Natural Environment Technical Report

Contract RFS-2019-NAFC-110

PO 214244

HDR Project 10206938

Ontario Line Technical Advisor

Toronto, Ontario

April 2022

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Executive Summary

ES.1 Project Overview and Study Purpose

Metrolinx, an agency of the Province of Ontario, is proceeding with the planning and development of the Ontario Line (the Project), extending from Exhibition/Ontario Place to the Ontario Science Centre in the City of Toronto.

The Project is being assessed in accordance with Ontario Regulation 341/20: Ontario Line Project under the *Environmental Assessment Act*. Ontario Regulation 341/20: Ontario Line Project outlines a Project-specific environmental assessment process that includes an Environmental Conditions Report (ECR), Environmental Impact Assessment Report, and an opportunity for Early Works Report(s) for assessment of works that are ready to proceed in advance of the Environmental Impact Assessment Report. The ECR documents the local environmental conditions of the Ontario Line (OL) Study Area and provides a preliminary description of the potential environmental impacts from the Project. Information outlined in the ECR is used to inform the Early Works Report(s) and Environmental Impact Assessment Report, which study environmental impacts in further detail and confirm and refine preliminary mitigation measures identified in the ECR.

The Project is a new approximately 15.6-kilometre subway line with connections to Line 1 (Yonge-University) subway service at Osgoode and Queen Stations, Line 2 (Bloor-Danforth) subway service at Pape Station, and Line 5 (Eglinton Crosstown) LRT service at the future Science Centre Station. Fifteen stations are proposed, with additional connections to three GO Transit lines (Lakeshore East, Lakeshore West and Stouffville), and the Queen, King, Bathurst, Spadina, Harbourfront, and Gerrard/Carlton streetcar routes. The Project will reduce crowding on Line 1 and provide connections to new high-order rapid transit neighbourhoods. The Project will be constructed in a dedicated right-of-way with a combination of elevated (i.e., above existing rail corridor/roadway), tunnelled (i.e., underground), and at-grade (i.e., at the same elevation as the existing rail corridor) segments at various locations.

The purpose of this Natural Environment Technical Report (NETR) is to assess the potential impacts on the natural heritage features and systems found within or on adjacent lands associated with the construction and the operation of the Project. The assessment divides the Project into 3 defined study areas – Ontario Line West (OLW), Ontario Line South (OLS) and Ontario Line North (OLN) for the purposes of reporting. The existing conditions in the Ontario Line study area are based on the available background natural environment information and supporting field studies. Project construction and operation is assessed with respect to their potential to impact the features document to be in the area. Mitigation for the impacts is provided for both construction activities as well as the long-term operation of the infrastructure and its periodic maintenance. Where direct impacts occur to key natural heritage features, compensation opportunities are discussed. Monitoring programs are also outlined to document the predicted influence of construction and operations on the key natural heritage features identified.

ES.2 Environmental Components Summary

The environmental components in the impact assessment are grouped into the following categories: designated features and policy areas; vegetation communities; wildlife and wildlife habitat, Species at Risk, aquatic habitats and stormwater management and drainage. The environmental components occur across the Ontario Line (OL) study area and are concentrated in the valleylands associated with the Don River.

Designated Features and Policy Areas

Designated features and policy areas are comprised of a Candidate Regionally Significant Life Science Areas of Natural and Scientific Interest within the E.T. Seton Area of Investigation, as well as unevaluated wetlands and woodlands within the OLN study area (Figure 3.1 to Figure 3.7 in Appendix A). In addition, the Don River Valley is considered to be a valleyland feature under the Provincial Policy Statement and is also designated as an Urban River Valley under the Greenbelt Plan. There are no Provincially Significant Wetlands or Locally Significant Wetlands in the study area.

Policy areas are comprised of the Don River Valley which is part of the City of Toronto's Natural Heritage System and Ravine and Natural Feature Protection by-law area (Figure 3.1 to Figure 3.7 in Appendix A), as well as Toronto and Region Conservation Authority's Terrestrial Natural Heritage System and regulation limits. There is one environmentally significant area within E.T. Seton Park, located north of Overlea Boulevard within the Don River Valley.

Vegetation Communities

Vegetation communities are highly fragmented and mainly comprised of culturally influenced meadows, thickets and woodlands in the urbanized areas in the OL study area, and contain large proportions of non-native and invasive plant species (Figure 3.1 to Figure 3.7 in Appendix A). More continuous tracts of natural vegetation, including mature forest communities and wetlands, occur in the Don River valley in the OLN study area.

Wildlife and Wildlife Habitat

Based on a review of wildlife atlases, there are records of 28 mammal species, 125 bird species, 31 herpetofauna species and 104 butterfly species in the OL study area. The majority of wildlife are common in the City of Toronto and tolerant to anthropogenic (human-made) disturbances, while a small proportion is comprised of sensitive or rare species. Fragmented forest and woodland communities and anthropogenic structures in the urbanized areas have the potential to support candidate significant wildlife habitat for bat maternity colonies and several species of conservation concern. The Don River and natural vegetation communities in the Don River Valley have the potential to support a greater variety of candidate significant wildlife features and terrestrial species of conservation concern.

Species at Risk

The OL study area has the potential to support various species at risk. Habitat for Barn Swallow, Chimney Swift and Species at Risk bats has the potential to occur in the anthropogenic structures and buildings in the OL study area. Woodland and forest communities in the OL study area also have the potential to support endangered bats as well as butternut. Wetlands in the OLN study area and the Don River have the potential to support Blanding's turtle. Eroded banks along the Don River and associated valleys (i.e., Walmsley Brook Valley) have the potential to support bank swallow. All requirements of the *Endangered Species Act*, 2007 will be met. Species-specific mitigation measures will be implemented, in consultation with Ministry of the Environment, Conservation and Parks (MECP).

Aquatic Habitat

The Don River provides direct fish habitat to a generally tolerant warm to cold water fish community and conditions were non-limiting throughout. No habitat classified as critical by the federal *Species at Risk Act* and no aquatic Species at Risk that are afforded protection under the Ontario *Endangered Species Act* or the federal *Species at Risk Act* were identified within the OL study area.

ES.3 Impact Assessment – During Construction

During the construction phase, removal of vegetation communities and anthropogenic structures will be required for the above-ground Project Footprint. This has the potential to negatively impact wildlife, including species at risk, that may be using the vegetation and/or structures to nest, breed and/or roost. Construction activities also have the potential to impact adjacent vegetation and natural features that will be retained.

Mitigation measures are outlined in this report to reduce potential impacts on vegetation and wildlife and to compensate for the loss of vegetation and/or wildlife habitat, where applicable. Monitoring activities are also outlined to confirm that the mitigation measures are in place and effective, and that compensation measures are successful. Mitigation measures include but are not limited to pre-construction surveys to confirm the presence of wildlife and species at risk, implementation of construction timing windows and installation of appropriate exclusion measures and fencing.

No natural environment impacts are anticipated during construction for the below-ground Project Footprint. The general impacts of construction for above ground development are well-known and appropriate mitigation has been recommended based on the knowledge of the elements of conceptual design available at the time of this report. It should be noted that the design is evolving and as details are finalized, it is recommended that a quantitative review of the areas of impact (e.g., area in hectares of temporary and permanent construction footprints based on final design) be verified by Metrolinx to assess and facilitate the understanding of additional mitigation measures and the implementation of design specific mitigation where applicable.

The proposed in-water work required for bridge construction has potential for temporary effects on fish and fish habitat including sedimentation, spills and leaks and underwater noise. The effects on fish and fish habitat can be reduced with the design and implementation of mitigation measures including a restricted activity construction timing window, and erosion and sediment control measures among others.

Refer to Table ES-1 for a complete list of potential impacts, mitigation measures, and monitoring activities during construction.

Table ES-1. Ontario Line Potential Impacts, Mitigation Measures and Monitoring During Construction

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Designated natural areas: The West Don River valley; candidate Regionally Significant Life Science Areas of Natural and Scientific Interest; and unevaluated wetlands The Don River Valley is considered to be valleyland feature under the Provincial Policy Statement. Policy areas: • City of Toronto Natural Heritage System (NHS) and E.T. Seton Park Environmentally Significant Area • City of Toronto Ravine and Natural Feature Protection Areas (Don River valley) • Toronto and Region Conservation Authority's Terrestrial Natural Heritage System and Regulation Areas (Don River valley) • Urban River Valley under the Greenbelt Plan (Don River valley)	• Vegetation removal within the West Don River Valley; and candidate Regionally Significant Life Science Areas of Natural and Scientific Interest • Disturbance, displacement or mortality of wildlife or habitat loss/degradation, including potential significant wildlife habitat and Species at Risk • Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use • Introduction or spread of invasive species • Increased erosion and sedimentation • Reduction in ecological function and integrity	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.
Vegetation Communities			
Vegetation communities – vegetation community removal	• Removal of vegetation communities • Damage to adjacent vegetation or ecological land classification communities as a result of accidental intrusion	• Vegetation removal will be limited and within the construction footprint. • Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ecological land classification communities. • Provide compensation for the removal of vegetation in accordance with Metrolinx's Vegetation Guideline (2020). • Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and/or seed mix, appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop as needed. • Vegetation removals will also consider and mitigate potential impacts to sensitive species (e.g., migratory birds and Species at Risk) and features (e.g., significant wildlife habitat). Refer to mitigation measures described for Wildlife and Wildlife Habitat and Species at Risk. • The following Ontario Provincial Standard Specifications (OPSS) will be considered when removing vegetation communities: OPSS PROV 180 (Management of Excess	• 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 reduce impacts. • If required, vegetation compensation activities will be monitored in accordance with Metrolinx's Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		Materials), OPSS PROV 801 (Protection of Trees), 803 PROV (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control).	
Vegetation communities – tree removal and compensation plans	• City and private tree removal	• An Arborist Report by an I.S.A. Certified Arborist may be prepared with regard to the Ontario *Forestry Act* R.S.O. 1990, and other regulations and best management practices as applicable. • The Arborist Report may include, but not be limited to, the individual identification of trees within the study area, including those that require removal or preservation, or trees that may be injured as a result of the Project. Trees to be identified within the study area may include those on Metrolinx property, trees on public and private lands, and boundary trees. The City of Toronto by-laws dictate the minimum area buffers to be inventoried and diameter at breast height that requires inventory. • Prior to the undertaking of tree removals, a tree removal strategy/tree preservation plan may be developed during detailed design to document tree protection and mitigation measures that follow the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees Guidelines (2016) and/or City of Toronto by-laws, and adherence with best practices, standards and regulations on safety, environmental, and wildlife protections. • Compensation for tree removals will be undertaken in accordance with the Metrolinx Vegetation Guideline (2020) and principles of the Toronto and Region Conservation Authority's (TRCA) Guideline for Determining Ecosystem Compensation (June 2018) (Ecological Compensation). • Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries. TPZs will be clearly staked prior to construction using barriers in accordance with local by-law requirements. • City of Toronto tree removal/injury permits shall be requested and obtained for trees regulated under Bylaw 813, 658 and 608. • OPSS PROV 803 (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered for tree removal.	• Regular inspection in areas of vegetation removal will be undertaken as required during construction to confirm that fencing is intact; only specified trees are removed; and no damage is caused to the remaining trees and adjacent vegetation communities. • 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 reduce impacts. • If required, vegetation compensation activities will be monitored in accordance with Metrolinx's Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.
Vegetation Communities – integrated vegetation management (IVM)	• Footprint Impacts and potential for the establishment of invasive species and other incompatible species	• An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and enhances cost-effectiveness.	• 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-treatment monitoring that will be carried out by field survey, by aerial survey, and by high-rail vehicle or train surveys conducted by qualified specialists.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Vegetation communities – tree removal strategy	• Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handing and transport of ash trees	• 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, *Agrilus planipennis* (Fairmaire) (2014), as amended from time to time. To comply with this Directive, ash trees requiring removal, including wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. • Confirm precautions are being taken to reduce the risk of the spread of invasive species by cleaning equipment prior to moving sites.	• 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 reduce impacts.
Vegetation communities – erosion and sedimentation	• Increased erosion and sedimentation	• Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ecological land classification communities. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and Erosion and Sediment Control Guideline for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to the vegetation communities. • Stockpiled materials or equipment will be stored within the construction footprint but shall be kept at least 30 m away from any watercourse; signs will be put up on site to so indicate the setback. • OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered when implementing erosion and sediment controls.	• 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 reduce impacts.
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use • Introduction or spread of invasive species	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse. Signs will be put up on site to indicate the 30 m setback from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • All machinery, construction equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the construction site. This will reduce the risk of the spread of invasive species to other locations.	• 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 reduce impacts. • Ensure precautions are being taken to reduce the risk of the spread of invasive species by implementing the Clean Equipment Protocol for Industry (Halloran et al. 2013) on equipment and machinery prior to arriving on a site.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general wildlife habitat, significant wildlife habitat (SWH), including species of conservation concern and wildlife habitat connectivity	• Disturbance, displacement, or mortality of wildlife, habitat loss or decrease of habitat connectivity for wildlife	• If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and its habitat. For example, construction activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required. • Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • The NDMNRF will be contacted if wildlife species protected by the Fish and Wildlife Conservation Act are required to be relocated from the work area during construction. • Opportunities to enhance the natural environment and provide a connection to the surrounding natural areas will be explored, to the extent possible.	• 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 reduce impacts.
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern (birds), wildlife habitat connectivity	• Disturbance or destruction of migratory bird nests of Species of Conservation Concern (birds)	• All works must comply with the *Migratory Birds Convention Act*, including timing windows for the nesting period (April 1 to August 31). • If activities are proposed to occur during the general nesting period, then a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest), it still receives protection. • Bird Species at Risk are also protected by the Ontario *Endangered Species Act* and migratory bird Species at Risk are protected by the federal *Species at Risk Act*. Mitigation measures for bird Species at Risk are discussed under the Species at Risk heading. • Comply with the City of Toronto's Toronto Green Standard for both light pollution and bird-friendly design and adopt the Leadership in Energy and Environmental Design requirements to reduce light pollution, in order to reduce bird collisions into project structures.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Species at Risk			
Species at Risk: Barn Swallow, Bank Swallow, Chimney Swift, Species at Risk Bats, Blanding's Turtle and Butternut	• Habitat loss, disturbance, and/or mortality to Species at Risk	• All requirements of the *Endangered Species Act* and *Species at Risk Act* will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with the MECP. • If Species at Risk is present and conservation strategies have been developed by the MECP. Metrolinx will follow the commitments in the recovery strategy. • If construction is scheduled during the nesting season for barn swallow and bank swallow (April 1 to August 31), a nest search will be undertaken to confirm that no barn swallow or bank swallow are nesting on structures or banks that may be affected by 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. • Removal of identified roosting structures/habitat for Species at Risk Bats is subject to MECP Endangered Species Act conditions. • Disturbance to bat roosting habitat will be avoided during the active season for bats from April 1 to September 30 to the extent possible. • If disturbance cannot be avoided, all requirements of the ESA will be met. • Additional monitoring, mitigation and compensation for the removal of suitable treed or human-made roosting habitat may be required based on the results of the additional surveys and consultation with the MECP. • On-site personnel will be provided with information (e.g., factsheets) that addresses the existence of potential Species at Risk on site, the identification of the Species at Risk and the procedure(s) to follow if an individual is encountered or injured.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented, in consultation with the MECP.
Aquatic Habitat			
Aquatic environment – wetlands and waterbodies	• Removal or impacts to wetland; aquatic and riparian vegetation; degradation of wetlands as result of dewatering and discharge activities; erosion and sedimentation to wetlands/waterbodies from construction; and risk of contamination to wetlands/waterbodies as a result of spills	• Construction activities will maintain the buffers established during the design phase to reduce 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, preferably through re-vegetation with native species suitable for the site. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and Erosion and Sediment Control Guideline for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to the waterbody. • A Spill Prevention and Response Plan will be developed before work commences to ensure procedures and policies are in	• On-site 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 reduce impacts and enhance mitigation measures.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		place during construction to reduce impacts to wetlands and watercourses. • 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. • Vegetation removals will also consider and mitigate potential impacts to wetland communities. Until such a time, that an Ontario Wetland Evaluation System evaluation is completed and evaluated by Ministry of Northern Development, Mines, Natural Resources and Forestry, unevaluated wetlands will be considered as significant for the purposes of assessing impacts. • Wetland communities potentially affected by the Project will be clearly staked out on site. • If dewatering is proposed, then it is recommended to be undertaken during the winter when the potential impacts of changes in water levels are less significant in wetland communities. During detailed design, the need for a dewatering zone of influence assessment and dewatering monitoring plan should be evaluated. The dewatering monitoring plan, if required, will monitor for potential negative impacts on nearby wetlands and adjacent vegetation communities to confirm if they affected due to dewatering activities. An adaptive management plan will be prepared if negative impacts are observed. • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the MNRF.	
Aquatic environment – fish and fish habitat	• Potential for direct, in-water impacts to fish and fish habitat • Dewatering activities and water discharge resulting in changes in water velocity or temperature; changes in soil and erosion; release of contaminated and sediment-laden water; changes in fish habitat structure and cover; changes in food supply, changes in nutrient concentration; changes in access to habitat leading to the displacement or stranding of fish	• All requirements of the *Fisheries Act* and the *Species at Risk Act* will be met. • In the event that in-water and/or near water construction works are required, appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including Fisheries and Oceans Canada (DFO). In-water works will be planned to consider timing windows to protect fish, including their eggs, juveniles, spawning adults, and/or the organisms upon which they feed. • Follow OPSS PROV 182 General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks (APR 2021). • Design water management system and dewatering operations to prevent erosion and/or release of sediment-laden or contaminated water to the waterbody or adjacent wetlands. • Follow OPSS PROV 517 Construction Specification for Dewatering (NOV 2016). • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the Ministry of Northern Development, Mines, Natural Resources and Forestry.	• 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 reduce impacts. • Monitoring for dewatering will be undertaken to confirm sediment-laden discharge; changes in visible scour/erosion; and changes in temperature within any receiving watercourse.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Stormwater Management and Drainage			
Floodplain	• Potential to impact flooding conditions in the Don River Floodplain • Potential for flooding impacts on-site during construction	• Floodplain impact assessment will be conducted during detailed design following TRCA guidelines once details on the pier configuration and other detailed bridge design information are available. Design optimizations on abutment, pier, and valley way placement shall be considered to reduce hydraulic impacts. • All temporary works including, but not limited to, the temporary bridges, should follow the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), to reduce the chance of flooding during the construction. TRCA staff will be consulted during detailed design to avoid potential infrastructure conflicts and impacts to flood protection measures/initiatives. • In addition, all necessary studies such as fluvial geomorphic process studies, meander belt and erosion studies, and geotechnical and slope stability assessments will be completed. • Prior to construction, develop a Flood Contingency Plan with specific mitigation measures for any proposed works or temporary laydown and staging areas, as required. The Flood Contingency Plan may include risk mapping, and a monitoring strategy. • Include construction site on TRCA flood warning system to prepare site in advance of possible flood events.	• Develop and undertake a monitoring program of the West Don Flood Protection Landform, as required, in consultation with TRCA. • Include a monitoring strategy in the Flood Contingency Plan to monitor surface water levels during construction activities.

Surface Water / Stormwater and Drainage	• Change in stormwater quality and quantity, including:
	  ○ Erosion of exposed soil and increased sediment loading which may impact receiving waterbodies and/or municipal stormwater drainage system; and,
	  ○ Increased surface water/stormwater runoff
		• Prior to construction, a Stormwater Management Plan that will outline stormwater discharges management associated with construction activities, and an Erosion and Sediment Control plan will be developed.
		• The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial, and federal requirements, as amended, and outlined in a Stormwater Management Report**,** including the City of Toronto Wet Weather Flow Management Guidelines. Stormwater management design will consider guidance provided by the MECP, formerly the Ministry of the ECCC Management Planning and Design Manual (2003) and Ontario Ministry of Transportation Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation 2010), as required.
		• The following stormwater management best management practices will be considered and implemented, as required:
		  ○ Reduce clearing and amount of exposed soil;
		  ○ Install key sediment control before grading/land alterations begin;
		  ○ Sequence construction activities so that the soil is not exposed for long periods of times;
			• Monitoring activities will be implemented as outlined in the Stormwater Management Plan and/or Erosion and Sediment Control Plan and may include regular inspections and reporting on the performance of implemented erosion and sediment control measures, best management practices, and other monitoring activities, as required.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		○ Protect storm drain inlets to filter out debris; and, ○ Stabilize all exposed soil areas as soon as land alterations have been completed. • The TRCA's Living City Policies (TRCA 2014b) will be followed during detailed design, including those policies related to outfall placement. • The TRCA's Stormwater Management Criteria (TRCA 2012) will be followed, including those policies related to impervious areas.	

ES.4 Impact Assessment – During Operation

The permanent removal of anthropogenic structures, natural vegetation communities and associated local wildlife habitat in specific areas will be required to support the infrastructure Project.

Capacity for alignment refinements for the OL proposed location are constrained by:

- the existing urban setting of the service area in terms of user needs for connecting existing transportation hubs to limit community disruption (without removing existing developments/neighbourhoods)
- the availability of land to support viable linear infrastructure corridors in a densely developed urban city
- the complex geophysical setting and existing hazard lands (i.e., challenges associated with connecting communities on either side of the Don Valley and maintaining its associated natural heritage system to the extent possible)

Affected areas in the above-ground Project Footprint has the potential to negatively impact wildlife, including species at risk, that may be using the vegetation and/or structures to nest, breed and/or roost. Further, the culmination of localized vegetation removals throughout the NHS can result in a greater impact on the NHS function as a whole. The function of the NHS includes: wildlife movement corridors, biodiversity, carbon sequestration, flood control, habitat diversity (aquatic, riparian, wetland, terrestrial habitat).

The cumulative impacts associated with permanent losses to the NHS in several areas can include: (1) negative impacts on habitat quality resultant from increases in light, noise pollution and dust generation (2) the permanent loss of woodland and terrestrial meadow communities in existing edge habitat can result in the conversion of higher quality/less disturbed habitat to edge habitat (3) increases in disturbance regimes in new track areas proposed at-grade in or adjacent to the NHS can lead to changes in community composition to early successional or disturbance tolerant species which may in turn enable invasive species to proliferate and decrease biodiversity and ecosystem resilience, and (4) can result in reductions to species movement associated with narrowing the wildlife corridor due to avoidance behaviour resultant from high disturbance regimes.

The proposed location of the transportation line, supporting infrastructure and bridges were chosen to reduce the level of impacts to natural features to the greatest extent feasible while also enabling safe passage while traversing portions of undeveloped lands associated with the Don Valley and City of Toronto’s Natural Heritage System.

During the operation phase, maintenance of vegetation will be required in the OL right-of-way along the at-grade sections of the corridor. This activity has the potential to negatively impact wildlife that may be using the OL corridor to nest or travel, including migratory birds and reptiles.

Mitigation measures are discussed in this report to compensate for habitat losses in the NHS and reduce potential impacts on wildlife during maintenance activities, including the implementation of timing windows and methods to reduce the spread of invasive species.

Bridges where maintenance activities that may impact those structures that support Barn Swallow habitat will need to be surveyed in advance, and will be subject to the requirements of the ESA. Timing restrictions and compensation will be implemented in consultation with the Ministry of the Environment, Conservation and Parks (MECP).

Proposed bridge crossings do not have an in-water footprints. No impacts to the aquatic environment are expected at bridge crossings during the operation phase of the Project.

Refer to Table ES-2 for a complete list of potential impacts, mitigation measures, and monitoring activities during operations.

Table ES-2. Ontario Line Potential Impacts, Mitigation Measures and Monitoring Activities During Operations

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Designated natural areas: The West Don River valley; candidate Regionally Significant Life Science Areas of Natural and Scientific Interest; and unevaluated wetlands The Don River Valley is considered to be valleyland feature under the Provincial Policy Statement. Policy areas: • City of Toronto Natural Heritage System (NHS) and E.T. Seton Park Environmentally Significant Area • City of Toronto Ravine and Natural Feature Protection Areas (Don River valley) • Toronto and Region Conservation Authority's Terrestrial Natural Heritage System and Regulation Areas (Don River valley) • Urban River Valley under the Greenbelt Plan (Don River valley)	• Localized losses of habitat which may support local wildlife populations and species at risk • Reduction in habitat quality resultant from increases in light, noise pollution and dust generation • Potential reduction in habitat quality and NHS ecosystem resilience related to edge habitat and invasive species proliferation • Potential reduction in species movement throughout the NHS corridor	• Compensatory habitat within the Don Valley NHS and mitigation measures including on-going invasive species management are under discussion with agency stakeholders (City of Toronto and TRCA).	• Monitoring restoration areas and follow up management are under discussion with agency stakeholders (City of Toronto and TRCA).
Vegetation Communities			
Vegetation communities – vegetation removal	• Removal of vegetation during operational vegetation maintenance activities, if applicable • Damage to adjacent vegetation or Ecological Land Classification communities as a result of accidental intrusion during vegetation maintenance activities, if applicable	• Vegetation removal will be reduced to the extent possible and limited to the Metrolinx right-of-way. • An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness. • Herbicide applications will be administered subject to the Pesticides *Act*.	• 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 reduce impacts. • Monitoring and management of trees/vegetation in the rail corridor right-of-way will be undertaken in accordance with the IVM Program within the Metrolinx Vegetation Guideline (2020).
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use during maintenance activities	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse. Signs will be put up on site to indicate the 30 m setback from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge.	• 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 reduce impacts.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		• All machinery, equipment and vehicles arriving on site should be in clean condition (e.g., free from fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the site in order to prevent the spread of invasive species to other locations.	
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general	• Disturbance, displacement or mortality of wildlife during operational vegetation maintenance activities, if applicable	• If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat. For example, operational vegetation maintenance activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the work area on its own. A qualified biologist will be contacted to define the appropriate buffer required.	• 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 reduce impacts.
Wildlife and wildlife habitat – significant wildlife habitat – turtles and turtle habitat, including Species of Conservation Concern	• Potential for impacts to turtles and/or turtle habitat during operational vegetation maintenance activities, if applicable	• Work within turtle habitat will be planned in consideration of turtle overwintering period which occurs from October 1 to April 30. It is also possible that turtle surveys would need to be conducted prior to the work.	• 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 reduce impacts.
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern (birds)	• Disturbance or destruction of migratory bird nests during operational vegetation maintenance activities, if applicable	• All works must comply with the *Migratory Birds Convention Act*, including timing windows for the nesting period (April 1 to August 31). • If operation vegetation maintenance activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside this nesting period (including a ground nest), it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
Species at Risk			
Species at Risk – general	• Habitat loss, disturbance, and/or mortality to SAR during operational maintenance activities, if applicable	• In areas subject to maintenance activities during operations, (repair or replacement of structures, or removal of treed habitat), additional surveys may be required to determine the presence of SAR. • All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – barn swallow	• Habitat loss, disturbance and/or mortality to barn swallow during operational maintenance activities, if applicable	If operational maintenance activities are scheduled during the nesting season for barn swallow (April 1 to August 31), a nest search will be undertaken to confirm that no barn swallow are nesting on structures that may be affected by 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.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Aquatic Habitat			
Aquatic environment – wetlands and waterbodies	• Potential impacts are not anticipated during operations	• None required.	• None required.
Aquatic environment – fish and fish habitat	• Potential impacts are not anticipated during operations	• None required.	• None required.

Table of Contents

Figures

Tables

Appendices

Abbreviations

CPR	Canadian Pacific Railway
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
ECR	Environmental Conditions Report
EEB	Emergency Egress Building
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
ESA	*Endangered Species Act,* 2007
IVM	Integrated Vegetation Management
LRT	Light Rail Transit
MBCA	*Migratory Birds Convention Act,* 1994
MECP	Ministry of the Environment, Conservation and Parks
MNR	Ministry of Natural Resources – Ontario (for references prior to 2015)
MNRF	Ministry of Natural Resources and Forestry – Ontario (for references between 2015 and 2020)
NDMNRF	Ministry of Northern Development, Mines, Natural Resources and Forestry – Ontario (2021 and current references)
NETR	Natural Environment Technical Report
NHS	Natural Heritage System
OL	Ontario Line
OLN	Ontario Line North
OLS	Ontario Line South
OLW	Ontario Line West
OMSF	Operation, Maintenance and Storage Facility
OPSS	Ontario Provincial Standard Specifications

PPS	Provincial Policy Statement, 2020
RFR	Request for Review
SAR	Species at Risk
SARA	*Species at Risk Act,* 2002
SOCC	Species of Conservation Concern
SWH	Significant Wildlife Habitat
TPZ	Tree Protection Zone
TRCA	Toronto and Region Conservation Authority
TTC	Toronto Transit Commission
VPR	Voluntary Project Review

1 Introduction

1.1 Project Overview

Metrolinx, an agency of the Province of Ontario, is proceeding with the planning and development of the Ontario Line (the Project), extending from Exhibition/Ontario Place to the Ontario Science Centre in the City of Toronto.

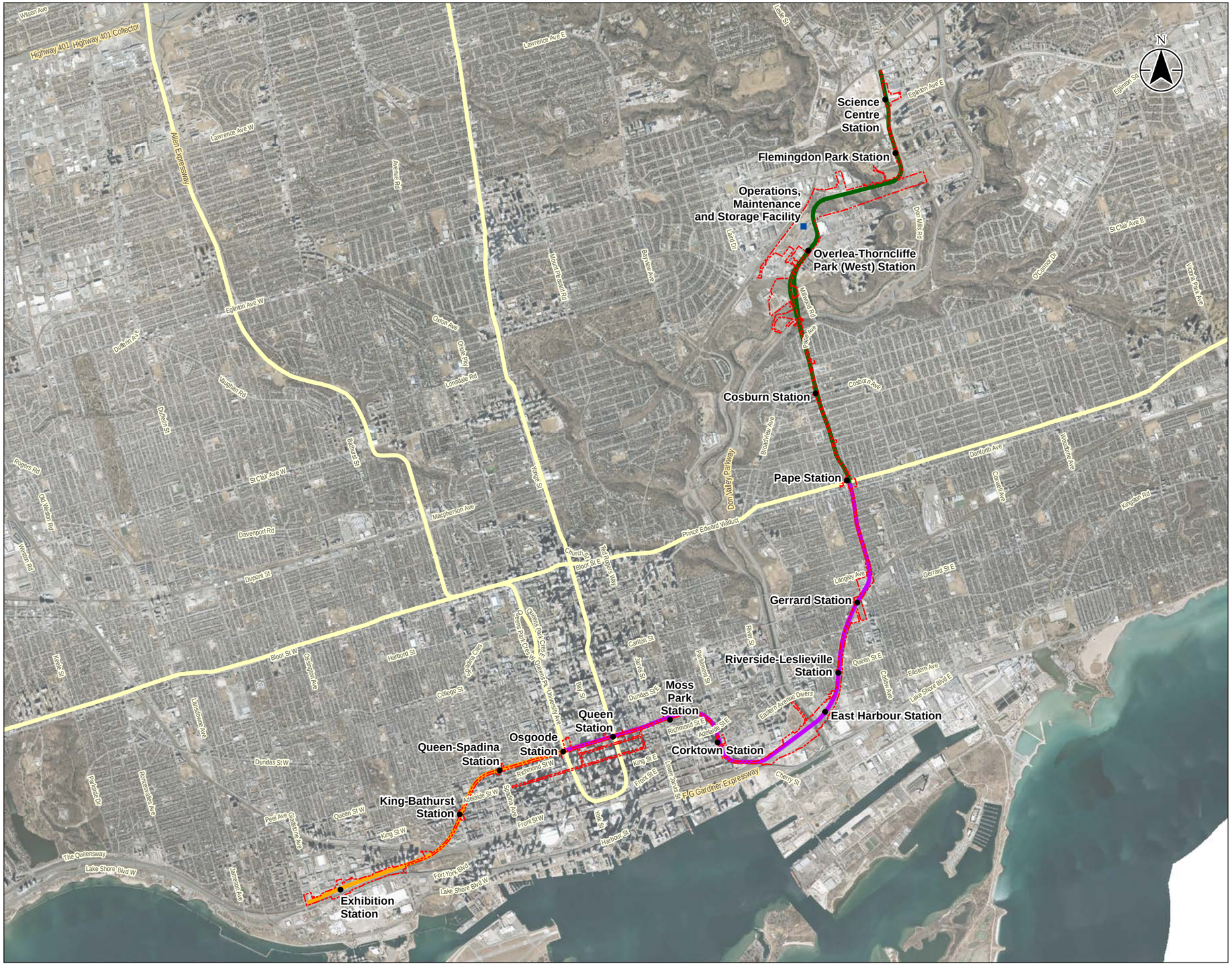
The Project is a new approximately 15.6-kilometre subway line with connections to Line 1 (Yonge-University) subway service at Osgoode and Queen Stations, Line 2 (Bloor-Danforth) subway service at Pape Station, and Line 5 (Eglinton Crosstown) Light Rail Transit (LRT) service at the future Science Centre Station. Fifteen stations are proposed, with additional connections to three GO Transit lines (Lakeshore East, Lakeshore West and Stouffville), and the Queen, King, Bathurst, Spadina, Harbourfront, and Gerrard/Carlton streetcar routes. The Project will reduce crowding on Line 1 and provide connections to new high-order rapid transit neighbourhoods. The Project will be constructed in a dedicated right-of-way (RoW) with a combination of elevated (i.e., above existing rail corridor/roadway), tunnelled (i.e., underground), and at-grade (i.e., at the same elevation as the existing rail corridor) segments at various locations.

An overview of the Project Footprint is shown in Figure 1-1.

1.2 Purpose of the Ontario Line Environmental Impact Assessment Report

The Project is being assessed in accordance with Ontario Regulation 341/20: Ontario Line Project under the *Environmental Assessment Act*. Ontario Regulation 341/20: Ontario Line Project outlines a Project-specific environmental assessment process that includes an Environmental Conditions Report (ECR), Environmental Impact Assessment Report (EIAR), and an opportunity for Early Works Report(s) for assessment of works that are ready to proceed in advance of the EIAR. The ECR documents the local environmental conditions of the Ontario Line (OL) Study Area and provides a preliminary description of the potential environmental impacts of the Project. Information provided in the ECR is used to inform the Early Works Report(s) and the EIAR, which study environmental impacts in further detail and confirm and refine preliminary mitigation measures identified in the ECR.

The EIAR includes environmental impact assessment results, proposed mitigation measures, proposed monitoring activities, potentially required permits and approvals and a record of consultation, among other information, to meet Ontario Regulation 341/20: Ontario Line Project requirements.



Stantec

Legend

- ▭ Project Footprint
- ● Station Location
- ■ Operations, Maintenance and Storage Facility
- ▬ Ontario Line West
- ▬ Ontario Line South
- ▬ Ontario Line North
- ▬ Existing Subway

0 1,100 2,200
Metres

1:47,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD27 MTM zone 10
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2020.
3. City of Toronto data licensed under the Open Government. Licence - Toronto,

Project Location
Coity of Toronto, ON

160560009 REV4
Prepared by BCC on 2022-01-27

Client/Project
HDR CORPORATION
ONTARIO LINE TA

Figure No.
1-1

Title
Project Footprint

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1.3 Purpose of the Natural Environment Technical Report

This Report (Natural Environment Technical Report [NETR]) forms part of the EIAR and has been prepared to assess potential natural heritage impacts and identify proposed mitigation measures and monitoring activities to verify mitigation effectiveness.

This NETR assesses the impacts on the natural heritage features found within the Project Footprint, and the adjacent lands within the Project Study Area where impacts may occur as a result of construction and operation of the Ontario Line. The NETR addresses and investigates the designated natural features encountered, and the federal, provincial and municipal policies as they relate to five categories: designated features and policy areas; vegetation communities; wildlife and wildlife habitat, species at risk and aquatic habitats. The construction of some Project components are proposed to proceed before the completion of the environmental impact assessment process and have been assessed as part of the Ontario Line Early Works (AECOM 2020a, 2021a and b) and therefore are generally not part of the scope and not assessed in this NETR.

However, some portions of the early works are addressed in the NETR, including the operations components of Exhibition Station, Corktown Station, Lower Don Bridge and Don Yard, East Harbour Station and the Lakeshore East Joint Corridor.

The NETR assesses the potential for impacts based on the conceptual design approach planned for the Project and is completed in support of the Environmental Impact Assessment Report for the Ontario Line. Recommendations may be updated or refined at subsequent design stages, as details are confirmed. Refer to Table 1-1 for the sections and main components of the Project.

Table 1-1. Report Contents in Accordance with Ontario Regulation 341/20: Ontario Line Project

Reg. Section	Requirement	Report Section
Section 15(2)4	A description of the local environmental conditions at the site of the Ontario Line Project.	Section 3
Section 15(2)6	Metrolinx's assessment and evaluation of the impacts that the preferred method of carrying out the Ontario Line Project and other methods might have on the environment, and Metrolinx's criteria for assessment and evaluation of those impacts.	Section 3
Section 15(2)7	A description of any measures proposed by Metrolinx for mitigating any negative impacts that the preferred method of carrying out the Ontario Line Project might have on the environment.	Section 4
Section 15(2)8	A description of the means Metrolinx proposes to use to monitor or verify the effectiveness of mitigation measures proposed.	Section 4
Section 15(2)9	A description of any municipal, provincial, federal or other approvals or permits that may be required for the Ontario Line Project.	Section 5

1.4 Project Description

For readability, the Project has been divided into three sections: Ontario Line West (OLW), Ontario Line South (OLS), and Ontario Line North (OLN).

Select Project components are proposed to proceed before the completion of the Environmental Impact Assessment process and have been assessed under separate cover, as part of the Ontario Line Early Works Reports. These include early works at Exhibition Station, Corktown Station, Lower Don Bridge and Don Yard, East Harbour Station, and the Lakeshore East Joint Corridor.

Ontario Line West

The OLW section extends from Exhibition Station (a terminus and interchange point with the Lakeshore West GO Transit corridor) to the TTC (Toronto Transit Commission) Line 1 interchange at Osgoode Station.

At Exhibition Place, the OLW tracks and platform will be located at-grade on the north side of the Lakeshore West GO Transit corridor. An above-grade concourse is planned to span both sets of tracks to facilitate cross-track access to the Ontario Line and GO Transit platforms. As the tracks extend eastwards from Exhibition Station they gradually descend, and the tracks will be below-grade before entering the portal to transition the subway underground. Between Exhibition Station and the portal, retaining walls will be installed to facilitate the gradual descent of the subway line. The location of supporting structures will be confirmed as design advances, but based on current information, it is anticipated that a traction power substation may be located east of the Exhibition portal, and an Emergency Egress Building (EEB) may be located in the Ordnance Park area.

The subway tunnel continues underground at an approximate depth of 30 m to King/Bathurst Station. Beyond King/Bathurst Station, the tunnel continues northeast before curving to arrive at Queen/Spadina Station. From there, the tunnel extends east under Queen Street to an interchange station under the existing TTC Osgoode Station. The Ontario Line Osgoode Station will be an interchange station with the existing TTC Line 1 Osgoode Station.

Ontario Line South

The OLS section extends from the east side of Osgoode Station to just south of Pape Station.

The OLS tracks continue from Osgoode Station through the subway tunnels east under Queen Street to an interchange station under the existing TTC Line 1 Queen Station. The Ontario Line Queen Station will be connected with TTC Line 1 Queen Station and the PATH system. An underground track crossover will be constructed east of Queen Station for maintenance and emergency diversion purposes. East of the crossover, the tunnels continue under Queen Street East to the Moss Park Station, located on the north side of Queen Street East between George Street and Sherbourne Street. From Moss Park Station the tunnels turn south and travels underground to Corktown Station near the intersection of Berkeley Street and King Street East. An EEB connected to the station will be located on the east side of Berkeley Street, north of

Front Street. From Corktown Station, the tunnels turn southeast and travels under Distillery Lane.

An EEB will be located west of Cherry Street in the Metrolinx Union Station Rail Corridor RoW with emergency access provided from Cherry Street and Lakeshore Boulevard East. An additional EEB is proposed at the foot of Tannery Road in the Metrolinx Union Station Rail Corridor RoW. The tunnels reach the surface at the Don Yard Portal, located just west of the Don River, to the north of the existing GO Transit Union Station Rail Corridor and Don Yard train storage facility and to the southeast of Mill Street. Retaining walls will be constructed from the portal face on both sides of the tracks as the elevation ascends from below grade to at-grade. The tracks will cross the Lower Don River on a new bridge, the Lower Don Bridge, that will be constructed on the north side of the existing rail bridge. Once the tracks cross the Lower Don River, the tracks will be located on the northwest side of the Joint Corridor that runs from the Don Valley Parkway in the south to Gerrard Street East in the north.

The East Harbour Station will be located south of Eastern Avenue and Broadview Avenue and will support transfer between Ontario Line and GO transit through the station concourse. Moving northeast along the Joint Corridor, the tracks will enter the Riverside/Leslieville Station at Queen Street East. The tracks continue into Gerrard Station at Gerrard Street East and Carlaw Avenue, with a new rail bridge at the intersection of Gerrard Street East and Carlaw Avenue to accommodate the tracks. North of Gerrard Station, the tracks begin to descend from the Gerrard portal underground. The Gerrard portal is situated south of the intersection of Pape Avenue and Langley Street immediately north of the Joint Corridor. Once underground at the Gerrard portal, the subway tunnels will continue north along Pape Avenue to Pape Station at Danforth Avenue and Pape Avenue. An EEB is planned to be located at Bain Avenue and Pape Avenue.

Ontario Line North

The OLN section extends from Pape Station to Science Centre Station.

Pape Station will interchange with the existing TTC Line 2 Pape Station. North of Pape Station, under Pape Avenue, between Browning Avenue and Sammon Avenue, an underground track crossover, the Sammon Avenue Crossover, will be constructed for maintenance and emergency diversion purposes. From the Sammon Avenue Crossover, the tunnel continues north crossing under Pape Avenue to run along the west side of Pape Avenue RoW to Cosburn Station which is planned to be located on the west side of Pape Avenue at Cosburn Avenue. The tunnel continues north to the Minton Place portal, which includes an EEB. The portal face is on the southern valley wall of the Don Valley, north of Hopedale Avenue.

The underground segment of OLN will emerge from the southern valley wall of the Don Valley west of the Don Valley Crossing Bridge on an elevated structure that will span the Don Valley Parkway and the Don River. The elevated guideway will continue along the northwest side of Overlea Boulevard to the Thorncliffe Park Station, located at Thorncliffe Park Drive. East of Thorncliffe Park Station, the elevated guideway turns north, then east, crossing over Beth Nealson Drive (which will run underneath the guideway) and crossing the west branch of the West Don River to arrive at Flemingdon Park Station. Flemingdon Park Station is located on the

west side of Don Mills Road, just north of Gateway Boulevard. North of Flemingdon Park Station, a crossover will be constructed for maintenance and emergency diversion purposes. The elevated guideway then travels north crossing from the west side to the east side of Don Mills Road to Science Centre Station, located at Don Mills Drive and Eglinton Avenue East. This station will have an underground tunnel connection to the existing TTC Line 5 (the Eglinton Crosstown LRT). North of Science Centre Station, a crossover will be constructed for maintenance and emergency diversion purposes.

The Operations, Maintenance and Storage Facility (OMSF) will be located north of Thorncliffe Park Station. The OMSF will provide storage, inspection, maintenance, and repair services for the Project.

1.5 Purpose of the Report and Methodology

This NETR considers the potential impacts during the construction and operational phases for the Project. This NETR builds on the existing natural heritage information from AECOM's Natural Environment ECR (AECOM 2020c). The impact assessment in the NETR is based on the existing natural heritage information and the conceptual design (November 23, 2021) which is a functional design intended to identify the potential location of Project components as well as temporary lands that may be required during construction and operation of the Ontario Line. It is a preferred design providing a basic understanding of the extent and potential for impacts and will be refined and updated as Project planning progresses through detailed design.

1.5.1 Existing Environmental Conditions Report

An existing ECR (AECOM 2020b) was prepared to meet the requirements of Section 4 of Ontario Line Regulation 341/20. The ECR summarized the local environmental conditions within the Project's preliminary study area as defined in that report, through a combination of desktop review and field studies.

As per the Ontario Line Regulation, the ECR also provided a preliminary description of potential impacts that the Project may have on the environment, recommended mitigation measures, and a list of potential permits and approvals.

The purpose of the ECR was to:

- document existing natural environment features
- describe potential impacts to the natural environment caused by the Ontario Line Project and the potential measures for mitigating negative impacts in respect of them
- outline a preliminary list of the potential municipal, provincial, federal or other approvals or permits associated with the natural environment that may be required for the Ontario Line Project

This NETR details the existing environmental conditions, preliminary impacts and mitigation measures from the ECR, and provides further details on existing environmental conditions, impacts and mitigation measures based on the conceptual design.

In the ECR, the report was divided into sections as described in Section 1.4 (OLN, OLW and OLS), and the OLN study area was further divided into sub-areas to separately describe two natural valleyland areas associated with the Don River. Natural environment sub-areas include the Millwood Road Area of Investigation and the E.T. Seton Park Area of Investigation which also encompasses the Operation, Maintenance and Storage Facility (OMSF).

1.5.2 Study Area

For the purposes of this NETR, the study area boundary extends 120 m from the Project Footprint which is consistent with the provinces standard for natural heritage investigations on adjacent lands and 170 m from the Project Footprint in the Don River Valley areas and the station locations to facilitate the assessment of areas subject to more involved project components that could result in a larger area of impact. The study area is shown on Figure 2.1 to Figure 2.7 in Appendix A.

The following terms are used throughout the report to define the scope of investigation:

- Project Footprint – Lands within the construction limits of the Ontario Line project, including, buildings, rail lines, temporary workspace, natural heritage features and transportation infrastructure
- Study Area – Project Footprint and area within 120m or 170 m of the Project Footprint
- Areas of Investigation (AECOM 2020c) – Millwood Road Area of Investigation and E.T. Seton Park Area of Investigation in the OLN Study Area

The Project Footprint was established based on a conceptual design for the Project, which will be refined and updated as Project planning progresses through detailed design. The conceptual design is intended to identify the potential location of Project components as well as temporary lands that may be required during construction. The Project Footprint includes the total area anticipated to be potentially affected by the proposed construction activities and operations of the Project. The extent of proposed physical works from construction and operation includes, but is not limited to, temporary laydown and staging areas, potential road detours, new bridges, tunnelling and associated openings (including vent shafts and emergency egress buildings), new stations and platforms, portals, retaining walls and barriers, railway track alignments/ realignments, the operations, maintenance and storage facility (OMSF), new power supply and transformers, and utility relocations.

As indicated in Section 1.3, the construction phase of some Project components will proceed before overall Project construction and were assessed as part of the Ontario Line Early Works (AECOM 2020) and are, therefore, not assessed in this report. The operation phase of these components are assessed in this report. The sections and main components of the Project are provided in Table 1-1.

1.5.3 Impact Assessment Methodology

Potential impacts on the natural environment were assessed for Project construction and operation (see Section 4). The assessment was based on the ECR data, updated desk top analysis and complimentary field investigations undertaken to expand on or update ECR findings and recommendations. The potential impacts have been determined based on an understanding of the conceptual design and how construction and operation of the proposed Project will interact with the existing natural environment. The conceptual design may evolve as design continues to progress, and the intent of this report is to identify the potential for impacts based on general design approaches with the understanding that more detailed assessment will be undertaken as needed once design advances. GIS-based overlay mapping was used to identify potential interactions between the Project and existing natural heritage features. Where potential adverse impacts have been identified, mitigation measures and monitoring activities are recommended in Section 4 to eliminate or reduce these impacts. Mitigation and monitoring recommendations include reference to Metrolinx's Vegetation Guideline (Metrolinx 2020).

2 Legislation and Policy Context

There are a number of policies at the federal, provincial and municipal levels that are embodied in various legislation that are applicable to the construction and operation of the Project as it relates to natural environment features and fauna and flora. These polices are outlined below and further assessed in Section 5 of this report to document the compliance with these policies based on the permits and authorization obtained or in progress, as well as the mitigation to manage the various policy requirements.

2.1 Federal

2.1.1 Species at Risk Act, 2002

The federal *Species at Risk Act*, 2002 protects and provides recovery strategies for Species at Risk (SAR) listed as extirpated, endangered or threatened under Schedule 1. With respect to terrestrial SAR, this legislation applies to federal lands, federally regulated projects or species with critical habitat on non-federal lands in specific circumstances, unless they are aquatic species or migratory birds listed on Schedule 1. Critical habitat is identified in recovery strategies or action plants for species listed as endangered and threatened under the *Species at Risk Act* (SARA) and is defined as habitat that is vital to the survival or recovery of a species. The majority of species listed under Schedule 1 of SARA receive habitat protection on non-federal lands under the Ontario *Endangered Species Act* (refer to Section 2.2.4). Species that do not receive protection under the Ontario *Endangered Species Act* and do not have critical habitat identified may be afforded protection under other legislation such as the *Migratory Bird Convention Act*, 1994 (*Migratory Birds Convention Act*; refer to Section 2.1.3). In the case of aquatic SAR, the SARA provides protection for aquatic species and habitat, including critical habitats, on both federal and non-federal lands.

Species that are listed as Special Concern under Schedule 1 of the SARA receive management initiatives under the SARA to prevent them from becoming endangered and threatened, but do not receive individual or habitat protection.

Permits are required by those persons/organizations conducting activities that may affect species listed on Schedule 1 of the SARA, as extirpated, endangered, or threatened and which contravene the Act's general or critical habitat prohibitions. The Act also contains a prohibition against the damage or destruction of their residences (e.g., nest or den). Under Section 73 of the SARA, a permit may be issued to engage in an activity affecting a listed wildlife species or a part of its critical habitat or its residences.

In summary, the Project does not occur on federal lands and is not generally subject to the SARA policies, with the exception of the SARA aquatic species and migratory birds listed on Schedule 1. Interactions with aquatic species during the construction phase have the potential to occur at the Lower Don River, West Don River, and Walmsley Brook crossings.

Through consultation and response with Fisheries and Oceans Canada (DFO) for the bridge over the Lower Don River indicates that no DFO authorization or SARA permitting is required with respect to in-water works. Additional RFR reviews for the other watercourse crossings in the OL Study Area are in progress and will be documented in subsequent Metrolinx Ontario Line submissions. SARA permits are not anticipated to be required given that no federally regulated aquatic SAR.

2.1.2 Fisheries Act, R.S.C. 1985

On August 28, 2019 the new Fish and Fish Habitat Protection Provisions of the Amended *Fisheries Act* came into force. Changes to the Act include a return to the policies that were enforced prior to the 2012 amendments, focusing on the following key concepts:

- protecting fish and fish habitat (i.e., the focus is no longer on only protecting Commercial, Recreational and Aboriginal fisheries)
- restoring the previous prohibition against “harmful alteration, disruption or destruction of fish habitat”
- restoring a prohibition against causing “the death of a fish by any other means than fishing”

The Fish and Fish Habitat Protection Program ensures compliance with relevant provisions under the *Fisheries Act* and SARA. The program reviews proposed works, undertakings and activities that may impact fish and fish habitat. If a project is taking place in or near water, the proponent is responsible for understanding project related impacts on fish and fish habitat and applying measures to avoid and/or mitigate impacts (i.e., harmful, alteration, disruption or destruction) to fish and fish habitat. In water works below the high water mark are subject to DFO review via a Request for Review form.

2.1.3 Migratory Birds Convention Act, 1994

The federal *Migratory Birds Convention Act* (MBCA) is intended to protect migratory birds, their eggs and their active nests. The MBCA prohibits the possession, destruction and harm of migratory birds and/or their active nests and prohibits the release of harmful substances in areas frequented by migratory birds. Environment and Climate Change Canada (ECCC) administers the Act, but numerous other agencies are responsible for consideration of migratory birds under the MBCA. Under the MBCA, the nesting period for most migratory birds for Nesting Zone C1 that encompasses the Project is from April 1 to August 31, during which time vegetation removal is strongly discouraged to avoid contravention of the MBCA. However, if vegetation clearing must occur during this timing window, active nest searches may be conducted in simple habitats defined by ECCC (2019) as “often man-made settings with only a few likely nesting spots or small community of migratory birds.”

Examples of simple habitats that apply to the Ontario Line Project include:

- an urban park consisting mostly of lawns with a few isolated trees
- a vacant lot with few possible nest sites

- a previously cleared area where there is a lag between clearing and construction activities (and where ground nesters may have been attracted to nest in cleared areas or in stockpiles of soil, for instance); or a structure such as a bridge, a beacon, a tower or a building (often chosen as a nesting spot by robins, swallows, phoebes, Common Nighthawks, gulls and others)

Complex habitat includes woodlands and scrublands where there are many potential nesting areas such that detection of nests, especially nests of cryptic songbirds, would be difficult and not effective (ECCC 2019).

2.2 Provincial

2.2.1 Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) sets the policy framework for regulating development and use of land and is issued under the authority of the *Planning Act*, 1990 (Ministry of Municipal Affairs and Housing 2020a). According to Section 2.0 of the PPS, development and site alteration is not permitted in significant wetlands or coastal wetlands. However, development and site alteration may occur adjacent to significant wetlands and significant coastal wetlands, and in or adjacent to significant woodlands, significant valleylands, significant wildlife habitat (SWH), and areas of natural and scientific interest, provided that it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Section 1.6.8.6 of the PPS notes that “when planning for corridors and rights-of-way for significant transportation infrastructure facilities, consideration will be given to the significant resources in Section 2.0: Wise Use and Management of Resources”. If development of significant transportation infrastructure facilities occurs in or adjacent (50 m or 120 m) to natural heritage features (e.g., SWH, areas of natural and scientific interest, provincially significant wetlands, significant woodlands, significant valleylands, fish habitat), Metrolinx must provide consideration to reduce effects, if applicable, on these features to the extent possible. These features occur primarily in the Don River Valley lands and associated natural corridors. These are illustrated on Figure 4.1 to Figure 4.7 in Appendix A.

2.2.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020, Growth Plan) is a long-term plan for Ontario designed to promote economic growth, increase housing supply, create jobs, and build communities that make life easier, healthier, and more affordable for people of all ages. As one of the most dynamic and fast-growing regions in North America, the Greater Golden Horseshoe is a designation for many people and businesses from other parts of Canada and around the world. To accommodate such growth, an integral part of the Plan’s vision is focused on investing in transit infrastructure to support the regional transit network.

As stated in the Growth Plan “The implementation of A Place to Grow is supported by Metrolinx (an agency of the Government of Ontario created to improve coordination and integration of all modes of transportation in the Greater Toronto and Hamilton Area)”.

The Growth Plan identifies Downtown Toronto as an “urban growth centre” and a “priority transit corridor” (Ministry of Municipal Affairs and Housing 2020b). The Growth Plan notes that urban growth centres will be planned:

a) as focal areas for investment in regional public service facilities, as well as commercial, recreational, cultural, and entertainment uses

b) to accommodate and support the transit network at the regional scale and provide connection points for inter- and intra-regional transit

c) to serve as high-density major employment centres that will attract provincially, nationally, or internationally significant employment uses

d) to accommodate significant population and employment growth

Each “urban growth centre” is given a minimum density target to achieve by 2031. The minimum density target for Downtown Toronto is 400 residents and jobs combined per hectare.
To support these growth and density targets, “priority transit corridors” are identified with policies for infrastructure development, such as requiring municipalities to recognize these areas in their official plans to implement the policies of the Growth Plan.

According to Section 3.2.5 (d), impacts on key natural heritage features in the Natural Heritage System (NHS) for the Growth Plan, key hydrological features and key hydrologic areas should be avoided or, if not possible, reduced and mitigated to the extent possible as demonstrated through an environmental assessment completed by the Province when planning for the development, optimization or expansion of existing or planned infrastructure corridors. The NHS for the Growth Plan is not mapped for Downtown Toronto; however, the City of Toronto maps its NHS in its Official Plan (City of Toronto 2019).

2.2.3 Greenbelt Plan, 2017

The Greenbelt Plan builds on the PPS and provides a land use planning framework related to urban structure and future growth in Ontario’s Greater Golden Horseshoe while providing protection to the agricultural lands, ecological and hydrological features in the Greenbelt Area (Ministry of Municipal Affairs and Housing 2017). In the Ontario Line Study Area, the Don River is designated as an Urban River Valley under the Greenbelt Plan. The Urban River Valley designation provides connectivity between the Greenbelt and Lake Ontario and directs land use planning in those areas where the Greenbelt occupies river valleys in an urban context (Ministry of Municipal Affairs and Housing 2017). The lands are governed by municipal official plans, such as the City of Toronto Official Plan (2019). Publicly owned lands (i.e., by the Province, municipality or conservation authority) are subject to the policies of the Urban River Valley designation and existing, expanded or new infrastructure subject to and approved under the *Environmental Assessment Act* (or similar approval) are permitted within the Urban River Valley Designations provided that the goals of the Growth Plan and Greenbelt Plan are supported (Ministry of Municipal Affairs and Housing 2017).

2.2.4 Endangered Species Act, 2007

The provincial *Endangered Species Act* (ESA) protects those species listed on the Species at Risk in Ontario List as extirpated, endangered or threatened on provincial, crown, or private lands. Sections 9 and 10 of the ESA prohibit the killing, harassment, capture or taking of living individuals of SAR or damaging or destroying their habitat. Therefore, where a proposed activity will impact protected species or habitat, changes to timing, location and methods of the proposed activity should be considered, wherever feasible, to avoid impacts to SAR. Where impacts cannot be avoided or mitigated, a permit process can be initiated.

The Act was formerly administered by the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF), but as of June 29, 2019, the provincial government officially transitioned duties regarding administration of the ESA to the Ministry of the Environment, Conservation and Parks (MECP). The MECP may grant a permit, or other authorization, for activities that would otherwise not be allowable under the Act. Several permit types are available, depending on the nature of the proposed work and may include conditions for the activity to meet with aid in protection or recovery of the targeted SAR. Although listed as SAR under the ESA, special concern species are not afforded species or habitat protection under the Act but receive protection under other Acts such as the MBCA, Ontario *Fish and Wildlife Conservation Act*, 1997, as SWH (refer to Section 3.2.2) under the PPS, 2020, and other planning documents (e.g., municipal official plans).

Metrolinx will comply with the conditions of the Permit CD-D-002-19 issued on August 7, 2020 under Section 17(1) in accordance with clause 17(2)(d) of the ESA for SAR that may be affected by the Ontario Line works.

2.2.5 Conservation Authorities Act, 1998

The Ontario Line study area falls under the jurisdiction of the Toronto and Region Conservation Authority (TRCA). Ontario Regulation (O. Reg.) 166/06 under Section 28 of the *Conservation Authorities Act* (1998), establishes regulated areas within TRCA's jurisdiction where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features.

Metrolinx will engage with the TRCA as project planning and design advance, including regarding compensation and post-planting monitoring, in support of The Living City Policies for Planning and Development in the Watersheds (TRCA 2014).

2.3 Municipal

Metrolinx as a Crown Agency of the Province of Ontario is exempt from certain municipal processes and requirements. In these instances, Metrolinx will engage with the City of Toronto to incorporate municipal requirements as a best practice, where practical, and may obtain associated permits and approvals.

City of Toronto Official Plan

The City of Toronto Official Plan (OP) was approved by the Ontario Municipal Board on July 6, 2006 and includes subsequent Official Plan Amendments. Official Plan policies related to the natural environment are outlined in Chapters 1-5, Schedules 1-4 and Maps, and are in effect as of April 2021.

The OP promotes strong communities and a competitive economy while protecting, restoring or enhancing the natural environment and urban forests. Several designated areas related to the natural environment as well as urban parks and forests are present in various areas within the Ontario Line (OL) study area. These designated areas include *Green Space System*, *Natural Heritage System* (NHS), *Environmentally Sensitive Area*, and *Parks and Open Space System*.

Chapter 1, Section 2 Principles for A successful Toronto recognizes the critical need to take an integrated approach to planning for such a large and diverse City. The OP states:

"Holistic and integrated thinking is a fundamental requirement for planning a modern city like Toronto. Integrated thinking means seeing, understanding and accounting for all the connections as we go about our decision making. Sometimes it means thinking differently about solutions. Always it means searching for outcomes that demonstrate integration, balance and interdependence and that earn social, environmental and economic rewards".

This base principle is paramount to land use planning in the City and highlights the need to balance conflicting resource interests through a holistic planning approach.

Chapter 2 of the OP outlines principles for steering growth and change to some parts of the City while protecting neighbourhoods and green spaces from development pressures. The Chapter includes integrated land use and transportation policies aimed at achieving this objective.

Section 2.3.2 of Chapter 2 speaks to Toronto's Green Space System and Waterfront and outlines the benefits the Green Space System provides for the City and residents.

The *Green Space System* is comprised of those lands with a *Parks and Open Space Areas* designation which are large, have significant natural heritage or recreational value and which are connected. The City has a number of policies outlined in Section 2.3.2 focused on protecting, improving or adding to the Green Space System whenever feasible.

Policy 2.3.2.4 states:

> *The sale or disposal of publicly owned lands in the Green Space System will be discouraged. No City owned land in the Green Space System will be sold or disposed of. However, City owned land in the Green Space System may be exchanged for other nearby land of equivalent or larger area and comparable or superior green space utility.*

Policy 2.3.2.5 states:

> *Within the Green Space System, development will not result in the loss of public space.*

The inclusion of these later two policies are provided herein as requested by the City of Toronto; however, are subject to consultation and agreement beyond the scope of the NETR.

Chapter 3 of the OP outlines principles for building a successful city generally defined as improving quality of life for its residents. The policies in the Chapter were developed to guide growth in the City by integrating social, economic and environmental perspectives in the decision-making process to create an attractive Toronto with a strong economy and complete communities. Within this Chapter, Section 3.4 of the City of Toronto Official Plan (OP) outlines municipal policies related to the natural environment.

Policy 3.4.6 states:

> *Areas within the floodplain may only be used for activities that:*
>
> *a) retain existing topography;*
>
> *b) protect, restore or improve existing natural features and functions;*
>
> *c) do not result in unacceptable risks to life or property; and*
>
> *d) minimize the need to mitigate and remediate floods, erosion and damage to the natural ecosystem.*

Policy 3.4.7 states:

> *Utilities or services may be located within, or cross the floodplain, including:*
>
> *a) transportation and above-ground utilities, which may be permitted only to cross the floodplain if there is no reasonable alternative; and*
>
> *b) underground utilities, flood or erosion control, stormwater management, and conservation.*

Policy 3.4.14 states:

> *Areas of land or water within the natural heritage system with any of the following characteristics are particularly sensitive and require additional protection to preserve their environmentally significant qualities:*
>
> *a) habitats for vulnerable, rare, threatened or endangered plant and/or animal species and communities that are vulnerable, threatened or endangered within the City or the Greater Toronto Area; or*
>
> *b) rare, high quality or unusual landforms created by geomorphological processes within the City or the Greater Toronto Area; or*

c) *habitats or communities of flora and fauna that are of a large size or have an unusually high diversity of otherwise commonly encountered biological communities and associated plants and animals; or*

d) *areas where an ecological function contributes appreciably to the healthy maintenance of a natural ecosystem beyond its boundaries, such as serving as a wildlife migratory stopover or concentration point, or serving as a water storage or recharge area.*

Chapter 4 of the OP relates to land use designations. Land use designations are noted to be among the OP's key implementation tools for achieving the growth strategy set out in Chapter Two – to direct major growth to some parts of the City and away from others. The four land use designations *Neighbourhoods*, *Apartment Neighbourhoods*, *Parks and Open Space Areas and Utility Corridors,* aim to help protect and reinforce the existing physical character of these areas.

Policy 4.3.3 states:

> *The areas shown as Natural Areas on Maps 13-23 will be maintained primarily in a natural state, while allowing for:*
>
> a) *compatible recreational, cultural and educational uses and facilities that minimize adverse impacts on natural features and functions; and*
>
> b) *conservation projects, public transit, public works and utilities for which no reasonable alternatives are available, that are designed to have only minimal adverse impacts on natural features and functions, and that restore and enhance existing vegetation and other natural heritage features.*

Chapter 5 Implementation: Making Things Happen, of the OP is focused on enabling the effective implementation of the OP, including both the traditional tools that govern plans of subdivision, zoning by-laws, minor variances, consents and demolition control and also policies that provide guidance needed to fulfil this Plan's objectives. The OP is an integrated document. For any part to be properly understood, the Plan must be read as whole.

Section 5.6 Interpretation States:

> *'The Plan is more than a set of individual policies. Policies in the Plan should not be read in isolation or to the exclusion of other relevant policies in the Plan. When more than one policy is relevant, all appropriate policies are to be considered in each situation. The goal of this Plan is to appropriately balance and reconcile a range of diverse objectives affecting land use planning in the City.'*

The OP is an integrated document. For any part to be properly understood, the Plan must be read as whole.

A range of municipal permits and approvals may be required for the Project, particularly as pertaining to municipally owned lands and infrastructure. Metrolinx will obtain all required permits and approvals.

City of Toronto Ravine Strategy

Toronto's Ravine Strategy aims to guide future ravine management, use, enhancement and protection. At its essence, Toronto's first Ravine Strategy *will help to support a ravine system that is a natural, connected sanctuary essential for the health and well-being of the city, where use and enjoyment support protection, education and stewardship.* The Ravine Strategy Implementation Report was adopted by City Council on January 29, 2020.

Toronto's Ravine Strategy is led by five guiding principles that were developed through extensive consultation with the public, interest groups, staff and key stakeholders. In summary the five principles are to *protect, invest, connect, partner* (with stakeholder and community), and *celebrate* our ravine systems throughout the City. The strategy further outlines twenty actions to support the five guiding principles.

City of Toronto Municipal Code Chapter 658, Ravine & Natural Feature Protection

The Ravine & Natural Feature Protection Bylaw, officially called, the *City of Toronto Municipal Code Chapter 658, Ravine & Natural Feature Protection*, was first passed by City Council on October 3, 2002. The by-law is a tool to protect features (trees and landform) and functions (ecology and hydrology) of the ravine and natural feature system by encouraging environmentally responsible management. The current by-law replaces previous ravine bylaws and expands the area of protection to the entire city.

The by-law was developed to protected ravines and natural features such as: all areas regulated for flooding purposes by the TRCA; smaller ravines where there is a discernible slope with a grade change of 2 metres or greater; Environmentally Sensitive Areas; Areas of Natural and Scientific Interest; woodlands and public golf courses that are beside ravines, and; woodlands larger than 0.5 ha and wooded portions of the Lake Iroquois shoreline are also covered under the by-law.

TRCA Ontario Regulation 166/06

The City of Toronto provides the boundaries of regulated areas under TRCA O. Reg. 166/06 and the Ravine & Natural Feature Protection Bylaw. A permit may be required through the City's Parks, Forestry and Recreation (or Urban Forestry) to undertake work in ravines to permit the injury or remove trees covered within the regulated area.

It is necessary for the proposed transit improvements and station developments to encroach into some areas covered under the Ravine & Natural Feature Protection Bylaw. A permit is generally not required for grade changes within areas that are regulated by the TRCA.

Stantec has consulted the City of Toronto and the TRCA regarding proposed developments including anticipated impacts to trees and vegetation covered under TRCA and City regulated ravine features. A Ravine Stewardship Plan detailing tree/vegetation compensation and restoration plans is being completed under separate cover to address tree/vegetation removal in these areas.

3 Existing Environmental Conditions

A Natural Environment ECR (AECOM 2020c) was completed to document existing natural environment features, outline the preliminary description of the potential impacts of the Ontario Line Project on the natural environment, outline a description of potential mitigation measures to mitigate those impacts, describe potential impacts to the natural environment caused by the Ontario Line Project and the potential measures for mitigating negative impacts in respect of them, and outline a preliminary list of the potential municipal, provincial, federal or other approvals or permits associated with the natural environment that may be required for the Ontario Line Project.

Methods from the Natural Environment ECR are summarized in Section 3.1 and the results are presented in Sections 3.2 to 3.9. Detailed methods are provided under a separate cover in the Natural Environment Existing Conditions Report (AECOM 2020c).

3.1 Methods

A review of available information and field investigations were conducted in support of the EIAR. This NETR presents the overall report for the Project, which is a combination of the preliminary ECR and complimentary works completed after that report to address the latest conceptual design and to establish natural environment existing conditions. (Mapped in Figure 2.1 to Figure 2.7, Appendix A.)

The following aspects of the natural environment were examined:

- designated natural areas and planning policy areas
- Ecological Land Classification vegetation community surveys (Lee et. al. 1998) and plant inventory
- fish and fish habitat
- wildlife and wildlife habitat
- significant wildlife habitat (MNR 2000; MNRF 2015) and species at risk

A background review of available desktop information was reviewed to characterize the existing natural environment conditions, including:

- Ministry of Natural Resources and Forestry (MNRF) Ontario GeoHub base mapping data (MNRF 2020a)
- Wildlife atlases (BSC 2001; Dobbyn 1994; eBird 2020; Macnaughton et. al. 2019; Ontario Nature 2020)
- planning documents and guidelines
- previously completed environmental assessments within the Ontario Line Study Area
- open data portals

Other background information was collected through correspondence with the following agencies:

- MNRF – Aurora District Office
- Toronto and Region Conservation Authority
- Ontario Nature

Field investigations were also completed in support of the Project and the ECR, as summarized below.

Ontario Line West

- Ecological Land Classification and Plant Inventory – June 2020
- Incidental Wildlife Observations – Spring 2020

Ontario Line South

- Ecological Land Classification and Plant Inventory – October 2018

Ontario Line North

- Ecological Land Classification and Plant Inventory
  - Millwood Road Area – June/July 2019
  - E.T. Seton Park – June 2020
- Aquatic Site Reconnaissance
  - Millwood Road Area – July 2019
  - E.T. Seton Park – October 2019
- Breeding Bird Surveys (BSC 2001)
  - Millwood Road Area – June/July 2019
- Nocturnal Amphibian Breeding Call Surveys (BSC et. al. 2009)
  - Millwood Road Area – April 2019
- Incidental Wildlife Observations
  - Millwood Road Area – Spring 2020
  - E.T. Seton Park – Spring 2020

Additional surveys conducted for the Project that were not included in the ECR include:

- SAR Surveys
- AECOM conducted targeted SAR surveys across the Study Area to confirm the presence of SAR. These SAR surveys were documented in various memorandum. In most cases SAR locations are subject to confidentiality to protect the long-term protection and recovery of species and populations. As such, the results of the SAR surveys, including SAR locations have not been included in this NETR due to the

sensitive nature of these species. E.T. Seton Park/Walmsley Brook and Valley Field Investigations.

- An assessment of the initial field surveys and results was completed to assess gaps in the flora and fauna survey data and determine areas where current design and anticipated construction footprint interacts with key natural heritage features. This gap analysis was used to direct additional field investigations including surveys conducted in E.T. Seton Park to survey geomorphological conditions of Walmsley Brook, and to conduct supplementary Ecological Land Classification surveys and a plant inventory in the valley associated with Walmsley Brook. The Seton Park – Walmsley Brook and Valley Environmental Information Summary Memo (Stantec 2020) was prepared to summarize the results of the surveys. The memo included a background review of available fisheries data for Walmsley Brook.

3.2 Designated Natural Areas

Designated natural areas include valleylands, Provincially Significant Wetlands and Locally Significant Wetlands, Areas of Natural and Scientific Interest, significant woodlands, and SWH. According to Section 1.6.8.6 of the PPS, consideration is to be given to designated natural areas when planning for corridors and rights-of-way for significant transportation and infrastructure facilities. Brief descriptions of the different types of designated natural areas are as follows:

- Valleylands refer to a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year (Ministry of Natural Resources [MNR] 2010). Significant valleylands are those valleylands that are identified as significant based on a variety of criteria including but not limited to hydrological, geomorphological and ecological function as identified in the Natural Heritage Reference Manual (MNR 2010).
- Provincially Significant Wetlands and Locally Significant Wetlands are wetlands that are seasonally or permanently flooded by shallow water, or areas where the water table is close to the surface, enabling the development of hydric soil, which supports primarily hydrophytic or water tolerant plants (MNR 2014). The NDMNRF evaluates the significance of wetlands through the Ontario Wetland Evaluation System. Based on the resulting score of an evaluation, an evaluated wetland can fall into one of two classes: Provincially Significant Wetlands or Locally Significant Wetland (MNR 2014). Until such a time that an Ontario Wetland Evaluation System evaluation is completed and evaluated by the NDMNRF unevaluated wetlands should be considered as significant for the purposes of assessing impacts.
- Areas of Natural and Scientific Interest include land and/or water containing natural landscapes or features that have been scientifically identified by the NDMNRF as having life science or earth science values related to protection, scientific study or education (MNR 2010). Areas of Natural and Scientific Interest are designated as earth science (geological) or life science (biological) depending on the features present (MNR 2010). “Candidate Areas of Natural and Scientific Interest” are those provincial-level Areas of Natural and Scientific Interest that the NDMNRF has identified and recommended for

protection but that have not been formally confirmed through a confirmation procedure (MNR 2010). For the purposes of the PPS, an Area of Natural and Scientific Interest is not considered provincially significant until it has been confirmed.

- Significant woodlands are those woodlots that are identified as significant in a municipal official plan or those woodlots that have been investigated and meet the criteria of significance as identified in the Natural Heritage Reference Manual (MNR 2010).
- Significant wildlife habitats are areas that have important ecological features and functions which support sustainable populations of plants, wildlife and other organisms as discussed in Section 3.7.

The following subsections describe the designated natural areas within each segment of the Ontario Line study area. Designated natural areas are shown on Figure 3.1 to Figure 3.7 in Appendix A.

3.2.1 Ontario Line West (OLW)

According to the MNRF's GeoHub Mapping (2020a), there are no Provincially Significant Wetlands, Locally Significant Wetland, Areas of Natural and Scientific Interest, valleylands, unevaluated wetlands or woodlands within the OLW Study Area. The City of Toronto does not identify significant woodlands or significant valleylands in their Official Plan (2019). Refer to Section 3.7.1 for a discussion on SWH in the OLW study area.

3.2.2 Ontario Line South (OLS)

According to the MNRF's GeoHub Mapping (2020a), there are no Provincially Significant Wetlands, Locally Significant Wetland, valleylands, unevaluated wetlands or woodlands within the OLS Study Area. The City of Toronto does not identify significant woodlands or significant valleylands in their Official Plan (2019). The Don River Valley is designated as an Urban River Valley under the Greenbelt Plan. Refer to Section 3.7.2 for a discussion on SWH in the OLS study area.

3.2.3 Ontario Line North (OLN)

According to the MNRF's GeoHub Mapping (MNRF 2020a), there are no Provincially Significant Wetlands, Locally Significant Wetland or provincially significant Areas of Natural and Scientific Interest within the OLN study area. There is a candidate Regionally Significant Life Science Area of Natural and Scientific Interest within the E.T. Seton Park Area of Investigation, as well as unevaluated wetlands and wooded areas. As per TRCA guidance, the unevaluated wetlands have been considered as significant until such time that an evaluation using the Ontario Wetland Evaluation System (OWES) determines otherwise. The City of Toronto does not identify significant woodlands or significant valleylands in their Official Plan (2019). Refer to Section 3.7.3 for a discussion on SWH in the OLN study area.

In addition, the Don River Valley within the OLN study area is a valleyland feature consisting of a continuous natural vegetation corridor with a minimum width of 100 m and containing over 25% of natural cover, fish habitat and regionally and locally rare species identified within the Candidate Regionally Significant West Don River Valley Life Science Areas of Natural and Scientific Interest and an Environmentally Significant Area within E.T. Seton Park, described below in Section 3.3.3. Although there was no mapping available from secondary sources identifying the boundaries of this valleyland specifically, the City of Toronto's NHS and Ravine and Natural Feature Protection By-law, and TRCA's regulation limits generally include the extent of the valleyland within the OLN Study Area as further discussed in Section 3.3.3. The Don River Valley is also designated as an Urban River Valley under the Greenbelt Plan.

3.3 Planning Policy Areas

Planning Policy Areas include land use planning designations from provincial plans, upper and lower tier municipal official plans, and conservation authorities. Planning Policy Areas related to the protection of the natural environment that are applicable to the Ontario Line are described below.

City of Toronto Natural Heritage System

As described in Section 3.4 of the City of Toronto's Official Plan (2019), the NHS is comprised of the following features:

- significant landforms and physical features
- watercourses and hydrological features
- valley slopes, riparian zones
- terrestrial natural habitat types
- significant aquatic features
- species of concern and significant biological features that are subject to the PPS

According to the City of Toronto Interactive Map – Environmentally Significant Areas (City of Toronto, 2020), portions of the NHS are located within the Ontario Line Study Area. According to Section 3.4.14 of the City's Official Plan (2019), new or expanding infrastructure should be avoided in the NHS unless there is no reasonable alternative, in which case adverse impacts are reduced and natural features and ecological functions are restored or enhanced where feasible. In this case, Metrolinx is not subject to City of Toronto permitting requirements within Metrolinx-owned lands but will engage the City as project planning and design advance.

City of Toronto Ravine and Natural Feature Protection By-law

This By-law is enforced by the City of Toronto and protects natural features that are vulnerable to degradation due to the removal of trees, changes in grade, or lack of management (City of Toronto 2017). Typically, a permit would be required to conduct work in a Ravine or Natural Feature area including removing a tree, placing fill, or altering the grade of the land (City of Toronto 2017). In this case, Metrolinx is not subject to City of Toronto permitting requirements within Metrolinx-owned lands but will engage the City as project planning and design advances. Metrolinx obtains permits on behalf of property owners for cases where trees on private lands are impacted by the Project.

Environmentally Significant Areas

These are designated by the City of Toronto and form portions of the City's NHS and include natural heritage areas that support high species diversity and habitats for wildlife (including rare species, rare landforms and important ecological function), which require additional protection to conserve their important ecological qualities and functions (North-South Environmental Inc. et al. 2012).

Toronto and Region Conservation Authority Terrestrial Natural Heritage System

TRCA has developed the Terrestrial NHS to identify natural features and areas that need to be protected and expanded within their jurisdiction in order to protect ecological functions and biodiversity. Valley and stream corridors, wetlands, woodlands and meadows are key components of this target system. TRCA also sets targets for improving the quality, integrity, quantity and connectivity of terrestrial natural features within the system.

Toronto and Region Conservation Authority Regulated Areas

The Ontario Line Study Area falls under the jurisdiction of the TRCA. Ontario Regulation (O. Reg.) 166/06 under Section 28 of the *Conservation Authorities Act* (1998), establishes regulated areas within TRCA's jurisdiction where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features.

Metrolinx will engage with the TRCA as project planning and design advance, including regarding compensation and post-planting monitoring, in support of The Living City Policies for Planning and Development in the Watersheds (TRCA 2014).

Urban River Valley Designation

This designation is provided under the Greenbelt Plan and applies to the Don River Valley. The Greenbelt Plan builds on the PPS and provides a land use planning framework related to urban structure and future growth in Ontario's Greater Golden Horseshoe, while providing protection to the agricultural lands, ecological and hydrological features in the Greenbelt Area (Ministry of Municipal Affairs and Housing 2017). Within the Ontario Line study area, the Don River is designated as an Urban River Valley under the Greenbelt Plan. The Urban River Valley designation provides connectivity between the Greenbelt and Lake Ontario and directs land use planning in those areas where the Greenbelt occupies river valleys in an urban context (Ministry of Municipal Affairs and Housing 2017). The lands are governed by municipal official plans, such as the City of Toronto Official Plan (2019). Publicly owned lands (i.e., by the Province, municipality or conservation authority) are subject to the policies of the Urban River Valley designation and existing, expanded or new infrastructure subject to and approved under the *Environmental Assessment Act* (or similar approval) are permitted within the Urban River Valley Designations provided that the goals of the Growth Plan and Greenbelt Plan are supported (Ministry of Municipal Affairs and Housing 2017).

A discussion of planning policy areas as they relate to each study area is provided in the following sub-sections. Planning policy areas are shown on Figure 3.1 to Figure 3.7 in Appendix A.

3.3.1 Ontario Line West (OLW)

According to the City of Toronto's Interactive Map (City of Toronto 2020a), a small portion of the City's NHS falls within the western most limits of the OLW study area west of Dufferin Street along the rail corridor. There are no other policy areas identified within this study area. This study area is located outside of TRCA's regulation limits.

3.3.2 Ontario Line South (OLS)

According to the City of Toronto's Interactive Map (City of Toronto 2020), areas associated with the Lower Don River Valley fall within the City of Toronto's NHS and Ravine and Natural Feature Protection By-law Area, as well as TRCA's Terrestrial NHS and regulation limits. The Urban River Valley designation under the Greenbelt Plan occurs along the Don River to its mouth at Lake Ontario. There are no environmentally significant areas within the OLS study area.

3.3.3 Ontario Line North (OLN)

According to the City of Toronto Interactive Map (City of Toronto 2020), the natural areas within the Don River Valley located in the OLN study area (in both the Millwood Road and E.T. Seton Park Areas of Investigation) are part of the City of Toronto's NHS and Ravine and Natural Feature Protection By-law Area, as well as TRCA's Terrestrial NHS and regulation limits. There is one environmentally significant area within E.T. Seton Park, located north of Overlea

Boulevard within the Don River Valley. The Urban River Valley designation under the Greenbelt Plan occurs along the Don River.

The E.T. Seton Park Environmentally Significant Area consists of a mixture of forested, cultural and wetland communities. Wetlands are groundwater-fed and support important water storage functions (North-South Environmental Inc. et al. 2012). There are three significant flora species, two significant fauna species and two significant vegetation communities present (North-South Environmental Inc. et al. 2012).

3.4 Ecological Land Classification and Plant Inventory

The following subsections describe the Ecological Land Classification vegetation communities (Lee et. al. 1998) and results of the plant inventory for each segment of the Ontario Line study area. Ecological Land Classification vegetation communities are shown on Figure 3.1 to Figure 3.7 in Appendix A. Representative photographs of the vegetation communities are located in the Natural Environment Existing Conditions Report (AECOM 2020b).

3.4.1 Ontario Line West (OLW)

The majority of the OLW study area is urban and vegetation is limited to streetscapes (e.g., street trees, city parks and manicured lawns). Based on aerial photography interpretation, there are limited vegetation communities present within the Fort York Historic Site and within the Right-of-Way of the existing rail corridor. These vegetation communities were investigated by AECOM in June 2020; the results of which can be found in Table 3-1.

Table 3-1. Ecological Land Classification Vegetation Communities Identified by AECOM in June 2020 within the Ontario Line West Study Area

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	General Location	Comments
Cultural (CU) Communities	Cultural Hedgerow (CUH)	CUH	Cultural Hedgerow	Manitoba maple (*Acer negundo*) dominated the canopy along with European ash (*Fraxinus excelsior*) and Siberian elm (*Ulmus pumila).*	The shrub layer contained Manitoba maple and staghorn sumac (*Rhus typhina*).	The ground layer was not noted in this community.	West of Strachan Ave.	–
Cultural (CU) Communities	Cultural Hedgerow (CUH)	CUH with MAS2 inclusion	Cultural Hedgerow with Mineral Shallow Marsh inclusion	Manitoba maple dominated the canopy along with Siberian elm and tree-of-heaven (*Ailanthus altissima*).	The shrub layer was dominated by Manitoba maple and Scotch elm (*Ulmus glabra*).	The following species were found in the ground layer: garlic mustard (*Alliaria petiolata*), goldenrod species (*Solidago spp*.), yellow avens (*Geum aleppicum*), Philadelphia fleabane (*Erigeron philadelphicus ssp. Philadelphicus)* and thicket creeper (*Parthenocissus inserta*).	North of the rail corridor, from Atlantic Ave. to the western limit of the OLW study area.	–
Cultural (CU) Communities	Cultural Hedgerow (CUH)	CUH with CUT1a inclusion	Cultural Hedgerow with Manitoba Maple Thicket inclusion	Horse chestnut (*Aesculus hippocastanum*) dominated the canopy along with Siberian elm, Freeman's maple (*Acer freemanii*) and European ash.	The shrub layer was dominated by European ash and Siberian elm.	The following species were found in the ground layer: orchard grass (*Dactylis glomerate*), dame's rocket (*Hesperis matronalis*), garlic mustard, tall goldenrod (*Solidago altissima*), wild carrot (*Daucus carota*), and common burdock (*Arctium minus*).	In Fort York Park, east of Strachan Ave. between the rail corridor and Gardiner Expressway.	–
Cultural (CU) Communities	Cultural Thicket (CUT)	CUT1	Mineral Cultural Thicket	Manitoba maple, eastern cottonwood (*Populus deltoides ssp. deltoides*) and Siberian elm dominated the canopy layer.	The shrub layer was dominated by Manitoba maple, red-osier dogwood (*Cornus sericea*) and thicket creeper.	The ground layer was not noted in this community.	West of Bathurst St. in Fort York Park.	–
Forest (FO) Communities	Deciduous Forest (FOD)	FOD4	Dry – Fresh Deciduous Forest Ecosite	Siberian elm, hybrid crack willow (*Salix rubens*), Manitoba maple, Norway maple (*Acer platanoides*) and white ash (*Fraxinus americana*) made up the canopy layer.	The shrub layer was dominated by Manitoba maple, Morrow's honeysuckle (*Lonicera morrowii*) and common buckthorn (*Rhamnus cathartica*).	The following species were found in the ground layer: grass species including Kentucky blue grass (*Poa pratensis*) and orchard grass, garlic mustard, common burdock and dog-strangling vine (*Cynanchum rossicum*).	In Fort York Park, south of the rail corridor and west of Bathurst St.	Patch of Japanese knotweed (*Fallopia japonica*) growing along the trail.

The vegetation communities in the OLW study area were mainly cultural in nature and consisted of Cultural Hedgerows (CUH), Cultural Thickets (CUT1) and a Deciduous Forest (FOD).

A comprehensive vascular plant list for the OLW study area is provided in Appendix B. Of the 72 species documented, 29 (40%) were native and 43 (60%) were invasive. There were no plant SAR or provincially rare species (S1-S3 rank), however, there were two Regional Species of Conservation Concern (SOCC) plants recorded, which are described in Table 3-2 below. These Regional SOCC plants are not protected under federal or provincial legislation and therefore Metrolinx is not subject to their protection within their own lands.

Table 3-2. Toronto and Region Conservation Authority Regional Species of Conservation Concern Plants Recorded within the Ontario Line West Study Area

Common Name	Scientific Name	Local Rank	Vegetation Community Observed	Source of Record
Slippery elm	*Ulmus rubra*	L3	CUH near Strachan Avenue	AECOM (2020)
Eastern snowberry	*Symphoricarpos albus var. albus*	L3	CUH near Strachan Avenue	AECOM (2020)

Notes:

Local Rank – TRCA (2020c). Species with a rank of L1 to L3 are considered to be Regional SOCC by TRCA within their jurisdiction.

L+: Exotic. Not native to TRCA jurisdiction (includes hybrids between native and exotic species).

L1: Rare in TRCA jurisdiction, of concern regionally.

L2: Probably rare in TRCA jurisdiction, of concern regionally.

L3: Generally secure in natural matrix; considered to be of regional concern.

L4: Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.

L5: Generally secure throughout TRCA jurisdiction; may be of very localized concern in highly disturbed areas.

3.4.2 Ontario Line South (OLS)

Vegetation communities identified in the OLS study area were generally disturbed and are largely limited to narrow vegetation strips within the existing rail corridor surrounded by heavily developed commercial, industrial and residential areas. These vegetation communities contained large proportions of non-native and invasive plant species and none were identified as being provincially significant (AECOM 2017; AECOM 2018; 4Transit 2018; HDR 2018; Golder Associates 2018). Descriptions of vegetation communities and their structural compositions are summarized in Table 3-3.

Table 3-3. Ecological Land Classification Vegetation Communities within the Ontario Line South Study Area – Cultural (CU) Communities

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	General Location
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1	Dry-moist Old Field Cultural Meadow	No tree canopy layer identified in this community.	No shrub layer identified in this community.	Cultural meadows were identified through interpretation of aerial imagery. These communities were generally dominated by grasses, weeds, and other herbaceous species.	West of the Don River
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-1	Dry-moist Old Field Cultural Meadow	No tree canopy layer identified in this community.	No shrub layer identified in this community.	Greater than 60% ground cover primarily dominated by dog strangling vine, garlic mustard, white sweet-clover (*Melilotus alba*), Canada goldenrod (*Solidago canadensis*), tall goldenrod, thicket creeper and wild carrot.	East of the Don River
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-A	Native Forb Meadow	Less than 10% tree cover consisting of Russian olive (*Elaeagnus angustifolia*).	No shrub layer identified in this community.	Greater than 60% ground cover primarily dominated by goldenrods, grasses and Canada thistle (*Cirsium arvense*).	West of the Don River underneath the Don Valley Parkway
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-b with a CUP1-A	Exotic Cool-season Grass Graminoid Meadow with a Cultural Plantation inclusion	Less than 10% tree cover consisting of Austrian Pine (*Pinus nigra*), giant-toothed aspen (*Populus grandidentata*) and balsam poplar (*Populus balsamifera*).	No shrub layer identified in this community.	Greater than 60% ground cover primarily dominated by grasses, Canada thistle, wild carrot and common milkweed (*Asclepias syriaca*).	East of the Don River within the clover-leaf of the on-ramp for the Don Valley Parkway
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-c	Exotic Forb Meadow	Less than 10% tree cover consisting of green ash (*Fraxinus pensylvanica*).	Less than 10% cover dominated by common buckthorn.	Greater than 60% ground cover primarily dominated by white sweet clover (*Melilotus alba*), common chicory (*Cichorium intybus*)	West of the Don River underneath the Don Valley Parkway
Cultural (CU) Communities	Cultural Thicket (CUT)	CUT1	Mineral Cultural Thicket	Less than 25% tree cover: dominated by tree species such as: Manitoba maple, Norway maple and tree-of-heaven. Less common trees noted in the canopy included green ash, white mulberry (*Morus alba*), Carolina poplar (*Populus X canadensis*) and wych elm (*Ulmus glabra*).	Between 25 and 60% shrub cover: dominated by staghorn sumac, common buckthorn, gray dogwood (*Cornus racemosa*), Russian olive and Oriental bittersweet (*Celastrus orbiculatus*).	Ground species made up more than 60% of this community, including especially tall goldenrod, dog strangling vine and mugwort (*Artemisia vulgaris*).	West of the Don River
Cultural (CU) Communities	Cultural Thicket (CUT)	CUT1-1	Sumac Deciduous Thicket	Less than 10% tree cover consisting of tree-of-heaven, Russian olive, Manitoba maple and eastern cottonwood.	Greater than 60% shrub cover dominated by staghorn sumac with lesser of white mulberry, choke cherry (*Prunus virginiana*), red-osier dogwood, common buckthorn and narrow-leaf willow (*Salix exigua*)	Greater than 60% ground cover dominated by grasses, stinging nettle, common milkweed, Canada thistle and bouncing bet (*Saponaria offinaliz*).	West of the Don River north of the existing rail corridor

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	General Location
Cultural (CU) Communities	Cultural Woodland (CUW)	CUW1	Mineral Cultural Woodland	The species composition of cultural woodlands varied depending on the location along the Union Station Rail Corridor. Tree canopy cover was 25-60% and mainly dominated by Manitoba maple, tree-of-heaven or Eastern cottonwood. Less common tree species included black cherry (*Prunus serotina*) and green ash.	The shrub cover generally consisted of Tartarian honeysuckle (*Lonicera tatarica*), Japanese knotweed, red-osier dogwood, and common buckthorn.	Ground cover was largely dominated by stinging nettle and garlic mustard, both highly invasive species. Other ground species consisted of thicket creeper, riverbank grape (*Vitis riparia*), and common plantain (*Plantago major*).	West of the Don River
Cultural (CU) Communities	Cultural Woodland (CUW)	CUW1	Mineral Cultural Woodland	Less than 60% tree canopy was dominated by Manitoba maple, Siberian elm (*Ulmus pumila*) or black walnut (*Juglans nigra*). Less dominant trees included tree-of-heaven, Norway maple, green ash and black locust (*Robinia pseudoacacia*). Red oak (*Quercus rubra*) was sometimes noted on the edge of City parks but was generally outside of the existing rail corridor.	The shrub cover generally consisted of choke cherry, Manitoba maple, honeysuckles, staghorn sumac and common buckthorn.	Ground species were largely either dominated by dog strangling vine or garlic mustard, both highly invasive species. Other ground species consisted of thicket creeper, wild carrot, riverbank grape, field horsetail (*Equisetum arvense*), goldenrods, bracken fern (*Pteridium aquilinum*), common St. John's wort (*Hypericum perforatum*) and sometimes to a lesser extent, false Solomon's seal (*Maianthemum racemosum*).	East of the Don River
Cultural (CU) Communities	Cultural Hedgerows[1]	CUH	Cultural Hedgerows	The tree canopy was dominated by Manitoba maple, common buckthorn and Russian olive.	No shrub layer identified in this community.	Ground cover consisted of the same herbaceous species described above for cultural thickets and woodlands.	West of the Don River
Cultural (CU) Communities	Cultural Hedgerows[1]	CUH	Cultural Hedgerows	The tree canopy was dominated by Siberian elm, Manitoba maple, tree-of-heaven or black walnut depending on the location. Other less dominant tree species noted included poplar (*Populus sp.*), Norway maple and black locust.	The shrub layer was dominated by thicket Creeper. Japanese knotweed was also noted at certain locations.	Ground cover consisted of the same herbaceous and grass species described above for cultural meadows.	East of the Don River

1. For the purpose of this investigation, cultural hedgerows were defined as narrow strips or rows of trees, either planted or natural growing as remnants of old vegetation communities that were removed in the past, with minimal vegetative cover underneath.

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	General Location
Marsh (MA)/ Shallow Water (SA)	Shallow Marsh (MAS)/ Shallow Water (SA)	MAS2/SA	Mineral Shallow Marsh/ Shallow Water	No tree canopy layer identified in this community.	Surrounding wetland forbs and shrubs comprised of Panicled Aster (*Symphyotrichum lanceolatum*), Spotted Joe Pye Weed (*Eutrochium maculatum*), meadowsweet (*Spiraea* Red-osier Dogwood (*Cornus sericea*), Eastern Buttonbush (*Cephalanthus occidentalis*), and various willow species (*Salix* sp.) were observed adjacent to the MAS2/SA, but were not large enough for classification/splitting to separate vegetation types.	Dominated by tall narrow-leaved emergents and floating aquatic marophytes, including, but not limited to: Narrow-leaved Cattail (*Typha angustifolia*), rushes (various members of the *Juncaceae* family) and sedges (*Carex* sp.), and Fragrant Water-lily (*Nymphaea odorata*).	Constructed wetland areas within the Corktown Commons municipal park.
Open Water (OA)	Open Aquatic (OAO)	OAO-T	Open Aquatic (Turbid)	No tree canopy layer identified in this community.	No shrub layer identified in this community.	No ground layer identified in this community.	OAO-T represents the Don River.

There were no plant SAR or provincially significant plants identified within the OLS study area (AECOM 2017; AECOM 2018; HDR 2018). However, three Regional SOCC plants were recorded within or in the vicinity of the OLS study area and are summarized in Table 3-4. These Regional SOCC plants are not protected under federal or provincial legislation and therefore Metrolinx is not subject to their protection within their own lands.

Table 3-4. Toronto and Region Conservation Authority Regional Species of Conservation Concern Plants Recorded within the Ontario Line South Study Area

Common Name	Scientific Name	Local Rank	General Location within the Ontario Line South Study Area	Source
Wild red currant	*Ribes triste*	L3	East of the Don River	Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Environment Project Reports (AECOM 2017)
American prickly-ash	*Zanthoxylum americanum*	L3	East of the Don River	Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Environment Project Reports (AECOM 2017)
Big bluestem	*Andropogon gerardii*	L3	East of the Don River	Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Environment Project Reports (AECOM 2017)

Notes:

Local Rank – TRCA (2020c). Species with a rank of L1 to L3 are considered to be Regional SOCC by TRCA within their jurisdiction.

L+: Exotic. Not native to TRCA jurisdiction (includes hybrids between native and exotic species).

L1: Rare in TRCA jurisdiction, of concern regionally.

L2: Probably rare in TRCA jurisdiction, of concern regionally.

L3: Generally secure in natural matrix; considered to be of regional concern.

L4: Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.

L5: Generally secure throughout TRCA jurisdiction; may be of very localized concern in highly disturbed areas.

3.4.3 Ontario Line North (OLN)

As outlined in Section 3.3.3, portions of the OLN study area included developed residential and commercial areas with vegetation limited to streetscapes (e.g., street trees, City parks, manicured lawns). Field investigations were focused on the natural areas present within the Millwood Road and E.T. Seton Park Areas of Investigation and described in the following sub-sections.

3.4.3.1 Millwood Road Area of Investigation

Nine vegetation communities were identified within the Millwood Road Area of Investigation. The Ecological Land Classification vegetation communities are summarized in Table 3-5 below. None of these vegetation communities are provincially significant.

A comprehensive vascular plant list for the Millwood Road Area of Investigation is provided in Appendix B. A total of 125 plant species were recorded within the area investigated. Of the 125 species that could be identified to species level, 68 (54%) were native and 57 (46%) were non-native species.

One SAR, butternut, was incidentally observed in two locations during Ecological Land Classification surveys in the Millwood Road Area of Investigation; this species is listed as Endangered and protected under the ESA. One butternut was observed in the Dry – Fresh Sugar Maple – Oak Deciduous Forest Type (FOD5-3) near Millwood Road, noted to be in general good health conditions (e.g., minimal evidence of butternut canker (*Ophiognomonia clavigignenti-juglandacearum*)). This tree was surrounded by tree protection fencing, which suggests that this individual may be a pure specimen. A second butternut was noted in the Fresh - Moist Lowland Deciduous Forest Ecosite (FOD7b) near the existing rail corridor. It was measured to be approximately 24 cm diameter at breast height and was noted to be heavily affected by butternut canker. The live canopy percent could not be confirmed at the time of field investigations given that this butternut was just beginning to leaf out, but several dead branches were noted in the canopy. It is anticipated that this specimen was a pure butternut and a butternut health assessment is required if proposed works are within 25 m the Critical Root Zone of this tree. If the Butternut is determined to be retainable, a reasonable attempt will be made to retain the tree and restrict activity in the critical root zone. If the Butternut cannot be retained, species specific mitigation will be implemented in consultation with the MECP.

Table 3-5. Ecological Land Classification Vegetation Communities Identified within the Millwood Road Area of Investigation

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Forest Communities (FO)	Deciduous Forest (FOD)	FOD	Deciduous Forest	• Canopy comprised of >60% deciduous tree cover. Desktop assessment only.	• Unknown. Desktop assessment only.	• Unknown. Desktop assessment only.	• Desktop assessment by Stantec 2022. FOD communities in the Study Area are comprised of woodlands east of Millwood Road on either side of the Don River and a woodland east of the Don Valley Parkway at the south end of the Study Area.
Forest (FO) Communities	Deciduous Forest (FOD)	FOD4	Dry – Fresh Deciduous Forest Ecosite	• Greater than 60% tree cover: dominated by Norway maple, Manitoba maple, Siberian elm, and black walnut.	• No distinct shrub layer could be observed in the community.	• Between 10 and 60% ground cover: dominated by false nettle (*Boehmeria cylindrica*), dog-strangling vine, reed canary grass (*Phalaris arundinacea*), and dame's rocket).	–
Forest (FO) Communities	Deciduous Forest (FOD)	FOD5-3 with FOD5-2 inclusion	Dry – Fresh Sugar Maple – Oak Deciduous Forest Type	• Greater than 60% tree cover: canopy dominated by sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), and bitternut hickory (*Carya cordiformis*).	• Between 10 and 25% shrub cover: dominated by sugar maple and included green ash (*Fraxinus pennsylvanica*).	• Between 10 and 25% ground cover: dominated by grass species (*Poaceae sp.*), sugar maple, and eastern creeping snowberry (*Gaultheria hispidula*).	• An inclusion of Dry – Fresh Sugar Maple – Beech Deciduous Forest Type (FOD5-2) was noted along the Lower Don Recreation Trail near the valley bottom. • Suitable cavity trees for bats were present in this mature forest. • Generally more non-native, weedy species were present along the edge of Millwood Road.
Forest (FO) Communities	Deciduous Forest (FOD)	FOD7a with MAM2 inclusion	Fresh – Moist Lowland Deciduous Forest Ecosite	• Greater than 60% tree cover: canopy dominated by sugar maple, Freeman's maple, and, to a lesser extent, tree-of-heaven.	• Between 25 and 60% shrub cover: dominated by Manitoba maple, green ash, American basswood (*Tilia americana*), and red oak.	• Greater than 60% ground cover: dominated by stinging nettle (*Urtica dioica ssp. dioica*), common burdock, and wood avens (*Geum urbanum*).	• Patch of invasive species growing along the trail, including Japanese knotweed, abundant dog-strangling vine, and garlic mustard.
Forest (FO) Communities	Deciduous Forest (FOD)	FOD7b with MAM2-10 Inclusion and a Mineral Open Beach/bar (BBO1) inclusion	Fresh – Moist Lowland Deciduous Forest Ecosite with Forb Mineral Meadow Marsh inclusion	• Canopy dominated by Siberian elm, crack willow (*Salix fragilis*), and eastern cottonwood.	• Shrub layer dominated by Manitoba maple and common buckthorn.	• Ground layer dominated by stinging nettle and, to a lesser extent, garlic mustard, dog-strangling vine, goldenrod species, and common ragweed (*Ambrosia artemisifolia*).	• Forb Mineral Meadow Marsh (MAM2-10) was dominated by stinging nettle, goldenrods and dog strangling vine. No standing water was observed. • A sand, gravelly beach (BBO1) was noted as an inclusion of FOD7b along the Don River on the north bank. • Abundant evidence of disturbance, including trails, invasive species, and abandoned bonfire sites.

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Forest (FO) Communities	Deciduous Forest (FOD)	FOD7c with FOD5-3 inclusion	Fresh – Moist Lowland Deciduous Forest Ecosite	• Canopy dominated by Manitoba maple, crack willow, black locust (*Robinia pseudoacacia)*, and black walnut.	• Shrub layer dominated by Manitoba maple and common buckthorn.	• Ground layer dominated by Canadian wood nettle (*Laportea canadensis*) and tall nettle (*Urtica procera*) and, to a lesser extent, goldenrod species, dame's rocket, and garlic mustard.	• Dog-strangling vine was dominant along the edge of the Lower Don Recreational Trail.
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-1	Dry-moist Old Field Meadow	• No tree canopy layer identified in this community.	• Between 0 and 10% shrub cover: dominated by Manitoba maple and common buckthorn.	• Greater than 60% ground cover: dominated by dog-strangling vine, dame's rocket, common tansy (*Tanacetum vulgare*) and, to a lesser extent, common milkweed, reed canary grass, and stinging nettle.	• This Dry-moist Old Field Meadow was located along the south bank of the Don River underneath the Millwood Road Overpass Bridge.
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-1 with CUT1 inclusion	Mineral Cultural Meadow with Common Lilac Cultural Thicket inclusion	• No tree canopy layer identified in this community.	• Less than 25% shrub cover dominate by eastern red cedar (*Juniperus virginiana*), Tartarian honeysuckle (*Lonicera tatarica*), and common buckthorn.	• Greater than 60% ground cover dominated by goldenrods, poison ivy (*Toxicodendron radicans ssp. negundo*), dog strangling vine, reed-canary grass, wild carrot, and Canada thistle.	• This Mineral Cultural Meadow was located within the existing rail corridor of the Don Valley Parkway. The Common Lilac Cultural Thicket (CUT1) inclusion was present along the south side of the Don Valley Parkway.
Cultural (CU) Communities	Cultural Meadow (CUM)	CUM1-1 with CUT1-1 inclusion	Dry-moist Old Field Meadow with Mineral Sumac Cultural Thicket inclusion	• No tree canopy layer identified in this community.	• Less than 60% shrub cover was dominated by staghorn sumac, Manitoba maple, and Tartarian honeysuckle.	• Greater than 60% ground cover was dominated by stinging nettle and, to a lesser extent, dog-strangling vine, dame's rocket, and Kentucky blue grass.	• This Dry-moist Old Field Meadow was located north of the existing rail corridor. Active construction was ongoing at the time of field investigation. The Mineral Sumac Cultural Thicket was located immediately along the north side of the rail tracks. • A small patch of common reed (Phragmites australis), a wetland invasive plant, was present adjacent to the construction parking area.
Cultural (CU) Communities	Cultural Thicket (CUT)	CUT1	Mineral Cultural Thicket Ecosite	• No tree canopy layer identified in this community.	• Greater than 60% shrub cover dominated by staghorn sumac, Morrow's honeysuckle, Norway maple, black elderberry (*Sambucus nigra*), Manitoba maple and common buckthorn.	• Greater than 60% ground cover: dominated by dog-strangling vine, garlic mustard, and wood avens.	• Evidence of disturbance underneath the Hydro Corridor (e.g., cutting of shrubs and Manitoba maple).
Cultural (CU) Communities	Cultural Woodland (CUW)	CUW1	Mineral Cultural Woodland Ecosite	• Canopy comprised of >35% to ≤60% deciduous tree cover. Desktop assessment only.	• Unknown. Desktop assessment only.	• Unknown. Desktop assessment only.	• Desktop assessment by Stantec 2022. The CUW1 communities occur in the southwest corner of the Study Area. One larger CUW1 between the Don Valley Parkway and the Don River, and a smaller CUW1 community near the trail parking area north of the railway tracks.

Ecological Land Classification Community	Ecological Land Classification Descriptor	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Open Water (OA)	Open Aquatic (OAO)	OAO	Open Aquatic	• No tree canopy layer identified in this community.	• No shrub layer identified in this community.	• No ground layer identified in this community.	• Represents the Don River west of the Don Valley Parkway.
Open Water (OA)	Open Aquatic (OAO)	OAO-T	Open Aquatic (Turbid)	• No tree canopy layer identified in this community.	• No shrub layer identified in this community.	• No ground layer identified in this community.	• Represents the Don River east of the Don Valley Parkway.
Shallow Water (SA)	Shallow Water (SA)	SA	Shallow Water	• No tree canopy layer identified in this community.	• No shrub layer identified in this community.	• No ground layer identified in this community.	• Desktop assessment by Stantec 2022. This is a 0.23 ha area of standing water located on the west side of the Study Area between the Don River and the railway tracks.

No other SAR or provincially significant plants were observed during ELC surveys. Six Regional SOCC plants were observed and are summarized in Table 3-6.

Table 3-6. Toronto and Region Conservation Authority Regional Species of Conservation Concern Plants Recorded in the Millwood Road Area of Investigation

Common Name	Scientific Name	Local Rank	Vegetation Community Observed
Red pine	*Pinus resinosa*	L1	FOD7c
Hoary vervain	*Verbena stricta*	L3	CUM1-1
Hard-stemmed bulrush	*Schoenoplectus acutus var. acutus*	L3	FOD7b
Eastern Snowberry	*Symphoricarpos albus var. albus*	L3	FOD5-3
Butternut	*Juglans cinerea*	L3	FOD5-3
Wood-sorrel	*Oxalis montana*	L2	FOD4, FOD7b, FOD7c

Notes:

Local Rank – TRCA (2020c). Species with a rank of L1 to L3 are considered to be Regional SOCC by TRCA within their jurisdiction.

L+: Exotic. Not native to TRCA jurisdiction (includes hybrids between native and exotic species).

L1: Rare in TRCA jurisdiction, of concern regionally.

L2: Probably rare in TRCA jurisdiction, of concern regionally.

L3: Generally secure in natural matrix; considered to be of regional concern.

L4: Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.

L5: Generally secure throughout TRCA jurisdiction; may be of very localized concern in highly disturbed areas.

3.4.3.2 E.T. Seton Park Area of Investigation

Vegetation communities within the E.T. Seton Park Area of Investigation were classified to 40 vegetation types. It appears that natural vegetation communities dominated the landscape, particularly forest communities which represented 33.69 hectares or 54% of the of the study area. Dry-Fresh Sugar Maple – White Ash Deciduous Forest (FOD5-8) and Fresh-Moist Lowland Deciduous Forest (FOD7) were the largest vegetation communities while Fresh-Moist Manitoba Maple Lowland Deciduous Forest (FOD7-a) was the most frequently occurring community type.

These vegetation communities are further described in Table 3-7.

Table 3-7. Ecological Land Classification Vegetation Communities Identified within the E.T. Seton Park Area of Investigation

Ecological Land Classification Community	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Beach/Bar (BB)	BBO1-A	Open Riparian Sand/ Gravel Bar	No tree canopy layer identified in this community.	No shrub layer identified in this community.	The following species were dominant in the ground cover: reed-canary grass, forget-me-not (*Myosotis scirpoides*) and stinging nettle.	There is a moderate level of non-native species present and evidence of flash floods and disturbed hydrology. Verified by AECOM 2020
Bluff Communities (BL)	BLT1-B	Deciduous Treed Bluff	Dominant species in the canopy included: sugar maple, paper birch (*Betula papyrifera*), American elm (*Ulmus americana*), and white ash.	The following species were dominant in the shrub layer: white ash, alternate-leaved dogwood (*Cornus alternifolia*), and hybrid honeysuckle (*Lonicera x bella)*.	The following species were dominant in the shrub layer: field horsetail, dog-strangling vine, coltsfoot (*Tussilago farfara*) and Virginia creeper (*Parthenocissus quinquefolia*).	–
Cultural Communities (CU)	CUH	Cultural Hedgerow	Manitoba maple dominated the canopy along with white ash, trembling aspen (*Populus tremuloides*) and Siberian elm.	Common buckthorn was present in the shrub layer.	The following species were dominant in the ground layer: Virginia creeper, tall goldenrod and dog-strangling vine.	Verified by AECOM 2020
Cultural Communities (CU)	CUM1	Mineral Cultural Meadow	No tree canopy layer identified in this community.	No shrub layer identified in this community.	The following species were dominant in the ground layer: Kentucky blue-grass (Poa pratensis), dog-strangling vine, wild carrot (Daucus carota), white sweet-clover (Melilotus albus) and common dandelion (Taraxacum officinale)	Verified by AECOM 2020
Cultural Communities (CU)	CUM1-1	Mineral Cultural Meadow	No tree canopy layer identified in this community.	No shrub layer identified in this community.	The following species were dominant in the ground layer: Kentucky blue-grass, dog-strangling vine, wild carrot, white sweet-clover and common dandelion (*Taraxacum officinale*).	Verified by AECOM 2020
Cultural Communities (CU)	CUM1-b	Exotic Cool-season Grass Graminoid Meadow	Dominant species in the canopy included: *Lonicera x bella* shrub honeysuckle, Siberian elm, staghorn sumac, black locust, white spruce (*Picea glauca*) and common buckthorn.	No shrub layer identified in this community.	The following species were dominant in the ground layer: grasses, common reed (*Phragmites australis asustralis*) dog-strangling vine, Canada thistle and tall goldenrod.	Verified by AECOM 2020
Cultural Communities (CU)	CUM1-c	Exotic Forb Meadow	Dominant species in the canopy included: Norway spruce (*Picea abies*), honey locust (*Gleditsia triacanthos*), and white spruce.	The following species were dominant in the shrub layer: common buckthorn, hybrid honeysuckle and staghorn sumac.	Dog-strangling vine dominated in the ground layer. Orchard grass, Canada thistle and tall goldenrod was also present.	Verified by AECOM 2020
Cultural Communities (CU)	CUP1-c with CUT1-1 inclusion	Locust Deciduous Plantation	Dominant species in the canopy included: black locust with some black walnut and Manitoba maple.	Common buckthorn dominated in the shrub layer with staghorn sumac and Morrow's honeysuckle.	The following species were dominant in the ground layer: dog-strangling vine, tall goldenrod, and garlic mustard.	Formerly designated FOD4-c. Verified by AECOM 2020

Ecological Land Classification Community	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Cultural Communities (CU)	CUP1-c	Locust Deciduous Plantation	Black locust dominated the canopy with some black walnut and sugar maple in the sub-canopy.	The following species were dominant in the shrub layer: hybrid honeysuckle, hawthorn species (*Crataegus sp.*), common buckthorn and white ash.	The following species were dominant in the ground layer: dog-strangling vine, garlic mustard and grasses.	Formerly designated FOD4-c. Verified by AECOM 2020
Cultural Communities (CU)	CUP1-8	Red Oak Deciduous Plantation	Red oak dominated the canopy along with black locust.	The shrub layer was dominated by common buckthorn and Morrow's honeysuckle.	The following species were dominant in the ground layer: dog-strangling vine, bracken fern, goldenrod species, false Solomon's seal and garlic mustard.	Verified by AECOM 2020
Cultural Communities (CU)	CUP2-A	Restoration Mixed Plantation	Dominant species in the canopy included: Austrian pine (*Pinus nigra*), green ash and bur oak (*Quercus macrocarpa*).	The following species were dominant in the shrub layer: red oak, white pine (*Pinus strobus*), common buckthorn and staghorn sumac.	The following species were dominant in the ground layer: grasses, dog-strangling vine, Canada thistle and bird vetch (*Vicia cracca*).	–
Cultural Communities (CU)	CUP3-1	Red Pine Coniferous Plantation	The canopy was dominated by red pine (*Pinus resinosa*) with white pine and American elm also present.	Common buckthorn and white ash dominated in the shrub layer.	The following species were dominant in the ground layer: dog-strangling vine, garlic mustard, enchanters' nightshade (*Circaea sp.*) and herb-Robert (*Geranium robertianum*).	–
Cultural Communities (CU)	CUP3-2	White Pine Coniferous Plantation	The canopy was dominated by white pine with some alder (*Alnus sp.*) species present.	Shrub species were not noted.	The following species were dominant in the ground layer: dog-strangling vine, enchanters' nightshade and stinging nettle.	–
Cultural Communities (CU)	CUP3-H	Mixed Conifer Coniferous Plantation	Dominant species in the canopy included: red pine, white pine, Norway spruce and white spruce.	Common buckthorn and hybrid honeysuckle dominated in the shrub layer.	Garlic mustard and dog-strangling vine dominated in the ground layer. Grasses were also present.	Verified by AECOM 2020
Cultural Communities (CU)	CUS1-1 with CUP3-C inclusion	Hawthorn Successional Savannah	Dominant species in the canopy included: eastern cottonwood, hawthorn species, ash species (*Fraxinus spp.*), black locust and white pine.	Common buckthorn and hawthorn species dominated in the shrub layer.	Dog-strangling vine dominated in the ground layer. Tall goldenrod and grasses were also present.	History of cattle grazing; native hawthorn
Cultural Communities (CU)	CUS1-b	Exotic Successional Savannah	Dominant species in the canopy included: Hybrid poplar (*Populus* × *jackii*), honey locust, Colorado Spruce (*Picea pungens*), and Manitoba maple.	Hybrid poplar and European cranberrybush (*Viburnum opulus*) dominated in the shrub layer.	The following species were dominant in the ground layer: dog-strangling vine, smooth brome (*Bromus inermis*), wild carrot and tall goldenrod.	Formerly tended landscapes with ornamentals
Cultural Communities (CU)	CUT1	Mineral Cultural Thicket	Dominant species in the canopy included: Siberian elm, tree-of-heaven, and Manitoba maple.	The following species were dominant in the shrub layer: staghorn sumac, common buckthorn and Siberian elm.	The following species were dominant in the ground layer: dog-strangling vine, Virginia creeper and tall goldenrod.	Verified by AECOM 2020
Cultural Communities (CU)	CUT1-1 with MAS2-1b inclusion	Sumac Deciduous Thicket	Dominant species in the canopy included: trembling aspen, balsam poplar, and Manitoba maple.	The following species were dominant in the shrub layer: staghorn sumac, common buckthorn and hybrid honeysuckle.	The following species were dominant in the ground layer: dog-strangling vine, Virginia creeper, garlic mustard, grasses and goldenrod species.	Verified by AECOM 2020

Ecological Land Classification Community	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Cultural Communities (CU)	CUT1-1 with CUP3-H complex	Sumac Deciduous Thicket	Dominant species in the canopy included: white ash, Manitoba maple and trembling aspen.	The following species were dominant in the shrub layer: staghorn sumac, riverbank grape and hybrid honeysuckle.	The following species were dominant in the ground layer: dog-strangling vine, grasses and goldenrod species.	–
Cultural Communities (CU)	CUT1-1	Sumac Deciduous Thicket	No tree canopy layer identified in this community.	The shrub layer was dominated by staghorn sumac with buckthorn and Morrow's honeysuckle.	Dog-strangling vine dominated in the ground layer. Tall goldenrod, grasses and garlic mustard were also present.	Honeysuckle (*Lonicera spp.)* and autumn olive (*Elaeagnus 40etiolate*) present. Verified by AECOM 2020.
Cultural Communities (CU)	CUT1-b with CUT1-1 inclusion	Buckthorn Deciduous Thicket	The canopy was dominated by white ash and Manitoba maple.	The shrub layer was dominated by common buckthorn. Hybrid honeysuckle and white ash were also present.	Dog-strangling vine dominated in the ground layer. Tall goldenrod and grasses were also present.	Buckthorn in more-or-less pure stands. Verified by AECOM 2020.
Cultural Communities (CU)	CUT1-b	Buckthorn Deciduous Thicket	The canopy was dominated by common buckthorn and white spruce.	The following species were dominant in the shrub layer: common buckthorn, staghorn sumac, Manitoba maple and eastern red cedar.	The following species were dominant in the ground layer: dog-strangling vine, Canada blue grass (*Poa compressa*), and Kentucky blue grass.	Buckthorn in more-or-less pure stands. Verified by AECOM 2020.
Cultural Communities (CU)	CUT1-c	Exotic Deciduous Thicket	Dominant species in the canopy included: black locust, Manitoba maple, white Ash and common buckthorn.	The following species were dominant in the shrub layer: Manitoba maple, common buckthorn, riverbank grape and staghorn sumac.	The following species were dominant in the ground layer: dog-strangling vine, grasses, garlic mustard, Virginia creeper and tall goldenrod.	Honeysuckle, lilac (*Syringa sp.*), multiflora rose (*Rosa multiflora*), autumn olive (*Elaeagnus umbellata*), etc. Verified by AECOM 2020.
Cultural Communities (CU)	CUW1	Mineral Cultural Woodland	The canopy was dominated with Manitoba maple and white ash.	The following species were dominant in the shrub layer: common buckthorn, Manitoba maple, common lilac (*Syringa vulgaris*), and Amur honeysuckle (*Lonicera maackii*).	Dog-strangling vine dominated in the ground layer, followed by zig-zag goldenrod (*Solidago flexicaulis*) and garlic mustard.	Verified by AECOM 2020.
Cultural Communities (CU)	CUW1-b with CUM1 inclusion	Exotic Successional Woodland	Dominant species in the canopy included: reddish willow (*Salix x*. rubens), Siberian elm, black locust, eastern cottonwood and Manitoba maple.	The following species were dominant in the shrub layer: Manitoba maple, common buckthorn, Siberian elm, hybrid honeysuckle and American elm.	Dog-strangling vine dominated in the ground layer, followed by common buckthorn, garlic mustard and dame's rocket. Smooth brome and tall goldenrod were also present.	Abandoned homesteads & formerly manicured yards. Verified by AECOM 2020.
Forest Communities (FO)	FOD	Deciduous Forest	Canopy comprised of >60% deciduous tree cover. Desktop assessment only.	Unknown. Desktop assessment only.	Unknown. Desktop assessment only.	Desktop assessment by Stantec 2022. FOD is an isolated woodlot located east of E.T. Seton Park and Don Mills Road.
Forest Communities (FO)	FOD1-1	Dry-Fresh Red Oak Deciduous Forest	Dominant species in the canopy included: red oak, sugar maple, American basswood, American beech (*Fagus grandifolia*) and ironwood (*Ostrya virginiana*).	The following species were dominant in the shrub layer: common buckthorn, sugar maple and staghorn sumac.	The following species were dominant in the ground layer: northern bush honeysuckle (*Diervilla lonicera*), dog-strangling vine, riverbank grape and garlic mustard.	Verified by AECOM 2020.

Ecological Land Classification Community	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Forest Communities (FO)	FOD3-1 with MAS2-1 inclusion	Dry-Fresh Poplar Deciduous Forest	Dominant canopy species included: trembling aspen, red oak and white ash.	The following species were dominant in the shrub layer: common buckthorn, Morrow's honeysuckle and trembling aspen.	Dog-strangling vine dominated the ground layer with bracken fern.	Verified by AECOM 2020.
Forest Communities (FO)	FOD4-b	Dry-Fresh Manitoba Maple Deciduous Forest	The canopy was dominated by Manitoba maple and black locust with some American basswood and white ash present.	Common buckthorn, hybrid honeysuckle and staghorn sumac dominated in the shrub layer.	The following species were dominant in the ground layer: enchanters' nightshade, garlic mustard, dame's rocket, goldenrod, wild sarsaparilla (*Aralia nudicaulis*) and yellow avens.	Verified by AECOM 2020.
Forest Communities (FO)	FOD4-b with FOD3-1 inclusion	Dry-Fresh Manitoba Maple Deciduous Forest	Dominant species in the canopy included: Manitoba maple, white Ash, and American elm.	The following species were dominant in the shrub layer: riverbank grape, common buckthorn, Virginia creeper and multiflora rose.	The ground layer was dominated by dog-strangling vine and garlic mustard.	–
Forest Communities (FO)	FOD5-1 with SWD2-2 inclusion	Dry-Fresh Sugar Maple Deciduous Forest	Sugar maple dominated the canopy. Red oak, black cherry, white ash, American beech and sugar maple were also present.	The following species were dominant in the shrub layer: sugar maple, white ash, chokecherry (*Prunus virginiana*) and hybrid honeysuckle.	The following species were dominant in the ground layer: garlic mustard, yellow trout-lily (*Erythronium 41etiolate41*) and large false Solomon's seal.	Verified by AECOM 2020.
Forest Communities (FO)	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest	Sugar maple dominated the canopy. Red oak and black cherry were also present.	The following species were dominant in the shrub layer: sugar maple, chokecherry buckthorn, and alternate-leaved dogwood.	The ground layer was dominated by zig-zag goldenrod, dog-strangling vine and garlic mustard.	Verified by AECOM 2020.
Forest Communities (FO)	FOD5-2 with CUP3-b inclusion	Dry-Fresh Sugar Maple – Beech Deciduous Forest	Dominant species in the canopy included: American beech and sugar maple.	The following species were dominant in the shrub layer: American beech, sugar maple and common buckthorn.	The ground layer was dominated by garlic mustard and yellow trout-lily.	–
Forest Communities (FO)	FOD5-2	Dry-Fresh Sugar Maple – Beech Deciduous Forest	Dominant species in the canopy included: sugar maple, American beech, red oak, white ash and ironwood.	The following species were dominant in the shrub layer: sugar maple, common buckthorn, chokecherry, white ash and Manitoba maple.	The following species were dominant in the ground layer: garlic mustard, yellow trout-lily, zig-zag goldenrod and dog-strangling vine.	Verified by AECOM 2020.
Forest Communities (FO)	FOD5-3	Dry-Fresh Sugar Maple – Oak Deciduous Forest	Dominant species in the canopy included: sugar maple, red oak, American beech, white ash, American basswood and ironwood.	The following species were dominant in the shrub layer: sugar maple, alternate-leaved dogwood and common buckthorn.	The following species were dominant in the ground layer: zig-zag goldenrod, sarsaparilla, garlic mustard, dog-strangling vine, large false Solomon's seal and Canada mayapple (*Podophyllum peltatum*).	Verified by AECOM 2020.
Forest Communities (FO)	FOD5-3 with MAM2-a inclusion	Dry-Fresh Sugar Maple – Oak Deciduous Forest	Dominant species in the canopy included: red oak, sugar maple, American basswood and black cherry.	The following species were dominant in the shrub layer: sugar maple, white ash, common buckthorn and chokecherry.	The following species were dominant in the ground layer: garlic mustard, zig-zag goldenrod, Virginia creeper, large false Solomon's seal and starry false Solomon's seal (*Maianthemum stellatum*).	Verified by AECOM 2020.

Ecological Land Classification Community	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Forest Communities (FO)	FOD5-3 with FOD4-b and FOD6-1 inclusions	Dry-Fresh Sugar Maple – Oak Deciduous Forest	Dominant species in the canopy included: sugar maple, red oak and white ash.	The following species were dominant in the shrub layer: sugar maple, chokecherry, alternate-leaved dogwood and white ash.	The following species were dominant in the ground layer: zig-zag goldenrod, garlic mustard, large false Solomon's seal and Canada black-snakeroot (*Sanicula canadensis var. canadensis*).	–
Forest Communities (FO)	FOD5-8	Dry-Fresh Sugar Maple – White Ash Deciduous Forest	Dominant species in the canopy included: sugar maple, white ash, American beech and red oak.	The following species were dominant in the shrub layer: sugar maple, Manitoba maple and white ash.	The following species were dominant in the ground layer: yellow trout-lily, starry false Solomon's seal, garlic mustard and zig-zag goldenrod.	Verified by AECOM 2020.
Forest Communities (FO)	FOD5-8 with CUP1 inclusion	Dry-Fresh Sugar Maple – White Ash Deciduous Forest	Dominant species in the canopy included: sugar maple, white ash, red oak, American beech and eastern hemlock (*Tsuga canadensis*).	Chokecherry and common buckthorn dominated in the shrub layer.	The following species were dominant in the ground layer: zig-zag goldenrod, grasses, marginal wood-fern (*Dryopteris marginalis*), and garlic mustard.	CUP1 inclusion consisted of white pine, trembling aspen, silver maple, staghorn sumac and red-osier dogwood. Verified by AECOM 2020.
Forest Communities (FO)	FOD5-8 with FOD4-b inclusion	Dry-Fresh Sugar Maple – White Ash Deciduous Forest	Dominant species in the canopy included: sugar maple, white ash, paper birch and black cherry.	The following species were dominant in the shrub layer: alternate-leaved dogwood, sugar maple, chokecherry and Norway maple.	The following species were dominant in the ground layer: garlic mustard, zig-zag goldenrod, Virginia creeper and yellow trout-lily.	Verified by AECOM 2020.
Forest Communities (FO)	FOD7 with CUT1-1 inclusion	Fresh-Moist Lowland Deciduous Forest	Dominant species in the canopy included Manitoba maple, eastern cottonwood, willow species and Siberian elm.	Shrub species were not noted.	Ground layer species were not noted.	Verified by AECOM 2020.
Forest Communities (FO)	FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest	Dominant species in the canopy included: reddish willow, eastern cottonwood, Manitoba maple, European black alder (*Alnus glutinosa*) and Norway maple.	The following species were dominant in the shrub layer: European black alder, *Lonicera x bella* shrub honeysuckle, common buckthorn and staghorn sumac.	The following species were dominant in the ground layer: dog-strangling vine, goldenrod, garlic mustard, stinging nettle and Virginia creeper.	Verified by AECOM 2020.
Forest Communities (FO)	FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	Dominant species in the canopy included: American elm, Manitoba maple, white ash, reddish willow, and eastern cottonwood.	Common buckthorn, honeysuckle and riverbank grape dominated the shrub layer.	The following species were dominant in the ground layer: garlic mustard, dog-strangling vine, dame's rocket, Virginia creeper and tall goldenrod.	Verified by AECOM 2020.
Forest Communities (FO)	FOD7-a with CUM1 inclusion	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	Manitoba maple, white ash, sugar maple and American basswood dominated the canopy.	Manitoba maple, common buckthorn and white ash made up a majority of the shrub layer.	The following species were dominant in the ground layer: zig-zag goldenrod, ostrich fern (*Matteuccia struthiopteris*), dog-strangling vine and field horsetail.	Verified by AECOM 2020.
Forest Communities (FO)	FOD7-c	Fresh-Moist Exotic Deciduous Forest	The canopy was dominated by alder species with Manitoba maple and reddish willow also present.	The following species were dominant in the shrub layer: alder species, common buckthorn and hybrid honeysuckle.	The following species were dominant in the ground layer: alder species, dog-strangling vine, enchanters' nightshade and spotted spurge (*Euphorbia 42etiolat*).	–

Ecological Land Classification Community	Ecological Land Classification Code	Ecological Land Classification Name	Tree Canopy	Shrub Layer	Ground Layer	Comments
Forest Communities (FO)	FOD8-1	Fresh-Moist Poplar Deciduous Forest	Dominant species in the canopy included: trembling aspen, paper birch, white ash and hawthorn species.	The following species were dominant in the shrub layer: hybrid honeysuckle, common buckthorn, white ash and sugar maple.	The following species were dominant in the ground layer: dog-strangling vine, Virginia creeper and sensitive fern (*Onoclea sensibilis*).	–
Marsh Communities (MA)	MAM	Meadow Marsh	Trees surrounding this community include Manitoba maple and common buckthorn.	No shrub layer identified in this community.	The ground layer was dominated by colonial wetland sedges.	Identified by Stantec in 2021. Linear feature located west of Don Mills Road at the bottom of the slope, at the east end of the archery range.
Marsh Communities (MA)	MAM2	Mineral Meadow Marsh Ecosite	No tree canopy layer identified in this community.	No shrub layer identified in this community.	Dominated by cattails with occasional Phragmites.	Identified by Stantec in 2021. Seepage on north slope of Walmsley Brook.
Marsh Communities (MA)	MAM2-7	Horsetail Graminoid Mineral Meadow Marsh Type	Unknown. Delineated by AECOM in support of the ECR.	Unknown. Delineated by AECOM in support of the ECR.	Unknown. Delineated by AECOM in support of the ECR.	Delineated by AECOM in support of the ECR but characteristics were not described. Located west of the Don River along the Walmsley Brook Corridor immediately south of the Project Footprint.
Marsh Communities (MA)	MAM2-a	Mineral Meadow Marsh Ecosite	No tree canopy layer identified in this community.	No shrub layer identified in this community.	Dominated by Phragmites.	Represents seepage areas located west of the Don River and north of the Walmsley Brook Corridor.
Marsh Communities (MA)	MAS2-1b	Cattail Mineral Shallow Marsh Type	No tree canopy layer identified in this community.	No shrub layer identified in this community.	Dominated by cattails.	Located east of the Don River along the northern boundary of the Study Area and directly adjacent to an open water feature to the north.
Open Water (OA)	OAO1-T	Open Aquatic (Turbid)	No tree canopy layer identified in this community.	No shrub layer identified in this community.	No ground layer identified in this community.	Represents the Don River.
Swamp Communities (SW)	SWT2-2	Willow Mineral Thicket Swamp Type	Unknown. Delineated by AECOM in support of the ECR.	Unknown. Delineated by AECOM in support of the ECR.	Unknown. Delineated by AECOM in support of the ECR.	Delineated by AECOM in support of the ECR but characteristics were not described. Located east of the Don River at the south edge of the Study Area.

A comprehensive vascular plant list for the E.T. Seton Park Area of Investigation is provided in Appendix B. A total of 166 plant species were recorded within the area investigated. Of the 166 species that could be identified to species level, 106 (64%) were native and 60 (36%) were non-native species. Three butternuts were incidentally encountered within the E.T. Seton Park Area of Investigation; they are described as follows:

- One butternut tree had a diameter at breast height of 20 cm, some evidence of butternut canker and a live crown of 50 to 60%. Leaves could not be reached by staff from the ground for DNA testing but can likely be reached using pruners. It is suspected that this specimen is pure.
- A second butternut tree had a diameter at breast height of 4 cm, little to no evidence of butternut canker and a live crown of 90%. Similarly, leaves could not be reached from the ground but could be accessed via a pruner for DNA sample collection in the future. This specimen exhibited atypical characteristics of a butternut, which suggests that it is likely a hybrid, and DNA testing is recommended to confirm hybridity.
- A third butternut tree was recorded to have a diameter at breast height of 22 cm with no visible evidence of butternut canker. Live canopy percent could not be determined as the canopy was obscured by understorey foliage. This specimen exhibited atypical characteristics of a butternut, which suggests that it is likely a hybrid specimen, and DNA testing is recommended to confirm hybridity.

No other plant SAR or provincially significant plants were observed during ELC surveys. However, TRCA and AECOM recorded 27 Regional SOCC plants, which are summarized in Table 3-8. AECOM recorded 16 plant species considered to be Regional SOCC by TRCA; the remaining species were recorded by TRCA and were not encountered by AECOM in 2020. Aside from butternut, the Regional SOCC in Table 3-8 are not protected under federal or provincial legislation. In consideration of Metrolinx's Ontario Line Project commitment to municipal interests, these species are identified for conservation purposes where feasible.

Table 3-8. Regional Species of Conservation Concern Plants Recorded within the E.T. Seton Park Area of Investigation

Common Name	Scientific Name	Regional Status – Toronto[1]	Local Rank[2]	Source of Record
Red pine	*Pinus resinosa*	R3	L1	AECOM (2020)
Sycamore	*Platanus occidentalis*	R2	L2	Toronto and Region Conservation Authority
White oak	*Quercus alba*	X	L2	Toronto and Region Conservation Authority
Bearded short-husk	*Brachyelytrum erectum*	R	L3	AECOM (2020)

Common Name	Scientific Name	Regional Status – Toronto[1]	Local Rank[2]	Source of Record
Black-fruited mountain-rice	*Patis racemosa*	R3	L3	AECOM (2020)
Blue cohosh	*Caulophyllum thalictroides*	X	L3	AECOM (2020)
Blunt-leaf water-leaf	*Hydrophyllum canadense*	U	L3	AECOM (2020)
Broad-leaved sedge	*Carex platyphylla*	U	L3	AECOM (2020)
Butternut	*Juglans cinerea*	X	L3	AECOM (2020)
Dwarf scouring-rush	*Equisetum scirpoides*	U	L3	AECOM (2020)
Eastern snowberry	*Symphoricarpos albus var. albus*	U	L3	Toronto and Region Conservation Authority
Maple-leaved viburnum	*Viburnum acerifolium*	X	L3	Toronto and Region Conservation Authority
Meadow horsetail	*Equisetum pratense*	R1	L3	AECOM (2020)
Ninebark	*Physocarpus opulifolius*	R6	L3	AECOM (2020)
Northern dewberry	*Rubus flagellaris*	R4	L3	Toronto and Region Conservation Authority
Shagbark hickory	*Carya ovata*	R4	L3	Toronto and Region Conservation Authority
Sharp-lobed hepatica	*Anemone acutiloba*	X	L3	AECOM (2020)
Shinleaf	*Pyrola elliptica*	R5	L3	Toronto and Region Conservation Authority
Star duckweed	*Lemna trisulca*	R1	L3	Toronto and Region Conservation Authority
Swamp red currant	*Ribes triste*	R2	L3	Toronto and Region Conservation Authority
Turtlehead	*Chelone glabra*	U	L3	Toronto and Region Conservation Authority

Common Name	Scientific Name	Regional Status – Toronto[1]	Local Rank[2]	Source of Record
White bear sedge	*Carex albursina*	R5	L3	AECOM (2020)
White rattlesnake-root	*Prenanthes alba*	U	L3	AECOM (2020)
White spruce	*Picea glauca*	X	L3	AECOM (2020)
Witch-hazel	*Hamamelis virginiana*	X	L3	AECOM (2020)
Wood millet	*Milium effusum*	R1	L3	AECOM (2020)
Wood-anemone	*Anemone quinquefolia var. quinquefolia*	U	L3	Toronto and Region Conservation Authority

Source: 1. Varga et al., 2000 / 2. TRCA

Notes:

Local Rank (TRCA 2020b). Species with a rank of L1 to L3 are considered to be Regional SOCC by TRCA within their jurisdiction.

L+: Exotic. Not native to TRCA jurisdiction (includes hybrids between native and exotic species).

L1: Rare in TRCA jurisdiction, of concern regionally.

L2: Probably rare in TRCA jurisdiction, of concern regionally.

L3: Generally secure in natural matrix; considered to be of regional concern.

L4: Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.

L5: Generally secure throughout TRCA jurisdiction; may be of very localized concern in highly disturbed areas.

3.4.3.3 Walmsley Brook Valley

In addition to vegetation information described above from the ECR, supplementary Ecological Land Classification surveys and a plant inventory was conducted in the Walmsley Brook Valley. The results are summarized in the E.T. Seton Park/Walmsley Brook and Valley Environmental Information Summary (Stantec 2020) and provided in Table 3-9.

Table 3-9. Ecological Land Classification Vegetation Communities in the Walmsley Brook Valley

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer
Cultural Communities (CU)				
CUH	Mineral Cultural Hedgerow	Manitoba maple dominated (*Acer negundo)* the canopy along with white ash (*Fraxinus americana*), trembling aspen (*Populus tremuloides*) and Siberian elm (*Ulmus pumila*).	Common buckthorn (*Rhamnus cathertica*) was present in the shrub layer.	The following species were dominant in the ground layer: Virginia creeper (*Parthenocissus quinquefolia*), tall goldenrod (*Solidago altissima*) and dog-strangling vine *(Vincetoxicum rossicum).*
CUM1	Mineral Cultural Meadow	No tree canopy layer identified in this community.	No shrub layer identified in this community.	The following species were dominant in the ground layer: Kentucky blue-grass (*Poa pratensis*), dog-strangling vine, wild carrot (*Daucus carota*), white sweet-clover (*Melilotus albus*) and common dandelion (*Taraxacum officinale*).
CUM1-b	Exotic Cool-season Grass Graminoid Meadow	Dominant species in the canopy included: shrub honeysuckle (*Lonicera x bella*), Siberian elm, staghorn sumac *(Rhus typhina*), black locust (*Robinia pseudoacacia*), white spruce (*Picea glauca*) and common buckthorn.	No shrub layer identified in this community.	The following species were dominant in the ground layer: grasses, common reed (*Phragmites australis australis*) dog-strangling vine, Canada thistle (*Cirsium arvense*) and tall goldenrod.
CUP1-8	Red Oak Deciduous Plantation	Red oak (*Quercus rubra*) and black locust dominated the canopy.	The shrub layer was dominated by common buckthorn and Morrow's honeysuckle (*Lonicera morrowii*).	The following species were dominant in the ground layer: dog-strangling vine, bracken fern (*Pteridium aquilinum*), goldenrod species, false Solomon's seal *(Maianthemum racemosum*) and garlic mustard (*Alliaria 47etiolate*).

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer
CUT1	Mineral Cultural Thicket	Dominant species in the canopy included: Siberian elm and Manitoba maple.	The following species were dominant in the shrub layer: staghorn sumac, common buckthorn and Siberian elm.	The following species were dominant in the ground layer: dog-strangling vine, Virginia creeper and tall goldenrod.
CUT1-1 with MAS2-1b inclusion	Sumac Deciduous Thicket	Dominant species in the canopy included: trembling aspen, balsam poplar (*Populus balsamifera*), and Manitoba maple.	The following species were dominant in the shrub layer: staghorn sumac, common buckthorn and hybrid honeysuckle.	The following species were dominant in the ground layer: dog-strangling vine, Virginia creeper, garlic mustard, grasses and goldenrod species.
CUT1-1	Sumac Deciduous Thicket	No tree canopy layer identified in this community.	The shrub layer was dominated by staghorn sumac with buckthorn and Morrow's honeysuckle.	Dog-strangling vine dominated in the ground layer. Tall goldenrod grasses and garlic mustard were also present.
CUT1-c	Exotic Deciduous Thicket	Dominant species in the canopy included: black locust, Manitoba maple, white ash and common buckthorn.	The following species were dominant in the shrub layer: Manitoba maple, common buckthorn, riverbank grape (*Vitis riparia*) and staghorn sumac.	The following species were dominant in the ground layer: dog-strangling vine, grasses, garlic mustard, Virginia creeper and tall goldenrod.
CUW1	Mineral Cultural Woodland	The canopy was dominated with Manitoba maple and white ash.	The following species were dominant in the shrub layer: common buckthorn, Manitoba maple, lilac, and Amur honeysuckle (*Lonicera maackii*).	Dog-strangling vine dominated in the ground layer, followed by zig-zag goldenrod and garlic mustard.
Forest Communities (FO)				
FOD3-1 with MAS2-1 inclusion	Dry-Fresh Poplar Deciduous Forest	Dominant canopy species included: trembling aspen, red oak and white ash.	Common buckthorn, Morrow's honeysuckle and trembling aspen dominate the shrub layer.	Dog-strangling vine dominated the ground layer with bracken fern.

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer
FOD5-8 with CUP1 inclusion	Dry-Fresh Sugar Maple – White Ash Deciduous Forest	Dominant species in the canopy included: sugar maple, white ash, red oak, American beech *(Fagus grandifolia)* and eastern hemlock (*Tsuga canadensis*).	Chokecherry *(Prunus virginiana)* and common buckthorn dominated in the shrub layer.	The following species were dominant in the ground layer: zig-zag goldenrod, grasses, marginal wood-fern (*Dryopteris marginalis*), and garlic mustard.
FOD5-8	Dry-Fresh Sugar Maple – White Ash Deciduous Forest	Dominant species in the canopy included: sugar maple, white ash, American beech and red oak.	The following species were dominant in the shrub layer: sugar maple, Manitoba maple and white ash.	The following species were dominant in the ground layer: yellow trout-lily (*Erythronium Americanum)*, starry false Solomon's seal (*Maianthemum stellatum*), garlic mustard and zig-zag goldenrod (*Solidago flexicaulis)*.
FOD7 with CUT1-1 inclusion	Fresh-Moist Lowland Deciduous Forest	Dominant species in the canopy included Manitoba maple, eastern cottonwood (*Populus deltoides*), willow species and Siberian elm.	Shrub species were not noted.	Ground layer species were not noted.
FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	Dominant species in the canopy included: American elm, Manitoba maple, white ash, reddish willow (*Salix x rubens*), and eastern cottonwood.	Common buckthorn, honeysuckle and riverbank grape dominated the shrub layer.	The following species were dominant in the ground layer: garlic mustard, dog-strangling vine, dame's rocket (*Hesperis matronalis)*, Virginia creeper and tall goldenrod.
FOD7a with CUM1 inclusion	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	Manitoba maple, white ash, sugar maple and American basswood (*Tilia americana*) dominated the canopy.	Manitoba maple, common buckthorn and white ash comprised the majority of the shrub layer.	The following species were dominant in the ground layer: zig-zag goldenrod, ostrich fern (*Matteuccia struthiopteris*), dog-strangling vine and field horsetail (*Equisetum arvense)*.

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer
Wetland Communities				
MAM2-a	Common Reed Mineral Meadow Marsh	Common reed dominated in the canopy.	Shrub species include Morrow's honeysuckle and choke cherry.	The following species were dominant in the ground layer: field horsetail, Virginia creeper, bittersweet nightshade (*Solanum dulcamara*) and coltsfoot (*Tussilago farfara*).

These communities are considered provincially common. The area includes a variety of non-native species that are found in urban areas where development pressure is occurring. A total of 98 plant species were recorded, of which 64 (65%) were native and 34 (35%) were non-native species. These communities and flora are considered tolerant to various disturbance. The vegetation in the valley provides important slope stability to valley slopes.

Plants encountered that are considered locally rare plants by TRCA and identified by AECOM during field surveys include dwarf scouring-rush (*Equisetum scirpoides*; L3), blue cohosh (*Caulophyllum thalictroides*; L3), white oak (*Quercus alba*; L2) and broad-leaved sedge (*Carex platyphylla*; L3). The locations of these plants should be delineated and avoided to the extent possible, or alternatively transplanted where appropriate.

3.5 Fish and Fish Habitat

The following subsections describe the fish and fish habitat identified in each segment of the Ontario Line Study Area. Watercourses are shown on Figure 3.1 to Figure 3.7 in Appendix A. Representative photographs of the habitat reaches are located in the Natural Environment Existing Conditions Report (AECOM 2020c).

3.5.1 Ontario Line West (OLW)

There were no watercourses identified within the OLW study area; thus, fish and fish habitat assessments were not required.

3.5.2 Ontario Line South (OLS)

3.5.2.1 Watershed Description

The study area contains the Don River, which is situated within the Don River watershed with the southern extent adjacent to the Lake Ontario waterfront. The Don River watershed is approximately 80% urbanized with almost half of the watershed dedicated to residential development (AECOM 2017). As one of the watersheds most anthropologically affected in TRCA's jurisdiction, the natural cover that remains is mostly along the larger valleys and in the headwaters which serve as wildlife refuges and recreational spaces for the 1.2 million residents

that live within its boundaries (AECOM 2017). The Don River watershed has suffered extensive degradation as a result of the removal of natural cover and the alteration of the hydrologic system through the spread of agriculture and subsequent urbanization of the watershed. Lack of effective stormwater control including the increase of impervious surfaces, stormwater retention ponds affecting seasonal fluctuations of flows and physical alterations to tributaries (TRCA 2009) has resulted in flooding, erosion, poor water quality and degraded terrestrial and aquatic ecosystems. The water quality of the Don River is impacted by industrial and sewage outfalls, untreated storm water discharge and agricultural runoff (TRCA 2009). Rising population density has led to further development and expanded areas of impervious ground cover as well as heavy use of public greenspaces and natural areas (AECOM 2017).

3.5.2.2 Aquatic Habitat Description

Previous assessments of the Don River within the OLS study area showed evidence of prior re-alignment to accommodate urban transportation corridor development with little natural features present (AECOM 2017) and slow flowing, turbid water (HDR 2018). Banks were found to have a narrow strip of riparian vegetation and steel support walls (HDR 2018). Bankfull width and depth were approximately 40 m and 2 m, respectively, with wetted width approximately 36 m (HDR 2018).

The Don River within the study area provides direct fish habitat important for migration, feeding and refuge however conditions are generally non-limiting throughout with no specialized (critically limiting spawning habitat) identified (AECOM 2017; 4Transit 2018a). Migratory species (i.e., salmon) use the Don River as a seasonal migratory corridor to and from Lake Ontario as no barriers to fish use were identified (AECOM 2017).

3.5.2.3 Fish Species Composition

The section of the Don River through the OLS study area is classified as estuarine in the City of Toronto Natural Heritage Study (HDR 2018) with 33 species of fish recorded (TRCA 2014 & 2020c). The aquatic species composition represents a mix of generally common warm to cold water species that are intermittently tolerant to tolerant of environmental perturbation with Salmonid species being the exception (AECOM 2018). Coldwater species that are generally pollution intolerant such as Atlantic salmon and Brown trout were identified, however are not anticipated to be resident fish. Rather, they have been captured in the Don River as a result of sport fish restocking initiatives and/or seasonal migration to and from Lake Ontario (AECOM 2018; TRCA 2009). TRCA fish community sampling locations are provided in the Natural Environment ECR (AECOM 2020c). There is no habitat classified as critical by the Federal *Species at Risk Act.*

American Eel has been assessed as Endangered by COSSARO and is protected under the Ontario ESA. American Eel may occur in the greater Study Area, as it has been recorded once in the Lower Don and it resides in Lake Ontario. The potential for American Eel to occur in the Study Area is extremely low given that there is no preferred habitat for its life cycle process in this area, and it’s presence would most likely be a result of individuals wandering in search of suitable habitat.

Table 3-10 provides a summary of records including the number of fish species and thermal regime.

Table 3-10. Fish Community in the Don River within the Ontario Line South Study Area

Watercourse	Number of Fish Species	Thermal Regime[1]	Fish Community Records 2011 – 2018[4]
Don River	33	Warm[2]	Mixed Assemblage of Cold, Cool and Warm Water Species[3] including (*denotes non-native species): **Cold:** Atlantic Salmon Chinook Salmon* Rainbow Trout* Sea Lamprey* **Cool:** Alewife* American Eel Brown Trout* Common Shiner Creek Chub Emerald Shiner Johnny Darter Longnose Dace Longnose Gar Northern Pike Rainbow Darter Rainbow Smelt* Round Goby* Spotfin Shiner Threespine Stickleback Walleye Western Blacknose Dace White Sucker Yellow Perch **Warm:** Bigmouth Buffalo Bluntnose Minnow Brown Bullhead Common Carp* Fathead Minnow Freshwater Drum Gizzard Shad

Watercourse	Number of Fish Species	Thermal Regime[1]	Fish Community Records 2011 – 2018[4]
			Goldfish* Grass Carp* Largemouth Bass Pumpkinseed Rock Bass White Bass White Perch*

Notes:

1. Thermal regime data provided by TRCA (2020).
2. Coldwater species such as salmon and trout were identified, however are not anticipated to be resident fish, rather a result of sport fish restocking initiatives and/or seasonal migration to and from Lake Ontario (AECOM, 2018). As such, thermal regime is based on resident fish community structure and has been confirmed through TRCA correspondence as a warmwater regime.
3. Thermal Regime by species Source: Coker et al. 2001.
4. Sources: TRCA et al. 2014, TRCA 2020.

3.5.3 Ontario Line North (OLN)

3.5.3.1 Watershed Description

The general watershed characteristics of the Don River in the OLS study area described in Section 3.5.2.1 above also apply to the reaches of the Don River and Don River West Branch located within the OLN study area.

3.5.3.2 Aquatic Habitat Description

Field investigations of the general aquatic habitat conditions occurred within the Millwood Road and E.T. Seton Park Areas of Investigation in the OLN study area. The results of these field investigations are summarized below.

Millwood Road Area of Investigation

The assessed reach of the Don River in the Millwood Road Area of Investigation was conveyed southwest through the study area with moderate flow and morphology consisting of sequences of runs (50%), riffles (25%) and pools (25%). The mean wetted width of the channel was approximately 20 m and mean wetted depth was approximately 0.3 m. The mean bankfull depth was approximately 25 m and mean bankfull depth was approximately 1.0 m. Substrate was mainly comprised of cobble, gravel, sand, silt, and boulder, in order of dominance. Right upstream bank was stable, while the left upstream bank was moderately unstable with scouring due to high water levels. Riparian cover was low (30%) and consisted of trees (90%) and shrubs (10%). Instream cover (100% total cover) was provided primarily by cobble (90%), boulder (5%) and woody debris (5%). No barriers to fish passage or groundwater indicators were observed.

The assessed reach provides habitat for general life processes (i.e., feeding, migration, refuge) and is non-limiting throughout. No habitat classified as critical by SARA and no aquatic SAR identified in desktop review or agency correspondence that are afforded protection under the ESA were identified within the surveyed reach.

E.T. Seton Park Area of Investigation

Don River West Branch

The assessed reach of the Don River West Branch was conveyed southwest through the study area with moderate flow and morphology consisting of sequences of runs (50%), riffles (25%) and pools (25%). The mean wetted width of the channel was approximately 15 m and mean wetted depth was approximately 0.2 m. The mean bankfull depth was approximately 20 m and mean bankfull depth was approximately 1.0 m. Substrate was mainly comprised of cobble, gravel, sand, silt, and boulder, in order of dominance. Banks were unstable with scouring at meanders throughout the OLN study area. Riparian cover was moderate (35%) and consisted of trees (90%) and shrubs (10%). Instream cover (100% total cover) was provided primarily by cobble (60%), boulder (35%) and woody debris (15%). No barriers to fish passage or groundwater indicators were observed.

The assessed reach provides habitat for general life processes (i.e., feeding, migration, refuge) and is non-limiting throughout. No habitat classified as critical by the SARA and no aquatic SAR identified in desktop review or TRCA sampling data that are afforded protection under the ESA were identified within the surveyed reach.

Walmsley Brook

In addition to aquatic habitat information described above from the ECR, supplementary background information and geomorphological data were collected for Walmsley Brook to describe aquatic habitat features. The results are summarized in the E.T. Seton Park/Walmsley Brook and Valley Environmental Information Summary (Stantec 2020) and provided below.

Walmsley Brook is a tributary of the Don River West Branch in the Lower West Don River Subwatershed. Historically, the tributary originally commenced near Yonge Street, but has since been piped through much of it's headwaters with the open portion of the channel now originating near the Canadian Pacific Railway (CPR) line southwest of the proposed OMSF site. The remaining lower reaches of the tributary from the CPR track to the confluence with the Don River West Branch are open as it meanders through a deep wooded valley surrounded by commercial and industrial properties on both the north and south sides. Although the quality of the tributary has been compromised by the piping, it is recognized as one of the few coldwater systems in the Don River watershed and is mapped as a coldwater system in the *Don River Watershed Plan Aquatic System Report on Current Conditions* (TRCA 2009). However, consistent temperature data at the nearest water monitoring station are limited.

Walmsley Brook is a small watercourse (bankfull width 4 to 8 m wide), with a riffle-pool bed morphology, channel substrate comprised of gravel and cobble, and channel banks comprised of sandy loam. The riparian corridor consists of deciduous trees with shrubs and herbaceous vegetation. The lower reach between Beth Nealson Drive and the tributary's confluence with the Don River West Branch exhibits low sinuosity, high entrenchment (poor access to floodplain), and a steep gradient (2% to 3%). Significant knick point migration was observed in the downstream reach, and there was evidence of fallen trees, large organic debris, exposed tree roots and basal scour on both sides of the channel. Widening and degradation are the most common geomorphic processes in this reach.

The upper reach between the CPR rail line corridor and Beth Nealson Drive exhibits moderate sinuosity, moderate entrenchment (access to floodplain during moderate flood flows), and a moderately steep gradient (1% to 2%). Knick point migration was less prevalent in the upper reach, but fallen trees, large organic debris, exposed tree roots and basal scour were observed on both sides of the channel. Degradation and widening were occurring in this reach but were less than the rate of degradation and widening in the lower reach.

Slope stability of the valley and the meander belt of the creek should be considered significant constraints upon the constructability of a proposed watercourse crossing and rail system paralleling the top of slope.

3.5.3.3 Fish Species Composition

The aquatic species composition represents a mix of generally common forage that are tolerant of environmental perturbation.

Don River West Branch

Fish records for the Don River West Branch within and upstream of the OLN study area were obtained from TRCA (2020). Table 3-11 provides a summary of records including the number of fish species and thermal regime within the Don River West Branch. TRCA fish community sampling locations are provided in the Natural Environment ECR (AECOM 2020c). No habitat classified as critical by the SARA and no aquatic SAR have been recorded within the OLN Study Area (DFO 2020), except historical records discussed in Section 3.8.3.

Table 3-11. Fish Community in the Don River within the Ontario Line North Study Area

Official Name Label	Number of Fish Species	Thermal Regime[1]	Toronto and Region Conservation Authority/Ministry of Natural Resources and Forestry Fish Community Records
Don River West Branch[2]	5	Warm	Mixed Assemblage of Cool and Warm Water Species[3] including: **Cool:** Creek Chub Longnose Dace Western Blacknose Dace White Sucker **Warm:** Fathead Minnow

Notes:

1. Thermal regime data provided by TRCA (2020).
2. Fish community assemblage within the Don River may consist of a larger species diversity and may include some of the species identified in Table 3-10. However, TRCA fish community records presented in Table 3-11 are sourced from TRCA sampling locations in closest proximity to the OLN Study Area.
3. Thermal Regime by species Source: Coker et al. 2001.

* denotes non-native species (Source: Fish Communities of the Toronto Waterfront, TRCA 2008).

Walmsley Brook

In addition to fish species information described above from the ECR, supplementary background fish species information was collected for Walmsley Brook. The results are summarized in the E.T. Seton Park/Walmsley Brook and Valley Environmental Information Summary (Stantec 2020) and provided below.

There are limited data on the fish community in Walmsley Brook. Fish species are anticipated to be the same as, or a subset of those found in the Don River West Branch. Species collected from the West Branch by TRCA (2020) and MNRF (2020) include Western Blacknose Dace (*Rhinichthys atratulus*), Common Shiner (*Luxilus cornutus*), Creek Chub (*Semotilus atromaculatus*), Fathead Minnow (*Pimephales promelas*), Longnose Dace (*Rhinichthys cataractae*) and White Sucker (*Catostomus commersonii*). These species are a mix of common forage fish that are generally tolerant of disturbance. The tributary likely offers habitat for life process – feeding, refuge and migration for these species. The tributary and the downstream portions of the Don River West Branch are not known to provide critical habitat for FederalSARA protected species or Provincial SAR that would be protected under the Ontario ESA.

3.6 Wildlife and Wildlife Habitat

Based on a review of wildlife atlases, there are records of 28 mammal species, 125 bird species, 31 herpetofauna species and 104 butterfly species in the Ontario Line study area (refer to Appendix C for comprehensive species lists). The majority of the wildlife are common in the City of Toronto and tolerant to anthropogenic (human-made) disturbances, while a small proportion is comprised of sensitive or rare species (refer to Sections 3.7 and 3.8 for discussion on SOCC and SAR).

Forested ravines, City parks and open spaces that make up the City of Toronto's NHS provide important habitats for wildlife in an urban setting (City of Toronto 2012). The forested ravines of the Don River act as important wildlife corridors and allow for the movement of mammals, herpetofauna, birds and butterflies between different areas to seek food, shelter and mates within the City of Toronto's NHS (City of Toronto 2012). The Don River also provides connectivity from Lake Ontario and the Greenbelt. In addition, the forested river valleys and ravines associated with the Don River Valley, such as those in the OLN study area for example, support the movement of migratory breeding birds and provide shelter and food for migrant waterbirds such as black-crowned night-herons (*Nycticorax nycticorax*), spotted sandpipers (*Actitis macularius*), and belted kingfishers (*Megaceryle alcyon*) among other bird species (Dougan & Associates and North-South Environmental Inc. 2009). In addition, City parks and open spaces, utility corridors and existing rail corridors may act as stepping stones that provide connectivity to major natural systems (e.g., forested ravines of the Don River) and support wildlife movement (City of Toronto 2018).

Within the Ontario Line study area, there were 23 area-sensitive forest breeding bird species recorded between 2001 and 2005 based on the Ontario Breeding Bird Atlas (BSC et al. 2006). Area-sensitive refers to species that require large patches of habitat (e.g., forest) to carry out their critical life processes (e.g., foraging and reproduction) or occur in higher densities in larger areas of habitat (Environment Canada 2007).

The following sub-section discuss local wildlife habitat conditions within each study area.

3.6.1 Ontario Line West (OLW)

The majority of these species are common and secure in Ontario and tolerant to urban conditions. Many bird species are protected under the MBCA and a few SOCC and SAR were noted which are further described in Sections 3.7 and 3.8 below.

Generally, the OLW study area is largely urbanized with very limited naturalized areas providing low-quality habitat for urban wildlife due to fragmentation, limited connectivity to significant natural areas, presence of non-native and invasive plants, and noise and vibration from surrounding vehicle, train and pedestrian traffic. However, it is important to note that isolated trees and shrubs, vegetation communities and anthropogenic (human-made) structures (e.g., buildings and bridges) can provide nesting habitat for many migratory birds protected under the MBCA. The existing rail corridor may support movement of small mammals, birds and insects but

overall is considered to be a poor wildlife linkage due to limited connectivity to significant natural areas, which are generally absent in the OLW study area.

3.6.1.1 Incidental Wildlife Observations

The following incidental wildlife were recorded during the 2020 field investigations within the OLW study area:

- barn swallow (Hirundo rustica)
- song sparrow (Melospiza melodia)
- chimney swift (Chaetura pelagica)

Song sparrow is a common bird that is protected under the MBCA; however, barn swallow and chimney swift are listed as threatened and protected under the ESA, as well as the MBCA (refer to Section 3.8 for detailed discussion on SAR). Barn swallows were observed flying over and foraging over mowed lawns of the Garrison Commons; however, no nests were observed in the vicinity of the Garrison Commons from accessible areas. It is possible that barn swallows are nesting at sites closer to the waterfront and foraging further away in open areas such as Garrison Commons. Chimney swifts were observed flying over the Royal Regiment of Canada Museum, which appears to contain an uncapped smokestack. It is suspected that chimney swifts may be using this smokestack as nesting and roosting habitat; however, none were incidentally observed entering the smokestack. Chimney swifts were also observed flying over near Jefferson Avenue and the existing rail corridor.

3.6.2 Ontario Line South (OLS)

There is limited natural cover providing wildlife habitat within the OLS study area in the form of urban parks, residential yards and narrow strips of riparian vegetation along the Don River and within the existing rail corridor (HDR 2018). The Corktown Common Park is located in the West Don Lands adjacent to the Don River and was converted from an industrial brownfield to a 7.3 hectare park, containing a system of restored urban prairie and marsh habitats situated on top of a flood protection landform (Waterfront Toronto 2020).

This park provides habitat for urban wildlife. Small pockets of low-quality vegetation west of Don River supporting urban wildlife were documented but generally lacked in amphibian breeding habitat (AECOM 2018). Similarly, there is limited wildlife habitat within the existing rail corridor as vegetation communities are largely disturbed containing a high proportion of non-native and invasive plant species that were highly fragmentated with low connectivity to significant natural features (AECOM 2017). The existing rail corridor provides low-quality movement corridors for some small mammals, birds and insects.

Most of the bird species recorded within the existing rail corridor east of the Don River consisted of common species in Ontario that are tolerant to urban disturbances except for barn swallow and chimney swift, both SAR birds protected under the ESA, noted flying over the existing rail corridor (AECOM 2017; further discussed in Section 3.8 below).

Areas that could potentially support herpetofauna tolerant of urban conditions including American toad (*Anaxyrus americanus*), Dekay's brownsnake (*Storeria d. dekayi*), and eastern gartersnake (*Thamnophis s.sirtalis*) were also identified close to the Don River (4Transit 2018b).

Generally, the OLS study area provides limited wildlife habitat throughout and although the Don River may function as a movement corridor for small to medium sized urban wildlife, there is low connectivity to other significant natural features with many barriers to animal movement (i.e., railways, roads, construction areas and fences). However, it is important to note that isolated trees and shrubs, vegetation communities and anthropogenic structures (e.g., buildings and bridges) can provide nesting habitat for many migratory birds, which are protected under the MBCA.

3.6.3 Ontario Line North (OLN)

A large proportion of the OLN study area consists of residential and commercial buildings, with the remainder consisting of natural area systems associated with the Don River. Generally, the forested ravines of the Don River provide higher quality of wildlife habitat that facilitate, and support wildlife movement as discussed above (Section 3.6). The following subsections document the results of wildlife surveys completed in the OLN study area.

3.6.3.1 Millwood Road Area of Investigation

Birds

A total of 37 species of birds were recorded within the Millwood Road Area of Investigation during the breeding bird surveys completed in 2019. Appendix D provides a comprehensive summary of the breeding bird survey results and the locations of the eight breeding bird stations are provided in the Natural Environment ECR (AECOM 2020c). The most abundant species recorded was the red-winged blackbird (*Agelaius phoeniceus*), followed by yellow warbler (*Dendroica petechia*) and American goldfinch (*Cardeulis tristis*). Two area-sensitive species were also recorded including hairy woodpecker (*Picoides villosus*) and blue-gray gnatcatcher (*Polioptila caerulea*). The majority of the species recorded are common throughout southern Ontario; however, many of the recorded species are protected under the MBCA. One bird SAR, barn swallow, and one bird SOCC, eastern wood-pewee (*Contopus virens*), were recorded during the breeding bird surveys.

Barn swallow is listed as threatened under the ESA and receives species and habitat protection under the ESA (refer to Section 3.8 for detailed discussion pertaining to SAR). A total of three individuals were observed foraging near breeding bird point count stations BBS-MC-004 and BBS-MC-006 during the first round of surveys. The North Toronto Wastewater Treatment Plant located immediately west of the Millwood Road Area of Investigation and OLN study area likely provides suitable nesting habitat for barn swallow as suitable open structures were observed and juveniles were observed perched on a building within the property during field investigations on July 9, 2019. Habitats for bird SAR are discussed further in Section 3.8.

Eastern wood-pewee is listed as Special Concern but does not receive species or habitat protection under the ESA; however, habitats for SOCC are protected under the PPS. A total of three individuals were recorded near breeding bird point count stations BBS-MC-007 and BBS-MC-008. As a result, the FOD5-3 and FOD7a are considered to be confirmed SWH for eastern wood-pewee.

No nests were observed under the Millwood Road Overpass Bridge. Though the bridge was too tall to confirm with 100% confidence from the ground, given that the bridge is subjected to high levels of noise and vibration from daily vehicular traffic, its anticipated that it is unlikely to provide suitable nesting habitat for more sensitive species such as barn swallow.

There were two sites along the Don River where several burrows were noted in the eroded, undercut banks. The first site is located near the Millwood Road overpass bridge. At this location (Location 1), approximately 6 burrows were noted at the south eroding vertical bank of the Don River, estimated to be at height of 2 m and 30 m wide, near breeding point count BBS-MC-004; however, no Bank Swallows (Riparia riparia), a bird SAR known to make and nest in burrows in vertical faces, were observed during the breeding bird surveys in 2019. Northern rough-winged swallows (*Stelgidopteryx serripennis*), a common species that also nests in burrows, was recorded flying near this breeding bird point count station. This suggests that these burrows may be used by this species but none were observed entering or exiting the burrows. The other site (Location 3) was located on the north bank approximately 200 m west of the Millwood Road overpass bridge and was estimated to be at a height of 2 m and 20 m wide. At this location, approximately 12 burrows were noted in the sandy, sunny, south facing bank. No bank swallows were observed at these locations during 2019 field investigations.

Amphibians and Amphibian Habitat

There were no amphibians heard calling on the first survey and it was noted that there was likely no standing water in the Forb Mineral Meadow Marsh (MAM2-10) inclusion of the Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7b), which did not constitute suitable amphibian breeding habitat. Background noise levels were high due to vehicle, airplane, and rail traffic and the running water of the Don River. Due to high noise levels and absence of standing water, it was determined that the second and third rounds of amphibian breeding surveys were not required to further assess Station 1. Therefore, there was no significant amphibian breeding habitat identified within the Millwood Road Area of Investigation.

Incidental Wildlife Observations

The following incidental wildlife were recorded during the 2019 field investigations within the Millwood Road Area of Investigation:

- red admiral butterfly (*Vanessa atalanta*)
- eastern cottontail (*Sylvilagus floridanus*)
- monarch (*Danaus plexippus*)

These are common wildlife tolerant to urban disturbances; however, monarch is listed as Special Concern under the ESA and therefore is considered to be a SOCC. The monarch was observed flying over the Mineral Cultural Meadow (CUM1-1) within the right-of-way of the Don Valley Parkway. There were no large patches of Common Milkweed identified within the Mineral Cultural Meadow; however, this meadow may act as foraging habitat for this species.

3.6.3.2 E.T. Seton Park Area of Investigation

The majority of the species are common and secure in Ontario and tolerant to urban disturbances. The E.T. Park Area of Investigation provides habitat for many urban wildlife species, including migratory breeding bird species protected under the MBCA (Ramsay-Brown 2015).

An additional two sites along the Don River within the E.T. Seton Park Area of Investigation were identified to have burrows in eroding, undercut banks. One site (Location 2) was initially identified during the fish habitat assessment completed in 2019. At this site, a total of six burrows were noted on the sandy, south bank (facing north) estimated to be at a height of 2 m tall and 25 m to 30 m wide. Presence of woody debris and vegetation such as Manitoba maple were noted at the top and bottom of bank. The other site (Location 4) was located on the north bank (facing south) of the Don River and estimated to be at a height of 2 m and approximately 30 m in width. Approximately 30 burrows were noted in the vertical bank consisting of sandy substrate. The top of the bank consisted of mowed grass surrounded by young Manitoba maple and more mature willows. No bank swallows were observed at these locations during 2019 field investigations.

Incidental Wildlife Observations

The following incidental wildlife were recorded during the 2020 field investigations within the E.T. Seton Park Area of Investigation:

- Amphibians
  - American toad
- Birds
  - American crow (*Corvus brachyrhynchos*)
  - blue jay (*Cyanocitta cristata*)
  - cedar waxwing (*Bombycilla cedrorum*)
  - chimney swift
  - downy woodpecker (*Picoides pubescens*)
  - eastern phoebe (*Sayornis phoebe*)
  - eastern wood-pewee (*Contopus virens*)
  - gray catbird (*Dumetella carolinensis*)
  - mallard (*Anas platyrhynchos*)

    - red-eyed vireo (*Vireo olivaceus*)
    - red-tailed hawk (*Buteo jamaicensis*)
    - red-winged blackbird (*Agelaius phoeniceus*)
    - song sparrow (*Melospiza melodia*)
    - yellow warbler (*Setophaga petechia*)
- Butterflies
    - cabbage white (*Pieris rapae*)
    - eastern tiger Swallowtail (*Papilio glaucus*)
    - spring azure (*Celastrina ladon*)
- Mammals
    - American red squirrel (*Tamiasciurus hudsonicus*)
    - eastern chipmunk (*Tamias striatus*)
    - eastern gray squirrel (*Sciurus carolinensis*)

The majority of the wildlife observed are considered to be urban wildlife common to downtown Toronto. Two chimney swifts were observed flying over the circle parking lot south of Overlea Boulevard (refer to Section 3.8 for detailed discussion for SAR). Eastern wood-pewee was recorded vocalizing in the Dry-Fresh Sugar Maple – White Ash Deciduous Forest (FOD5-10) located west of the Don River.

In addition, anecdotal evidence was provided by a member of the public that there was an active Cooper's Hawk nest in the Red Oak Deciduous Plantation (CUP1-8) Community in previous years.

3.7 Significant Wildlife Habitat

The following sub-sections identify candidate and confirmed SWH within the Ontario Line study area. SWH, including habitats for SOCC, receive protection under the PPS and should thus be considered when corridors and rights-of-way for significant transportation are being planned according to Section 1.6.8.6 of the PPS. SOCC may also be afforded protection under the MBCA or Ontario *Fish and Wildlife Conservation Act* (1997).

A SWH screening for each study area is provided in Appendix E. A habitat screening for SOCC was completed for each Study Area and is provided in Appendix F. Applicable Ecological Land Classification vegetation communities for each candidate or confirmed SWH are mapped in Figure 3.1 to Figure 3.7 in Appendix A.

3.7.1 Ontario Line West (OLW)

Based on the preliminary review of Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015), the following SWH types may occur within the OLW study area.

Seasonal Concentration Areas:

- **Candidate Bat Maternity Colonies**
    - Deciduous Forests (FOD), Mixed Forests (FOM), Deciduous Swamp (SWD) and Mixed Swamp (SWM) communities are considered to be candidate bat maternity colony habitats. A Deciduous Forest Community (FOD4) was identified within the Study Area north of the Gardiner Expressway between Strachan Avenue and Bathurst Street.

Habitats of SOCC (refer to Appendix F for details):

- Candidate Habitat for SOCC:
    - **Common Nighthawk (*Chordeiles minor*)**
      This species may nest on the flat, gravel rooftops of buildings in urban areas (Brigham et al. 2011).
    - **Eastern Wood-pewee (*Contopus virens*)**
      A forested area (FOD4) within the existing rail corridor may provide suitable nesting habitat. This species is protected by MBCA.
    - **Peregrine Falcon (*Falco peregrinus*)**
      High-rise buildings may provide suitable nesting. This species is not protected by MBCA but receives protection under the Ontario *Fish and Wildlife Conservation Act* (1997).
    - **Red-headed Woodpecker (*Melanerpes erythrocephalus*)**
      a forested area (FOD4) within the existing rail corridor may provide suitable habitat for this species. This species is protected by MBCA.

There were no candidate or confirmed rare vegetation communities, specialized habitat for wildlife or animal movement corridors identified within the OLW study area. The OLW study area is significantly urbanized and contains many barriers to animal movements (i.e., railways, roads, construction areas and fences). In addition, there were no confirmed SOCC habitats identified within the OLW study area.

3.7.2 Ontario Line South (OLS)

Based on review of the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015), the following SWH types occur or may occur within the OLS study area.

Habitats of SOCC (refer to Appendix F for details)

- Confirmed Habitat for SOCC
    - **Peregrine Falcon**
      This species may nest on ledges of high-rise buildings. This species was recorded by TRCA in 2010 near the intersection of Queen Street West and University Avenue. The Sheraton Centre Toronto Hotel located at 123 Queen Street West is a confirmed and current nesting location for this species (Canadian Peregrine Foundation 2020). This species is not protected by MBCA but receives protection under the Ontario *Fish and Wildlife Conservation Act* (1997).
    - **Northern Map Turtle**
      The Don River may serve as a movement corridor for this species due to its moderate flow and less than 1 m depth. However, there are no suitable nesting or basking habitats present. A single record of this species within the OLS Study Area was reported by Ontario Nature in 2016.
- Candidate Habitat for SOCC
    - **Common Nighthawk**
      This species may nest on the flat, gravel rooftops of buildings in urban areas (Brigham et al. 2011), as well as along the banks of the Don River. This species was recorded by TRCA in 2016 near the intersection of Pape Avenue and Danforth Avenue. This species is protected by MBCA.
    - **Eastern Wood-pewee**
      The cultural woodlands (CUW1) west of the Don River may provide suitable nesting habitat for this species. This species is protected by MBCA.
    - **Red-headed Woodpecker**
      Wooded areas (e.g., cultural woodlands) may provide suitable habitat for this species. This species is protected by MBCA.
    - **Monarch**
      Cultural meadows (CUM1) east and west of the Don River may provide suitable foraging and rearing habitat.
    - **Snapping Turtle**
      The Don River is a moderately flowing river with depths ranging from 0.1 m to 1.0 m and may serve as movement corridor for this species to Lake Ontario. However, there are no suitable nesting, or basking habitats present.

There were no candidate or confirmed seasonal concentration areas, rare vegetation communities or specialized habitat for wildlife identified within the OLS study area. Although the Don River within the OLS study area acts as an important movement corridor for small urban wildlife in a highly urbanized area, it does not qualify as a candidate animal movement (amphibian or deer) corridor based on the criteria described in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015) due to high levels of urbanization, fragmentation and barriers to animal movements (i.e., railways, roads, construction areas and fences).

3.7.3 Ontario Line North (OLN)

Based on review of the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015) and field investigations completed within the Millwood Road and E.T. Seton Park Areas of Investigation, the following SWH types occur or may occur within the OLN study area.

Seasonal Concentration Areas

- **Confirmed Turtle Wintering Areas**
  Based on records received from TRCA and Ontario Nature, the ponds in E.T. Seton Park behind the Ontario Science Centre support Painted Turtle and Snapping Turtle and provide confirmed turtle wintering area habitat.
- **Candidate Bat Maternity Colonies**
  Deciduous Forests (FOD), Mixed Forests (FOM), Deciduous Swamp (SWD) and Mixed Swamp (SWM) communities are considered to be candidate bat maternity colony habitats. Suitable snag trees were observed within the treed areas in the Millwood Road and E.T. Seton Park Areas of Investigation.
- **Candidate Reptile Hibernacula**
  Reptile hibernacula sites for common snakes may be present in burrows or rock outcroppings in dry areas within the Millwood Road and E.T. Seton Park Areas of Investigation.
- **Candidate Colonially – Nesting Bird Breeding Habitat (Bank and Cliff)**
  There were four separate locations where several burrows were observed at each location in the vertical eroded banks along the Don River. Two locations (Burrow Locations 1 and 3) were within the Millwood Road Area of Investigation and the other two locations (Burrow Locations 2 and 4) were in the E.T. Seton Park Area of Investigation.
- **Candidate Landbird Migratory Stopover Area**
  According to Migratory Birds in the City of Toronto (Dougan & Associates and North-South Environmental Inc. 2009), the natural areas within the City of Toronto, specifically along the shoreline and those associated with ravine systems such as the Don River act as an annual stopover for migratory birds. Therefore, the natural areas within the Millwood Road and E.T. Seton Park Areas of Investigation, which are within approximately 5 km of the Lake Ontario shoreline may act as candidate landbird migratory stopover areas. These locations cannot be confirmed as significant as detailed bird migration surveys were not completed.

Specialized Habitat for Wildlife

- **Candidate Turtle Nesting Areas**
  Sandy or gravel shorelines (BBO1 community) along the Don River may provide suitable nesting habitat for turtles.
- **Confirmed Amphibian Wetland Breeding Habitat**
  The ponds in E.T. Seton Park behind the Ontario Science Centre and associated marshes provide amphibian breeding habitat as confirmed through records received from Ontario Nature, including records of American toad, green frog (*Rana clamitans*) and American bullfrog (*Lithobates catesbeianus*). According to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015), wetlands with breeding American bullfrogs are considered significant.
- **Confirmed Marsh Breeding Bird Habitat**
  Green herons with probable breeding were observed in June 2020 and trumpeter swans in 2019 in the ponds behind the Ontario Science Centre based on records reviewed from eBird (2017). The pond and associated shallow marsh (MAS) communities are considered significant marsh breeding bird habitat.

Habitats of Species of Conservation Concern (refer to Appendix F for details)

- Confirmed Habitat for SOCC
  - **Eastern Wood-pewee**
    Based on records from AECOM's field investigations and TRCA records, the forested areas within the Millwood Road and E.T. Seton Park Areas of Investigation provide breeding habitat for eastern wood-pewee. This species is protected by MBCA.
  - **Monarch**
    The Mineral Cultural Meadow (CUM1) within the right-of-way of the Don Valley Parkway in the Millwood Road Area of Investigation provides foraging and rearing habitat for this species. Large patches of common milkweed were not noted but the Mineral Cultural Meadow (CUM1) provides foraging habitat.
  - **Snapping Turtle**
    The ponds in the E.T. Seton Park provide overwintering habitat for this species. Snapping turtle was recorded by TRCA in these ponds in 2013.
- Candidate Habitat for SOCC
  - **Western Chorus Frog (*Pseudacris maculata pop. 1*)**
    No amphibians or amphibian habitat was identified during amphibian surveys conducted by AECOM in the Millwood Road Field Investigation Area. Amphibian surveys were not conducted by AECOM for the E.T. Seton Park Field Investigation Area; however, the ponds in E.T. Seton Park behind the Ontario Science Centre may provide suitable breeding habitat. TRCA has a record of Western Chorus Frog from 1990.

- **Black-crowned Night Heron (*Nycticorax nycticorax*)**
  This species may forage near the Don River and roost in trees along the forested riparian banks. However, this species likely nests in the Leslie Street Spit (outside the OLN study area), where there is a known large rookery. This species is protected by MBCA.
- **Common Nighthawk**
  This species may nest on flat, gravel rooftops of buildings in urban areas (Brigham *et al.* 2011). Several buildings within the OLN Study Area were identified to have flat rooftops. This species is protected under the MBCA.
- **Great Egret (*Ardea alba*)**
  This species may forage near the Don River and roost in trees along the forested riparian banks. This species is protected by MBCA.
- **Peregrine Falcon**
  There were no high-rise buildings identified within the OLN study area that are suitable for nesting; however, Peregrine Falcons may be observed flying over the study area preying on abundant supply of pigeons, other small passerines and occasionally mammals (White et al*.* 2020).
- **Red-headed Woodpecker**
  The forested areas within the Millwood Road and E.T. Seton Park Areas of Investigation may provide suitable habitat. This species is protected by MBCA.
- **Wood Thrush (*Hylocichla mustelina*)**
  The forested areas within the Millwood Road and E.T. Seton Park Areas of Investigation may provide suitable habitat. This species is protected by MBCA.
- **Monarch**
  Cultural meadows may provide foraging and rearing habitat for this species. A dense patch consisting of more than 60 common milkweeds was noted in the CUT1-1 community located east of Beth Nealson Drive (43.710944, -79.341518), which may act as suitable egg-laying habitat for monarchs. No monarch caterpillars were observed in this patch at the time of confirmatory Ecological Land Classification surveys in 2020.
- **Northern Map Turtle**
  The Don River may serve as a movement corridor and provide nesting habitat for this species.
- **Snapping Turtle**
  The Don River is a moderately flowing river with depths ranging from 0.1 m to 1.0 m, with sandy/gravel banks at certain locations and may serve as movement corridor for this species to Lake Ontario, as well as nesting habitat. TRCA provided a record of snapping turtle in the ponds behind the Ontario Science Centre from 2013.

Animal Movement Corridors

- **Candidate Amphibian Movement Corridor**
  The Don River and the forested habitats within the E.T. Seton Park Area of Investigation are candidate significant habitat due to the presence of significant amphibian breeding habitat within the ponds behind the Ontario Science Centre.

There were no rare vegetation communities identified within the OLN study area.

3.8 Species at Risk Habitat Screening

A habitat screening for SAR was completed for each study area and is provided in Appendix G. The following sub-sections provide a brief discussion on the likelihood of SAR occurring within each study area.

3.8.1 Ontario Line West (OLW)

The following SAR have a high probability of occurring within the OLW study area:

- **Barn Swallow**
  This species is listed as Threatened and receives protection under the Provincial ESA, as well as the federal MBCA. Barn Swallows are known to use anthropogenic structures (e.g., bridges and buildings); however, nesting Barn Swallows require proximity to suitable open habitat for foraging and generally also require access mud to for nest building (Heagy et al. 2014). Therefore, anthropogenic structures (e.g., buildings) located within 200 m of waterbodies were determined as having a higher probability of supporting Barn Swallow nesting. The buildings within the OLW study area were generally deemed to have low potential for supporting nesting Barn Swallows as these were located more than 200 m from the nearest waterbody. This species was observed foraging within the OLW study area in the Garrison Commons; however, no nests in the vicinity were observed from accessible areas. It is suspected that barn swallow may be nesting closer to the Lake Ontario waterfront and forage further inland.
- **Chimney Swift**
  This species is listed as Threatened and receives protection under the provincial ESA, as well as the federal MBCA. Chimney swifts are aerial insectivores and are typically concentrated in urban settlements where there are suitable chimneys for nesting and roosting (Steeves et al. 2014). Chimney swifts were observed flying over in the OLW study area. Buildings with suitable chimneys or standalone smokestacks may provide nesting or roosting habitat for chimney swifts within the OLW study area. Suitable chimneys have the following characteristics (BSC 2009; Committee on the Status of Endangered Wildlife in Canada 2018):
    - chimneys with a wide diameter of at least 2.5 standard bricks (20 cm x 9 cm x 6 cm) in width or that have a minimum interior diameter of 25 cm to 30 cm (or 1 foot)
    - chimneys built of brick, stucco, stone or concrete

- chimneys lacking caps, spark protectors and animal guards that would otherwise prevent entry
- chimneys lacking aluminum flues or metal linings that may prevent chimney swifts from clinging to the interior of the chimney
- internal chimney temperatures between 13°C and 43°C
- chimney height extends beyond the roofline with a preferred height of 2.68 m

The following SAR have a medium probability of occurring within the OLW study area:

- **Bat SAR, including Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Long-eared Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*)**
  Bat SAR are listed as Endangered and receive protection under the ESA. Little brown myotis and northern myotis may roost in trees that are hollow, have cavities or loose bark. Tri-coloured bats are known to roost in dead leaf clusters while eastern small-footed myotis are known to roost in rocky outcrops and talus slopes. Bat SAR are known to roost in anthropogenic structures such as buildings in crevice-like spaces; under sidings, eves, roof tiles or shingles or behind shutters or sliding doors, between building wings, cracks and crevices in walls, wall coatings, hollow mortice joints, rain gutters and chimneys; and/or in attics (Bat Conservation Trust 2012; MNR 1984; Humphrey 2017; Humphrey and Fotherby 2019). There were no hibernacula identified within the OLW study area; however, maternity roosting habitats may be present. Within the OLW study area, a forest community (FOD4) along the existing rail corridor may provide suitable maternity roosting habitats for these species. Buildings with potential entry or exit points within the OLW study area may also be used by bat SAR for roosting. A portion of the OLW occurs in underground sections of new and existing infrastructure. The MECP has determined (Nov 25, 2020) that it is unlikely that underground sections would be used by overwintering SAR bats and that surveys to confirm this prior to construction would not be necessary. Notwithstanding, conditions of the tunnels could be suitable for overwintering and MECP advises that a contingency plan be in place should bats be encountered. The plan should include worker awareness of the potential prior to construction activity and actions for scenarios where bats are encountered outlining actions to be taken.
- **Butternut**
  This species is listed as Endangered and receives protection under the provincial ESA. This species may occur within the cultural hedgerows within the existing rail corridor or within the forested area.

The remaining SAR identified had low probability of occurrence within the OLW study area (refer to Appendix G for the full SAR habitat screening):

- bank swallow
- bobolink (*Dolichonyx oryzivorus*)
- eastern meadowlark (*Sturnella magna*)

- Blanding's turtle

There are no aquatic SAR present given that there are no water features identified within the OLW study area.

3.8.2 Ontario Line South (OLS)

The following SAR have a high probability of occurring within the OLS study area:

- **Barn Swallow**
  This species is listed as Threatened and receives protection under the provincial ESA, as well as the federal MBCA. Barn Swallows are aerial insectivores and commonly forage over open areas such as waterbodies, pastures with livestock and woodlands edges (MNR 2013a), and often live in close association with humans, building their cup-shaped mud nests, which are often reused from year to year, almost exclusively on human-made structures such as open barns, buildings, under bridges and in culverts (Ministry of the Environment, Conservation and Parks 2019a). Nesting Barn Swallows require proximity to suitable open habitat for foraging and generally also require access to mud for nest building (Heagy et al. 2014). According to 4Transit (2018b), Barn Swallows were observed foraging in the vicinity of the rail bridge crossing the Don River suggesting that active nests may be present under this bridge. Generally, the buildings within the OLS study area were deemed to have limited potential to support nesting barn swallows as these were located more than 200 m from the nearest waterbody.
- **Chimney Swift**
  This species is listed as threatened and receives protection under the provincial ESA, as well as the federal MBCA. Buildings with suitable chimneys or standalone uncapped smokestacks may provide nesting or roosting habitat for chimney swifts within the OLS study area. A list of characteristics for suitable chimneys is provided above in Section 3.8.1. Based on review of available online secondary source information, there are two confirmed Chimney Swift sites within the OLS study area. According to 4Transit (2018b), chimney swift nests were confirmed in 2017 inside the chimney located on 21 Don Roadway, which is situated on the east bank of the Don River and south of the existing rail corridor. The second location is one of the largest known roosts in Ontario, located at the Moss Park Armoury on 130 Queen Street East (Bird Studies Canada and SwiftWatch 2019). Chimney swifts have strong site fidelity (i.e., will return and use sites year after year) as long as the conditions of the nest and roost sites remain stable (MNR 2013b).

The following SAR have a medium probability of occurring within the OLS study area:

- **Bat SAR, including Eastern Small-footed Myotis, Little Brown Myotis, Northern Long-eared Myotis and Tri-coloured Bat**
  Bat SAR are listed as Endangered and receive protection under the ESA. There were no hibernacula identified within the OLS study area; however, maternity roosting habitats may be present. Within the OLS study area, treed areas, including forest and cultural woodlands within the existing rail corridor may provide suitable maternity roosting habitats for these species. Buildings with potential entry or exit points within the OLS study area may also be used by bat SAR for roosting. The rail bridge over the Don River

is not considered to be roosting habitat for bat SAR as these species are not known to use bridges or rail overpasses as day roost habitats at northern latitudes (There are no documented cases of bats utilizing bridges as roosting habitat in Ontario or Michigan, as bridges at these northern latitudes are not warm enough to meet bats' microclimatic conditions.

- Portion of the OLS occurs in underground sections of new and existing infrastructure. The MECP has determined (Nov 25, 2020) that it is unlikely that underground sections would be used by overwintering SAR bats and that surveys to confirm this prior to construction would not be necessary. Notwithstanding, conditions of the tunnels could be suitable for overwintering and MECP advises that a contingency plan be in place should bats be encountered. The plan should include worker awareness of the potential prior to construction activity and actions for scenarios where bats are encountered outlining actions to be taken.
- **Butternut**
  This species is listed as endangered and receives protection under the provincial ESA. This species may occur within the cultural hedgerows within the existing rail corridor.

The remaining SAR had low probability of occurrence due to lack of habitat identified within the OLS study area (refer to Appendix G for full SAR habitat screening):

- bank swallow
- bobolink
- eastern meadowlark
- Blanding's turtle

There is no mapped critical habitat for Federally protected aquatic SAR in the Don River within the entire Ontario Line study area based on review of DFO's 2020 Aquatic SAR Maps.

There are historical Natural Heritage Information Centre records from 1884 and 1926 of Lake Sturgeon (*Acipenser fulvescens*), Redside Dace (*Clinostomus elongatus*), and American Eel (*Anguilla rostrata*) (4Transit 2018a). These species are listed as Endangered under the ESA. Redside Dace is also listed as endangered under the SARA. Lake Sturgeon and Redside Dace are not included in the SAR habitat screening provided in Appendix G, as these records from Natural Heritage Information Centre were considered to be historical (i.e., more than 20 years old). Within the Study Area the Don River does not provide suitable habitat conditions for Lake Sturgeon and Redside Dace. Barriers in the Lower Don prevent Lake Sturgeon from travelling up from the Lake to access suitable spawning areas such as rapids and falls. Habitat for Redside Dace is located in the upper reaches of the Don River tributaries. American Eel have been captured in the Lower Don River by TRCA in 2014 (TRCA 2020). The recovery strategy for this species also lists the Don River as potential habitat for this species (MacGregor et al. 2013).

3.8.3 Ontario Line North (OLN)

The following SAR have a high probability of occurring within the OLN study area:

- **Barn Swallow**
  This species is listed as threatened and receives protection under the provincial ESA, as well as the federal MBCA. This species was observed foraging within the Millwood Road Area of Investigation during AECOM's breeding bird surveys. Barn swallows are aerial insectivores and commonly forage over open areas such as waterbodies, pastures with livestock and woodlands edges (MNR 2013a), and often live closely with humans, building their cup-shaped mud nests, which are often reused from year to year, almost exclusively on human-made structures such as open barns, buildings, under bridges and in culverts (MECP 2019). Nesting barn swallows require proximity to suitable open habitat for foraging and generally also require access to mud for nest building (Heagy et al. 2014). Therefore, anthropogenic structures located within 200 m of waterbodies were considered to have a higher probability of supporting Barn Swallow nesting. It is anticipated that the buildings associated with the Ontario Science Centre and Go Green Youth Centre located within the E.T. Seton Park Area of Investigation may have higher probability of nesting Barn Swallows than other buildings within the OLN study area because they are within 200 m of the Don River. In addition, the North Toronto Wastewater Treatment Plant located immediately west of the Millwood Road Area of Investigation and OLN study area likely provides suitable nesting habitat for barn swallow as suitable open structures were observed and juveniles were observed perched on a building within the property during field investigations on July 9, 2019.
- **Chimney Swift**
  This species is listed as threatened and receives protection under the provincial ESA, as well as the federal MBCA. Chimney swifts are aerial insectivores and are typically concentrated in urban settlements where there are suitable chimneys for nesting and roosting (Steeves et al. 2014). Chimney swift was recorded by TRCA in 2010 and 2016 foraging within the Millwood Road and E.T. Seton Park Areas of Investigation, suggesting that they may be nesting nearby**.** AECOM also observed Chimney Swifts foraging over the E.T. Seton Park Area of Investigation in 2020. A large uncapped chimney (as seen from Google Earth aerial Imagery) is located within the North Toronto Wastewater Treatment Plant, located immediately outside of the OLN study area, that may provide suitable habitat; however, no Chimney Swifts were recorded during AECOM's breeding bird surveys. Buildings with suitable chimneys or standalone uncapped smokestacks may provide nesting or roosting habitat for chimney swifts within the OLN study area. A list of characteristics for suitable chimneys is provided above in Section 3.8.1. Chimney swifts have strong site fidelity (i.e., will return and use sites year after year) as long as the conditions of the nest and roost sites remain stable (MNR 2013b).
- **Butternut**
  This species is listed as endangered and receives protection under the provincial ESA. A total of five butternuts were identified within the OLN study area, including two in the Millwood Road Area of Investigation and three in the E.T. Seton Park Area of Investigation with varying degrees of evidence of butternut canker (*Ophiognomonia*

clavigignenti-juglandacearum). Detailed tree inventories are required during detailed design to confirm that there are no additional butternuts within the Project Footprint.

The following SAR have a medium probability of occurring within the OLN study area:

- **Bank Swallow**
  This species listed as threatened and receives protection under the provincial ESA, as well as the federal MBCA. Bank Swallow nesting habitat includes naturally eroding banks and human-made sand and gravel pits, quarries and stockpiles where vertical or near-vertical (at least 75°) surfaces of suitable material (typically fine sand or silt) are available (MNRF 2017). This species nest in burrows and is strongly colonial, rarely nesting alone (Garisson 1999). Colonies may consist of 10 to 2,000 nests (Cornell Laboratory of Ornithology 2019). There were four separate sites where several burrows (ranging from 6 to 30) were observed at each location in the vertical eroded banks of the Don River; two sites (Burrow Location 1 and 3) were in the Millwood Road Area of Investigation and the other two sites (Burrow Location 2 and 4) were in the E.T. Seton Park Area of Investigation. Bank Swallows were not recorded during the breeding bird survey completed in 2019 within the Millwood Road Area of Investigation. As species-specific surveys were not yet completed to confirm use of burrows by bank swallows, these four locations were assumed to be suitable potential habitat.
- **Bat SAR, including Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis and Tri-coloured Bat**
  Bat SAR are listed as endangered and receive protection under the ESA. There were no hibernacula identified within the OLN study area during field investigation or through the background information review; however, maternity roosting habitats may be present. Little brown myotis and northern myotis may roost in trees that are hollow, have cavities or loose bark. Tri-coloured bats are known to roost in dead leaf clusters while eastern small-footed myotis are known to roost in rocky outcrops and talus slopes. Bat SAR are also known to roost in anthropogenic structures such as buildings in crevice-like spaces; under sidings, eves, roof tiles or shingles or behind shutters or sliding doors, between building wings, cracks and crevices in walls, wall coatings, hollow mortice joints, rain gutters and chimneys; and/or in attics (Bat Conservation Trust 2012; MNR 1984; Humphrey 2017; Humphrey and Fotherby 2019). Within the OLN Study Area, forested areas associated with the Don River Valley where cavity trees are available may provide suitable maternity roosting habitats for these species. Rocky outcrops weren't identified within the OLN Study Area. Buildings with potential entry or exit points within the OLN Study Area may also be used by bat SAR for roosting. As outlined in Section 3.8.2, bat SAR are not known to use bridges or rail overpasses as day roost habitats at northern latitudes. Therefore, the Millwood Road overpass bridge and the existing rail overpass crossing the Don River in E.T. Seton Park are not considered to be roosting habitat for bat SAR.
- A portion of the OLN occurs in underground sections of new and existing infrastructure. The MECP has determined (Nov 25, 2020 that it is unlikely that underground sections would be used by overwintering SAR bats and that surveys to confirm this prior to construction would not be necessary. Notwithstanding, conditions of the tunnels could be suitable for overwintering and MECP advises that a contingency plan be in place should

bats be encountered. The plan should include worker awareness of the potential prior to construction activity and actions for scenarios where bats are encountered outlining actions to be taken.

The remaining SAR recorded in the OLN study area had low probability of occurrence due to lack of habitat (refer to Appendix G for the full SAR habitat screening):

- bobolink
- eastern meadowlark
- Blanding's turtle

As outlined in Section 3.8.2, lake sturgeon, American eel and redside dace were not included in the SAR habitat screening given their historical records (more than 20 years old). This is further confirmed through correspondence with the Ministry of Natural Resources and Forestry (MNRF) on January 30, 2018, wherein the MNRF stated that there are no occupied habitats for redside dace or lake sturgeon within the Don River and Don River West Branch in the OLN study area. Furthermore, review of DFO's 2020 Aquatic SAR Map indicated that there is no critical habitat for aquatic SAR in the Don River within the entire Ontario Line study area. DFO's 2020 Aquatic SAR Map and MNRF data records are considered current to confirm regulatory records.

There were records of Blanding's Turtle from 2019 (refer to Appendix C) in the vicinity of Millwood Road in the OLN study area (Ontario Nature 2020); however, there were no records of Blanding's Turtle within the Ontario Line Study Area provided by Ontario Nature. The OLN study area is located within a densely urbanized area with several movement barriers including roads, highways and existing rail tracks that would impede movement. Furthermore, the Don River is characterized as moderately flowing in the OLN study area which can also be a movement barrier for Blanding's turtles (Ministry of the Environment, Conservation and Parks 2019b). Therefore, the probability of Blanding's turtles traveling along the Don River Valley into the Ontario Line study area was deemed to be low.

3.9 Existing Conditions Summary

The following provides a summary of the natural environment environmental conditions for each study area.

3.9.1 Ontario Line West (OLW)

There are no designated natural areas (i.e., Provincially Significant Wetlands, Locally Significant Wetland, Areas of Natural and Scientific Interest, unevaluated wetlands or significant woodlands); however, a small portion of the City's NHS falls within the western most limits.

The majority of the vegetation communities were disturbed and heavily fragmented.

There were no watercourses identified within the OLW study area.

The OLW study area is largely heavily urbanized with very limited naturalized areas providing low-quality habitat for urban wildlife; however, isolated trees, shrubs, vegetation communities and anthropogenic structures (e.g., buildings and bridges) can provide nesting habitat for MBCA protected birds.

The following SWH were identified for the OLW study area:

- candidate bat maternity colonies
- candidate habitat for the SOCC common nighthawk, eastern wood-pewee, peregrine falcon and red-headed woodpecker

The following SAR have a high probability of occurring within the OLW study area:

- **Barn Swallow** – Several were seen foraging in the Garrison Commons.
- **Chimney Swift** – Buildings with suitable chimneys or standalone uncapped smokestacks may provide nesting or roosting habitat for chimney Swifts within the OLW study area. Chimney swifts were recorded flying-over in the OLW study area.

The following SAR have a medium probability of occurring within the OLW study area:

- **Bat SAR** – Natural roosting habitat (i.e., treed areas) is present, in addition anthropogenic roosting structures in the form of buildings with potential entry holes may be present within the OLW study area.
- **Butternut** – This species may occur within the vegetation communities in the OLW study area.

3.9.2 Ontario Line South (OLS)

There are no designated natural areas (i.e., Provincially Significant Wetlands, Locally Significant Wetland, Areas of Natural and Scientific Interest, unevaluated wetlands or significant woodlands); however, areas associated with the Lower Don River Valley fall within the City of Toronto's NHS, Ravine and Natural Feature Protection by-law area, TRCA's Terrestrial NHS and regulation limits. The Don River Valley is also designated as an Urban River Valley under the Greenbelt Plan.

Vegetation communities identified within the OLS study area are largely limited to narrow vegetation strips within the existing rail corridor, which is surrounded by heavily developed commercial, industrial and residential areas. These vegetation communities are heavily disturbed as evidenced by large proportions of non-native and invasive plant species (AECOM 2017; AECOM 2018; 4Transit 2018b; HDR 2018; Golder Associates 2018). None of these vegetation communities are provincially significant.

Previous assessments of the Don River characterized it as a hardened channel with little natural features and slow flowing, turbid water (HDR 2018). The Don River provides direct fish habitat to a tolerant warmwater fish community and conditions were generally non-limiting throughout. There were no critical habitats identified for aquatic SAR.

There is limited natural cover providing wildlife habitat within the OLS study area in the form of urban parks, residential yards and narrow strips of riparian vegetation along the Don River. Although the Don River may function as a movement corridor for small to medium sized urban wildlife, there is low connectivity to other significant natural features with many barriers to animal movement (i.e., railways, roads, construction areas, and fences). Isolated trees, shrubs, vegetation communities and anthropogenic structures (e.g., buildings and bridges) can provide nesting habitat for MBCA protected birds.

The following SWH were identified for the OLS study Area:

- confirmed habitat for Peregrine Falcon (SOCC) at the Sheraton Centre Toronto Hotel located at 123 Queen Street West
- confirmed habitat for Northern Map Turtle near the Lower Don River
- candidate habitat for the SOCC common nighthawk, eastern wood-pewee, red-headed woodpecker, monarch, and snapping turtle

The following SAR have a high probability of occurring within the OLS study area:

- **Barn Swallow** – This species was observed by 4Transit to be nesting under the rail bridge crossing the Don River.
- **Chimney Swift** – There are two confirmed chimney swift roosting/nesting sites in the OLS study area. Buildings with suitable chimneys or uncapped smokestacks can provide habitat for chimney swift.

The following SAR have a medium probability of occurring within the OLS study area:

- **Bat SAR** – Natural roosting habitat (i.e., treed areas) is present, in addition to anthropogenic roosting habitat in the form of buildings with potential entry or exit points that may be present within the OLS study area.
- **Butternut** – This species may occur within the cultural hedgerows within the existing rail corridor.

The Don River identified within the OLS study area. No habitat classified as critical by the SARA and no aquatic SAR that are afforded protection under the ESA or SARA were identified within the study area.

3.9.3 Ontario Line North (OLN)

There is a Candidate Regionally Significant Life Science Areas of Natural and Scientific Interest within the E.T. Seton Area of Investigation, as well as unevaluated wetlands and woodlands within the OLN study area. In addition, the Don River Valley is considered to be valleyland feature under the PPS and is also designated as an Urban River Valley under the Greenbelt Plan. There are no Provincially Significant Wetlands or Locally Significant Wetland; however, as per TRCA guidance, the unevaluated wetlands have been considered as significant until such time that an evaluation using the Ontario Wetland Evaluation System (OWES) determines otherwise.

The natural areas within the Don River Valley are part of the City of Toronto's NHS and Ravine and Natural Feature Protection by-law area, as well as TRCA's Terrestrial NHS and regulation limits. There is one environmentally significant area within E.T. Seton Park, located north of Overlea Boulevard within the Don River Valley.

A large proportion of the OLN study area consists of residential and commercial buildings, with the remainder consisting of natural area systems associated with the Don River. The forested ravines of the Don River provide higher quality of wildlife habitat that facilitate and support wildlife movement. There were no provincially significant vegetation communities.

The Don River provides direct fish habitat to a generally tolerant warm to cold water fish community and conditions were non-limiting throughout. There were no critical habitats identified for aquatic SAR.

OLN contains two natural areas associated with the Don River Valley which provide larger, more intact habitats for urban wildlife. A total of 37 species of birds were recorded within the Millwood Road Area of Investigation during the breeding bird surveys completed in 2019; the majority of which were common and protected under the MBCA. There was no amphibian breeding habitat identified within the Millwood Road Area of Investigation. There were no wildlife surveys conducted at the E.T. Seton Park Area of Investigation but the natural areas therein provide habitat for many urban wildlife, including migratory breeding bird species protected under the MBCA.

The following SWH were identified for the OLN study area:

- confirmed turtle wintering areas
- confirmed marsh breeding bird habitat
- candidate bat maternity colonies
- candidate reptile hibernacula
- candidate colonially – nesting bird breeding habitat (bank and cliff)
- candidate landbird migratory stopover area
- candidate turtle nesting areas
- confirmed amphibian wetland breeding habitat
- candidate amphibian movement corridor
- confirmed habitat for SOCC (eastern wood-pewee, monarch and snapping turtle)
- candidate habitat for SOCC western chorus frog, black-crowned night heron, common nighthawk, great egret, peregrine falcon, red-headed woodpecker, wood thrush, monarch and northern map turtle

The following SAR have a high probability of occurring within the OLN study area:

- **Barn Swallow** – Several were seen foraging within the Millwood Road Area of Investigation.

- **Chimney Swift** – Recent records from TRCA indicate this species forages within the Millwood Road and E.T. Seton Park Areas of Investigation, suggesting that they may be nesting nearby. AECOM observed Chimney swifts flying over E.T. Seton Park Area of Investigation in June 2020. Buildings with suitable chimneys or standalone uncapped smokestacks may provide nesting or roosting habitat for chimney swifts within the OLN study area.
- **Butternut** – A total of five butternuts were incidentally recorded within the OLN study area.

The following SAR have a medium probability of occurring within the OLN study area:

- **Bank Swallow** – There were four separate sites where several burrows (ranging from 6 to 30) were observed at each location in the vertical eroded banks of the Don River; two sites (Location 1 and 3) were in the Millwood Road Area of Investigation and the other two sites (Location 2 and 4) were in the E.T. Seton Park Area of Investigation.
- **Bat SAR** – Natural roosting habitat (i.e., treed areas) is present, in addition to anthropogenic roosting habitat in the form of buildings with potential entry/exit points that may be present within the OLN study area.

There are two reaches of the Don River within the OLN study area, the Don River within the Millwood Road Area of Investigation and the Don River West Branch within the E.T. Seton Park Area of Investigation. No habitat classified as critical by the SARA and no aquatic SAR that are afforded protection under the ESA or SARA were identified within the study area.

4 Potential Impacts, Mitigation Measures and Monitoring Activities

This impact assessment identifies potential natural heritage impacts for the general activities that may be associated with the construction and operations phases of the Project and proposes mitigation and monitoring measures where potential effects are predicted, aiming to reduce these adverse effects.

4.1 Preliminary Potential Impacts, Mitigation Measures and Monitoring Activities

In accordance with Sections 4(3)(6) and 4(3)(7) of Ontario Regulation 341/20: Ontario Line Project, AECOM prepared a preliminary overview of potential impacts, mitigation measures, and monitoring activities during construction and operation of the Project in the ECR (AECOM 2020b). This NETR includes complimentary field investigation information and expands on the mitigation methods based on refined design approaches considered in the conceptual design.

4.2 Concept Design Impact Assessment

Preliminary potential impacts, mitigation measures, and monitoring activities for the Environmental Components assessed by AECOM (2020a) have been further assessed based on two considerations, complimentary field data and the refined current conceptual design that is the basis of this assessment. Figure 4.1 to Figure 4.15 in Appendix A shows the significant natural heritage features that are summarized from the ECR (Section 3.9) and overlayed on the conceptual design. An updated assessment of the construction and operation impacts and proposed mitigation and monitoring measures associated with the conceptual design is provided in Section 4.2.1 (OLW), Section 4.2.2 (OLS) and Section 4.2.3 (OLN). The environmental components in the assessments are grouped into three primary categories: designated features and policy areas; vegetation communities; and wildlife and wildlife habitat. There are associated sub-components for each category.

There are components of the Project that are part of an Early Works Project. These Project components are proposed to proceed before the completion of the environmental impact assessment process, and the construction impacts have been assessed by AECOM as part of Ontario Line Early Works (AECOM 2020a, 2021a and b). Components include the construction of Exhibition Station (OLW), Corktown Station and the Lower Don Bridge and Don Yard, East Harbour Station and the Lakeshore East Joint Corridor Rail Expansion (OLS). Since construction of the Early Works Projects are occurring prior completion of the environmental impact assessment process, construction impacts are not a component of this NETR; however, operation impacts are assessed for the complete Project as outlined in the NETR, and will apply to these Early Works components of the Project.

4.2.1 Ontario Line West (OLW)

Impacts during construction are presented in Table 4-1 and during operation are presented in Table 4-2. The tables include the assessment details from the ECR that are applicable to OLW and additional recommendations that apply based on the current conceptual design. This assessment includes operation impacts that apply to components of the Project that are part of the Early Works Project at Exhibition Station.

The Environmental Components in the tables are grouped into the following categories: designated features and policy areas; vegetation communities; wildlife and wildlife habitat, Species at Risk, aquatic habitats and stormwater management and drainage..

Table 4-1. Ontario Line West Potential Natural Environment Impacts, Mitigation Measures and Monitoring During Construction

<table>
<tr><th>Environmental Component</th><th>Potential Impacts</th><th>Mitigation Measure(s)</th><th>Monitoring Activities</th></tr>
<tr><td colspan="4">Designated Features and Policy Areas</td></tr>
<tr><td>Policy areas – City of Toronto Natural Heritage System Lands in the study area located west of the Project Footprint</td><td>• City of Toronto NHS Lands are located west of the Project Footprint and are separated from the Project Footprint by Dufferin Street. Natural environment impacts are not anticipated to this feature.</td><td>• None required.</td><td>• None required.</td></tr>
<tr><td colspan="4">Vegetation Communities</td></tr>
<tr><td>Vegetation communities – vegetation community removal</td><td>• Removal of vegetation communities
• Damage to adjacent vegetation or ecological land classification communities as a result of accidental intrusion
Vegetation communities (as shown on Figures 4.1-4.15, Appendix A) overlap with above ground Project components and the study area as follows:<table><tr><th>ELC Community Code</th><th>Area of Overlap with Above Ground Project Components (ha)</th><th>Area of Overlap with the Study Area outside the Project Footprint (ha)</th></tr><tr><td>CUH</td><td>0.357</td><td>0.818</td></tr><tr><td>CUT1</td><td>n/a</td><td>0.086</td></tr><tr><td>FOD4</td><td>n/a</td><td>0.547</td></tr></table></td><td>• Vegetation removal will be reduced to the extent possible and limited to the construction footprint.
• Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ecological land classification communities.
• Compensation will be provided for the removal of vegetation in accordance with Metrolinx’s Vegetation Guideline (2020).
• Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and/or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop, as needed. Vegetation removal will also consider and mitigate potential impacts to sensitive species (e.g., migratory birds and SAR) and features (e.g., designated natural areas and SWH). Refer to mitigation measures described for Wildlife and Wildlife Habitat and Species at Risk.
• The following Ontario Provincial Standard Specifications (OPSS) will be considered when removing vegetation communities: OPSS PROV 180 (Management of Excess Materials), OPSS PROV 801 (Protection of Trees), 803 PROV (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control).</td><td>• 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 reduce impacts.
• If required, vegetation compensation activities will be monitored in accordance with Metrolinx’s Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.</td></tr>
<tr><td>Vegetation communities – tree removal and compensation plans</td><td>• City and private tree removal, injury, and protection</td><td>• An Arborist Report by an I.S.A. Certified Arborist will be prepared with regard to the Metrolinx Vegetation Guidelines (2020), Ontario Forestry Act R.S.O. 1990, the ESA and other regulations, municipal bylaws, and best management practices as applicable.
• The Arborist Report will include, but not be limited to the individual identification of trees in the study area, including those that require removal or preservation, or trees that may be injured as a result of Project activities. Trees to be identified in the study area will include those on Metrolinx property, trees on public and private lands, and boundary trees. The City of Toronto by-laws will dictate the minimum diameter at breast height that requires inventory and additional requirements for tree inventories and tree protection plans.</td><td>• Regular inspection in areas of vegetation removal will be undertaken, as required, during construction to confirm that fencing is intact, only specified trees are removed, and no damage is caused to the remaining trees and adjacent vegetation communities.
• 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 reduce impacts.
• If required, vegetation compensation activities will be monitored in accordance with Metrolinx’s Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing</td></tr>
</table>

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		• Prior to the undertaking of tree removals, a Tree Removal Strategy/Tree Preservation Plan will be developed during detailed design to document tree protection and mitigation measures that follow the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees Guidelines (2016) and/or City of Toronto by-laws, and 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). • Pruning of branches will be conducted through the implementation of proper arboricultural techniques. • Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries. TPZs will be clearly staked prior to construction using barriers in accordance with local by-law requirements. • The Arborist Report will include information needed to establish compensation ratios and tree end use (including identification of high value trees) as per the Metrolinx Vegetation Guideline (2020). • If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's Vegetation Guideline (2020). Applicable bylaws for tree removals outside of Metrolinx properties will be followed. • Vegetation removal will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and SAR, and features, e.g., designated natural areas and SWH. Refer to mitigation measures described for Wildlife and Wildlife Habitat and Species at Risk. • City of Toronto tree removal/injury permits shall be requested and obtained for trees regulated under Bylaw 813, 658 and 608. • Compensation for trees in the Metrolinx ROW will follow the Metrolinx Vegetation Guideline (2020). Trees that are located in a designated natural area will reflect the principles of the TRCA Guideline for Determining Ecosystem Compensation (June 2018) (Ecological Compensation). • OPSS PROV 803 (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered for tree removal.	by-laws/regulations, and location with respect to ecological functioning.
Vegetation Communities – Integrated Vegetation Management (IVM)	• Footprint Impacts and potential for the establishment of invasive species and other incompatible species	• An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness.	• 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-treatment monitoring that will be carried out by field survey, by aerial survey, and by high-rail vehicle or train surveys conducted by qualified specialists.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Vegetation communities – tree removal strategy	• Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handing and transport of ash trees.	• 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, *Agrilus planipennis* (Fairmaire) (2014), as amended from time to time. To comply with this Directive, ash trees requiring removal, including wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. • Take precautions to reduce the spread of invasive species by cleaning equipment prior to moving them into sites.	• 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 reduce impacts.
Vegetation communities – erosion and sedimentation	• Increased erosion and sedimentation	• Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ecological land classification communities. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and Erosion and Sediment Control Guideline for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to vegetation communities. • Stockpiled materials or equipment will be stored in the construction footprint but shall be kept at least 30 m away from any watercourse; signs will be put up on site to indicate the setback. • OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered when implementing erosion and sediment controls.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions, if required. All erosion and sediment control measures should be inspected weekly. All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection. Corrective actions may include additional site maintenance and alteration of activities to reduce impacts.
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use • Introduction or spread of invasive species	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from a watercourse, where possible; signs will be put up on site to indicate the setback. • Refuelling shall be done in refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • All machinery, construction equipment and vehicles arriving on site will be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the construction site. This will reduce the risk of spread of invasive species to other locations.	• 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 reduce impacts. • Precautions will be taken to reduce the risk of the spread of invasive species by implementing the Clean Equipment Protocol for Industry (Halloran et al. 2013) on equipment and machinery prior to arriving on a site.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general	• Disturbance, displacement, or mortality of wildlife	• If wildlife is encountered, measures will be implemented to avoid, as much as possible, destruction, injury, or interference with the species, and/or its habitat. For example, construction activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required. • Prior to construction, investigation will be undertaken of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys, as appropriate. • The NDMNRF will be contacted if wildlife species protected by the Fish and Wildlife Conservation Act are required to be relocated from the work area during construction.	• 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 reduce impacts.

Wildlife and wildlife habitat – general significant wildlife habitat	• Disturbance, displacement or mortality of wildlife or habitat loss for the following SWH:
	  ○ candidate bat maternity colonies
	  ○ candidate habitat for the SOCC common nighthawk, eastern wood-pewee, peregrine falcon and red-headed woodpecker
		• Prior to construction, investigation will be undertaken of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys, as appropriate.
		• Mitigation measures specific to each SWH are detailed in the wildlife and wildlife habitat sections below.
			• Monitoring activities specific to each SWH are detailed in the wildlife and wildlife habitat sections below.

Wildlife and wildlife habitat – significant wildlife habitat – candidate bat maternity colonies (refer to Species at Risk bats)	• Refer to Species at risk bats	• Refer to Species at Risk bats	• Refer to Species at Risk bats
Wildlife and wildlife habitat – significant wildlife habitat – common nighthawk (Species of Conservation Concern)	• Removal of candidate nesting habitat for common nighthawk	• Refer to mitigation measures described for migratory breeding birds and nests. • Demolition of buildings should be scheduled outside the breeding bird season of April 1 to August 31. If this is not possible and buildings must be demolished during this period, the following will be completed: • The roofs will be checked for presence of gravel. If gravel is not present, then the building is unlikely to provide suitable nesting habitat for common nighthawk. If gravel is present, a search for eggs and nesting activity for common nighthawk on the roof will be conducted. If nests or nesting activity of common nighthawk are confirmed, the building cannot be demolished until it is confirmed by a qualified biologist that young have fully fledged and left the nest.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern (birds).	• Disturbance or destruction of migratory bird nests, including candidate SWH for the following SOCC birds: common nighthawk, eastern wood-pewee, peregrine falcon and red-headed woodpecker	• All works must comply with the MBCA, including timing windows for the nesting period (April 1 to August 31). • If activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside this nesting period, (including a ground nest) it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		• Bird SAR are also protected by the Ontario *Endangered Species Act* and migratory bird SAR are protected by the federal *Species at Risk Act*. Mitigation measures for bird SAR are discussed under the Species at Risk heading. • Comply with the City of Toronto's Toronto Green Standard for both light pollution and bird-friendly design, and adopt the Leadership in Energy and Environmental Design requirements to reduce light pollution, in order to reduce bird collisions into project structures.	
Wildlife and wildlife habitat – wildlife habitat connectivity	• Decrease of habitat connectivity for wildlife	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife habitat. • Opportunities to enhance the natural environment and provide a connection to the surrounding natural areas will be explored to the extent possible.	• Refer to monitoring described for Vegetation Communities and Wildlife and Wildlife Habitat.
Species at Risk			
Species at Risk – general	• Habitat loss, disturbance, and/or mortality to SAR	• All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP and NDMNRF. • If SAR is present and conservation strategies have been developed by NDMNRF and MECP, Metrolinx will follow the commitments in the recovery strategy. • On-site personnel will be provided with information (e.g., factsheets) that addresses the existence of potential SAR on site, the identification of the SAR species, and the procedure(s) to follow if an individual of such a species is encountered or injured.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented, in consultation with the MECP.
Species at Risk – barn swallow	• Habitat loss, disturbance, and/or mortality to barn swallow	• 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. • Where loss or disturbance cannot be avoided (e.g., due to work on bridges), all requirements under the ESA 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 1 to August 31), a nest search will be undertaken to confirm that no barn swallows are nesting on structures 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. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented, in consultation with the MECP.
Species at Risk – chimney swift	• Habitat loss, disturbance, and/or mortality to chimney swift	• If repair, maintenance or demolition of buildings and structures with suitable roosting and nesting habitat (e.g., chimneys) is to take place, targeted surveys for chimney swift will be completed as per the Bird Studies Canada Chimney Swift	• 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 reduce impacts.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		Monitoring Protocol (2009) during the nesting season of April 15 to October 15. • Repair, maintenance, or demolition of an identified structures that are used for roosting and nesting may constitute destruction of critical habitat and would be discussed in advance with the MECP and requirements of the ESA will be met. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP	• Species-specific monitoring measures will be implemented, in consultation with the MECP.
Species at Risk –bats	• Habitat loss, disturbance and/or mortality to Species at Risk Bats	• Additional monitoring, mitigation and compensation for removal of suitable treed or anthropogenic roosting habitat may be required, based on the results of additional surveys and consultation with the MECP. • Disturbance to bat roosting habitat will be avoided during the active season for bats from April 1 to September 30 to the extent possible. If disturbance cannot be avoided, all requirements of the ESA will be met.Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented, in consultation with the MECP.
Species at Risk – butternut	• Habitat loss, disturbance, and/or mortality of butternut	• If any works are proposed within the critical root zone (i.e., 25 m radius from stem) of a butternut, then mitigation, monitoring and compensation to address impacts to butternuts may be required based on the results of additional surveys (i.e., butternut health assessment and DNA testing to confirm purity) and consultation with the MECP. • As part of the Arborist Report, trees within or adjacent to the Project study area that will be removed or injured as part of Project activities will be inventoried, including butternut and other SAR vegetation. SAR 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 MNR Butternut Assessment Guidelines (2014). The Assessor will prepare a butternut health assessment report and document the mitigation monitoring and corrective actions implemented. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP	• 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 reduce impacts. • Species-specific monitoring measures will be implemented, in consultation with the MECP.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Stormwater Management and Drainage			
Surface water / Stormwater and Drainage	• Change in stormwater quality and quantity, including: ○ Erosion of exposed soil and increased sediment loading which may impact receiving waterbodies and/or municipal stormwater drainage system; and, ○ Increased surface water/stormwater runoff	• Prior to construction, a Stormwater Management Plan that will outline stormwater discharges management associated with construction activities, and an Erosion and Sediment Control plan will be developed. • The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial, and federal requirements, as amended, and outlined in a Stormwater Management Report**,** including the City of Toronto Wet Weather Flow Management Guidelines. Stormwater management design will consider guidance provided by the MECP, formerly the ECCC Stormwater Management Planning and Design Manual (2003) and Ontario Ministry of Transportation Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation 2010), as required. • The following stormwater management best management practices will be considered and implemented, as required: ○ Reduce clearing and amount of exposed soil; ○ Install key sediment control before grading/land alterations begin; ○ Sequence construction activities so that the soil is not exposed for long periods of times; ○ Protect storm drain inlets to filter out debris; and, ○ Stabilize all exposed soil areas as soon as land alterations have been completed. • The TRCA's Living City Policies (TRCA 2014b) will be followed during detailed design, including those policies related to outfall placement. • The TRCA's Stormwater Management Criteria (TRCA 2012) will be followed, including those policies related to impervious areas.	• Monitoring activities will be implemented as outlined in the Stormwater Management Plan and/or Erosion and Sediment Control Plan and may include regular inspections and reporting on the performance of implemented erosion and sediment control measures, best management practices, and other monitoring activities, as required.

Table 4-2. Ontario Line West Potential Impacts, Mitigation Measures and Monitoring Activities During Operations

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Policy Areas – City of Toronto Natural Heritage System Lands in the study area located west of the Project Footprint	• City of Toronto NHS Lands are located west of the Project Footprint and are separated from the Project Footprint by Dufferin Street. Natural environment impacts are not anticipated to this feature	• None Required	• None Required
Vegetation Communities			
Vegetation communities – vegetation removal	• Removal of vegetation during operational vegetation maintenance activities, if applicable • Removal and/or damage to adjacent vegetation or ecological land classification communities as a result of accidental intrusion during vegetation maintenance activities, if applicable	• Vegetation removal will be reduced to the extent possible and limited to the Metrolinx right-of-way. • An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness. • Herbicide applications will be administered subject to the *Pesticides Act*.	• 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 reduce impacts. • Monitoring and management of trees/vegetation in the rail corridor right-of-way will be undertaken in accordance with the IVM Program within the Metrolinx Vegetation Guideline (2020).
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use during maintenance activities • Introduction of invasive species	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • Machinery, equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the site. This will reduce the risk of the spread of invasive species to other locations.	• 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 reduce impacts. • Ensure precautions are being taken to reduce the risk of the spread of invasive species by implementing the Clean Equipment Protocol for Industry (Halloran et al. 2013) on equipment and machinery prior to arriving on a site.
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general	• Disturbance, displacement, or mortality of wildlife during operational vegetation maintenance activities, if applicable	• If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat. For example, operational vegetation maintenance activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the work area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife.	• 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 reduce impacts.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern (birds)	• Disturbance or destruction of migratory bird nests during operational vegetation maintenance activities, if applicable	• All works must comply with the MBCA, including timing windows for the nesting period (April 1 to August 31). • If operation vegetation maintenance activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest), it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
Species at Risk			
Species at Risk – general	• Habitat loss, disturbance, and/or mortality to SAR during operational maintenance activities, if applicable	• In areas subject to maintenance activities during operations, (repair or replacement of structures, or removal of treed habitat), additional surveys may be required to determine the presence of SAR. • All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – barn swallow	• Habitat loss, disturbance, and/or mortality to barn swallow during operational maintenance activities, if applicable	• If operational maintenance activities are scheduled during the nesting season for barn swallow (April 1 to August 31), a nest search will be undertaken to confirm that no barn swallows are nesting on structures that may be affected by 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. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.

4.2.2 Ontario Line South (OLS)

Potential impacts, mitigation measures, and monitoring activities for the Environmental Components of the Project assessed by AECOM (2020a) have been further assessed and refined for the OLS conceptual design. During construction impacts are presented in Table 4-3 and operation impacts are presented in Table 4-4. The tables include the assessment details from the ECR that are applicable to OLS, and additional recommendations that apply based on the conceptual design. This assessment includes operation impacts that apply to components of the Project that are part of the Early Works Projects at Corktown Station, Lower Don Bridge and Don Yard, East Harbour Station and the Lakeshore East Joint Corridor.

The Environmental Components in the tables are grouped into the following categories: designated features and policy areas; vegetation communities; wildlife and wildlife habitat, Species at Risk, aquatic habitats and stormwater management and drainage.

Table 4-3. Ontario Line South Potential Impacts, Mitigation Measures and Monitoring During Construction

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Policy Areas – City of Toronto Natural Heritage System (Lower Don River Valley)	• Removal of vegetation communities • Disturbance, displacement or mortality of wildlife or habitat loss/degradation, including potential SWH and SAR • Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use. • Introduction or spread of invasive species • Increased erosion and sedimentation • Reduction in ecological function and integrity	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.
Policy Areas – City of Toronto Ravine and Natural Feature Protection Area (Lower Don River Valley)	• Removal of vegetation communities	• Refer to mitigation measures described for Vegetation Communities. • Compensation for tree removals will be undertaken in accordance with provisions outlined in the Metrolinx Vegetation Guideline (2020).	• Refer to monitoring described for Vegetation Communities.
Policy Areas – Toronto and Region Conservation Authority's Terrestrial Natural Heritage System and Regulation Areas (Lower Don River Valley)	• Vegetation removal within TRCA's Terrestrial NHS and Regulation Areas (Lower Don River Valley)	• Further consideration to reduce potential impacts on TRCA's Terrestrial NHS to the extent possible will be undertaken during detailed design.	• Refer to monitoring described for Vegetation Communities. • Recommendations for additional monitoring related to vegetation removal within regulated areas may be determined through consultation with TRCA.
Policy Areas – Lower Don River Valley is an Urban River Valley under the Greenbelt Plan	• Vegetation removal within the Lower Don River Valley	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and Aquatic Environment. • Compensation for the removal of vegetation in accordance with Metrolinx's Vegetation Guideline (2020) will consider maintaining or enhancing connectivity along the Don River to the extent possible.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment.

<table>
<tr><th>Environmental Component</th><th>Potential Impacts</th><th>Mitigation Measure(s)</th><th>Monitoring Activities</th></tr>
<tr><td colspan="4">Vegetation Communities</td></tr>
<tr><td>Vegetation Communities – Vegetation Community Removal</td><td>
Removal of vegetation communities
Damage to adjacent vegetation or Ecological Land Classification communities as a result of accidental intrusion
Vegetation Communities (as shown on Figures 4.3-4.10, Appendix A) overlap with above ground Project Components and the Study Area as follows:
<table>
<tr><th>ELC Community Code</th><th>Area of Overlap with Above Ground Project Components (ha)</th><th>Area of Overlap with Study Area outside of the Project Footprint (ha)</th></tr>
<tr><td>CUH</td><td>1.430</td><td>0.630</td></tr>
<tr><td>CUM1</td><td>0.245</td><td>2.983</td></tr>
<tr><td>CUM1-1</td><td>0.548</td><td>0.632</td></tr>
<tr><td>CUM1-a</td><td>n/a</td><td>0.029</td></tr>
<tr><td>CUM1-b</td><td>n/a</td><td>1.058</td></tr>
<tr><td>CUM1-c</td><td>n/a</td><td>0.213</td></tr>
<tr><td>CUT1</td><td>1.323</td><td>0.944</td></tr>
<tr><td>CUT1-1</td><td>0.246</td><td>0.098</td></tr>
<tr><td>CUW1</td><td>2.927</td><td>2.856</td></tr>
<tr><td>CUW1/CUT1/CUM1</td><td>n/a</td><td>0.906</td></tr>
<tr><td>CUW1/CUT1/MAS2/SA</td><td>n/a</td><td>0.932</td></tr>
<tr><td>OAO-T</td><td>0.543</td><td>1.868</td></tr>
</table>
</td><td>
Vegetation removal will be reduced to the extent possible and limited to the construction footprint.
Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or Ecological Land Classification communities.
Provide compensation for the removal of vegetation in accordance with Metrolinx’s Vegetation Guideline (2020).
Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and/or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop as needed.
Vegetation removals will also consider and mitigate potential impacts to sensitive species (e.g., migratory birds and SAR) and features (e.g., Designated Natural Areas and SWH). Refer to mitigation measures described for Wildlife and Wildlife Habitat and Species at Risk.
The following Ontario Provincial Standard Specifications (OPSS) will be considered when removing vegetation communities: OPSS PROV 180 (Management of Excess Materials), OPSS PROV 801 (Protection of Trees), 803 PROV (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control).
</td><td>
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 reduce impacts.
If required, vegetation compensation activities will be monitored in accordance with Metrolinx’s Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.
</td></tr>
<tr><td>Vegetation Communities - Tree Removal and Compensation Plans</td><td>
City and private tree removal, injury and protection
</td><td>
An Arborist Report by an I.S.A. Certified Arborist may be prepared with regard to the Metrolinx Vegetation Guidelines (2020), Ontario Forestry Act R.S.O. 1990, the ESA and other regulations, municipal bylaws and best management practices as applicable.
The Arborist Report will include, but not be limited to the individual identification of trees within the Study Area including those that require removal or preservation, or trees that may be injured as a result of the Project. Trees to be identified within the Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. The City of Toronto by-laws will dictate the minimum Diameter at Breast Height which requires inventory and additional requirements for tree inventories and tree protection plans.
Prior to the undertaking of tree removals, a Tree Removal Strategy/Tree Preservation Plan will be developed during
</td><td>
Regular inspection in areas of vegetation removal will be undertaken, as required during construction, to confirm that fencing is intact, only specified trees are removed, and no damage is caused to the remaining trees and adjacent vegetation communities.
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 reduce impacts.
If required, vegetation compensation activities will be monitored in accordance with Metrolinx’s Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.
</td></tr>
</table>

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		detailed design to document tree protection and mitigation measures that follow the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees Guidelines (2016) and/or City of Toronto by-laws, and 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). • Pruning of branches will be conducted through the implementation of proper arboricultural techniques. • Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries. TPZs will be clearly staked prior to construction using barriers in accordance with local by-law requirements. • The Arborist Report will include information needed to establish compensation ratios and tree end use (including identification of high value trees) as per the Metrolinx *Vegetation Guideline* (2020). • 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 applicable bylaws for tree removals outside of Metrolinx properties. • Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and SAR, and features, e.g., Designated Natural Areas and SWH. Refer to mitigation measures described for Wildlife and Wildlife Habitat and Species at Risk. • City of Toronto tree removal/injury permits shall be requested and obtained for trees regulated under Bylaw 813, 658 and 608. • Compensation for trees within the Metrolinx ROW that are located within a designated natural area will reflect the principles of the TRCA's (TRCA) Guideline for Determining Ecosystem Compensation (June 2018) (Ecological Compensation). • OPSS PROV 803 (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered for tree removal.	
Vegetation Communities – Integrated Vegetation Management (IVM)	• Footprint Impacts and potential for the establishment of invasive species and other incompatible species	• An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness.	• 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-treatment monitoring that will be carried out by field survey, by aerial survey, and by high-rail vehicle or train surveys conducted by qualified specialists.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Vegetation Communities – Tree Removal Strategy	• Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handling and transport of ash trees	• 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, *Agrilus planipennis* (Fairmaire) (2014), as amended from time to time. To comply with this Directive, ash trees requiring removal, including wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. • Take precautions to reduce the spread of invasive species by cleaning equipment prior to moving sites.	• 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 reduce impacts.
Vegetation Communities - Erosion and Sedimentation	• Increased erosion and sedimentation	• Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or Ecological Land Classification communities. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and Erosion and Sediment Control Guideline for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to the vegetation communities. • Stockpiled materials or equipment will be stored within the construction footprint but shall be kept at least 30 m away from any watercourse. Signs will be put up on site to indicate the 30 m setback from any watercourse. • OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered when implementing erosion and sediment controls.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions, if required. All erosion and sediment control measures should be inspected weekly. All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection. Corrective actions may include additional site maintenance and alteration of activities to reduce impacts.
Vegetation Communities – Environmental Contamination and Invasive Species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use • Introduction or spread of Invasive Species	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse, where possible. Signs will be put up on site to indicate the 30 m setback from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • Machinery, construction equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the construction site in order to prevent the spread of invasive species to other locations.	• 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 reduce impacts. • Precautions will be taken to reduce the risk of spread of invasive species by implementing the Clean Equipment Protocol for Industry (Halloran et al. 2013) on equipment and machinery prior to arriving on a site.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and Wildlife Habitat			
Wildlife and Wildlife Habitat – General	• Disturbance, displacement or mortality of wildlife	• If wildlife is encountered, measures will be implemented to avoid, as much as possible, destruction, injury, or interference with the species, and/or its habitat. For example, construction activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified Biologist will be contacted to define the appropriate buffer required from wildlife. • Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • The NDMNRF will be contacted if wildlife species protected by the Fish and Wildlife Conservation Act are required to be relocated from the work area during construction.	• 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 reduce impacts.
Wildlife and Wildlife Habitat – General Significant Wildlife Habitat	• Disturbance, displacement or mortality of wildlife or habitat loss for the following SWH: ○ Confirmed habitat for Peregrine Falcon (SOCC) at the Sheraton Centre Toronto Hotel located at 123 Queen Street West. ○ Confirmed habitat for Northern Map Turtle near the Lower Don River. ○ Candidate habitat for the following SOCC: Common Nighthawk, Eastern Wood-pewee, Red-headed Woodpecker, Monarch, and Snapping Turtle.	• Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • Mitigation measures specific to each SWH are detailed in the Wildlife and Wildlife Habitat sections below.	• Monitoring activities specific to each SWH are detailed in the wildlife and wildlife habitat sections below.
Wildlife and Wildlife Habitat – Significant Wildlife Habitat – Monarch (Species of Conservation Concern)	• Disturbance or destruction of habitat used by Monarchs	• Identify opportunities to promote pollinator species and habitat in accordance with the Metrolinx Vegetation Guideline (2020). This may include planting or seeding native flowering plants in temporarily disturbed areas. • Opportunities to plant milkweed or forage vegetation outside of and within the rail Right-of-Way (ROW) will be undertaken, where possible, and in accordance with the Metrolinx Vegetation Guideline (2020). • If vegetation clearing will proceed when Monarch larvae may be present (April 1 to September 30), milkweed plants should be inspected for Monarch larvae prior to their removal. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified biologist. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis). Entire milkweed plants should be transplanted.	• Regular monitoring will be undertaken during construction to prevent unauthorized impacts to habitats used by Monarchs. This will include regular inspection to confirm that protection fencing around the habitat remains intact, and that there is no encroachment into the habitat.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and Wildlife Habitat – Significant Wildlife Habitat – Turtles and Turtle Habitat, including Species of Conservation Concern	• Potential for impacts to turtles and/or turtle habitat including confirmed habitat for Northern Map Turtle and candidate habitat for Snapping Turtle near the Lower Don River	• Work within turtle habitat will be planned in consideration of turtle overwintering period which occurs from October 1 to April 30 in any given year. It is also possible that turtle surveys would need to be conducted prior to the work. • If required, reptile exclusion fencing will be installed according to the Reptile and Amphibian Exclusion Fencing Best Practices (MNR 2013c) and fencing should be inspected daily to ensure it is tight and no species are entangled. • Post-construction habitat restoration will be implemented as required.	• 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 reduce impacts.
Wildlife and Wildlife Habitat – Significant Wildlife Habitat – Common Nighthawk	• Removal of candidate nesting habitat for Common Nighthawk	• Refer to mitigation measures described for Migratory Breeding Birds and Nests. • Demolition of buildings should be scheduled outside of the breeding bird season of April 1 to August 31. If this is not possible and buildings must be demolished during this period, the following will be completed: • The roofs will be checked for presence of gravel. If gravel is not present, then the building is unlikely to provide suitable nesting habitat for Common Nighthawk. If gravel is present, a search for eggs and nesting activity for Common Nighthawk on the roof will be conducted. If nests or nesting activity of Common Nighthawk are confirmed, the building cannot be demolished until it is confirmed by a Qualified Biologist that young have fully fledged and left the nest.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
Wildlife and Wildlife Habitat – Migratory Breeding Birds and Nests, including Species of Conservation Concern birds	• Disturbance or destruction of migratory bird nests including the following SOCC birds: Common Nighthawk, Eastern Wood-pewee, Peregrine Falcon, Red-headed Woodpecker Note: Impacts to Peregrine Falcon habitat are not anticipated to the Sheraton Centre since the Ontario Line Subway tracks are tunneled underground adjacent to the building and there are no proposed above ground construction activities within approximately 100 m from the building.	• All works must comply with the MBCA, including timing windows for the nesting period (April 1 to August 31 in Ontario). • If activities are proposed to occur during the general nesting period a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified Biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection. • Bird SAR are also protected by the Ontario *Endangered Species Act* and migratory bird SAR are protected by the federal *Species at Risk Act*. Mitigation measures for bird SAR are discussed under the Species at Risk heading. • Comply with the City of Toronto's Toronto Green Standard for both light pollution and bird-friendly design and adopt the Leadership in Energy and Environmental Design requirements to reduce light pollution, in order to reduce bird collisions into project structures.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
Wildlife and Wildlife Habitat – Wildlife Habitat Connectivity	• Decrease of habitat connectivity for wildlife	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment. • Compensation for the removal of vegetation in accordance with Metrolinx's Vegetation Guideline (2020) will consider maintaining or enhancing connectivity along the Don River to the extent possible.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Species at Risk			
Species at Risk – General	• Habitat loss, disturbance and/or mortality to Species at Risk	• All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with the MECP. • If SAR is present and conservation strategies have been developed by the MECP, the Constructor will follow the commitments in the recover strategy. • On-site personnel will be provided with information (e.g., factsheets) that addresses the existence of potential SAR on site, the identification of the SAR species and the procedure(s) to follow if an individual is encountered or injured. • Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – Barn Swallow	• Habitat loss, disturbance and/or mortality to Barn Swallow	• 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. • Where loss or disturbance cannot be avoided (e.g., due to work on bridges), all requirements under the ESA 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 1 to August 31), a nest search will be undertaken to confirm that no Barn Swallows are nesting on structures 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. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – Chimney Swift	• Habitat loss, disturbance and/or mortality to Chimney Swift	• 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 as per the Bird Studies Canada Chimney Swift Monitoring Protocol (2009) during the nesting season of April 15 to October 15. • Repair, maintenance, or demolition of an identified roosting/nesting structure may constitute destruction of critical habitat and would be discussed in advance with the MECP and requirements of the ESA will be met. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – Species at Risk Bats	• Habitat loss, disturbance and/or mortality to Species at Risk Bats	• Additional monitoring, mitigation and compensation for removal of suitable treed or anthropogenic roosting habitat may be required based on the results of additional surveys and consultation with the MECP.	• 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 reduce impacts.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		• Disturbance to bat roosting habitat will be avoided during the active season for bats from April 1 to September 30, to the extent possible. • If disturbance cannot be avoided, all requirements of the ESA will be met. • Species-specific mitigation measures will be implemented, in consultation with the MECP.	• Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – Butternut	• Habitat loss, disturbance and/or mortality of Butternut	• If any works are proposed within the critical root zone (i.e., 25 m radius from stem) of a butternut, mitigation, monitoring and compensation to address impacts to butternuts may be required based on the results of additional surveys (i.e., Butternut Health Assessment and DNA testing to confirm purity) and consultation with the MECP. • As part of the Arborist Report, 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 other SAR vegetation. SAR 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 MNR Butternut Assessment Guidelines (2014). The Assessor will prepare a butternut health assessment report and document the mitigation monitoring and corrective actions implemented. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Aquatic Habitats			
Aquatic Environment –Waterbodies	• Impacts to riparian vegetation, erosion and sedimentation to waterbodies from construction; risk of contamination to waterbodies as a result of spills	• Construction activities will maintain the buffers established during the design phase to reduce potential negative impacts to 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, preferably through re-vegetation with native species suitable for the site. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and Erosion and Sediment Control Guideline for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to the waterbody. • A Spill Prevention and Response Plan will be developed before work commences to ensure procedures and policies are in place during construction to reduce impacts to wetlands and watercourses.	• On-site 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 reduce impacts and enhance mitigation measures.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Aquatic Environment – Fish and Fish Habitat	• No in-water works, no direct impacts to fish and fish habitat • Indirect - Dewatering activities and water discharge resulting in changes in water velocity or temperature, soil and erosion, release of contaminated and sediment-laden water, fish habitat structure and cover, food supply, nutrient concentration, access to habitat leading to the displacement or stranding of fish	• All requirements of the *Fisheries Act* will be met. • In the event that in-water and/or near water construction works are required appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including DFO. In-water works will be planned to consider timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. • Follow OPSS PROV 182 General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks (APR 2021). • Design water management system and dewatering operations to prevent erosion and/or release of sediment-laden or contaminated water to the waterbody or adjacent wetlands. • Follow OPSS PROV 517 Construction Specification for Dewatering (NOV 2016). • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the Ministry of Northern Development, Mining, Natural Resources and Forestry.	• 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 reduce impacts. • Monitoring for dewatering will be undertaken to confirm sediment-laden discharge, visible scour/erosion, and/or changes in temperature within any receiving watercourse.
Stormwater Management and Drainage			

Floodplain	• Potential to impact flooding conditions within the Don River Floodplain
	• Potential for flooding impacts on-site during construction
		• Floodplain impact assessment will be conducted during detailed design following TRCA guidelines once details on the pier configuration and other detailed bridge design information are available. Design optimizations on abutment, pier, and valley way placement shall be considered to reduce hydraulic impacts.
		• All temporary works including, but not limited to, the temporary bridges, should follow the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), to reduce the chance of flooding during the construction.
		• TRCA staff will be consulted during detailed design to avoid potential infrastructure conflicts and impacts to flood protection measures/initiatives within the Lower Don Bridge and Don Yard Hydrology and Surface Water Study Area with consideration of, but not limited to, the following:
		  ○ West Don Lands Flood Protection Landform (TRCA 2005);
		  ○ Broadview and Eastern Flood Protection Municipal Class Environmental Assessment (TRCA 2021b);
		  ○ Flood protection measures and tie-in with the existing railway valley way at Don Roadway and Eastern Avenue underpass as identified in the Don Mouth Naturalization and Port Lands Flood Protection Project Environmental Assessment (TRCA 2014a);
		  ○ New Broadview underpass with expanded flood protection tie-ins and drainage with the railway valley way as identified in the Port Lands and South of Eastern
			• Develop and undertake a monitoring program of the West Don Flood Protection Landform, as required, in consultation with TRCA.
			• Include a monitoring strategy in the Flood Contingency Plan to monitor surface water levels during construction activities.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		Transportation and Servicing Master Plan Class Environmental Assessment (Waterfront Toronto and City of Toronto 2016); and, ○ Opening of bridge crossing on east side of Don River through railway valley way to accommodate Hybrid 3 as identified in the Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environmental Assessment (Waterfront Toronto and City of Toronto 2017). • In addition, all necessary studies such as fluvial geomorphic process studies, meander belt and erosion studies, and geotechnical and slope stability assessments will be completed. • Prior to construction, develop a Flood Contingency Plan with specific mitigation measures for any proposed works or temporary laydown and staging areas, as required. The Flood Contingency Plan may include risk mapping, and a monitoring strategy. • Include construction site on TRCA flood warning system to prepare site in advance of possible flood events.	
Surface Water / Stormwater and Drainage	• Change in stormwater quality and quantity, including: ○ Erosion of exposed soil and increased sediment loading which may impact receiving waterbodies and/or municipal stormwater drainage system; and, ○ Increased surface water/stormwater runoff	• The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial, and federal requirements, as amended, and outlined in a Stormwater Management Report**,** including the City of Toronto Wet Weather Flow Management Guidelines. Stormwater management design will consider guidance provided by the MECP, formerly the ECCC Stormwater Management Planning and Design Manual (2003) and Ontario Ministry of Transportation Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation 2010), as required. • The following stormwater management best management practices will be considered and implemented, as required: ○ Reduce clearing and amount of exposed soil; ○ Install key sediment control before grading/land alterations begin; ○ Sequence construction activities so that the soil is not exposed for long periods of times; ○ Protect storm drain inlets to filter out debris; and, ○ Stabilize all exposed soil areas as soon as land alterations have been completed. • Prior to construction, a Stormwater Management Plan that will outline stormwater discharges management associated with construction activities, and an Erosion and Sediment Control plan will be developed. • The TRCA's Living City Policies (TRCA 2014b) will be followed during detailed design, including those policies related to outfall placement.	• Monitoring activities will be implemented as outlined in the Stormwater Management Plan and/or Erosion and Sediment Control Plan and may include regular inspections and reporting on the performance of implemented erosion and sediment control measures, best management practices, and other monitoring activities, as required.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		• Continue to consult with the TRCA to align the Lower Don Bridge and Don Yard early works to the Lower Don Special Policy Area requirements, including the approach to flood proofing and flood modelling. • The TRCA's Stormwater Management Criteria (TRCA 2012) will be followed, including those policies related to impervious areas.	

Table 4-4. Ontario Line South Potential Impacts, Mitigation Measures and Monitoring Activities During Operations

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Policy Areas – Lower Don River Valley falls within the City of Toronto Natural Heritage System	• Localized losses of habitat which may support local wildlife populations and SAR • Reduction in habitat quality resultant from increases in light, noise pollution and dust generation • Potential reduction in habitat quality and NHS ecosystem resilience related to edge habitat and invasive species proliferation • Potential reduction in species movement throughout the NHS corridor	• Compensatory habitat within the Don Valley NHS and mitigation measures including on-going invasive species management are under discussion with agency stakeholders (City of Toronto and TRCA).	• Monitoring restoration areas and follow up management are under discussion with agency stakeholders (City of Toronto and TRCA).
Vegetation Communities			
Vegetation communities – vegetation removal	• Removal of vegetation during operational vegetation maintenance activities, if applicable • Removal and/or damage to adjacent vegetation or Ecological Land Classification communities as a result of accidental intrusion during vegetation maintenance activities, if applicable	• Vegetation removal will be reduced to the extent possible and limited to the Metrolinx right-of-way. • An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness. • Herbicide applications will be administered subject to the *Pesticides Act*.	• 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 reduce impacts. • Monitoring and management of trees/vegetation in the rail corridor right-of-way will be undertaken in accordance with the IVM Program within the Metrolinx Vegetation Guideline (2020).

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use during maintenance activities	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • Machinery, equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the site. This will reduce the risk of the spread of invasive species to other locations.	• 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 reduce impacts.
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general	• Disturbance, displacement or mortality of wildlife during operational vegetation maintenance activities, if applicable	• If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat. For example, operational vegetation maintenance activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the work area on its own. A qualified Biologist will be contacted to define the appropriate buffer required from wildlife.	• 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 reduce impacts.
Wildlife and wildlife habitat – significant wildlife habitat – turtles and turtle habitat, including Species of Conservation Concern	• Potential for impacts to turtles and/or turtle habitat during operational vegetation maintenance activities, if applicable	• Work within turtle habitat will be planned in consideration of turtle overwintering period which occurs from October 1 to April 30 in any given year. It is also possible that turtle surveys would need to be conducted prior to the work.	• 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 reduce impacts.
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern birds	• Disturbance or destruction of migratory bird nests during operational vegetation maintenance activities, if applicable	• All works must comply with the MBCA, including timing windows for the nesting period (April 1 to August 31 in Ontario). • If operation vegetation maintenance activities are proposed to occur during the general nesting period a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified Biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Species at Risk			
Species at Risk – general	• Habitat loss, disturbance, and/or mortality to SAR during operational maintenance activities, if applicable	• In areas subject to maintenance activities during operations, (repair or replacement of structures, or removal of treed habitat), additional surveys may be required to determine the presence of SAR. • All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – barn swallow	• Habitat loss, disturbance and/or mortality to barn swallow during operational vegetation maintenance activities, if applicable	• If operational vegetation maintenance activities are scheduled during the nesting season for barn swallow (April 1 to August 31), a nest search will be undertaken to confirm that no barn swallows are nesting on structures that may be affected by 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. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Aquatic Habitat			
Aquatic environment – waterbodies	• Potential impacts are not anticipated during operations	• None required.	• None required.
Aquatic environment – fish and fish habitat	• Potential impacts are not anticipated during operations	• None required.	• None required.

4.2.3 Ontario Line North (OLN)

Potential impacts, mitigation measures, and monitoring activities for the Environmental Components of the Project assessed by AECOM (2020a) have been further assessed and updated for the OLN section current conceptual design. Impacts during construction are presented in Table 4-5 and during operation are presented Table 4-6. The tables include the assessment details from the ECR that are applicable to OLN, and additional recommendations for the current conceptual design. The environmental components in the tables are grouped into the following categories: designated features and policy areas; vegetation communities; wildlife and wildlife habitat, Species at Risk, aquatic habitats and stormwater management and drainage.

Table 4-5. Ontario Line North Potential Impacts, Mitigation Measures and Monitoring During Construction

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Designated natural areas – West Don River valley; candidate Regionally Significant Life Science Areas of Natural and Scientific Interest; and unevaluated wetlands Don River Valley is considered to be valleyland feature under the Provincial Policy Statement	• Removal of vegetation communities • Disturbance, displacement or mortality of wildlife or habitat loss/degradation, including potential SWH and SAR • Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use • Introduction or spread of invasive species • Increased erosion and sedimentation • Reduction in ecological function and integrity	• Vegetation removal and soil disturbance in designated natural areas will be avoided where possible and will be kept to a minimum. In support of this, a Tree Protection Plan and an Erosion and Sediment Control Plan will be developed and implemented prior to construction. • Compensation for the removal of vegetation in designated natural areas will be in accordance with Metrolinx's Vegetation Guideline (2020), which provides a compensation framework for Designated Natural Areas which mirrors the TRCA Guideline for Determining Ecosystem Compensation. • Mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk also apply to designated natural areas.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.
Policy areas – City of Toronto Natural Heritage System and E.T. Seton Park Environmentally Significant Area	• Removal of vegetation communities • Disturbance, displacement or mortality of wildlife or habitat loss/degradation, including potential SWH and SAR • Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use. • Introduction or spread of invasive species • Increased erosion and sedimentation • Reduction in ecological function and integrity	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk.
Policy areas – City of Toronto Ravine and Natural Feature Protection Areas (Don River valley)	• Removal of vegetation communities	• Refer to mitigation measures described for Vegetation Communities. • Compensation for tree removals will be undertaken in accordance with provisions outlined in the Metrolinx Vegetation Guideline (2020).	• Refer to monitoring described for Vegetation Communities.
Policy areas –Toronto and Region Conservation Authority's Terrestrial Natural Heritage System and Regulation Areas (Don River valley)	• Removal of vegetation communities	• Further consideration to reduce potential impacts on TRCA's Terrestrial NHS, to the extent possible, will be undertaken during detailed design.	• Refer to monitoring described for Vegetation Communities. • Recommendations for additional monitoring related to vegetation removal within regulated areas may be determined through consultation with TRCA.
Policy areas – urban river valley under the Greenbelt Plan (Don River valley)	• Removal of vegetation communities	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment. • Compensation for the removal of vegetation in accordance with Metrolinx's Vegetation Guideline (2020) will consider maintaining or enhancing connectivity along the Don River, to the extent possible.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment.
Vegetation Communities			

<table>
<tr><th>Environmental Component</th><th>Potential Impacts</th><th>Mitigation Measure(s)</th><th>Monitoring Activities</th></tr>
<tr>
<td>Vegetation communities – vegetation community removal</td>
<td>

Removal of vegetation communities
Damage to adjacent vegetation or ecological land classification communities as a result of accidental intrusion

Vegetation communities (as shown on Figures 4.10-4.15, Appendix A) overlap with above ground Project components and the study area as follows:
<table>
<tr><th>ELC Community Code</th><th>Area of Overlap with Above Ground Project Components (ha)</th><th>Area of Overlap with the Study Area outside the Project Footprint (ha)</th></tr>
<tr><td>BBO1</td><td>0.030</td><td>0.165</td></tr>
<tr><td>BBO1-A</td><td>n/a</td><td>0.025</td></tr>
<tr><td>BLT1-B</td><td>0.657</td><td>n/a</td></tr>
<tr><td>CUH</td><td>0.253</td><td>0.279</td></tr>
<tr><td>CUM1</td><td>0.521</td><td>0.000</td></tr>
<tr><td>CUM1-1</td><td>2.815</td><td>1.652</td></tr>
<tr><td>CUM1-b</td><td>0.524</td><td>0.000</td></tr>
<tr><td>CUM1-c</td><td>1.151</td><td>0.355</td></tr>
<tr><td>CUP1-8</td><td>0.242</td><td>n/a</td></tr>
<tr><td>CUP1-c</td><td>0.044</td><td>1.120</td></tr>
<tr><td>CUP2-A</td><td>n/a</td><td>0.405</td></tr>
<tr><td>CUS1-b</td><td>0.421</td><td>0.292</td></tr>
<tr><td>CUT1</td><td>2.907</td><td>0.437</td></tr>
<tr><td>CUT1/CUW1</td><td>0.745</td><td>n/a</td></tr>
<tr><td>CUT1-1</td><td>3.557</td><td>0.536</td></tr>
<tr><td>CUT1-c</td><td>0.435</td><td>0.102</td></tr>
<tr><td>CUW1</td><td>2.331</td><td>2.156</td></tr>
<tr><td>CUW1-b</td><td>n/a</td><td>0.341</td></tr>
<tr><td>FOD</td><td>0.032</td><td>7.014</td></tr>
<tr><td>FOD1-1</td><td>n/a</td><td>0.265</td></tr>
<tr><td>FOD3-1</td><td>0.536</td><td>n/a</td></tr>
<tr><td>FOD4</td><td>0.127</td><td>1.912</td></tr>
<tr><td>FOD4-b</td><td>0.777</td><td>2.105</td></tr>
<tr><td>FOD5-1</td><td>0.164</td><td>2.600</td></tr>
<tr><td>FOD5-2</td><td>0.400</td><td>0.391</td></tr>
<tr><td>FOD5-3</td><td>2.912</td><td>4.063</td></tr>
<tr><td>FOD5-8</td><td>0.077</td><td>2.698</td></tr>
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Vegetation removal will be reduced to the extent possible and limited to the construction footprint.
Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ecological land classification communities.
Provide compensation for the removal of vegetation in accordance with Metrolinx’s Vegetation Guideline (2020).
Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and/or seed mix, appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop as needed.
Vegetation removals will also consider and mitigate potential impacts to sensitive species (e.g., migratory birds and SAR) and features (e.g., SWH). Refer to mitigation measures described for Wildlife and Wildlife Habitat and Species at Risk.
The following Ontario Provincial Standard Specifications (OPSS) will be considered when removing vegetation communities: OPSS PROV 180 (Management of Excess Materials), OPSS PROV 801 (Protection of Trees), 803 PROV (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control).

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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 reduce impacts.
If required, vegetation compensation activities will be monitored in accordance with Metrolinx’s Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.

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Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
	ELC Community Code / Area of Overlap with Above Ground Project Components (ha) / Area of Overlap with the Study Area outside the Project Footprint (ha) FOD7 — 2.548 — n/a FOD7-3 — 0.522 — 0.783 FOD7-a — 2.517 — 1.544 FOD7-b — 0.167 — 2.110 FOD7-c — 2.126 — 3.690 MAM — 0.163 — 0.008 MAM2 — 0.042 — n/a MAM2-7 — 0.037 — 0.153 MAM2-a — n/a — 0.089 MAS2-1b — n/a — 0.065 OAO — 0.044 — 0.775 OAO1-T — 0.204 — 0.570 OAO-T — n/a — 0.002 SA — n/a — 0.278 SWT2-2 — n/a — 0.073		
Vegetation communities – tree removal and compensation plans	• City and private tree removal	• An Arborist Report by an I.S.A. Certified Arborist may be prepared with regard to the Ontario *Forestry Act* R.S.O. 1990, and other regulations and best management practices as applicable. • The Arborist Report may include, but not be limited to, the individual identification of trees within the study area, including those that require removal or preservation, or trees that may be injured as a result of the Project. Trees to be identified within the study area may include those on Metrolinx property, trees on public and private lands, and boundary trees. The City of Toronto by-laws dictate the minimum area buffers to be inventoried and diameter at breast height that requires inventory. • Prior to the undertaking of tree removals, a tree removal strategy/tree preservation plan will be developed during detailed design to document tree protection and mitigation measures that follow the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees Guidelines (2016) and/or City of Toronto by-laws, and adherence with best practices, standards and regulations on safety, environmental, and wildlife protections. • Compensation for tree removals will be undertaken in accordance with the Metrolinx Vegetation Guideline (2020) and	• Regular inspection in areas of vegetation removal will be undertaken as required during construction to confirm that fencing is intact; only specified trees are removed; and no damage is caused to the remaining trees and adjacent vegetation communities. • 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 reduce impacts. If required, vegetation compensation activities will be monitored in accordance with Metrolinx's Vegetation Guideline (2020) and conditions of permits and approvals as determined by property ownership, applicable governing by-laws/regulations, and location with respect to ecological functioning.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		principles of the TRCA's Guideline for Determining Ecosystem Compensation (June 2018) (Ecological Compensation). • Pruning of branches will be conducted through the implementation of proper arboricultural techniques. • Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries. TPZs will be clearly staked prior to construction using barriers in accordance with local by-law requirements. • The Arborist Report will include information needed to establish compensation ratios and tree end use (including identification of high value trees) as per the Metrolinx Vegetation Guideline (2020). • If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's Vegetation Guideline (2020). Applicable bylaws will be followed for tree removals outside of Metrolinx properties. • Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and SAR, and features, e.g., designated natural areas and SWH. Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat and Species at Risk. • City of Toronto tree removal/injury permits shall be requested and obtained for trees regulated under Bylaw 813, 658 and 608. • Compensation for trees within the Metrolinx ROW that are located within a designated natural area will reflect the principles of the TRCA's (TRCA) Guideline for Determining Ecosystem Compensation (June 2018) (Ecological Compensation). • OPSS PROV 803 (Construction Specification for Vegetation Cover), and OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered for tree removal.	
Vegetation Communities – integrated vegetation management (IVM)	• Footprint Impacts and potential for the establishment of invasive species and other incompatible species	• An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and enhances cost-effectiveness.	• 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-treatment monitoring that will be carried out by field survey, by aerial survey, and by high-rail vehicle or train surveys conducted by qualified specialists.
Vegetation communities – tree removal strategy	• Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handing and transport of ash trees	• 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, *Agrilus planipennis* (Fairmaire) (2014), as amended from time to time. To comply with this Directive, ash trees requiring removal, including wood, bark or chips, will be	• 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 reduce impacts.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		restricted from being transported outside of the emerald ash borer regulated areas of Canada. • Confirm precautions are being taken to reduce the risk of the spread of invasive species by cleaning equipment prior to moving sites.	
Vegetation communities – erosion and sedimentation	• Increased erosion and sedimentation	• Construction fencing and/or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ecological land classification communities. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to the vegetation communities. • Stockpiled materials or equipment will be stored within the construction footprint but shall be kept at least 30 m away from any watercourse; signs will be put up on site to so indicate the setback.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions, if required. All erosion and sediment control measures should be inspected weekly. All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection. Corrective actions may include additional site maintenance and alteration of activities to reduce impacts.
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use • Introduction or spread of invasive species	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse, where possible. Signs will be put up on site to indicate the 30 m setback from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • All machinery, construction equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the construction site. This will reduce the risk of the spread of invasive species to other locations. • OPSS PROV 804 and 805 (Construction Specifications for Temporary Erosion Control) will be considered when implementing erosion and sediment controls.	• 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 reduce impacts. • Precautions are being taken to reduce the risk of the spread of invasive species by implementing the Clean Equipment Protocol for Industry (Halloran et al. 2013) on equipment and machinery prior to arriving on a site.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general	• Disturbance, displacement, or mortality of wildlife	• If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and its habitat. For example, construction activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required. • Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • The NDMNRF will be contacted if wildlife species protected by the Fish and Wildlife Conservation Act are required to be relocated from the work area during construction.	• 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 reduce impacts.
Wildlife and wildlife habitat – general significant wildlife habitat (SWH)	• Disturbance, displacement, or mortality of wildlife or habitat loss for the following SWH: ○ candidate amphibian movement corridor ○ candidate bat maternity colonies ○ candidate colonially – nesting bird breeding habitat (bank and cliff) ○ candidate landbird migratory stopover area ○ candidate reptile hibernacula ○ candidate turtle nesting areas ○ confirmed amphibian wetland breeding habitat ○ confirmed marsh breeding bird habitat ○ confirmed turtle wintering area ○ confirmed habitat for the SOCC eastern wood-pewee, monarch and snapping turtle ○ candidate habitat for the SOCC western chorus frog, black-crowned night heron, common nighthawk, great egret, peregrine falcon, red-headed woodpecker, wood thrush, monarch and northern map turtle	• Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • Mitigation measures specific to each SWH are detailed in the wildlife and wildlife habitat sections below.	• Monitoring activities specific to each SWH are detailed in the wildlife and wildlife habitat sections below.
Wildlife and wildlife habitat – significant wildlife habitat – monarch (Species of Conservation Concern)	• Disturbance or destruction of habitat used by monarchs	• Identify opportunities to promote pollinator species and habitat in accordance with the Metrolinx Vegetation Guideline (2020). This may include planting or seeding native flowering plants in temporarily disturbed areas. • Opportunities to plant milkweed or forage vegetation outside and within the rail right-of-way (ROW) will be undertaken, where possible, and in accordance with the Metrolinx Vegetation Guideline (2020). • If vegetation clearing proceeds when monarch larvae may be present (April 1 to September 30), then milkweed plants should be inspected for monarch larvae prior to their removal. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified biologist. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis), entire milkweed plants will be transplanted.	• Regular monitoring will be undertaken during construction to prevent unauthorized impacts to habitats used by Monarchs. This will include regular inspection to confirm that protection fencing around the habitat remains intact, and that there is no damage to the habitat.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Wildlife and wildlife habitat – significant wildlife habitat – turtles and turtle habitat, including Species of Conservation Concern	• Potential for impacts to turtles and/or turtle habitat	• Work within turtle habitat will be planned in consideration of turtle overwintering period which occurs from October 1 to April 30. It is also possible that turtle nesting surveys would need to be conducted prior to the work. • If required, reptile exclusion fencing will be installed according to the Reptile and Amphibian Exclusion Fencing Best Practices (MNR 2013c) and fencing should be inspected daily to ensure it is tight and no species are entangled. Post-construction habitat restoration will be implemented, as required.	• 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 reduce impacts.
Wildlife and wildlife habitat – significant wildlife habitat -– snake hibernacula	• Disturbance or destruction of reptile hibernaculum	• Where Project activity occurs adjacent to suitable snake hibernacula, exclusionary fencing will be erected along the activity area to fully isolate the area of activity during the active snake season. In the event that exclusionary fencing cannot be installed, follow-up discussions with the MECP will be required to determine adequate alternative mitigation measure(s). • For areas where the hibernacula feature requires removal to facilitate development, the exclusion fencing is to be installed during the active snake season and prior to any construction activities commencing to prevent snakes from entering the feature pre-removal. Any snakes encountered within the exclusion fencing will be relocated outside the fencing and within suitable habitat containing suitable vegetation cover/refuge by a qualified biologist in accordance with the required permit(s) in accordance with the MNR's Reptile and Amphibian Exclusion Fencing (2013c).	• Monitoring will be undertaken prior to construction to survey exclusionary fencing installation and regular monitoring during construction to survey for snakes potentially trapped within exclusionary areas. • Continuous monitoring of feature removal will be undertaken during activity.
Wildlife and wildlife habitat – significant wildlife habitat – common nighthawk	• Removal of candidate nesting habitat for common nighthawk	• Refer to mitigation measures described for migratory breeding birds and nests. • Demolition of buildings should be scheduled outside of the breeding bird season of April 1 to August 31. If this is not possible and buildings must be demolished during this period, then the following will be completed: ○ The roofs will be checked for presence of gravel. If gravel is not present, then the building is unlikely to provide suitable nesting habitat for common nighthawk. If gravel is present, a search for eggs and nesting activity for common nighthawk on the roof will be conducted. if nests or nesting activity of common nighthawk are confirmed, the building cannot be demolished until it is confirmed by a qualified biologist that young have fully fledged and left the nest.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern (birds)	• Disturbance or destruction of migratory bird nests for the SOCC (birds) black-crowned night heron, common nighthawk, great egret, peregrine falcon, red-headed woodpecker, wood thrush	• All works must comply with the MBCA, including timing windows for the nesting period (April 1 to August 31). • If activities are proposed to occur during the general nesting period, then a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest), it still receives protection. • Bird SAR are also protected by the Ontario *Endangered Species Act* and migratory bird SAR are protected by the	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
		federal *Species at Risk Act*. Mitigation measures for bird SAR are discussed under the Species at Risk heading. • Comply with the City of Toronto's Toronto Green Standard for both light pollution and bird-friendly design and adopt the Leadership in Energy and Environmental Design requirements to reduce light pollution, in order to reduce bird collisions into project structures.	
Wildlife and wildlife habitat – wildlife habitat connectivity	• Decrease of habitat connectivity for wildlife	• Refer to mitigation measures described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment. • Opportunities to enhance the natural environment and provide a connection to the surrounding natural areas will be explored, to the extent possible.	• Refer to monitoring described for Vegetation Communities, Wildlife and Wildlife Habitat, Species at Risk and the Aquatic Environment.
Species at Risk			
Species at Risk – general	• Habitat loss, disturbance, and/or mortality to SAR	• All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with the MECP. • If SAR is present and conservation strategies have been developed by the MECP, Metrolinx will follow the commitments in the recover strategy. • On-site personnel will be provided with information (e.g., factsheets) that addresses the existence of potential SAR on site, the identification of the SAR species and the procedure(s) to follow if an individual is encountered or injured.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – barn swallow and bank swallow	• Habitat loss, disturbance, and/or mortality to barn swallow and bank swallow	• 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. • Where loss or disturbance cannot be avoided (e.g., due to work on bridges or banks), all requirements under the ESA will be met, including any registration, compensation, replacement structures, and permitting requirements. • If construction activities are scheduled during the nesting season for Barn Swallow and Bank Swallow (April 1 to August 31), a nest search will be undertaken to confirm that no barn swallows or bank swallows 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. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Species at Risk – chimney swift	• Habitat loss, disturbance, and/or mortality to chimney swift	• If repair, maintenance or demolition of buildings and structures with suitable roosting and nesting habitat (e.g., chimneys) is to take place, then targeted surveys for Chimney Swift will be completed as per the Bird Studies Canada Chimney Swift Monitoring Protocol (2009) during the nesting season of April 15 to October 15. • Repair, maintenance, or demolition of an identified structure used for roosting and nesting may constitute destruction of critical habitat and would be discussed in advance with the MECP and requirements of the ESA will be met. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – Species at Risk bats	• Habitat loss, disturbance, and/or mortality to SAR bats	• Additional monitoring, mitigation and compensation for removal of suitable treed or anthropogenic roosting habitat may be required, based on the results of additional surveys and consultation with the MECP. • Disturbance to bat roosting habitat will be avoided during the active season for bats from April 1 to September 30, to the extent possible. • If disturbance cannot be avoided, all requirements of the ESA will be met. • Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – butternut	• Habitat loss, disturbance, and/or mortality of butternut	• If any works are proposed within the critical root zone (i.e., 25 m radius from stem) of a butternut, mitigation, monitoring and compensation to address impacts to butternuts may be required based on the results of additional surveys (i.e., Butternut Health Assessment and DNA testing to confirm purity) and consultation with the MECP. • As part of the Arborist Report, 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 other SAR vegetation. SAR 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 MNR Butternut Assessment Guidelines (2014). The Assessor will prepare a butternut health assessment report and document the mitigation monitoring and corrective actions implemented. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented, in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Aquatic Habitat			
Aquatic environment – wetlands and waterbodies	• Removal or impacts to wetland; aquatic and riparian vegetation; degradation of wetlands as result of dewatering and discharge activities; erosion and sedimentation to wetlands/waterbodies from construction; and risk of contamination to wetlands/waterbodies as a result of spills	• Construction activities will maintain the buffers established during the design phase to reduce 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, preferably through re-vegetation with native species suitable for the site. • An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), will be prepared prior to and implemented during construction to reduce the risk of sedimentation to the waterbody. • A Spill Prevention and Response Plan will be developed before work commences so that procedures and policies are in place during construction to reduce impacts to wetlands and watercourses. • 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. • Vegetation removals will also consider and mitigate potential impacts to wetland communities. Until such a time, that an Ontario Wetland Evaluation System evaluation is completed and evaluated by the NDMNRF, unevaluated wetlands will be considered as significant for the purposes of assessing impacts. • Wetland communities potentially affected by the Project will be clearly staked out on site. • If dewatering is proposed, then it is recommended to be undertaken during the winter when the potential impacts of changes in water levels are less significant in wetland communities. During detailed design, the need for a dewatering zone of influence assessment and dewatering monitoring plan should be evaluated. The dewatering monitoring plan, if required, will monitor for potential negative impacts on nearby wetlands and adjacent vegetation communities to confirm if they would be affected due to dewatering activities. An adaptive management plan will be prepared if negative impacts are observed. • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the MNRF.	• On-site 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 reduce impacts and enhance mitigation measures.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Aquatic environment – fish and fish habitat	• Potential for direct, in-water impacts to fish and fish habitat related to temporary crossing structures for both Don and West Don River bridges • Dewatering activities and water discharge resulting in changes in water velocity or temperature; changes in soil and erosion; release of contaminated and sediment-laden water; changes in fish habitat structure and cover; changes in food supply, changes in nutrient concentration; changes in access to habitat leading to the displacement or stranding of fish	• All requirements of the *Fisheries Act* will be met. • In the event that in-water and/or near water construction works are required, appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including DFO. In-water works will be planned to consider timing windows to protect fish, including their eggs, juveniles, spawning adults, and/or the organisms upon which they feed. • Follow OPSS PROV 182 General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks (APR 2021) • Design water management system and dewatering operations to prevent erosion and/or release of sediment-laden or contaminated water to the waterbody or adjacent wetlands. • Follow OPSS PROV 517 Construction Specification for Dewatering (NOV 2016) • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the NDMNRF.	• 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 reduce impacts. • Monitoring for dewatering will be undertaken to confirm sediment-laden discharge; changes in visible scour/erosion; and changes in temperature within any receiving watercourse.
Stormwater Management and Drainage			
Floodplain	• Potential to impact flooding conditions in the Don River Floodplain • Potential for flooding impacts on-site during construction	• Floodplain impact assessment will be conducted during detailed design following TRCA guidelines once details on the pier configuration and other detailed bridge design information are available. Design optimizations on abutment, pier, and valley way placement shall be considered to reduce hydraulic impacts. • All temporary works including, but not limited to, the temporary bridges, should follow the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), to reduce the chance of flooding during the construction. TRCA staff will be consulted during detailed design to avoid potential infrastructure conflicts and impacts to flood protection measures/initiatives. • In addition, all necessary studies such as fluvial geomorphic process studies, meander belt and erosion studies, and geotechnical and slope stability assessments will be completed. • Prior to construction, develop a Flood Contingency Plan with specific mitigation measures for any proposed works or temporary laydown and staging areas, as required. The Flood Contingency Plan may include risk mapping, and a monitoring strategy. • Include construction site on TRCA flood warning system to prepare site in advance of possible flood events.	• Develop and undertake a monitoring program of the West Don Flood Protection Landform, as required, in consultation with TRCA. • Include a monitoring strategy in the Flood Contingency Plan to monitor surface water levels during construction activities.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Surface Water / Stormwater and Drainage	• Change in stormwater quality and quantity, including: ○ Erosion of exposed soil and increased sediment loading which may impact receiving waterbodies and/or municipal stormwater drainage system; and, ○ Increased surface water/stormwater runoff	• Prior to construction, a Stormwater Management Plan that will outline stormwater discharges management associated with construction activities, and an Erosion and Sediment Control plan will be developed. • The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial, and federal requirements, as amended, and outlined in a Stormwater Management Report**,** including the City of Toronto Wet Weather Flow Management Guidelines. Stormwater management design will consider guidance provided by the MECP, formerly the Ministry of the ECCC Management Planning and Design Manual (2003) and Ontario Ministry of Transportation Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation 2010), as required. • The following stormwater management best management practices will be considered and implemented, as required: − Reduce clearing and amount of exposed soil; ○ Install key sediment control before grading/land alterations begin; ○ Sequence construction activities so that the soil is not exposed for long periods of times; ○ Protect storm drain inlets to filter out debris; and, ○ Stabilize all exposed soil areas as soon as land alterations have been completed. • The TRCA's Living City Policies (TRCA 2014b) will be followed during detailed design, including those policies related to outfall placement. • The TRCA's Stormwater Management Criteria (TRCA 2012) will be followed, including those policies related to impervious areas.	• Monitoring activities will be implemented as outlined in the Stormwater Management Plan and/or Erosion and Sediment Control Plan and may include regular inspections and reporting on the performance of implemented erosion and sediment control measures, best management practices, and other monitoring activities, as required.

Table 4-6. Ontario Line North Potential Impacts, Mitigation Measures and Monitoring Activities During Operations

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Designated Features and Policy Areas			
Designated natural areas: The West Don River valley; candidate Regionally Significant Life Science Areas of Natural and Scientific Interest; and unevaluated wetlands The Don River Valley is considered to be valleyland feature under the Provincial Policy Statement. Policy areas: • City of Toronto Natural Heritage System (NHS) and E.T. Seton Park Environmentally Significant Area • City of Toronto Ravine and Natural Feature Protection Areas (Don River valley) • Toronto and Region Conservation Authority's Terrestrial Natural Heritage System and Regulation Areas (Don River valley) • Urban River Valley under the Greenbelt Plan (Don River valley)	• Localized losses of habitat which may support local wildlife populations and SAR • Reduction in habitat quality resultant from increases in light, noise pollution and dust generation • Potential reduction in habitat quality and NHS ecosystem resilience related to edge habitat and invasive species proliferation • Potential reduction in species movement throughout the NHS corridor	• Compensatory habitat within the Don Valley NHS and mitigation measures including on-going invasive species management are under discussion with agency stakeholders (City of Toronto and TRCA).	• Monitoring restoration areas and follow up management are under discussion with agency stakeholders (City of Toronto and TRCA).
Vegetation Communities			
Vegetation communities – vegetation removal	• Removal of vegetation during operational vegetation maintenance activities, if applicable • Removal and/or damage to adjacent vegetation or Ecological Land Classification communities as a result of accidental intrusion during vegetation maintenance activities, if applicable	• Vegetation removal will be reduced to the extent possible and limited to the Metrolinx right-of-way. • An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM 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 meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness. • Herbicide applications will be administered subject to the *Pesticides Act*.	• 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 reduce impacts. • Monitoring and management of trees/vegetation in the rail corridor right-of-way will be undertaken in accordance with the IVM Program within the Metrolinx Vegetation Guideline (2020).

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Vegetation communities – environmental contamination and invasive species	• Soil or water contamination as a result of spills (e.g., grease and/or fuel) from equipment use during maintenance activities	• A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. • Refuelling of equipment will occur at least 30 m away from any watercourse. • Refuelling will be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. • All machinery, equipment and vehicles arriving on site should be in clean condition (e.g., free from fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al. 2013) prior to arriving and leaving the site in order to prevent the spread of invasive species to other locations.	• 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 reduce impacts.
Wildlife and Wildlife Habitat			
Wildlife and wildlife habitat – general	• Disturbance, displacement or mortality of wildlife during operational vegetation maintenance activities, if applicable	• If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat. For example, operational vegetation maintenance activities will cease, or be reduced, and wildlife will be encouraged to move off-site and away from the work area on its own. A qualified biologist will be contacted to define the appropriate buffer required.	• 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 reduce impacts.
Wildlife and wildlife habitat – significant wildlife habitat – turtles and turtle habitat, including Species of Conservation Concern	• Potential for impacts to turtles and/or turtle habitat during operational vegetation maintenance activities, if applicable	• Work within turtle habitat will be planned in consideration of turtle overwintering period which occurs from October 1 to April 30. It is also possible that turtle surveys would need to be conducted prior to the work.	• 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 reduce impacts.
Wildlife and wildlife habitat – migratory breeding birds and nests, including Species of Conservation Concern (birds)	• Disturbance or destruction of migratory bird nests during operational vegetation maintenance activities, if applicable	• All works must comply with the MBCA, including timing windows for the nesting period (April 1 to August 31). • If operation vegetation maintenance activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. • If a nest of a migratory bird is found outside this nesting period (including a ground nest), it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Species at Risk			
Species at Risk – general	• Habitat loss, disturbance, and/or mortality to SAR during operational maintenance activities, if applicable	• In areas subject to maintenance activities during operations, (repair or replacement of structures, or removal of treed habitat), additional surveys may be required to determine the presence of SAR. • All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Species at Risk – barn swallow	• Habitat loss, disturbance and/or mortality to Barn Swallow and/or Bank Swallow during operational maintenance activities, if applicable	• If operational maintenance activities are scheduled during the nesting season for barn swallow(April 1 to August 31), a nest search will be undertaken to confirm that no barn swallows are nesting on structures that may be affected by 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. • All requirements of the ESA will be met. Species-specific mitigation measures will be implemented in consultation with the MECP.	• 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 reduce impacts. • Species-specific monitoring measures will be implemented in consultation with the MECP.
Aquatic Habitat			
Aquatic environment – wetlands and waterbodies	• Potential impacts are not anticipated during operations	• None required.	• None required.
Aquatic environment – fish and fish habitat	• Potential impacts are not anticipated during operations	• None required.	• None required.

5 Permits and Approvals

5.1 Federal

5.1.1 Species at Risk Act, 2002

Terrestrial SARA species are not considered in this NETR because the development does not occur on federal lands, and there were no aquatic SAR found in the Project water crossings. Species identified federally as endangered, threatened or special concern are applicable to the assessment of SOCC. These species have been documented in the Existing Conditions Summary in Section 3.9 and assessed for impacts and considered in the development of appropriate mitigation measures and monitoring activities in the tables in Section 4.

Migratory bird species listed as extirpated, endangered or threatened on Schedule 1 of the SARA and species listed in the MBCA are regulated under the SARA. Should construction result in potential impacts to a regulated migratory bird species, consultation with ECCC is recommended to confirm authorization requirements under the SARA. Contravention of the SARA can be avoided by implementing measures (i.e., construction outside of breeding bird timing window) to prevent the disturbance, destruction or taking of a nest as described for the MBCA (see Section 5.2.3).

5.1.2 Fisheries Act, R.S.C. 1985

The subway line will cross fish habitat associated with the Don River, Don River West, and Walmsley Brook.

The proposed activities at all crossings will require review by DFO based on their proximity to the watercourses. Review by DFO is initiated through a Request for Review (RFR) process. The RFR Form should include details on the activities such as detailed designs, mitigation measures, schedules and potential impacts and compensations measures.

An RFR form was submitted to DFO for the arch bridge over the lower Don River. DFO reviewed the Project and informed the proponent that the construction of an arch bridge over the Lower Don River will not require an authorization under the *Fisheries Act* or the SARA.

It should be noted that the iterative process of consultation and design refinement undertaken with the TRCA encompasses many of the DFO principles of impact assessment, mitigation measures and no net loss of fish habitat. The TRCA is engaged in the refinement of design and mitigation for the Lower Don River, the Don River, the West Don and Walmsley Brook crossings. The crossing designs, site control (slope stabilization, fish habitat protection (i.e., setbacks, timing windows)), sediment and erosion control, and compensatory concept plans are consistent with DFO's policies and guiding principles. Once the design and mitigation measures are determined, an RFR form will need to be submitted to the DFO similar to the Lower Don River RFR to determine whether an authorization is required for the remaining crossings.

5.1.3 Migratory Birds Convention Act, 1994

There are no permits under the MBCA (1994). Mitigation measures for the clearing of lands and buildings have been recommended for the Project in the impact, mitigation, and monitoring tables in Section 4 to avoid impacts on migratory breeding birds.

5.2 Provincial

5.2.1 Provincial Policy Statement, 2020

The PPS offers the overriding policy to protect the natural heritage features and embody the goals and principles of the Greenbelt Plan and Growth Plan as well as the City of Toronto Official Plan. These natural heritage policy features such as wetlands, woodlands valleylands, SWH, SAR and fish habitat have been documented for the study area, and impacts assessed for both construction and operation of the Ontario Line. The assessment of natural heritage features in provided in this NETR are consistent with the protection and policies for natural heritage in the PPS.

5.2.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe

The Project is consistent with the relevant policies of the Growth Plan by extending the higher-order transit network into existing residential and employment areas, which optimizes the efficiency and viability of existing and planned transit and helps develop more vibrant and complete communities.

The Project promotes the Growth Plan's policies by providing Downtown Toronto with improved regional connections that will accommodate the increased population and employment to be achieved by the density targets while minimizing impacts on natural heritage and hydrological features.

5.2.3 Greenbelt Plan, 2017

The Greenbelt Plan comes into consideration for the study area as it relates to the Designation of the Don River Valley as an urban river valley. It is subject to assessment under the *Environmental Assessment Act*, provided that the goals of the Growth Plan and Greenbelt Plan are supported in the EA. This NETR applies and considers the policies of these plans in the assessment of impacts and is consistent with the mitigation measures that are adopted in these planning areas to protect the natural heritage features and designated features such as the Don Valley. These principles are imbedded in the principles of reducing the extent of impacts, where feasible, by applying mitigation techniques and restoring natural areas to the extent possible during post-construction for maintaining the integrity and function of natural heritage features.

5.2.4 Endangered Species Act, 2007

SAR surveys are being undertaken as part of the Project. Species covered under the ESA, are subject to permitting requirements with the MECP.

5.2.5 Conservation Authorities Act, 1998

The Project is not subject to the provisions of *Conservation Authority Act*. However, through the Voluntary Project Review (VPR) process, the Project is committed to the goals and guiding principles of the *Conservation Authority Act* and associated regulation 166/06 for the TRCA. Metrolinx has and continues to engage the TRCA in the development of design opportunities and refinements to avoid, mitigate and restore habitats in the watershed within the flood regulated areas of the TRCA. An important component of this consultation process is the development of compensatory opportunities within the watershed to address the loss for vegetated areas and aquatic environments and design the rail corridor, including the OMSF, in a manner to retain long term slope and watercourse stability. For relevant VPR submissions, Metrolinx will submit a scoped Environmental Impact Statement (EIS) in support of individual project components and as part of a comprehensive submission.

Compensation for impacts to TRCA regulation areas (watercourses, regulatory floodplain, valleylands and wetlands) for specific areas such as the OMSF and associated supporting infrastructure within the E.T. Seton Park is subject to the noted on-going design refinements and consultation with the TRCA. Compensation for impacts to fish habitat will be determined through consultation with the DFO in concert with TRCA.

5.3 Municipal

The City of Toronto Official Plan encompasses the above noted natural heritage policies and guiding principles, in addition to a suite of polices specific to the City of Toronto.

Metrolinx, as a Provincial Agency, is generally not subject to municipal permits and approvals (Metrolinx Act 2006); however, Metrolinx will endeavour to adhere to the intent of the relevant municipal permits/approvals to the greatest extent possible and will submit applications for review and information. A Ravines and Natural Features Protection permit is required for tree removal and will be obtained prior to commencing construction activities in the Ravines and Natural Features Protection Areas (Don River Valley and Lower Don River Valley). Metrolinx will continue to communicate and engage with the City of Toronto during detailed design and construction planning to address municipal concerns.

6 Conclusions

This NETR summarizes the existing natural environment conditions; the potential impacts on the natural environment features for the Ontario Line Project; and recommends mitigation measures and monitoring activities to reduce impacts on the natural environment. Relevant natural environment policy and permitting considerations are also provided. The assessment of impacts and proposed mitigation measures have been divided into the OLW, OLS and OLN study areas.

Natural environment field investigations were conducted by AECOM in 2019 and 2020 in support of the Existing Conditions Report (AECOM 2020) and Early Works Assessments. Preliminary impact assessment tables to assess potential construction and operation impacts were prepared in the Existing Conditions Report including recommended mitigation measures and monitoring activities. Potential impacts on the natural environment features, and recommended mitigation measures and monitoring activities were updated in the tables in Section 4 of this NETR based on the refined Project Footprint and the current conceptual design.

Designated Features and Policy Areas

Designated features are comprised of a Candidate Regionally Significant Life Science Areas of Natural and Scientific Interest within the E.T. Seton Area of Investigation, as well as unevaluated wetlands and woodlands within the OLN study area. In addition, the Don River Valley is considered to be a valleyland feature under the PPS and is also designated as an Urban River Valley under the Greenbelt Plan. There are no Provincially Significant Wetlands or Locally Significant Wetland.

Policy areas are comprised of the Don River Valley which is part of the City of Toronto's NHS and Ravine and Natural Feature Protection by-law area, as well as TRCA's Terrestrial NHS and regulation limits. There is one environmentally significant area within E.T. Seton Park, located north of Overlea Boulevard within the Don River Valley.

Impacts to designated features and associated protection, mitigation and compensation measures are embodied in the natural heritage assessment under the following feature components:

Vegetation Communities

Vegetation communities are highly fragmented and mainly comprised of culturally influenced meadows, thickets and woodlands in the more built-up areas in the OL study area. More continuous tracts of natural vegetation, including mature forest communities and wetlands, occur in the Don River valley in the OLN study area.

Compensatory opportunities and initiatives are being advanced with TRCA.

Wildlife and Wildlife Habitat

Based on a review of wildlife atlases, there are records of 28 mammal species, 125 bird species, 31 herpetofauna species and 104 butterfly species in the Ontario Line study area. The majority of wildlife are common in the City of Toronto and tolerant to anthropogenic disturbances, while a small proportion is comprised of sensitive or rare species. Fragmented forest and woodland communities and anthropogenic structures in the built-up areas had the potential to support candidate SWH for bat maternity colonies and several SOCC. The Don River and natural vegetation communities in the Don River Valley have the potential to support a greater variety of candidate significant wildlife features and terrestrial SOCC.

Most wildlife impacts can be controlled and mitigated through the implementation of the established standard and tested mitigation measures for infrastructure undertakings. Special protection measures are recommended for some species like Peregrine Falcon which are unique to the OL alignment.

Species at Risk

Based on the habitat suitability assessment, there is a medium to high potential for the following ESA protected species to occur in the OL study area: Bank Swallow, Barn Swallow, Chimney Swift, Butternut, and endangered bats, and there is a low potential for Blanding's Turtle to occur in the OL study area. Pre-construction surveys are required to determine if SAR or their habitat will be negatively impacted by the Project. If SAR or their habitat are documented during pre-construction surveys and impacts to individuals or habitat cannot be avoided, authorization requirements (e.g., permit) and species specific mitigation requirements will be determined in consultation with the MECP.

Aquatic Habitat

The Don River provides direct fish habitat to a generally tolerant warm to cold water fish community and conditions were non-limiting throughout. No habitat classified as critical by the SARA and no aquatic SAR that are afforded protection under the ESA or SARA were identified within the OL study area.

The proposed in-water work for bridge construction has potential for temporary effects on fish and fish habitat including sedimentation, spills and leaks and underwater noise. The effects on fish and fish habitat can be reduced with the design and implementation of mitigation measures a timing window, and erosion and sediment control measures among others.

The proposed bridges do not have a permanent in-water footprint and therefore the duration of impact on fish and/or fish will be temporary. No long-term impacts to the aquatic environment are anticipated.

Summary

Mitigation measures and monitoring activities have been recommended to comply with policy and permitting requirements. Further field studies to comply with policies and permitting may be required once design has advanced, including conducting nest searches for migratory birds during the breeding bird window to avoid contravention of the MBCA.

Appropriate strategies to compensate for natural heritage features impacted by the Project will be determined and implemented in appropriate areas through consultation with TRCA, City of Toronto and Metrolinx planning and ecology personnel.

Targeted SAR surveys will be required prior to commencing construction activities to determine presence/absence of SAR and comply with the requirements of the ESA.

DFO permitting may be required if in-water works are proposed to occur in fish habitat.

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Sign-Off Sheet

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Reviewed by _____
(signature)

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Associate, Environmental Planner

Appendix A. Figures

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Legend

- Ontario Line West
- Project Footprint
- Study Area
- Waterbody

Notes

1. Coordinate System: NAD 1983 CSRS MTM 10
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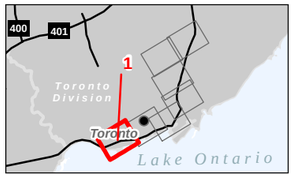


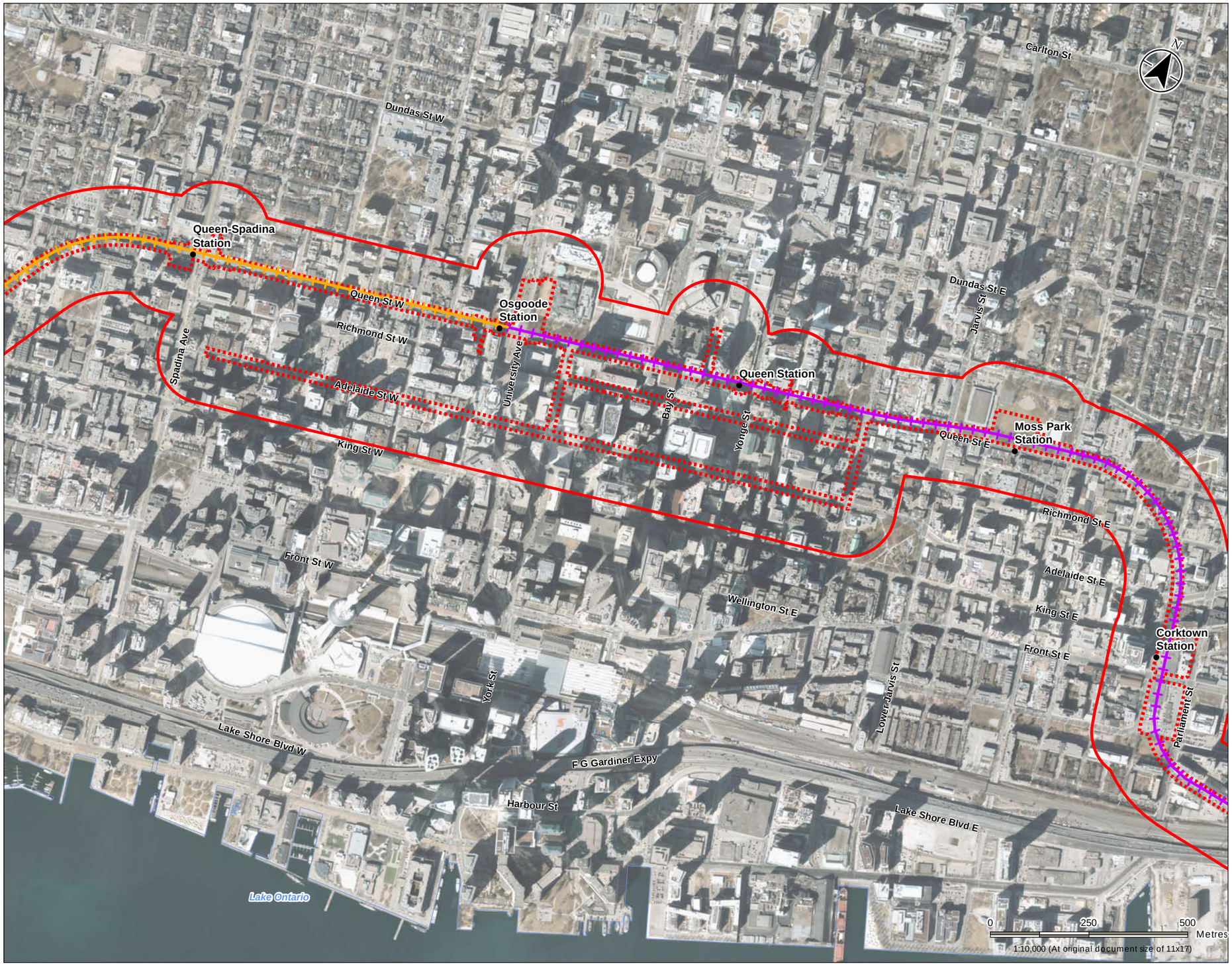
Project Location
Coity of Toronto, ON

160560009 REV4
Prepared by BCC on 2022-02-01

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
2.1

Title
Study Area Overview



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Legend

- Ontario Line West
- Ontario Line South
- Project Footprint
- Study Area
- Waterbody

Notes

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Figure No.
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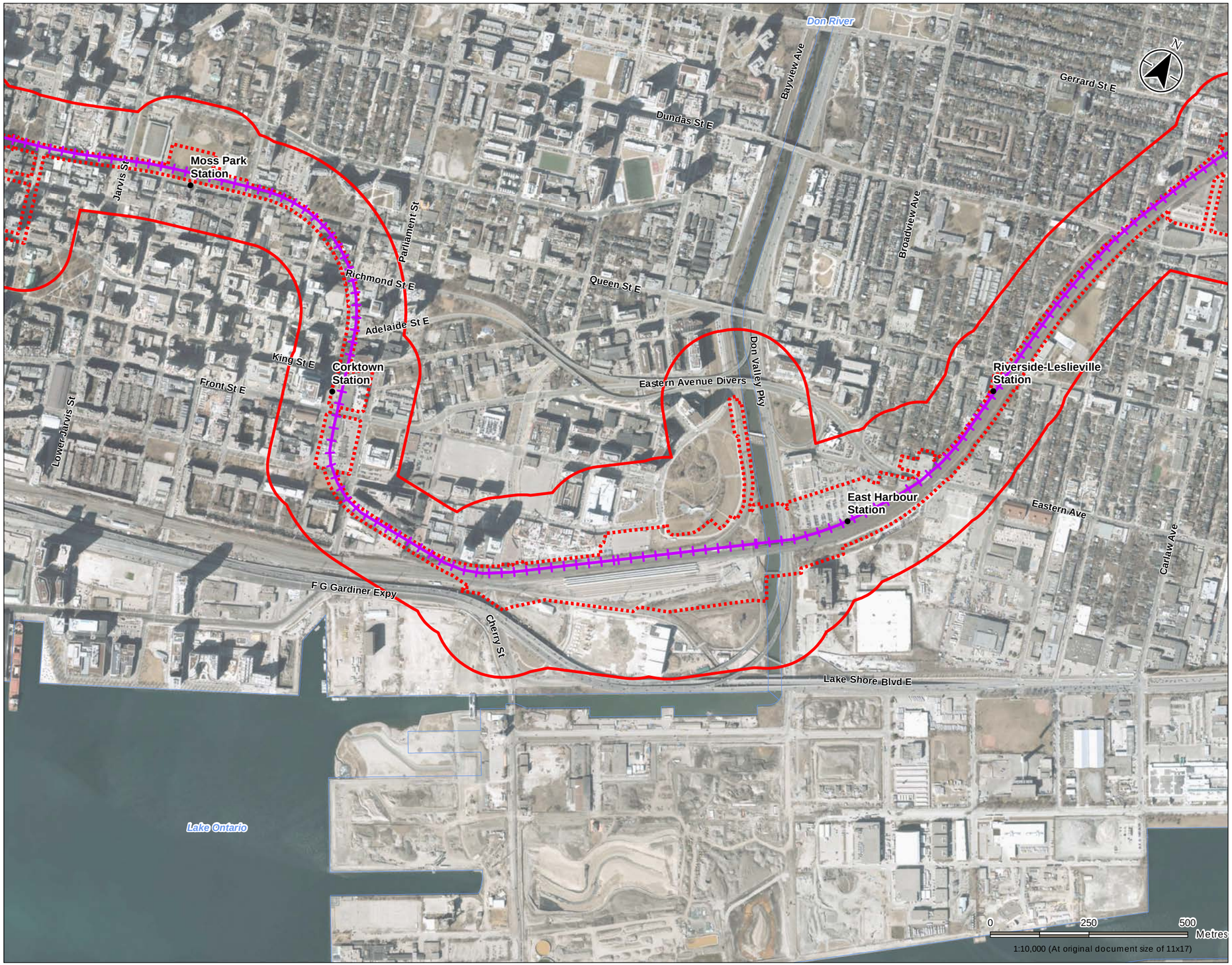
Title
Study Area Overview



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Legend

- Ontario Line South
- Project Footprint
- Study Area
- Waterbody

Notes

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Figure No.

2.3

Title

Study Area Overview

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Legend

- Ontario Line South
- Ontario Line North
- Project Footprint
- Study Area
- Watercourse (Permanent)
- Waterbody

Notes
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Figure No.
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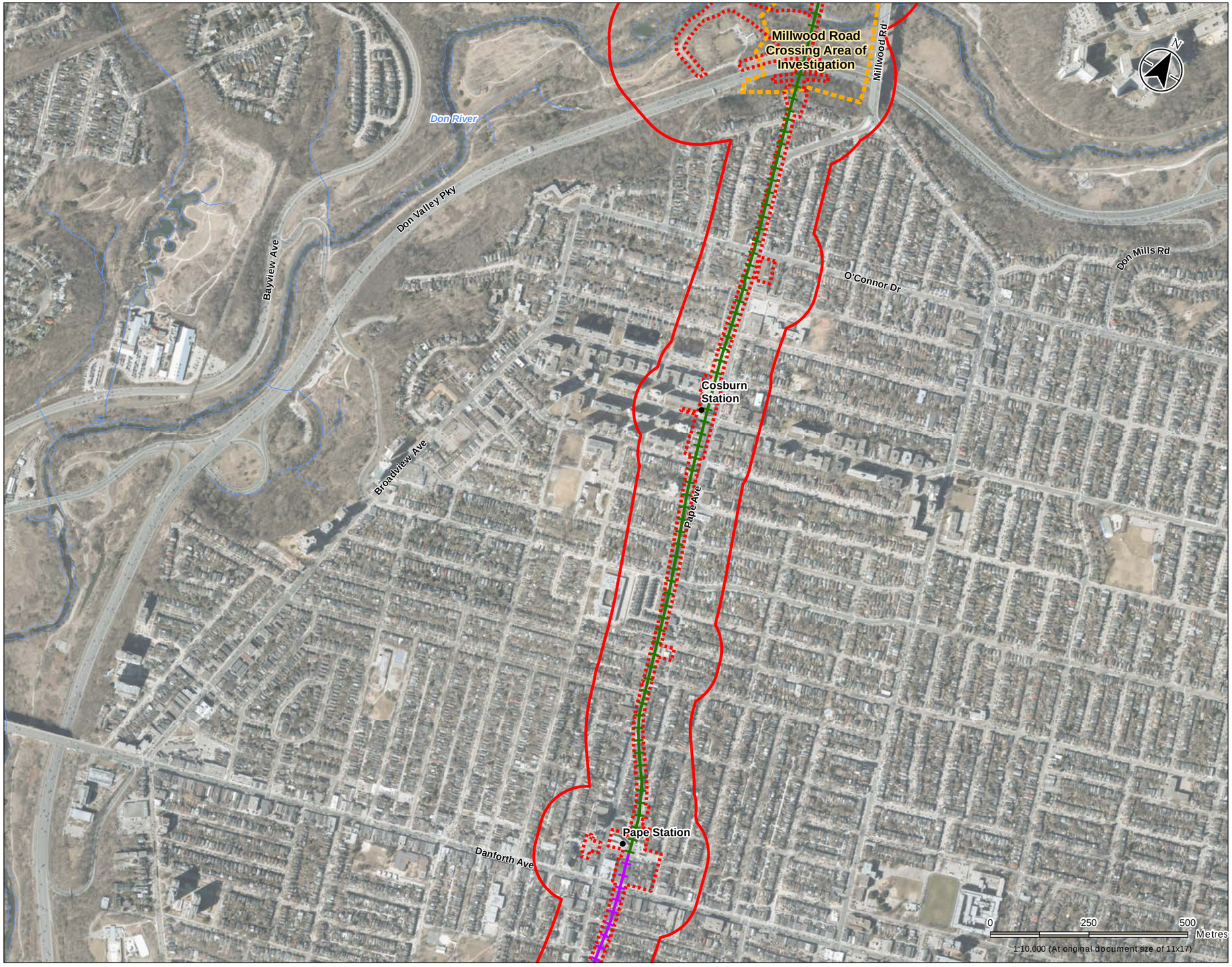
Study Area Overview



Stantec

Legend

- Ontario Line South
- Ontario Line North
- Project Footprint
- Study Area
- Areas of Investigation (AECOM)
- Watercourse (Permanent)
- Waterbody

Notes

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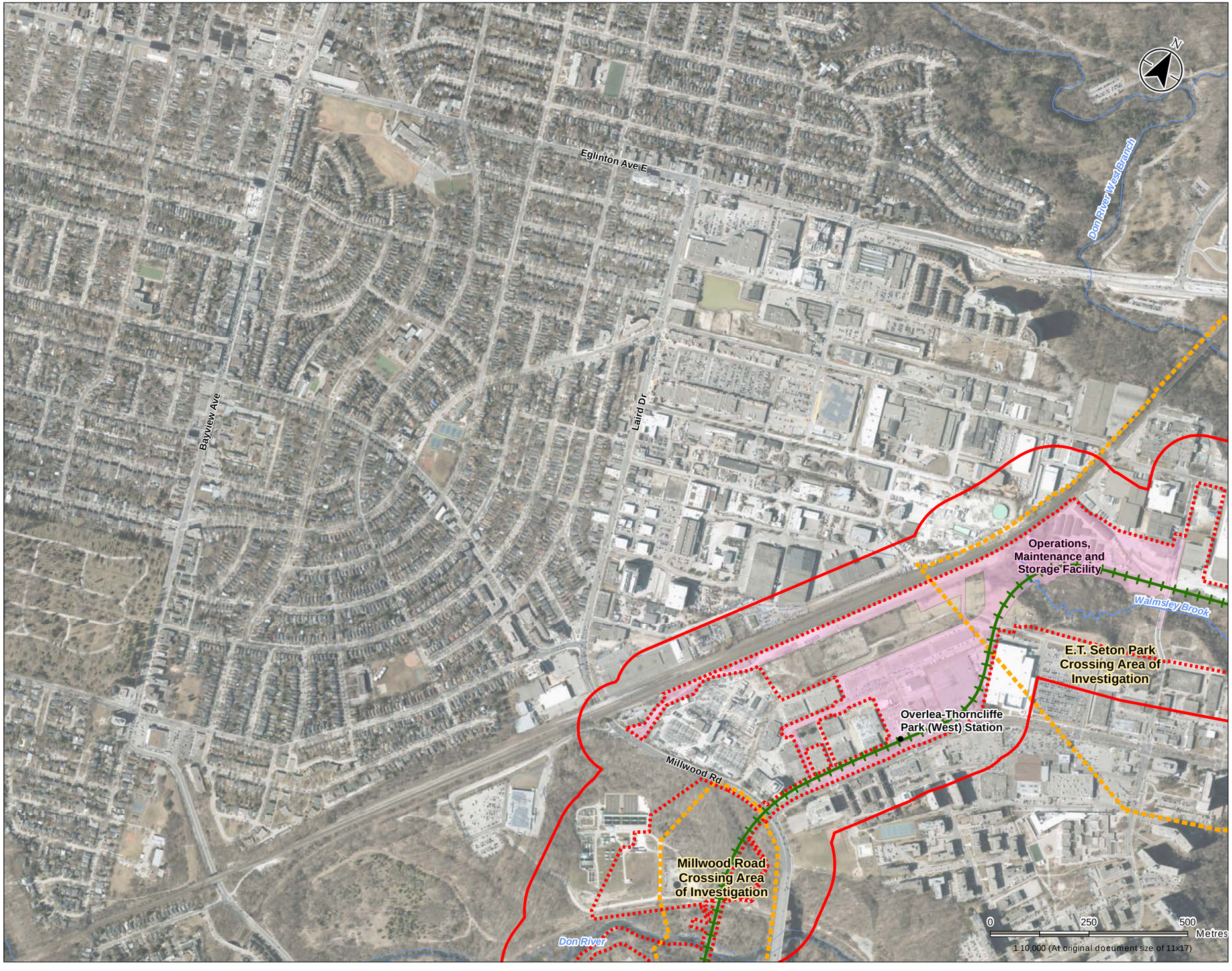
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
2.5

Title
Study Area Overview



Stantec

Legend

- Ontario Line North
- Project Footprint
- Operations, Maintenance and Storage Facility
- Study Area
- Areas of Investigation (AECOM)
- Watercourse (Permanent)
- Waterbody

Notes
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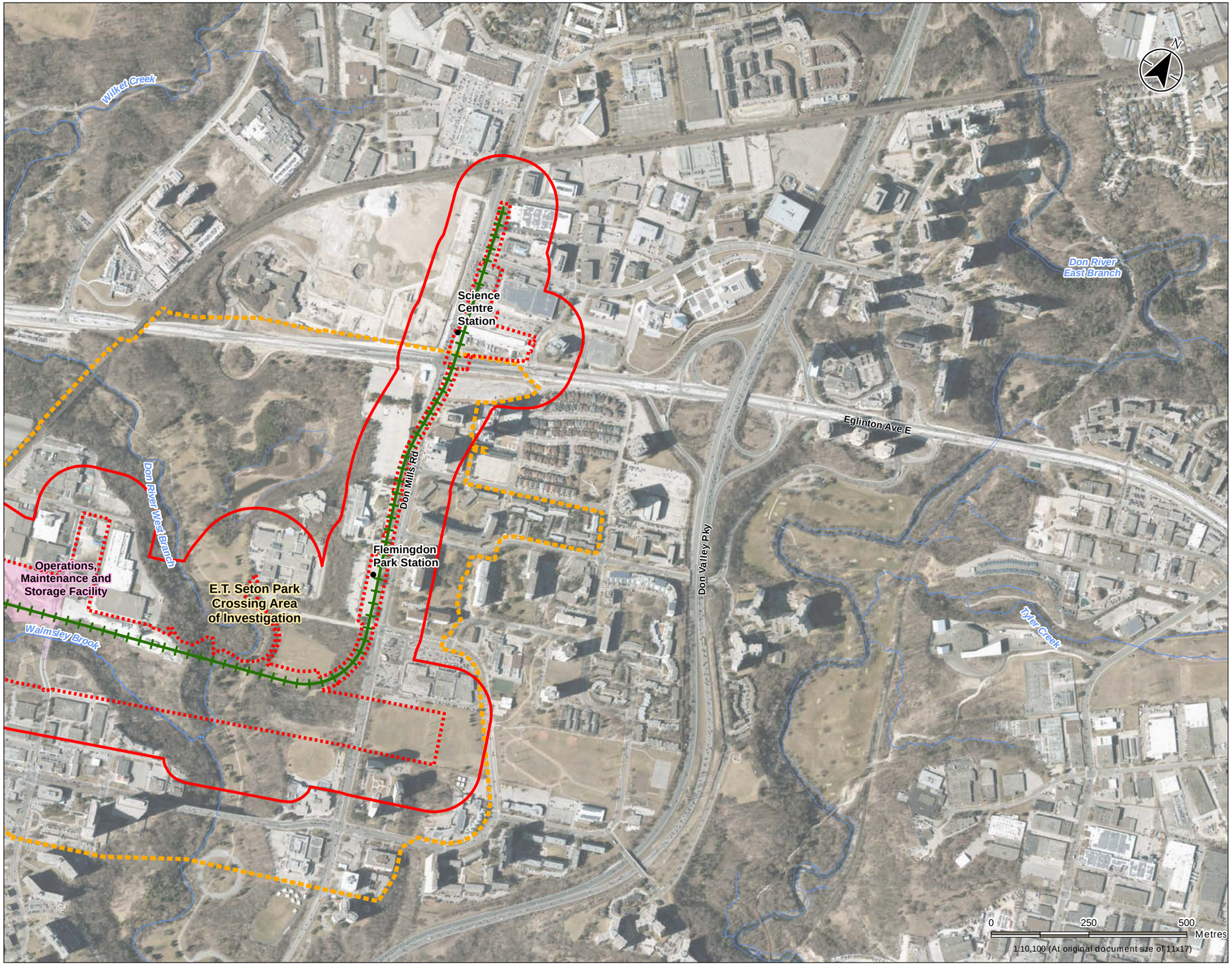
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
2.6

Title
Study Area Overview



Stantec

Legend

- Ontario Line North
- Project Footprint
- Operations, Maintenance and Storage Facility
- Study Area
- Areas of Investigation (AECOM)
- Watercourse (Permanent)
- Waterbody

Notes

1. Coordinate System: NAD 1983 CSRS MTM 10
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Project Location
Coity of Toronto, ON

160560009 REV4
Prepared by BCC on 2022-02-01

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
2.7

Title
Study Area Overview

ELC Description
CUH – Cultural Hedgerow
CUT1 – Mineral Cultural Thicket
FOD4 – Dry-Fresh Deciduous Forest Ecosite

Stantec

Legend
- Ontario Line West
- Project Footprint
- Study Area
- Natural Heritage System (City of Toronto)
- RavineByLaw (City of Toronto)
- ELC
- Potential Bat Roosting
- Regulation Limit (TRCA)

Notes
1. Coordinate System: NAD27 MTM zone 10
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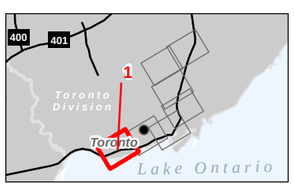

Project Location
Coity of Toronto, ON

160560009 REV4
Prepared by BCC on 2022-01-27

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.1

Title
Natural Heritage Results

Stantec

Legend

- Ontario Line West
- Ontario Line South
- Project Footprint
- Study Area
- Natural Heritage System (City of Toronto)
- Confirmed Peregrine
- ELC
- Regulation Limit (TRCA)

TRCA Natural Heritage System

- Potential Natural Cover

Notes

1. Coordinate System: NAD27 MTM zone 10
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Project Location
Coity of Toronto, ON

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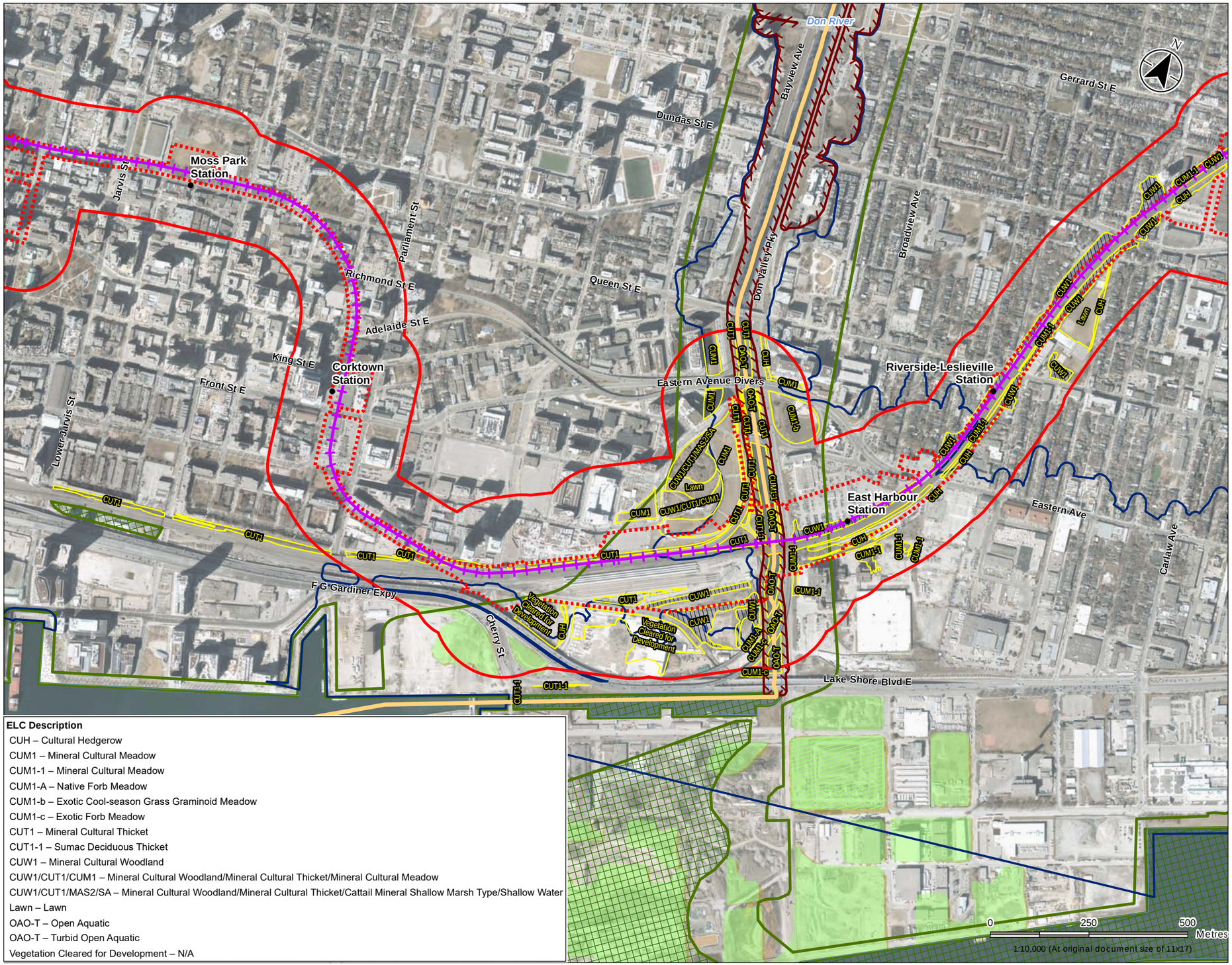
Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.2

Title
Natural Heritage Results



ELC Description

- CUH – Cultural Hedgerow
- CUM1 – Mineral Cultural Meadow
- CUM1-1 – Mineral Cultural Meadow
- CUM1-A – Native Forb Meadow
- CUM1-b – Exotic Cool-season Grass Graminoid Meadow
- CUM1-c – Exotic Forb Meadow
- CUT1 – Mineral Cultural Thicket
- CUT1-1 – Sumac Deciduous Thicket
- CUW1 – Mineral Cultural Woodland
- CUW1/CUT1/CUM1 – Mineral Cultural Woodland/Mineral Cultural Thicket/Mineral Cultural Meadow
- CUW1/CUT1/MAS2/SA – Mineral Cultural Woodland/Mineral Cultural Thicket/Cattail Mineral Shallow Marsh Type/Shallow Water
- Lawn – Lawn
- OAO-T – Open Aquatic
- OAO-T – Turbid Open Aquatic
- Vegetation Cleared for Development – N/A

Stantec

Legend

- Ontario Line South
- Project Footprint
- Study Area

Thermal Regime

- Warm

- Environmentally Significant Area (City of Toronto)
- Natural Heritage System (City of Toronto)
- RavineByLaw (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting
- Regulation Limit (TRCA)

TRCA Natural Heritage System

- Existing Natural Cover
- Potential Natural Cover

Notes
1. Coordinate System: NAD27 MTM zone 10
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Project Location
Coity of Toronto, ON

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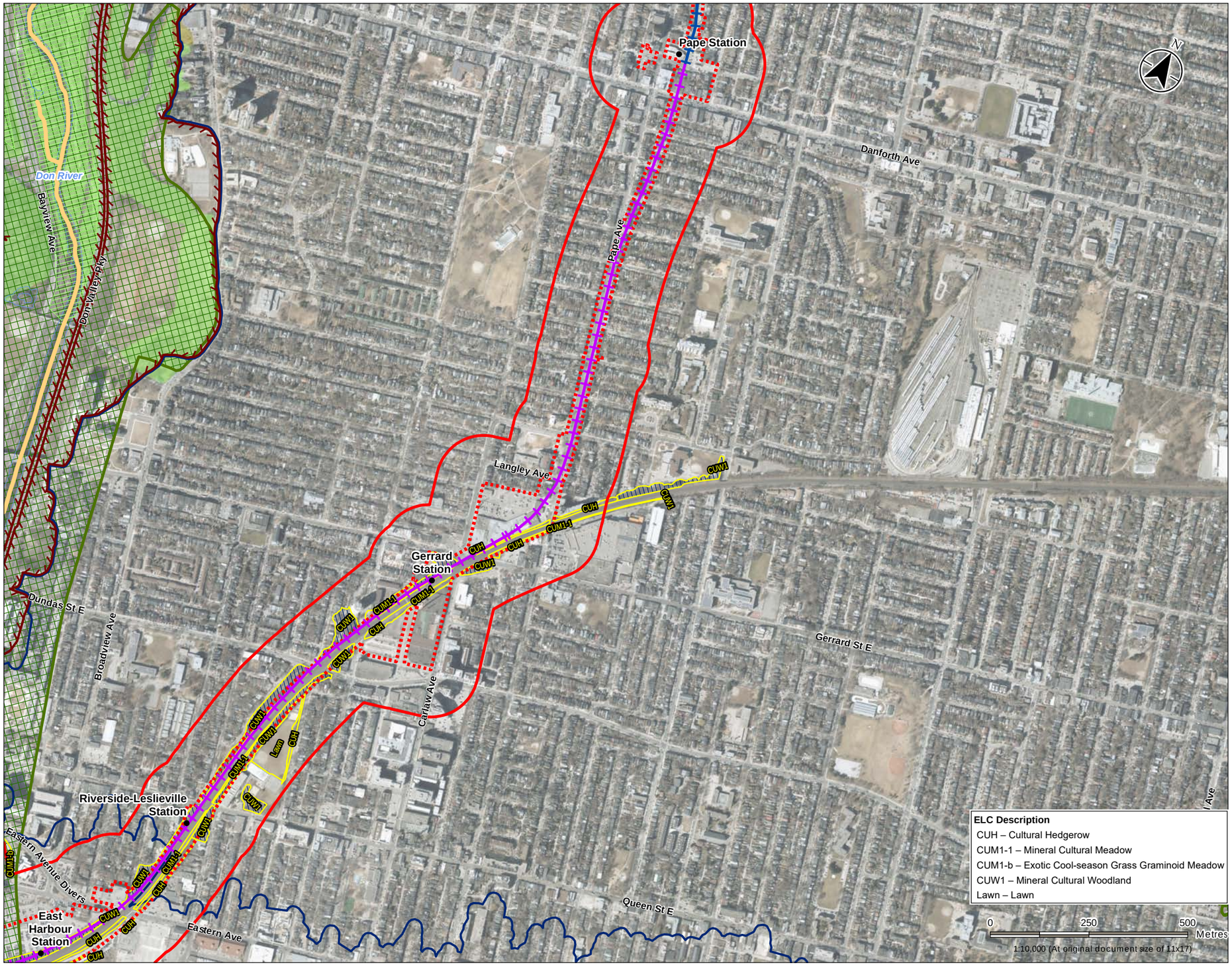
Prepared by BCC on 2022-01-27

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.3

Title
Natural Heritage Results



ELC Description

- CUH – Cultural Hedgerow
- CUM1-1 – Mineral Cultural Meadow
- CUM1-b – Exotic Cool-season Grass Graminoid Meadow
- CUW1 – Mineral Cultural Woodland
- Lawn – Lawn

Stantec

Legend

- Ontario Line South
- Ontario Line North
- Project Footprint
- Study Area

Thermal Regime

- Warm
- Watercourse (Permanent)
- Environmentally Significant Area (City of Toronto)
- Natural Heritage System (City of Toronto)
- RavineByLaw (City of Toronto)
- ELC
- Potential Bat Roosting
- Regulation Limit (TRCA)

TRCA Natural Heritage System

- Existing Natural Cover
- Potential Natural Cover

Notes

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Project Location
Coity of Toronto, ON

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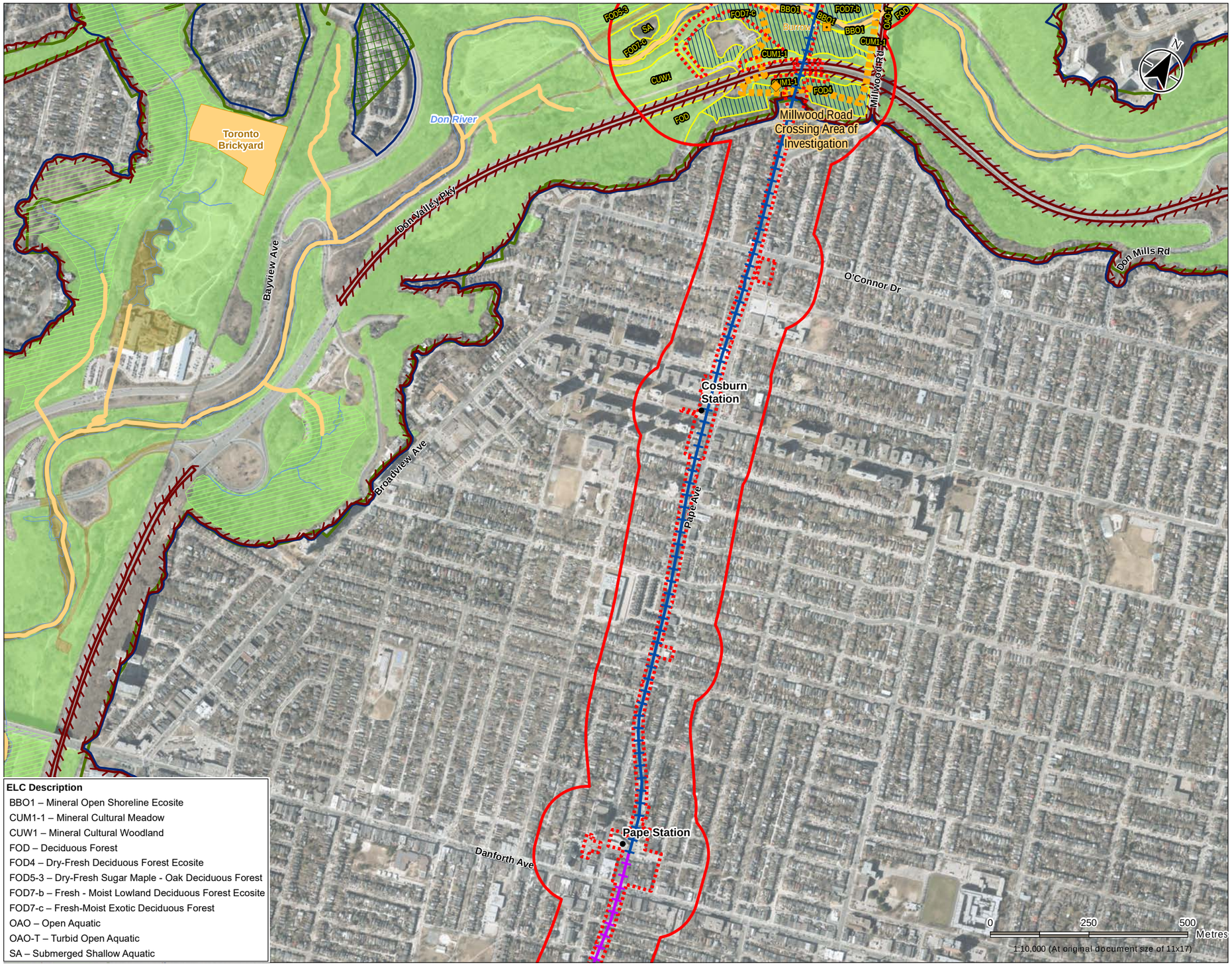
Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.4

Title
Natural Heritage Results



ELC Description

- BBO1 – Mineral Open Shoreline Ecosite
- CUM1-1 – Mineral Cultural Meadow
- CUW1 – Mineral Cultural Woodland
- FOD – Deciduous Forest
- FOD4 – Dry-Fresh Deciduous Forest Ecosite
- FOD5-3 – Dry-Fresh Sugar Maple - Oak Deciduous Forest
- FOD7-b – Fresh - Moist Lowland Deciduous Forest Ecosite
- FOD7-c – Fresh-Moist Exotic Deciduous Forest
- OAO – Open Aquatic
- OAO-T – Turbid Open Aquatic
- SA – Submerged Shallow Aquatic

Stantec

Legend

- Ontario Line South
- Ontario Line North
- Project Footprint
- Study Area
- Areas of Investigation (AECOM)
- Mammal Burrow

Incidental Observations

- Monarch

Thermal Regime

- Warm
- Watercourse (Permanent)
- Environmentally Significant Area (City of Toronto)
- Natural Heritage System (City of Toronto)
- RavineByLaw (City of Toronto)
- ELC
- Potential Bat Roosting

Areas of Natural and Scientific Interest

- Provincially Significant Earth Science Area of Natural and Scientific Interest
- Regulation Limit (TRCA)

TRCA Natural Heritage System

- Existing Natural Cover
- Potential Natural Cover

Notes
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Project Location
Coity of Toronto, ON

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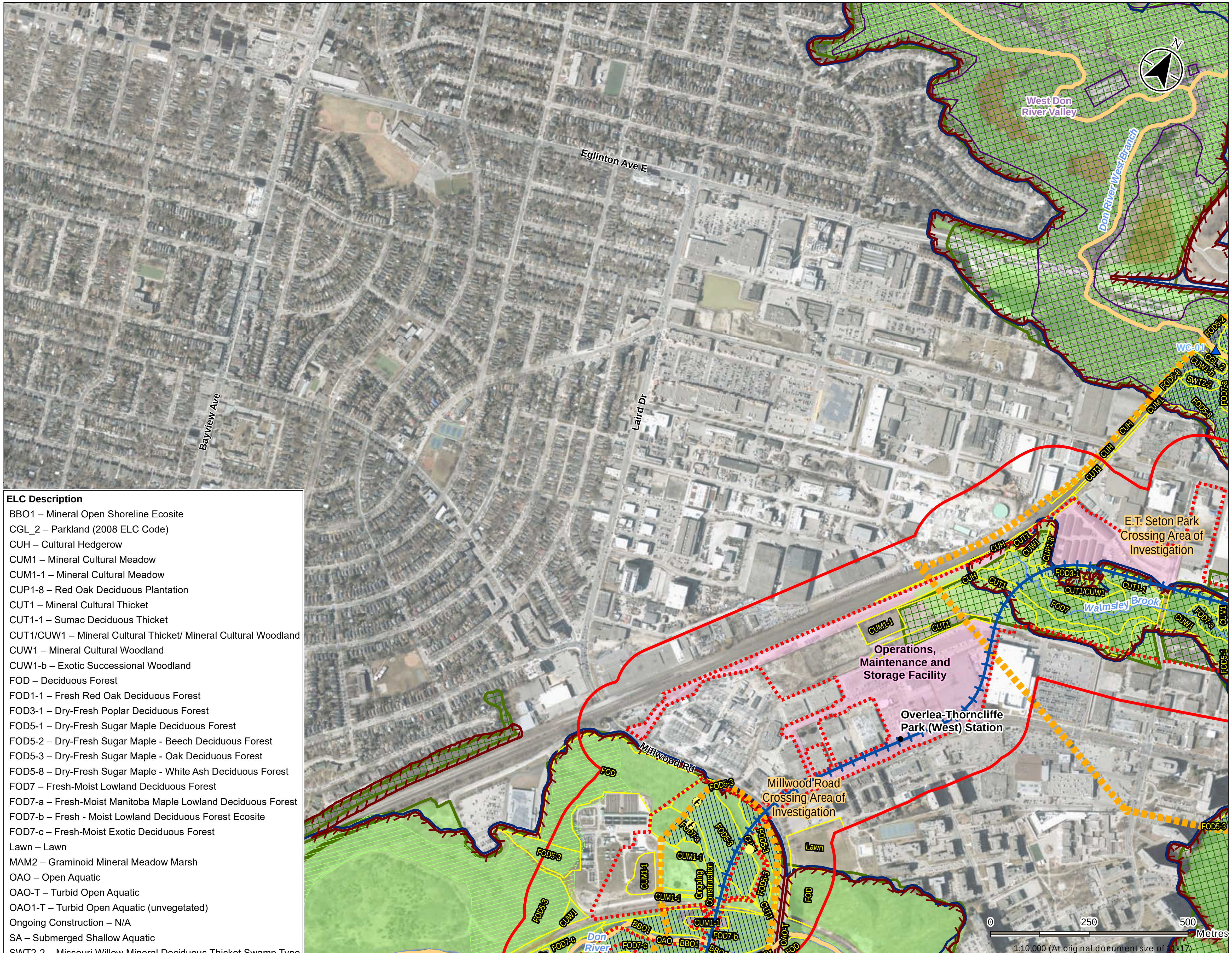
Prepared by BCC on 2022-01-27

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.5

Title
Natural Heritage Results



ELC Description

BBO1 – Mineral Open Shoreline Ecosite
CGL_2 – Parkland (2008 ELC Code)
CUH – Cultural Hedgerow
CUM1 – Mineral Cultural Meadow
CUM1-1 – Mineral Cultural Meadow
CUP1-8 – Red Oak Deciduous Plantation
CUT1 – Mineral Cultural Thicket
CUT1-1 – Sumac Deciduous Thicket
CUT1/CUW1 – Mineral Cultural Thicket/ Mineral Cultural Woodland
CUW1 – Mineral Cultural Woodland
CUW1-b – Exotic Successional Woodland
FOD – Deciduous Forest
FOD1-1 – Fresh Red Oak Deciduous Forest
FOD3-1 – Dry-Fresh Poplar Deciduous Forest
FOD5-1 – Dry-Fresh Sugar Maple Deciduous Forest
FOD5-2 – Dry-Fresh Sugar Maple - Beech Deciduous Forest
FOD5-3 – Dry-Fresh Sugar Maple - Oak Deciduous Forest
FOD5-8 – Dry-Fresh Sugar Maple - White Ash Deciduous Forest
FOD7 – Fresh-Moist Lowland Deciduous Forest
FOD7-a – Fresh-Moist Manitoba Maple Lowland Deciduous Forest
FOD7-b – Fresh - Moist Lowland Deciduous Forest Ecosite
FOD7-c – Fresh-Moist Exotic Deciduous Forest
Lawn – Lawn
MAM2 – Graminoid Mineral Meadow Marsh
OAO – Open Aquatic
OAO-T – Turbid Open Aquatic
OAO1-T – Turbid Open Aquatic (unvegetated)
Ongoing Construction – N/A
SA – Submerged Shallow Aquatic
SWT2-2 – Missouri Willow Mineral Deciduous Thicket Swamp Type

Stantec

Legend

Ontario Line North
Project Footprint
Operations, Maintenance and Storage Facility
Study Area
Areas of Investigation (AECOM)
Mammal Burrow

Incidental Observations

Eastern Wood-pewee
Water Crossing

Thermal Regime

Warm
Watercourse (Permanent)
Environmentally Significant Area (City of Toronto)
Natural Heritage System (City of Toronto)
RavineByLaw (City of Toronto)
ELC
Potential Bat Roosting

Areas of Natural and Scientific Interest

Candidate Regionally Significant Life Science Area of Natural and Scientific Interest
Regulation Limit (TRCA)

TRCA Natural Heritage System

Existing Natural Cover
Potential Natural Cover

Notes
1. Coordinate System: NAD27 MTM zone 10
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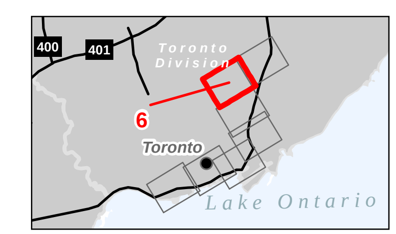


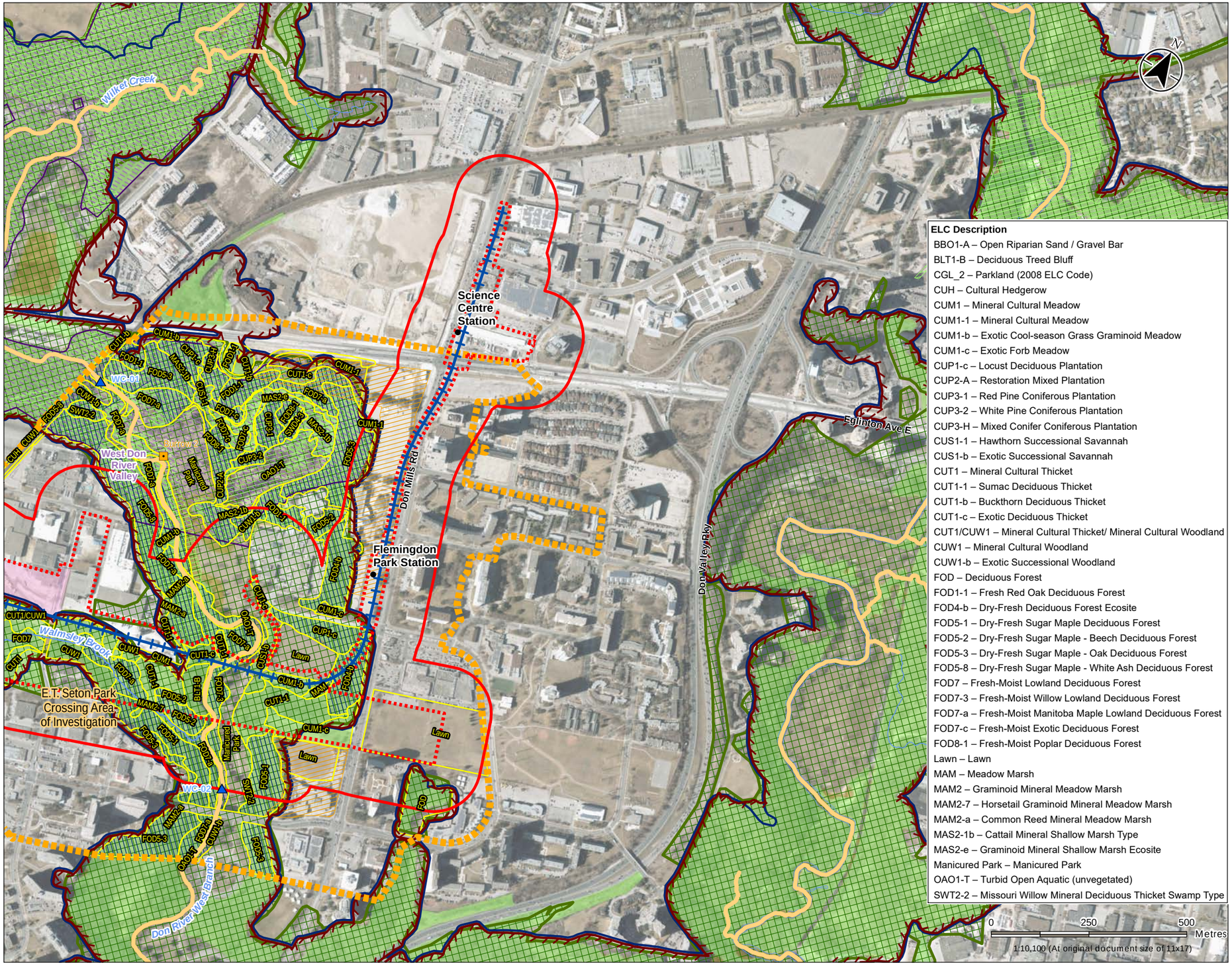
Project Location
Coity of Toronto, ON

160560009 REV4
Prepared by BCC on 2022-01-27

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.6

Title
Natural Heritage Results



ELC Description

- BBO1-A – Open Riparian Sand / Gravel Bar
- BLT1-B – Deciduous Treed Bluff
- CGL_2 – Parkland (2008 ELC Code)
- CUH – Cultural Hedgerow
- CUM1 – Mineral Cultural Meadow
- CUM1-1 – Mineral Cultural Meadow
- CUM1-b – Exotic Cool-season Grass Graminoid Meadow
- CUM1-c – Exotic Forb Meadow
- CUP1-c – Locust Deciduous Plantation
- CUP2-A – Restoration Mixed Plantation
- CUP3-1 – Red Pine Coniferous Plantation
- CUP3-2 – White Pine Coniferous Plantation
- CUP3-H – Mixed Conifer Coniferous Plantation
- CUS1-1 – Hawthorn Successional Savannah
- CUS1-b – Exotic Successional Savannah
- CUT1 – Mineral Cultural Thicket
- CUT1-1 – Sumac Deciduous Thicket
- CUT1-b – Buckthorn Deciduous Thicket
- CUT1-c – Exotic Deciduous Thicket
- CUT1/CUW1 – Mineral Cultural Thicket/ Mineral Cultural Woodland
- CUW1 – Mineral Cultural Woodland
- CUW1-b – Exotic Successional Woodland
- FOD – Deciduous Forest
- FOD1-1 – Fresh Red Oak Deciduous Forest
- FOD4-b – Dry-Fresh Deciduous Forest Ecosite
- FOD5-1 – Dry-Fresh Sugar Maple Deciduous Forest
- FOD5-2 – Dry-Fresh Sugar Maple - Beech Deciduous Forest
- FOD5-3 – Dry-Fresh Sugar Maple - Oak Deciduous Forest
- FOD5-8 – Dry-Fresh Sugar Maple - White Ash Deciduous Forest
- FOD7 – Fresh-Moist Lowland Deciduous Forest
- FOD7-3 – Fresh-Moist Willow Lowland Deciduous Forest
- FOD7-a – Fresh-Moist Manitoba Maple Lowland Deciduous Forest
- FOD7-c – Fresh-Moist Exotic Deciduous Forest
- FOD8-1 – Fresh-Moist Poplar Deciduous Forest
- Lawn – Lawn
- MAM – Meadow Marsh
- MAM2 – Graminoid Mineral Meadow Marsh
- MAM2-7 – Horsetail Graminoid Mineral Meadow Marsh
- MAM2-a – Common Reed Mineral Meadow Marsh
- MAS2-1b – Cattail Mineral Shallow Marsh Type
- MAS2-e – Graminoid Mineral Shallow Marsh Ecosite
- Manicured Park – Manicured Park
- OAO1-T – Turbid Open Aquatic (unvegetated)
- SWT2-2 – Missouri Willow Mineral Deciduous Thicket Swamp Type

0 250 500 Metres

1:10,100 (At original document size of 11x17)

Stantec

Legend

- Ontario Line North
- Project Footprint
- Operations, Maintenance and Storage Facility
- Study Area
- Areas of Investigation (AECOM)
- Mammal Burrow
- Water Crossing

Thermal Regime

- Warm
- Watercourse (Permanent)
- Environmentally Significant Area (City of Toronto)
- Natural Heritage System (City of Toronto)
- RavineByLaw (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting

Areas of Natural and Scientific Interest

- Candidate Regionally Significant Life Science Area of Natural and Scientific Interest
- Regulation Limit (TRCA)

TRCA Natural Heritage System

- Existing Natural Cover
- Potential Natural Cover

Notes
1. Coordinate System: NAD27 MTM zone 10
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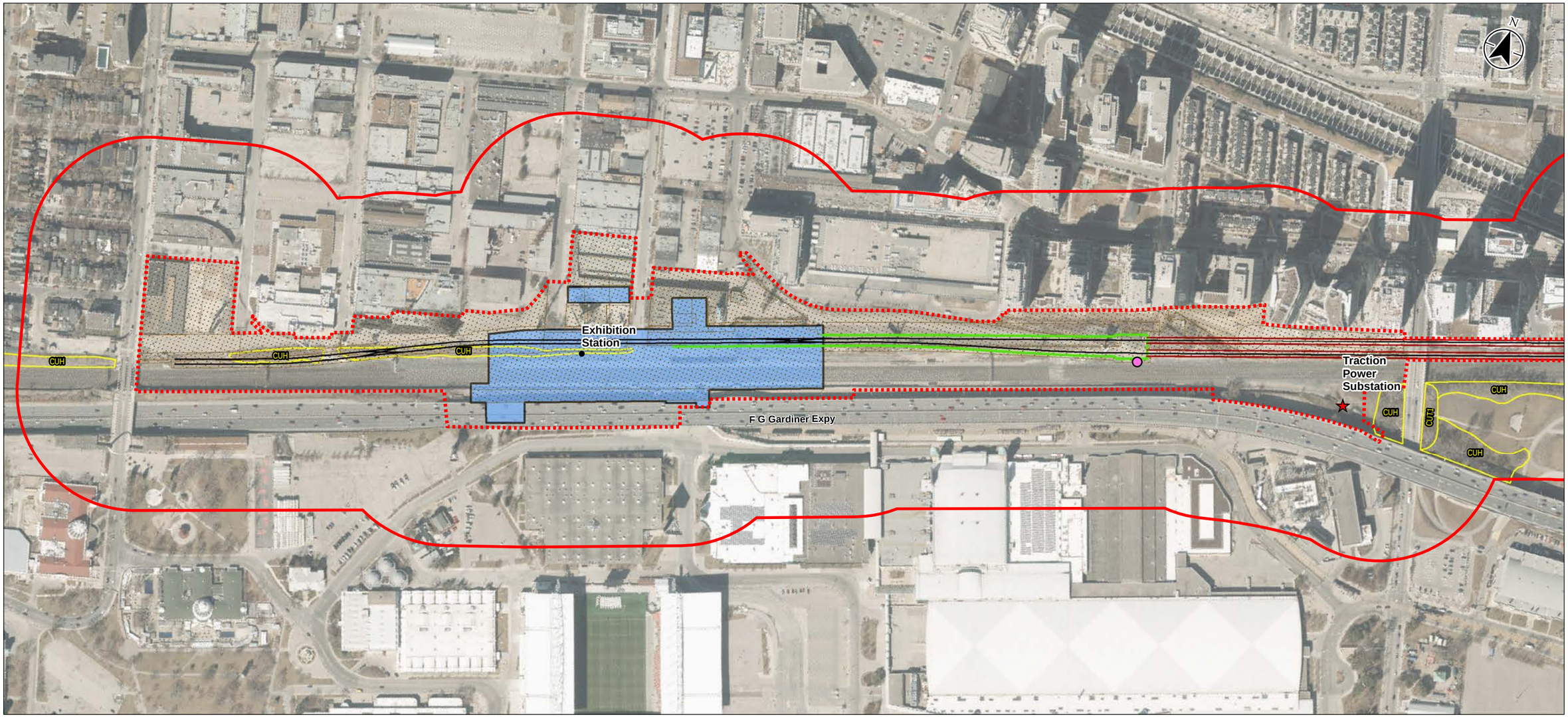
Project Location
Coity of Toronto, ON

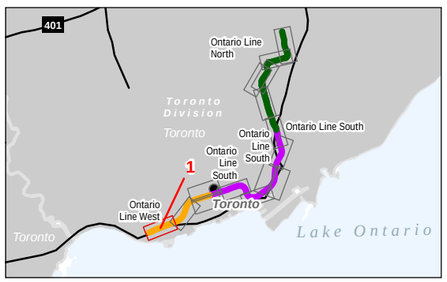
160560009 REV4
Prepared by BCC on 2022-01-27

Client/Project
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
3.7

Title
Natural Heritage Results





Notes
1. Coordinate System: NAD27 MTM zone 10
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Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Portal
- Station
- Emergency Egress Building (EEB)
- Traction Power Substation
- Construction Staging and Construction Area
- ELC

0 100 200 Metres

1:4,000 (At original document size of 11x17)

Stantec

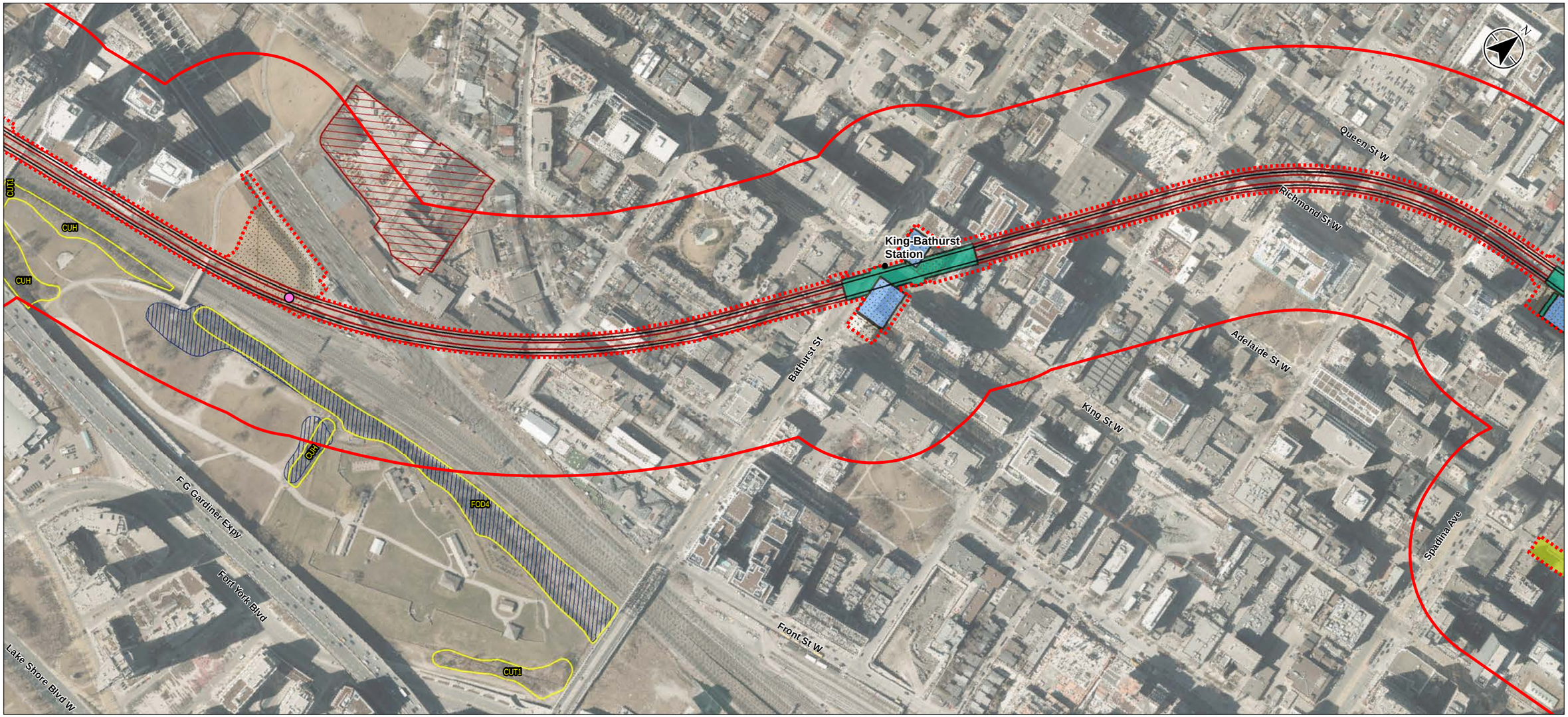
Project Location
Toronto, ON

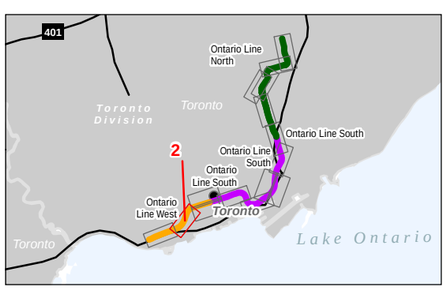
Prepared by BCC on 2022-04-07

Client/Project
160560009 REVA
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
4.1

Title
Natural Heritage Results with Conceptual Design





Notes
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Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Station
- Station Platform - Subsurface Level
- Streetcar Diversion
- Emergency Egress Building (EEB)
- Construction Staging and Construction Area
- ELC
- Potential Bat Roosting
- Potential Bat SAR Habitat

0 100 200 Metres

1:4,000 (At original document size of 11x17)

Stantec

Project Location
Toronto, ON

Prepared by BCC on 2022-04-07

Client/Project
160560009 REVA
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
4.2

Title
Natural Heritage Results with Conceptual Design

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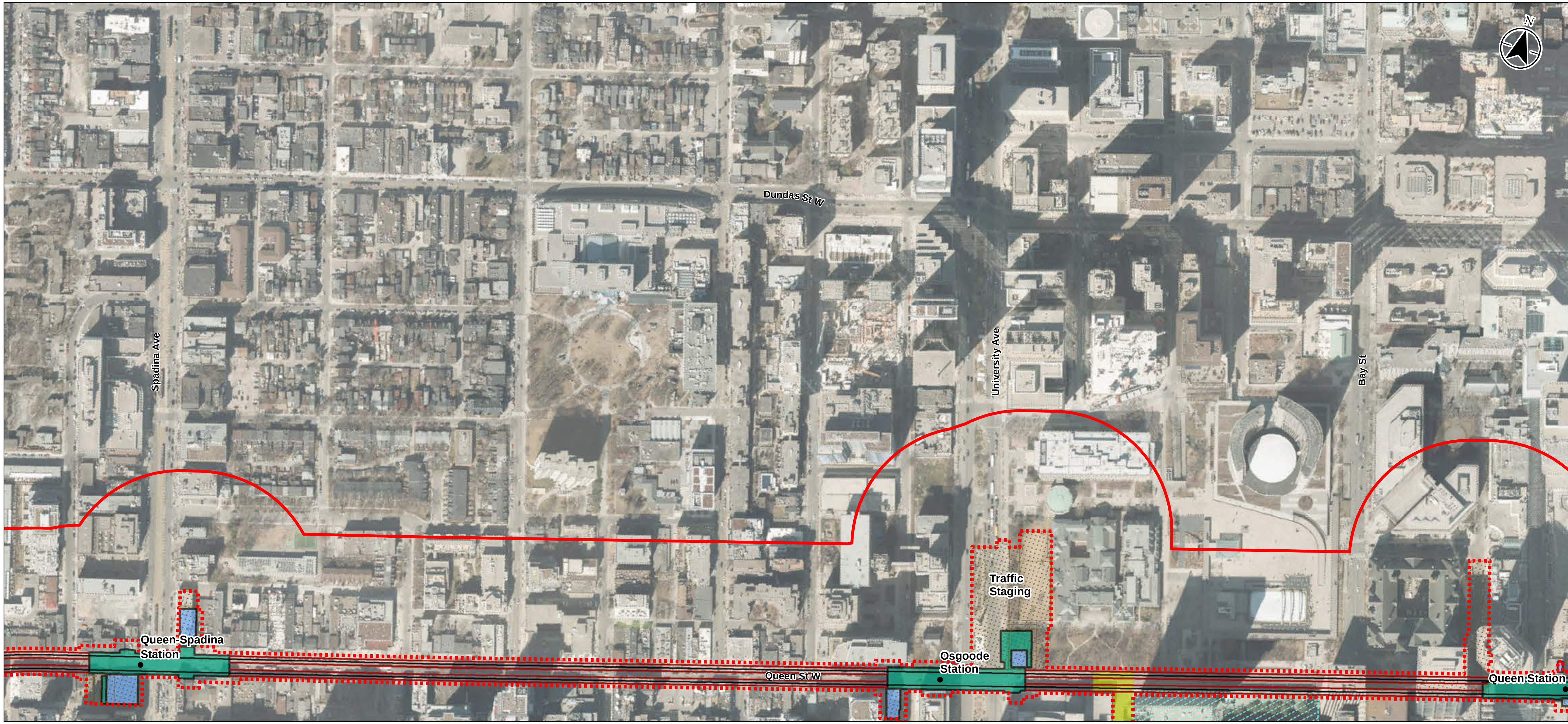

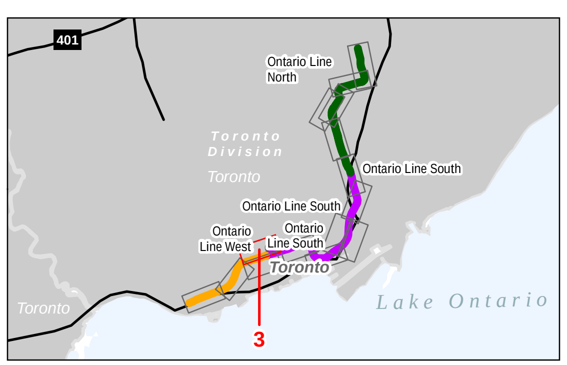

Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Station
- Station Platform - Subsurface Level
- Streetcar Diversion
- Construction Staging and Construction Area
- Confirmed Peregrine

0 100 200 Metres

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Stantec

Project Location Toronto, ON

Prepared by BCC on 2022-04-07

Client/Project 160560009 REVA

HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
4.3

Title
Natural Heritage Results with Conceptual Design

Notes
1. Coordinate System: NAD27 MTM zone 10
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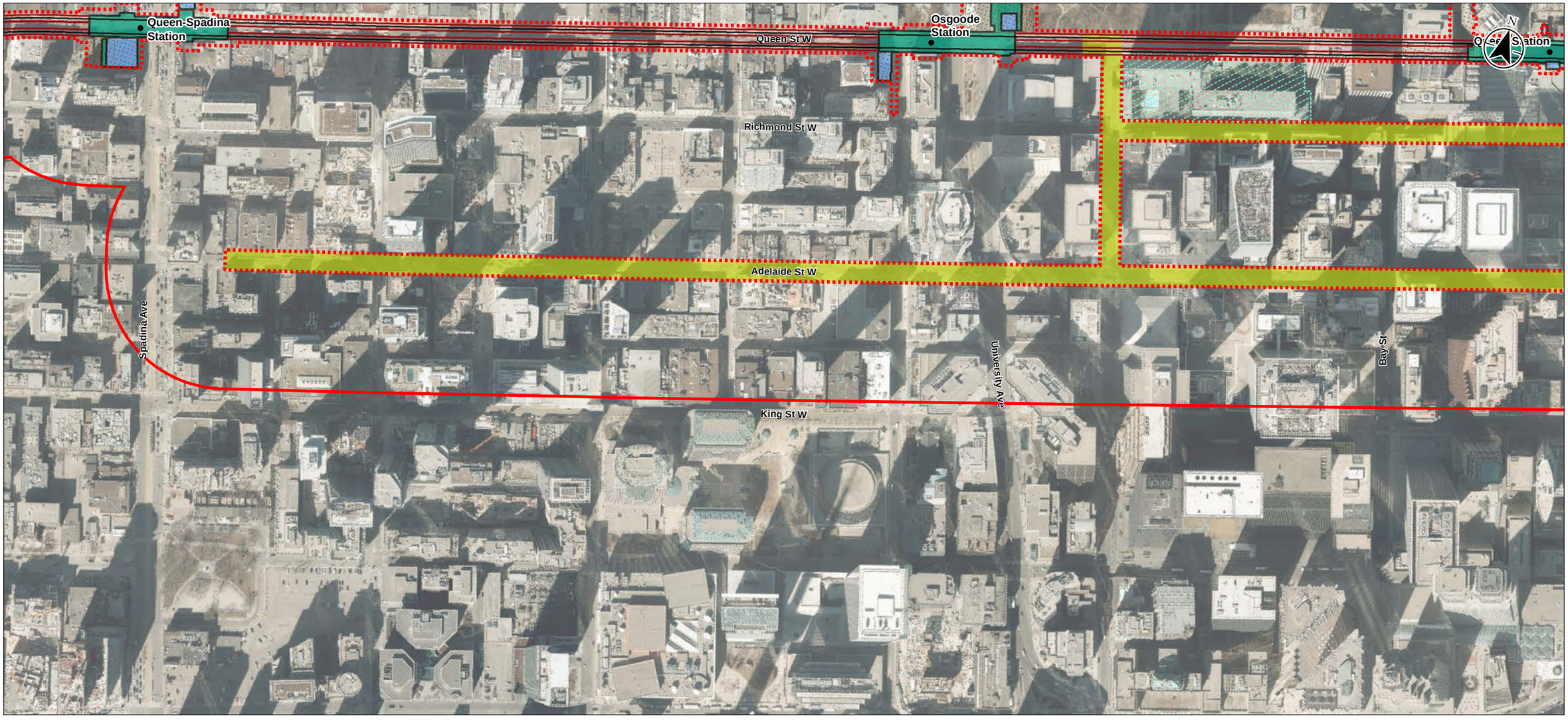
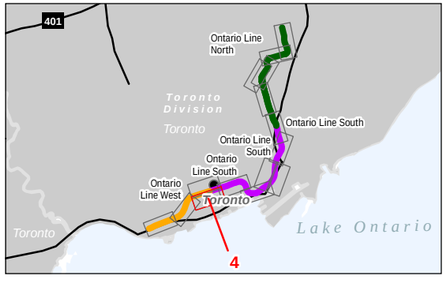
\\cd1215-f01\work_group\01605\active\160560009\11_data\gis_cad\gis\mxds\ecosystems\report_figures\20210924_NETR_rev1\160560009_NE_Fig04_1-15_NHDesign.mxd Revised: 2022-04-07 By: bcowper





Notes
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Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Station
- Station Platform - Subsurface Level
- Streetcar Diversion
- Construction Staging and Construction Area
- Confirmed Peregrine

0 100 200 Metres

1:4,000 (At original document size of 11x17)

Stantec

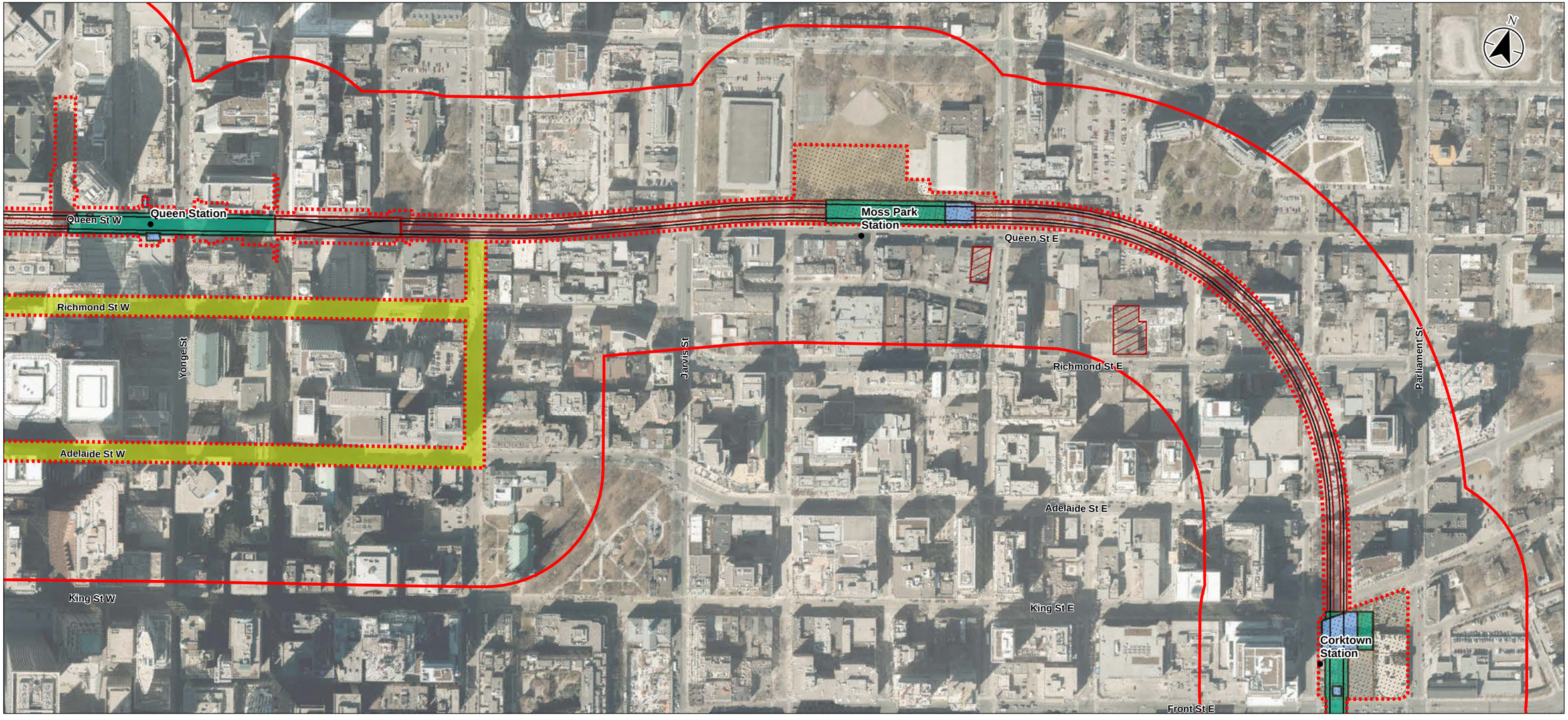
Project Location
Toronto, ON

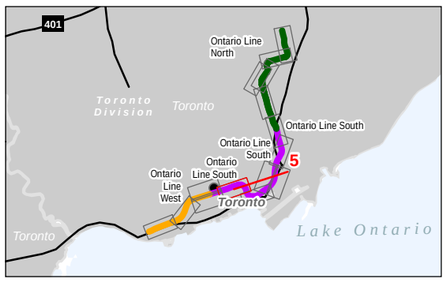
Prepared by BCC on 2022-04-07

Client/Project
160560009 REVA
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
4.4

Title
Natural Heritage Results with Conceptual Design





Notes
1. Coordinate System: NAD27 MTM zone 10
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Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Station
- Station Platform - Subsurface Level
- Streetcar Diversion
- Construction Staging and Construction Area
- Potential Bat SAR Habitat

0 100 200 Metres

1:4,000 (At original document size of 11x17)

Stantec

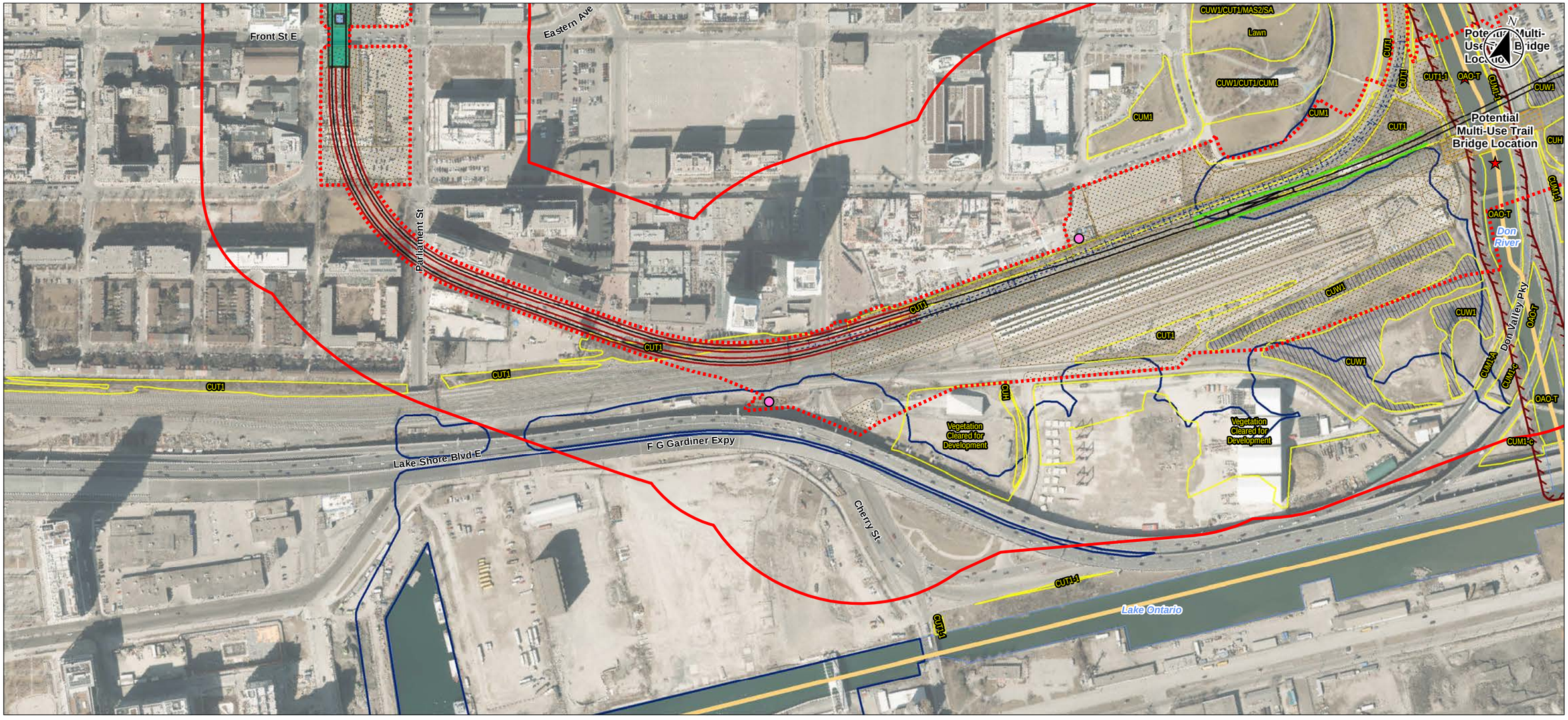
Project Location
Toronto, ON

Prepared by BCC on 2022-04-07

Client/Project
160560009 REVA
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
4.5

Title
Natural Heritage Results with Conceptual Design



Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Portal
- Station
- Station Platform - Subsurface Level
- Emergency Egress Building (EEB)
- Potential Multi-Use Trail Bridge Location
- RH Final Alignment
- Construction Staging and Construction Area

Thermal Regime

- Warm
- Ravine By Law (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting
- Regulation Limit (TRCA)

Notes
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0 100 200 Metres

1:4,000 (At original document size of 11x17)

Stantec

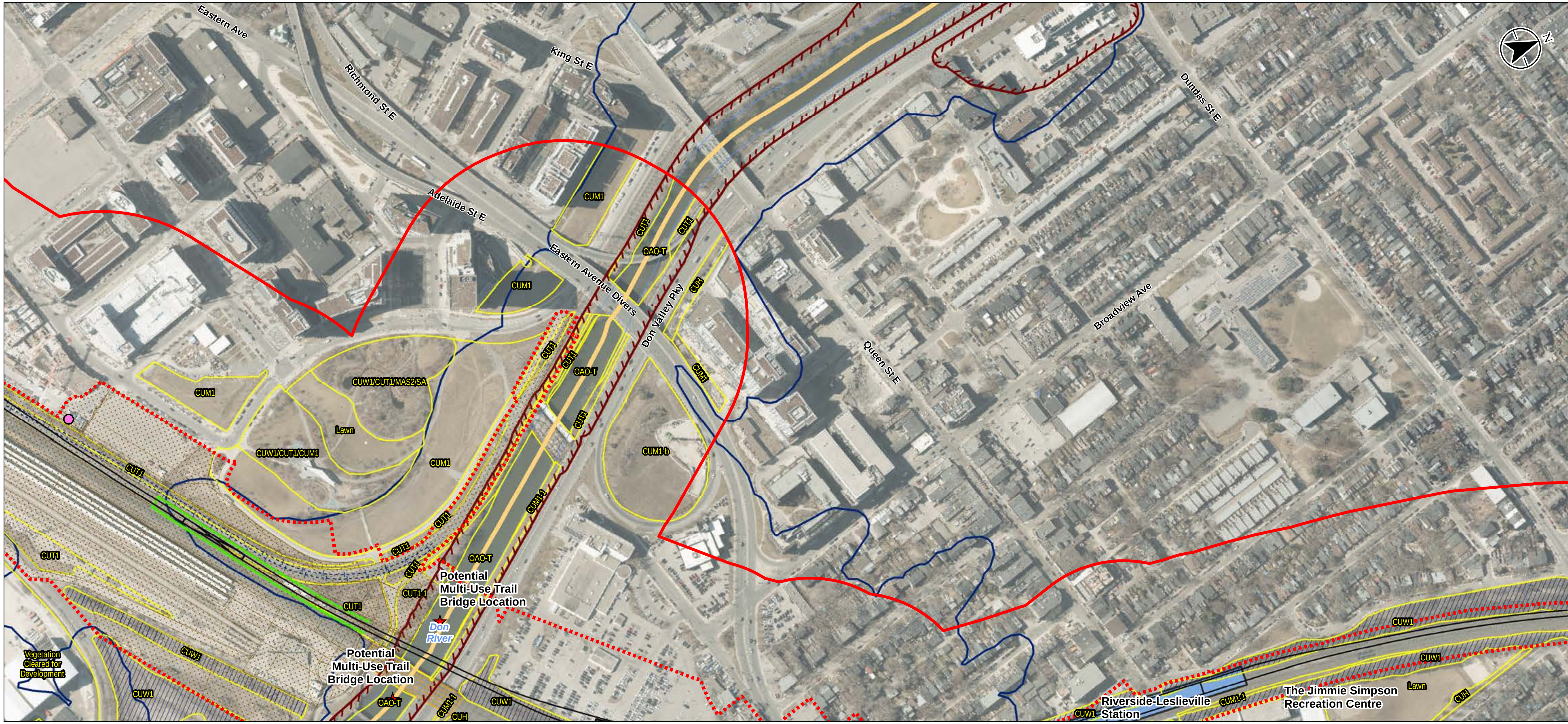
Project Location
Toronto, ON

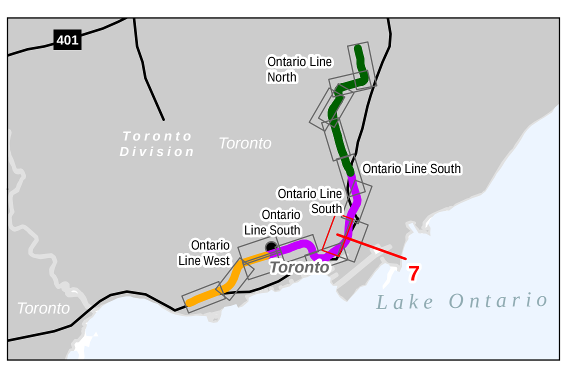
Prepared by BCC on 2022-04-07

Client/Project
160560009 REVA
HDR CORPORATION
ONTARIO LINE TA
NATURAL ENVIRONMENT TECHNICAL REPORT

Figure No.
4.6

Title
Natural Heritage Results with Conceptual Design





Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Portal
- Station
- Emergency Egress Building (EEB)
- Potential Multi-Use Trail Bridge Location
- RH Final Alignment
- Construction Staging and Construction Area

Thermal Regime

- Warm
- Ravine By Law (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting
- Regulation Limit (TRCA)

0 100 200 Metres

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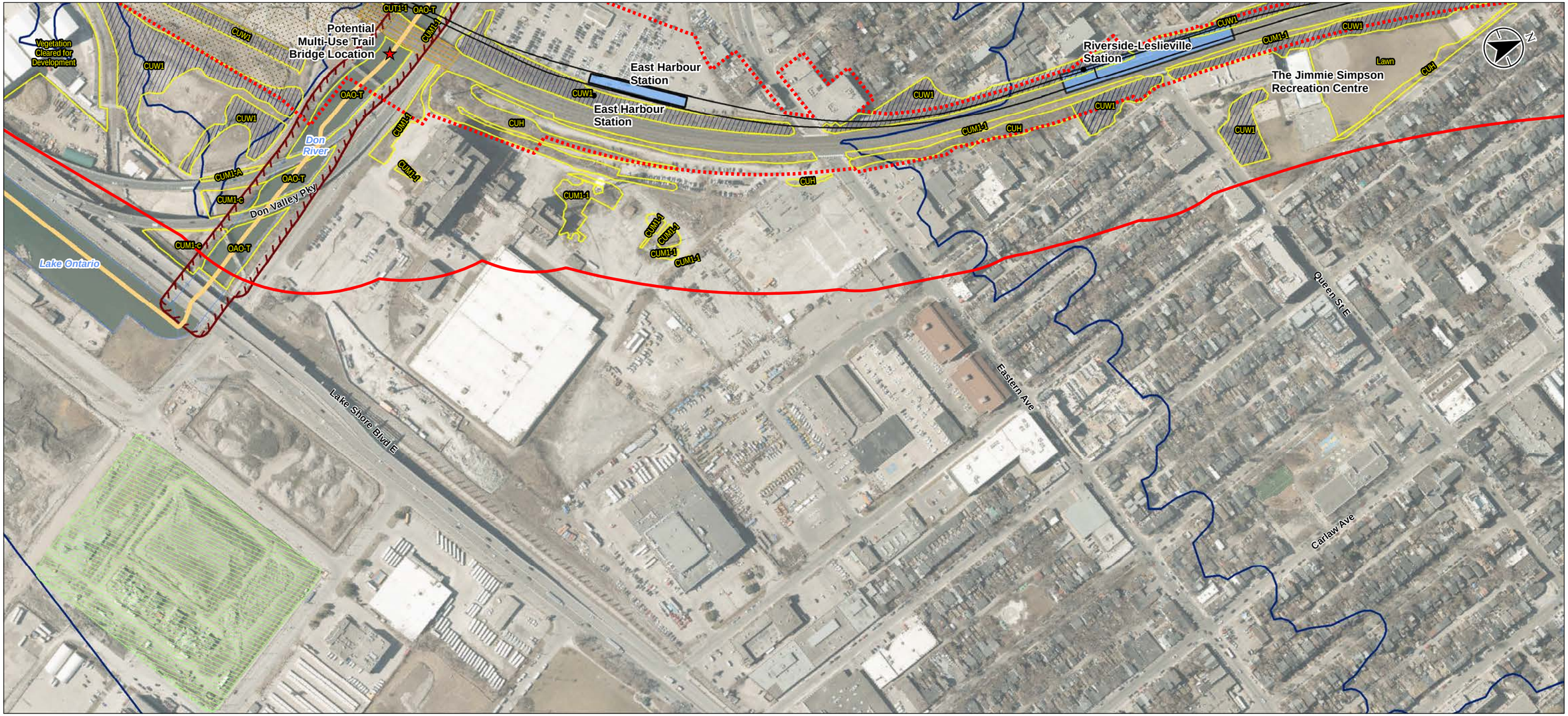
Figure No.
4.7

Title
Natural Heritage Results with Conceptual Design



Notes
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Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Station
- Potential Multi-Use Trail Bridge Location
- Construction Staging and Construction Area

Thermal Regime

- Warm
- Environmentally Significant Area (City of Toronto)
- Ravine By Law (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting
- Regulation Limit (TRCA)

0 100 200 Metres

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Figure No.
4.8

Title
Natural Heritage Results with Conceptual Design

Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Portal
- Station
- Emergency Egress Building (EEB)
- Proposed Sewer Relocation
- Construction Staging and Construction Area
- ELC
- Potential Bat Roosting
- Potential Bat SAR Habitat

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Figure No.
4.9

Title
Natural Heritage Results with Conceptual Design

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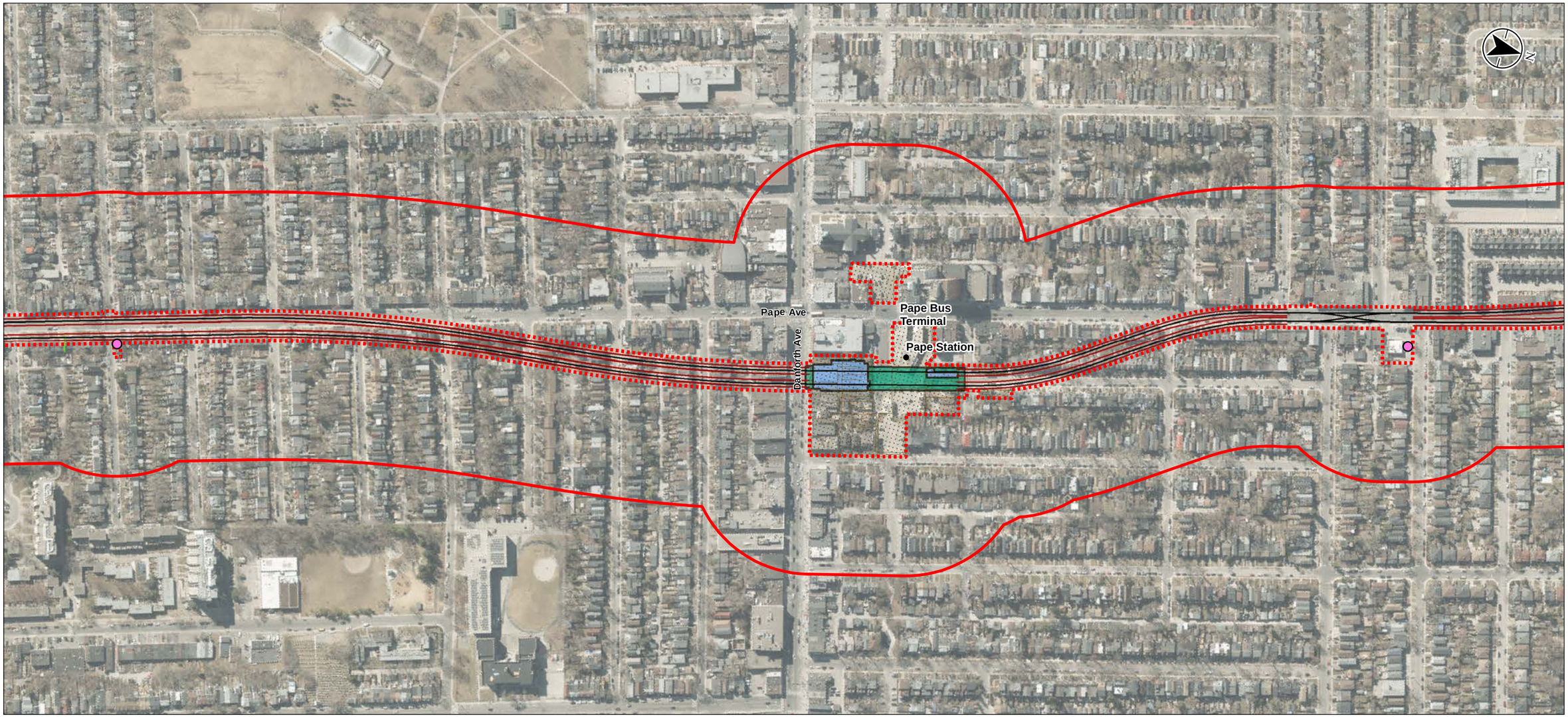

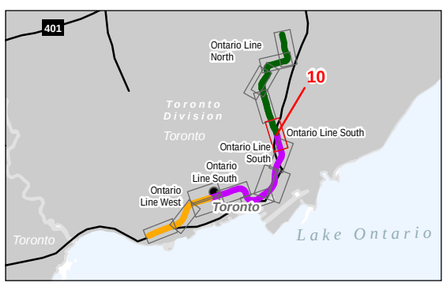

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Legend

- Project Footprint
- Study Area

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Portal
- Station
- Station Platform - Subsurface Level
- Emergency Egress Building (EEB)
- Construction Staging and Construction Area

0 100 200 Metres

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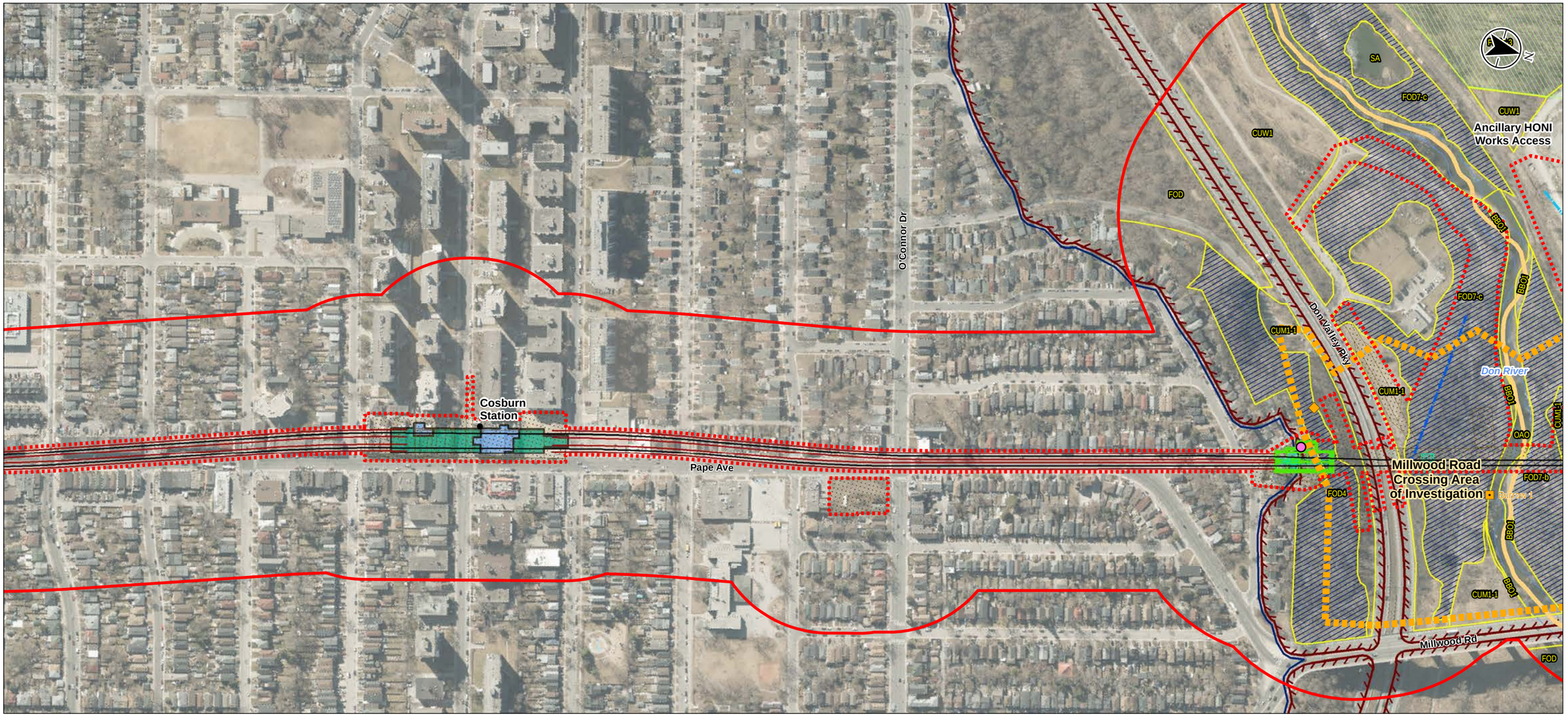
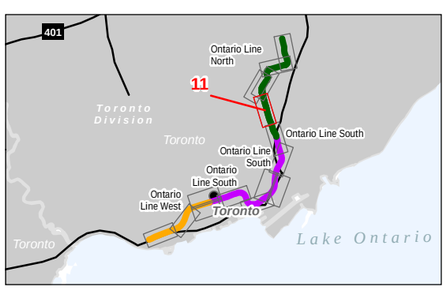
Figure No.
4.10

Title
Natural Heritage Results with Conceptual Design





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Legend

- Project Footprint
- Study Area
- Areas of Investigation (AECOM)

Alignment - Current

- Track Alignment Centerline
- Tunnels
- Portal
- Elevated Guideway
- Station
- Station Platform - Subsurface Level
- Emergency Egress Building (EEB)
- Proposed HONI Realignment
- Proposed Sewer Bypass
- Construction Staging and Construction Area
- Burrow

Incidental Observations

- Monarch

Thermal Regime

- Warm
- Environmentally Significant Area (City of Toronto)
- Ravine By Law (City of Toronto)
- ELC
- Potential Bat Roosting
- Regulation Limit (TRCA)

0 100 200 Metres

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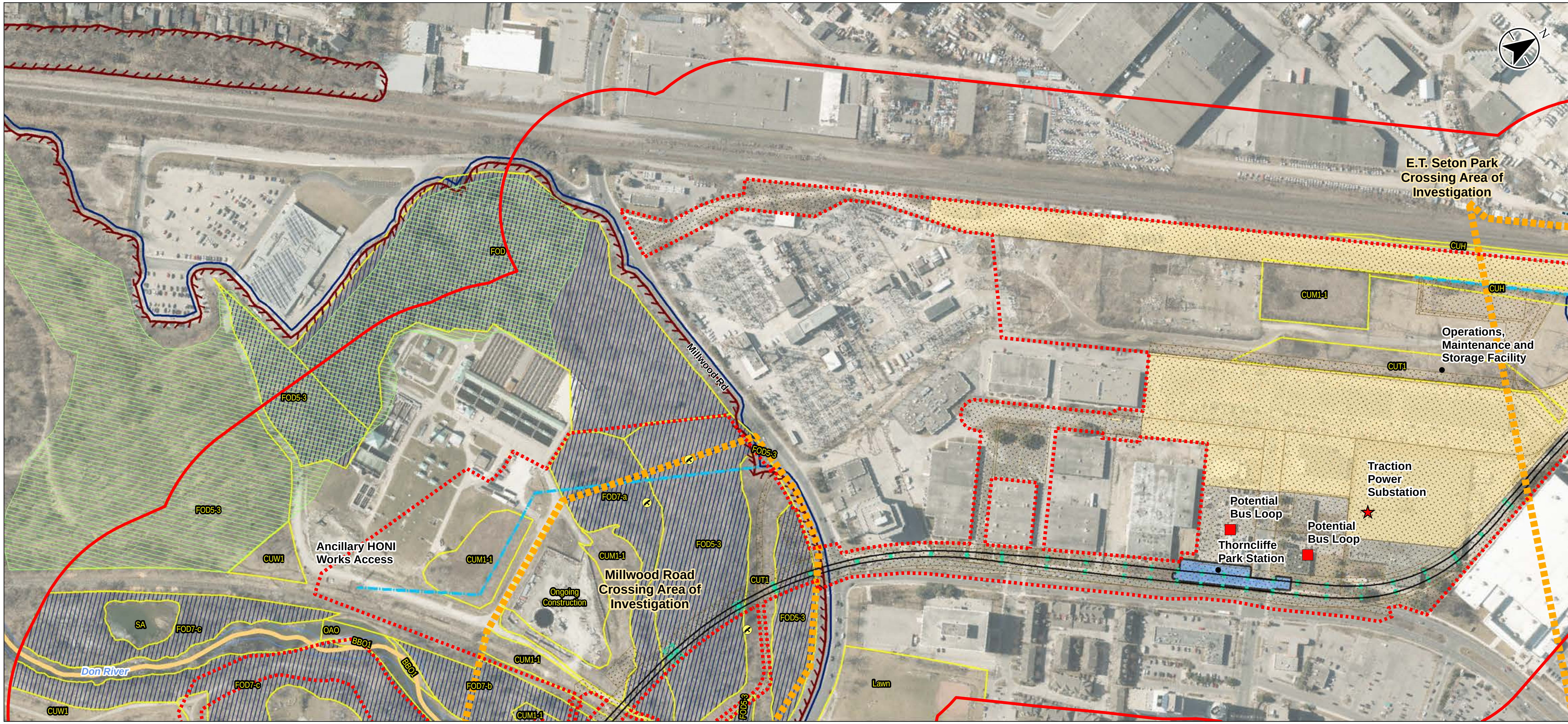
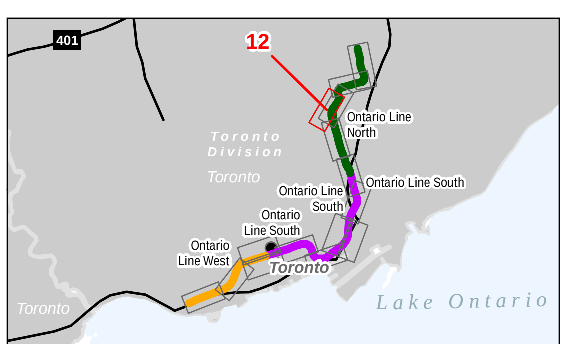
Figure No.
4.11

Title
Natural Heritage Results with Conceptual Design





Legend

- Project Footprint
- Study Area
- Areas of Investigation (AECOM)

Alignment - Current

- Track Alignment Centerline
- Elevated Guideway
- Station
- Operations, Maintenance and Storage Facility
- Potential Bus Loop
- Traction Power Substation
- Proposed HONI Realignment
- Existing Storm Sewer
- Construction Staging and Construction Area

Incidental Observations

- Eastern Wood-pewee

Thermal Regime

- Warm
- Environmentally Significant Area (City of Toronto)
- Ravine By Law (City of Toronto)
- ELC
- Potential Bat Roosting
- Regulation Limit (TRCA)

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Figure No.
4.12

Title
Natural Heritage Results with Conceptual Design

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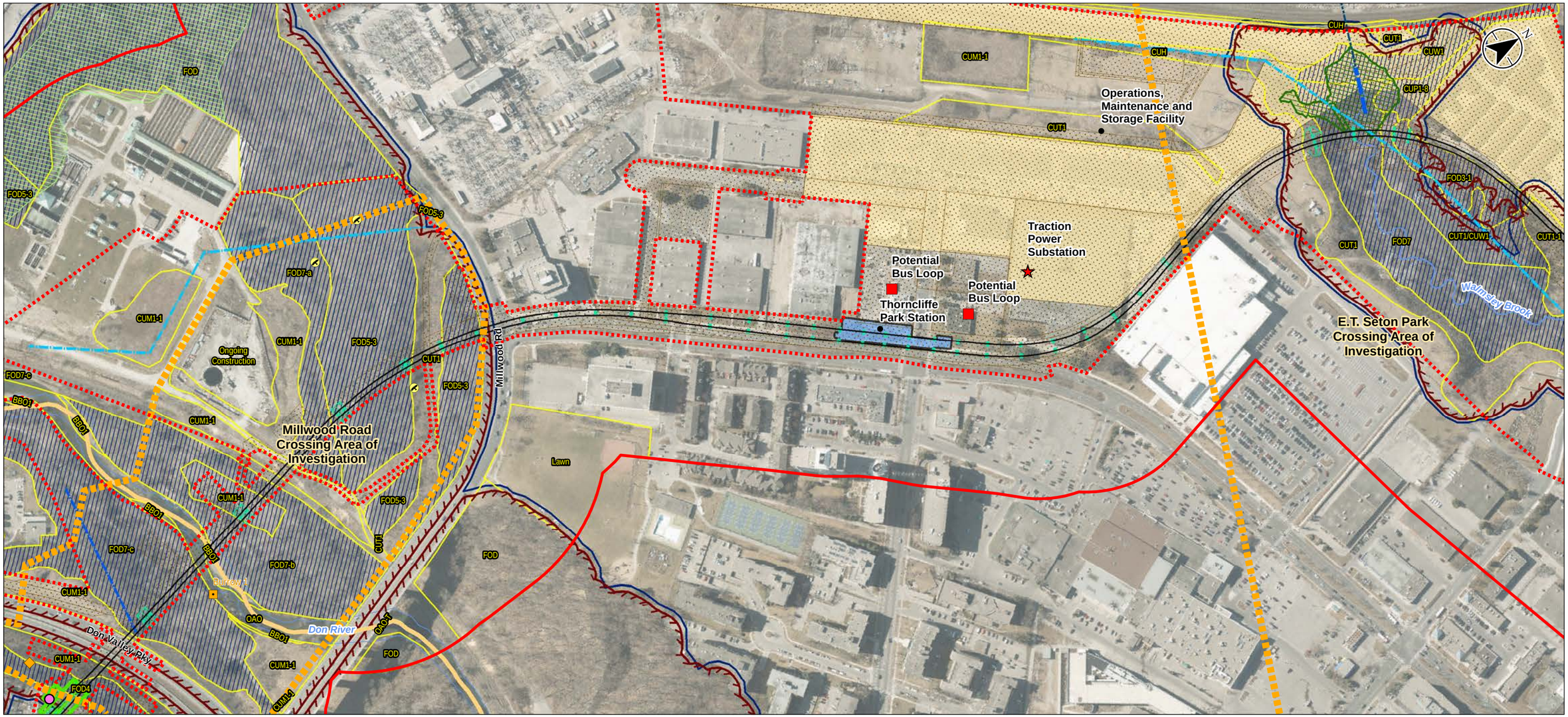

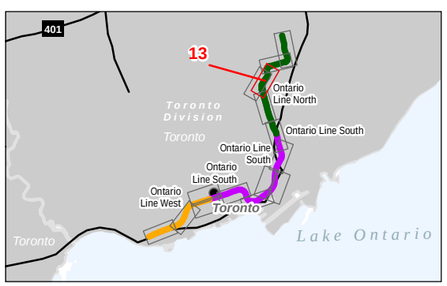

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Legend

- Project Footprint
- Study Area
- Areas of Investigation (AECOM)

Alignment - Current

- Track Alignment Centerline
- Portal
- Elevated Guideway
- Station
- Operations, Maintenance and Storage Facility
- Emergency Egress Building (EEB)
- Potential Bus Loop
- Traction Power Substation
- Proposed HONI Realignment
- Proposed Sewer Bypass
- Existing Storm Sewer
- Storm Sewer Extension
- OMSF Bridge Fill Area
- Construction Staging and Construction Area
- Burrow

Incidental Observations

- Eastern Wood-pewee
- Monarch

Thermal Regime

- Warm
- Environmentally Significant Area (City of Toronto)
- Ravine By Law (City of Toronto)
- ELC
- Potential Bat Roosting
- Regulation Limit (TRCA)

0 100 200 Metres

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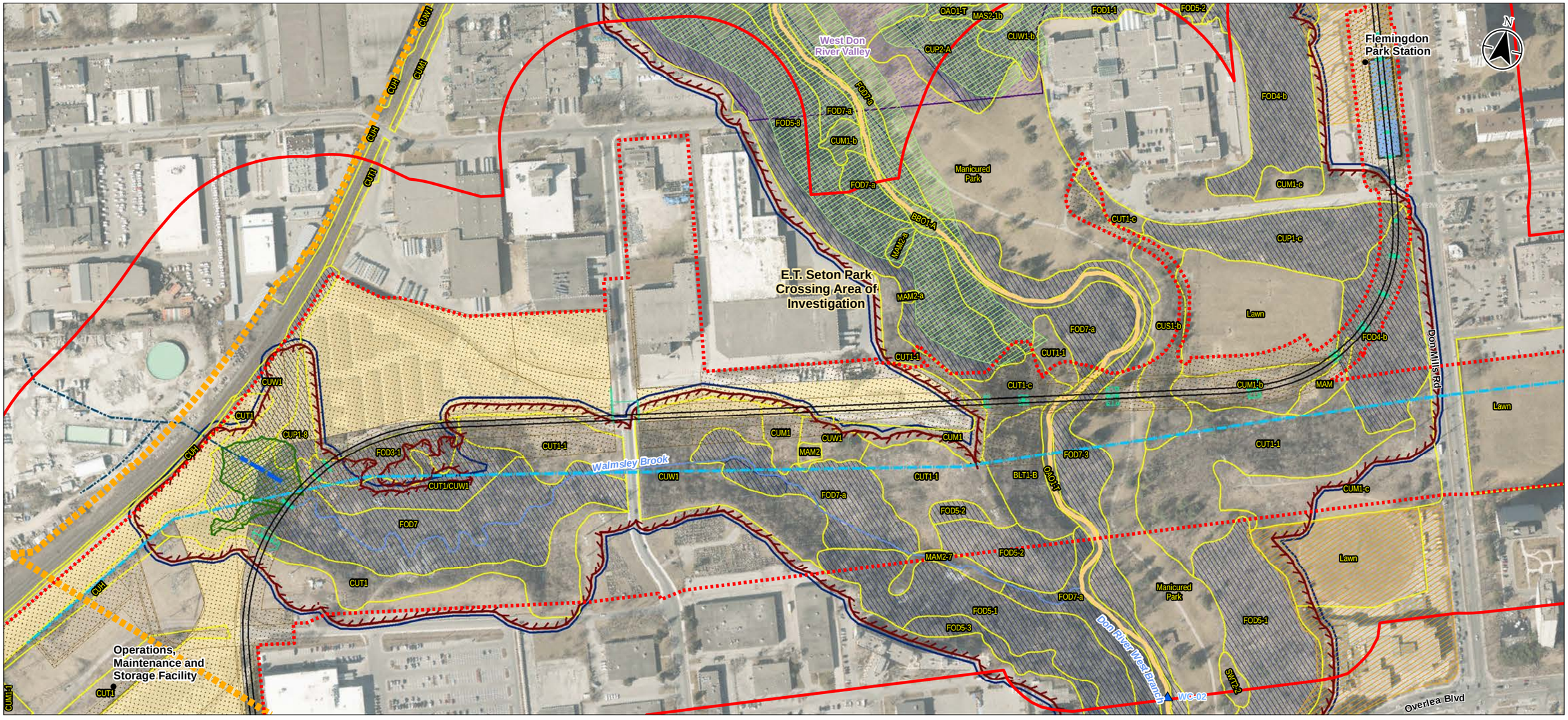
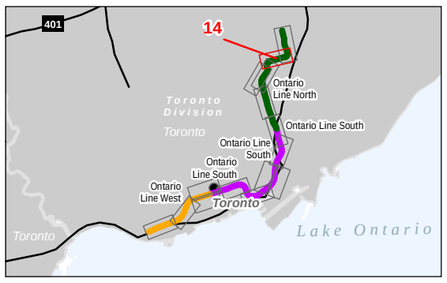
Figure No.
4.13

Title
Natural Heritage Results with Conceptual Design





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Legend

- Project Footprint
- Study Area
- Areas of Investigation (AECOM)

Alignment - Current

- Track Alignment Centerline
- Elevated Guideway
- Station
- Operations, Maintenance and Storage Facility
- Proposed HONI Realignment
- Existing Storm Sewer
- Storm Sewer Extension
- OMSF Bridge Fill Area
- Construction Staging and Construction Area
- Water Crossing

Thermal Regime

- Warm
- Watercourse (Permanent)
- Environmentally Significant Area (City of Toronto)
- Ravine By Law (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting

Areas of Natural and Scientific Interest

- Candidate Regionally Significant Life Science Area of Natural and Scientific Interest
- Regulation Limit (TRCA)

0 100 200 Metres

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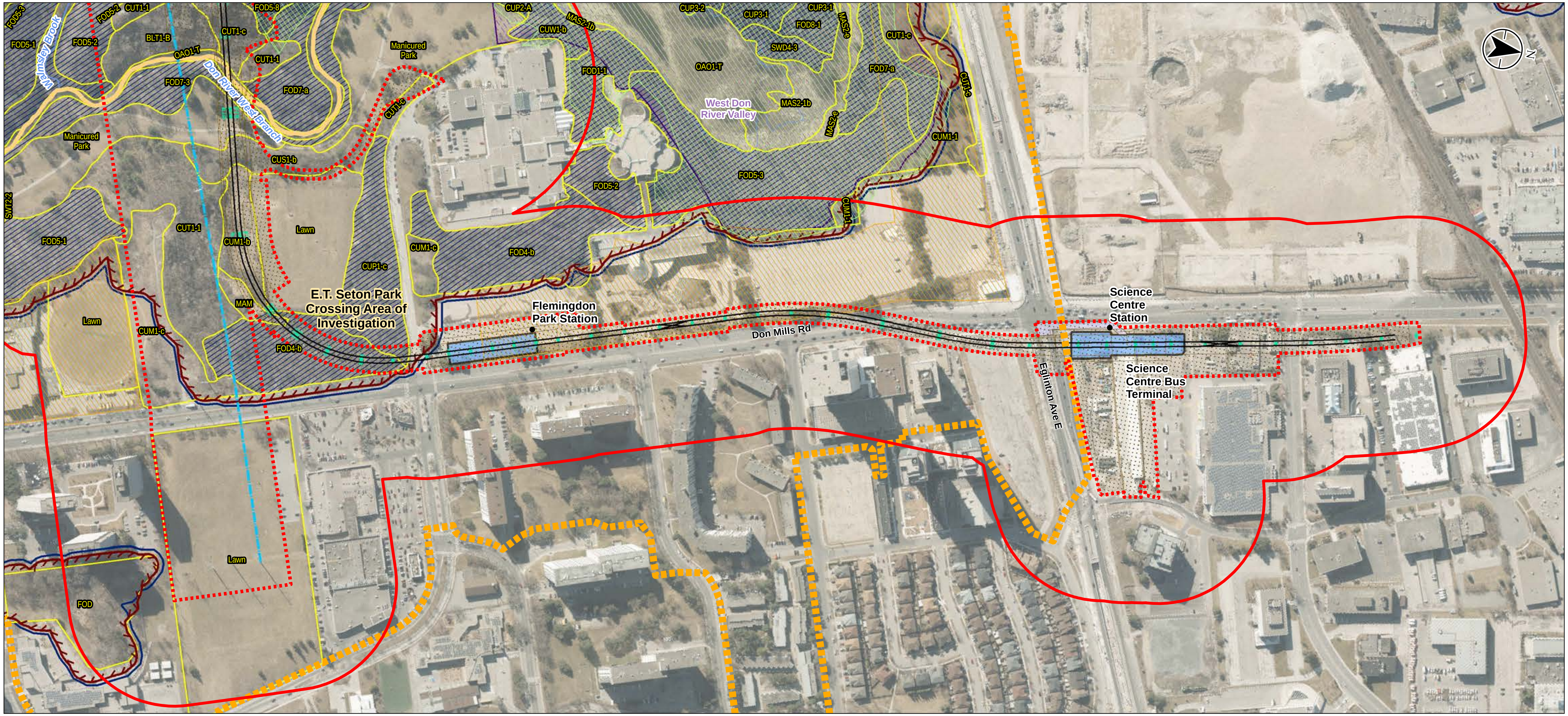
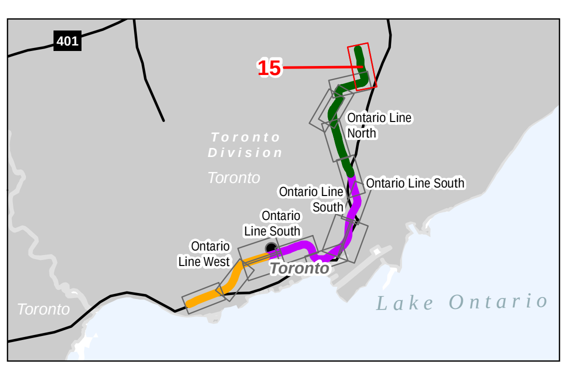
Figure No.
4.14

Title
Natural Heritage Results with Conceptual Design





Legend

- Project Footprint
- Study Area
- Areas of Investigation (AECOM)

Alignment - Current

- Track Alignment Centerline
- Elevated Guideway
- Station
- Pedestrian Tunnel
- Proposed HONI Realignment
- Construction Staging and Construction Area

Thermal Regime

- Warm
- Watercourse (Permanent)
- Environmentally Significant Area (City of Toronto)
- Ravine By Law (City of Toronto)
- ELC
- Potential Barn Swallow Habitat
- Potential Bat Roosting

Areas of Natural and Scientific Interest

- Candidate Regionally Significant Life Science Area of Natural and Scientific Interest
- Regulation Limit (TRCA)

0 110 220 Metres

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Figure No.
4.15

Title
Natural Heritage Results with Conceptual Design

Appendix B. Ontario Line Plant Species Lists[2]

[2] Appendix C1, Appendix C2, Appendix C3 of AECOM Natural Environment Environmental Conditions Report – Ontario Line Project dated November 2020

Appendix C1: 2020 Vascular Plant List for the Ontario Line West Study Area

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	CUH/ CUT1a	FOD4	CUT1	CUH/ MAS2
PTERIDOPHYTES		**FERNS & ALLIES**													
Equisetaceae		**Horsetail Family**													
Equisetum	*arvense*	Field Horsetail	0	0		S5	-	-	-	G5	L5		x		x
GYMNOSPERMS		**CONIFERS**													
Cupressaceae		**Cedar Family**													
Juniperus	*virginiana*	Eastern Red Cedar	4	3		S5	-	-	-	G5	L5		x		
DICOTYLEDONS		**DICOTS**													
Amaranthaceae		**Amaranth Family**													
Atriplex	*patula*	Spear Saltbush	0	-2		SE5	-	-	-	G5	L+?		x		
Anacardiaceae		**Sumac or Cashew Family**													
Toxicodendron	*radicans var. radicans*	Eastern Poison-ivy				S5	-	-	-	G5T5	L5		x		
Rhus	*typhina*	Staghorn Sumac	1	3		S5	-	-	-	G5	L5	x	x		
Apiaceae		**Carrot or Parsley Family**													
Carum	*carvi*	Common Caraway		5	-1	SE3?	-	-	-	GNR	L+			x	
Daucus	*carota*	Wild Carrot		5	-2	SE5	-	-	-	GNR	L+	x		x	
Apocynaceae		**Dogbane Family**													
Asclepias	*syriaca*	Common Milkweed	0	5		S5	-	-	-	G5	L5				x
Vincetoxicum	*rossicum*	Dog-strangling Vine		5	-3	SE5	-	-	-	GNR	L+	x			
Asteraceae		**Composite or Aster Family**													
Arctium	*minus*	Common Burdock		3	-2	SE5	-	-	-	GNR	L+	x	x	x	x
Cirsium	*arvense*	Canada Thistle		3	-1	SE5	-	-	-	G5	L+	x			x
Cirsium	*vulgare*	Bull Thistle		3	-1	SE5	-	-	-	GNR	L+		x		x
Erigeron	*philadelphicus*	Philadelphia Fleabane	1	-3		S5	-	-	-	G5	L5				x
Euthamia	*graminifolia*	Grass-leaved Goldenrod	2	0		S5	-	-	-	G5	L5				x
Hieracium	*vulgatum*	Common Hawkweed		5	-1	SE2?	-	-	-	G5	L+				x
Solidago	*altissima*	Tall Goldenrod	1	3		S5	-	-	-	G5	L5	x	x		x
Tanacetum	*vulgare*	Common Tansy		5	-1	SE5	-	-	-	GNR	L+		x		
Taraxacum	*officinale*	Common Dandelion		3	-2	SE5	-	-	-	G5	L+	x			x
Tussilago	*farfara*	Coltsfoot		3	-2	SE5	-	-	-	GNR	L+				x
Balsaminaceae		**Touch-me-not Family**													
Impatiens	*capensis*	Jewelweed	4	-3		S5	-	-	-	G5	L5		x		
Berberidaceae		**Barberry Family**													
Berberis	*vulgaris*	Common Barberry		3	-2	SE5	-	-	-	GNR	L+		x		
Brassicaceae		**Mustard Family**													
Alliaria	*petiolata*	Garlic Mustard		0	-3	SE5	-	-	-	GNR	L+	x	x	x	x
Barbarea	*vulgaris*	Garden Yellowrocket		0	-1	SE5	-	-	-	GNR	L+		x		
Hesperis	*matronalis*	Dame's Rocket		5	-3	SE5	-	-	-	G4G5	L+	x	x	x	
Celtis	*occidentalis*	Common Hackberry	8	1		S4	-	-	-	G5	L+		x		
Caprifoliaceae		**Honeysuckle Family**													
Lonicera	*maackii*	Amur Honeysuckle		5	-2	SE2	-	-	-	GNR	L+	x			
Lonicera	*morrowii*	Morrow's Honeysuckle		5	-1	SE3	-	-	-	GNR	L+		x		
Lonicera	*tatarica*	Tartarian Honeysuckle		3	-3	SE5	-	-	-	GNR	L+	x			
Symphoricarpos	*albus*	Snowberry	7	4		S5	-	-	-	G5	L3	x			
Silene	*latifolia*	Bladder Campion		5	-2	SE5	-	-	-	GNR	L+		x		x
Celastraceae		**Staff-tree Family**													
Euonymus	*europaeus*	European Spindle Tree		5	-1	SE2	-	-	-	GNR	L+	x			
Convolvulus	*arvensis*	Field Bindweed		5	-1	SE5	-	-	-	GNR	L+		x		
Cornaceae		**Dogwood Family**													
Cornus	*sericea*	Red-osier Dogwood	2	-3		S5	-	-	-	G5	L5		x	x	x
Fabaceae		**Pea Family**													
Securigera	*varia*	Crown-vetch		5	-2	SE5	-	-	-	GNR	L+		x		
Trifolium	*hybridum*	Alsike Clover		1	-1	SE5	-	-	-	GNR	L+	x			
Vicia	*cracca*	Cow Vetch		5	-1	SE5	-	-	-	GNR	L+	x			
Fagaceae		**Beech Family**													
Quercus	*rubra*	Red Oak	6	3		S5	-	-	-	G5	L4		x		
Grossulariaceae		**Currant Family**													
Ribes	*rubrum*	Red Currant		5	-2	SE5	-	-	-	G4G5	L+				x
Juglandaceae		**Walnut Family**													
Juglans	*nigra*	Black Walnut	5	3		S4?	-	-	-	G5	L5				x
Lamiaceae		**Mint Family**													
Leonurus	*cardiaca ssp. cardiaca*	Common Motherwort		5	-2	SE5	-	-	-	GNRTNR	L+	x			
Nepeta	*cataria*	Catnip		1	-2	SE5	-	-	-	GNR	L+		x		
Malvaceae		**Mallow Family**													
Tilia	*americana*	American Basswood	4	3		S5	-	-	-	G5	L5	x			
Moraceae		**Mulberry Family**													
Morus	*alba*	White Mulberry		0	-3	SE5	-	-	-	GNR	L+		x		x
Oleaceae		**Olive Family**													
Fraxinus	*americana*	White Ash	4	3		S4	-	-	-	G5	L5	x	x		
Fraxinus	*excelsior*	European Ash				SE2	-	-	-	GNR	L+	x			

Appendix C1: 2020 Vascular Plant List for the Ontario Line West Study Area

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	CUH/ CUT1a	FOD4	CUT1	CUH/ MAS2
Plantaginaceae		**Plantain Family**													
Plantago	*major*	Common Plantain		-1	-1	SE5	-	-	-	G5	L+	x			
Polygonaceae		**Smartweed Family**													
Fallopia	*japonica*	Japanese Knotweed		3	-1	SE5	-	-	-	G?	L+		x		x
Ranunculaceae		**Buttercup Family**													
Ranunculus	*acris*	Tall Buttercup		-2	-2	SE5	-	-	-	G5	L+		x		
Rhamnaceae		**Buckthorn Family**													
Rhamnus	*cathartica*	Common Buckthorn		3	-3	SE5	-	-	-	GNR	L+	x		x	x
Rosaceae		**Rose Family**													
Geum	*aleppicum*	Yellow Avens	2	-1		S5	-	-	-	G5	L5	x	x		x
Malus	*pumila*	Common Apple		5	-1	SE4	-	-	-	G5	L+				x
Prunus	*virginiana*	Choke Cherry	2	1		S5	-	-	-	G5	L5	x			
Rubiaceae		**Madder Family**													
Galium	*mollugo*	Smooth Bedstraw		5	-2	SE5	-	-	-	GNR	L+		x		
Salicaceae		**Willow Family**													
Populus	*deltoides ssp. deltoides*	Eastern Cottonwood	4	-1		S5	-	-	-	G5T5	L5		x	x	
Populus	*tremuloides*	Trembling Aspen	2	0		S5	-	-	-	G5	L5		x		
Salix	*sp.*	Willow species					-	-	-						x
Salix	*exigua*	Narrow-leaf Willow	3	-5		S5	-	-	-	GNR	L+				x
Salix X	*rubens*	Hybrid Crack Willow		-4	-3	hyb	-	-	-	HYB	L+		x		
Sapindaceae		**Soapberry Family**											x		
Acer	*negundo*	Manitoba Maple	0	0		S5	-	-	-	G5	L+?	x	x	x	x
Acer	*platanoides*	Norway Maple		5	-3	SE5	-	-	-	GNR	L+		x		
Acer X	*freemanii*	Freeman's Maple	6	-5		SNA	-	-	-	GNA	L4	x			
Aesculus	*hippocastanum*	Horse Chestnut		5	-1	SE2	-	-	-	GNR	L+	x	x		x
Scrophulariaceae		**Figwort Family**													
Verbascum	*thapsus*	Common Mullein		5	-2	SE5	-	-	-	GNR	L+		x		
Ailanthus	*altissima*	Tree-of-heaven		5	-1	SE5	-	-	-	GNR	L+	x			x
Solanaceae		**Nightshade Family**													
Solanum	*dulcamara*	Bittersweet Nightshade		0	-2	SE5	-	-	-	GNR	L+	x	x		x
Ulmaceae		**Elm Family**													
Ulmus	*americana*	American Elm	3	-2		S5	-	-	-	G4	L5	x			
Ulmus	*glabra*	Scotch Elm				SE1	-	-	-	GNR	L+	x	x		x
Ulmus	*pumila*	Siberian Elm		5	-1	SE3	-	-	-	GNR	L+	x		x	x
Ulmus	*rubra*	Slippery Elm	6	0		S5	-	-	-	G5	L3	x			
Urticaceae		**Nettle Family**													
Urtica	*dioica ssp. dioica*	Stinging Nettle		-1	-1	SE2	-	-	-	G5T5?	L+	x			
Vitaceae		**Grape Family**													
Parthenocissus	*vitacea*	Thicket-creeper	3	3		S5	-	-	-	G5	L5	x	x	x	x
Vitis	*riparia*	Riverbank Grape	0	-2		S5	-	-	-	G5	L5		x		
MONOCOTYLEDONS		**MONOCOTS**													
Poaceae		**Grass Family**													
Bromus	*inermis*	Smooth Brome		5	-3	SE5	-	-	-	G5	L+				x
Dactylis	*glomerata*	Orchard Grass		3	-1	SE5	-	-	-	GNR	L+	x	x	x	
Phragmites	*australis*	Common Reed	0	-4		S4?	-	-	-	G5	L+				x
Poa	*pratensis ssp. pratensis*	Kentucky Blue Grass	0	1		SE5	-	-	-	G5T5	L+	x	x		

FLORISTIC SUMMARY & ASSESSMENT

Species Diversity

Total Species:	**72**	
Native Species:	**29**	40.28%
Exotic Species	**43**	59.72%
Total Taxa in Region (List Region, Source)	10000	
% Regional Taxa Recorded	0.72%	
S1-S3 Species	0	
S4 Species	2	
S5 Species	23	

Co-efficient of Conservatism and Floral Quality Index

Co-efficient of Conservatism (CC) (average)	**2.86**

Appendix C1: 2020 Vascular Plant List for the Ontario Line West Study Area

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	CUH/ CUT1a	FOD4	CUT1	CUH/ MAS2
CC 0 to 3	*lowest sensitivity*	17	58.62%												
CC 4 to 6	*moderate sensitivity*	9	31.03%												
CC 7 to 8	*high sensitivity*	2	6.90%												
CC 9 to 10	*highest sensitivity*	0	0.00%												
Floral Quality Index (FQI)		**15.39**													
Presence of Weedy & Invasive Species															
mean weediness		**-1.77**													
weediness = -1	*low potential invasiveness*	19	44.19%												
weediness = -2	*moderate potential invasiveness*	15	34.88%												
weediness = -3	*high potential invasiveness*	9	20.93%												
Presence of Wetland Species															
average wetness value		**2.01**													
upland		24	33.33%												
facultative upland		19	26.39%												
facultative		17	23.61%												
facultative wetland		9	12.50%												
obligate wetland		2	2.78%												

Appendix C2: 2019 Vascular Plant List for Millwood Road Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	ESA STATUS	COSEWIC STATUS (2016-08-19)	SARA STATUS (2016-08-19)	GLOBAL STATUS	LOCAL STATUS TRCA	CUM1-1 (North of Tracks)	FOD5-3	CUT1-1	FOD7a	FOD7b	FOD7c	CUM1-1 (South of Tracks)	FOD4	CUM1-1 (DVP)
PTERIDOPHYTES		**FERNS & ALLIES**																		
Equisetaceae		**Horsetail Family**																		
Equisetum	*arvense*	Field Horsetail	0	0		S5	-	-	-	G5	L5							x		
GYMNOSPERMS		**CONIFERS**																		
Cupressaceae		**Cedar Family**																		
Juniperus	*virginiana*	Eastern Red Cedar	4	3		S5	-	-	-	G5	L5									x
Thuja	*occidentalis*	Eastern White Cedar	4	-3		S5	-	-	-	G5	L5						x			
Pinaceae		**Pine Family**																		
Picea	*abies*	Norway Spruce		5	-1	SNA	-	-	-	G5	L+						x			
Pinus	*resinosa*	Red Pine	8	3		S5	-	-	-	G5	L1						x			
Pinus	*strobus*	Eastern White Pine	4	3		S5	-	-	-	G5	L4		x							
DICOTYLEDONS		**DICOTS**																		
Aceraceae		**Maple Family**																		
Acer	*negundo*	Manitoba Maple	0	-2		S5	-	-	-	G5	L+?	x	x	x	x	x	x	x		
Acer	*platanoides*	Norway Maple		5	-3	SNA	-	-	-	GNR	L+			x	x	x			x	
Acer	*saccharum*	Sugar Maple	4	3		S5	-	-	-	G5	L5		x						x	
Acer	*nigrum*	Black Maple	7	3		S4?	-	-	-	G5Q	L4				x					
Acer X	*freemanii*	Freeman's Maple	6	-5		SNA	-	-	-	GNR	L4				x					
Anacardiaceae		**Sumac or Cashew Family**																		
Toxicodendron	*radicans ssp. negundo*	Eastern Poison-ivy	5	-1		S5	-	-	-	G5	L5		x	x						x
Rhus	*typhina*	Staghorn Sumac	1	5		S5	-	-	-	G5	L5	x		x	x	x	x		x	x
Apiaceae		**Carrot or Parsley Family**																		
Aegopodium	*podagraria*	Bishop's Goutweed		0	-3	SNA	-	-	-	GNR	L+					x				
Daucus	*carota*	Wild Carrot		5	-2	SNA	-	-	-	GNR	L+		x			x				
Heracleum	*maximum*	Cow-parsnip	3	-3		S5	-	-	-	G5	L5	x				x	x	x		
Apocynaceae		**Dogbane Family**																		
Apocynum	*androsaemifolium ssp. androsaemifolium*	Spreading Dogbane	3	5		S5	-	-	-	G5	L5							x		
Asclepiadaceae		**Milkweed Family**																		
Asclepias	*incarnata*	Swamp Milkweed	6	-5		S5	-	-	-	G5	L4							x		
Asclepias	*syriaca*	Common Milkweed	0	5		S5	-	-	-	G5	L5		x					x		x
Vincetoxicum	*rossicum*	Dog-strangling Vine		5	-2	SNA	-	-	-	GNR	L+	x	x	x	x	x	x	x	x	x
Asteraceae		**Composite or Aster Family**																		
Achillea	*millefolium*	Common Yarrow		3	-1	SNA	-	-	-	G5	L+									x
Ambrosia	*artemisiifolia*	Common Ragweed	0	3		S5	-	-	-	G5	L5					x				
Ambrosia	*trifida*	Giant Ragweed	0	-1		S5	-	-	-	G5	L5						x			
Anthemis	*arvensis*	Corn Chamomille		5	-1	SNA	-	-	-	GNR	L+		x			x				
Arctium	*minus*	Common Burdock		5	-2	SNA	-	-	-	GNR	L+	x			x	x	x	x		
Symphyotrichum	*lanceolatum*	White Panicled Aster	3	-3		S5	-	-	-	G5T5	L5		x							
Symphyotrichum	*novae-angliae*	New England Aster	2	-3		S5	-	-	-	G5	L5					x				x
Bidens	*frondosa*	Devil's Beggar-ticks	3	-3		S5	-	-	-	G5	L5				x	x				
Leucanthemum	*vulgare*	Ox-eye Daisy		5	-1	SNA	-	-	-	GNR	L+									x
Cichorium	*intybus*	Chicory		5	-1	SNA	-	-	-	GNR	L+		x							
Cirsium	*arvense*	Canada Thistle		3	-1	SNA	-	-	-	GNR	L+	x				x		x		x
Erigeron	*philadelphicus ssp. philadelphicus*	Philadelphia Fleabane	1	-3		S5	-	-	-	G5	L5	x			x	x				
Solidago	*canadensis*	Canada Goldenrod	1	3		S5	-	-	-	G5	L5	x			x	x	x	x	x	x
Solidago	*flexicaulis*	Zig-zag Goldenrod	6	3		S5	-	-	-	G5	L5		x							
Tanacetum	*vulgare*	Common Tansy		5	-1	SNA	-	-	-	GNR	L+	x				x		x		
Taraxacum	*officinale*	Common Dandelion			-1	SNA	-	-	-	G5	L+		x			x				
Balsaminaceae		**Touch-me-not Family**																		
Impatiens	*capensis*	Jewelweed	4	-3		S5	-	-	-	G5	L5					x	x			
Impatiens	*glandulifera*	Ornamental Jewelweed		-3	-2	SNA	-	-	-	GNR	L+					x				
Berberidaceae		**Barberry Family**																		
Podophyllum	*peltatum*	May-apple	5	3		S5	-	-	-	G5	L5		x							
Betulaceae		**Birch Family**																		
Alnus	*glutinosa*	European Black Alder		-2	-3	SNA	-	-	-	GNR	L+		x							
Betula	*papyrifera*	Paper Birch	3	2		S5	-	-	-	G5	L4				x					
Ostrya	*virginiana*	Ironwood	4	4		S5	-	-	-	G5	L5		x							
Brassicaceae		**Mustard Family**																		
Alliaria	*petiolata*	Garlic Mustard		0	-3	SNA	-	-	-	GNR	L+	x	x	x	x	x	x		x	
Barbarea	*vulgaris*	Garden Yellowrocket		0	-1	SNA	-	-	-	GNR	L+							x		
Hesperis	*matronalis*	Dame's Rocket		5	-3	SNA	-	-	-	G4G5	L+	x					x	x	x	
Caprifoliaceae		**Honeysuckle Family**																		
Lonicera	*morrowii*	Morrow's Honeysuckle		5	-1	SNA	-	-	-	GNR	L+			x						
Lonicera	*tatarica*	Tartarian Honeysuckle		3	-3	SNA	-	-	-	GNR	L+	x		x	x		x			
Sambucus	*nigra ssp. canadensis*	American Black Elderberry	5	-2		S5	-	-	-	G5T5	L5			x	x					
Symphoricarpos	*albus*	Snowberry	7	4		S5	-	-	-	G5T5	L3		x							
Cornaceae		**Dogwood Family**																		
Cornus	*alternifolia*	Alternate-leaved Dogwood	6	5		S5	-	-	-	G5	L5		x				x			
Cornus	*sericea*	Red-osier Dogwood	2	-3		S5	-	-	-	G5	L5			x						

Appendix C2: 2019 Vascular Plant List for Millwood Road Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	ESA STATUS	COSEWIC STATUS (2016-08-19)	SARA STATUS (2016-08-19)	GLOBAL STATUS	LOCAL STATUS TRCA	CUM1-1 (North of Tracks)	FOD5-3	CUT1-1	FOD7a	FOD7b	FOD7c	CUM1-1 (South of Tracks)	FOD4	CUM1-1 (DVP)
Dipsacaceae		**Teasel Family**																		
Dipsacus	*fullonum*	Fuller's Teasel		5	-1	SNA	-	-	-	GNR	L+	x						x		
Fabaceae		**Pea Family**																		
Desmodium	*canadense*	Canadian Tick-trefoil	5	1		S4	-	-	-	G5	L5									x
Lotus	*corniculatus*	Bird's-foot Trefoil		1	-2	SNA	-	-	-	GNR	L+	x	x							
Medicago	*lupulina*	Black Medick		1	-1	SNA	-	-	-	GNR	L+	x	x							
Melilotus	*alba*	White Sweet-clover		3	-3	SNA	-	-	-	G5	L+		x							
Robinia	*pseudoacacia*	Black Locust		4	-3	SNA	-	-	-	G5	L+						x			
Trifolium	*hybridum ssp. elegans*	Alsike Clover		1	-1	SNA	-	-	-	GNR	L+		x							
Trifolium	*pratense*	Red Clover		2	-2	SNA	-	-	-	GNR	L+									x
Vicia	*cracca*	Bird Vetch		5	-1	SNA	-	-	-	GNR	L+	x	x					x	x	x
Fagaceae		**Beech Family**																		
Fagus	*grandifolia*	American Beech	6	3		S4	-	-	-	G5	L4	x								
Quercus	*macrocarpa*	Bur Oak	5	1		S5	-	-	-	G5	L4		x							
Quercus	*rubra*	Red Oak	6	3		S5	-	-	-	G5	L4		x		x					
Geraniaceae		**Geranium Family**																		
Geranium	*robertianum*	Herb-robert		5	-2	S5	-	-	-	G5	L+?								x	
Guttiferae		**St. John's-wort Family**																		
Hypericum	*perforatum*	Common St. John's-wort		5	-3	SNA	-	-	-	GNR	L+		x					x		x
Hydrophyllaceae		**Water-leaf Family**																		
Hydrophyllum	*virginianum*	Virginia Water-leaf	6	-2		S5	-	-	-	G5	L5						x			
Juglandaceae		**Walnut Family**																		
Carya	*cordiformis*	Bitternut hickory	6	0		S5	-	-	-	G5	L4		x							
Juglans	*cinerea*	Butternut	6	2		S3?	END	END	END	G4	L3		x							
Juglans	*nigra*	Black Walnut	5	3		S4	-	-	-	G5	L5						x		x	
Lamiaceae		**Mint Family**																		
Glechoma	*hederacea*	Ground Ivy		5	-2	SNA	-	-	-	GNR	L+	x	x		x					
Leonurus	*cardiaca ssp. cardiaca*	Common Motherwort		5	-2	SNA	-	-	-	GNR	L+	x			x	x			x	
Prunella	*vulgaris ssp. vulgaris*	Common Heal-all		0	-1	SNA	-	-	-	G5TU	L+		x							
Lythraceae		**Loosestrife Family**																		
Lythrum	*salicaria*	Purple Loosestrife		-5	-3	SNA	-	-	-	G5	L+							x		
Moraceae		**Mulberry Family**																		
Morus	*alba*	White Mulberry		0	-3	SNA	-	-	-	GNR	L+				x	x	x			
Oleaceae		**Olive Family**																		
Fraxinus	*pennsylvanica*	Green Ash	3	-3		S4	-	-	-	G5	L5		x		x	x	x		x	
Syringa	*vulgaris*	Common Lilac		5	-2	SNA	-	-	-	GNR	L+									x
Onagraceae		**Evening-primrose Family**																		
Circaea	*lutetiana*	Enchanter's Nightshade	3	3		S5	-	-	-	G5T5	L5		x		x	x				
Oxalidaceae		**Wood Sorrel Family**																		
Oxalis	*montana*	Wood-sorrel	8	3		S5	-	-	-	G5	L2					x	x		x	
Papaveraceae		**Poppy Family**																		
Sanguinaria	*canadensis*	Bloodroot	5	4		S5	-	-	-	G5	L5		x		x				x	
Plantaginaceae		**Plantain Family**																		
Plantago	*major*	Common Plantain		-1	-1	S5	-	-	-	G5	L+		x			x				
Polygonaceae		**Smartweed Family**																		
Fallopia	*japonica*	Japanese Knotweed		3	-1	SE4	-	-	-	G?	L+				x	x	x		x	
Polygonum	*persicaria*	Lady's-thumb		-3	-1	SE5	-	-	-	G?	L+						x			
Rumex	*crispus*	Curly-leaf Dock		-1	-2	SNA	-	-	-	GNR	L+	x					x			
Primulaceae		**Primrose Family**																		
Lysimachia	*ciliata*	Fringed Loosestrife	4	-3		S5	-	-	-	G5	L5						x			
Ranunculaceae		**Buttercup Family**																		
Ranunculus	*acris*	Tall Buttercup		-2	-2	SNA	-	-	-	G5	L+					x	x			
Thalictrum	*pubescens*	Tall Meadow-rue	5	-2		S5	-	-	-	G5	L5		x							
Rhamnaceae		**Buckthorn Family**																		
Rhamnus	*cathartica*	Common Buckthorn		3	-3	SNA	-	-	-	GNR	L+	x	x	x	x	x	x	x	x	
Rosaceae		**Rose Family**																		
Crataegus	*species*	Hawthorn species	4	5			-	-	-								x			
Geum	*urbanum*	Wood Avens		5	-1	SNA	-	-	-	G5	L+	x	x	x	x	x				x
Prunus	*serotina*	Black Cherry	3	3		S5	-	-	-	G5	L5		x							
Prunus	*virginiana*	Choke Cherry	2	1		S5	-	-	-	G5	L5		x		x					
Rubus	*idaeus*	American Red Raspberry	2	3		S5	-	-	-	G5	L+									x
Rubus	*odoratus*	Purple Flowering Raspberry	3	5		S5	-	-	-	G5	L5			x			x			
Rubiaceae		**Madder Family**																		
Galium	*mollugo*	Smooth Bedstraw		5	-2	SNA	-	-	-	GNR	L+							x		
Salicaceae		**Willow Family**																		
Populus	*deltoides ssp. deltoides*	Eastern Cottonwood	4	-1		S5	-	-	-	G5T5	L5	x			x	x				
Populus	*grandidentata*	Large-tooth Aspen	5	3		S5	-	-	-	G5	L4						x			
Salix X	*rubens*	Reddish Willow		-4	-3	SE4	-	-	-	HYB						x	x			
Scrophulariaceae		**Figwort Family**																		

Appendix C2: 2019 Vascular Plant List for Millwood Road Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	ESA STATUS	COSEWIC STATUS (2016-08-19)	SARA STATUS (2016-08-19)	GLOBAL STATUS	LOCAL STATUS TRCA	CUM1-1 (North of Tracks)	FOD5-3	CUT1-1	FOD7a	FOD7b	FOD7c	CUM1-1 (South of Tracks)	FOD4	CUM1-1 (DVP)
Verbascum	*thapsus*	Common Mullein		5	-2	SNA	-	-	-	GNR	L+					x				x
Simaroubaceae		**Ailanthus Family**																		
Ailanthus	*altissima*	Tree-of-heaven		5	-1	SNA	-	-	-	GNR	L+				x	x				
Solanaceae		**Nightshade Family**																		
Solanum	*dulcamara*	Bittersweet Nightshade		0	-2	SNA	-	-	-	GNR	L+					x			x	
Tiliaceae		**Linden Family**																		
Tilia	*americana*	American Basswood	4	3		S5	-	-	-	G5	L5				x	x				
Tilia	*cordata*	Small Leaf Linden			0	SNA	-	-	-	GNR	L+		x							
Ulmaceae		**Elm Family**																		
Ulmus	*americana*	American Elm	3	-2		S5	-	-	-	G5?	L5		x						x	
Ulmus	*pumila*	Siberian Elm		5	-1	SNA	-	-	-	GNR	L+					x			x	
Urticaceae		**Nettle Family**																		
Boehmeria	*cylindrica*	Smallspike False Nettle	4	-5		S5	-	-	-	G5	L4					x				
Pilea	*pumila*	Canadian Clearweed	5	-3		S5	-	-	-	G5	L5					x				
Urtica	*dioica ssp. dioica*	Stinging Nettle		-1	-1	SNA	-	-	-	G5T5?	L+	x			x	x	x	x		
Verbenaceae		**Vervain Family**																		
Verbena	*stricta*	Hoary Vervain	7	5		S4	-	-	-	G5	L3							x		
Violaceae		**Violet Family**																		
Viola	*pubescens*	Downy Yellow Violet	5	4		S5	-	-	-	G5T5	L5					x				
Vitaceae		**Grape Family**																		
Parthenocissus	*inserta*	Thicket-creeper	3	3		S5	-	-	-	G5	L5	x	x			x	x		x	
Vitis	*riparia*	Riverbank Grape	0	-2		S5	-	-	-	G5	L5	x		x				x		x
MONOCOTYLEDONS		**MONOCOTS**																		
Araceae		**Arum Family**																		
Arisaema	*triphyllum*	Small Jack-in-the-pulpit	5	-2		S5	-	-	-	G5	L5		x							
Cyperaceae		**Sedge Family**																		
Carex	*vulpinoidea*	Fox Sedge	3	-5		S5	-	-	-	G5	L5					x				
Schoenoplectus	*acutus var. acutus*	Hard-stemmed Bulrush	6	-5		S5	-	-	-	G5	L3					x				
Liliaceae		**Lily Family**																		
Maianthemum	*canadense*	Wild Lily-of-the-Valley	5	0		S5	-	-	-	G5	L4		x							
Maianthemum	*racemosum*	Large False Solomon's Seal	4	3		S5	-	-	-	G5	L5		x			x				
Poaceae		**Grass Family**																		
Agrostis	*gigantea*	Redtop		0	-2	SNA	-	-	-	G4G5	L+									x
Bromus	*arvensis*	Field Brome			-1	SNA	-	-	-	GNR								x		
Bromus	*inermis ssp. inermis*	Smooth Brome		5	-3	SNA	-	-	-	G5TNR	L+					x				
Dactylis	*glomerata*	Orchard Grass		3	-1	SNA	-	-	-	GNR	L+									x
Elymus	*repens*	Quack Grass		3	-3	SNA	-	-	-	GNR	L+					x				
Glyceria	*species*	Manna Grass Species	5				-	-	-				x							
Phalaris	*arundinacea*	Reed Canary Grass	0	-4		S5	-	-	-	G5	L+				x			x	x	x
Phragmites	*australis ssp. australis*	European Reed		-3	-3	SNA	-	-	-	G5T5	L+	x				x	x	x		
Poa	*pratensis ssp. pratensis*	Kentucky Blue Grass	0	1		S5	-	-	-	G5T	L+	x	x			x	x	x		x

FLORISTIC SUMMARY & ASSESSMENT

Species Diversity

Total Species:	**125**	
Native Species:	**68**	54.40%
Exotic Species	**57**	45.60%
Total Taxa in Region (List Region, Source)	10000	
% Regional Taxa Recorded	1.25%	
Regionally Significant Species	enter manually	
S1-S3 Species	0	
S4 Species	5	
S5 Species	60	

Co-efficient of Conservatism and Floral Quality Index

Co-efficient of Conservatism (CC) (average)		**3.85**	
CC 0 to 3	*lowest sensitivity*	27	39.71%
CC 4 to 6	*moderate sensitivity*	36	52.94%
CC 7 to 8	*high sensitivity*	5	7.35%
CC 9 to 10	*highest sensitivity*	0	0.00%
Floral Quality Index (FQI)		**31.77**	

Presence of Weedy & Invasive Species

mean weediness		**-1.82**	
weediness = -1	*low potential invasiveness*	24	42.11%
weediness = -2	*moderate potential invasiveness*	16	28.07%
weediness = -3	*high potential invasiveness*	16	28.07%

Appendix C2: 2019 Vascular Plant List for Millwood Road Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	ESA STATUS	COSEWIC STATUS (2016-08-19)	SARA STATUS (2016-08-19)	GLOBAL STATUS	LOCAL STATUS TRCA	CUM1-1 (North of Tracks)	FOD5-3	CUT1-1	FOD7a	FOD7b	FOD7c	CUM1-1 (South of Tracks)	FOD4	CUM1-1 (DVP)
Presence of Wetland Species																				
average wetness value	**1.39**																			
upland	31	24.80%																		
facultative upland	36	28.80%																		
facultative	23	18.40%																		
facultative wetland	25	20.00%																		
obligate wetland	6	4.80%																		

Appendix C3: 2020 Vascular Plant List of E.T. Seton Park Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	FOD5-1/ SWD2-2	SWT2-2	CUT1-1	CUM-c/ CUT1-1	FOD7-a/ CUM1	FOD5-1	FOD5-3	FOD3 / MAM2-a	FOD7-3	CUW1-b	CUP1-c	FOD4-b	FOD7	CUT1-b	FOD5-2	FOD5-3	FOD1-1	MAS2-1b	CUP1-c	CUP3	FOD1-1	CUT1	FOD5-3	CUT1-c	CUM1-1	FOD7	FOD5-3	CUW1/CUM1-1	SWT2-2/MAS2	FOD5-8	CUW1	FOD5-8	FOD5-8/CUP1	CUT1-1	CUM1	FOD7	FOD3/MAS	CUP1-8
PTERIDOPHYTES		**FERNS & ALLIES**																																															
Dennstaedtiaceae		**Bracken Fern Family**																																															
Pteridium	*aquilinum*	Bracken Fern	2	3		S5	-	-	-	G5	L4																																				x	x
Dryopteridaceae		**Wood Fern Family**																																															
Dryopteris	*carthusiana*	Spinulose Wood Fern	5	-3		S5	-	-	-	G5	L5																															x	x						
Polystichum	*acrostichoides*	Christmas Fern	5	3		S5	-	-	-	G5	L4																													x		x	x						
Equisetaceae		**Horsetail Family**																																															
Equisetum	*arvense*	Field Horsetail	0	0		S5	-	-	-	G5	L5	x	x			x																									x		x	x	x		x		
Equisetum	*pratense*	Meadow Horsetail	8	-3		S5	-	-	-	G5	L3		x																																				
Equisetum	*scirpoides*	Dwarf Scouring-rush	7	0		S5	-	-	-	G5	L3																																				x		
Onocleaceae		**Ostrich Fern Family**																																															
Matteuccia	*struthiopteris*	Ostrich Fern	5	0		S5	-	-	-	G5	L5					x																								x		x							
GYMNOSPERMS		**CONIFERS**																																															
Cupressaceae		**Cedar Family**																																															
Juniperus	*virginiana*	Eastern Red Cedar	4	3		S5	-	-	-	G5	L5																						x			x					x		x	x	x		x		
Thuja	*occidentalis*	Eastern White Cedar	4	-3		S5	-	-	-	G5	L5																												x										
Pinaceae		**Pine Family**																																															
Picea	*abies*	Norway Spruce		5	-1	SE3	-	-	-	G5	L+																				x																		
Picea	*glauca*	White Spruce	6	3		S5	-	-	-	G5	L3																				x		x																
Picea	*pungens*	Blue Spruce		3		SE1	-	-	-	G5	LH																						x																
Pinus	*resinosa*	Red Pine	8	3		S5	-	-	-	G5	L1																				x				x														
Pinus	*strobus*	Eastern White Pine	4	3		S5	-	-	-	G5	L4																			x	x										x		x	x					
Tsuga	*canadensis*	Eastern Hemlock	7	3		S5	-	-	-	G5	L4	x					x		x																						x		x	x					
DICOTYLEDONS		**DICOTS**																																															
Adoxaceae		**Moschatel Family**																																															
Sambucus	*racemosa*	Red Elderberry	5	2		S5	-	-	-	G5	L5					x																																	
Amaranthaceae		**Amaranth Family**																																															
Anacardiaceae		**Sumac or Cashew Family**																																															
Toxicodendron	*radicans var. radicans*	Eastern Poison-ivy				S5	-	-	-	G5T5	L5	x	x					x						x													x				x		x	x	x	x			
Rhus	*typhina*	Staghorn Sumac	1	3		S5	-	-	-	G5	L5			x	x					x	x	x	x	x				x					x		x	x	x	x	x		x		x	x	x	x		x	x
Apiaceae		**Carrot or Parsley Family**																																															
Aegopodium	*podagraria*	Bishop's Goutweed		0	-3	SE5	-	-	-	GNR	L+									x				x													x												
Anthriscus	*sylvestris*	Woodland Chervil		5	-2	SE4?	-	-	-	GNR	L+										x			x																									
Daucus	*carota*	Wild Carrot		5	-2	SE5	-	-	-	GNR	L+	x				x								x												x	x									x			
Heracleum	*maximum*	Cow-parsnip	3	-3		S5	-	-	-	G5	L5																																						
Apocynaceae		**Dogbane Family**																																															
Apocynum	*androsaemifolium*	Spreading Dogbane	3	5		S5	-	-	-	G5	L5																						x																
Asclepias	*syriaca*	Common Milkweed	0	5		S5	-	-	-	G5	L5				x																														x				
Vincetoxicum	*rossicum*	Dog-strangling Vine		5	-3	SE5	-	-	-	GNR	L+	x	x	x	x	x	x	x		x	x	x	x	x	x	x		x		x	x	x	x		x	x	x		x	x	x	x	x	x	x	x	x	x	x
Araliaceae		**Ginseng Family**																																															
Aralia	*nudicaulis*	Wild Sarsaparilla	4	3		S5	-	-	-	G5	L5												x				x							x							x		x	x				x	
Aristolochiaceae		**Duchman's-pipe Family**																																															
Asarum	*canadense*	Wild Ginger	6	5		S5	-	-	-	G5	L4												x																										
Asteraceae		**Composite or Aster Family**																																															
Arctium	*minus*	Common Burdock		3	-2	SE5	-	-	-	GNR	L+	x					x				x			x							x						x	x	x						x				
Ambrosia	*trifida*	Giant Ragweed	0	0		S5	-	-	-	G5	L5													x																									
Symphyotrichum	*lanceolatum*	White Panicled Aster	3	-3		S5	-	-	-	G5	L5																																			x			
Bidens	*cernua*	Nodding Beggar-ticks	2	-5		S5	-	-	-	G5	L5																		x																				
Leucanthemum	*vulgare*	Ox-eye Daisy		5	-1	SE5	-	-	-	GNR	L+																																		x	x			
Cichorium	*intybus*	Chicory		5	-1	SE5	-	-	-	GNR	L+				x																																		
Cirsium	*arvense*	Canada Thistle		3	-1	SE5	-	-	-	G5	L+					x																																	
Erigeron	*philadelphicus*	Philadelphia Fleabane	1	-3		S5	-	-	-	G5	L5									x				x													x								x		x		
Eupatorium	*perfoliatum*	Boneset	2	-3		S5	-	-	-	G5	L5		x																x																				
Prenanthes	*alba*	White Rattlesnake-root	6	3		S5	-	-	-	G5	L3																																	x					
Solidago	*altissima*	Tall Goldenrod	1	3		S5	-	-	-	G5	L5			x	x		x							x	x												x	x	x	x		x				x	x		
Solidago	*canadensis var. canadensis*	Canada Goldenrod	1	3		S5	-	-	-	G5T5	L5										x	x	x																										
Solidago	*flexicaulis*	Zig-zag Goldenrod	6	3		S5	-	-	-	G5	L5	x				x	x	x	x				x	x		x	x							x			x				x	x	x	x					
Solidago	*nemoralis ssp. nemoralis*	Gray Goldenrod	2	5		S5	-	-	-	G5T5	L5	x																													x		x	x					
Tanacetum	*vulgare*	Common Tansy		5	-1	SE5	-	-	-	GNR	L+				x																																		
Taraxacum	*officinale*	Common Dandelion		3	-2	SE5	-	-	-	G5	L+	x												x												x	x				x		x	x					
Tussilago	*farfara*	Coltsfoot		3	-2	SE5	-	-	-	GNR	L+				x	x								x													x				x		x	x	x				
Balsaminaceae		**Touch-me-not Family**																																															
Impatiens	*capensis*	Jewelweed	4	-3		S5	-	-	-	G5	L5	x	x			x								x	x				x		x						x		x	x	x		x	x					
Berberidaceae		**Barberry Family**																																															

Appendix C3: 2020 Vascular Plant List of E.T. Seton Park Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	FOD5-1/ SWD2-2	SWT2-2	CUT1-1	CUM-c/ CUT1-1	FOD7-a/ CUM1	FOD5-1	FOD5-3	FOD3 / MAM2-a	FOD7-3	CUW1-b	CUP1-c	FOD4-b	FOD7	CUT1-b	FOD5-2	FOD5-3	FOD1-1	MAS2-1b	CUP1-c	CUP3	FOD1-1	CUT1	FOD5-3	CUT1-c	CUM1-1	FOD7	FOD5-3	CUW1/CUM1-1	SWT2-2/MAS2	FOD5-8	CUW1	FOD5-8	FOD5-8/CUP1	CUT1-1	CUM1	FOD7	FOD3/MAS	CUP1-8
Caulophyllum	*thalictroides*	Blue Cohosh	6	5		S5	-	-	-	G5	L3												x																									
Podophyllum	*peltatum*	May-apple	5	3		S5	-	-	-	G5	L5															x			x																			
Betulaceae		**Birch Family**																																														
Alnus	*glutinosa*	European Black Alder		-2	-3	SE4	-	-	-	GNR	L+									x																													
Betula	*alleghaniensis*	Yellow Birch	6	0		S5	-	-	-	G5	L4							x																															
Betula	*papyrifera*	Paper Birch	2	2		S5	-	-	-	G5	L4					x	x		x							x															x		x	x			x		x
Corylus	*cornuta*	Beaked Hazelnut	5	5		S5	-	-	-	G5	L4							x																												x		
Ostrya	*virginiana*	Ironwood	4	4		S5	-	-	-	G5	L5	x							x						x	x				x				x							x		x	x				
Boraginaceae		**Borage Family**																																														
Myosotis	*scorpioides*	True Forget-me-not		-5	-1	SE5	-	-	-	G5	L+													x														x										
Brassicaceae		**Mustard Family**																																														
Alliaria	*petiolata*	Garlic Mustard		0	-3	SE5	-	-	-	GNR	L+	x		x		x		x	x	x	x	x	x	x	x	x	x			x	x		x	x	x	x		x			x		x		x
Barbarea	*vulgaris*	Garden Yellowrocket		0	-1	SE5	-	-	-	GNR	L+		x																x																			
Cardamine	*concatenata*	Cut-leaved Toothwort	6	3		S5	-	-	-	G5	L4	x																																			
Hesperis	*matronalis*	Dame's Rocket		5	-3	SE5	-	-	-	G4G5	L+	x				x	x		x	x	x			x	x				x						x		x			x				x		
Caprifoliaceae		**Honeysuckle Family**																																													
Lonicera	*maackii*	Amur Honeysuckle		5	-2	SE2	-	-	-	GNR	L+													x																								
Lonicera	*morrowii*	Morrow's Honeysuckle		5	-1	SE3	-	-	-	GNR	L+	x				x						x	x						x	x				x		x		x		x	x	x	x	x		x	x	x
Lonicera	*tatarica*	Tartarian Honeysuckle		3	-3	SE5	-	-	-	GNR	L+			x	x	x		x		x		x	x	x				x		x	x			x		x		x		x	x	x	x	x		x	x	x
Caryophyllaceae		**Pink Family**																																													
Stellaria	*media*	Nodding Chickweed		3	-1	SE5	-	-	-	GNR	L+													x																								
Cornaceae		**Dogwood Family**																																													
Cornus	*alternifolia*	Alternate-leaved Dogwood	6	5		S5	-	-	-	G5	L5	x				x	x	x	x	x																			x		x	x		x			
Cornus	*rugosa*	Round-leaved Dogwood	6	5		S5	-	-	-	G5	L4							x																													x
Cornus	*sericea*	Red-osier Dogwood	2	-3		S5	-	-	-	G5	L5		x															x												x	x		x	x	x			
Dipsacus	*fullonum*	Fuller's Teasel		5	-1	SE5	-	-	-	GNR	L4																																		x			
Elaeagnaceae		**Oleaster Family**																																														
Elaeagnus	*umbellata*	Autumn Olive		3	-3	SE3	-	-	-	GNR	L+				x																										x	x		x	x		x		
Fabaceae		**Pea Family**																																														
Melilotus	*albus*	White Sweet-clover		3	-3	SE5	-	-	-	G5	L+																																x		x	x		x		
Robinia	*pseudoacacia*	Black Locust		4	-3	SE5	-	-	-	G5	L+			x								x	x							x						x			x								x
Trifolium	*pratense*	Red Clover		2	-2	SE5	-	-	-	GNR	L+				x																											x		x	x				
Trifolium	*repens*	White Clover		2	-1	SE5	-	-	-	GNR	L+			x																																			
Vicia	*cracca*	Cow Vetch		5	-1	SE5	-	-	-	GNR	L+				x																											x		x	x	x			
Fagaceae		**Beech Family**																																														
Fagus	*grandifolia*	American Beech	6	3		S4	-	-	-	G5	L4	x					x	x								x	x				x		x				x			x		x	x				
Quercus	*alba*	White Oak	6	3		S5	-	-	-	G5	L2																																			x			
Quercus	*macrocarpa*	Bur Oak	5	1		S5	-	-	-	G5	L4																																			x		x		
Quercus	*rubra*	Red Oak	6	3		S5	-	-	-	G5	L4	x		x			x	x	x							x	x	X			x	x	x				x			x	x	x	x			x	x
Geraniaceae		**Geranium Family**																																														
Geranium	*maculatum*	Spotted Geranium	6	3		S5	-	-	-	G5	L4																											x										
Geranium	*robertianum*	Herb-robert		5	-2	S5	-	-	-	G5	L+?																															x		x	x				
Grossulariaceae		**Currant Family**																																														
Ribes	*cynosbati*	Eastern Prickly Gooseberry	4	5		S5	-	-	-	G5	L5																															x		x	x				
Ribes	*rubrum*	Red Currant		5	-2	SE5	-	-	-	G4G5	L+	x				x		x	x						x	x				x				x			x	x		x	x	x	x	x				
Hamamelidaceae		**Witch-hazel Family**																																														
Hamamelis	*virginiana*	Witch-hazel	6	3		S4S5	-	-	-	G5	L3						x																															
Hydrophyllaceae		**Water-leaf Family**																																														
Hydrophyllum	*canadense*	Blunt-leaf Water-leaf	8	-2		S4	-	-	-	G5	L3													x																								
Hydrophyllum	*virginianum*	Virginia Water-leaf	6	-2		S5	-	-	-	G5	L5													x																								
Hypericaceae		**St. John's-wort Family**																																														
Hypericum	*perforatum*	Common St. John's-wort		5	-3	SE5	-	-	-	GNR	L+									x											x																	
Juglandaceae		**Walnut Family**																																														
Carya	*cordiformis*	Bitternut Hickory	6	0		S5	-	-	-	G5	L4								x																													
Juglans	*cinerea*	Butternut	6	2		S2?	END	END	END	G3	L3							x																								x		x	x				
Juglans	*nigra*	Black Walnut	5	3		S4?	-	-	-	G5	L5								x		x	x		x						x						x	x		x		x	x					
Lamiaceae		**Mint Family**																																														
Glechoma	*hederacea*	Ground Ivy		5	-2	SE5	-	-	-	GNR	L+									x																												
Leonurus	*cardiaca ssp. cardiaca*	Common Motherwort		5	-2	SE5	-	-	-	NRTN	L+																															x		x	x				
Mentha	*arvensis*	American Wild Mint	3	-3		S5	-	-	-	G5	L+		x															x																			
Lythraceae		**Loosestrife Family**																																														
Lythrum	*salicaria*	Purple Loosestrife		-5	-3	SE5	-	-	-	G5	L+																	x																			
Malvaceae		**Mallow Family**																																														
Tilia	*americana*	American Basswood	4	3		S5	-	-	-	G5	L5	x				x	x	x	x				x				x	x			x		x		x		x		x	x			x			

Appendix C3: 2020 Vascular Plant List of E.T. Seton Park Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	FOD5-1/ SWD2-2	SWT2-2	CUT1-1	CUM-c/ CUT1-1	FOD7-a/ CUM1	FOD5-1	FOD5-3	FOD3 / MAM2-a	FOD7-3	CUW1-b	CUP1-c	FOD4-b	FOD7	CUT1-b	FOD5-2	FOD5-3	FOD1-1	MAS2-1b	CUP1-c	CUP3	FOD1-1	CUT1	FOD5-3	CUT1-c	CUM1-1	FOD7	FOD5-3	CUW1/CUM1-1	SWT2-2/MAS2	FOD5-8	CUW1	FOD5-8	FOD5-8/CUP1	CUT1-1	CUM1	FOD7	FOD3/MAS	CUP1-8
Tilia	*cordata*	Little Leaf Linden				SE1	-	-	-	GNR	L+							x																															
Moraceae		**Mulberry Family**																																															
Morus	*alba*	White Mulberry		0	-3	SE5	-	-	-	GNR	L+												x	x													x		x										
Oleaceae		**Olive Family**																																															
Fraxinus	*americana*	White Ash	4	3		S4	-	-	-	G5	L5	x	x			x		x	x	x		x	x	x	x	x	x	x		x	x		x	x	x		x	x	x		x	x	x	x	x		x	x	x
Fraxinus	*pennsylvanica*	Green Ash	3	-3		S4	-	-	-	G5	L5	x															x							x											x				
Syringa	*vulgaris*	Common Lilac		5	-2	SE5	-	-	-	GNR	L+																															x							
Onagraceae		**Evening-primrose Family**																																															
Circaea	*canadensis*	Canada Enchanter's Nightshade	3	3		S5	-	-	-	G5	L5	x				x		x	x				x			x				x	x										x		x	x					
Oenothera	*biennis*	Common Evening-primrose	0	3		S5	-	-	-	G5	L5																																						
Oxalidaceae		**Wood Sorrel Family**																																															
Oxalis	*stricta*	Common Yellow Oxalis	0	3		S5	-	-	-	G5	L5																									x													
Plantaginaceae		**Plantain Family**																																															
Linaria	*vulgaris*	Butter-and-eggs		5	-1	SE5	-	-	-	GNR	L+																						x																
Plantago	*major*	Common Plantain		-1	-1	SE5	-	-	-	G5	L+																												x										
Polygonaceae		**Smartweed Family**																																															
Fallopia	*japonica*	Japanese Knotweed		3	-1	SE5	-	-	-	G?	L+									x	x			x													x	x	x		x		x	x					x
Rumex	*crispus*	Curly-leaf Dock		-1	-2	SE5	-	-	-	GNR	L+													x																									
Ranunculaceae		**Buttercup Family**																																															
Anemone	*canadensis*	Canada Anemone	3	-3		S5	-	-	-	G5	L5													x													x												
Anemone	*acutiloba*	Sharp-lobed Hepatica	6	5		S5	-	-	-	G5	L3																x							x															
Aquilegia	*canadensis*	Wild Columbine	5	1		S5	-	-	-	G5	L4																																	x					
Ranunculus	*acris*	Tall Buttercup		-2	-2	SE5	-	-	-	G5	L+	x	x			x								x							x						x		x										
Thalictrum	*dioicum*	Early Meadow-rue	5	2		S5	-	-	-	G5	L5	x																																					
Thalictrum	*pubescens*	Tall Meadow-rue	5	-2		S5	-	-	-	G5	L5					x	x		x							x	x							x							x		x	x					x
Rhamnaceae		**Buckthorn Family**																																															
Rhamnus	*cathartica*	Common Buckthorn		3	-3	SE5	-	-	-	GNR	L+		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x		x	x	x		x	x	x	x	x		x	x	x
Frangula	*alnus*	Glossy Buckthorn		-1	-3	SE5	-	-	-	GNR	L+										x																												
Rosaceae		**Rose Family**																																															
Crataegus	*sp.*	Hawthorn species	4	5			-	-	-										x											x		x			x			x							x				
Fragaria	*virginiana*	Wild Strawberry	2	1		S5	-	-	-	G5	L5				x																																		
Geum	*aleppicum*	Yellow Avens	2	-1		S5	-	-	-	G5	L5	x					x														x										x		x	x	x				
Geum	*canadense*	White Avens	3	0		S5	-	-	-	G5	L5	x																		x																			
Malus	*pumila*	Common Apple		5	-1	SE4	-	-	-	G5	L+				x						x		x										x												x				x
Physocarpus	*opulifolius*	Ninebark	5	-2		S5	-	-	-	G5	L3													x																									
Prunus	*serotina*	Black Cherry	3	3		S5	-	-	-	G5	L5	x					x	x	x							x															x		x	x	x		x		x
Prunus	*virginiana*	Choke Cherry	2	1		S5	-	-	-	G5	L5	x				x	x		x	x							x							x							x		x	x			x		
Pyrus	*communis*	Common Pear		5	-1	SE4	-	-	-	G5	L+																																		x				
Rosa	*multiflora*	Multiflora Rose		3	-3	SE5	-	-	-	GNR	L+														x																				x				
Rubus	*allegheniensis*	Common Blackberry	2	2		S5	-	-	-	G5	L5																																		x				
Rubus	*idaeus*	American Red Raspberry	0	-2		S5	-	-	-	G5	L+		x			x								x													x				x		x	x	x				
Rubus	*occidentalis*	Black Raspberry	2	5		S5	-	-	-	G5	L5																																						
Rubus	*odoratus*	Purple Flowering Raspberry	3	5		S5	-	-	-	G5	L5				x		x							x													x				x		x	x					
Sorbus	*aucuparia*	European Mountain-ash		5	-2	SE4	-	-	-	G5	L+																														x		x	x					
Rubiaceae		**Madder Family**																																															
Galium	*mollugo*	Smooth Bedstraw		5	-2	SE5	-	-	-	GNR	L+		x																																				
Galium	*palustre*	Marsh Bedstraw	5	-5		S5	-	-	-	G5	L5		x																																				
Salicaceae		**Willow Family**																																															
Populus	*balsamifera*	Balsam Poplar	4	-3		S5	-	-	-	G5	L5																														x		x	x	x				
Populus	*deltoides ssp. deltoides*	Eastern Cottonwood	4	-1		S5	-	-	-	G5T5	L5	x												x				x							x		x	x	x		x		x	x	x		x		
Populus	*tremuloides*	Trembling Aspen	2	0		S5	-	-	-	G5	L5				x														x										x		x		x	x	x		x	x	
Salix	*sp.*	Willow species					-	-	-			x				x					x																			x					x	x			
Salix	*exigua*	Narrow-leaf Willow	3	-5		S5	-	-	-	GNR		x	x											x													x								x				
Salix	*fragilis*	Crack Willow		-1	-3	SE	-	-	-	GNR	L+																																						
Salix X	*rubens*	Hybrid Crack Willow		-4	-3	hyb	-	-	-	HYB										x	x		x																x	x	x		x	x	x		x		
Sapindaceae		**Soapberry Family**																																															
Acer	*negundo*	Manitoba Maple	0	0		S5	-	-	-	G5	L+?	x	x	x		x	x	x	x	x	x	x	x	x	x	x			x	x			x		x		x	x	x	x	x	x	x	x	x		x		x
Acer	*platanoides*	Norway Maple		5	-3	SE5	-	-	-	GNR	L+	x		x		x			x	x	x			x													x		x						x		x		
Acer	*saccharinum*	Silver Maple	5	-3		S5	-	-	-	G5	L4																														x		x	x					
Acer	*saccharum*	Sugar Maple	4	3		S5	-	-	-	G5	L5	x				x	x	x	x							x	x	x		x		x		x				x	x		x		x	x					
Acer X	*freemanii*	Freeman's Maple	6	-5		SNA	-	-	-	GNA	L4																			x	x										x		x	x					
Scrophulariaceae		**Figwort Family**																																															
Verbascum	*thapsus*	Common Mullein		5	-2	SE5	-	-	-	GNR	L+																																		x	x			
Ailanthus	*altissima*	Tree-of-heaven		5	-1	SE5	-	-	-	GNR	L+																														x		x	x					

Appendix C3: 2020 Vascular Plant List of E.T. Seton Park Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	FOD5-1/ SWD2-2	SWT2-2	CUT1-1	CUM-c/ CUT1-1	FOD7-a/ CUM1	FOD5-1	FOD5-3	FOD3 / MAM2-a	FOD7-3	CUW1-b	CUP1-c	FOD4-b	FOD7	CUT1-b	FOD5-2	FOD5-3	FOD1-1	MAS2-1b	CUP1-c	CUP3	FOD1-1	CUT1	FOD5-3	CUT1-c	CUM1-1	FOD7	FOD5-3	CUW1/CUM1-1	SWT2-2/MAS2	FOD5-8	CUW1	FOD5-8	FOD5-8/CUP1	CUT1-1	CUM1	FOD7	FOD3/MAS	CUP1-8
Solanaceae		**Nightshade Family**																																														
Solanum	*dulcamara*	Bittersweet Nightshade		0	-2	SE5	-	-	-	GNR	L+						x												x																					
Ulmaceae		**Elm Family**																																														
Ulmus	*americana*	American Elm	3	-2		S5	-	-	-	G4	L5	x				x			x			x		x												x		x											
Ulmus	*pumila*	Siberian Elm		5	-1	SE3	-	-	-	GNR	L+										x	x	x															x								x				
Urticaceae		**Nettle Family**																																														
Boehmeria	*cylindrica*	Smallspike False Nettle	4	-5		S5	-	-	-	G5	L4						x																																	
Laportea	*canadensis*	Canadian Wood Nettle	6	-3		S5	-	-	-	G5	L5																										x												
Pilea	*pumila*	Canadian Clearweed	5	-3		S5	-	-	-	G5	L5																															x								
Urtica	*dioica ssp. dioica*	Stinging Nettle		-1	-1	SE2	-	-	-	G5T5?	L+					x								x					x								x		x	x									
Valerianaceae		**Valerian Family**																																															
Valeriana	*officinalis*	Garden Valerian		2	-1	SE3	-	-	-	GNR	L+		x																																					
Verbenaceae		**Vervain Family**																																															
Verbena	*hastata*	Blue Vervain	4	-4		S5	-	-	-	G5	L5																																					x			
Vitaceae		**Grape Family**																																															
Parthenocissus	*vitacea*	Thicket-creeper	3	3		S5	-	-	-	G5	L5		x			x			x	x			x	x					x							x	x	x			x		x	x			x	x	
Vitis	*riparia*	Riverbank Grape	0	-2		S5	-	-	-	G5	L5	x			x	x					x		x	x					x			x					x		x		x	x	x	x			x	x	
MONOCOTYLEDONS		**MONOCOTS**																																														
Amaryllidaceae		**Amaryllis Family**																																															
Maianthemum	*racemosum*	Large False Solomon's Seal	4	3		S5	-	-	-	G5	L5	x				x	x	x	x	x			x	x	x	x	x							x			x										x	x
Araceae		**Arum Family**																																														
Arisaema	*triphyllum*	Jack-in-the-pulpit	5	-2		S5	-	-	-	G5	L5							x					x																	x									
Cyperaceae		**Sedge Family**																																														
Carex	*sp.*	Sedge species					-	-	-			x	x								x			x											x	x			x		x	x				
Carex	*albursina*	White Bear Sedge	7	5		S5	-	-	-	G5	L3													x																								
Carex	*platyphylla*	Broad-leaved Sedge	7	5		S4S5	-	-	-	G5	L3	x																																x					
Carex	*rosea*	Rosy Sedge	5	5		S5	-	-	-	G5	L5	x																																					
Liliaceae		**Lily Family**																																														
Erythronium	*americanum*	Yellow Trout-lily	5	5		S5	-	-	-	G5	L5	x																																					
Melanthiaceae		**Bunchflower Family**																																															
Trillium	*grandiflorum*	White Trillium	5	5		S5	-	-	-	G5	L4																																x		x	x				
Poaceae		**Grass Family**																																														
Brachyelytrum	*erectum*	Bearded Short-husk	7	5		S4	-	-	-	G5	L3																											x											
Bromus	*inermis*	Smooth Brome		5	-3	SE5	-	-	-	G5	L+						x							x														X								x	x		
Dactylis	*glomerata*	Orchard Grass		3	-1	SE5	-	-	-	GNR	L+										x			x														x								x	x		
Milium	*effusum*	Wood Millet	8	4		S4S5	-	-	-	G5	L3	x																																					
Phalaris	*arundinacea*	Reed Canary Grass	0	-4		S5	-	-	-	G5	L+?													x														x								x			
Phleum	*pratense*	Timothy		3	-1	SE5	-	-	-	GNR	L+				x																																			
Phragmites	*australis*	Common Reed	0	-4		S4?	-	-	-	G5	L+																															x								
Poa	*pratensis ssp. pratensis*	Kentucky Blue Grass	0	1		SE5	-	-	-	G5T5	L+		x		x	x					x	x	x	x	x						x		x			x	x		x						x	x		x	
Typhaceae		**Cattail Family**																																															
Typha	*latifolia*	Broad-leaved Cattail	3	-5		S5	-	-	-	G5	L4																		x																		x		x	
Typha X	*glauca*	Glaucous Cattail	3	-5		SNA	-	-	-	GNA	L+																		x																		x		x	

FLORISTIC SUMMARY & ASSESSMENT

Species Diversity

Total Species:	**166**	
Native Species:	**106**	63.86%
Exotic Species	**60**	36.1%
Total Taxa in Region (List Region, Source)	10000	
% Regional Taxa Recorded	1.66%	
S1-S3 Species	0	
S4 Species	5	
S5 Species	93	

Co-efficient of Conservatism and Floral Quality Index

Co-efficient of Conservatism (CC) (average)		**3.96**	
CC 0 to 3	*lowest sensitivity*	41	38.68%
CC 4 to 6	*moderate sensitivity*	55	51.89
CC 7 to 8	*high sensitivity*	9	8.49%
CC 9 to 10	*highest sensitivity*	0	0.00%
Floral Quality Index (FQI)		**40.79**	

Presence of Weedy & Invasive Species

Appendix C3: 2020 Vascular Plant List of E.T. Seton Park Area of Investigation

BOTANICAL NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2020-04-21)	SARA STATUS (2020-04-21)	GLOBAL RANK	LOCAL STATUS TRCA	FOD5-1/ SWD2-2	SWT2-2	CUT1-1	CUM-c/ CUT1-1	FOD7-a/ CUM1	FOD5-1	FOD5-3	FOD3 / MAM2-a	FOD7-3	CUW1-b	CUP1-c	FOD4-b	FOD7	CUT1-b	FOD5-2	FOD5-3	FOD1-1	MAS2-1b	CUP1-c	CUP3	FOD1-1	CUT1	FOD5-3	CUT1-c	CUM1-1	FOD7	FOD5-3	CUW1/CUM1-1	SWT2-2/MAS2	FOD5-8	CUW1	FOD5-8	FOD5-8/CUP1	CUT1-1	CUM1	FOD7	FOD3/MAS	CUP1-8
mean weediness		**-1.93**																																														
weediness = -1	*low potential invasiveness*	23	38.33%																																													
weediness = -2	*moderate potential invasivenes*	18	30.00%																																													
weediness = -3	*high potential invasiveness*	19	31.67%																																													
Presence of Wetland Species																																																
average wetness value		**1.62**																																															
upland		47	28.31%																																														
facultative upland		55	33.13%																																														
facultative		26	15.66%																																														
facultative wetland		30	18.07%																																														
obligate wetland		8	4.82%																																														

EXPLANATION OF TERMINOLOGY (See the following pages for addition detailed information on terms.)
Botanical and Common Name: From Newmaster et. al, 1998. Species requiring confirmation noted (cf).
Co-efficient of Conservatism: This value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific habitat integrity.
Wetness Index: This value, ranging from -5 (obligate wetland) to 5 (upland) provides the probability of a species occurring in wetland or upland habitats.
Weediness Index: This value, ranging from -1 (low) to -3 (high) quantifies the potential invasiveness of non-native plants. In combination with the percentage of non-native plants, it can be used as an indicator of disturbance.
Provincial Status: Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These ranks are not legal designations. S4 and S5 species are generally uncommon to common in the province. Species ranked S1-S3 are considered to be rare in Ontario.
Local TRCA Status:

L+: Exotic. Not native to TRCA jurisdiction (includes hybrids between native and exotic species).
L1: Rare in TRCA jurisdiction, of concern regionally.
L2: Probably rare in TRCA jurisdiction, of concern regionally.
L3: Generally secure in natural matrix; considered to be of regional concern.
L4: Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.
L5: Generally secure throughout TRCA jurisdiction; may be of very localized concern in highly disturbed areas.

Record Type
x- Species recorded in ELC Vegetation Community
DETAILED EXPLANATION OF TERMS
Floral Quality Index and Coefficient of Conservatism Values
Vegetation species and community sensitivity was assessed through the application of coefficient of conservatism values (CC), assigned to each native species in southern Ontario (Oldham, et. al, 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to specific habitat integrity. The occurrence of species with a CC of 9 or 10 can be good indicators of undisturbed conditions such as mature forests, fens or bogs.
General habitat values associated with the CC values are:
0-3: species found in a wide variety of communities, including disturbed sites
4-6: species associated with a specific community, but tolerate moderate disturbance
7-8: species associated with a community in an advanced successional stage, tolerant of minor disturbances
9-10: species with a high degree of fidelity to a narrow range of synecological parameters
The floristic quality of an area is reflected in the mean value of CC. For example, an old field or grazed woodlot would tend have a low mean CC; these habitats are dominated by opportunistic species that occur in a wide range of site conditions and are tolerant of disturbance. A bog, prairie or intact forest would have a higher value, reflecting the specific habitat requirements of many of the species and a generally undisturbed condition. The following provides an example of interpretation of CC values:
mean CC value / % spp CC >8 / Condition of the Landscape
5 / 27 / intact
3.5 / 19 / slightly degraded
1.3 / 2 / severely degraded
The FQI accounts for the species diversity of the area by equating the number of native species with the mean CC value. The FQI is generally used for comparing natural areas. The CC value and FQI of the study area were calculated for the entire study area.
Weediness Index
The sensitivity of natural areas can be assessed through application of the Weediness Index. The Weediness Index quantifies the potential invasiveness of non-native plants, and, in combination with the percentage of non-native plants can be used as an indicator of disturbance. Values (ranging from 1- to -3) have been assigned to most non-native species based on the potential impact each species can have in natural areas:
-1: little or no impact on natural areas (most non-native plants are in this category)
-2: occasional impacts on natural areas, generally infrequent or localized
-3: major potential impacts on natural areas
Wetness Index
All plants in southern Ontario have been assigned a wetland category, based on the designations developed for use by the United States Fish & Wildlife Service. Plants are designated into the following categories:
OBL (Obligate Wetland): occurs almost always in wetlands under natural conditions (estimated >99% probability)
FACW (Facultative Wetland): usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67-99% probability)
FAC (Facultative): equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability)
FACU (Facultative Upland): occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33% probability)
UPL (Upland): occurs almost never in wetlands under natural conditions (estimated <1% probability)
Further refinement of the Facultative categories are denoted by a "+" or "-" to express exaggerated tendencies for those species. The "+" denotes a greater estimated probability occurring in wetlands than species in the general indicator category, but a lesser probability than species occurring in the next higher category. The "-" denotes a lesser estimated probability of occurring in wetlands than species in the general indicator category, but a greater probability than species occurring in the next lower general category.
Each wetland category has been assigned a numerical value to facilitate the quantification of the wetness index. The wetland categories and their corresponding values are as follows:
OBL : -5
FACW+: -4
FACW: -3
FACW-: -2
FAC+: -1
Provincial Status
Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These rankings are based on the total number of extant Ontario populations and the degree to which they are potentially or actively threatened with destruction. The ranks are:
S1: Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province
S2: Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province
S3: Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation
S4: Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5:Secure—Common, widespread, and abundant in the nation or state/province
SH: Possibly Extirpated (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences
SNR Unranked—Nation or state/province conservation status not yet assessed
SX: Presumed Extirpated—Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered
SNA Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
SU: Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends
Rank ranges, e.g. S2S3, indicate that the rank is either S2 or S3, but that current information is insufficient to differentiate.
S#S# Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

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Appendix C. Ontario Line Species Records Review[3]

[3] Appendix E of AECOM Natural Environment Environmental Conditions Report – Ontario Line Project dated November 2020

Appendix E. Species Records from Wildlife Atlases

Table 1: Mammal Records Within the Ontario Line Study Area

Taxon	Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]
Bat	Little Brown Myotis	*Myotis lucifugus*	S4	END	END	END
Bat	Hoary Bat	*Lasiurus cinereus*	S4	-		
Bat	Silver-haired Bat	*Lasionycteris noctivagans*	S4	-		
Bat	Eastern Red Bat	*Lasiurus borealis*	S4	-		
Bat	Eastern Small-footed Myotis	*Myotis leibii*	S2S3	END	-	-
Bat	Northern Long-eared Myotis	*Myotis septentrionalis*	S3	END	END	END
Bat	Big Brown Bat	*Eptesicus fuscus*	S5	-		
Bat	Tri-coloured Bat	*Perimyotis subflavus*	S3?	END	END	END
Carnivore	American Mink	*Mustela vison*	S4	-		
Carnivore	Common Raccoon	*Procyon lotor*	S5	-		
Carnivore	Coyote	*Canis latrans*	S5	-		
Carnivore	Striped Skunk	*Mephitis*	S5	-		
Carnivore	Red Fox	*Vulpes*	S5	-		
Hare	European Hare	*Lepus europaeus*	SNA	-		
Mole	Star-nosed Mole	*Condylura cristata*	S5	-		
Opossum	Virginia Opossum	*Didelphis virginiana*	S4	-		
Rabbit	Eastern Cottontail	*Sylvilagus floridanus*	S5	-		
Rodent	Beaver	*Castor canadensis*	S5	-		
Rodent	Deer Mouse	*Peromyscus maniculatus*	S5	-		
Rodent	Eastern Gray Squirrel	*Sciurus carolinensis*	S5	-		
Rodent	Eastern Chipmunk	*Tamias striatus*	S5	-		
Rodent	Groundhog	*Marmota monax*	S5	-		
Rodent	House Mouse	*Mus musculus*	SNA	-		
Rodent	Meadow Vole	*Microtus pennsylvanicus*	S5	-		
Rodent	Porcupine	*Erethizon dorsatum*	S4	-		
Rodent	Norway Rat	*Rattus norvegicus*	SNA	-		
Rodent	Muskrat	*Ondatra zibethicus*	S5	-		
Rodent	White-footed Mouse	*Peromyscus leucopus*	S5	-		

Table Legend

[1] ***S-rank:*** *The natural heritage provincial ranking system (provincial S-rank) is used by the MNRF NHIC to set protection priorities for rare species and natural communities.* The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

SX - Presumed Extirpated—Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

Appendix E. Species Records from Wildlife Atlases

SH- Possibly Extirpated (Historical)—Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for.
S1 - Critically Imperiled — Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2-Imperiled—Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 - Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 - Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 - Secure—Common, widespread, and abundant in the nation or state/province.
SNR - Unranked—Province conservation status not yet assessed.
SU - Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA - Not Applicable — A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B - Breeding—Conservation status refers to the breeding population of the species in the province.
N - Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.
M - Migrant—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.
Note: A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the province, and/or a migrant-status S-rank if the species occurs regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. The two (or rarely, three) status ranks are separated by a comma (e.g., "S2B,S3N" or "SHN,S4B,S1M").
Other Qualifiers
? -Inexact or Uncertain—Denotes inexact or uncertain numeric rank. (The ? qualifies the character immediately preceding it in the S-rank.)

[2]***ESA Status:*** *The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:*

END *(Endangered) – A species facing imminent extinction or extirpation in Ontario.*
THR *(Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.*
SC *(Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.*
NAR *(Not at Risk) – A species that has been evaluated and found to be not at risk.*

[3]***SARA Status****: The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before*

they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act. The following are definitions of the SARA status rankings assigned to each species in the table above:

***END (Schedule 1)** – These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*
***THR (Schedule 1)** – These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*
***SC (Schedule 1)** – These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.*
***No Status (No Schedule)** – These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.*
***NAR (Not at Risk)**– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*
***Not Applicable (N / A)** – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*
Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on January 2017. Available: http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm

***[4]COSEWIC Status:** COSEWIC (Committee on the Status of Endangered Wildlife in Canada) assigns a federal status ranking for all species that it assesses. Rankings include:*

***END** (Endangered) - A species facing imminent extirpation or extinction throughout its range.*
***THR** (Threatened) - A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction*
***SC** (Special Concern) - A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.*
***NAR** (Not at Risk) - A species that has been evaluated and found to be not at risk.*
***DD** (Data Deficient) - A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.*

Appendix E. Species Records from Wildlife Atlases

Table 2: Ontario Reptile and Amphibian Atlas Records within the Ontario Line Study Area

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Historical Record (> 20 years old)	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
American Bullfrog	*Lithobates catesbeianus*	S4	-	-	-	No	2012	2016	2008
American Toad	*Anaxyrus americanus*	S5	-	-	-	No	2018	2018	2018
Blanding's Turtle	*Emydoidea blandingii*	S3	THR	THR	END	No	2017	2019	1983
Dekay's Brownsnake	*Storeria dekayi*	S5	NAR	-	NAR	No	2019	2019	2018
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	S5	-	-	-	No	2018	2019	2018
Eastern Hog-nosed Snake	*Heterodon platirhinos*	S3	THR	THR	THR	Yes	1916	No record	No record
Eastern Musk Turtle	*Sternotherus odoratus*	S3	SC	SC	SC	Yes	1952	No record	1952
Eastern Red-backed Salamander	*Plethodon cinereus*	S5	-	-	-	No	2018	2019	2017
Eastern Ribbonsnake	*Thamnophis sauritus*	S4	SC	SC	SC	Yes	1931	1913	No record
Four-toed Salamander	*Hemidactylium scutatum*	S4	NAR	-	NAR	Yes	1913	No record	No record
Gray Treefrog	*Hyla versicolor*	S5	-	-	-	No	1983	2016	1982
Green Frog	*Lithobates clamitans*	S5	-	-	-	No	2018	2018	2017
Jefferson Salamander	*Ambystoma jeffersonianum*	S2	END	END	END	No	1983	1983	2000
Midland Painted Turtle	*Chrysemys picta marginata*	S4	-	No status	SC	No	2018	2019	2019
Eastern Milksnake	*Lampropeltis triangulum*	S4	NAR	SC	SC	No	2019	2019	2016
Mudpuppy	*Necturus maculosus*	S4	NAR	-	NAR	No	2014	1913	1982
Northern Leopard Frog	*Lithobates pipiens*	S5	NAR	-	NAR	No	2018	2017	2010
Northern Map Turtle	*Graptemys geographica*	S3	SC	SC	SC	No	2018	2018	2016
Northern Watersnake	*Nerodia sipedon sipedon*	S5	NAR	-	NAR	No	2015	No record	No record
Pickerel Frog	*Lithobates palustris*	S4	NAR	-	NAR	Yes	1922	No record	No record
Queensnake	*Regina septemvittata*	S2	END	EN	END	Yes	No record	1858	No record
Red-bellied Snake	*Storeria occipitomaculata*	S5	-	-	-	No	1988	2018	1982
Red-eared Slider	*Trachemys scripta elegans*	SE	-	-	-	No	2016	2017	2014
Red-spotted Newt	*Notophthalmus viridescens viridescens*	S5	-	-	-	Yes	1983	1913	1982
Ring-necked Snake	*Diadophis punctatus*	S4	-	-	-	No	2011	No record	No record
Smooth Greensnake	*Opheodrys vernalis*	S4	-	-	-	No	2016	2016	1987
Snapping Turtle	*Chelydra serpentina*	S4	SC	SC	SC	No	2018	2019	2019
Spotted Salamander	*Ambystoma maculatum*	S4	-	-	-	Yes	1995	1929	1982

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Historical Record (> 20 years old)	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Spring Peeper	*Pseudacris crucifer*	S5	-	-	-	No	2007	2002	1982
Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield populati	*Pseudacris maculata pop. 1*	S3	NAR	-	THR	No	2016	1989	1990
Wood Frog	*Lithobates sylvaticus*	S5	-	-	-	No	2016	2011	1982

Table Legend

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S1 - Critically Imperiled — Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
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Appendix E. Species Records from Wildlife Atlases

Other Qualifiers

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NAR *(Not at Risk) - A species that has been evaluated and found to be not at risk.*
DD *(Data Deficient) - A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.*

Appendix E. Species Records from Wildlife Atlases

Table 3: 2001-2005 Ontario Breeding Bird Atlas Records within the Ontario Line Study Area

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Year Last Recorded	MBCA Protected[5]	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
American Black Duck	*Anas rubripes*	S4	-	-	-	2001-2005	Yes	√	√	√
American Crow	*Corvus brachyrhynchos*	S5B	-	-	-	2001-2005	No	√	√	√
American Goldfinch	*Spinus tristis*	S5B	-	-	-	2001-2005	Yes	√	√	√
American Kestrel	*Falco sparverius*	S4	-	-	-	2001-2005	No	√	√	√
American Redstart[A]	*Setophaga ruticilla*	S5B	-	-	-	2001-2005	Yes	√	√	√
American Robin	*Turdus migratorius*	S5B	-	-	-	2001-2005	Yes	√	√	√
American Wigeon	*Anas americana*	S4	-	-	-	2001-2005	Yes	√		
American Woodcock	*Scolopax minor*	S4B	-	-	-	2001-2005	Yes	√	√	√
Baltimore Oriole	*Icterus galbula*	S4B	-	-	-	2001-2005	Yes	√	√	√
Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	2001-2005	Yes	√	√	√
Barn Swallow	*Hirundo rustica*	S4B	THR	SC	THR	2001-2005	Yes	√	√	√
Belted Kingfisher	*Megaceryle alcyon*	S4B	-	-	-	2001-2005	No	√	√	√
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B	-	-	-	2001-2005	Yes	√	√	√
Black-capped Chickadee	*Poecile atricapillus*	S5	-	-	-	2001-2005	Yes	√	√	√
Black-crowned Night-Heron	*Nycticorax nycticorax*	S3B,S3N	-	-	-	2001-2005	Yes		√	
Blue Jay	*Cyanocitta cristata*	S5	-	-	-	2001-2005	No	√	√	√
Blue-gray Gnatcatcher[A]	*Polioptila caerulea*	S4B	-	-	-	2001-2005	Yes	√	√	√
Blue-winged Teal	*Anas discors*	S4	-	-	-	2001-2005	Yes	√	√	
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	2001-2005	Yes	√	√	√
Brown Creeper[A]	*Certhia americana*	S5B	-	-	-	2001-2005	Yes	√	√	
Brown Thrasher	*Toxostoma rufum*	S4B	-	-	-	2001-2005	Yes	√	√	√
Brown-headed Cowbird	*Molothrus ater*	S4B	-	-	-	2001-2005	No	√	√	√
Canada Goose	*Branta canadensis*	S5	-	-	-	2001-2005	Yes	√	√	√
Canvasback	*Aythya valisineria*	S1B,S4N	-	-	-	2001-2005	Yes	√	√	
Carolina Wren	*Thryothorus ludovicianus*	S4	-	-	-	2001-2005	Yes	√	√	√
Caspian Tern	*Hydroprogne caspia*	S3B	NAR	-	NAR	2001-2005	Yes		√	
Cedar Waxwing	*Bombycilla cedrorum*	S5B	-	-	-	2001-2005	Yes	√	√	√
Chestnut-sided Warbler[A]	*Setophaga pensylvanica*	S5B	-	-	-	2001-2005	Yes	√	√	√
Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	2001-2005	Yes	√	√	√
Chipping Sparrow	*Spizella passerina*	S5B	-	-	-	2001-2005	Yes	√	√	√
Clay-colored Sparrow	*Spizella pallida*	S4B	-	-	-	2001-2005	Yes		√	
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B	-	-	-	2001-2005	Yes	√	√	√
Common Grackle	*Quiscalus quiscula*	S5B	-	-	-	2001-2005	Yes	√	√	√
Common Nighthawk	*Chordeiles minor*	S4B	SC	THR	SC	2001-2005	Yes	√	√	√
Common Tern	*Sterna hirundo*	S4B	NAR	-	NAR	2001-2005	Yes	√	√	
Common Yellowthroat	*Geothlypis trichas*	S5B	-	-	-	2001-2005	Yes	√	√	√
Cooper's Hawk[A]	*Accipiter cooperii*	S4	NAR	-	NAR	2001-2005	No	√	√	√

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Year Last Recorded	MBCA Protected[5]	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Double-crested Cormorant	*Phalacrocorax auritus*	S5B	NAR	-	NAR	2001-2005	No	√	√	
Downy Woodpecker	*Picoides pubescens*	S5	-	-	-	2001-2005	Yes	√	√	√
Eastern Kingbird	*Tyrannus tyrannus*	S4B	-	-	-	2001-2005	Yes	√	√	√
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	2001-2005	Yes	√	√	√
Eastern Phoebe	*Sayornis phoebe*	S5B	-	-	-	2001-2005	Yes	√	√	√
Eastern Screech-Owl	*Megascops asio*	S4	NAR	-	NAR	2001-2005	No	√	√	√
Eastern Towhee	*Pipilo erythrophthalmus*	S4B	-	-	-	2001-2005	Yes	√		
Eastern Wood-Pewee	*Contopus virens*	S4B	SC	SC	SC	2001-2005	Yes	√	√	√
European Starling	*Sturnus vulgaris*	SNA	-	-	-	2001-2005	No	√	√	√
Field Sparrow	*Spizella pusilla*	S4B	-	-	-	2001-2005	No	√	√	
Gadwall	*Anas strepera*	S4	-	-	-	2001-2005	Yes	√	√	
Gray Catbird	*Dumetella carolinensis*	S4B	-	-	-	2001-2005	Yes	√	√	√
Great Black-backed Gull	*Larus marinus*	S2B	-	-	-	2001-2005	Yes		√	
Great Blue Heron	*Ardea herodias*	S4	-	-	-	2001-2005	Yes		√	
Great Crested Flycatcher	*Myiarchus crinitus*	S4B	-	-	-	2001-2005	Yes	√	√	√
Great Egret	*Ardea alba*	S2B	-	-	-	2001-2005	Yes	√	√	
Great Horned Owl	*Bubo virginianus*	S4	-	-	-	2001-2005	No	√	√	√
Green Heron	*Butorides virescens*	S4B	-	-	-	2001-2005	Yes	√	√	√
Green-winged Teal	*Anas crecca*	S4	-	-	-	2001-2005	Yes		√	
Hairy Woodpecker[A]	*Picoides villosus*	S5	-	-	-	2001-2005	Yes	√	√	√
Herring Gull	*Larus argentatus*	S5B,S5N	-	-	-	2001-2005	Yes		√	
Hooded Merganser	*Lophodytes cucullatus*	S5B,S5N	-	-	-	2001-2005	Yes	√	√	√
Horned Lark	*Eremophila alpestris*	S5B	-	-	-	2001-2005	Yes	√	√	√
House Finch	*Haemorhous mexicanus*	SNA	-	-	-	2001-2005	Yes	√	√	√
House Sparrow	*Passer domesticus*	SNA	-	-	-	2001-2005	No	√	√	√
House Wren	*Troglodytes aedon*	S5B	-	-	-	2001-2005	Yes	√	√	√
Indigo Bunting	*Passerina cyanea*	S4B	-	-	-	2001-2005	Yes	√	√	√
Killdeer	*Charadrius vociferus*	S5B,S5N	-	-	-	2001-2005	Yes	√	√	√
Least Flycatcher[A]	*Empidonax minimus*	S4B	-	-	-	2001-2005	Yes	√	√	√
Magnolia Warbler	*Setophaga magnolia*	S5B	-	-	-	2001-2005	Yes	√		
Mallard	*Anas platyrhynchos*	S5	-	-	-	2001-2005	Yes	√	√	√
Marsh Wren	*Cistothorus palustris*	S4B	-	-	-	2001-2005	Yes		√	
Merlin	*Falco columbarius*	S5B	NAR	-	NAR	2001-2005	No			√
Mourning Dove	*Zenaida macroura*	S5	-	-	-	2001-2005	Yes	√	√	√
Mourning Warbler[A]	*Geothlypis philadelphia*	S4B	-	-	-	2001-2005	Yes	√	√	√
Mute Swan	*Cygnus olor*	SNA	-	-	-	2001-2005	Yes	√	√	
Nashville Warbler	*Oreothlypis ruficapilla*	S5B	-	-	-	2001-2005	Yes	√		
Northern Cardinal	*Cardinalis cardinalis*	S5	-	-	-	2001-2005	Yes	√	√	√
Northern Flicker	*Colaptes auratus*	S4B	-	-	-	2001-2005	Yes	√	√	√
Northern Harrier	*Circus hudsonius*	S4B	NAR	-	NAR	2001-2005	No		√	
Northern Mockingbird	*Mimus polyglottos*	S4	-	-	-	2001-2005	Yes	√	√	√

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Year Last Recorded	MBCA Protected[5]	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B	-	-	-	2001-2005	Yes	√	√	√
Northern Saw-whet Owl	*Aegolius acadicus*	S4	-	-	-	2001-2005	No		√	
Northern Shoveler	*Anas clypeata*	S4	-	-	-	2001-2005	Yes	√		
Northern Waterthrush[A]	*Parkesia noveboracensis*	S5B	-	-	-	2001-2005	Yes	√		
Orchard Oriole	*Icterus spurius*	S4B	-	-	-	2001-2005	Yes	√	√	√
Ovenbird[A]	*Seiurus aurocapilla*	S4B	-	-	-	2001-2005	Yes		√	√
Peregrine Falcon	*Falco peregrinus*	S3B	SC	-	NAR	2001-2005	No	√	√	√
Pied-billed Grebe	*Podilymbus podiceps*	S4B,S4N	-	-	-	2001-2005	Yes	√		
Pileated Woodpecker[A]	*Dryocopus pileatus*	S5	-	-	-	2001-2005	Yes	√	√	√
Pine Siskin	*Spinus pinus*	S4B	-	-	-	2001-2005	Yes	√		
Pine Warbler[A]	*Setophaga pinus*	S5B	-	-	-	2001-2005	Yes	√		√
Purple Martin	*Progne subis*	S3S4B	-	-	-	2001-2005	Yes	√	√	√
Red-bellied Woodpecker[A]	*Melanerpes carolinus*	S4	-	-	-	2001-2005	Yes	√	√	
Red-breasted Nuthatch[A]	*Sitta canadensis*	S5	-	-	-	2001-2005	Yes	√	√	√
Red-eyed Vireo	*Vireo olivaceus*	S5B	-	-	-	2001-2005	Yes	√	√	√
Redhead	*Aythya americana*	S2B,S4N	-	-	-	2001-2005	Yes		√	
Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	SC	THR	END	2001-2005	Yes	√	√	
Red-necked Grebe	*Podiceps grisegena*	S3B,S4N	NAR	-	NAR	2001-2005	Yes	√		
Red-tailed Hawk	*Buteo jamaicensis*	S5	NAR	-	NAR	2001-2005	No	√	√	√
Red-winged Blackbird	*Agelaius phoeniceus*	S4	-	-	-	2001-2005	Yes	√	√	√
Ring-billed Gull	*Larus delawarensis*	S5B,S4N	-	-	-	2001-2005	Yes	√	√	
Ring-necked Pheasant	*Phasianus colchicus*	SNA	-	-	-	2001-2005	Yes	√		√
Rock Pigeon	*Columba livia*	SNA	-	-	-	2001-2005	Yes	√	√	√
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B	-	-	-	2001-2005	Yes	√	√	√
Ruby-throated Hummingbird	*Archilochus colubris*	S5B	-	-	-	2001-2005	Yes	√	√	√
Savannah Sparrow	*Passerculus sandwichensis*	S4B	-	-	-	2001-2005	Yes	√	√	√
Scarlet Tanager[A]	*Piranga olivacea*	S4B	-	-	-	2001-2005	Yes	√	√	√
Sharp-shinned Hawk[A]	*Accipiter striatus*	S5	NAR	-	NAR	2001-2005	No	√	√	√
Song Sparrow	*Melospiza melodia*	S5B	-	-	-	2001-2005	Yes	√	√	√
Sora	*Porzana carolina*	S4B	-	-	-	2001-2005	Yes	√	√	√
Spotted Sandpiper	*Actitis macularius*	S5	-	-	-	2001-2005	Yes	√	√	√
Swamp Sparrow	*Melospiza georgiana*	S5B	-	-	-	2001-2005	Yes	√		√
Tree Swallow	*Tachycineta bicolor*	S4B	-	-	-	2001-2005	Yes	√	√	√
Turkey Vulture	*Cathartes aura*	S5B	-	-	-	2001-2005	No	√		√
Veery[A]	*Catharus fuscescens*	S4B	-	-	-	2001-2005	Yes	√		√
Virginia Rail	*Rallus limicola*	S5B	-	-	-	2001-2005	Yes	√	√	√
Warbling Vireo	*Vireo gilvus*	S5B	-	-	-	2001-2005	Yes	√	√	√
White-breasted Nuthatch[A]	*Sitta carolinensis*	S5	-	-	-	2001-2005	Yes	√	√	√
White-throated Sparrow[A]	*Zonotrichia albicollis*	S5B	-	-	-	2001-2005	Yes			√

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Year Last Recorded	MBCA Protected[5]	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Willow Flycatcher	*Empidonax traillii*	S5B	-	-	-	2001-2005	Yes	√	√	√
Winter Wren[A]	*Troglodytes hiemalis*	S5B	-	-	-	2001-2005	Yes	√		
Wood Duck	*Aix sponsa*	S5	-	-	-	2001-2005	Yes	√	√	√
Wood Thrush[A]	*Hylocichla mustelina*	S4B	SC	THR	THR	2001-2005	Yes	√	√	√
Yellow Warbler	*Setophaga petechia*	S5B	-	-	-	2001-2005	Yes	√	√	√
Yellow-bellied Sapsucker[A]	*Sphyrapicus varius*	S5B	-	-	-	2001-2005	Yes	√		
Yellow-billed Cuckoo	*Coccyzus americanus*	S4B	-	-	-	2001-2005	Yes	√	√	√
Yellow-throated Vireo[A]	*Vireo flavifrons*	S4B	-	-	-	2001-2005	Yes	√		

Table Legend

[1] ***S-rank:*** *The natural heritage provincial ranking system (provincial S-rank) is used by the MNRF NHIC to set protection priorities for rare species and natural communities.* The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

SX - Presumed Extirpated—Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH- Possibly Extirpated (Historical)—Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for.
S1 - Critically Imperiled — Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2-Imperiled—Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 - Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 - Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 - Secure—Common, widespread, and abundant in the nation or state/province.
SNR - Unranked—Province conservation status not yet assessed.
SU - Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA - Not Applicable — A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B - Breeding—Conservation status refers to the breeding population of the species in the province.
N - Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.
M - Migrant—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

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Note: A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the province, and/or a migrant-status S-rank if the species occurs regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. The two (or rarely, three) status ranks are separated by a comma (e.g., "S2B,S3N" or "SHN,S4B,S1M").

Other Qualifiers

? -Inexact or Uncertain—Denotes inexact or uncertain numeric rank. (The ? qualifies the character immediately preceding it in the S-rank.)

[2]***ESA Status:*** *The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:*

END *(Endangered) – A species facing imminent extinction or extirpation in Ontario.*

THR *(Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.*

SC *(Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.*

NAR *(Not at Risk) – A species that has been evaluated and found to be not at risk.*

[3]***SARA Status****: The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act. The following are definitions of the SARA status rankings assigned to each species in the table above:*

END (Schedule 1) *– These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*

THR (Schedule 1) *– These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*

SC (Schedule 1) *– These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.*

No Status (No Schedule) *– These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.*

NAR (Not at Risk)*– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*

Not Applicable (N / A) *– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*

Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on January 2017. Available: http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm

[4]***COSEWIC Status:*** *COSEWIC (Committee on the Status of Endangered Wildlife in Canada) assigns a federal status ranking for all species that it assesses. Rankings include:*

END *(Endangered) - A species facing imminent extirpation or extinction throughout its range.*

THR *(Threatened) - A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction*

Appendix E. Species Records from Wildlife Atlases

SC *(Special Concern) - A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.*
NAR *(Not at Risk) - A species that has been evaluated and found to be not at risk.*
DD *(Data Deficient) - A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.*

[5]***MBCA***: The federal Migratory Bird Convention Act, 1994 (MBCA) protects most migratory birds and their nests in Canada. Bird families not protect under the act include grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays, kingfishers, and some species of blackbirds; however, these bird families have some level of protection under the Fish and Wildlife Conservation Act, 1997(FWCA)

[A]Area-Sensitive Forest Breeding Bird: Area-sensitive means a forest bird that requires a larger patch of forest to carry out its critical life processes or occurs in higher densities in large patches (Environment Canada, 2007).

Appendix E. Species Records from Wildlife Atlases

Table 4: Ontario Butterfly Atlas Records within the Ontario Line Study Area

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Historical Record (> 20 years old)	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Acadian Hairstreak	*Satyrium acadica*	S4	-	-	-	No	2019	2016	2018
American Copper	*Lycaena phlaeas*	S5	-	-	-	No	2017	1993	No record
American Lady	*Vanessa virginiensis*	S5	-	-	-	No	2019	2019	2019
American Snout	*Libytheana carinenta*	SNA	-	-	-	No	2019	2019	2019
Aphrodite Fritillary	*Speyeria aphrodite*	S5	-	-	-	No	1928	1959	No record
Appalachian Brown	*Lethe appalachia*	S4	-	-	-	Yes	1984	1984	1997
Atlantis Fritillary	*Speyeria atlantis*	S5	-	-	-	Yes	1921	No record	No record
Azure sp.	*Celastrina sp.*		-	-	-	No	2018	2019	2019
Baltimore Checkerspot	*Euphydryas phaeton*	S4	-	-	-	No	2019	2019	2019
Banded Hairstreak	*Satyrium calanus*	S4	-	-	-	No	2019	2019	2017
Black Dash	*Euphyes conspicua*	S3	-	-	-	No	2004	2016	No record
Black Swallowtail	*Papilio polyxenes*	S5	-	-	-	No	2019	2019	2019
Broad-winged Skipper	*Poanes viator*	S4	-	-	-	No	2012	(year not recorded)	1981
Bronze Copper	*Lycaena hyllus*	S5	-	-	-	No	2007	2006	1983
Cabbage White	*Pieris rapae*	SNA	-	-	-	No	2019	2019	2019
Canadian Tiger Swallowtail	*Papilio canadensis*	S5	-	-	-	No	2017	2016	No record
Checkered White	*Pontia protodice*	SNA	-	-	-	No	2001	2007	No record
Clouded Sulphur	*Colias philodice*	S5	-	-	-	No	2019	2019	2019
Cloudless Sulphur	*Phoebis sennae*	SNA	-	-	-	No	2017	2012	No record
Columbine Duskywing	*Erynnis lucilius*	S4	-	-	-	Yes	1926	1904	No record
Common Buckeye	*Junonia coenia*	SNA	-	-	-	No	2019	2019	No record
Common Checkered Skipper	*Pyrgus communis*	SNA	-	-	-	Yes	1982	No record	No record
Common Ringlet	*Coenonympha tullia*	S5	-	-	-	No	2019	2019	2019
Common Sootywing	*Pholisora catullus*	S4	-	-	-	Yes	1997	1991	1956
Common Wood-Nymph	*Cercyonis pegala*	S5	-	-	-	No	2019	2019	2019
Compton Tortoiseshell	*Nymphalis l-album*	S5	-	-	-	No	2018	2015	2018
Coral Hairstreak	*Satyrium titus*	S5	-	-	-	No	2015	2000	1977
Crossline Skipper	*Polites origenes*	S4	-	-	-	No	2019	2014	2013
Delaware Skipper	*Anatrytone logan*	S4	-	-	-	No	2019	2016	2016
Dion Skipper	*Euphyes dion*	S4	-	-	-	No	1985	No record	2016
Dreamy Duskywing	*Erynnis icelus*	S5	-	-	-	No	1913	No record	2014
Dun Skipper	*Euphyes vestris*	S5	-	-	-	No	2019	2018	2019

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Historical Record (> 20 years old)	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Eastern Comma	*Polygonia comma*	S5	-	-	-	No	2019	2019	2019
Eastern Giant Swallowtail	*Papilio cresphontes*		-	-	-	No	2019	2019	2019
Eastern Pine Elfin	*Callophrys niphon*	S5	-	-	-	No	2006	No record	No record
Eastern Tailed Blue	*Cupido comyntas*	S5	-	-	-	No	2019	2019	2018
Eastern Tiger Swallowtail	*Papilio glaucus*	S5	-	-	-	No	2019	2019	2019
Edwards' Hairstreak	*Satyrium edwardsii*	S4	-	-	-	No	2010	1981	1990
European Skipper	*Thymelicus lineola*	SNA	-	-	-	No	2019	2019	2019
Eyed Brown	*Lethe eurydice*	S5	-	-	-	No	1987	2019	1989
Fiery Skipper	*Hylephila phyleus*	SNA	-	-	-	No	2019	2019	2016
Funereal Duskywing	*Erynnis funeralis*	SNA	-	-	-	No	2015	2019	No record
Gorgone Checkerspot	*Chlosyne gorgone*		-	-	-	No	No record	No record	(year not recorded)
Gray Comma	*Polygonia progne*	S5	-	-	-	No	2018	2003	2019
Gray Hairstreak	*Strymon melinus*	S4	-	-	-	No	2012	2012	No record
Great Spangled Fritillary	*Speyeria cybele*	S5	-	-	-	No	2019	2018	2019
Green Comma	*Polygonia faunus*	S4	-	-	-	No	No record	2006	No record
Hackberry Emperor	*Asterocampa celtis*	S3	-	-	-	No	2017	No record	No record
Harris's Checkerspot	*Chlosyne harrisii*	S4	-	-	-	Yes	No record	No record	1969
Harvester	*Feniseca tarquinius*	S4	-	-	-	No	2010	2018	2017
Hickory Hairstreak	*Satyrium caryaevorus*	S4	-	-	-	No	2008	2014	2016
Hobomok Skipper	*Poanes hobomok*	S5	-	-	-	No	2019	2019	2019
Horace's Duskywing	*Erynnis horatius*	SNA	-	-	-	No	2011	2019	2019
Juvenal's Duskywing	*Erynnis juvenalis*	S5	-	-	-	No	No record	No record	No record
Karner Blue	*Plebejus melissa samuelis*	SX	EXP	Extirpated	EXP	Yes	1909	No record	No record
Least Skipper	*Ancyloxypha numitor*	S5	-	-	-	No	2018	2019	2019
Leonard's Skipper	*Hesperia leonardus*	S4	-	-	-	Yes	1926	(year not recorded)	No record
Little Glassywing	*Pompeius verna*	S4	-	-	-	No	2018	2014	2019
Little Wood-Satyr	*Megisto cymela*	S5	-	-	-	No	2019	2019	2019
Little Yellow	*Pyrisitia lisa*	SNA	-	-	-	No	2012	2015	1994
Long Dash Skipper	*Polites mystic*	S5	-	-	-	No	2018	2015	2015
Long-Tailed Skipper	*Urbanus proteus*	SNA	-	-	-	No	2012	No record	No record
Marine Blue	*Leptotes marina*	SNA	-	-	-	No	2008	No record	No record
Meadow Fritillary	*Boloria bellona*	S5	-	-	-	No	2017	1986	2013
Midsummer Tiger Swallowtail	*Papilio canadensis X glaucus*		-	-	-	No	2019	2019	No record
Milbert's Tortoiseshell	*Aglais milberti*	S5	-	-	-	No	2016	2019	2018

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Historical Record (> 20 years old)	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Monarch	*Danaus plexippus*	S2N,S4 B	SC	Special Concern	END	No	2019	2019	2019
Mottled Duskywing	*Erynnis martialis*	S2	END	No Status	END	Yes	1906	No record	1896
Mourning Cloak	*Nymphalis antiopa*	S5	-	-	-	No	2019	2019	2019
Mustard White	*Pieris oleracea*	S4	-	-	-	No	2017	No record	No record
Northern Azure	*Celastrina lucia*		-	-	-	No	2019	2019	No record
Northern Broken-Dash	*Wallengrenia egeremet*	S5	-	-	-	No	2019	2019	2019
Northern Cloudywing	*Thorybes pylades*	S5	-	-	-	No	2019	2005	2017
Northern Crescent	*Phyciodes cocyta*	S5	-	-	-	No	2019	2019	2019
Northern Pearly-Eye	*Lethe anthedon*	S5	-	-	-	No	2016	1987	1989
Ocola Skipper	*Panoquina ocola*	SNA	-	-	-	No	2012	No record	No record
Orange Sulphur	*Colias eurytheme*	S5	-	-	-	No	2019	2019	2018
Orange-barred Sulphur	*Phoebis philea*	SNA	-	-	-	No	No record	1987	No record
Painted Lady	*Vanessa cardui*	S5	-	-	-	No	2019	2019	2019
Pearl Crescent	*Phyciodes tharos*	S4	-	-	-	No	2019	2019	2019
Peck's Skipper	*Polites peckius*	S5	-	-	-	No	2019	2019	2019
Pipevine Swallowtail	*Battus philenor*	SNA	-	-	-	No	2019	2017	1935
Purplish Copper	*Lycaena helloides*	S3	-	-	-	No	No record	1953	No record
Question Mark	*Polygonia interrogationis*	S5	-	-	-	No	2019	2019	2019
Red Admiral	*Vanessa atalanta*	S5	-	-	-	No	2019	2019	2019
Red-spotted Purple	*Limenitis arthemis astyanax*	S5	-	-	-	No	2015	2019	2019
Regal Fritillary	*Speyeria idalia*	SNA	-	-	-	Yes	1911	No record	No record
Sachem	*Atalopedes campestris*	SNA	-	-	-	No	2012	2012	No record
Silver-bordered Fritillary	*Boloria selene*	S5	-	-	-	Yes	1929	1960	No record
Silver-spotted Skipper	*Epargyreus clarus*	S4	-	-	-	No	2019	2019	2019
Silvery Blue	*Glaucopsyche lygdamus*	S5	-	-	-	No	2019	2019	2019
Silvery Checkerspot	*Chlosyne nycteis*	S5	-	-	-	No	2008	1988	1977
Spicebush Swallowtail	*Papilio troilus*	S4	-	-	-	No	2019	2017	No record
Striped Hairstreak	*Satyrium liparops*	S5	-	-	-	No	2019	2012	2015
Summer Azure	*Celastrina neglecta*	S5	-	-	-	No	2019	2016	No record
Tawny Emperor	*Asterocampa clyton*	S3	-	-	-	No	No record	2015	No record
Tawny-edged Skipper	*Polites themistocles*	S5	-	-	-	No	2018	2017	2019
Two-spotted Skipper	*Euphyes bimacula*	S4	-	-	-	Yes	1928	No record	No record
Variegated Fritillary	*Euptoieta claudia*	SNA	-	-	-	No	2018	2012	2016
Viceroy	*Limenitis archippus*	S5	-	-	-	No	2019	2019	2015
White Admiral	*Limenitis arthemis arthemis*	S5	-	-	-	No	2012	2018	2015
White M-Hairstreak	*Parrhasius m-album*		-	-	-	Yes	No record	1999	No record

Appendix E. Species Records from Wildlife Atlases

Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	SARA Status[3]	COSEWIC[4]	Historical Record (> 20 years old)	17PJ23 (OLS)	17PJ33 (OLW, OLS, OLN)	17PJ34 (OLN)
Wild Indigo Duskywing	*Erynnis baptisiae*	S4	-	-	-	No	2019	2018	2019
Zebra Swallowtail	*Eurytides marcellus*	SNA	-	-	-	Yes	1896	No record	1943

Table Legend

[1] ***S-rank:*** *The natural heritage provincial ranking system (provincial S-rank) is used by the MNRF NHIC to set protection priorities for rare species and natural communities.* The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

SX - Presumed Extirpated—Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH- Possibly Extirpated (Historical)—Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for.
S1 - Critically Imperiled — Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2-Imperiled—Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 - Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 - Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 - Secure—Common, widespread, and abundant in the nation or state/province.
SNR - Unranked—Province conservation status not yet assessed.
SU - Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA - Not Applicable — A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B - Breeding—Conservation status refers to the breeding population of the species in the province.
N - Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.
M - Migrant—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.
Note: A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the province, and/or a migrant-status S-rank if the species occurs regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. The two (or rarely, three) status ranks are separated by a comma (e.g., "S2B,S3N" or "SHN,S4B,S1M").
Other Qualifiers
? -Inexact or Uncertain—Denotes inexact or uncertain numeric rank. (The ? qualifies the character immediately preceding it in the S-rank.)

Appendix E. Species Records from Wildlife Atlases

[2]***ESA Status:*** *The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:*

END *(Endangered) – A species facing imminent extinction or extirpation in Ontario.*
THR *(Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.*
SC *(Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.*
NAR *(Not at Risk) – A species that has been evaluated and found to be not at risk.*

[3]***SARA Status****: The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act. The following are definitions of the SARA status rankings assigned to each species in the table above:*

END (Schedule 1) *– These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*
THR (Schedule 1) *– These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*
SC (Schedule 1) *– These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.*
No Status (No Schedule) *– These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.*
NAR (Not at Risk)*– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*
Not Applicable (N / A) *– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*
Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on January 2017. Available: http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm

[4]***COSEWIC Status:*** *COSEWIC (Committee on the Status of Endangered Wildlife in Canada) assigns a federal status ranking for all species that it assesses. Rankings include:*

END *(Endangered) - A species facing imminent extirpation or extinction throughout its range.*
THR *(Threatened) - A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction*
SC *(Special Concern) - A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.*
NAR *(Not at Risk) - A species that has been evaluated and found to be not at risk.*
DD *(Data Deficient) - A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.*

Appendix D. Ontario Line Breeding Birds[4]

[4] Appendix F of AECOM Natural Environment Environmental Conditions Report – Ontario Line Project dated November 2020

Appenix F: Breeding Bird Survey Results for Millwood Road Area of Investigation

												AECOM Observations	BBS-MC-001				BBS-MC-002				BBS-MC-003				BBS-MC-004				BBS-MC-005		BBS-MC-006				BBS-MC-007				BBS-MC-008			
													Round 1		Round 2		Round 1		Round 2		Round 1		Round 2		Round 1		Round 2		Round 1		Round 1		Round 2		Round 1		Round 2		Round 1		Round 2	
Common Name	Scientific Name	S-Rank[2]	SARA Status[3]	COSEWIC Status[4]	ESA Status[5]	COSSARO Status[6]	MBCA Protected (Y/N)	Area-sensitive Species[8]	TRCA L-Rank[9]	AECOM Observations	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence	Total	Highest Breeding Evidence
Ducks, Geese, & Swans (ANATIDAE)																																									
Mallard	*Anas platyrhynchos*	S5					Y		L5	4	H													3	X	1	H														
Eagles & Hawks (ACCIPITRIDAE)																																									
Red-tailed Hawk	*Buteo jamaicensis*	S5	SC Sch 3			NAR	N		L5	1	X													1	X																
Plovers and Lapwings (CHARADRIIDAE)																																									
Killdeer	*Charadrius vociferus*	S5B,S5N					Y		L5	1	S													1	S																
Sandpipers, Phalaropes, and Allies (SCOLOPACIDAE)																																									
Spotted Sandpiper	*Actitis macularia*	S5					Y		L4	1	S															1	S														
Gulls & Terns (LARIDAE)																																									
Ring-billed Gull	*Larus delawarensis*	S5B,S4N					Y		L4	2	X																					1	X	1	X						
Hummingbirds (TROCHILIDAE)																																									
Ruby-throated Hummingbird	*Archilochus colubris*	S5B					Y		L4	1	H																											1	H		
Kingfishers (ALCEDINIDAE)																																									
Belted Kingfisher	*Ceryle alcyon*	S4B					N		L4	1	CF															1	CF														
Woodpeckers & Allies (PICIDAE)																																									
Downy Woodpecker	*Picoides pubescens*	S5					Y		L5	2	S											1	S										1	S							
Hairy Woodpecker	*Picoides villosus*	S5					Y	A	L4	3	A							1	A																	1	S	1	S		
Northern Flicker	*Colaptes auratus*	S4B					Y		L4	1	H																						1	H						
Flycatchers (TYRANNIDAE)																																									
Eastern Wood-Pewee	*Contopus virens*	S4B	SC	SC	SC	SC	Y		L4	3	T																									1	S			1	S	1	T
Willow Flycatcher	*Empidonax traillii*	S5B					Y		L4	1	S																												1	S		
Great Crested Flycatcher	*Myiarchus crinitus*	S4B					Y		L4	2	S											1	S							1	S										
Swallows (HIRUNDINIDAE)																																									
Tree Swallow	*Tachycineta bicolor*	S4B					Y		L4	8	X													5	X	3	X														
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B					Y		L4	2	X													1	X	1	X														
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B					Y		L5	2	X															2	X														
Barn Swallow	*Hirundo rustica*	S4B	THR	THR	THR	THR	Y		L4	3	X													1	X							2	X								
Jays & Crows (CORVIDAE)																																									
Blue Jay	*Cyanocitta cristata*	S5					N		L5	3	S	1	H																									1	S	1	S
Chickadees & Titmice (PARIDAE)																																									
Black-capped Chickadee	*Poecile atricapillus*	S5					Y		L5	1	S																			1	S									
Wrens (TROGLODYTIDAE)																																									
House Wren	*Troglodytes aedon*	S5B					Y		L5	1	S																														
Gnatcatchers (POLIOPTILIDAE)																																									
Blue-gray Gnatcatcher	*Polioptila caerulea*	S4B					Y	A	L4	2	T																											1	S	1	T
Thrushes (TURDIDAE)																																									
American Robin	*Turdus migratorius*	S5B					Y		L5	11	T			1	H	1	S	1	T			1	S	1	H			1	H	1	S	1	T	1	S			1	S	1	S
Mockingbirds, Thrashers & Allies (MIMIDAE)																																									
Gray Catbird	*Dumetella carolinensis*	S4B					Y		L4	4	T									1	S											1	S	1	T					1	S		
Waxwings (BOMBYCILLIDAE)																																									
Cedar Waxwing	*Bombycilla cedrorum*	S5B					Y		L5	10	S	1	X					1	X	1	X	1	X	1	X			5	X			1	S								
Vireos (VIREONIDAE)																																									
Warbling Vireo	*Vireo gilvus*	S5B					Y		L5	4	S									1	S			1	S									1	S	1	S				
Red-eyed Vireo	*Vireo olivaceus*	S5B					Y		L4	4	S									1	S															1	S	2	S		
Wood-Warblers (PARULIDAE)																																									
Yellow Warbler	*Dendroica petechia*	S5B					Y		L5	19	FY	1	S							3	S	2	T	2	S	1	T	1	S	2	S	3	FY	2	S	1	T	1	S		
American Redstart	*Setophaga ruticilla*	S5B					Y		L3	7	T																			1	S			3	S	1	T	1	S	1	T
Cardinals, Grosbeaks & Allies (CARDINALIDAE)																																									
Northern Cardinal	*Cardinalis cardinalis*	S5					Y		L5	11	T	1	S	1	T	2	H									1	S	1	S	2	S	1	S					1	H	1	H
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B					Y		L4	2	S																									1	S			1	S
Indigo Bunting	*Passerina cyanea*	S4B					Y		L4	7	S													1	S			2	S	2	S					1	S			1	S
New World Sparrows & Allies																																									
Song Sparrow	*Melospiza melodia*	S5B					Y		L5	8	T									1	S	1	S	1	S			1	S	1	S	2	T					1	S		
Blackbirds & Allies (ICTERIDAE)																																									
Red-winged Blackbird	*Agelaius phoeniceus*	S4					N		L5	20	T	1	S	1	T			1	S	2	S	3	T	2	S	2	S	1	S	2	S	1	T	1	S	1	T	2	S		
Brown-headed Cowbird	*Molothrus ater*	S4B					N		L5	3	S													1	S					1	S	1	S								
Baltimore Oriole	*Icterus galbula*	S4B					Y		L5	8	T									2	S	1	T	1	S	1	S	2	S			1	S								
Finches & Allies (FRINGILLIDAE)																																									
American Goldfinch	*Cardeulis tristis*	S5B					Y		L5	16	T					1	S			1	S					1	X	1	X	1	S	8	T	1	S			1	X	1	X
Old World Sparrows (PASSERIDAE)																																									
House Sparrow	*Passer domesticus*	SNA					N		L+	7	T	1	S	2	T	2	S	1	T			1	S																		

Appendix E. Ontario Line SWH Habitat Assessment[5]

[5] Appendix G of AECOM Natural Environment Environmental Conditions Report – Ontario Line Project dated November 2020

Appendix G. Significant Wildlife Habitat Screening

SWH Ecoregion 7E Criterion Schedule

Table 1.1 Seasonal Concentration Areas of Animals.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale:** Habitat important to migrating waterfowl.	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 • Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. • Fields with waste grain in the Long Point, Rondeau, Lk. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	• Fields with sheet water during Spring (mid-March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	• Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates).	None present.	None present.	None Present.
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale:** Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH • The combined area of the ELC ecosites and a 100 m radius area is the SWH • Wetland area and shorelines associated with sites identified within the Significant Wildlife Habitat Technical Guide (SWHTG) Appendix K are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded).	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Shorebird Migratory Stopover Area **Rationale:** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH, Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • NHIC Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects".	None present.	None present.	None present. Shoreline habitat (BBO1) associated with the Don River is limited and unable to support large numbers of shorebirds.
Raptor Wintering Area **Rationale:** Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **Special Concern:** Short-eared Owl Bald Eagle	**Hawks/Owls** Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. **Bald Eagle:** Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or lakes with open water (hunting areas).	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering(hawk/owl) sites need to be > 20 ha with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water and large trees and snags available for roosting. Information Sources: • OMNR Ecologist or Biologist • Naturalist club • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada, most notably for Short-eared Owls. • Results of Christmas Bird Counts. • Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One of more Bald Eagles or; At least 10 individuals and two of listed hawk/owl species. • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects".	None present.	None Present.	None present. There are no idle/fallow or lightly grazed field/meadows of sufficient size (>15 ha).

Appendix G. Significant Wildlife Habitat Screening

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Bat Hibernacula **Rationale;** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-colored Bat	• Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH. • The locations of bat hibernacula are relatively poorly known. Information Sources • OMNR for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The area includes 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Guideline for Wind Power Projects Potential Impacts to Bats and Bat Habitats”.	None present.	None present.	None present.
Bat Maternity Colonies **Rationale;** Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	• Maternity colonies considered SWH are found in forested Ecosites. • All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred. Information Sources • OMNR for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by; – >10 Big Brown Bats – >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”.	None present.	Candidate Habitat present. A Deciduous Forest Community (FOD4) was identified within the Study Area north of the Gardiner Expressway between Strachan Avenue and Bathurst Street.	Candidate Habitat present. Suitable snag trees were observed within the treed areas in the Millwood Road and E.T. Seton Park Areas of Investigation.

Appendix G. Significant Wildlife Habitat Screening

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Turtle Wintering Areas **Rationale;** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	• Snapping and Midland Painted turtles; ELC Community Classes; SW, MA, OA and SA. ELC Community Series; • FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. Information Sources • EIS studies carried out by Conservation Authorities. • Field Naturalist Clubs • OMNRF Ecologist or Biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May). Congregation of turtles is more common where wintering areas are limited and therefore significant.	None present.	None present.	Confirmed Habitat present. Based on records received from TRCA and Ontario Nature, the ponds in E.T. Seton Park behind the Ontario Science Centre support turtles and provide confirmed turtle wintering area habitat. In 2008, there were 22 Midland Painted Turtles (*Chrysemys picta*) and one Snapping Turtle (*Chelydra serpentina*) recorded in these ponds, with a more recent record of Snapping Turtle from 2013.
Reptile Hibernaculum **Rationale;** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**Snakes:** Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern:** Milksnake Eastern Ribbonsnake	• For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. • Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator.	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g.old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs • University herpetologists. • Natural Heritage Information Center (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (e.g. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity.]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m buffer is the SWH	None present.	None present.	Candidate Habitat present. Reptile hibernacula sites for common snakes may be present in burrows or rock outcroppings in dry areas within the Millwood Road and E.T. Seton Park Areas of Investigation.

Appendix G. Significant Wildlife Habitat Screening

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff) **<u>Rationale:</u>** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies).	• Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles, cliff faces, bridge abutments, silos, barns (Cliff Swallows). • Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> • Reports and other information available from Conservation Authorities • Ontario Breeding Bird Atlas. • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests. • Field surveys to observe and count swallow nests are to be completed during the breeding season (May-June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	Candidate Habitat present. There were four separate locations where several burrows were observed at each location in the vertical eroded banks along the Don River. Two locations (Burrow Locations 1 and 3) were within the Millwood Road Area of Investigation and the other two locations (Burrow Locations 2 and 4) were in the E.T. Seton Park Area of Investigation.
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **<u>Rationale;</u>** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from Conservation Authorities • MNRF District Offices. • Local naturalist clubs.	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300 m radius or extend of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells.	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Colonially - Nesting Bird Breeding Habitat (Ground) **<u>Rationale:</u>** Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	• Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). • Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> • Ontario Breeding Bird Atlas, rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from Conservation Authorities • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist Clubs.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH. • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects".	None present.	None present.	None present.
Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	• Combination of ELC Community Series; need to have present one Community Series from each landclass: <u>Field</u>: CUM CUT CUS <u>Forest</u>: FOC FOD FOM CUP • Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	• A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present and will be located within 5 km of Lake Erie and Ontario. • The habitat is typically a combination of field & forest and provides the butterflies with a location to rest prior to their long migration south. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. • Stopover areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes. <u>Information Sources</u> • MNRF district Offices • Natural Heritage Information Center (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.	None present. There are no field or forest combinations of sufficient size (> 10 ha). However, Monarch butterflies may still be present and use the habitat in the OLW Study Area for foraging and egg-laying but not at significant numbers to qualify as a candidate Migratory Butterfly Stopover Area.	None present. There are no field or forest combinations of sufficient size (> 10 ha). However, Monarch butterflies may still be present and use the habitat in the OLS Study Area for foraging and egg-laying but not at significant numbers to qualify as a candidate Migratory Butterfly Stopover Area.	None present. The Millwood Road and E.T. Seton Park Area of Investigations are located more than 5 km from the lakeshore. However, Monarch butterflies may still be present and use the habitat in the OLN Study Area for foraging and egg-laying but not at significant numbers to qualify as a candidate Migratory Butterfly Stopover Area.

Appendix G. Significant Wildlife Habitat Screening

Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	• All migratory songbirds. • Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 • All migrant raptors species: • Ontario Ministry of Natural Resources: • Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	• All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Woodlots need to be >5 ha in size and within 5 km of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie and Lake Ontario are more significant • Sites have a variety of habitats; forest, grassland and wetland complexes • The largest sites are more significant • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH. <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (March to May) and fall (Aug to Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	Candidate Habitat present. According to the Migratory Birds in the City of Toronto (Dougan & Associates and North-South Environmental Inc., 2009), the natural areas within the City of Toronto, specifically along the shoreline and those associated with ravine systems such as the Don River act as an annual stopover for migratory birds.
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	White-tailed Deer	• All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD • Conifer plantations much smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots >50ha. • Deer movement during winter in the southern areas Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> • MNRF District Offices. • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques , ground or road surveys, or a pellet count deer density survey.	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Table 1.2.1 Rare Vegetation Communities.

Rare Vegetation Community	CANDIDATE SWH ELC Ecosite Code	CANDIDATE SWH Habitat Description	CANDIDATE SWH Detailed Information and Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Cliffs and Talus Slopes **<u>Rationale;</u>** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	• Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	• A Cliff is vertical to near vertical bedrock >3m in height. • A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	• Most cliff and talus slopes occur along the Niagara Escarpment. <u>Information Sources</u> • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Center (NHIC) has location information available their website • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	None present.	None present.	None present.
Sand Barren **<u>Rationale;</u>** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	• ELC Ecosites: SBO1 SBS1 SBT1 • Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	• Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	• A sand barren area >0.5ha in size. <u>Information Sources</u> • OMNRF Destricts. • Natural Heritage Information Center (NHIC) has location information available on their website • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).	None present.	None present.	None present.
Alvar **<u>Rationale:</u>** Alvars are extremely rare habitats in Ecoregion 7E.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 • **Five Alvar Indicator Species:** 1)*Carex crawei* 2)*Panicum philadelphicum* 3)*Elocharis compressa* 4)*Scutellaria parvula* 5)*Trichostema brachiatum* • These indicator species are very specific to Alvars within Ecoregion 7E.	• An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	• An Alvar site > 0.5 ha in size. • Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie. <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists. • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Staff. • Field Naturalist Clubs. • Conservation Authorities.	• Field studies identify four of the five **Alvar Indicator Species** at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses.	None present.	None present.	None present.

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Rare Vegetation Community	CANDIDATE SWH ELC Ecosite Code	CANDIDATE SWH Habitat Description	CANDIDATE SWH Detailed Information and Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Old Growth Forest **Rationale:** Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	• Forest Community Series: FOD FOC FOM SWD SWC SWM	• Old-growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in mosaic of gaps that encourage development of multi-layered canopy and an abundance of snags and downed woody debris.	• Woodland area is >0.5 ha. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist Clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then area containing these trees is Significant Wildlife Habitat • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut steps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics.	None present.	None present.	None present.
Savannah **Rationale:** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	• A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. • In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	• No minimum size to site • Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location data available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	• Field studies confirm one or more of the Savannah indicator species listed in Appendix N of SWHTG should be present. Note: Savannah plant spp. list from Ecoregion 7E should be used • Area of the ELC Ecosite is the SWH· • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).	None present.	None present.	None present.
Tallgrass Prairie **Rationale:** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	• A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. • In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	• No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location data available on their website. • Field Naturalists Clubs. • Conservation Authorities	• Field studies confirm one or more of the Prairie indicator species listed in Appendix N of SWHTG should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used • Area of the ELC Ecosite is the SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).	None present.	None present.	None present.
Other Rare Vegetation Communities **Rationale:** Plant communities that often contain rare species which depend on the habitat for survival.	• Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	• Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	• ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M • The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location data available on their website. • Field Naturalists Clubs. • Conservation Authorities	• Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH.	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Table 1.2.2 Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Waterfowl Nesting Area **Rationale;** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	• All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	• A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5 ha) with small wetlands (<0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest.	None present.	None present.	None present.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale;** Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey **Special Concern** Bald Eagle	• ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities • Field naturalist Clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area . • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	• May be found in all forested ELC Ecosites. • May also be found in SWC, SWM, SWD and CUP3	• All natural or conifer plantation woodland/forest stands combined >30ha or with >4 ha of interior habitat. Interior habitat determined with a 200m buffer • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities	Studies confirm: • Presence of 1 or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). • Barred Owl – A 200m radius around the nest is the SWH. • Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area.	None present.	None present.	None present. Although there was anecdotal evidence from a citizen indicating the presence of an active Copper's Hawk nest in previous year in the Red Oak Deciduous Plantation (CUP1-8), this community or adjacent forested communities (FOD3-1 and FOD7) west of Beth Nealson Drive do not qualify as candidate Woodland Raptor Nesting Habitat as these plantation and forested communities together do not meet the minimum size criterion of > 30 ha with 4 ha of interior habitat.
Turtle Nesting Areas **<u>Rationale;</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	• Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Atlas records (or other similar atlases) for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist Clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles. • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as a part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method.	None present.	None present.	Candidate Habitat present. Sandy or gravel shorelines along the Don River may provide suitable nesting habitat for turtles (BBO1 community).

Appendix G. Significant Wildlife Habitat Screening

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Seeps and Springs **Rationale:** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	• Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	• Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. Information Sources • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists Clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat.	None present.	None present.	None present.
Amphibian Breeding Habitat (Woodland). **Rationale:** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	• All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD • Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool(including vernal pools) >500m^2 within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field Naturalist Clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; • Presence of breeding population of 1 or more of the listed salamander species or 2 or more of the listed frog species with at least 20 individuals (adults, juveniles, eggs/larval masses) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observation study and call count survey will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH ELC Ecosite Codes	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Amphibian Breeding Habitat (Wetlands) **<u>Rationale;</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	• ELC Community Classes SW, MA, FE, BO, OA and SA. • Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m2 (about 25m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.	None present.	None present.	Confirmed significant habitat present. The ponds in E.T. Seton Park behind the Ontario Science Centre and associated marshes provide amphibian breeding habitat as confirmed through records received from Ontario Nature. There are records of up to four American Toads (*Anayxrus americanus*) in 2015, and up to 15 Green Frogs (*Rana clamitans*) and up to two American Bullfrogs (*Lithobates catesbeianus*) recorded in 2008.

Appendix G. Significant Wildlife Habitat Screening

Table 1.3. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH ELC Ecosite	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Woodland Area-Sensitive Bird Breeding Habitat **Rationale:** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Special Concern: Cerulean Warbler Canada Warbler	• All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 years old) forest stands or woodlots >30 ha. • Interior forest habitat is at least 200 m from forest edge habitat. Information Sources • Local birder clubs. • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	None present. Although forested areas are present, interior forest habitat is lacking due to fragmentation from roads rail corridors, etc.
Marsh Breeding Bird Habitat **Rationale:** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Centre (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	Confirmed significant habitat present. Green Herons were observed in June 2020 and Trumpeter Swans in 2019 have been recorded in the ponds behind E.T. Seton Park (eBirds, 2017). The pond and associated shallow marsh (MAS) communities are considered to be significant marsh breeding bird habitat.

Appendix G. Significant Wildlife Habitat Screening

Wildlife	Species	CANDIDATE SWH ELC Ecosite	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Open Country Bird Breeding Habitat **Rationale;** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha. • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources: • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • EIS Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	None present.
Shrub/Early Successional Bird Breeding Habitat **Rationale;** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 • Patches of shrub ecosites can be complexed into a larger habitat for some bird species	• Large field areas succeeding to shrub and thicket habitats >10ha in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources: • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”.	None present.	None present.	None present.

Appendix G. Significant Wildlife Habitat Screening

Wildlife	Species	CANDIDATE SWH ELC Ecosite	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Terrestrial Crayfish; **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish; (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	• Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. • Area of ELC ecosite or an Habitat ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult.	None present.	None present.	None present.
Special Concern and Rare Wildlife Species **Rationale:** These species are quite rare or have experienced significant population declines in Ontario.	• All Special Concern and Provincially Rare (S1-S3, SH) plant and animal • species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	• All plant and animal element occurrences (EO) within a 1 or 10km grid. • Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	• When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites. Information Sources: • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website "Get Information" : http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat.	A comprehensive screening for each SOCC record identified within the OLS Study Area is provided in Appendix H.	A comprehensive screening for each SOCC record identified within the OLW Study Area is provided in Appendix H.	A comprehensive screening for each SOCC record identified within the OLN Study Area is provided in Appendix H.

Appendix G. Significant Wildlife Habitat Screening

Table 1.4 Animal Movement Corridors

Habitat	SPECIES	CANDIDATE SWH ELC Eco-sites	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
Amphibian Movement Corridors **<u>Rationale:</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	• Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	• Movement corridors between breeding habitat and summer habitat. • Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat –Wetland) of this Schedule. <u>Information Sources:</u> • MNRF District Office. • Natural Heritage Information Centre (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant • Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat.	None present.	None present.	Candidate habitat present. The Don River and the forested habitats within the E.T. Seton Park Area of Investigation are candidate significant habitat due to the presence of significant amphibian breeding habitat within the ponds behind the Ontario Science Centre.

Table 1.5 Significant Wildlife Habitat Exceptions for Ecodistricts within Eco-Region 7E

Habitat	SPECIES	CANDIDATE SWH ELC Eco-sites	CANDIDATE SWH Habitat Criteria and Information Sources	CONFIRMED SWH Defining Criteria	Ontario Line South Study Area (OLS)	Ontario Line West Study Area (OLW)	Ontario Line North Study Area (OLN)
7E-2	**Bat Migratory Stopover Area** Rationale: Stopover areas for long distance migrant bats are important during fall migration. Hoary Bat Eastern Red Bat Silver-haired Bat	• No specific ELC types.	• Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University of Waterloo, Biology Department	• Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration. • The confirmation criteria and habitat areas for this SWH are still being determined.	None present as the Study Area is not located in Long Point, Ontario.	None present as the Study Area is not located in Long Point, Ontario.	None present as the Study Area is not located in Long Point, Ontario.

Appendix F. Ontario Line SOCC Habitat Screening[6]

[6] Appendix H of AECOM Natural Environment Environmental Conditions Report – Ontario Line Project dated November 2020

Appendix H. Species of Conservation Concern Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
Amphibian	Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield populati	*Pseudacris maculata pop. 1*	2016	S3	NAR	THR	THR	The Western Chorus Frog is primarily a lowland terrestrial species. In marshes or wooded wetland areas, it is found on the ground or in low shrubs and grass. It is a poor climber. Like all other frogs, the Western Chorus Frog requires both terrestrial and aquatic habitats in close proximity. For breeding and tadpole development, it requires seasonally dry temporary ponds devoid of predators, particularly fish. The Western Chorus Frog is very rarely found in permanent ponds. Although it uses aquatic habitat during the breeding season, the Western Chorus Frog is a poor swimmer. The species hibernates in its terrestrial habitat, under rocks, dead trees, or leaves, or in loose soil or animal burrows, even though these sites are sometimes flooded.	MAS, SW	ORAA, TRCA	Low - no suitable habitat is present.	Low - no suitable habitat is present. Although the RLS EPR, suggests that the Corktown Common Park may provide suitable habitat for this species, it's unlikely that this species is present given that the park was built in 2012 and is surrounded by barriers (e.g., roads, railways, etc.) to amphibian movement.	Medium - the ponds within E.T. Seton Park near the Ontario Science Centre may provide suitable breeding habitat. TRCA has a record of Western Chorus Frog from 1990 in these ponds; however, it's unlikely that this species still persists in this location.
Birds	Black-crowned Night-Heron	*Nycticorax nycticorax*	2001-2005	S3B,S3N	-	-	-	This species can be found in deciduous woodland swamps, cattail marshes, islands, wooded rivers and lake banks, coastal wetlands, bottomland hardwood forests and thickets, rocky cliffs, various habitats except in dense vegetation. This species roosts in tall live or dead trees with tree limbs greater than 18 inches in diameter.	SWD, MAS, FOD, SW, CL	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - there is no suitable habitat present.	Low - there is no suitable habitat present.	Medium - this species may forage near the Don River and roost in trees along the forested riparian banks; however, this species likely nests in the Leslie Street Spit, where there is a known large rookery.
Birds	Canvasback	*Aythya valisineria*	2001-2005	S1B,S4N	-	-	-	This species can be found in large marshes for nesting and prefers deep, permanent waterbodies for feeding and courtship.	MA, OAO	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - no suitable habitat is present. This species likely occurs within Lake Ontario which is located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario which is located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario which is located outside of the study area.
Birds	Caspian Tern	*Hydroprogne caspia*	2001-2005	S3B	-	-	-	This species can be found in open habitat near large lakes or rivers, beaches, shorelines, rocky or sandy beaches and offshore islands.	OAO, BB	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.
Birds	Common Nighthawk	*Chordeiles minor*	2016	S4B	SC	THR Schedule 1	SC	Traditional Common Nighthawk habitat consists of open areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores, and mine tailings. Although the species also nests in cultivated fields, orchards, urban parks, mine tailings, and along gravel roads and railways, they tend to occupy natural sites.The Common Nighthawk nests in a wide range of open, vegetation-free habitats, including dunes, beaches, recently harvested forests, rocky outcrops, grasslands, pastures, marshes, river banks and flat buildings with gravel rooftops in urban centres. This species also inhabits mixed and coniferous forests. The Common Nighthawk probably benefited from the newly-opened habitats created by the massive deforestation associated with the arrival of European settlers in eastern Canada and United States. In urban areas, Common Nighthawk prefers to nest on flat, gravel rooftops of buildings (Brigham et al., 2011).	SD, BB, RB, CUM, BO, FOM, FOC and FOD with openings with little vegetation.	TRCA, OBBA (17PJ23, 17PJ33, 17PJ34)	Medium - building with flat, gravel filled rooftops may provide suitable nesting habitat for this species as well as the riverbanks of the Don River.	High - building with flat, gravel filled rooftops may provide suitable nesting habitat for this species as well as the riverbanks of the Don River. TRCA recorded Common Nighthawk near the intersection of Pape Avenue and Danforth Avenue in 2016.	High - building with flat, gravel filled rooftops may provide suitable nesting habitat for this species as well as the riverbanks of the Don River. TRCA recorded Common Nighthawk near the intersection of Pape Avenue and Danforth Avenue in 2015, although was noted to be a possible migrant.

Appendix H. Species of Conservation Concern Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
Birds	Eastern Wood-Pewee	*Contopus virens*	2016	S4B	SC	SC Schedule 1	SC	The Eastern Wood-pewee lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation. During migration, a variety of habitats are used, including forest edges and early successional clearings.	FOC, FOM, FOD, SWD, SWM and CUW.	TRCA; OBBA (17PJ23, 17PJ33); NHIC	Medium - forested areas may provide suitable nesting habitat.	Medium - forested areas east of the Don River may provide suitable nesting habitat.	High - forested areas within the Don River valley provide suitable nesting and foraging habitat for this species. Eastern Wood-pewee was recorded within the Millwood Road Area of Investigation during the 2019 breeding bird survey and TRCA has records of this species within the E.T. Seaton Park Area of Investigation from 2000 and 2004.
Birds	Great Black-backed Gull	*Larus marinus*	2001-2005	S2B	-	-	-	This species can be found in flat rocky, coastal islands, moorlands, rocky beaches and cliffs.	OAO, BB, CL	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.
Birds	Great Egret	*Ardea alba*	2001-2005	S2B	-	-	-	This species can be found in open swamp woods or willow thickets, offshore islands and mudflats for feeding. This species nests in standings trees in open water, thickets and sometimes in low vegetation on islands or in rookeries with other herons.	SWD, SWC, SWM, SWT	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - suitable habitat is not present.	Low - suitable habitat is not present.	Medium - this species may forage near the Don River and roost in trees along the forested riparian banks.
Birds	Peregrine Falcon	*Falco peregrinus*	2008	S3B	SC	No Status	Not At Risk	Peregrine Falcons usually nest on tall, steep cliff ledges close to large bodies of water. Although most people associate Peregrine Falcons with rugged wilderness, some of these birds have adapted well to city life. Urban peregrines raise their young on ledges of tall buildings, even in busy downtown areas. Cities offer peregrines a good year-round supply of pigeons and starlings to feed on.The Peregrine Falcon is found in various types of habitats, from Arctic tundra to coastal areas and from prairies to urban centres. It usually nests alone on cliff ledges or crevices, preferably 50 to 200 m in height, but sometimes on the ledges of tall buildings or bridges, always near good foraging areas. Suitable nesting sites are usually dispersed, but can be common locally in some areas. The natural nesting habitat has not changed significantly since the population crash and is still largely available. In addition, structures built by humans in both rural and urban areas provide the Peregrine Falcon with other potential nesting sites. And though urbanization and other land uses have had a significant impact on some areas where they feed, Peregrine Falcons can usually modify their diet based on the prey species present in a given area.	CLO	NHIC, OBBA (17PJ23, 17PJ33, 17PJ34), TRCA	Medium - High-rise buildings may provide suitable nesting habitat.	High - High-rise buildings may provide suitable nesting habitat. TRCA has a record of a Peregrine Falcon near the intersection of Queen Street West and University Avenue from 2010. The Sheraton Centre Toronto Hotel located at 123 Queen Street West is a confirmed, and current nesting habitat for this species according to the Canadian Peregrine Foundation (2019).	Medium - Although there were no high-rise buildings identified within this study area, this species may still forage in the area.
Birds	Purple Martin	*Progne subis*	2001-2005	S3S4B	-	-	-	This species can be found in open and treed areas such as farmlands, parks, yards, marshes usually near large bodies of water. This species most commonly nests in artificial nest boxes and requires open space for foraging.	CUM, CUT, MA	OBBA (17PJ23, 17PJ33)	Low - no suitable habitat (i.e., nest boxes) is present.	Low - no suitable habitat (i.e., nest boxes) is present.	Low - no suitable habitat (i.e., nest boxes) is present.

Appendix H. Species of Conservation Concern Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
Birds	Redhead	*Aythya americana*	2001-2005	S2B,S4N	-	-	-	This species can be found in shallow cattail/bulrush marshes, lakes and ponds and fens, preferred nesting usually close to shallow water.	MAS, OAO, FE	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.
Birds	Red-headed Woodpecker	*Melanerpes erythrocephalus*	2001-2005	S4B	SC	THR Schedule 1	END	The Red-headed Woodpecker lives in open woodland and woodland edges, and is often found in parks, golf courses, and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching. A few of these birds will stay the winter in woodlands in southern Ontario if there are adequate supplies of nuts. The Red-headed Woodpecker is found in a variety of habitats, including oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, beaver ponds, and burns.	TPS, TPW, CUW, FOD1, FOD2, FOD4-1, FOD6, FOD7, and FOD9 that are open and have an abundance of dead trees.	OBBA (17PJ23, 17PJ33, 17PJ34)	Medium - forested areas provide suitable habitat for this species.	Medium - forested areas (e.g., cultural woodlands) provide suitable habitat for this species.	Medium - forested areas within the Don River Valley provide suitable habitat for this species.
Birds	Red-necked Grebe	*Podiceps grisegena*	2001-2005	S3B,S4N	-	-	-	This species can be found in permanent freshwater lakes with a fringe of aquatic emergent vegetation, marshes, impoundments or sewage lagoons with greater than 4 ha of open water.	OAO, MA	OBBA (17PJ23, 17PJ33)	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.	Low - no suitable habitat is present. This species likely occurs within Lake Ontario and its shorelines which are located outside of the study area.
Birds	Wood Thrush	*Hylocichla mustelina*	2016	S4B	SC	THR Schedule 1	THR	The Wood Thrush lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing perches. These birds prefer large forests, but will also use smaller stands of trees. They build their nests in living saplings, trees, or shrubs, usually in Sugar Maple or American Beech. In Canada, the Wood Thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. This species prefers large forest mosaics, but may also nest in small forest fragments.	FOD and FOM that are greater than 1 ha in size.	TRCA, OBBA (17PJ23, 17PJ33)	Low - no suitable habitat is present.	Low - no suitable habitat is present.	Medium - forested areas within the Don River Valley provide suitable habitat for this species.
Insect	Monarch	*Danaus plexippus*	2019	S2N,S4B	SC	SC Schedule 1	END	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Milkweeds (numerous species) are the sole food plant for Monarch caterpillars. These plants grow predominantly in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests. Milkweeds are often planted outside their native range, and sometimes wayward Monarchs are observed at these patches. Monarchs require staging areas which are used to rest, feed, and avoid inclement weather during migration. In Canada, they are found along the north shores of the Great Lakes where Monarchs roost in trees before crossing large areas of open water.	AI, TP, and CUM where milkweed plants are present.	OBA	Low - no suitable habitat is present.	Medium - cultural meadows may provide suitable foraging and rearing habitat.	High - cultural meadows provide suitable foraging and rearing habitat. Monarch was observed within the Millwood Road Area of Investigation during AECOM's 2019 field investigations.

Appendix H. Species of Conservation Concern Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
Insect	Black Dash	*Euphyes conspicua*	2016	S3	-	-	-	This species can be found in boggy marshes, wet meadows, and marshy stream banks	MA, BO	OBA	Low - suitable habitat is not present.	Low - suitable habitat is not present.	Low - suitable habitat is not present.
Insect	Hackberry Emperor	*Asterocampa celtis*	2017	S3	-	-	-	This species can be found along wooded streams and deciduous forests with the host plant, Hackberry (*Celtis*)	FOD4-3	OBA	Low - suitable habitat is not present.	Low - suitable habitat is not present.	Low - suitable habitat is not present.
Insect	Tawny Emperor	*Asterocampa clyton*	2015	S3	-	-	-	This species can be found along wooded streams and deciduous forests with the host plant, Hackberry (*Celtis*)	FOD4-3	OBA	Low - suitable habitat is not present.	Low - suitable habitat is not present.	Low - suitable habitat is not present.
Reptiles	Northern Map Turtle	*Graptemys geographica*	2018	S3	SC	SCSchedule 1	SC	The Northern Map Turtle inhabits rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, the turtles hibernate on the bottom of deep, slow-moving sections of river. They require high-quality water that supports the female's mollusc prey. Their habitat must contain suitable basking sites, such as rocks and deadheads, with an unobstructed view from which a turtle can drop immediately into the water if startled.The Northern Map Turtle inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	OAO, SA with emergent rocks and fallen trees suitable habitat for prey.	ORAA	Low - suitable habitat is not present.	High - the Don River is a moderately flowing river with depths ranging from 0.1 to 1.0 m. One record of this species supplied by Ontario Nature indicates its presence within the Study Area and that the Don River may serve as movement corridor for this species to Lake Ontario. However, there are no suitable nesting, or basking habitats present. There are reinforced retaining walls on either side of the Don River at the Lower Don Bridge which do not provide suitable nesting habitat.	Medium - the Don River is a moderately flowing river with depths ranging from 0.1 to 1.0 m, with sandy banks and may serve as movement corridor and nesting habitat for this species to Lake Ontario.
Reptiles	Snapping Turtle	*Chelydra serpentina*	2019	S4	SC	SC Schedule 1	SC	Snapping Turtles spend most of their lives in water. They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams, and aggregate pits. Although Snapping Turtles have been observed in shallow water in almost every kind of freshwater habitat, the preferred habitat of the species is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Established populations are most often located in ponds, sloughs, shallow bays or river edges, and slow streams, or areas combining several of these wetland habitats. Individual turtles will persist in urbanized water bodies, such as golf course ponds and irrigation canals, but it is unlikely that a population could become established in such habitats. The Snapping Turtle can occur in highly polluted waterways, but environmental contamination is known to reduce the already low reproductive output of this species. Basking on offshore logs and protruding rocks can be common in Snapping Turtles, depending on environmental temperature.	OAO, SA near gravelly or sandy areas.	ORAA; TRCA; NHIC	Low - suitable habitat is not present.	Medium - the Don River is a moderately flowing river with depths ranging from 0.1 to 1.0 m and may serve as movement corridor for this species to Lake Ontario. However, there are no suitable nesting, or basking habitats present. There are reinforced retaining walls on either side of the Don River at the Lower Don Bridge which do not provide suitable nesting habitat.	High - the Don River is a moderately flowing river with depths ranging from 0.1 to 1.0 m, with sandy banks and may serve as movement corridor, and nesting habitat for this species to Lake Ontario. The ponds in E.T. Seton Park near the Ontario Science Centre may provide suitable overwintering habitat. TRCA has a record of Snapping Turtle from these ponds from 2013.

Appendix H. Species of Conservation Concern Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
								Females generally nest on sand or gravel banks along waterways. Upon emergence from the nest in early fall, hatchling Snapping Turtles usually move to water, after which they bury themselves under leaf litter or debris. Snapping Turtles overwinter underwater, buried beneath logs, sticks or overhanging banks in small streams that flow continuously throughout the winter. They can also hibernate buried in deep mud in marshy areas or beneath floating mats of vegetation. Snapping Turtle habitat is diminishing in both quantity and quality in Canada, with losses primarily due to conversion of wetlands to agriculture and urban development.					
Plants	Old -field Toadflax	*Nuttallanthus canadensis*	n/a	S2				Dry, open, sandy or rocky, barren ground; oak and sassafras savanna and jack pine plains; beds of dried lakes (Michigan Flora, 2011)	TPW, RBO, RBS	NHIC	Low - suitable habitat is not present.	Low - suitable habitat is not present.	Low - suitable habitat is not present.

Glossary and Notes

1 S-rank: **The natural heritage provincial ranking system (provincial S-rank) is used by the MNRF NHIC to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:**

SX - Presumed Extirpated—Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH- Possibly Extirpated (Historical)—Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for.
S1 - Critically Imperiled — Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2-Imperiled—Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 - Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 - Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 - Secure—Common, widespread, and abundant in the nation or state/province.
SNR - Unranked—Province conservation status not yet assessed.
SU - Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA - Not Applicable — A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

Breeding Status Qualifiers

B - Breeding—Conservation status refers to the breeding population of the species in the province.
N - Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.
M - Migrant—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.
Note: A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the province, and/or a migrant-status S-rank if the species occurs regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. The two (or rarely, three) status ranks are separated by a comma (e.g., "S2B,S3N" or "SHN,S4B,S1M").

Other Qualifiers

? -Inexact or Uncertain—Denotes inexact or uncertain numeric rank. (The ? qualifies the character immediately preceding it in the S-rank.)

2 ESA Status: **The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:**

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.
NAR (Not at Risk) – A species that has been evaluated and found to be not at risk.

3 SARA Status: **The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not**

receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act. The following are definitions of the SARA status rankings assigned to each species in the table above:

END (Schedule 1) – These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
THR (Schedule 1) – These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
SC (Schedule 1) – These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.
No Status (No Schedule) – These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.
NAR (Not at Risk)– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
Not Applicable (N / A) – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
Schedule 2 - Species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3 - Species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on January 2017. Available: http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm

4 COSEWIC: Committee on the Status of Endangered Wildlife in Canada - a committee of experts that assesses and designates which wild species are in some danger of disappearing from Canada.

5 Preferred Habitat / Known Species Range: The following references were used to describe preferred habitat and/or known species ranges:

- Species at Risk . Ontario Ministry of Natural Resources. http://www.mnr.gov.on.ca/en/Business/Species/index.html. © Queens Printer For Ontario, 2013.
- Species at Risk Status Reports. Committed on the Status of Endangered Wildlife in Canada. Ottawa. http://www.sararegistry.gc.ca/search/advSearchResults_e.cfm?stype=doc&docID=18.
- Evans, Melissa, Elizabeth Gow, R. R. Roth, M. S. Johnson and T. J. Underwood. 2011. Wood Thrush (Hylocichla mustelina), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology;

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- McCarty, John P. 1996. Eastern Wood-Pewee (Contopus virens), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/245

doi:10.2173/bna.245

6 Sources Identifying Species Record: Records of species were identified from the following secondary sources unless otherwise stated:

BCI -Bat Conservation International (BCI), 2019: Species Profiles. Accessed from:http://www.batcon.org/resources/media-education/species-profiles
OBBA -Bird Studies Canada (BSC), Environment Canada – Canadian Wildlife Service (EC-CWS), Ontario Nature, Ontario Field Ornithologists (OFO) and Ontario Ministry of Natural Resources and Forestry (MNRF), 2006: Ontario Breeding Bird Atlas (OBBA) website. Accessed 2019 from: http://www.birdsontario.org/atlas/index.jsp
NHIC - Ontario Ministry of Natural Resources and Forestry (MNRF), 2019: Natural Heritage Information Centre (NHIC) Rare Species Database. Accessed 2019 from: http://www.giscoeapp.lrc.gov.on.ca/Mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
ORAA - Ontario Nature, 2017: Ontario Reptile and Amphibian Atlas Program. Accessed 2017 from: http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php
OBA - Macnaughton, A., Layberry, R., Jones, C. and B. Edwards, 2020: Ontario Butterfly Atlas Online. Accessed 2020 from: http://www.ontarioinsects.org/atlas_online.htm
DFO - Fisheries and Oceans Canada (DFO). 2020: Aquatic Species at Risk Mapping. Accessed 2020 from: http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm
TRCA - flora and fauna records received from TRCA on February 27, 2018
MNRF - records from MNRF based on email correspondence on January 30 2018

Other References Used:

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurrary, 1998: Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

MICHIGAN FLORA ONLINE. A. A. Reznicek, E. G. Voss, & B. S. Walters. February 2011. University of Michigan. Web. January 14, 2020. https://michiganflora.net/species.aspx?id=1950.

Appendix G. Ontario Line SAR Habitat Assessment[7]

[7] Appendix I of AECOM Natural Environment Environmental Conditions Report – Ontario Line Project dated November 2020

Appendix I. Species at Risk Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source Identifying Species Record (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
Birds	Bank Swallow	*Riparia riparia*	2017	S4B	THR	THRSchedule 1	THR	Bank Swallows nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. Many nests are on banks of rivers and lakes, but they are also found in active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs.The Bank Swallow breeds in a wide variety of natural and artificial sites with vertical banks, including riverbanks, lake and ocean bluffs, aggregate pits, road cuts, and stock piles of soil. Sand-silt substrates are preferred for excavating nest burrows. Breeding sites tend to be somewhat ephemeral due to the dynamic nature of bank erosion. Breeding sites are often situated near open terrestrial habitat used for aerial foraging (e.g., grasslands, meadows, pastures, and agricultural cropland). Large wetlands are used as communal nocturnal roost sites during post-breeding, migration, and wintering periods.	N/A	NHIC; OBBA (17PJ33, 17PJ34)	Low - there is no suitable habitat present.	Low - there is no suitable habitat present. The banks of the Don River include a hardened bank, impervious surfaces and lack of sandy vertical banks.	Medium - Potential habitat exists along the vertical eroded banks of the Don River at two locations where several burrows (approximately 12 to 20) were found at two locations, one at the Millwood Road and another the E.T. Seton Park areas of Investigations. Bank Swallows were not observed at the Millwood Road Area of Investigation during breeding bird surveys in 2019 and none were observed within the E.T. Seton Park Area of Investigation but the site visit was conducted outside of the breeding bird season.
Birds	Barn Swallow	*Hirundo rustica*	2001-2005	S4B	THR	THR Schedule 1	THR	Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges, and in culverts. The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year. They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces. Before European colonization, Barn Swallows nested mostly in caves, holes, crevices, and ledges in cliff faces. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, wetlands, and subarctic tundra.	TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1, SAF1; containing or adjacent structures that are suitable for nesting.	OBBA (17PJ33, 17PJ34)	High – Barn Swallows were recorded foraging in the Garrison Commons; however, there are no buildings, bridges and other structures within 200 m of a waterbody within the study area and therefore there is limited potential for Barn Swallows to be nesting on buildings within the OLW Study Area.	High - buildings, bridges and other structures with suitable nesting attachment sites provide suitable nesting habitat. According to 4Transit (2018), Barn Swallows were observed foraging in the vicinity of the rail corridor bridge crossing the Don River, suggesting that nests be present under the bridge.	High - buildings, bridges and other structures with suitable nesting attachment sites provide suitable nesting habitat. Foraging habitat is also present, especially within the forested Don River valleylands. Barn Swallows were observed within the Millwood Road Area of Investigation during the breeding bird surveys.
Birds	Bobolink	*Dolichonyx oryzivorus*	2001-2005	S4B	THR	THRSchedule 1	THR	Historically, Bobolinks lived in North American tallgrass prairie and other open meadows. With the clearing of native prairies, Bobolinks moved to living in hayfields. Bobolinks often build their small nests on the ground in dense grasses. Both parents usually tend to their young, sometimes with a third Bobolink helping.Most of this prairie was converted to agricultural land over a century ago, and at the same time the forests of eastern North America were cleared to hayfields and meadows that provided habitat for the birds. Since the conversion of the prairie to cropland and the clearing of the eastern forests, the Bobolink has nested in forage crops (e.g.,	TPO, TPS, CUM1 and MAM2.	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - suitable breeding habitats in the form of hayfields or tall grass meadows of sufficient size were not present.	Low - suitable breeding habitats in the form of hayfields or tall grass meadows of sufficient size were not present.	Low - suitable breeding habitats in the form of hayfields or tall grass meadows of sufficient size were not present.

Appendix I. Species at Risk Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source Identifying Species Record (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
								hayfields and pastures dominated by a variety of species, such as clover, Timothy, Kentucky Bluegrass, and broadleaved plants). The Bobolink also occurs in various grassland habitats including wet prairie, graminoid peatlands, and abandoned fields dominated by tall grasses, remnants of uncultivated virgin prairie (tall-grass prairie), no-till cropland, small-grain fields, restored surface mining sites, and irrigated fields in arid regions. It is generally not abundant in short-grass prairie, Alfalfa fields, or in row crop monocultures (e.g., corn, soybean, wheat), although its use of Alfalfa may vary with region.					
Birds	Chimney Swift	*Chaetura pelagica*	2016	S4B,S4N	THR	THR Schedule 1	THR	Before European settlement, Chimney Swifts mainly nested on cave walls and in hollow trees or tree cavities in old growth forests. However, due to the land clearing associated with colonization, hollow trees became increasingly rare, which led Chimney Swifts to move into house chimneys. Today, they are more likely to be found in and around urban settlements where they nest and roost (rest or sleep) in chimneys and other manmade structures. It is likely that a small portion of the population continues to use hollow trees. They also tend to stay close to water as this is where the flying insects they eat congregate. The Chimney Swift spends the major part of the day in flight feeding on insects. In the northern part of the breeding range, the Chimney Swift favours sites where the ambient temperature is relatively stable.	TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1, SAF1 containing or adjacent structures with suitable nesting habitat (i.e. chimneys).	OBBA (17PJ33, 17PJ34)	High - buildings with suitable chimneys may provide nesting and roosting habitat. Several Chimney Swifts were recorded flying over in the OLW Study Area.	High - buildings with suitable chimneys may provide nesting and roosting habitat. According to 4Transit (2018), Chimney Swift nests were confirmed at a chimney located at 21 Don Roadway which is within the OLS Study Area but outside of the proposed TOD footprints. In addition, Moss Park Armoury is known to be a confirmed roost site for Chimney Swifts.	High - buildings with suitable chimneys may provide nesting and roosting habitat. Chimney Swift was recorded by TRCA in 2010 and 2016 foraging within the Millwood Road and E.T. Seton Park Areas of Investigations.
Birds	Eastern Meadowlark	*Sturnella magna*	2001-2005	S4B	THR	THRSchedule 1	THR	Eastern Meadowlarks breed primarily in moderately tall grasslands, such as pastures and hayfields, but are also found in alfalfa fields, weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Small trees, shrubs, or fence posts are used as elevated song perches.Eastern Meadowlarks prefer grassland habitats, including native prairies and savannahs, as well as non-native pastures, hayfields, weedy meadows, herbaceous fencerows, and airfields.	TPO, TPS, CUM1, CUS, and MAM2 with elevated song perches.	OBBA (17PJ23, 17PJ33, 17PJ34)	Low - suitable breeding habitats in the form of hayfields or tall grass meadows of sufficient size were not present.	Low - suitable breeding habitats in the form of hayfields or tall grass meadows of sufficient size were not present.	Low - suitable breeding habitats in the form of hayfields or tall grass meadows of sufficient size were not present.
Mammals	Eastern Small-footed Myotis	*Myotis leibii*	N/A	S2S3	END	N/A	N/A	In the spring and summer, Eastern Small-footed Bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. These bats often change their roosting locations every day. At night, they hunt for insects to eat, including beetles, mosquitos, moths, and flies. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year.	FOC, FOM, FOD, SWC, SWM, and SWD where suitable roosting (i.e. cavity trees and trees with loose bark) habitat is available.	BCI	Medium - treed areas including forests may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.
Mammals	Little Brown Myotis	*Myotis lucifugus*	N/A	S3	END	ENDSchedule 1	END	Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. Bats can squeeze through very tiny spaces (as small as six millimetres across) and this is how they access many roosting areas. Little Brown Bats hibernate from October or November to March or April, most often in caves or	FOC, FOM, FOD, SWC, SWM, and SWD where suitable roosting (i.e. cavity trees and trees with loose	BCI	Medium - treed areas including forests may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide

Appendix I. Species at Risk Habitat Screening for the Ontario Line Study Area

Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source Identifying Species Record (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
								abandoned mines that are humid and remain above freezing.Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.	bark) habitat is available.		anthropogenic roosting habitat for this species.	anthropogenic roosting habitat for this species.	anthropogenic roosting habitat for this species.
Mammals	Northern Long-eared Myotis	*Myotis septentrionalis*	N/A	S3	END	END Schedule 1	END	Northern Long-eared Bats are associated with boreal forests, choosing to roost under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April. The Northern Long-eared Bat overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-diameter trees. Foraging occurs along waterways, forest edges, and in gaps in the forest. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.	FOC, FOM, FOD, SWC, SWM, and SWD where suitable roosting (i.e. cavity trees and trees with loose bark) habitat is available.	BCI	Medium - treed areas including forests may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.
Mammals	Tri-coloured Bat	*Perimyotis subflavus*	N/A	S3?	END	END Schedule 1	END	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. Tri-colored Bats eat flying insects and spiders gleaned from webs. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter. They overwinter in caves where they typically roost by themselves rather than part of a group.The Tri-colored Bat overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-	0	BCI	Medium - treed areas including forests may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.	Medium - treed areas including forests and cultural woodlands may provide suitable roosting habitat. In addition, buildings with potential entry and exit holes may also provide anthropogenic roosting habitat for this species.

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Taxon	Common Name	Scientific Name	Year Last Observed	S-Rank (See Note 1)	ESA Status (See Note 2)	SARA Status (See Note 3)	COSEWIC Status (See Note 4)	Preferred Habitat (See Note 5)	Associated ELC Communities (based on Lee et. al., 1998)	Source Identifying Species Record (See Note 6)	Probability of Occurrence based on Presence of Suitable Habitat: OLW Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLS Study Area	Probability of Occurrence based on Presence of Suitable Habitat: OLN Study Area
								diameter trees. Foraging occurs over water, along waterways, and forest edges. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.					
Plant	Butternut	*Juglans cinerea*	2004	S2?	END	END Schedule 1	END	In Ontario, Butternut usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams. It is also found on well-drained gravel sites and rarely on dry, rocky soil. This species does not do well in the shade, and often grows in sunny openings and near forest edges.Butternut occurs primarily in neutral to calcareous soils of pH 5.5 to 8, often in regions with underlying limestone, and is generally absent from acidic regions. It tends to reach greatest abundance in rich well-drained mesic loams in floodplains, streambanks, terraces, and ravine slopes, but can occur in a wide range of other situations. In closed-canopy stands, it must be in the overstory to thrive. Seedling establishment, growth, and survival to maturity are most frequent in stand openings, riparian zones, and forest edges.	FOD and mature hedgerows; Soil: dry rocky or moist (4, 5, 6) to fresh (2, 3).	NHIC	Medium - forests and hedgerows may provide suitable habitat for butternut. There no records based on available secondary source information.	Medium - Butternuts may occur within the hedgerows within the Metrolinx rail corridor.	High - suitable habitat is present within the forested Don River valleyland. One butternut was incidentally recorded within the Millwood Road Area of Investigation.
Reptiles	Blanding's Turtle	*Emydoidea blandingii*	2017	S3	THR	THRSchedule 1	END	Blanding's Turtles live in shallow water, usually in large wetlands and shallow lakes with lots of water plants. They can also occur in slow flowing rivers and creek and artificial channels (MECP, 2019). It is not unusual, though, to find them hundreds of metres from the nearest water body, especially while they are searching for a mate or traveling to a nesting site. Blanding's Turtles hibernate in the mud at the bottom of permanent water bodies from late October until the end of April.In the Great Lakes/St. Lawrence population, Blanding's Turtles are often observed using clear water, eutrophic wetlands. Blanding's Turtles have strong site fidelity but may use several connected water bodies throughout the active season. Females nest in a variety of substrates including sand, organic soil, gravel, cobblestone, and soil-filled crevices of rock outcrops. Adults and juveniles overwinter in a variety of water bodies that maintain pools averaging about 1 m in depth; however, hatchling turtles have been observed hibernating terrestrially during their first winter. Reported mean home ranges generally fall between 10-60 ha (maximum 382 ha) or 1000-2500 m (maximum 7000 m); however, most studies likely underestimate Blanding's Turtle home range size because few have utilized GPS loggers to track daily movements throughout one or more entire active seasons.	SWT2, SWT3, SWD, SWM, MAS2, SAS1, SAM1, where open water is present.	ORAA	Low - suitable habitat is not present. Study Area is largely urbanized.	Low - suitable habitat is not present. Study Area is largely urbanized and this species is not likely present in moderately flowing waters of the Don River.	Low - suitable habitat is not present. Study Area is largely urbanized and this species is not likely present in moderately flowing waters of the Don River.

Appendix I. Species at Risk Habitat Screening for the Ontario Line Study Area

Glossary and Notes

1 S-rank: **The natural heritage provincial ranking system (provincial S-rank) is used by the MNRF NHIC to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:**

SX - Presumed Extirpated—Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH- Possibly Extirpated (Historical)—Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for.
S1 - Critically Imperiled — Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2-Imperiled—Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3 - Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 - Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 - Secure—Common, widespread, and abundant in the nation or state/province.
SNR - Unranked—Province conservation status not yet assessed.
SU - Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA - Not Applicable — A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

Breeding Status Qualifiers

B - Breeding—Conservation status refers to the breeding population of the species in the province.
N - Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.
M - Migrant—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.
Note: A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the province, and/or a migrant-status S-rank if the species occurs regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. The two (or rarely, three) status ranks are separated by a comma (e.g., "S2B,S3N" or "SHN,S4B,S1M").

Other Qualifiers

? -Inexact or Uncertain—Denotes inexact or uncertain numeric rank. (The ? qualifies the character immediately preceding it in the S-rank.)

2 ESA Status: **The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:**

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.
NAR (Not at Risk) – A species that has been evaluated and found to be not at risk.

3 SARA Status: **The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act. The following are definitions of the SARA status rankings assigned to each species in the table above:**

END (Schedule 1) – These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
THR (Schedule 1) – These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
SC (Schedule 1) – These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.
No Status (No Schedule) – These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.
NAR (Not at Risk)– These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
Not Applicable (N / A) – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
Schedule 2 - Species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3 - Species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on January 2017. Available: http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm

4 COSEWIC: **Committee on the Status of Endangered Wildlife in Canada - a committee of experts that assesses and designates which wild species are in some danger of disappearing from Canada.**

5 Preferred Habitat / Known Species Range: The following references were used to describe preferred habitat and/or known species ranges:

- Species at Risk . Ontario Ministry of Natural Resources. http://www.mnr.gov.on.ca/en/Business/Species/index.html. © Queens Printer For Ontario, 2013.
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doi:10.2173/bna.245

6 Sources Identifying Species Record: Records of species were identified from the following secondary sources unless otherwise stated:

BCI -Bat Conservation International (BCI), 2019: Species Profiles. Accessed from:http://www.batcon.org/resources/media-education/species-profiles
OBBA -Bird Studies Canada (BSC), Environment Canada – Canadian Wildlife Service (EC-CWS), Ontario Nature, Ontario Field Ornithologists (OFO) and Ontario Ministry of Natural Resources and Forestry (MNRF), 2006: Ontario Breeding Bird Atlas (OBBA) website. Accessed 2019 from: http://www.birdsontario.org/atlas/index.jsp
NHIC - Ontario Ministry of Natural Resources and Forestry (MNRF), 2019: Natural Heritage Information Centre (NHIC) Rare Species Database. Accessed 2019 from: http://www.giscoeapp.lrc.gov.on.ca/Mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
ORAA - Ontario Nature, 2020: Ontario Reptile and Amphibian Atlas Program. Accessed 2020 from: http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php
OBA - Macnaughton, A., Layberry, R., Jones, C. and B. Edwards, 2020: Ontario Butterfly Atlas Online. Accessed 2020 from: http://www.ontarioinsects.org/atlas_online.htm
DFO - Fisheries and Oceans Canada (DFO). 2020: Aquatic Species at Risk Mapping. Accessed 2020 from: http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm
TRCA - flora and fauna records received from TRCA on February 27, 2018
MNRF - records from MNRF based on email correspondence on January 30, 2018

Other References Used:

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MICHIGAN FLORA ONLINE. A. A. Reznicek, E. G. Voss, & B. S. Walters. February 2011. University of Michigan. Web. January 14, 2020. https://michiganflora.net/species.aspx?id=1950.