

# New Track and Facilities Transit Project Assessment Process

Errata to Environmental Project Report

05-Feb-2021

Prepared by:



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# Authorization

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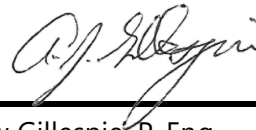
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## REVISION HISTORY

Revision	Date	Purpose of Submittal	Comments
00	05-Feb-2021	Final submission to Metrolinx.	N/A

This submission was completed and reviewed in accordance with the Quality Assurance Process for this project.

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## Introduction

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This Errata documents revisions to the New Track and Facilities Environmental Project Report (EPR) (January 2021); the specific additions have been identified in **yellow** and removals have been identified in ~~strikethrough~~ in the sections that follow.

This Errata was prepared to incorporate comments provided on the EPR by the City of Toronto, the City of Markham, and the Ministry of Tourism, Culture and Sport Industries (MHSTCI) during the 30-day public review which commenced December 30<sup>th</sup>, 2020, and ended January 28<sup>th</sup>, 2021.

# Executive Summary

TABLE E-0-1 of the Executive Summary (Summary of Potential Footprint Impacts and Reference to Mitigation Tables for Don Valley Layover Facility – Richmond Hill Corridor) has been amended as follows:

TABLE E-0-1: SUMMARY OF POTENTIAL FOOTPRINT IMPACTS AND REFERENCE TO MITIGATION TABLES FOR DON VALLEY LAYOVER FACILITY

Don Valley Layover Facility – Richmond Hill Corridor		
Project Site	Potential Effects	Reference to Mitigation Summary Tables
<b>Natural Environment</b>	<ul style="list-style-type: none"> <li>As the preferred site for the proposed layover facility contains nesting/shelter habitat for urban tolerant birds and mammals, it is anticipated that there will be loss of habitat due to the disturbances and/or displacement. as well as increase light pollution.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-101 Summary of Natural Environment (including Vegetation) Mitigations and Monitoring Commitments</li> </ul>
<b>Hydrogeology</b>	<ul style="list-style-type: none"> <li>Potential for groundwater quality impacts resulting from accidental leaks and spills associated with fuel handling, storage and onsite equipment maintenance activities.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-102 Summary of Hydrogeology Mitigations and Monitoring Commitments</li> </ul>
<b>Land Use and Socio Economics</b>	<ul style="list-style-type: none"> <li>The preferred site for proposed facilities will have footprint impacts limited to nuisance effects and property acquisitions, both temporary and permanent. Zoning conflicts are also anticipated for this site.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-103 Summary of Land Use and Socio Economics Mitigations and Monitoring Commitments</li> </ul>
<b>Visual/ Aesthetic</b>	<ul style="list-style-type: none"> <li>There are visual impacts to existing viewsheds from nearby natural areas.</li> <li>View of the culturally significant Prince Edward Viaduct will be altered.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-104 Summary of Visual/ Aesthetics Mitigations and Monitoring Commitments</li> </ul>
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>No direct <b>Indirect</b> cultural heritage impacts are anticipated for this layover site.</li> </ul>	<ul style="list-style-type: none"> <li><del>No mitigations are required at present.</del></li> <li>A Heritage Impact Assessment will be completed prior to construction.</li> </ul>
<b>Archeology</b>	<ul style="list-style-type: none"> <li>There is the potential for the disturbance of unassessed or undocumented archaeological resources.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-106 Summary of Archeology Mitigations and Monitoring Commitments</li> </ul>
<b>Stormwater Management</b>	<ul style="list-style-type: none"> <li>The proposed works will result in increases to impervious areas, with potential effects to water quantity and quality as well as alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system)</li> <li>Risk of erosion hazard (both slope stability and toe erosion) in the proposed layover area in proximity of the Don River.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-109 Summary of Stormwater Management- Don Valley Layover Mitigations and Monitoring Commitments</li> </ul>

Don Valley Layover Facility – Richmond Hill Corridor		
Project Site	Potential Effects	Reference to Mitigation Summary Tables
Utilities	<ul style="list-style-type: none"> <li>As part of the impact assessment phase, potential effects on known utilities were considered and relocations may be required.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-110 Summary of Utilities Mitigations and Monitoring Commitments</li> </ul>
EMI/EMF	<ul style="list-style-type: none"> <li>Induced current in neighbouring wires and fences is possible.</li> <li>Unintended contact with High-Voltage Sources is possible.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-111 Summary of EMI/EMF Mitigations and Monitoring Commitments</li> </ul>
Contaminated Soils, Excavated Materials and Groundwater Management	<ul style="list-style-type: none"> <li>No footprint impacts are anticipated however construction operations have the potential to expose contaminated materials.</li> </ul>	<ul style="list-style-type: none"> <li>Table 5-112 Summary of Contaminated Soils, Excavated Materials and Groundwater Management Mitigations and Monitoring Commitments</li> </ul>

## Chapter 1

The Glossary of Terms has been revised as follows:

Cultural Heritage Value or Interest	<p><del>Term used to associate a location or structure with having characteristics or history that is significant to the Province of Ontario and has the potential to be worth maintaining.</del></p> <p>A property may be determined to have cultural heritage value or interest if it meets one or more of the criteria found in Ontario Regulation 9/06 and/or Ontario Regulation 10/06 under the <i>Ontario Heritage Act</i>.</p>
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## Chapter 2

No revisions required.

## Chapter 3

No revisions required.

## Chapter 4

No revisions required.



## Chapter 5

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### Natural Environment

In general, mitigation measures for species at risk (SAR) have been updated throughout the Natural Environment sections (i.e., Sections 5.15.1, 5.16.1, 5.17.1, 5.18.1, 5.19.2, and 5.20.1) of EPR Chapter 5 to reflect updated bat breeding windows, such as:

- ~~Performing vegetation removal outside the typical breeding period for birds with consideration of potential occupation of treed roosts (individual trees) by bats and Milkweed by Monarch caterpillars from March to September; and~~ Performing vegetation removal outside the typical breeding period for birds as well as the period of potential occupation of treed roosts (habitat) by bats and Milkweed by Monarch caterpillars (April 1<sup>st</sup> to September 30<sup>th</sup>).

### Visual/Aesthetics

Section 5.20.4.1 Potential Effects & Mitigation Measures: Don Valley Layover Facility has been revised as follows:

The site is proposed to store approximately three (3) trains of 14 cars each. ~~L12L consists, each containing a locomotive, twelve (12) coaches, and another locomotive.~~ Unlike the other layover facilities described above, the Don Valley Layover will not be electrified. No maintenance activities are proposed at this layover facility, although lighting and parking for staff and storage building will be required. The construction of the Don Valley Layover facility will impact the composition and character of current views experienced by visual receptors along the Lower Don Valley Trail and surrounding park space, resulting in High visual impacts. It should be noted that staff/storage facilities are located in a linear configuration adjacent to the storage track, which maximizes the distance between proposed structures and the Lower Don River Trail to minimize visual impacts.

### Mitigation and Monitoring Commitments

Section 5.21 Summary of Mitigation and Monitoring Commitments has been revised as follows:

TABLE E-5-1: SUMMARY OF NATURAL ENVIRONMENT (INCLUDING VEGETATION) MITIGATION AND MONITORING COMMITMENTS

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
Walkers Line Layover Facility – Lakeshore West Corridor	Footprint	<ul style="list-style-type: none"> <li>Direct removal of low-quality CUM and CUT communities.</li> <li>Encroachment into Shoreacres Creek valley and City's NHS.</li> <li>Disturbance, displacement of wildlife (including SAR species) habitat (permanent loss of habitat).</li> <li>Enclosure via culvert extension of a reach to Shoreacres Creek.</li> <li>Temporary disruption to candidate SWH habitat.</li> </ul>	<ul style="list-style-type: none"> <li>An Arborist Report will be prepared which meets regulatory requirements and is completed by an I.S.A. Certified Arborist. The report will also be completed with regard to the Metrolinx Vegetation Guideline (2020), Ontario Forestry Act R.S.O. 1990, the Endangered Species Act, and other regulations, municipal by-laws and best management practices as applicable. An Arborist Report will be prepared which meets regulatory requirements and is completed by an International Society of Arboriculture (ISA) certified Arborist. The report will also be completed with regard to the Ontario Forestry Act, 1990 (OFA), the Metrolinx Vegetation Guideline (2020), the Endangered Species Act, 2007 (ESA, 2007) and other regulations, municipal by-laws and BMPs as applicable.</li> <li>The Arborist Report will include, but not be limited to the individual identification of all trees within the Project 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 Project Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. Municipal by-laws will dictate the minimum Diameter at Breast Height (DBH) which requires inventory and additional requirements for tree inventories and tree protection plans. The Arborist Report will include all information needed to establish compensation ratios and tree end use (including identification of high value trees) as per the Metrolinx Vegetation Guideline (2020), but not be limited to the individual identification of all trees within the Project 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 Project Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. Municipal by-laws will dictate the minimum Diameter at Breast Height (DBH) which requires inventory and additional requirements for tree inventories and tree protection plans.</li> <li>If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties.</li> <li>Pruning of branches will be conducted through the implementation of proper arboricultural techniques.</li> <li>Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements and guidelines.</li> <li>Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx Vegetation Guideline (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</li> <li>Compensation for tree/vegetation removals will be undertaken in accordance with provisions outlined in the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties, undertaken in accordance with the Integrated Vegetation Management (IVM) Program as documented in Metrolinx's Vegetation Guideline (2020).</li> <li>Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk (SAR), and features, e.g., Designated Natural Areas and Significant Wildlife Habitat. Refer to Natural Environment commitment tables for additional details.</li> </ul>	<ul style="list-style-type: none"> <li>Removal of vegetation to also consider typical occupation of treed roosts (individual trees) by bats and Milkweed by Monarch caterpillars from April to September in addition to typical breeding period for birds regulated under the MBCA.</li> <li>Nests sweeps do not provide adequate levels of due diligence under SARA or MBCA. Birds can move into nest within hours after a sweep is conducted and often nests are hidden in tall grasses, cavities and tree canopies. Prevention and/or avoidance are better best practices.</li> <li>Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> <li>Pre-arrange with a local wildlife rehabilitator to provide sanctuary for recovered or accidentally injured wildlife (this may require approvals or permitting) and release following completion of construction or in the spring if captured during the winter.</li> <li>Stockpiled materials or equipment shall be stored in predetermined areas and be kept at least 30 m away from watercourses and wetlands and exposed soils shall be stabilized and re-vegetated as soon as possible to reduce erosion.</li> <li>All heavy machinery brought to the work site shall arrive free of soil, seeds and vegetation fragments to avoid the import and spread of invasive species.</li> <li>For works in areas with known invasive species, vehicles and equipment should be cleaned regularly in accordance with the Ontario Invasive Plant Council's "Clean Equipment Protocol" for cleaning of vehicles and equipment.</li> <li>The use of hay should be avoided and only certified weed-free straw or use fiber roll logs should be used for sediment containment.</li> <li>Where re-vegetation is required, a native seed mix, which does not contain invasive species, shall be used.</li> <li>Water or chemical dust suppressants shall be applied to mitigate fugitive dust from site preparation and construction activities.</li> <li>Consider the building design and selection of exterior materials used in construction to avoid or reduce attraction to wildlife.</li> <li>Where lighting is required for safety and security of the proposed layover facility, the design and intensity should consider Wildlife Friendly Lighting to reduce possible harmful adverse effects.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.</li> <li>The success of vegetation compensation activities will be monitored in accordance with Metrolinx's Vegetation Guideline (2020). The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.</li> <li>Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> <li>A Request for Project Review should be submitted to DFO during future design phases to ensure compliance with the Fisheries Act. Similarly, Conservation Halton should be consulted to ensure required review and permitting requirements are achieved for works within a regulated area (O. Reg. 162/06).</li> </ul>
	Construction	<ul style="list-style-type: none"> <li>Deposition of sediment or fines downstream into Shoreacres Creek.</li> <li>Temporary disruption of local wildlife movement corridor along Shoreacres Creek valley.</li> </ul>	<ul style="list-style-type: none"> <li>Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx Vegetation Guideline (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</li> </ul>		

<sup>1</sup> Mitigation strategies developed by Metrolinx as part of the *Guideline for Impact Assessment, Mitigation and Monitoring Design, Construction and Operations – Natural Environment (2021) and Vegetation (2021)*.

<sup>2</sup> Monitoring/Future Work Commitments as developed by Metrolinx as part of the *Guideline for Impact Assessment, Mitigation and Monitoring Design, Construction and Operations – Natural Environment (2021) and Vegetation (2021)*.

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
			<ul style="list-style-type: none"> <li>An Integrated Vegetation Management (IVM) Plan will be developed and implemented that is in adherence with the Metrolinx <i>Vegetation Guideline (2020)</i> 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.</li> <li><del>Compensation for tree / vegetation removals will be undertaken in accordance with the IVM Protocol as documented in Metrolinx's <i>Vegetation Guideline (2020)</i>.</del></li> <li>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.</li> <li>If wildlife is encountered, measures will be implemented to avoid 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 offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife. On-site personnel will be provided with information (e.g., factsheets) that address 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.</li> <li>Disturbance to potential bat roosting habitat will be avoided during the bat roosting period of April 1<sup>st</sup> March 31<sup>st</sup> to September 30<sup>th</sup> 4<sup>th</sup>, with emphasis on avoiding potential effects during the maternity period of June 1<sup>st</sup> to July 31<sup>st</sup> and in accordance with MECP requirements.</li> <li><del>Additional monitoring, mitigation and compensation for removal of suitable cavity trees may be required based on the results of additional surveys and consultation with the MECP. All requirements of the ESA, 2007 and <i>Species at Risk Act (SARA)</i> will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP.</del></li> <li>All works must comply with the <i>Migratory Birds Convention Act (MBCA)</i>, including timing windows for the general nesting period (April 1<sup>st</sup> to August 31<sup>st</sup> in Ontario).</li> <li>If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1<sup>st</sup> to August 31<sup>st</sup>), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.</li> <li>Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive <i>D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the Emerald Ash Borer, <i>Agrilus planipennis</i> (Fairmaire)</i> (2014), as amended from time to time. To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. <del>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'.</del></li> <li>All requirements of the <i>Fisheries Act</i> and the <i>ESA</i> will be met.</li> <li>An Erosion and Sediment Control Plan, in accordance with the <i>Erosion and Sediment Control Guide for Urban Construction (TRCA 2019)</i>, as amended from time to time, will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the waterbody wetland or waterbody.</li> <li>A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to watercourses wetlands or waterbodies.</li> </ul>		

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
			<ul style="list-style-type: none"> <li>• 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 <i>Vegetation Guideline (2020)</i>.</li> <li>• If vegetation clearing will proceed when Monarch larvae may be present (April 1<sup>st</sup> to September 30<sup>th</sup>), 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.</li> <li>• Provide mitigation measures for additional migratory butterfly species as required.</li> <li>• In the event that in-water and/or near water construction works are required, the restricted construction activity timing windows and appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including the Conservation Authority, MECP, MNRF and Fisheries and Oceans Canada (DFO). In water works will be planned to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.</li> <li>• Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.</li> </ul>		
	Operations	<ul style="list-style-type: none"> <li>• Incidental encounters.</li> </ul>	<ul style="list-style-type: none"> <li>• No additional mitigation required.</li> </ul>	<ul style="list-style-type: none"> <li>• While no SAR vegetation was observed, nuts or other seeds may be dispersed by wildlife. SAR species like Butternut may occur in the future. Educate personnel with respect to Butternut seedling identification.</li> </ul>	N/A
Unionville Storage Yard-Stouffville Corridor	Footprint	<ul style="list-style-type: none"> <li>• Encroachment and removal of narrow portions CUM.</li> <li>• Disturbance and temporary displacement or mortality of wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.</li> <li>• 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.</li> <li>• If wildlife is encountered, measures will be implemented to avoid destruction, injury or interference with the species. On-site personnel will be provided with information (e.g., factsheets) that address 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 and/or its habitat. For example, construction activities will cease or be reduced and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Removal of vegetation to also consider typical occupation of tree roosts (individual trees) by bats and Milkweed by Monarch caterpillars from March to September in addition to typical breeding period for birds regulated under the MBCA.</li> <li>• Nests sweeps do not provide adequate levels of due diligence under SARA or MBCA. Birds can move into nest within hours after a sweep is conducted and often nests are hidden in tall grasses, cavities and tree canopies. Prevention and/or avoidance are better best practices.</li> <li>• Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> </ul>	<ul style="list-style-type: none"> <li>• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.</li> <li>• Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> </ul>
	Construction		<ul style="list-style-type: none"> <li>• All requirements of the <i>Endangered Species Act</i> (ESA) and <i>the Species at Risk Act</i> (SARA) will be met. Species-specific mitigation measures will be implemented based on any recommended surveys studies undertaken prior to construction, and consultation with MECP/MNRF.</li> <li>• All works must comply with the <i>Migratory Birds Convention Act</i> (MBCA), including timing windows for the nesting period (March 30<sup>th</sup> April 1<sup>st</sup> to August 31<sup>st</sup> in Ontario).</li> <li>• If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1<sup>st</sup> to August 31<sup>st</sup>), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>• If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.</li> <li>• An Integrated Vegetation Management (IVM) Plan will be developed and implemented that is in adherence with the Metrolinx <i>Vegetation Guideline (2020)</i> 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</li> </ul>	<ul style="list-style-type: none"> <li>• Butternut nuts or other seeds may be dispersed by wildlife. SAR species like Butternut may occur in the future. Educate personnel with respect to Butternut seedling identification.</li> <li>• Stockpiled materials or equipment shall be stored in predetermined areas and be kept at least 30 m away from watercourses and wetlands and exposed soils shall be stabilized and re-vegetated as soon as possible to reduce erosion.</li> <li>• All heavy machinery brought to the work site shall arrive free of soil, seeds and vegetation fragments to avoid the import and spread of invasive species.</li> <li>• For works in areas with known invasive species, vehicles and equipment should be cleaned regularly in accordance with the Ontario Invasive Plant Council's "Clean Equipment Protocol" for cleaning of vehicles and equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• The success of vegetation compensation activities will be monitored in accordance with Metrolinx's <i>Vegetation Guideline (2020)</i>. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.</li> </ul>



Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
			<p>needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness.</p> <ul style="list-style-type: none"> <li>If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with the Metrolinx <i>Vegetation Guideline (2020)</i>. Adhere to all applicable bylaws for tree removals outside of Metrolinx properties.</li> <li>Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx <i>Vegetation Guideline (2020)</i>, will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</li> <li>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 <i>Vegetation Guideline (2020)</i>.</li> <li>If vegetation clearing will proceed when Monarch larvae may be present (April 1<sup>st</sup> to September 30<sup>th</sup>), 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.</li> <li>Provide mitigation measures for additional migratory butterfly species as required.</li> <li>In the event that in-water and/or near water construction works are required, the restricted construction activity timing windows and appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including the Conservation Authority, MECP, MNRF and Fisheries and Oceans Canada (DFO). In water works will be planned to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.</li> </ul>	<ul style="list-style-type: none"> <li>Where re-vegetation is required, a native seed mix, which does not contain invasive species, shall be used.</li> <li>Water or chemical dust suppressants shall be applied to mitigate fugitive dust from site preparation and construction activities.</li> <li>Mud mats to be implemented as per York Region specs at construction access points in addition to mud and dust control mitigation.</li> <li>Consider the building design and selection of exterior materials used in construction to avoid or reduce attraction to wildlife.</li> </ul>	
	Operations	<ul style="list-style-type: none"> <li>Incidental encounters.</li> </ul>	<ul style="list-style-type: none"> <li>No additional mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>Butternut nuts or other seeds may be dispersed by wildlife. SAR species like Butternut may occur in the future. Educate personnel with respect to Butternut seedling identification.</li> <li>Barn swallows (if appropriate structures are present) may occur in the future. Educate personnel with respect to working and cohabitating with urban tolerant wildlife.</li> <li>Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> </ul>	N/A

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
<p><b>Don Valley Layover Facility – Richmond Hill Corridor</b></p>	Footprint	<ul style="list-style-type: none"> <li>Potential displacement and/or habitat loss of nesting/shelter habitat for urban tolerant birds and mammals.</li> <li>Potential increase in light pollution which may affect nesting/shelter habitat for urban tolerant birds and mammals.</li> <li>Temporary displacement of SAR known to occur in broader area of Don Valley. No interior habitat loss of treed forest communities or wetlands suitable to support woodland and wetland SAR birds. Short term - expected to be infrequent events.</li> <li>Deposition of sediment or fines into adjacent wetland and Don Valley.</li> </ul>	<ul style="list-style-type: none"> <li>An Arborist Report will be prepared which meets regulatory requirements and is completed by an I.S.A. Certified Arborist. The report will also be completed with regard to the Metrolinx <i>Vegetation Guideline (2020)</i>, <i>Ontario Forestry Act R.S.O. 1990</i>, the <i>Endangered Species Act</i>, and other regulations, municipal by-laws and best management practices as applicable. An Arborist Report will be prepared which meets regulatory requirements and is completed by an ISA certified Arborist. The report will also be completed with regard to the OFA, the Metrolinx <i>Vegetation Guideline (2020)</i>, the <i>ESA, 2007</i> and other regulations, municipal by-laws and BMPs as applicable. Compensation for tree/vegetation removals will be undertaken in accordance with the IVM Protocol as documented in Metrolinx's <i>Vegetation Guideline (2020)</i>.</li> <li>The Arborist Report will include, but not be limited to the individual identification of all trees within the Project 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 Project Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. Municipal by-laws will dictate the minimum Diameter at Breast Height (DBH) which requires inventory and additional requirements for tree inventories and tree protection plans. The Arborist Report will include all information needed to establish compensation ratios and tree end use (including identification of high value trees) as per the Metrolinx <i>Vegetation Guideline (2020)</i>, but not be limited to the individual identification of all trees within the Project 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 Project Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. Municipal by-laws will dictate the minimum Diameter at Breast Height (DBH) which requires inventory and additional requirements for tree inventories and tree protection plans.</li> <li>If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's <i>Vegetation Guideline (2020)</i>. Adhere to all applicable bylaws for tree removals outside of Metrolinx properties.</li> <li>Pruning of branches will be conducted through the implementation of proper arboricultural techniques.</li> <li>Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements and guidelines.</li> <li>Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx <i>Vegetation Guideline (2020)</i>, will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</li> <li>An Integrated Vegetation Management (IVM) Plan will be developed and implemented that is in adherence with the Metrolinx <i>Vegetation Guideline (2020)</i> 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.</li> <li>Compensation for tree /vegetation removals will be undertaken in accordance with the Integrated Vegetation Management (IVM) Program as documented in Metrolinx's <i>Vegetation Guideline (2020)</i>. Adhere to all applicable bylaws for tree removals outside of Metrolinx properties.</li> <li>Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk (SAR), and features, e.g., Designated Natural Areas and Significant Wildlife Habitat. Refer to Natural Environment commitment tables for additional details.</li> <li>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.</li> <li>If wildlife is encountered, measures will be implemented to avoid destruction, injury or interference with the species. On-site personnel will be provided with information (e.g., factsheets) that address the existence of potential SAR on site, the identification of the</li> </ul>	<ul style="list-style-type: none"> <li>Avoid temporary stockpiling of debris in areas where snakes and other mammals may be attracted for gestation and/or hibernation.</li> <li>Removal of vegetation to also consider typical occupation of treed roosts by bats and Milkweed by Monarch caterpillars from April to September in addition to typical breeding period for birds regulated under the MBCA.</li> <li>Nests sweeps do not provide adequate levels of due diligence under SARA or MBCA. Birds can move into nest within hours after a sweep is conducted and often nests are hidden in tall grasses, cavities and tree canopies. Prevention and/or avoidance are better best practices.</li> <li>Sediment fence to act as temporary wildlife exclusion measures to keep wildlife from the work zone and include areas near the wetland community. This will discourage potential nesting from turtles (if present) from using newly exposed soils and or substrates and wildlife encounters during construction.</li> <li>Pre-arrange with a local wildlife rehabilitator to provide sanctuary for recovered or accidentally injured wildlife (this may require approvals or permitting) and release following completion of construction or in the spring if captured during the winter.</li> <li>Drainage will be directed away from the wetland feature and Don River and any ditching be designed and constructed to mitigate potential impacts to the adjacent wetland and Don River.</li> <li>Compensate in accordance with Metrolinx <i>Vegetation Compensation Protocol</i> with consideration for the Toronto Biodiversity Strategy (City of Toronto 2019). For example, opportunities may exist to provide additional invasive species management and naturalization of existing and disturbed habitats associated with the proposed Don Valley Layover Facility footprint.</li> <li>During building design ecologist to work with design team to review and selection of exterior materials used in construction to avoid or reduce attraction to wildlife(e.g. reduce overhangs and incorporate materials which make nesting unattractive to Barn Swallow.</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.</li> <li>Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> <li>The success of vegetation compensation activities will be monitored in accordance with Metrolinx's <i>Vegetation Guideline (2020)</i>. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.</li> </ul>
	Construction				

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
			<p>SAR species and the procedure(s) to follow if an individual is encountered or injured, and/or its habitat. For example, construction activities will cease or be reduced and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife.</p> <ul style="list-style-type: none"> <li>Disturbance to bat roosting habitat will be avoided during the bat roosting period of March 31st to September 1st, with emphasis on avoiding potential effects during the maternity period of June 1st to July 31st and in accordance with MECP requirements. Disturbance to bat roosting habitat will be avoided during the bat roosting period of April 1st to September 30th in accordance with MECP requirements.</li> <li>Additional monitoring, mitigation and compensation for removal of suitable cavity trees may be required based on the results of additional surveys and consultation with the MECP. All requirements of the ESA, 2007 and Species at Risk Act (SARA) will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP/MNRF.</li> <li>Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP. All requirements of the Endangered Species Act (ESA) and Species at Risk Act (SARA) will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and consultation with MECP/MNRF.</li> <li>All works must comply with the Migratory Birds Convention Act (MBCA), including timing windows for the general nesting period (March 30th April 1st to August 31st in Ontario).</li> <li>If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1st to August 31st), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.</li> <li>Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.</li> <li>All requirements of the Fisheries Act will be met.</li> <li>An Erosion and Sediment Control Plan, in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), as amended from time to time, will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the waterbody.</li> <li>A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to watercourses wetlands or waterbodies.</li> <li>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).</li> <li>If vegetation clearing will proceed when Monarch larvae may be present (April 1st to September 30th), 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.</li> <li>Provide mitigation measures for additional migratory butterfly species as required.</li> <li>In the event that in-water and/or near water construction works are required, the restricted construction activity timing windows and appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including the Conservation Authority, MECP, MNRF and Fisheries and Oceans Canada (DFO). In water works will be planned to respect timing windows to</li> </ul>		

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
	Operations	<ul style="list-style-type: none"> <li>Incidental encounters.</li> </ul>	<p>protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.</p> <ul style="list-style-type: none"> <li>If wildlife is encountered, measures will be implemented to avoid destruction, injury or interference with the species. On-site personnel will be provided with information (e.g., factsheets) that address 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.</li> </ul>	<ul style="list-style-type: none"> <li>Where lighting is required for safety and security the design and intensity will consider <i>Wildlife Friendly Lighting</i> to reduce possible harmful adverse effects.</li> <li>Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> <li>Butternut nuts or other seeds may be dispersed by wildlife. SAR species like Butternut may occur in the future. Educate personnel with respect to Butternut seedling identification.</li> <li>Barn swallows (if appropriate structures are present) may occur in the future. Educate personnel with respect to working and cohabitating with urban tolerant wildlife.</li> <li>Stockpiled materials or equipment shall be stored in predetermined areas and be kept at least 30 m away from watercourses and wetlands and exposed soils shall be stabilized and re-vegetated as soon as possible to reduce erosion.</li> <li>All heavy machinery brought to the work site shall arrive free of soil, seeds and vegetation fragments to avoid the import and spread of invasive species.</li> <li>For works in areas with known invasive species, vehicles and equipment should be cleaned regularly in accordance with the Ontario Invasive Plant Council's "Clean Equipment Protocol" for cleaning of vehicles and equipment.</li> <li>Where re-vegetation is required, a native seed mix, which does not contain invasive species, shall be used.</li> <li>Water or chemical dust suppressants shall be applied to mitigate fugitive dust from site preparation and construction activities.</li> <li>Consider the building design and selection of exterior materials used in construction to avoid or reduce attraction to wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. <b>Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. For example, exterior outdoor lighting.</b></li> <li>The success of vegetation compensation activities will be monitored in accordance with Metrolinx's <i>Vegetation Guideline (2020)</i>. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.</li> </ul>



Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
GO Station Platforms	Footprint	<ul style="list-style-type: none"> <li>Temporary disturbance, displacement or mortality of wildlife (incidental encounters).</li> <li>Temporary disturbance or displacement of wildlife habitat (e.g., Barn Swallow nest or bat roost sites).</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>If wildlife is encountered, measures will be implemented to avoid 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 offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife. <del>measures will be implemented to avoid destruction, injury or interference with the species. On-site personnel will be provided with information (e.g., factsheets) that address 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.</del></li> <li>All requirements of the <i>Endangered Species Act (ESA)</i> and <i>Species at Risk Act (SARA)</i> will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and consultation with <i>MECP/MNRF, ESA, 2007</i> and <i>SARA</i> will be met. <del>Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction.</del></li> <li>All works must comply with the <i>Migratory Birds Convention Act (MBCA)</i>, including timing windows for the <i>general</i> nesting period (March 30<sup>th</sup> April 1<sup>st</sup> to August 31<sup>st</sup> in Ontario).</li> <li>If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1<sup>st</sup> to August 31<sup>st</sup>), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.</li> <li>An Arborist Report will be prepared which meets regulatory requirements and is completed by an I.S.A. Certified Arborist. The report will also be completed with regard to the <i>Metrolinx Vegetation Guideline (2020)</i>, <i>Ontario Forestry Act R.S.O. 1990</i>, the <i>Endangered Species Act</i>, and other regulations, municipal by-laws and best management practices as applicable. <del>ISA certified Arborist. The report will also be completed with regard to the OFA, the Metrolinx Vegetation Guideline (2020), ESA, 2007, and other regulations, municipal by-laws and BMPs as applicable.</del></li> <li>Compensation for tree/vegetation removals will be undertaken in accordance with provisions outlined in the <i>Metrolinx Vegetation Guideline (2020)</i>. Adhere to all applicable bylaws for tree removals outside of Metrolinx properties. <del>IVM Protocol as documented in the Metrolinx Vegetation Guideline (2020).</del></li> <li>Removal of ash trees, or portions of ash trees, will be carried out in compliance with the <i>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)</i> (2014), as amended from time to time. To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. <del>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.</del></li> <li>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 <i>Metrolinx Vegetation Guideline (2020)</i>.</li> <li>If vegetation clearing will proceed when Monarch larvae may be present (April 1<sup>st</sup> to September 30<sup>th</sup>), 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.</li> </ul>	<ul style="list-style-type: none"> <li>Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> <li>Removal of vegetation to also consider typical occupation of treed roosts (individual trees) by bats and Milkweed by Monarch caterpillars from April to September in addition to typical breeding period for birds regulated under the MBCA.</li> <li>Stockpiled materials or equipment shall be stored in predetermined areas and be kept at least 30 m away from watercourses and wetlands and exposed soils shall be stabilized and re-vegetated as soon as possible to reduce erosion.</li> <li>All heavy machinery brought to the work site shall arrive free of soil, seeds and vegetation fragments to avoid the import and spread of invasive species.</li> <li>For works in areas with known invasive species, vehicles and equipment should be cleaned regularly in accordance with the Ontario Invasive Plant Council's "Clean Equipment Protocol" for cleaning of vehicles and equipment.</li> <li>The use of hay should be avoided and only certified weed-free straw or use fiber roll logs should be used for sediment containment.</li> <li>Where re-vegetation is required, a native seed mix, which does not contain invasive species, shall be used.</li> <li>Water or chemical dust suppressants shall be applied to mitigate fugitive dust from site preparation and construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.</li> <li>Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> </ul>
	Construction				

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
			<ul style="list-style-type: none"> <li>Provide mitigation measures for additional migratory butterfly species as required.</li> </ul>		
	Operations	<ul style="list-style-type: none"> <li>Incidental encounters.</li> </ul>	<ul style="list-style-type: none"> <li>No additional mitigation.</li> </ul>		
Thickson Road Bridge Expansion	Footprint	<ul style="list-style-type: none"> <li>Indirect harassment and mortality of wildlife (incidental encounters).</li> </ul>	<ul style="list-style-type: none"> <li>All requirements of the <i>Endangered Species Act</i> (ESA) and <i>Species at Risk Act</i> (SARA) will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and consultation with MECP/MNRF. ESA, 2007 will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP.</li> <li>All works must comply with the <i>Migratory Birds Convention Act</i> (MBCA), including timing windows for the general nesting period (April 1<sup>st</sup> to August 31<sup>st</sup> in Ontario).<del>MBCA, including timing windows for the nesting period (March 30<sup>th</sup> to August 31<sup>st</sup> in Ontario).</del></li> <li>If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1<sup>st</sup> to August 31<sup>st</sup>), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.</li> <li>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.</li> <li>If wildlife is encountered, measures will be implemented to avoid destruction, injury or interference with the species. <del>On-site personnel will be provided with information (e.g., factsheets) that address 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, and/or its habitat. For example, construction activities will cease or be reduced and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife.</del></li> <li>All requirements of the <i>Fisheries Act</i> will be met.</li> <li>Construction activities will maintain the buffers established during the design phase to minimize potential negative impacts to wetlands and waterbodies.</li> <li>An Erosion and Sediment Control Plan, in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), as amended from time to time, will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the wetland or waterbody.</li> <li>A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to watercourses wetlands or waterbodies.</li> <li>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 <i>Vegetation Guideline (2020)</i>.</li> <li>If vegetation clearing will proceed when Monarch larvae may be present (April 1<sup>st</sup> to September 30<sup>th</sup>), 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.</li> <li>Provide mitigation measures for additional migratory butterfly species as required.</li> <li>An Integrated Vegetation Management (IVM) Plan will be developed and implemented that is in adherence with the Metrolinx <i>Vegetation Guideline (2020)</i> 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</li> </ul>	<ul style="list-style-type: none"> <li>Survey the structure one season prior to the active period for Barn Swallows. If evidence of active nests is observed register with MECP and pre-plan work in accordance with Ontario Regulation 242/08 section 23.5.</li> <li>Develop a long-term program for inspections of bridges and overpasses to evaluate potential use by Barn Swallows and birds protected under the MBCA. For example, every 5 years. This would assist in facilitating future needs for ESA, 2007 requirement when maintenance may be required modifications (i.e., may indicate potential nesting or habitat usage).</li> <li>Removal of vegetation to also consider typical occupation of tree roosts (individual trees) by bats and Milkweed by Monarch caterpillars from March to September in addition to typical breeding period for birds regulated under the MBCA.</li> <li>Consider utilizing an experienced bat researcher (e.g., from a recognized university) to be on site during initial bridge expansion works to better understand habitat use by bats (if present).</li> <li>Pre-arrange with a local wildlife rehabilitator to provide sanctuary for recovered or accidentally injured wildlife (this may require approvals or permitting) and release following completion of construction.</li> <li>Butternut nuts or other seeds may be dispersed by wildlife. SAR species like Butternut may occur in the future. Educate personnel with respect to Butternut seedling identification.</li> <li>Stockpiled materials or equipment shall be stored in predetermined areas and be kept at least 30 m away from watercourses and wetlands and exposed soils shall be stabilized and re-vegetated as soon as possible to reduce erosion.</li> <li>All heavy machinery brought to the work site shall arrive free of soil, seeds and vegetation fragments to avoid the import and spread of invasive species.</li> <li>For works in areas with known invasive species, vehicles and equipment should be cleaned regularly in accordance with the Ontario Invasive Plant Council's "Clean Equipment Protocol" for cleaning of vehicles and equipment.</li> <li>Where re-vegetation is required, a native seed mix, which does not contain invasive species, shall be used.</li> <li>Water or chemical dust suppressants shall be applied to mitigate fugitive dust from site preparation and construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.</li> <li>Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> <li>The success of vegetation compensation activities will be monitored in accordance with Metrolinx's <i>Vegetation Guideline (2020)</i>. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.</li> </ul>
	Construction	<ul style="list-style-type: none"> <li>Temporary disturbance or displacement of wildlife habitat (e.g., Barn Swallow nest or bat roost sites).</li> <li>Deposition of sediment or fines into Corbett Creek or its associated riparian marsh community.</li> </ul>			

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
	Operations	<ul style="list-style-type: none"> <li>Incidental encounters.</li> </ul>	<ul style="list-style-type: none"> <li>No additional mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>Barn swallows may occur in the future. Educate personnel with respect to working and cohabitating with urban tolerant wildlife</li> <li>Develop a long-term program for inspections of bridges to evaluate potential use by Barn Swallows and birds protected under the MBCA. For example, every 5 years. This would help facilitate future needs for ESA, 2007 requirement when maintenance may be required.</li> </ul>	N/A
Electrification of Richmond Hill Corridor using OCS	Footprint	<ul style="list-style-type: none"> <li>Temporary disturbance, displacement or mortality of wildlife (incidental encounters).</li> <li>Removal of individual trees which may provide roost and nest sites for SAR birds and bats.</li> </ul>	<ul style="list-style-type: none"> <li>An Arborist Report will be prepared which meets regulatory requirements and is completed by an I.S.A. Certified Arborist. The report will also be completed with regard to the Metrolinx Vegetation Guideline (2020), Ontario Forestry Act R.S.O. 1990, the Endangered Species Act, and other regulations, municipal by-laws and best management practices as applicable, by an ISA certified Arborist. The report will also be completed with regard to the OFA, the Metrolinx Vegetation Guideline (2020), the ESA, 2007 and other regulations, municipal by-laws and BMPs as applicable. Compensation for tree/vegetation removals will be undertaken in accordance with the IVM Protocol as documented in Metrolinx's Vegetation Guideline (2020).</li> <li>The Arborist Report will include, but not be limited to the individual identification of all trees within the Project 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 Project Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. Municipal by-laws will dictate the minimum Diameter at Breast Height (DBH) which requires inventory and additional requirements for tree inventories and tree protection plans. The Arborist Report will include all information needed to establish compensation ratios and tree end use (including identification of high value trees) as per the Metrolinx Vegetation Guideline (2020), but not be limited to the individual identification of all trees within the Project 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 Project Study Area will include those on Metrolinx property, trees on public and private lands, and boundary trees. Municipal by-laws will dictate the minimum Diameter at Breast Height (DBH) which requires inventory and additional requirements for tree inventories and tree protection plans.</li> <li>If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties.</li> <li>Pruning of branches will be conducted through the implementation of proper arboricultural techniques.</li> <li>Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements and guidelines.</li> <li>Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx Vegetation Guideline (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</li> <li>Compensation for tree /vegetation removals will be undertaken in accordance with the provisions outlined in the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties. Integrated Vegetation Management (IVM) Program as documented in Metrolinx's Vegetation Guideline (2020).</li> <li>Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk (SAR), and features, e.g., Designated Natural Areas and Significant Wildlife Habitat. Refer to Natural Environment commitment tables for additional details.</li> <li>Pruning of branches will be conducted through the implementation of proper arboricultural techniques.</li> <li>Each Butternut that may potentially be removed or impacted must be assessed by a qualified Butternut Health Assessor, in accordance with MNRF Butternut Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Pre-screening for Butternut seedlings during "leaf on" one season prior to vegetation clearing.</li> <li>Removal of vegetation to also consider typical occupation of treed roosts by bats and Milkweed by Monarch caterpillars from April to September in addition to typical breeding period for birds regulated under the MBCA.</li> <li>Nests sweeps do not provide adequate levels of due diligence under SARA or MBCA. Birds can move into nest within hours after a sweep is conducted and often nests are hidden in tall grasses, cavities and tree canopies. Prevention and/or avoidance are better best practices.</li> <li>Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> <li>Stockpiled materials or equipment shall be stored in predetermined areas and be kept at least 30 m away from watercourses and wetlands and exposed soils shall be stabilized and re-vegetated as soon as possible to reduce erosion.</li> <li>All heavy machinery brought to the work site shall arrive free of soil, seeds and vegetation fragments to avoid the import and spread of invasive species.</li> <li>For works in areas with known invasive species, vehicles and equipment should be cleaned regularly in accordance with the Ontario Invasive Plant Council's "Clean Equipment Protocol" for cleaning of vehicles and equipment.</li> <li>The use of hay should be avoided and only certified weed-free straw or use fiber roll logs should be used for sediment containment.</li> <li>Where re-vegetation is required, a native seed mix, which does not contain invasive species, shall be used.</li> <li>Water or chemical dust suppressants shall be applied to mitigate fugitive dust from site preparation and construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.</li> <li>Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> <li>The success of vegetation compensation activities will be monitored in accordance with Metrolinx's Vegetation Guideline (2020). The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.</li> </ul>
	Construction				



Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
			<p><i>Guidelines</i> (2014). The Assessor will prepare a Health Assessment Report for submission to MECP to determine the next course of action.</p> <ul style="list-style-type: none"> <li>All works must comply with the <i>Migratory Birds Convention Act</i> (MBCA), including timing windows for the general nesting period (April 1<sup>st</sup> to August 31<sup>st</sup> in Ontario). <del>MBCA, including timing windows for the nesting period (March 30<sup>th</sup> to August 31<sup>st</sup> in Ontario).</del></li> <li>If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1<sup>st</sup> to August 31<sup>st</sup>), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.</li> <li>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.</li> <li>If wildlife is encountered, measures will be implemented to avoid 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 offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife. <del>On-site personnel will be provided with information (e.g., factsheets) that address 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.</del></li> <li>All requirements of the <i>Endangered Species Act</i> (ESA) and <i>Species at Risk Act</i> (SARA) will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and consultation with MECP/MNRF. <del>ESA, 2007 and SARA will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction.</del></li> <li><del>Disturbance to bat roosting habitat will be avoided during the bat roosting period of March 31<sup>st</sup> to September 1<sup>st</sup>, with emphasis on avoiding potential effects during the maternity period of June 1<sup>st</sup> to July 31<sup>st</sup> and in accordance with MECP requirements. Disturbance to bat roosting habitat will be avoided during the bat roosting period of April 1<sup>st</sup> to September 30<sup>th</sup> in accordance with MECP requirements.</del></li> <li><del>Additional monitoring, mitigation and compensation for removal of suitable cavity trees may be required based on the results of additional surveys and consultation with the MECP. All requirements of the ESA, 2007 and Species at Risk Act (SARA) will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP/MNRF.</del></li> <li>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 <i>Metrolinx Vegetation Guideline (2020)</i>.</li> <li>If vegetation clearing will proceed when Monarch larvae may be present (April 1<sup>st</sup> to September 30<sup>th</sup>), 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.</li> <li>Provide mitigation measures for additional migratory butterfly species as required.</li> <li>An Integrated Vegetation Management (IVM) Plan will be developed and implemented that is in adherence with the <i>Metrolinx Vegetation Guideline (2020)</i> 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.</li> </ul>		

Project Site	Project Stage	Potential Effects	Mitigation Measures/Commitments <sup>1</sup>	Additional Considerations	Monitoring/Future Work Commitments <sup>2</sup>
	Operations	<ul style="list-style-type: none"> <li>Proximity of Don River increases Accipiter species potential use of poles and OCS facilities for nest platforms, perch sites and bridging issues leading to electrification.</li> <li>Vegetation Maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>Include visual deterrent mechanisms to the wires to highlight their location and include design elements to reduce bird mortality or injury.</li> <li>Trees requiring removal, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's <i>Vegetation Guideline (2020)</i>. Adhere to all applicable bylaws for tree removals outside of Metrolinx properties.</li> <li>Pruning of branches will be conducted through the implementation of proper arboricultural techniques.</li> <li>Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx <i>Vegetation Guideline (2020)</i>, will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>Develop an initial 5-year inspection program in consultation with industry experts (from the competition date) to evaluate potential nest attempts by accipiter species.</li> <li>Develop wildlife reporting protocols with emphases on mortality of birds (electrification) and identification of nest attempts from accipiter's (Hawks / Eagles / Osprey). Reports should include species names, location, nest location / attempt time and weather conditions etc. Details contribute to an understanding of use and assist in determination of appropriate future operational considerations.</li> </ul>
Richmond Hill Corridor OCS - Installation of Grounding and Bonding and Construction and Modifications of Bridge/Rail & Overpass Modifications	Footprint	<ul style="list-style-type: none"> <li>Indirect harassment and mortality of wildlife (incidental encounters).</li> <li>Temporary disturbance or displacement wildlife habitat of (e.g., Barn Swallow nest or bat roost sites).</li> </ul>	<ul style="list-style-type: none"> <li>All requirements of the <i>Endangered Species Act (ESA)</i> and <i>Species at Risk Act (SARA)</i> will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and consultation with MECP/MNRF. ESA, 2007 will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP.</li> <li>All works must comply with the <i>Migratory Birds Convention Act (MBCA)</i>, including timing windows for the general nesting period (April 1<sup>st</sup> to August 31<sup>st</sup> in Ontario). <del>MBCA, including timing windows for the nesting period (March 30<sup>th</sup> to August 31<sup>st</sup> in Ontario).</del></li> <li>If construction activities are scheduled during the nesting season for Barn and/or Bank Swallow (April 1<sup>st</sup> to August 31<sup>st</sup>), a nest search will be undertaken by a qualified biologist to confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.</li> <li>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.</li> <li>If wildlife is encountered, measures will be implemented to avoid destruction, injury or interference with the species. <del>On-site personnel will be provided with information (e.g., factheets) that address 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.,</del> and/or its habitat. For example, construction activities will cease or be reduced and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>Survey the structure one season prior to the active period for Barn Swallows. If evidence of active nests is observed register with MECP and pre-plan work in accordance with Ontario Regulation 242/08 section 23.5.</li> <li>Develop wildlife reporting protocols. Reports should include species names, location, what species was doing when observed, time and weather conditions. Details contribute to an understanding of wildlife use and assist in determination of appropriate mitigation modifications (i.e., may indicate potential nesting or habitat usage).</li> <li>Consider utilizing an experienced bat researcher (e.g., from a recognized university) to be on site during initial bridge expansion works to better understand habitat use by bats (if present).</li> <li>Pre-arrange with a local wildlife rehabilitator to provide sanctuary for recovered or accidentally injured wildlife (this may require approvals or permitting) and release following completion of construction.</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. <b>Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.</b></li> <li>Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.</li> </ul>
	Construction				
	Operations	N/A	<ul style="list-style-type: none"> <li>No additional mitigation.</li> </ul>		<ul style="list-style-type: none"> <li>Develop a long-term program for inspections of bridges and overpasses to evaluate potential use by Barn Swallows and birds protected under the MBCA. For example, every 5 years. This would assist in facilitating future needs for ESA, 2007 requirement when maintenance may be required.</li> </ul>

TABLE E-5-2: SUMMARY OF CULTURAL HERITAGE MITIGATION AND MONITORING COMMITMENTS

Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
<b>All Project Components as Identified in this Report</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Construction</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Track Infrastructure (Various Rail Corridors)</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Construction of Track Infrastructure (Various Rail Corridors)</b>	<ul style="list-style-type: none"> <li>Construction Impacts</li> </ul>	<ul style="list-style-type: none"> <li>Potential indirect impacts to the heritage attribute(s) if a known or potential properties of CHVI Cultural Heritage Value or Interest (CHVI) due to resulting from construction activities.</li> <li>No direct impacts to identified BHRs or CHLs were identified.</li> </ul>	<ul style="list-style-type: none"> <li>Selection of construction staging and laydown areas will follow the Contracting Authority's selection procedures which include avoiding heritage attributes wherever possible or effectively mitigating impacts where not possible.</li> <li>To ensure BHRs and CHLs are not adversely impacted during construction, baseline vibration monitoring should be undertaken in advance of construction. Should this advance monitoring assessment conclude that the structure will be subject to vibration impacts:                             <ul style="list-style-type: none"> <li>Preferred Option: Plan construction activities to avoid adverse vibration impacts to BHRs and CHLs.</li> <li>Alternative Option: Should it not be feasible to avoid adverse vibration impacts, a qualified engineer should undertake a condition assessment of the structures within the vibration zone of influence. Further, Metrolinx must make a commitment to repair any damages caused by vibrations.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Built Heritage. Resources/Cultural Heritage Landscapes/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHERs, HIAs and SCPs.</li> <li>The area should be monitored for vibration impacts during construction, and immediately cease work if acceptable vibration thresholds are exceeded until the above has been undertaken.</li> </ul>
<b>Walkers Line Layover Facility – Lakeshore West Corridor</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Unionville Storage Yard Facility- Stouffville Corridor</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Don Valley Layover Facility – Richmond Hill Corridor</b>	<ul style="list-style-type: none"> <li>Construction Impacts</li> </ul>	<ul style="list-style-type: none"> <li>Potential indirect or direct impacts to the heritage attribute(s) if known or potential Cultural Heritage Value or Interest (CHVI) due to construction activities. Potential direct impacts on known or potential properties of CHVI resulting from construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>Selection of construction staging and laydown areas will follow the Contracting Authority's selection procedures which include avoiding heritage attributes wherever possible or effectively mitigating impacts where not possible.</li> <li>In order to reduce the visual impacts of the layover facility on the Prince Edward Viaduct, a HIA should be conducted to help inform subsequent design stages. Such a study should consider and address the scale and massing of the ancillary buildings, as well as siting and building finishes and palettes as well as post-construction landscaping plans. Consideration should be given to using materials, colours, and finishes that will make these structures physically and visually compatible with, subordinate to, and distinguishable from the surrounding landscape and the subject bridge.</li> <li>To ensure the Prince Edward Viaduct is not adversely impacted during adjacent construction activities, baseline vibration monitoring should be undertaken in advance of construction:                             <ul style="list-style-type: none"> <li>Preferred Option: Plan construction activities to avoid the placement of buildings under the bridge, and to avoid adverse vibration impacts to the structure on this property.</li> <li>Alternative Option: Should it not be feasible to avoid adverse vibration impacts to the bridge a qualified engineer should undertake a condition assessment of the structures within the vibration zone of influence. Further, Metrolinx must make a commitment to repair any damages caused by vibrations. In addition, should it not be feasible to relocate the planned layover site buildings, an HIA is required to determine appropriate site-specific mitigation measures.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Built Heritage Resources/Cultural Heritage Landscapes/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHERs, HIAs and SCPs.</li> <li>The area should be monitored for vibration impacts during construction, and immediately cease work if acceptable vibration thresholds are exceeded until the above has been undertaken.</li> </ul>
<b>Construction of Layover Facilities</b>	<ul style="list-style-type: none"> <li>Construction Impacts</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>	<ul style="list-style-type: none"> <li>See above</li> </ul>
<b>GO Station Platforms</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Construction of GO Station Platforms</b>	<ul style="list-style-type: none"> <li>Construction Impacts</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Thickson Road Bridge Expansion</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Construction of Thickson Road Bridge Expansion</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>OCS – Richmond Hill Corridor</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Installation of OCS</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
	<ul style="list-style-type: none"> <li>Construct Modifications to Bridges</li> <li>Install duct banks</li> <li>Construct 25kV feeder routes</li> <li>Tree removals</li> </ul>			
Operation/Maintenance of OCS	<ul style="list-style-type: none"> <li>Operation of OCS</li> <li>Tree pruning/maintenance</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Installation/Construction of OCS	<ul style="list-style-type: none"> <li>Excavate soil</li> <li>Install OCS foundations at an approximate depth of 5m</li> <li>Erect poles</li> <li>Install wiring</li> <li>Tree removals</li> </ul>	<ul style="list-style-type: none"> <li>Construction activities associated with the OCS infrastructure area and vegetation clearing area may result in indirect impacts to the bridge piers through soil disturbance and vibration impacts.</li> </ul>	<ul style="list-style-type: none"> <li>To ensure this bridge is not adversely impacted during construction, baseline vibration monitoring should be undertaken in advance of construction. Should this advance monitoring assessment conclude that the structure will be subject to vibration impacts:                             <ul style="list-style-type: none"> <li>Preferred Option: Plan construction activities to avoid adverse vibration impacts to the structure on this property.</li> <li>Alternative Option: Should it not be feasible to avoid adverse vibration impacts to the structure on this property, a qualified engineer should undertake a condition assessment of the structures within the vibration zone of influence. Further, Metrolinx must make a commitment to repair any damages caused by vibrations.</li> <li>The area should be monitored for vibration impacts during construction, and immediately cease work if acceptable vibration thresholds are exceeded until the above has been undertaken.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Built Heritage Resources/Cultural Heritage Landscapes/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHERs, HIAs and SCPs.</li> <li>The area should be monitored for vibration impacts during construction, and immediately cease work if acceptable vibration thresholds are exceeded until the above has been undertaken.</li> </ul>
Installation of Grounding and Bonding – Richmond Hill Corridor	<ul style="list-style-type: none"> <li>Excavate the soil to the required depth (approximately 1m)</li> <li>Install grounding mats, conductors and rods, as per design</li> <li>Connect the grounding system internally and with adjacent existing grounding system, where required</li> <li>Backfill the grounding system, as per design</li> <li>Install the junction boxes and connect grounding conductors, where required</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Bridge/Rail Overpass Modifications – Richmond Hill Corridor	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Construction of Bridge/Rail Overpass Modifications – Richmond Hill Corridor	<ul style="list-style-type: none"> <li>Install bridge barriers</li> <li>Install OCS attachments</li> <li>Install flash plates</li> <li>Raise bridge</li> <li>Lower tracks</li> <li>Replace bridges</li> <li>Replace pedestrian bridges</li> </ul>	<ul style="list-style-type: none"> <li>Direct impacts to the heritage attribute(s) of a known or potential Provincial Heritage Property (PHP) or Provincial Heritage Properties of Provincial Significance (PHPPS) due to installation of new/modified infrastructure. PHP or PHPPS due to installation of new/modified infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Where no previous assessment has been completed or a Statement of Cultural Heritage Value (SCHV) has not been approved by the Contracting Authority Metrolinx, undertake a CHER as per the forthcoming Metrolinx I&amp;E Process (2020). In the event that the Metrolinx I&amp;E Process (2020) is not approved, follow the Metrolinx Interim Cultural Heritage Management (2013).</li> <li><del>Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Evaluation Report and Cultural Heritage Evaluation Report Recommendations (2016).</del></li> <li>If warranted, complete a HIA in accordance with MHSTCI Information Bulletin 3: Heritage Impact Assessments for Provincial Heritage Properties (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the Cultural Heritage Value and heritage attributes of the PHP, based on the PHP's SCHV Statement of Cultural Heritage Value. Mitigation measures and alternatives should be consistent with the relevant conservation strategies established and adopted in a SCP. A SCP will be prepared and implemented for PHPs and PHPPS in accordance with the Project Agreement.</li> <li>During design, the recommendations of all HIAs and Cultural Heritage Reports will be followed and adhered to during design and construction, including but not limited to strategies to protect heritage attributes.</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Built Heritage Resources/Cultural Heritage Landscapes/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHERs, HIAs and SCPs.</li> </ul>



TABLE E-5-1: SUMMARY OF ARCHAEOLOGY MITIGATION AND MONITORING COMMITMENTS

Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
<b>All Project Components as Identified in this Report</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Construction</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the disturbance of unassessed or documented deeply buried archaeological resources within a 200 metre radius of Allandale Site.</li> <li>Potential for the disturbance of unassessed or documented archaeological resources.</li> <li>Potential to impact cemetery located in proximity to the Project footprint.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the previously documented evidence of disturbed human remains on the historic Allandale Station site, archaeological monitoring of any proposed impacts to the historic station property as well as to any crawl spaces or soils beneath existing structures without basements is recommended within the area between Essa Road and Milburn Street.</li> <li>Stage 2 survey required prior to any construction impacts within the Don Valley layover impact footprint.</li> <li><del>The Constructor will</del> Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports.</li> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists</i> (2011), and the MHSTCI document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario</i> (2011).</li> <li>In the event that archaeological materials resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If materials resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the materials resources may be required. If it is determined that there is a potential for Indigenous artifacts, the Contracting Authority should be contacted and Applicable Law will be followed.</li> <li>If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance.</li> <li>For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance.</li> <li>If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, the Contracting Authority should be contacted and all Applicable Law must be adhered to.</li> <li>All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's procedures <i>Guide to Engaging with Indigenous Communities (2020)</i>.</li> <li>Work in proximity to known cemeteries requires completion of an Archaeological Assessment prior to any proposed ground disturbance in accordance with the MHSTCI's <i>Standards and Guidelines for Consultant Archaeologists</i> (2011) and the <i>Funeral, Burial, and Cremation Services Act</i> and regulations under that Act.</li> </ul>	<ul style="list-style-type: none"> <li>With the appropriate mitigation measures in place, effects from construction are not anticipated and the potential for long-term negative effects are reduced.</li> <li>Performance of the work will occur within land previously subject to an Archaeological Assessment.</li> <li>Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.</li> <li>Further Archaeological Assessment may identify the need for monitoring during construction.</li> </ul>
<b>Track Infrastructure (Various Rail Corridors)</b>	<ul style="list-style-type: none"> <li>Footprint Impact</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the disturbance of unassessed or documented deeply buried archaeological resources within a 200 metre radius of Allandale Site.</li> <li>Potential to impact cemetery located in proximity to the Project footprint.</li> <li>No potential for the disturbance of unassessed or documented archaeological resources in all</li> </ul>	<ul style="list-style-type: none"> <li>Due to the previously documented evidence of disturbed human remains on the historic Allandale Station site, archaeological monitoring of any proposed impacts to the historic station property as well as to any crawl spaces or soils beneath existing structures without basements is recommended within the area between Essa Road and Milburn Street.</li> <li><del>The Constructor will</del> Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports.</li> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the</li> </ul>	<ul style="list-style-type: none"> <li>With the appropriate mitigation measures in place, effects from construction are not anticipated and the potential for long-term negative effects are reduced.</li> <li>Performance of the work will occur within land previously subject to an Archaeological Assessment.</li> <li>Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.</li> <li>Further Archaeological Assessment may identify the need for monitoring during construction.</li> </ul>



Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
		other track infrastructure impact areas.	<p>Ministry of Tourism, Culture and Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists</i> (2011), and the MHSTCI document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario</i> (2011).</p> <ul style="list-style-type: none"> <li>In the event that archaeological materials resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If materials resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the materials resources may be required. If it is determined that there is a potential for Indigenous artifacts, the Contracting Authority should be contacted and Applicable Law will be followed.</li> <li>If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance.</li> <li>For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance.</li> <li>If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, the Contracting Authority should be contacted and all Applicable Law must be adhered to.</li> <li>All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's <i>procedures Guide to Engaging with Indigenous Communities (2020)</i>.</li> <li>Work in proximity to known cemeteries requires completion of an Archaeological Assessment prior to any proposed ground disturbance in accordance with the MHSTCI's <i>Standards and Guidelines for Consultant Archaeologists</i> (2011) and the <i>Funeral, Burial, and Cremation Services Act</i> and regulations under that Act.</li> <li>No further archaeological assessment required.</li> </ul>	
<b>Construction of Track Infrastructure (Various Rail Corridors)</b>	<ul style="list-style-type: none"> <li>Construction of track infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the disturbance of unassessed or documented deeply buried archaeological resources within a 200 metre radius of Allandale Site.</li> <li>Potential to impact cemetery located in proximity to the Project footprint.</li> <li>No potential for the disturbance of unassessed or documented archaeological resources in all other track infrastructure impact areas.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the previously documented evidence of disturbed human remains on the historic Allandale Station site, archaeological monitoring of any proposed impacts to the historic station property as well as to any crawl spaces or soils beneath existing structures without basements is recommended within the area between Essa Road and Milburn Street.</li> <li><del>The Contractor will</del> Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports.</li> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists</i> (2011), and the MHSTCI document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario</i> (2011).</li> <li>In the event that archaeological materials resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If materials resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the materials resources may be required. If it is determined that there is a potential for Indigenous artifacts, the Contracting Authority should be contacted and Applicable Law will be followed.</li> <li>If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to</li> </ul>	<ul style="list-style-type: none"> <li>With the appropriate mitigation measures in place, effects from construction are not anticipated and the potential for long-term negative effects are reduced.</li> <li>Performance of the work will occur within land previously subject to an Archaeological Assessment.</li> <li>Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.</li> <li>Further Archaeological Assessment may identify the need for monitoring during construction.</li> </ul>

Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
			<p>disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance.</p> <ul style="list-style-type: none"> <li>For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance.</li> <li>If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, the Contracting Authority should be contacted and all Applicable Law must be adhered to.</li> <li>All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's procedures <i>Guide to Engaging with Indigenous Communities (2020)</i>.</li> <li>Work in proximity to known cemeteries requires completion of an Archaeological Assessment prior to any proposed ground disturbance in accordance with the MHSTCI's <i>Standards and Guidelines for Consultant Archaeologists (2011)</i> and the <i>Funeral, Burial, and Cremation Services Act</i> and regulations under that Act.</li> <li>No further archaeological assessment required.</li> </ul>	
<p><b>Walkers Line Layover Facility – Lakeshore West Corridor</b></p>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>Stage 2 survey required prior to any construction impacts within the layover impact footprint.</li> <li><del>The Contractor will</del> Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports.</li> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists (2011)</i>, and the MHSTCI document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011)</i>.</li> <li>In the event that archaeological materials resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If materials resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the materials resources may be required. If it is determined that there is a potential for Indigenous artifacts, the Contracting Authority should be contacted and Applicable Law will be followed.</li> <li>If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance.</li> <li>For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance.</li> <li>If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, the Contracting Authority should be contacted and all Applicable Law must be adhered to.</li> </ul>	<ul style="list-style-type: none"> <li>With the appropriate mitigation measures in place, effects from construction are not anticipated and the potential for long-term negative effects are reduced.</li> <li>Performance of the work will occur within land previously subject to an Archaeological Assessment.</li> <li>Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.</li> <li>Further Archaeological Assessment may identify the need for monitoring during construction.</li> </ul>

Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
			<ul style="list-style-type: none"> <li>All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's procedures <i>Guide to Engaging with Indigenous Communities (2020)</i>.</li> <li>No further archaeological assessment required.</li> </ul>	
<b>Unionville Storage Yard Facility- Stouffville Corridor</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>		<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Don Valley Layover Facility – Richmond Hill Corridor</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>Stage 2 survey required prior to any construction impacts within the layover impact footprint.</li> <li><del>The Contractor will</del> Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports.</li> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists (2011)</i>, and the MHSTCI document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011)</i>.</li> <li>In the event that archaeological materials resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If materials resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the materials resources may be required. If it is determined that there is a potential for Indigenous artifacts, the Contracting Authority should be contacted and Applicable Law will be followed.</li> <li>If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance.</li> <li>For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance.</li> <li>If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, the Contracting Authority should be contacted and all Applicable Law must be adhered to.</li> <li>All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's procedures <i>Guide to Engaging with Indigenous Communities (2020)</i>.</li> <li>The City of Toronto, Heritage Planning Unit shall be consulted as part of the detailed design of this facility should any archaeological sites with Cultural Heritage Value or Interest be identified during subsequent Archaeological Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>With the appropriate mitigation measures in place, effects from construction are not anticipated and the potential for long-term negative effects are reduced.</li> <li>Performance of the work will occur within land previously subject to an Archaeological Assessment.</li> <li>Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.</li> <li>Further Archaeological Assessment may identify the need for monitoring during construction.</li> </ul>
<b>Construction of Layover/Storage Yard Facilities</b>	<ul style="list-style-type: none"> <li>Site clearing</li> <li>Excavate soil</li> <li>Grade and seed</li> <li>Install OCS foundations at an approximate depth of 5 meters</li> <li>Construction of infrastructure, access route, and associate fencing</li> <li>Install building foundation</li> <li>Construct access roads</li> <li>Install fencing</li> <li>Construct buildings</li> </ul>	<ul style="list-style-type: none"> <li>Potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>Stage 2 survey required prior to any construction impacts within the layover impact footprints.</li> <li><del>The Contractor will</del> Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports.</li> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists (2011)</i>, and the MHSTCI document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011)</i>.</li> </ul>	<ul style="list-style-type: none"> <li>With the appropriate mitigation measures in place, effects from construction are not anticipated and the potential for long-term negative effects are reduced.</li> <li>Performance of the work will occur within land previously subject to an Archaeological Assessment.</li> <li>Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.</li> <li>Further Archaeological Assessment may identify the need for monitoring during construction</li> </ul>

Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
	<ul style="list-style-type: none"> <li>Road paving</li> </ul>		<ul style="list-style-type: none"> <li>In the event that archaeological materials resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If materials resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the materials resources may be required. If it is determined that there is a potential for Indigenous artifacts, the Contracting Authority should be contacted and Applicable Law will be followed.</li> <li>If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance.</li> <li>For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance.</li> <li>If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, the Contracting Authority should be contacted and all Applicable Law must be adhered to.</li> <li>All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's procedures <i>Guide to Engaging with Indigenous Communities (2020)</i>.</li> </ul>	
<b>GO Station Platforms</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Operation &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Construction of GO Station Platforms</b>	<ul style="list-style-type: none"> <li>Site clearing</li> <li>Excavate soil</li> <li>Construction of infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Thickson Road Bridge Expansion</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Construction of Thickson Road Bridge Expansion</b>	<ul style="list-style-type: none"> <li>Site clearing</li> <li>Excavate soil</li> <li>Construction of infrastructure</li> <li>Road paving</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Operation/Maintenance of OCS</b>	<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Operation of OCS</li> <li>Tree pruning/maintenance</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Installation/Construction of OCS</b>	<ul style="list-style-type: none"> <li>Excavate soil</li> <li>Install OCS foundations at an approximate depth of 5 meters</li> <li>Erect poles</li> <li>Install wiring</li> <li>Tree removals</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Installation of Grounding and Bonding – Richmond Hill Corridor</b>	<ul style="list-style-type: none"> <li>Excavate the soil to the required depth (approximately 1 meter)</li> <li>Install grounding mats, conductors and rods, as per design</li> <li>Connect the grounding system internally and with adjacent existing grounding system, where required</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>



Project Component	Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
	<ul style="list-style-type: none"> <li>Backfill the grounding system, as per design</li> <li>Install the junction boxes and connect grounding conductors, where required</li> </ul>			
<b>Bridge/Rail Overpass Modifications – Richmond Hill Corridor</b>	<ul style="list-style-type: none"> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Construction of Bridge/Rail Overpass Modifications – Richmond Hill Corridor</b>	<ul style="list-style-type: none"> <li>Install bridge barriers</li> <li>Install OCS attachments</li> <li>Install flash plates</li> </ul>	<ul style="list-style-type: none"> <li>No potential for the disturbance of unassessed or documented archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>No further archaeological assessment required.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

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

TABLE E-5-3: SUMMARY OF STORMWATER MANAGEMENT – WALKERS LINE LAYOVER MITIGATION AND MONITORING COMMITMENTS

Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Construction</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>The proposed works will result in increases to impervious areas, with potential effects to water quantity and quality.</li> <li>In addition to the increases in impervious coverage, there may be alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system).</li> <li>The proposed construction activities pose a potential impact due to sediment transport into adjacent natural areas including watercourses, wetlands and municipal drainage infrastructure.</li> <li>Extension/replacement of existing 3-cell precast concrete box culvert and potential realignment of Shoreacres Creek.</li> <li>Potential slope stability issues in the vicinity of the Shoreacres Creek. A Geotechnical Study is required to address the overall setback distance (Erosion Hazard Limit) and Slope Stability in accordance with Conservation Halton requirements.</li> </ul>	<ul style="list-style-type: none"> <li>A Drainage and Stormwater Report, an Erosion and Sediment Control Plan and detailed drainage design and erosion and sediment control drawings will be prepared by Metrolinx, implemented and monitored in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual (2003), the Erosion and Sediment Control Guideline for Urban Construction (2019), and the guidelines and regulatory requirements of the Conservation Authority having jurisdiction.</li> <li>To mitigate potential increases in peak flows and potential adverse impacts to water quality and to adhere to the local stormwater management guidelines, requirements for stormwater quantity and quality controls will be carefully reviewed and implemented as required. The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial and federal requirements, as amended, as well as the requirements of Conservation Authorities having jurisdiction.</li> <li>At the outset of detailed design, an assessment of the receiving capacity of the minor and major drainage systems will be required.</li> <li>A detailed assessment of proposed ditches/swales along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements and American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2019).</li> <li>All area grading and resulting drainage patterns shall not adversely affect adjacent lands.</li> <li>To offset the potential impacts to wetlands, the grades and drainage system on the periphery of the layover site may need to be designed to result in minor local drainage diversions to the wetland features. An annual water budget for existing, future (without mitigation) and future (with mitigation) would have to be conducted. Input from a terrestrial biologist is required to review the annual water budget variations for existing and future conditions.</li> <li>Infiltration requirements for municipalities will be determined/confirmed as per the design guidelines and standards. Detailed geotechnical and hydrogeological investigations should be complete/updated at detailed design stage to precisely determine the soil type and runoff coefficient for open space and inform drainage infiltration systems (e.g. bio-swales, infiltration galleries/soakways).</li> <li>Any proposed bridge expansions and culvert extensions/replacements will be sized to maintain or improve local flood levels and supported by hydrologic/hydraulic calculations and/or models. Creek bed and banks design will include geomorphological input for scour and erosion prevention, and creation of appropriate fish habitat (i.e., Shoreacres Creek).</li> <li>A hydraulic assessment of each crossing and any proposed bridge expansions (extensions/replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses.</li> <li>Where sensitive/endangered fish/fish habitat may be identified near the layover sites during detailed design, the final design of the SWM features shall take these features into considerations to ensure the SWM facilities will not negatively affect aquatic features.</li> <li>To avoid/minimize excavation and dewatering requirement, shallow foundations are recommended.</li> <li>Analyze and recommend Low Impact Development (LID) measures, while taking flooding risks and space constraints into account. Specifically, consider usage of large undeveloped areas (i.e. "Open Space") located at the east and west limits of the site for treating run-off through bio-retention or infiltration.</li> <li>Given the potential extension/replacement of existing 3-cell precast concrete box culvert and realignment of Shoreacres Creek, 2-D HEC-RAS modelling, cut-and-fill analysis for flood control, Geotechnical investigation for toe erosion allowance and</li> </ul>	<ul style="list-style-type: none"> <li>Turbidity levels shall be monitored upstream and downstream of sites at watercourse crossings or adjacent to watercourses. Turbidity levels within discharges from sites and within receiving storm sewers will also be monitored visually to determine potential impacts from construction (i.e., Shoreacres Creek).</li> <li>Collect samples for existing watercourses and/or wetlands, when runoff from the site discharges to a watercourse and/or wetland will be conducted for pre-construction, during construction, and post construction conditions until the site is considered stabilized. Samples for watercourses and wetlands will be taken for non-precipitation events and for precipitation events to obtain a reasonable understanding of the turbidity levels (i.e., Shoreacres Creek). Post-construction monitoring of wetland areas may also be required depending on input from Conservation Authorities.</li> <li>Monitoring will be conducted for potential oil spills and containment of spills to be conducted as per provincial requirements.</li> <li>Functionality of stormwater quantity controls including peak flows and water levels for storm events within the design range. Monitoring would require local rainfall data.</li> <li>Low Impact Development (LID) features will be monitored to assess applicable parameters in accordance with local, regional, and conservation authority requirements.</li> <li>Infiltration targets measured by flow monitoring on infiltrative Low Impact Development (LID) Best Management Practices (BMPs).</li> <li>Stormwater quality measures will be assessed to provide a minimum 80% Total Suspended Solids (TSS) removal as per the MECP Stormwater Management Planning and Design Manual (2003). Additional water quality requirements shall apply as per Conservation Halton (CH).</li> <li>Within Conservation Halton's jurisdiction, phosphorus levels immediately downstream of sites will be monitored and compared to baseline conditions determined prior to construction.</li> </ul>

Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
		<p>stable slope allowance, and Fluvial Geomorphology investigation are required for this site during detailed design. Further consultation with CH will be carried out through this process.</p> <ul style="list-style-type: none"> <li>• The Constructor will develop and implement a Spill Prevention and Response Plan in accordance with the Project Agreement.</li> <li>• The stormwater servicing of the site to align with the recommendations of the Area Specific Servicing Plans prepared for Burlington Mobility Hub and the Downtown Lands.</li> <li>• Safe access and egress to the site will be provided considerate of the Regulatory Storm's floodplain and/or associated spills.</li> <li>• The City of Burlington has developed new Stormwater Management Design Guidelines (2020) at the time of finalizing this report. Recalculation of run-off flows is required at subsequent design stages to confirm the findings of this report.</li> <li>• For establishing quantity controls, CH noted preference for using the City of Burlington's proposed SWM criteria for re-development sites, which applies a maximum runoff coefficient C of 0.50 (i.e. 36% imperviousness) for establishing pre-development conditions. A computer-based model will be developed to assess the site's hydrology and hydraulics.</li> <li>• In order to meet Provincial Water Quality Objective (PWQO) and the Canadian Water Quality Guidelines for the Protection of Aquatic Life, mitigation measures to enhance water quality will be considered, particularly for the treatment discharge from the washing facility.</li> <li>• As per Metrolinx standards, automated oil shutoff valves and oil/water separators from all drainage lines and from all drip trays should be installed prior to drainage entering the existing storm drain system, for all new layover facilities. Additionally, a very robust and fail-proof treatment system will be required that removes oil contamination from the runoff of the layover tracks in accordance with City of Burlington's storm sewer discharge by-law.</li> <li>• A Wetland Water Balance Risk Evaluation will be completed at detail design as soon as the design is sufficiently advanced to make such an assessment possible to limit the risk of unexpected delays due to potential monitoring requirements.</li> </ul>	

TABLE E-5-4: SUMMARY OF STORMWATER MANAGEMENT – UNIONVILLE STORAGE YARD MITIGATION AND MONITORING COMMITMENTS

Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Construction</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>The proposed works will result in increases to impervious areas, with potential effects to water quantity and quality.</li> <li>In addition to the increases in impervious coverage, there may be alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system).</li> <li>The proposed construction activities pose a potential impact due to sediment transport into adjacent natural areas including watercourses, wetlands and municipal drainage infrastructure.</li> <li>Potential requirements for stormwater management infrastructure (i.e. end-of-pipe controls) to address the required stormwater management design criteria due to the proposed development at the storage facility.</li> <li>Potential slope stability issues at the far north end of the storage yard in the vicinity of the Rouge River. A Geotechnical Study is required to address the overall setback distance (Erosion Hazard Limit) as described in "TRCA Geotechnical Engineering Design and Submission Requirements".</li> </ul>	<ul style="list-style-type: none"> <li>A Drainage and Stormwater Report, an Erosion and Sediment Control Plan and detailed drainage design and erosion and sediment control drawings will be prepared by Project Co., implemented and monitored in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual (2003), Erosion and Sediment Control Guideline for Urban Construction (TRCA, December 2019), and the guidelines and regulatory requirements of the Conservation Authority having jurisdiction.</li> <li>To mitigate potential increases in peak flows and potential adverse impacts to water quality and to adhere to the local stormwater management guidelines, requirements for stormwater quantity and quality controls will be carefully reviewed and implemented as required. The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial and federal requirements, as amended, as well as the requirements of Conservation Authorities having jurisdiction.</li> <li>At the outset of detailed design, an assessment of the receiving capacity of the minor and major drainage systems will be required.</li> <li>A detailed assessment of proposed ditches/swales along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements and American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2019).</li> <li>All area grading and resulting drainage patterns shall not adversely affect adjacent lands.</li> <li>To offset the potential impacts to wetlands, the grades and drainage system on the periphery of the storage yard site may need to be designed to result in minor local drainage diversions to the wetland features. An annual water budget for existing, future (without mitigation) and future (with mitigation) would have to be conducted. Input from a terrestrial biologist is required to review the annual water budget variations for existing and future conditions.</li> <li>Infiltration requirements for municipalities will be determined/confirmed as per the design guidelines and standards. Detailed geotechnical and hydrogeological investigations should be complete/updated at detailed design stage to precisely determine the soil type and runoff coefficient for open space and inform drainage infiltration systems (e.g. bio-swales, infiltration galleries/soakaways).</li> <li>Any proposed bridge expansions and culvert replacements will be sized to maintain or improve local flood levels and supported by hydrologic/hydraulic calculations and/or models. Creek bed and banks design will include geomorphological input for scour and erosion prevention, and creation of appropriate fish habitat.</li> <li>A hydraulic assessment of each crossing and any proposed bridge expansions (replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses.</li> <li>Where sensitive/endangered fish/fish habitat may be identified near the layover/storage sites during detailed design, the final design of the SWM features shall take these features into considerations to ensure the SWM facilities will not negatively affect aquatic features.</li> <li>To avoid/minimize excavation and dewatering requirement, shallow foundations are recommended.</li> <li>For floodproofing of the site, the storage facility will be built 0.3m above the floodplain.</li> <li>Analysis and recommend Low Impact Development (LID) measures, while taking flooding risks and space constraints into account (e.g. roof retention might be more appropriate than bioswale given the flooding risk).</li> <li>Final site condition and temporary conditions (during construction) shall avoid alteration to the valley and other water features.</li> <li>The Constructor will develop and implement a Spill Prevention and Response Plan in accordance with the Project Agreement.</li> <li>A geotechnical study is required during detailed design to determine the position of the Long-Term Stable Top of Slope (LTSTOS) applying both the long-term stable slope allowance corresponding to a minimum factor of safety of 1.5 and appropriate toe erosion allowance (as per TRCA Geotechnical Engineering Design and Submission Requirements – November 2007).</li> <li>2-D HEC RAS modelling and cut-and-fill analysis for flood control and potential Fluvial Geomorphology investigation is to be completed at the site, with consideration given to the Rouge River Hydrology Study, Wood Environmental &amp; Infrastructure Solutions, 2018. Further consultation with TRCA will be carried out through this process.</li> <li>TRCA criteria requires that rip-rap at culvert outlet be set at an elevation above the 25-year storm flood line (as per TRCA SWM Criteria manual, Section 2.4 Outfall Structure and Plunge Pool).</li> <li>All proposed outfalls need to meet TRCA Appendix E.2 criteria, as such "should be at an oblique angle to the watercourse and supported by a fluvial geomorphologist".</li> <li>TRCA noted the following stormwater management criteria for the additional impervious areas:                         <ul style="list-style-type: none"> <li>Erosion Control: Retention of the 5mm storm onsite with the use of LIDs (Green roofs, permeable pavers, bioswales, etc.)</li> <li>Quantity Control: No quantity control for direct watercourse discharge to main Humber River. If discharging to a City sewer, then the City's criteria would govern.</li> <li>Quality Control: 80% TSS removal. Note that TRCA only credits oil-grit separators to provide 50% TSS removal when sized for 80% TSS removal. They must be placed in a treatment train to be credited the full 80% TSS removal. If there are space constraints, TRCA accepts a filtration system (e.g. Jellyfish) when sized correctly to provide 80% TSS removal.</li> </ul> </li> <li>As per Metrolinx standards, automated oil shutoff valves and oil/water separators from all drainage lines and from all drip trays should be installed prior to drainage entering the existing storm system, for all new facilities.</li> <li>As per MECP, lot level controls should be employed whenever possible to help achieve both water quantity and water quality targets.</li> <li>A Wetland Water Balance Risk Evaluation will be completed at detail design as soon as the design is sufficiently advanced to make such an assessment possible to limit the risk of unexpected delays due to potential monitoring requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Turbidity levels shall be monitored upstream and downstream of sites at watercourse crossings or adjacent to watercourses. Turbidity levels within discharges from sites and within receiving storm sewers will also be monitored visually to determine potential impacts from construction.</li> <li>Collect samples for existing watercourses and/or wetlands, when runoff from the site discharges to a watercourse and/or wetland will be conducted for pre-construction, during construction, and post construction conditions until the site is considered stabilized. Samples for watercourses and wetlands will be taken for non-precipitation events and for precipitation events to obtain a reasonable understanding of the turbidity levels. Post-construction monitoring of wetland areas may also be required depending on input from Conservation Authorities.</li> <li>Monitoring will be conducted for potential oil spills and containment of spills to be conducted as per provincial requirements.</li> <li>Functionality of stormwater quantity controls including peak flows and water levels for storm events within the design range. Monitoring would require local rainfall data.</li> <li>Low Impact Development (LID) features will be monitored to assess applicable parameters in accordance with local, regional, and conservation authority requirements.</li> <li>Infiltration targets, measured by flow monitoring on infiltrative Low Impact Development (LID) Best Management Practices (BMPs).</li> <li>Stormwater quality measures will be assessed to provide a minimum 80% Total Suspended Solids (TSS) removal as per the MECP Stormwater Management Planning and Design Manual (2003). Additional water quality requirements shall apply as per Toronto and Region Conservation Authority (TRCA).</li> <li>Within TRCA's jurisdiction, phosphorus levels immediately downstream of sites will be monitored and compared to baseline conditions determined prior to construction.</li> </ul>



TABLE E-5-2: SUMMARY OF STORMWATER MANAGEMENT – DON VALLEY LAYOVER MITIGATION AND MONITORING COMMITMENTS

Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
<ul style="list-style-type: none"> <li>Footprint Impacts</li> <li>Construction</li> <li>Operations &amp; Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>The proposed works will result in increases to impervious areas, with potential effects to water quantity and quality.</li> <li>In addition to the increases in impervious coverage, there may be alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system).</li> <li>The proposed construction activities pose a potential impact due to sediment transport into adjacent natural areas including watercourses, wetlands and municipal drainage infrastructure.</li> <li>Risk of erosion hazard (both slope stability and toe erosion) in the proposed layover area in proximity of the Don River.</li> </ul>	<ul style="list-style-type: none"> <li>A Drainage and Stormwater Report, an Erosion and Sediment Control Plan and detailed drainage design and erosion and sediment control drawings will be prepared, implemented and monitored in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual (2003), the Erosion and Sediment Control Guideline for Urban Construction (2019), and the guidelines and regulatory requirements of the Conservation Authority having jurisdiction.</li> <li>To mitigate potential increases in peak flows and potential adverse impacts to water quality and to adhere to the local stormwater management guidelines, requirements for stormwater quantity and quality controls will be carefully reviewed and implemented as required. The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial and federal requirements, as amended, as well as the requirements of Conservation Authorities having jurisdiction.</li> <li>At the outset of detailed design, an assessment of the receiving capacity of the minor and major drainage systems will be required.</li> <li>A detailed assessment of proposed ditches/swales along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements and American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2019).</li> <li>All area grading and resulting drainage patterns shall not adversely affect adjacent lands.</li> <li>To offset the potential impacts to wetlands, the grades and drainage system on the periphery of the layover site may need to be designed to result in minor local drainage diversions to the wetland features. An annual water budget for existing, future (without mitigation) and future (with mitigation) would have to be conducted. Input from a terrestrial biologist is required to review the annual water budget variations for existing and future conditions.</li> <li>Infiltration requirements for municipalities will be determined/confirmed as per the design guidelines and standards. Detailed geotechnical and hydrogeological investigations should be complete/updated at detailed design stage to precisely determine the soil type and runoff coefficient for open space and inform drainage infiltration systems (e.g. bio-swales, infiltration galleries/soakways).</li> <li>Any proposed bridge expansions and culvert replacements will be sized to maintain or improve local flood levels and supported by hydrologic/hydraulic calculations and/or models. Creek bed and banks design will include geomorphological input for scour and erosion prevention, and creation of appropriate fish habitat.</li> <li>A hydraulic assessment of each crossing and any proposed bridge expansions (replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses.</li> <li>Where sensitive/endangered fish/fish habitat may be identified near the layover sites during detailed design, the final design of the SWM features shall take these features into considerations to ensure the SWM facilities will not negatively affect aquatic features.</li> <li>To avoid/minimize excavation and dewatering requirement, shallow foundations are recommended.</li> <li>For floodproofing of the layover site, the Regulatory floodplain elevation (elev. 83.9) with a 0.3 meter of freeboard, shall be adhered to.</li> <li>Analysis and recommend Low Impact Development (LID) measures, while taking flooding risks and space constraints into account (e.g. roof retention might be more appropriate than bioswale given the flooding risk).</li> <li>Proposed new development of the site will minimize grading impact to existing site.</li> <li>Final site condition and temporary conditions (during construction) shall avoid alternation to the valley and other water features.</li> <li>The Constructor will develop and implement a Spill Prevention and Response Plan in accordance with the Project Agreement.</li> <li>A geotechnical study is required to determine the position of the Long-Term Stable Top of Slope (LTSTOS) applying both the long-term stable slope allowance corresponding to a minimum factor of safety of 1.5 and appropriate toe erosion allowance (as per TRCA Geotechnical Engineering Design and Submission Requirements - November 2007).</li> </ul>	<ul style="list-style-type: none"> <li>Turbidity levels within discharges from sites to be monitored visually. Turbidity levels will be monitored upstream and downstream of sites at watercourse crossings or adjacent to watercourses. Turbidity levels within discharges from sites and within receiving storm sewers will also be monitored visually to determine potential impacts from construction.</li> <li>Grab samples for existing watercourses and/or wetlands, when runoff from the site discharges to a watercourse and/or wetland will be conducted for pre-construction, during construction, and post construction conditions until the site is considered stabilized. Grab samples for watercourses and wetlands will be taken for non-precipitation event and for precipitation events to obtain a reasonable understanding of the turbidity levels. Post-construction monitoring of wetland areas depending on input from Conservation Authorities.</li> <li>Monitoring will be conducted for potential oil spills and containment of spills to be conducted as per provincial requirements.</li> <li>Functionality of stormwater quantity controls including peak flows and water levels for storm events within the design range. Monitoring would require local rainfall data.</li> <li>Low Impact Development (LID) features will be monitored to assess applicable parameters in accordance with local, regional, and conservation authority requirements.</li> <li>Infiltration targets, measured by flow monitoring on infiltrative Low Impact Development (LID) Best Management Practices (BMPs).</li> <li>Stormwater quality measures will be assessed to provide a minimum 80% Total Suspended Solids (TSS) removal as per the MECP Stormwater Management Planning and Design Manual (2003). Additional water quality requirements shall apply as per Toronto and Region Conservation Authority (TRCA).</li> <li>Within TRCA's jurisdiction, Phosphorus levels immediately downstream of sites will be monitored and compared to baseline conditions determined prior to construction.</li> </ul>

Project Activities	Potential Effect	Mitigation Measures/Commitments	Monitoring/Future Work Commitments
		<ul style="list-style-type: none"> <li>• TRCA had expressed concerns that this proposed layover is within a flood prone area and noted recent flooding events. TRCA has requested 2-D HEC RAS modelling and cut-and-fill analysis for flood control and potential Fluvial Geomorphology investigation to be completed at the site, with consideration given to the Don River Hydrology Final Report, Marshall Macklin Monaghan, 2018. Further consultation with TRCA.</li> <li>• TRCA criteria requires that rip-rap at culvert outlet be set at an elevation above the 25-year storm flood line (as per TRCA SWM Criteria manual, Section 2.4 Outfall Structure and Plunge Pool).</li> <li>• All proposed outfalls need to meet TRCA Appendix E.2 criteria, as such “should be at an oblique angle to the watercourse and supported by a fluvial geomorphologist”.</li> <li>• TRCA noted the following stormwater management criteria for the additional impervious areas:               <ul style="list-style-type: none"> <li>○ Erosion Control: Retention of the 5mm storm onsite with the use of LIDs (Green roofs, permeable pavers, bioswales, etc.)</li> <li>○ Quantity Control: No quantity control for direct watercourse discharge to main Humber River. If discharging to a City sewer, then the City’s criteria would govern.</li> <li>○ Quality Control: 80% TSS removal. Note that TRCA only credits oil-grit separators to provide 50% TSS removal when sized for 80% TSS removal. They must be placed in a treatment train to be credited the full 80% TSS removal. If there are space constraints, TRCA accepts a filtration system (e.g. Jellyfish) when sized correctly to provide 80% TSS removal.</li> </ul> </li> <li>• As per Metrolinx standards, automated oil shutoff valves and oil/water separators from all drainage lines and from all drip trays should be installed prior to drainage entering the existing storm system, for all new facilities.</li> <li>• As per MECP, lot level controls should be employed whenever possible to help achieve both water quantity and water quality targets.</li> <li>• A Wetland Water Balance Risk Evaluation will be completed at detail design as soon as the design is sufficiently advanced to make such an assessment possible to limit the risk of unexpected delays due to potential monitoring requirements.</li> </ul>	

## Chapter 6

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Section 6.1.10 Operational Noise & Vibration Mitigation has been revised as follows:

TABLE E-6-1: SUMMARY OF POTENTIAL EFFECTS, MITIGATION MEASURES &amp; MONITORING COMMITMENTS – OPERATIONAL NOISE &amp; VIBRATION

Project Component	Project Activities	Potential Effect	Mitigation Measure(s)	Monitoring
Richmond Hill Corridor	Operational Noise (Trains)	<p>Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health.</p> <p>If operations are projected to cause a 5-dB increase or greater in the average energy equivalent noise (referred to as "L<sub>EQ</sub>") relative to the existing noise level or the MECP objective of 55 dBA for daytime and 50 dBA for nighttime, whichever is higher, then mitigation is required.</p>	<p><b>Mitigation per TPAP Study Report (Noise Barriers):</b></p> <ul style="list-style-type: none"> <li>Deploy the noise barriers defined in the <i>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020</i> (RWDI).</li> <li>Maintain noise barriers so as to ensure their continued effectiveness in noise reduction.</li> <li>If deviating from the assessments made in the <i>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020</i> (RWDI), comply with the noise impact and assessment criteria in the <i>Metrolinx Guide for Noise and Vibration Assessment</i> (2020).</li> </ul> <p><b>Mitigation measures designed to reduce noise at the Source:</b></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below.</li> <li>Design, build, operate and maintain all rolling stock and infrastructure so as to minimize noise emissions as far as it is practicable and consistent with other performance criteria.</li> <li>Where feasible, deploy electric rather than diesel powered trains.</li> <li>Where possible, deploy consists with self-powered units (EMU or DMU) rather than those with locomotives.</li> <li>Where feasible, meet the ground-borne (vibration induced) noise exposure criteria in the US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</li> </ul> <p><b>Mitigation measures designed to reduce noise at the point of reception:</b></p> <ul style="list-style-type: none"> <li>Deploy the noise barriers defined in the <i>OnCorr Noise and Vibration Study Report</i> (RWDI).</li> <li>If deviating from the assessments made in this RWDI report, comply with the noise impact and assessment criteria in the <i>Metrolinx Guide for Noise and Vibration Assessment</i> (2019).</li> <li>If barriers cannot adequately mitigate the impact of operational noise at sensitive receptors, consider receiver-based controls that include building façade treatments (i.e., retrofits).</li> <li>Maintain noise barriers so as to ensure their continued effectiveness in noise reduction.</li> </ul> <p><b>Mitigation Criteria:</b></p> <ul style="list-style-type: none"> <li>Meet the following long-term daytime/ nighttime maximum noise exposure objectives at all noise sensitive receptors across the system, where background noise levels allow their realization:                             <ul style="list-style-type: none"> <li>10-year objective: 70/60 dBA</li> <li>20-year objective: 60/50 dBA</li> <li>25-year objective: 55/50 dBA</li> </ul> </li> <li>Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>Meet the ground-borne (vibration induced) noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>Meet any additional future criteria or guidance developed by regulatory agencies, as applicable.</li> </ul>	<ul style="list-style-type: none"> <li>Measure and document the Leq (16-hour) and Leq (8-hour) noise levels, under predictable worst-case conditions, at locations where new noise mitigation barriers have been provided per the 2020 noise and vibration studies and per the Metrolinx Enhanced Mitigation Program. Outdoor measurements will be carried out in accordance with MECP requirements and US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s).</li> <li>Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to noise emissions as part of maintenance to ensure continued compliance with manufacturer specifications.</li> <li>Assess the condition and performance of the rail tracks and switches with respect to noise as part of maintenance to ensure continued compliance with manufacturer specifications.</li> <li>Conduct ground-borne and air-borne noise monitoring in accordance with the Project Agreement, to check compliance and to inform decisions.</li> <li>Regularly assess the condition of the locomotive and coach, as well as the design and condition of the rail track.</li> <li>Continue to ensure that consist size parallels the service requirements.</li> </ul>
	Operational Vibration (Trains)	<p>Vibration can cause annoyance, interfere with human activity and affect human health. It may also cause building damage.</p> <p>A change in vibration levels may occur where there are changes in track alignment, addition of new track, and</p>	<p><b>Mitigation per TPAP Study Report:</b></p> <ul style="list-style-type: none"> <li>Deploy mitigation recommended in the <i>OnCorr Noise and Vibration Study Report</i> (RWDI). Review and update the vibration assessment during the design of new infrastructure at representative receptor locations to ensure compliance with the vibration exposure criteria in the <i>MOEE/GO Transit Draft Protocol for Noise and Vibration Assessment</i> (1994).</li> </ul> <p><b>Mitigation at the Source:</b></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below.</li> </ul>	<ul style="list-style-type: none"> <li>Measure and document the vibration impacts, under predictable worst-case conditions, of each distinct type of GO Transit train consist operating in the corridor of interest at locations where the 2020 noise and vibration studies recommends mitigation of vibration impacts. Measurements will be carried out at or near representative vibration sensitive receptors in accordance with MECP requirements and US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s).</li> <li>Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications.</li> </ul>

Project Component	Project Activities	Potential Effect	Mitigation Measure(s)	Monitoring
		<p>changes to or addition of special track work.</p> <p>Vibration levels may also change with changes in rail vehicle specifications and operating conditions.</p>	<p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none"> <li>• Meet the ground-borne vibration criteria in the 1995 MOEE/GO Transit Noise and Vibration Protocol.</li> </ul> <p><u>Consider Mitigation measures designed to reduce vibration at the source:</u></p> <ul style="list-style-type: none"> <li>• <del>Operational measures: reduction in vehicle speed in areas of concern, changes to operational sequence and changes to project layout or access.</del></li> <li>• <del>Maintenance measures: optimal maintenance, wheel flat detectors, and track continuity.</del></li> <li>• <del>Special Track Support Systems: floating slabs, resiliently supported ties, high-resilience fasteners and ballast mats.</del> <ul style="list-style-type: none"> <li>• <del>Rolling stock specifications: un-sprung vehicle mass, suspension system design, wheel design, brake system design</del></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Assess the condition and performance of the rail tracks and switches with respect to vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications.</li> <li>• <del>Conduct ground-borne and air-borne vibration monitoring in accordance with the Project Agreement, to check compliance and to inform decisions.</del></li> <li>• <del>Assess vibration performance of vibration control measures in accordance with the Project Agreement to check compliance and to inform decisions.</del></li> </ul>

## Chapter 7

### Noise

Section 7.4.11.1 Potential Effects & Mitigation Measures has been revised as follows:

Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health.

The severity of the noise effects resulting from construction projects varies, depending on:

- Scale, location and complexity of the project;
- Construction methods, processes and equipment deployed;
- Total duration of construction near sensitive noise receptors;
- Construction activity periods (days, hours, time period); and
- Number and proximity of noise-sensitive sites to construction area(s).

Prior to commencement of construction, ~~the Contractor will~~ develop and submit a detailed Construction Noise Management Plan<sup>3</sup> to Metrolinx.

- The Construction Noise Management Plan shall:
  - Document and commit to all measures to be taken for meeting the noise exposure limits documented in the Metrolinx *Guide for Noise and Vibration Assessment* (20~~20~~19) at every directly exposed sensitive receptor and throughout the entire project;
  - Determine the Zone of Influence (~~ZOI~~) for construction related noise based on the noise exposure limits outlined in the Metrolinx *Guide for Noise and Vibration Assessment* (20~~20~~19) and taking into consideration the construction site, staging and laydown sites and hauling routes, each stage of the construction (including demolition), the overall construction schedule along with the schedule of each major component and associated major construction processes and equipment usage; and
  - Identify all sensitive receptors that fall within the ZOI **Zone of Influence** for construction related noise. Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the modelling indicate that any sensitive receptors still remain within the ZOI **Zone of Influence** for construction related noise, then the following shall apply:
    - Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the ZOI **Zone of Influence**; or
    - If mitigation strategies are ~~deemed by Metrolinx to be not viable~~, receptor-based mitigation will be proposed.
    - **Scale, location and complexity of the project;**
- **The Construction Noise Management Plan will include the temporary/permanent noise barriers indicated in the applicable noise and vibration construction impact assessment report (2020). Where additional work sites are identified which were not assessed as part of the applicable noise and vibration construction impact assessment report (2020), or where construction**

<sup>3</sup> Regulations, standards and guidance documents referenced herein are current as of the time of writing and may be amended from time to time. If clarification is required regarding regulatory requirements, consult with the appropriate regulatory agencies.



activities at any given site differ from those considered in this report, conduct modelling to evaluate the need for additional noise barriers as part of the Construction Noise Management Plan.

The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints and these measures will be implemented during construction:

- ~~The Constructor will~~ Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, ~~the Constructor will~~ monitor noise continuously at each geographically distinct, active construction site with one monitor located strategically to capture the highest exposure level based on planned construction activities and the number, geographic distribution and proximity of noise sensitive receptors. ~~The Constructor will submit~~ **Develop** weekly reports to Metrolinx describing the monitoring conducted and summarizing the data collected for the reporting period. The reports will include but not be limited to the number and duration of any incident during which any of the noise exposure limits documented in the Metrolinx *Guide for Noise and Vibration Assessment (2020)* were exceeded, the probable cause of each exceedance, the incident-specific measure(s) implemented, the resulting mitigated noise levels and the complaints investigation procedure; and
- Establish a Communications Protocol and a Complaints Protocol in accordance with the Project Agreement **to respond to issues that develop during construction.**

## Vibration

Section 7.4.12.1 Potential Effects & Mitigation Measures has been revised as follows:

Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.

The following measures<sup>4</sup> will be implemented and adhered to during construction:

- Adhere to the following vibration exposure limits:
  - Vibration, as a human irritant, is assessed in terms of its average level. Vibration velocity should not exceed 0.14 mm/s or current conditions (whichever is higher) by more than 25%;
  - As a threat to buildings, vibration is assessed in terms of its peak value. The ~~ZOI~~ **Zone of Influence** for vibration shall be the area where structures are expected to experience vibration peak particle velocities that exceed 5 mm/s. Vibration velocity should be limited to 8-22 mm/s, depending on vibration frequency. These limits are prescribed by the **most current versions of the Municipal Code Chapter 591, Noise (2020) and Chapter 363, Vibration (2019) City of Toronto By-Law No. 514-2008** for typical structures (not building with special needs);
- Adhere to the ground-born (vibration induced) noise exposure criteria in the US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual (2018)*; and
- Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below:

<sup>4</sup> Regulations, standards and guidance documents referenced herein are current as of the time of writing and may be amended from time to time. If clarification is required regarding regulatory requirements, consult with the appropriate regulatory agencies.

- Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration ~~ZOI~~ **Zone of Influence**. The ~~ZOI~~ **Zone of Influence** for vibration shall be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), *Transit Noise and Vibration Impact Assessment Manual* (2018);
- Complete pre-construction condition surveys for properties within the vibration ~~ZOI~~ **Zone of Influence** of the planned work to establish their condition and establish a baseline prior to any work beginning;
- Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures;
- Identify buildings, where vibration sensitive activities such a sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures;
- Establish a 15-metre setback distance between the construction vibration source and nearby buildings, where possible, to minimize impacts. If this is not possible, then monitor the vibration levels associated with the activity;
- Select construction/maintenance methods and equipment with the least vibration impacts; and
- In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.

The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints and the provisions of this Plan will be implemented and adhered to during construction:

- ~~The Constructor is to~~ Monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the ~~ZOI~~ **Zone of Influence** for construction related vibration or at additional structures as requested by Metrolinx; and
- The type of Vibration Monitoring Program that is established is based on the **vibration** Zone of Influence, the project location, duration, presence of night-time activity, and receptor proximity. The monitoring types include:
  - Type 1: Monitoring continuously throughout the project (for receptors within the ~~ZOI~~ **Zone of Influence**).
  - Type 2: Monitoring during most impactful phases of the project only (for receptors outside of the ~~ZOI~~ **Zone of Influence** but within 50 m of the boundary of the construction site).
  - Type 3: Monitoring in response to complaints only (for receptors outside of the ~~ZOI~~ **Zone of Influence** and beyond 50 m of the boundary of the construction site).
- Establish a Communications Protocol and a Complaints Protocol ~~in accordance with the Project Agreement~~ **to respond to issues that develop during construction.**



## Air Quality

### Section 7.4.13.1 Potential Effects & Mitigation Measures has been revised as follows:

Construction related air pollution may pose risks to human health and wellbeing. Prior to commencement of construction, ~~the Constructor will develop and submit~~ **implement** a detailed Construction Air Quality Management Plan (AQMP) to Metrolinx. The AQMP will:

- Demonstrate compliance with the specific air quality criteria and limits in the Metrolinx Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment (2019);
- Define the Project's air quality impact zone and identify all sensitive receptors within this area;
- Assess the baseline air quality by continuous measurement of local ambient concentrations of PM<sub>2.5</sub> and PM<sub>10</sub> over a minimum period of one week, where large local sources of pollution, such as highways, directly affect the Zone of Influence of the Project;
- Estimate and document the predictable worst-case air quality impacts of the Project on sensitive receptors within the air quality impact zone, develop appropriate mitigation measures, demonstrate their effectiveness, and commit to their timely implementation;
- Monitor continuously any contaminant, in addition to PM<sub>2.5</sub> and PM<sub>10</sub>, which is predicted to exceed its relevant air quality exposure criterion during any phase of the Project and at any receptor; and
- Include explicit commitment to the implementation of all applicable best practices identified in the Environment Canada document, Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (2005).

In addition, a Communications Protocol and a Complaints Protocol will be developed ~~and implemented in accordance with the Project Agreement~~ **to respond to issues that develop during construction.**

Weekly Air Quality Monitoring Plans will also be developed and implemented during construction ~~in accordance with the Project Agreement which will be submitted to Metrolinx.~~ These plans will document how air quality monitoring has been conducted and compliance assessed to effectively prevent unacceptable rates of air emissions in accordance with the following guidelines:

- The construction related air contaminants of primary concern are in the form of particulate matter, with the principal construction related fractions of PM<sub>2.5</sub> and PM<sub>10</sub> - particulate matter of less than 2.5 and 10 micron in diameter, respectively. Other contaminants of concern include crystalline silica and oxides of nitrogen. The list of contaminants will be expanded with any and all air pollutants that may be produced as a result of the work;
- The criteria for PM<sub>2.5</sub>, PM<sub>10</sub> and crystalline silica are provided in Metrolinx's *Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment* (2019). The applicable criteria for all other air contaminants of concern are to be found in the various schedules of *Ontario Regulation 419/05*; and
- Siting of the monitors should generally follow the guidelines provided in the Ministry of the Environment, Conservation and Parks (MECP) *Operations Manual for Air Quality Monitoring in Ontario* (2018).

## Chapter 8

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The following sections of EPR Chapter 8 are now fully populated to reflect information that became available after the Notice of Completion on December 29<sup>th</sup>, 2020:

**TPAP Phase Consultation**

Please refer to Section 8.3 of EPR Chapter 8.

**Notice of Completion**

Please refer to Section 8.4 of EPR Chapter 8.

**30-Day Public Review**

Please refer to Section 8.5 EPR Chapter 8.

**35-Day Minister's Review**

Please refer to Section 8.6 EPR Chapter 8.

## Chapter 9

### Implementation of Mitigation & Monitoring Measures

Section 9.1 has been revised as follows:

This section is to be read in conjunction with Chapters 5, 6, and 7 of this Environmental Project Report (EPR).

To ensure that potential adverse environmental effects associated with the New Track & Facilities Project are avoided ~~or minimized~~/mitigated to the extent possible, the following actions will be adhered to by Metrolinx during the ~~detailed design and construction~~ subsequent phases of the project:

#### Federal

Section 9.3.2.1 Impact Assessment Act has been revised as follows:

On June 21, 2019, Bill C-69, ~~an Act to Enact the Impact Assessment Act and the Canadian Energy Regulatory Act, to Amend the Navigation Protection Act and to make Consequential Amendments to other Acts~~ received Royal Assent. The new *Impact Assessment Act* (IAA) and its regulations establish the legislative basis for the federal EA process. The Regulations Designating Physical Activities (the Project List) define the types of projects that may require an EA and were published in the Canada Gazette, Part II, on August 21, 2019. *The Information and Management of Time Limits Regulations* were also published at this time.

#### Municipal

Section 9.3.4.3 Municipal Tree Permits has been revised as follows:

Permits related to Municipal Tree By-laws and other applicable municipal tree removal permits will be obtained as appropriate and as outlined in Metrolinx's Vegetation Guideline (2020), [available here: https://www.metrolinxengage.com/sites/default/files/mx\\_vegguide-final\\_draft\\_s001-gen-7761-005\\_reduced\\_size.pdf](https://www.metrolinxengage.com/sites/default/files/mx_vegguide-final_draft_s001-gen-7761-005_reduced_size.pdf).

Section 9.3.4.5 Toronto and Region Conservation Authority has been revised as follows:

The following commitments specific to the Toronto and Region Conservation Authority (TRCA) will be adhered to during detailed design and construction:

- Ensure that TRCA's Stormwater Management guidelines are adhered to during detailed design for layover/storage yard facilities;
- Additional coordination with TRCA will be carried out to complete a detailed hydraulic analysis for layover/storage yard facilities within a floodplain during detailed design;
- ~~Complete a~~ A slope stability analysis **will be completed** in consultation with the municipality for the Don Valley Layover and Unionville Storage Yard Facilities during detailed design;
- Metrolinx will work with the TRCA to address the overall setback distance (Erosion Hazard Limit) as described in TRCA Geotechnical Engineering and Design Submission Requirements, as well as the Erosion and Sediment Control Guide for Urban Construction;
- 2-D **Hydrologic Engineering Center River Analysis System** (HEC-RAS) modelling and cut-and-fill analysis for flood control and potential fluvial geomorphology investigation shall be completed at the Don Valley layover site, with consideration given to the latest Don River Hydrology Study by TRCA;

- ~~Metrolinx will mitigate~~ Floodplain impacts resulting from the Don Valley Layover site **will be mitigated** to the extent that is feasible and reasonable;
- ~~Continue to explore~~ Options **will be explored** for Low Impact Development (LID) at the proposed Unionville Storage Yard facility site;
- The TRCA will be engaged **during detailed design**, as required, ~~during detailed design~~ through the established Voluntary Project Review process; and
- Further discussions and consultation with TRCA will be undertaken as appropriate during detail design.

Additionally, Section 9.3.4.6 Halton Conservation Authority has been revised as follows:

The following commitments specific to the Halton Region Conservation Authority (CH) will be adhered to:

- Engage with Halton Region Conservation Authority staff on typical requirements under Ontario Regulation 162/06 if it is determined that modifications to existing culverts is required; or if expansion is required beyond the existing developed track area in the vicinity of the Lower Morrison Creek (Town of Oakville);
- Continue consultation with CH with respect to Shoreacres Creek culvert expansion at the proposed Walkers Line Layover Facility;
- Metrolinx shall work with CH to address the concerns included within the project-specific EA and the culverts and bridges checklists prepared by CH. Although Metrolinx as a Crown agency, is not bound by Conservation Halton's Regulation O. Reg. 162/06. Metrolinx shall consult and have regard for CH's policies and regulations during the detailed design of layover facilities;
- ~~Complete a~~ A slope stability analysis **will be completed** in consultation with the municipality for the Walkers Line Layover Facility during detailed design;
- 2-D HEC-RAS modelling, cut-and-fill analysis for flood control, Geotechnical investigation for toe erosion allowance and stable slope allowance, and Fluvial Geomorphology investigation shall be completed at the **Walker's Line** Layover site; and
- Further discussions and consultation with CH will be undertaken, as appropriate, during detail design.

## **Design & Engineering Commitments**

Section 9.4.2 Construction Management Plans has been revised as follows:

~~As outlined in Chapter 7,~~ Construction Management Plans will be developed and implemented during the detailed design phase and implemented as part of construction, taking into consideration applicable legislation as appropriate.

Additionally, the following commitment has been added to Section 9.4.7 Stormwater Management/Drainage:

- **A Wetland Water Balance Risk Evaluation will be completed at detail design as soon as the design is sufficiently advanced to make such an assessment possible to limit the risk of unexpected delays due to potential monitoring requirements.**
  - **Please note that a Wetland Water Balance Risk Evaluation is a tool utilized for determining the intensity of the required monitoring at a specific site, whereas a Feature Based Water Balance may result in a lengthy monitoring program to ensure that seasonal variations in hydrology are considered for surrounding wetlands.**

### Unionville Storage Yard Facility

Section 9.4.9 Unionville Storage Yard Facility has been amended as follows:

- The Unionville Storage Yard is intended use is for daytime use only. Should Metrolinx proceed with overnight storage at this site, an addendum will be prepared as per O.Reg 231/08.
- The City of Markham is undertaking the “Markham Centre Secondary Plan”. Future coordination to be completed with the city during the detailed design stage.
- ~~The City of Markham is undertaking the “Markham Road – Mount Joy Secondary Plan Background Study”. Future coordination to be completed with the city during the detailed design stage.~~

### Don Valley Layover Facility

The following additional bullet point has been added to 9.4.10 Don Valley Layover Facility:

- Any design or construction required will follow the City of Toronto’s Standards at a minimum.

### City of Markham

The following additional bullet points have been added to Section 9.5.5 City of Markham:

- The Unionville Storage Yard is intended use is for daytime use only. Should Metrolinx proceed with overnight storage at this site, an addendum will be prepared as per O.Reg 231/08;
- The City of Markham is undertaking the “Markham Centre Secondary Plan” and updating the “Markham Road – Mount Joy Secondary Plan”. Future coordination to be completed with the city during the detailed design stage;

### City of Toronto

The following additional bullet points have been added to Section 9.5.6 City of Toronto:

- Potential conflicts with recreational amenities will be re-examined during the detailed design phase, and if required the City of Toronto will be consulted to determine appropriate design solutions to minimize/mitigate effects to recreational amenities;
- Any design or construction required will follow the City of Toronto’s Standards at a minimum;

### Natural Environment

Section 9.6.1 Future Studies/Field Investigations has been revised as follows:

TABLE E-9-1: FUTURE FIELD INVESTIGATIONS – NATURAL ENVIRONMENT

Project Study Area Location	Type of Study	Timing Window
Walkers Line Layover (LSW-4 and LSW-5)	Aquatic Habitat Survey to refine potential harmful alteration, disruption, or destruction of fish habitat (HADD) and inform submission to DFO and Conservation Halton	May 1st to September 30th
	Screening for Butternut Trees	In advance of site clearing
	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	The typical bird breeding window is April 1st to September 30th

Project Study Area Location	Type of Study	Timing Window
	Surveys to determine the potential use of the site by SAR bats is recommended only if tree removal can not be accomplished within the recommended timing windows.	The recommended bat survey window is from April 1st to September 30th <del>March 3rd to September 1st</del>
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
City of Barrie (BR-14 and BR-15) Allendale GO Station (BR-16) Unionville GO Station (ST-1)	Screening for Butternut Trees	In advance of site clearing
	Surveys to determine the potential use of the site by SAR bats is recommended only if tree removal can not be accomplished within the recommended timing windows. Surveys to determine the potential use of the site by SAR bats and monarch caterpillars, as applicable/if required	The recommended bat survey window is from April 1st to September 30th <del>March 3rd to September 1st</del>
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
	Screening for Butternut Trees	In advance of site clearing
	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	The typical bird breeding window is April 1st to September 30th
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
	Screening for Butternut Trees	In advance of site clearing
City of Barrie (BR-14 and BR-15) Unionville Storage Yard (ST-1 and ST-2)	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	The typical bird breeding window is April 1st to September 30th
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
	Conduct wildlife awareness/management program for SAR turtles	During Construction
Allendale GO Station (BR-16)	Screening for Butternut Trees	In advance of site clearing
	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	The typical bird breeding window is April 1st to September 30th

Project Study Area Location	Type of Study	Timing Window
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
Mount Joy GO Station (ST-3 and ST-4)	Conduct wildlife awareness/management program for SAR turtles	During Construction
	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	<b>The typical bird breeding window</b> is April 1st to September 30th
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
Thickson Road Bridge Expansion (LSE-2 and LSE-3) Oshawa GO Station (LSE-4)	Screening for Butternut Trees	In advance of site clearing
	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	<b>The typical bird breeding window is</b> April 1st to September 30th
	Ensure vegetation removal follows general mitigation outlined in the <del>OnCorr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A
	Screening for Butternut Trees	In advance of site clearing
Mount Joy GO Station (ST-3 and ST-4) Electrification of the Richmond Hill Corridor (RH-1, RH-2, RH-3, RH-4, RH-5 and RH-6)	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	<b>The typical bird breeding window is</b> April 1st to September 30th
	Ensure vegetation removal follows general mitigation outlined in the Metrolinx Vegetation Guideline (2020)	N/A
	<del>Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat</del>	<del>April 1st to September 30th</del>
Thickson Road Bridge Expansion (LSE-2 and LSE-3) Don Valley Layover (RH-3, RH-4 and RH-5)	Ensure vegetation removal follows general mitigation outlined in the Metrolinx Vegetation Guideline (2020)	N/A
	Conduct wildlife awareness/management program for SAR turtles	During Construction
	Screening for Butternut Trees	In advance of site clearing
Oshawa GO Station (LSE-4)	Performing vegetation removal outside of typical breeding period for birds and occupation of SAR habitat	<b>The typical bird breeding window is</b> April 1st to September 30th



Project Study Area Location	Type of Study	Timing Window
	Ensure vegetation removal follows general mitigation outlined in <del>On-Corr Vegetation Removal and Compensation Plan</del> <b>Metrolinx Vegetation Guideline (2020)</b>	N/A

## Visual

### Section 9.10.2 New Layover/Storage Yard Facilities has been revised as follows:

The installation of Layover/Storage Yard Facilities have potential to affect views within the surrounding area, particularly where vegetation/tree clearing is required or where there are no existing obstructions. However, in cases where a facility is proposed within the vicinity of residential/natural areas and/or other visually sensitive areas, landscaping and/or screening may be implemented around the facility. These specific locations include:

- Walkers Line Layover (Lakeshore West rail corridor, within the City of Burlington)
- Unionville Storage Yard (Stouffville rail corridor, within the City of Markham)
- Don Valley Layover (Richmond Hill rail corridor, within the City of Toronto)

There are several **certain** types of screening measures that may be considered to mitigate/reduce the visual impact of a layover/storage yard facility, such as fencing, use of locally-sourced or significant building materials (e.g., **clay brick cladding**), and/or vegetative buffers, where suitable/**feasible** with surrounding land uses. Metrolinx will continue to engage relevant municipalities during the detailed design phase to determine the feasibility and need for visual mitigation measures for the above noted facility.

### Additionally, Section 9.10.3 OCS Infrastructure – Richmond Hill Corridor has been revised as follows:

The installation of OCS infrastructure will affect the viewshed along the rail corridor, particularly in areas of vegetation/tree clearing and applicable bridge attachments. **Therefore, engineering design strategies for OCS will be identified and incorporated into the design process, where feasible. These strategies will address the range of visual conditions, area allocations, and mitigation needs that will be found along the corridor.** Generally speaking, assessment criteria is based on the following criteria: 1) Safety of Design/Required Protection, 2) Intended Functionality, 3) Cost Effectiveness, and 4) Aesthetics. It should be noted that ~~feasible solutions will be explored during detailed design based on the noted criteria, in order of importance.~~

## Cultural Heritage Resources

### Section 9.11.1 Cultural Heritage Monitoring & Commitments – Design, Construction & Operation has been revised as follows:



TABLE E-9-2: MITIGATION AND MONITORING COMMITMENTS – CULTURAL HERITAGE

Environmental Component	Potential Effect/Design Component or Activity	Mitigation Measure(s)	Monitoring
Built Heritage Resources and Cultural Heritage Landscapes	Indirect or direct impacts to the heritage attribute(s) of a property of known or potential Cultural Heritage Value or Interest or Value (CHVI) due to installation of new/modified infrastructure	<ul style="list-style-type: none"> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) <i>Standards and Guidelines for Provincial Heritage Properties: Identification and Evaluation (I&amp;E) Process</i> (2014), the MHSTCI guidance on <i>Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment</i> (2019) and the forthcoming <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2020). In the event that the Metrolinx I&amp;E Process is not approved, follow the Metrolinx <i>Interim Cultural Heritage Management Process</i> (2013).</li> <li>Follow the process and recommendations outlined in the Environmental Project Reports (EPR) under Transit Project Assessment Process (TPAP) for Proponents and their Consultants.</li> <li>Follow the recommendations outlined in the heritage reporting completed including <del>Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (2010)</del> <b>the Cultural Heritage Report</b> and/or the Heritage Impact Assessment (HIA).</li> <li>For known and potential properties of Cultural Heritage Value or Interest (CHVI) that will experience indirect or direct impacts and where no previous assessment has been completed or a Statement of Cultural Heritage Value (SCHV) has not been approved by Metrolinx, undertake a Cultural Heritage Evaluation Report (CHER) as per the forthcoming Metrolinx I&amp;E Process (2020). <b>In the event that the Metrolinx I&amp;E Process (2020) is not approved, follow the Metrolinx Interim Cultural Heritage Management Process (2013).</b></li> <li><b>Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks).</b></li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or Environmental Study Reports (ESRs) and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, Cultural Heritage Assessment Reports (CHARs), CHERs, HIAs and Strategic Conservation Plans (SCPs).</li> </ul>
	Direct impacts to the heritage attribute(s) of a known or potential Provincial Heritage Property (PHP) or Provincial Heritage Properties of Provincial Significance (PHPPS) due to installation of new/modified infrastructure	<ul style="list-style-type: none"> <li>Where no previous assessment has been completed or a Statement of Cultural Heritage Value has not been approved by Metrolinx, undertake a CHER as per the forthcoming Metrolinx I&amp;E Process (2020). <b>In the event that the Metrolinx I&amp;E Process (2020) is not approved, follow the Metrolinx Interim Cultural Heritage Management Process (2013).</b></li> <li>If warranted, complete a HIA in accordance with MHSTCI <i>Information Bulletin No. 3: Heritage Impact Assessments for Provincial Heritage Properties</i> (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the Cultural Heritage Value and heritage attributes of the PHP, based on the PHP's Statement of Cultural Heritage Value (SCHV). Mitigation measures and alternatives should be consistent with the relevant conservation strategies established and adopted in a SCP. A SCP will be prepared and implemented for PHPs and PHPPS <del>in accordance with the Project Agreement.</del></li> <li>Approval will be obtained from the MHSTCI, for any modifications to Provincially Significant properties prior to construction.</li> <li>During design, the recommendations of all HIAs and <b>Cultural Heritage Reports</b> will be followed and adhered to during design and construction, including but not limited to strategies to protect heritage attributes.</li> <li>If the project study limits change or there is a change in impact that is not captured or documented in previously completed Metrolinx and/or GO Transit EPRs and/or ESRs post EA/TPAP, and which causes any additional heritage properties to be impacted by the proposed design/infrastructure, all applicable legislation will be followed to carry out additional impact assessment work and heritage studies to identify any known or potential built heritage resources and cultural heritage landscapes, and to identify potential impacts and appropriate mitigation measures.</li> <li>Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks).</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHARs, CHERs, HIAs and SCPs.</li> </ul>
	Potential indirect impacts on known or potential properties of CHVI resulting from construction activities	<ul style="list-style-type: none"> <li>Selection of construction staging and laydown areas will follow Metrolinx's selection procedures which include avoiding heritage attributes wherever possible or effectively mitigating impacts where not possible.</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHARs, CHERs, HIAs and SCPs.</li> </ul>
	For any additional potentially affected Cultural Heritage Resources/properties not previously identified within a previous Metrolinx/GO Transit EA/TPAP/Other Study	<ul style="list-style-type: none"> <li>If the project study limits change or there is a change in impact that is not captured or documented in previously completed Metrolinx and/or GO Transit EPRs and/or ESRs post EA/TPAP, and which causes any additional heritage properties to be impacted by the proposed design/infrastructure, <del>Metrolinx Heritage Guidelines for Consultants (2015)</del> all applicable legislation will be followed to carry out additional impact assessment work and heritage studies to identify any known or potential built heritage resources and cultural heritage landscapes, and to identify potential impacts and appropriate mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHARs, CHERs, HIAs and SCPs.</li> </ul>
	Management of Cultural Heritage Resources/Properties	<ul style="list-style-type: none"> <li>Develop and implement a SCP that addresses built heritage resources and cultural heritage landscapes according to MHSTCI <i>Information Bulletin No. 2: Preparing Strategic Conservation Plans for Provincial Heritage Properties</i> (2017) and as outlined in the Project Agreement.</li> <li>For PHPPS, approval <b>of the MCP and SCP</b> by MHSTCI is required.</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: CHARs, CHERs, HIAs and SCPs.</li> </ul>

Environmental Component	Potential Effect/Design Component or Activity	Mitigation Measure(s)	Monitoring
	Demolition, removal, or relocation of a Metrolinx PHPPS (part or whole)	<ul style="list-style-type: none"> <li>In the case of properties identified as PHPPS and where the proposed project infrastructure will require demolition or removal and/or transfer out of provincial control, Metrolinx will need to obtain MHSTCI Minister's consent.</li> <li>The Minister's Consent Package will be prepared which meets MHSTCI requirements and satisfy Metrolinx's obligations under the <i>Ontario Heritage Act</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHARs, CHERs, HIAs and SCPs.</li> </ul>

## Archaeological Resources

### Section 9.12.1 General has been revised as follows:

- For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional **stages of** Archaeological Assessment will be conducted by a professionally licensed archaeologist **as early as possible during detail design and prior to any ground disturbing activities** ~~prior to disturbance.~~
- **All outstanding** ~~The Stage 2~~ Archaeological Assessment Report(s) will be submitted to the Ministry of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the ministry **acknowledging the report's recommendations and stating that it has been entered into the Ontario Public Register of Archaeological Reports.** ~~stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.~~

### Section 9.12.5 Stage 2 Archaeological Assessment Studies has been revised as follows:

The following Stage 2 Archaeological Assessment Studies were identified through the TPAP studies undertaken to date and will be completed **as early as possible during detail design and** prior to commencement of construction.

### Section 9.12.6 Stage 3 & 4 Archaeological Assessment Studies has been revised as follows:

Based on the results and recommendations of the completed Stage 2 Archaeological Assessments, any required Stage 3 and/or 4 archaeological assessments will be carried out as required during detailed design ~~and/or construction~~ and associated recommendations for avoidance/mitigation complied with.

## Noise & Vibration

### Section 9.13.1 Construction Noise Management Plan has been revised as follows:

Prior to commencement of construction, the Contractor will develop and submit a detailed Construction Noise Management Plan to Metrolinx. The Construction Noise Management Plan shall:

- Document and commit to all measures to be taken for meeting the noise exposure limits documented in ~~applicable regulations, by-laws and standards~~ **the Metrolinx Guide for Noise and Vibration Assessment (2020)** at every directly exposed sensitive receptor and throughout the entire project.
- Determine the **Zone of Influence** (ZOI) for construction related noise based on the noise exposure limits outlined in the ~~applicable regulations, by-laws and standards~~ **Metrolinx Guide for Noise and Vibration Assessment (2020)** and taking into consideration the construction site, staging and laydown sites and hauling routes, each stage of the construction (including demolition), the overall construction schedule along with the schedule of each major component and associated major construction processes and equipment usage.
- Identify all sensitive receptors that fall within the **Zone of Influence** for construction related noise. Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the

modelling indicate that any sensitive receptors still remain within the **Zone of Influence** for construction related noise, then the following shall apply;

- Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the **Zone of Influence** (ZOI); or
- If mitigation strategies are deemed by Metrolinx to be not viable, receptor-based mitigation will be proposed.

Additionally, Section 9.13.2 Construction Vibration Management Plan has been revised as follows:

Prior to commencement of construction, the Contractor will develop and submit a detailed Construction Vibration Management Plan to Metrolinx. The Construction Vibration Management Plan shall address and entail:

- Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration **Zone of Influence**. The **Zone of Influence** for vibration shall be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), Transit Noise and Vibration Impact Assessment Manual (2018).
- Complete pre-construction condition surveys for properties within the vibration **Zone of Influence** of the planned work to establish their condition and establish a baseline prior to any work beginning.
- Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures.
- Identify buildings, where vibration sensitive activities such as sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures.
- Establish a 15-metre setback distance between the construction vibration source and nearby buildings, where possible, to minimize impacts. If this is not possible, then monitor the vibration levels associated with the activity.
- Select construction/maintenance methods and equipment with the least vibration impacts.
- In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.

In addition, the commitments, mitigation and monitoring measures as outlined in Table 9-9 will be completed with and implemented.



TABLE E-9-3: MITIGATION AND MONITORING COMMITMENTS – NOISE AND VIBRATION

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
<b>Operational Noise (Trains)</b>	Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health.  If operations are projected to cause a 5-dB increase or greater in the average energy equivalent noise (referred to as “Leq”) relative to the existing noise level or the MECP objective of 55 dBA for daytime and 50 dBA for night-time, whichever is higher, then mitigation is required.	<p><u>Mitigation per TPAP Study Report (Noise Barriers):</u></p> <ul style="list-style-type: none"> <li>Deploy the noise barriers defined in <del>this On-Call</del> <b>the Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020 (RWDI)</b>.</li> <li>Maintain noise barriers so as to ensure their continued effectiveness in noise reduction.</li> <li>If deviating from the assessments made in the <b>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020 (RWDI)</b>, comply with the noise impact and assessment criteria in the <b>Metrolinx Guide for Noise and Vibration Assessment (2019/2020)</b>.</li> </ul> <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures <b>to maintain compliance with the noise and vibration exposure criteria defined below</b> <del>control vibration impacts</del>.</li> </ul> <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none"> <li>Meet the following long-term day-time/ night-time maximum noise exposure objectives at all noise sensitive receptors across the system, where background noise levels allow their realization:                             <ul style="list-style-type: none"> <li>10-year objective: 70/60 dBA</li> <li>20-year objective: 60/50 dBA</li> <li>3525-year objective: 55/50 dBA</li> </ul> </li> <li>Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>Meet the ground-borne (vibration induced) noise exposure criteria in the <b>1995 MOEE/GO Transit Draft Noise and Vibration Protocol US FTA Report No. 0123, Transit Noise and Vibration Impact Assessment Manual (2018)</b>.</li> <li>Meet any additional future criteria or guidance developed by regulatory agencies, as applicable.</li> </ul>	<ul style="list-style-type: none"> <li>Measure and document the Leq (16-hour) and Leq (8-hour) noise levels, under predictable worst-case conditions, at locations where new noise mitigation barriers have been provided per the 2020 noise and vibration studies and per the Metrolinx Enhanced Mitigation Program. Outdoor measurements will be carried out in accordance with MECP requirements and US FTA Report No. 0123, <b>Transit Noise and Vibration Impact Assessment Manual (2018)</b>. The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s).</li> <li><del>Monitor air-borne and air-borne noise as part of an annual “Noise and Vibration Survey” at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:</del> <ul style="list-style-type: none"> <li><del>Location subject to highest rail related noise and vibration</del></li> <li><del>Location representative of a significant number of receptors</del></li> <li><del>Location housing highly noise and/or vibration sensitive activity or equipment</del></li> <li><del>Locations approximately equally distributed along the length of the corridor</del></li> </ul> </li> <li>Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to noise emissions as part of <del>each major maintenance event</del> <b>to ensure continued compliance with manufacturer specifications.</b></li> <li>Assess the condition and performance of the rail tracks and switches with respect to noise as part of <del>each major maintenance event</del> <b>to ensure continued compliance with manufacturer specifications.</b></li> </ul>
<b>Construction and Maintenance-related Noise</b>	Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health.  The severity of the noise effects resulting from construction projects varies, depending on: <ul style="list-style-type: none"> <li>Scale, location and complexity of the project</li> <li>Construction methods, processes and equipment deployed</li> <li>Total duration of construction near sensitive noise receptors</li> <li>Construction activity periods (days, hours, time period)</li> </ul>	<ul style="list-style-type: none"> <li>Prior to commencement of construction, <del>the Constructor will</del> develop and submit a detailed Construction Noise Management Plan <del>to Metrolinx</del>.</li> <li>The Construction Noise Management Plan shall:                             <ul style="list-style-type: none"> <li>Document and commit to all measures to be taken for meeting the noise exposure limits documented in the <b>Metrolinx Guide for Noise and Vibration Assessment (2019/2020)</b> at every directly exposed sensitive receptor and throughout the entire project.</li> <li>Determine the Zone of Influence (<del>ZOI</del>) for construction related noise based on the noise exposure limits outlined in the <b>Metrolinx Guide for Noise and Vibration Assessment (2019/2020)</b> and taking into consideration the construction site, staging and laydown sites and hauling routes, each stage of the construction (including demolition), the overall construction schedule along with the schedule of each major component and associated major construction processes and equipment usage.</li> <li>Identify all sensitive receptors that fall within the <b>Zone of Influence ZOI</b> for construction related noise. Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the modelling indicate that any sensitive receptors still remain within the <b>Zone of Influence ZOI</b> for construction related noise, then the following shall apply:                                     <ul style="list-style-type: none"> <li>Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the <b>Zone of Influence ZOI</b>; or</li> <li>If mitigation strategies are <del>deemed by Metrolinx to be</del> not viable, receptor based mitigation will be proposed.</li> </ul> </li> </ul> </li> <li>The Construction Noise Management Plan will include the temporary/<b>permanent</b> noise barriers indicated in the <b>applicable noise and vibration construction impact assessment report (2020)</b>. Where additional work sites are identified which were not assessed as part of the applicable noise and vibration construction impact assessment report (2020), or where construction activities at</li> </ul>	The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints: <ul style="list-style-type: none"> <li><del>The Constructor will</del> Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, <del>the Constructor will</del> monitor noise continuously at each geographically distinct, active construction site with one monitor located strategically to capture the highest exposure level based on planned construction activities and the number, geographic distribution and proximity of noise sensitive receptors. <del>The Constructor will</del> <b>submit</b> Develop weekly reports <del>to Metrolinx</del> describing the monitoring conducted and summarizing the data collected for the reporting period. The reports will include but not be limited to the number and duration of any incident during which any of the noise exposure limits documented in the <b>Metrolinx Guide for Noise and Vibration Assessment (2019/2020)</b> were exceeded, the probable cause of each exceedance, the incident-specific measure(s) implemented, the resulting mitigated noise levels and the complaints investigation procedure.</li> <li>Establish a Communications Protocol and a Complaints Protocol <b>to respond to issues that develop during construction in accordance with the Project Agreement.</b></li> </ul>

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
	<ul style="list-style-type: none"> <li>Number and proximity of noise-sensitive sites to construction area(s)</li> </ul>	<p>any given site differ from those considered in this report, conduct modelling to evaluate the need for additional noise barriers as part of the Construction Noise Management Plan.</p>	
<p><b>Operational Vibration (Trains)</b></p>	<p>Vibration can cause annoyance, interfere with human activity and affect human health. It may also cause building damage.</p> <p>A change in vibration levels may occur where there are changes in track alignment, addition of new track, and changes to or addition of special track work.</p> <p>Vibration levels may also change with changes in rail vehicle specifications and operating conditions.</p>	<p><u>Mitigation per TPAP Study Report:</u></p> <ul style="list-style-type: none"> <li>Deploy mitigation recommended in the <i>OnCorr Noise and Vibration Study Report</i> (RWDI). Review and update the vibration assessment during the design of new infrastructure at relevant representative receptor locations to ensure compliance with the vibration exposure criteria in the MOEE/GO Transit <i>Draft Protocol for Noise and Vibration Assessment</i> (1994).</li> </ul> <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below control vibration impacts.</li> </ul> <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none"> <li>Meet the ground-borne vibration criteria in the 1995 MOEE/GO Transit Noise and Vibration Protocol.</li> </ul>	<ul style="list-style-type: none"> <li>Measure and document the vibration impacts, under predictable worst-case conditions, of each distinct type of GO Transit train consist operating in the corridor of interest at locations where the 2020 noise and vibration studies recommends mitigation of vibration impacts. Measurements will be carried out at or near representative vibration sensitive receptors in accordance with MECP requirements and US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s).</li> <li>Monitor air-borne and air-borne noise as part of an annual "Noise and Vibration Survey" at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:             <ul style="list-style-type: none"> <li>Location subject to highest rail related noise and vibration</li> <li>Location representative of a significant number of receptors</li> <li>Location housing highly noise and/or vibration sensitive activity or equipment</li> <li>Locations approximately equally distributed along the length of the corridor</li> </ul> </li> <li>Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to noise emissions vibration levels as part of each major maintenance event to ensure continued compliance with manufacturer specifications.</li> <li>Assess the condition and performance of the rail tracks and switches with respect to noise vibration levels as part of each major maintenance event to ensure continued compliance with manufacturer specifications.</li> </ul>
<p><b>Construction and Maintenance-related Vibration</b></p>	<p>Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.</p>	<ul style="list-style-type: none"> <li>Adhere to the following vibration exposure limits:             <ul style="list-style-type: none"> <li>Vibration, as a human irritant, is assessed in terms of its average level. Vibration velocity should not exceed 0.14 mm/s or current conditions (whichever is higher) by more than 25%.</li> <li>As a threat to buildings, vibration is assessed in terms of its peak value. The Zone of Influence ZOI for vibration shall be the area where structures are expected to experience vibration peak particle velocities that exceed 5 mm/s. Vibration velocity should be limited to 8-22 mm/s, depending on vibration frequency. These limits are prescribed by the most current versions of the <i>Toronto Municipal Code Chapter 591, Noise (2020) and Chapter 363, Vibration (2019) City of Toronto By-Law No. 524-2008</i> for typical structures (not building with special needs).</li> </ul> </li> <li>Adhere to the ground-borne (vibration induced) noise exposure criteria in the US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</li> <li>Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below:             <ul style="list-style-type: none"> <li>Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration Zone of Influence ZOI. The Zone of Influence ZOI for vibration shall be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</li> <li>Complete pre-construction condition surveys for properties within the vibration Zone of Influence ZOI of the planned work to establish their condition and establish a baseline prior to any work beginning.</li> <li>Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures.</li> </ul> </li> </ul>	<p>The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints:</p> <ul style="list-style-type: none"> <li>The Constructor is to Monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the Zone of Influence ZOI for construction related vibration or at additional structures as requested by Metrolinx.</li> <li>The type of Vibration Monitoring Program that is established is based on the vibration Zone of Influence, the project location, duration, presence of night-time activity, and receptor proximity. The monitoring types include:             <ul style="list-style-type: none"> <li>✓ Type 1: Monitoring continuously throughout the project (for receptors within the Zone of Influence ZOI).</li> <li>✓ Type 2: Monitoring during most impactful phases of the project only (for receptors outside of the Zone of Influence ZOI but within 50 m of the boundary of the construction site).</li> </ul> </li> </ul>



Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
		<ul style="list-style-type: none"> <li>○ Identify buildings, where vibration sensitive activities such as sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures.</li> <li>○ Establish a 15-metre setback distance between the construction vibration source and nearby buildings, where possible, to minimize impacts. If this is not possible, then monitor the vibration levels associated with the activity.</li> <li>○ Select construction/maintenance methods and equipment with the least vibration impacts.</li> <li>○ In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Type 3: Monitoring in response to complaints only (for receptors outside of the <b>Zone of Influence ZOI</b> and beyond 50 m of the boundary of the construction site).</li> <li>• Establish a Communications Protocol and a Complaints Protocol <b>to respond to issues that develop during construction in accordance with the Project Agreement.</b></li> </ul>

**EMI/EMF**

Section 9.17 has been revised as follows:

An Electromagnetic Fields (EMF) and Electromagnetic Interference (EMI) Assessment was carried out as part of the NTF TPAP to document existing ~~EMF and EMI~~ conditions along the Richmond Hill corridor study area and to determine the potential effects of implementing an electrified corridor ~~related to EMF and EMI~~. The results of this assessment recommended that additional studies and analyses will need to be carried out during the future phases of the project, and once the electric train specifications are known. All recommendations for mitigation and future study as identified in the EMI/EMF Impact Assessment Report (see **Appendix N for further detail**) will be implemented.

The following section outlines the commitments Metrolinx will adhere to during future phases of the project following TPAP completion.

Additionally, Section 9.17.7 EMF Exposure Reduction has been revised as follows:

As per FTA Best Practices for EMF concerns, particularly ELF EMF, the only relevant Best Practice is:

*Conduct baseline measurements before and after transit system construction and operation.*

*EMF and EMR measurement surveys along the right-of-way and of locations where... ~~TPSS, inverters, 3rd rail, and ...~~ OCS would be placed are recommended. If measurements are too costly, EMF and EMR data on similar transit systems and urban environments can be used, in combination with M&S tools, to predict environmental EMF levels as a function of distance from the right-of-way. The objective is to compare the pre-existing "before" background EMF levels, with expected "after" construction EMF. This allows the determination of incremental EMF contributions from the planned electric transit system.*

Data will also permit identification of potential EMF or RF "hotspots" in publicly accessible areas (stations, streets, near utility substations, in vehicle) that might require mitigation.

As previously noted, baseline measurements ~~are complete and higher than background areas (if any)~~ are to be re-assessed post-electrification and cataloged.

**TPAP Addendum Process**

Section 9.19.1 Insignificant Change has been revised as follows:

If the significance of the change is determined to be not significant/negligible, in accordance with *O. Reg. 231/08*, Metrolinx will document the rationale for this decision and keep a record of the EPR addendum/change documentation in the project file. The EPR Addendum documentation to be kept on file will contain the following:

- A description of the change;
- Reasons for the change;
- Assessment/evaluation of potential impacts that the change may have on the environment;
- Description of any proposed mitigation measures for mitigating potential negative impacts on the environment due to the change; and
- A statement of whether the changes were deemed significant or not and the reasons for this opinion.

Following this, Metrolinx would go ahead and implement the change. A Notice of Environmental Project Report Addendum will not be required/published.

Some examples of insignificant changes may include:

- ~~The alteration or change in the site layout or configuration of equipment within the previously identified Layover/Storage Yard Facility sites.~~
- ~~Deletion of a proposed Layover/Storage Yard Facility that is determined to be unnecessary during detailed design or construction.~~
- ~~Deletion of an access road previously identified or included in the NTF EPR that is determined to be unnecessary during detailed design or construction.~~
- ~~Reduction of the 5 metre OCS Impact Zone and/or reduction in the 7 metre vegetation clearing zone.~~
- ~~Changes to a type of bridge or rail overpass modification required in order to implement electrification (e.g., attachment of OCS wires or flash plate deemed required), where the alteration or change results in similar or reduced potential environmental effects as compared to the effects documented in the NTF EPR.~~
- ~~As a result of a change during construction (except for emergencies), changes to a method of construction, such as OCS pole installation method, where the alteration or change results in similar or reduced potential environmental effects as compared to the effects documented in the NTF EPR.~~

Section 9.19.2 Significant Change has been revised as follows:

If the significance of the change to the project is deemed to result in an increased potential adverse effect, then it would be categorized as a change that will require publishing of a Notice of EPR Addendum, as per *O. Reg. 231/08*.

An EPR Addendum will be prepared containing the following information:

- A description of the change;
- Reasons for the change;
- Assessment/evaluation of potential impacts that the change may have on the environment;
- Description of any proposed mitigation measures for mitigating potential negative impacts on the environment due to the change; and
- A statement of whether the changes were deemed significant or not and the reasons for this opinion.

In addition, in accordance with *O. Reg. 231/08*, A Notice of Environmental Project Report Addendum will be published and provided to the Director (MECP), Regional Director (MECP), landowners within 30 metres of the site/location of the change, Indigenous communities on the Project Mailing List and any other person who may be interested in the change.

Some examples of significant changes may include:

- ~~As a result of detailed design, the addition or complete relocation of a Layover/Storage Yard Facility site to a new location that was not previously identified or included in the NTF EPR, where the change results in different and/or increased potential environmental effects as compared to the effects documented in the NTF EPR.~~
- ~~As a result of a detailed design, changes to a type of bridge or rail overpass modification required in order to implement electrification (e.g., bridge replacement), where the alteration or change~~

~~results in increased potential environmental effects as compared to the effects documented in the NTF-EPR.~~

- ~~• Where the structure is jointly owned between Metrolinx and a third party (e.g., Municipality), the two parties will need to agree on the appropriate EA/TPAP Addendum process to be followed to address the amendment.~~
- ~~• As a result of a detailed design, change(s) necessitating an increase to the 5 metre OCS Impact Zone and/or the 7 metre Vegetation Clearing Zone as defined in the NTF-EPR that may cause adverse environmental effects not previously identified.~~
- ~~• As a result of a change during construction (except for emergencies), changes to a method of construction (e.g., substantive dewatering required), where the alteration or change results in increased potential environmental effects as compared to the effects documented in the NTF-EPR.~~