

Executive Summary

Introduction

Metrolinx is undertaking an Environmental Assessment (EA) study for electrification of the Union Pearson (UP) Express service beginning at UP Express Union Station in the City of Toronto and terminating at UP Express Pearson Station (Terminal 1, Toronto Pearson International Airport) in the City of Mississauga. The project involves the electrification of approximately 25 km of track along the Union Station GO railway corridor and Kitchener GO railway corridor to Highway 427, where the route then follows the new UP Express spur line (currently under construction) into Toronto Pearson International Airport (Toronto Pearson).

The purpose of the UP Express Electrification project is to convert the UP Express service that will operate between UP Express Union Station and UP Express Pearson Station (with stops at UP Express Bloor and UP Express Weston Stations) from diesel powered to electric powered trains.

The EA is being conducted under *Ontario Regulation 231/08* following the Transit Project Assessment Process (TPAP). The Transit Projects Regulation exempts the proponent of a transit project (in this case Metrolinx) from the requirements under Part II of the *EA Act*.

Electrification of UP Express requires a connection to Ontario's electrical system. It is proposed that the power be supplied from the existing 230 kV transmission line that runs between Hydro One's Claireville Transformer Station (located near Highway 407 and Highway 27 in the City of Vaughan) and Richview Transformer Station (located near Highway 401 and Highway 27 in the City of Toronto). Cables will deliver power to a new 230 kV Traction Power Substation (TPS). The TPS will convert the voltage from 230 kV to 25 kV so that it can be used to power the electric trains.

The Traction Power Substation is subject to the provincial *Environmental Assessment Act* in accordance with the *Class EA for Minor Transmission Facilities*. Therefore, the potential effects related to the new TPS are being assessed by Hydro One as part of this separate Class EA process (refer to the *Hydro One Union Pearson Express Electrification Traction Power Substation Class Environmental Assessment - Draft Environmental Study Report*).

Scope of the Project

The scope of the project includes three main components:

- **Traction Power Supply** (subject to Class EA process being carried out by Hydro One, refer to *Hydro One Union Pearson Express Electrification Traction Power Substation Class Environmental Assessment - Draft Environmental Study Report* for detailed information related to the Traction Power supply components)
- **Traction Power Distribution** (subject to TPAP being carried out by Metrolinx)

- **Maintenance Facility for the electrified UP Express service** (subject to TPAP being carried out by Metrolinx)

Traction Power Distribution

The power supplied by the new traction power substation will be distributed through the UP Express corridor via the power distribution system which will be comprised of an Overhead Contact System, gantries, 25 kV feeders (underground), and two Paralleling Stations. The trains will collect their propulsion power from the OCS by means of pantographs mounted on top of the trains, and will return the current (i.e., power) back to the traction power substation via their wheels through the traction power return system.

Overhead Contact System

The overhead contact system (OCS) is a fundamental component of the overall traction power distribution system for the UP Express service. The OCS consists of a wiring system (i.e., messenger wire and contact wire) that provides efficient transfer of traction power to the pantograph (mounted on the Electric Multiple Unit (EMU) train), and then to the EMU electric drive motors.

The OCS will be suspended from a number of galvanized steel support structures (i.e., portals and cantilevers) placed along the corridor, including on bridges and rail overpasses where required. Generally, the number of tracks to be spanned dictates the type of structure required, i.e., portals are typically used when spanning three or more tracks, whereas cantilevers are used when one or two tracks are spanned.

The vertical clearance requirements associated with the OCS design are primarily determined by the required clearances for Double Stacked Freight. Therefore, the portals/cantilevers used to support catenary wires over the electrified UP Express route will range between approximately 7.6m to 12m above the top of the highest rail.

Paralleling Stations

Paralleling stations contain autotransformers which are required as a part of the 2 x 25 kV system in order to boost the OCS voltage at certain points along the UP Express route and to reduce the running rail return current. The function of the autotransformers is to step down the 50 kV nominal voltage between the OCS and negative feeder, to the 25 kV level between catenary and running rails. There are two paralleling stations required as part of the electrified UP Express system.

Gantries and 25 kV Feeders

In order to convey electrical power to the OCS, 25 kV power supply feeders need to be routed at three locations: from the new traction power substation to the OCS along the rail corridor, and from the two

paralleling stations to the OCS along the rail corridor. At these three locations, the 25 kV feeders will be installed in underground duct banks where they will connect to the main and strain gantries (one on either side of the railway).

EMU Maintenance Facility

Regular maintenance will need to be carried out on the new electric trains that will operate along the electrified UP Express route. This includes preventative maintenance (e.g., replacing brake pads, measuring wheels, inspection of running gear, etc.), heavy maintenance (e.g., replacement of transformers and ac propulsion systems, etc.) and service maintenance (e.g., general cleaning, toilet dumping, refill potable water, etc.). Therefore, a new maintenance shop and storage yard is proposed at 50 Resources Road to service the dedicated fleet of electric UP Express EMU vehicles.

Assessment of Facility Sites

As part of the pre-planning phase of the EA, Metrolinx examined alternative sites for locating the required facilities (i.e., two paralleling stations, maintenance facility). This assessment process involved identification and evaluation of alternative siting options according to criteria associated with: natural features, land use/social features, cultural features, and technical features, in order to arrive at the recommended sites. Based on this assessment, the following preferred facility sites were established: paralleling station at Ordnance Road, paralleling station at 3500 Eglinton Avenue West, and EMU maintenance facility at 50 Resources Road. It is noted that the proposed paralleling station at 3500 Eglinton Ave. W. is to be integrated with the proposed Metrolinx Eglinton Crosstown Maintenance and Storage Facility (MSF), which is also planned for this property.

Impact Assessment

A number of studies and technical reports were prepared in support of the EA process and are included as Appendices to this EPR. A brief summary of the key findings is discussed below.

Terrestrial Features

As the preferred sites for the proposed facilities contain minimal vegetation, potential terrestrial footprint impacts are limited to nominal vegetation clearing as part of constructing the new paralleling stations. It is noted that the EMU Maintenance Facility at Resource Rd. is currently being used as a staging area. Mitigation measures (e.g., consider developing a restoration and enhancement plan) have been established to further minimize terrestrial effects. There is potential for soil erosion/siltation as a result of the excavation activities required to installing the underground duct banks. However, this will be minimized via standard mitigation measures (e.g., install silt fencing around designated work areas to prevent offsite transport of sediment), therefore no adverse net effects are anticipated. Standard best

practices and mitigation measures have also been implemented in the event of accidental spills during construction activities.

During operation of the new electrified UP Express system, there is potential for wildlife (bird) injury caused by collision or electrocution with OCS wires. As a result, in-design mitigation measures to minimize the potential for injury or mortality will be implemented, such as providing minimum clearances between two different OCS wires, and/or providing clearly visible markers on the OCS.

Aquatic Features

An aquatic impact assessment was conducted to assess the potential effects on three watercourses within the study area, including Black Creek, Humber River and Mimico Creek. There will be no footprint impacts anticipated with respect to any of the three watercourses, as the proposed paralleling stations and EMU maintenance facility are to be located a sufficient distance from the respective watercourses. In addition, no in-water works are proposed as part of construction. Similarly, no potential adverse effects are anticipated to any of the watercourses as a result of operations/maintenance activities. There is some potential for indirect construction related effects to Black Creek and Humber River during OCS installation on bridges (e.g., siltation, introduction of contaminants into the watercourse through the use of industrial equipment, construction debris), however best practice mitigation measures will be implemented to minimize potential adverse effects.

Stormwater Management

The conceptual design plan for the new EMU maintenance facility at 50 Resources Rd. indicates that tracks from the site may be in a crossing conflict with the existing stormwater management (SWM) pond (adjacent to the site) serving the immediately adjacent industrial/commercial sites. If deemed necessary during preliminary and/or detailed design, the recommended option for altering/modifying/relocating the existing SWM pond will be confirmed prior to operation of the proposed EMU Maintenance Facility.

The change in the ground surface at the Ordnance paralleling station facility location from current conditions may result in alterations to the current storm water drainage patterns. During detailed design, a stormwater management plan/design will be carried out by Metrolinx and will address: quantity control, erosion control, and quality control in accordance with the Ministry of the Environment's Stormwater Management Planning and Design Manual (2003).

With regard to the paralleling station site at 3500 Eglinton Ave. W., an on-site SWM pond is protected for within the current design of the Eglinton Crosstown MSF site to control both water quality and quantity of stormwater discharge before the connection to the municipal storm sewer network. The SWM pond will be further defined as part of the detailed design phase of the project of the Eglinton Crosstown MSF project.

Hydrogeological Features

In terms of the hydrogeological features, the subsurface footprint of the paralleling station grounding grid, gantry foundations, duct banks, and OCS foundations are relatively small and shallow. Therefore, no adverse hydrogeological impacts are anticipated in relation to the project footprint and no mitigation measures are recommended. Potential operations/maintenance impacts are limited to the potential for groundwater contamination from accidental spills of materials such as oils and fuels, however the risk will be mitigated via best management practices. The EMU Maintenance Facility will occupy land which is currently undeveloped and will consist primarily of rail siding, an approximately 0.5 hectare maintenance building. There is a stormwater management pond east of the EMU Maintenance Facility site that has been designed to manage flow associated with the adjacent Lowes retail development. Implementation of the EMU Maintenance Facility has the potential to change or redistribute groundwater recharge, which contributes to baseflow at the Humber River approximately 360m to the east. To ensure that baseflow contribution to the Humber River from this site is unaffected by the EMU Maintenance Facility development, the stormwater management pond design should be reviewed to ensure that a zero-net reduction in groundwater recharge will be achieved.

Contaminated Sites

In 2010, a Phase I and Phase II Environmental Site Assessment (ESA) that included the Ordnance St. location was completed. The report recommendations are being followed by Metrolinx in relation to managing contaminated material. As there is potential for disturbance of contaminated soil and/or groundwater during construction at the Ordnance paralleling station site. Similarly, a Phase I and Phase II ESA was carried out for the EMU Maintenance Facility site at 50 Resources Road in 2005 and 2006 respectively. Remedial works were carried out in 2008 based on 2006 Phase II ESA as well as new ESAs carried out in 2008. Therefore, a number of mitigation measures, based on best management practices, will be implemented at these two sites to manage contamination if encountered, e.g. a health and safety plan be developed and implemented for construction workers, an excess materials management plan will be developed and implemented, etc.

For the 3500 Eglinton Avenue West property, in accordance with Ontario Regulation 153/04, a Risk Assessment (RA) approach is proposed as part of the Eglinton Crosstown MSF project to protect human health and the environment during and following construction. A CPU will be issued for the site and must be followed with respect to risk management measures employed at the site. The RA approach to be carried out for redevelopment of the 3500 Eglinton Avenue West site may formalize the requirements for protection of workers during construction.

Cultural Heritage

A cultural heritage assessment was prepared to identify potentially affected cultural heritage resources associated with the proposed UP Express Electrification project, as well as to establish mitigation measures as required. The key findings of this assessment included potential for displacement of

heritage attributes and/or disruption of setting due to: attachment of OCS structure(s), and/or addition of a bridge protection barrier, and/or attachment of a grounding grid, and/or potential alteration of the bridge deck at the following bridges (CHRs):

- Bathurst Street Bridge (CHR 1)
- King Street Bridge (CHR 3)
- Fort York Heritage Conservation District (CHR 35)
- Wallace Avenue Pedestrian Bridge (CHR 7)
- Rogers Road Bridge (CHR B5)
- Jane Street Bridge (CHR B8)
- Humber River bridge (CHR 13)

To mitigate/minimize these potential effects, the following measures/future work are proposed:

- Carry out a Cultural Heritage Evaluation Recommendation Report (CHER) to identify heritage value and attributes (during detailed design);
- If found to have cultural heritage value in accordance with the Metrolinx Interim Cultural Heritage Management Process (2013), a Heritage Impact Assessment (HIA) will be conducted (during detailed design) in consultation with the Ministry of Tourism, Culture and Sport and City of Toronto Heritage Preservation Services to further identify potential impacts and appropriate mitigation measures;
- Undertake final design of the bridge following the recommendations (e.g., heritage attributes to be conserved) outlined in the HIA;
- Follow Metrolinx Interim Cultural Heritage Management Process (2013) for managing heritage assets.

With respect to the Fort York Heritage Conservation District in particular, the following mitigation measures will be implemented:

- Carry out a Visual Impact Assessment (VIA) to determine the impact of the Paralleling Station on identified viewpoints to and from Fort York;
- To minimize potential temporary construction effects, staging areas (if required) should be carefully selected so that they are non-invasive and avoid all heritage attributes;
- Pre-construction vibration studies may be required to mitigate any potential vibration related impacts (to be determined during detailed design);
- Pre-construction conditions should be re-established through post-construction landscape treatments, where appropriate;
- If possible, construction activities should avoid the removal of soil in the vicinity of Garrison Creek and the former Garrison Creek Ravine.

The construction activities associated with installing bridge protection barriers, OCS attachments, and grounding grids to bridges/rail overpasses will have potential short-term disruption effects (e.g., introduction of physical, visual, noise-related, and atmospheric elements that are not in keeping with

the CHRs will be minimized through: staging areas (if required) should be carefully selected so that they are non-invasive and avoid all heritage attributes. In addition, pre-construction vibration studies may be required to mitigate any potential vibration related impacts (to be determined during detailed design).

Archaeology

As per the Stage 1 Archaeological Assessment carried out, there is potential for archaeological remains to be encountered at the east end of the Ordnance paralleling station location. Therefore, a Stage 2 archaeological assessment will be carried out by Metrolinx for the paralleling station site (including the proposed underground duct bank route) during detailed design. No archaeological potential was identified for any of the other facility sites.

Land Use/Social Features

It is not anticipated that the electrification will adversely affect planned land use in any of the corridor sections; however, it is noted that the Ordnance Triangle, (location of the Paralleling Station) does have a development proposal under review to re-develop a portion of the property into a mixed-use neighbourhood, including residential, commercial and open space.

Overall, the electrification of UP Express and associated facilities are not anticipated to result in net adverse effects on existing or planned land use.

With respect to current land use zoning on the 50 Resources Rd. site, land at the site is zoned as *Class 1 Industrial (I.C1)* under former General Etobicoke Zoning Code V131. An amendment to Chapter 304 for the Etobicoke Zoning Code refers to 50 Resources Road, and states that ancillary maintenance facilities for a railway yard are prohibited. Discussions with City of Toronto Planning staff in March 2014 confirmed that there is a zoning conflict with the proposed Maintenance Facility. As a Crown Agency, Metrolinx is not bound by zoning by-laws passed by municipalities under s.34 of the *Planning Act* and as such does not have a requirement to apply for and obtain zoning amendments. However, Metrolinx will consult with, and have regard for, the City of Toronto's planning policies with regard to specific projects (or components thereof) and will comply with the City's requests when and where reasonable.

Property

With respect to the underground duct banks (to install high voltage feeders) that will be routed from the Ordnance Paralleling Station to the gantries at Strachan, an area of approximately 1320 m² may require property easement from the City of Toronto.

Underground duct banks (to install high voltage cables) will be routed from the 3500 Eglinton Avenue West Paralleling Station under Industry Street and Ray Avenue to the gantries located at Ray Avenue. As a result, a total area of approximately 2200m² (i.e., 1000 m² under Industry St. and approximately 1200m² under Ray Avenue) may require permanent easements from the City of Toronto.

With respect to the underground duct banks (to install high voltage cables) that will be routed from the 175 City View Drive traction power substation to the gantries at Highway 27, an area of approximately 400 m² will need to be acquired from the City of Toronto.

With respect to the small number of locations where there is not enough horizontal clearance to accommodate portal structures, further advancements to the OCS design will be made during detailed design to determine whether the location of OCS portal structures can be refined in such a way that avoids the need for property acquisition/easements. Where this is not possible, Metrolinx will proceed with acquiring property easements in accordance with standard Metrolinx procedures and policies.

Air Quality

An air quality assessment was carried out to investigate air quality impacts associated with replacing the DMU trains with EMU trains, as well as potential effects associated with the implementation of facilities necessary to support the electrified service.

The assessment resulted in a conclusion that there will be no predicted net effects within the UP Express corridor due to the change in technology (i.e., replacing DMUs with EMUs). Air quality within the UP Express corridor will improve based on the displacement of emissions from the operation of DMUs to emissions from the generation of electricity in Ontario to power the operation of EMUs. The assessment also concluded that there are no significant sources of atmospheric emissions at the two proposed paralleling stations; therefore no net air quality effects are anticipated from these facilities.

Furthermore, a modeling assessment based on worst case maximum operating conditions of all equipment at the Maintenance Facility indicated that maximum ground level contaminant concentrations are within applicable Ontario Ambient Air Quality Criteria (AAQC).

Noise and Vibration

The UP Express service will commence operations with train sets comprised of DMUs. Potential noise impacts attributable to the implementation of the UP Express service operating with DMUs were previously evaluated as part of the Approved *Georgetown South Service Expansion and Union Pearson Rail Link Environmental Assessment*. As part of these previous studies, noise mitigation (e.g., noise walls) was recommended and implemented into the design plans. The planned noise mitigation (noise walls) will be in place prior to the conversion from DMU to EMU trains, and are therefore considered part of the base case scenario. Accordingly, the noise study assessed the effect of replacing the DMU train sets with equivalent EMU train sets.

With this in mind, Metrolinx has provided noise specifications to the DMU manufacturer for the design of DMUs which will operate initially along the UP Express corridor. Accordingly, Metrolinx will establish the same or more stringent noise specifications for the EMU train sets. Therefore, for purposes of this

noise assessment, noise levels associated with the EMU train are assumed to be equal to (worst case scenario) or lower than the noise levels of the DMU.

The EMU pantograph represents a noise source due to friction between the pantograph and the OCS wires when the train is in motion. Based on background research, catenary noise has been identified as a potential nuisance effect in high-speed rail (HSR) systems. HSR has been defined by the American Society of Civil Engineers (ASCE) as rail speed greater than 201km/h, a speed much higher than the design speed capacity of the UP Express (i.e., approximately 144km/h). At lower speeds (i.e., UP Express), it is anticipated that engine and wheel-rail noise will be the dominant sources of noise.

Therefore, since the noise levels associated with the EMU will be equal to (worst case scenario) or lower than the noise levels of a DMU, and since the noise mitigation measures (barrier walls) required as part of the previous 2009 Georgetown South project will remain in place upon conversion to EMUs, no net adverse noise effects are anticipated by replacing DMUs with EMUs. Therefore, the maximum net impact is considered to be 0 dB, which is "Insignificant" in accordance with the *MOEE/GO Transit Draft Protocol*, and no further evaluation is required.

With respect to construction activities associated with the UP Express, a number of mitigation measures will be implemented by Metrolinx such as: contracts shall include explicit indication that all construction equipment used on the project is to meet the sound level criteria from NPC-115 and be well maintained, for work that has a high potential for noise impacts, the contractor will be responsible for identifying the implications of the noise generated, and to make construction work plans available to Metrolinx in advance, a Communications Protocol is to be established by Metrolinx for receiving, investigating and addressing construction noise inquiries from the public.

With respect to operation of the paralleling stations, the predicted sound level attributable to the paralleling stations at the nearest sensitive receptors will be below the most stringent MOE criteria, therefore the operation of the paralleling stations are not anticipated to have a net adverse noise effects.

Operations at the EMU maintenance facility were also assessed. An acoustic model was prepared based on the conceptual design plan for the maintenance facility. There is potential for EMU Maintenance Facility operations (i.e., idling engines on the storage track) to cause sound level increase beyond the allowable limits as per NPC-300 at the POR5 receptor location. As a result, a 5 m barrier adjacent to the storage track is proposed on the south side of the proposed maintenance facility to mitigate this effect. There were no vibration effects identified in relation to operation of the EMUs. During construction, standard mitigation measures will be implemented to minimize potential temporary effects, such as: activities that have potential to cause off-site vibrations will be phased such that as few as possible are occurring simultaneously (where possible), construction activities that have potential to cause off-site vibration during the night-time hours will be avoided wherever possible, etc.

Visual

There are potential visual effects related to the introduction of electrification infrastructure along the corridor and at facility sites. Specifically, OCS support structures at heights between 10 – 12 m along the corridor and that are viewed from pedestrian bridges are likely to be the most prominent effects. In addition, there are potential visual effects related to installation of the gantries on nearby residents and parks, as well as visual effects due to the installation of bridge protection barriers at certain bridges. Therefore, Metrolinx will undertake further review (during detailed design) of OCS design, bridge barriers, gantry design, and paralleling stations through Metrolinx's Design Review Panel, in consultation with the City of Toronto to identify: potential visual enhancements, opportunities for screening, options to locate OCS portals a further distance from bridges, bridge barrier designs, ensure lighting is sensitively designed with respect to Fort York, etc.

Traffic

The traffic study concluded that the proposed EMU Maintenance Facility development at 50 Resources Rd. will not have significant negative impacts on the adjacent road network since the total site volumes to be generated will be less than 100 trips per peak direction.

Utilities

As part of the impact assessment phase, potential effects on known utilities due to electrification of the UP Express were considered, and mitigation measures identified as appropriate. There are a significant number of utilities being relocated as part of the Georgetown South Project construction work that is currently ongoing along the corridor. As a result, the assessment of additional utility conflicts (that may require relocation) due to the proposed UP Express Electrification infrastructure will need to be reviewed by Metrolinx as part of the Detailed Design phase. Implementation and construction obligations will be undertaken pursuant to the crossing agreements with each of the utility companies as required.

Electromagnetic Fields

Based on the results of the EMF survey, and estimation of the maximum EMF levels at the railway right of way for the electrified UP Express railway (i.e., 1 kV/m), it is anticipated that EMF levels for human exposure will be within the industry limits once the UP Express is electrified. No potential adverse EMF effects identified. Metrolinx will undertake additional EMF studies and testing including: additional analysis during the detailed design phase will be required to verify the results of this EMF assessment, which will include consideration of electrified rolling stock specifications.

Electromagnetic Interference

Based on the results of the EMI survey, and with the implementation of the mitigation measures as outlined in the EMC Report (Appendix H), no adverse net effects due to extremely low frequency (ELF) EMI are anticipated. In addition, based on compliance with Industry Canada's frequency allocation plan and emission limits for radios along the electrified UP Express corridor, no adverse net effects due to radio frequency (RF) EMI are anticipated.

The following additional analysis/measures will be implemented/carried out during detailed design/ construction/ operations phase to ensure electromagnetic compatibility: Prepare EMC Analysis Report (Detailed Design), Frequency Management Plan (Detailed Design), Compliance testing during Construction Phase, Implement tests and maintenance procedures during operations phase.

Consultation

Metrolinx carried out numerous consultation activities during the Pre-Planning Phase (i.e., Pre-Notice of Commencement), as well as during the 120-day Transit Project Assessment Process phase (i.e., post Notice of Commencement) of the UP Express Electrification project.

The consultation process consisted of the following activities to engage a diverse set of participants, provide information and updates on the project, and to allow opportunities for interested persons (including members of the public, aboriginal peoples, and review agencies) to provide comments and feedback throughout the process.

- Project Web Site
- Electrification e-mail address
- Stakeholder Working Session
- Public Open Houses
- Public Update Meeting
- Newspaper Advertisements
- Meetings with Review Agencies
- Meetings with Elected Officials
- Meetings with Other Stakeholders
- Meetings with Property Owners

In the interest of presenting both key elements of the project (i.e., power supply and power distribution components) together and to avoid confusion amongst the public, the consultation process was carried out jointly by Metrolinx and Hydro One. This included combined public/property owner/review agency/Aboriginal communities notices and advertisements and a joint public open house session.

In general, strong support for the UP Express Electrification project has been expressed by the public. In addition, some of the key topics raised as part of the comments/feedback received at the POHs included but were not limited to the following:

- Commitment to electrification and timing of implementation
- Cost of electrification
- Potential construction – related impacts along the corridor (e.g., noise)
- Air quality effects (diesel vs. electric powered trains)

- Overhead contact system vs. third rail
- Locations and size of electrification facilities
- Opportunities for more stations and for future integrated transit system
- Distinction between scope of GTS construction project and UP Express Electrification project
- General support for electrification

Several meetings with stakeholders and review agencies were held throughout the EA process to provide project updates, discuss project issues/concerns, and to seek comments and feedback.

In addition, the UP Express Electrification consultation process included correspondence with the following Aboriginal communities:

- Chippewas of Georgina Island;
- Chippewas of Kettle and Stony Point
- Chippewas of Nawash First Nation
- Chippewas of Rama First Nation
- Chippewas of the Thames First Nation
- Mississauga's of Scugog Island First Nation
- Mississaugas of the Credit
- Saugeen First Nation
- Six Nations of the Grand River
- Métis Nation of Ontario

Commitments and Future Work

During the TPAP, Metrolinx worked with various stakeholders to discuss issues/concerns raised in relation to the design and implementation of the proposed UP Express Electrification project.

Recognizing that not all issues can be resolved prior to the detailed design stage, there are a number of commitments and future work during detail design (as well as future project phases) that will be carried out by Metrolinx including but not limited to:

- Implement all mitigation measures as documented in this Final EPR (as detailed in Chapter 6) during the detailed design, construction and operational phases of the project, as appropriate;
- Additional studies for specific heritage/archaeological resources were recommended as part of the TPAP through the Cultural Heritage Assessment Report and Stage 1 Archaeological Assessment Report. Accordingly, these additional studies (as described in Chapter 6) will be carried out by Metrolinx prior to implementing the project, as appropriate.
- The results of the noise modeling assessment carried out for the EMU Maintenance Facility be verified based on the subsequent Preliminary Design to be undertaken for the facility, in order to confirm that compliance with NPC-300.
- Further review of OCS design, bridge barriers, gantries, and paralleling stations will be undertaken through Metrolinx's Design Review Panel in consultation with the City of Toronto (during detailed design), to identify and consider potential visual enhancements/mitigation measures for minimizing visual effects due to the introduction of electrification infrastructure.

- Metrolinx will continue to engage and communicate with stakeholders beyond EA approval, including affected property owners where property easements or grounding and bonding may be required;
- Metrolinx will design and implement a response strategy to address/resolve potential noise complaints during the construction phase;
- Metrolinx will continue to consult and coordinate with the City of Toronto during the detailed design phase to carry out future discussions and negotiations with City of Toronto in relation to alterations required on City bridges, coordinate with Heritage Preservation Services at the City of Toronto to review detailed designs affecting City heritage resources/properties of interest and incorporate feedback/input into final designs as appropriate, etc.
- Ongoing coordination with Hydro One Networks Inc. during detailed design in relation to the interface between the Hydro One traction power supply and Metrolinx traction power distribution components/designs;
- During detailed design, further analysis and measurements will be carried once the electric rolling stock specifications are known in order to confirm the results of the EMC Report completed as part of the EA and to ensure to ensure EMI immunity and emissions compliance for the electrified UP Express System.