METROLINX

New Track and Facilities Transit Project Assessment Process

Final Environmental Project Report – Executive Summary

05 Mar 2021

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Authorization

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REVISION HISTORY

Revision	Date	Purpose of Submittal	Comments
00	29-Dec-2020	Final submission to Metrolinx.	N/A
01	29-Jan-2021	Final submission to Metrolinx for Minister's Review.	N/A
02	05-Mar-2021	Final Submission to Metrolinx for Statement of Completion	N/A

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

Executive Summary

Purpose of this Undertaking

Metrolinx is committed to improving the GO Transit system to bring 15-minute, two-way electrified service to core parts of the rail network through the Regional Express Rail (RER) program, also known as *GO Expansion*. As a component of the regional transportation plan, The Big Move, the GO Expansion program supports Metrolinx's goal of transforming the GO system into a comprehensive regional rapid transit network.

GO Expansion will offer more service with faster trains, more stations and seamless connections to a regional rapid transit network. As part of the GO Expansion program, Metrolinx has identified various infrastructure requirements to achieve the established service level targets across the network. The New Tracks & Facilities TPAP (the Project) is one component of the broader Metrolinx GO Expansion program. To this end, Metrolinx is undertaking a Transit Project Assessment Process (TPAP) under *Ontario Regulation 231/08 - Transit Projects and Metrolinx Undertakings* for various new infrastructure requirements along the Lakeshore West, Kitchener, Barrie, Stouffville, Lakeshore East, and Richmond Hill Rail Corridors that require Environmental Assessment (EA) approval. The TPAP entails a defined timeline of up to 120 days for the Proponent to complete the assessment of environmental effects, prepare the Environmental Project Report (EPR), and carry out consultation activities.

The purpose of the New Track and Facilities Project is to build new infrastructure along various rail corridors that will enable Metrolinx to deliver targeted service levels, including: new tracks within existing Metrolinx rail right-of-way (ROW), modifications or upgrades to existing tracks within existing Metrolinx rail ROW, three (3) new layover/storage facilities, new GO station platforms, bridge expansion/modification, and electrification of a portion of the Richmond Hill rail corridor, within the City of Toronto.

Project Proponent

Metrolinx is the Proponent of this Project for the purpose of the Transit Project Assessment Process, meaning they are the entity proposing to carry out, have charge, and take ownership/control of the undertaking. Metrolinx is an agency of the Government of Ontario under the *Metrolinx Act, 2006,* and was created to improve the condition and integration of all modes of transportation in the Greater Toronto and Hamilton Area.

Project Scope & Overview of Project Components

The scope of the Project includes the following infrastructure components to accommodate increased service levels, as shown in Table E-0-1. These infrastructure components are further discussed following the Table to allow the reader to comprehend what each component entails. The infrastructure proposed as part of the New Track & Facilities TPAP is based on a series of route capability and utilization studies that have been completed by Metrolinx to establish:

- The required infrastructure configuration necessary to robustly provide sufficient capacity (including storage, turnback and platform capacity) to operate peak services required.
- The strategy for operation of the infrastructure for optimal operations efficiency and capacity utilization.

Reference Concept Designs were prepared that provide the basis for the impact assessment studies that were undertaken and documented within this Environmental Project Report (EPR).

TABLE E-0-1 SUMMARY OF PROPOSED INFRASTRUCTURE: NEW TRACK AND FACILITIES TPAP

Rail Corridor	Approximate Kilometers of New Track/ Track Upgrades[1]	Number of New Switches	New GO Station Platforms	New Layover/ Storage Facilities	Bridge Expansions/ Modifications	Electrification[2]
Lakeshore West	6.14	61	• None	• Walkers Line Layover Facility	• No	• No
Kitchener	7.44	23	• None	• None	• No	• No
Barrie	12.41	33	• None	• None	• No	• No
Stouffville	2.13	11	• Mount Joy GO Station • Unionville GO Station	• Unionville Storage Yard	• No	• No
Lakeshore East	5.67	23	• Oshawa GO Station	• None	• Yes (Expansion of Thickson Rd Bridge)	• No
Richmond Hill	4.29	3	• None	• Don Valley Layover Facility (Don Branch)	• Yes, to accommodate Electrification	• Yes – up to Mile 4.4. on Bala Subdivision

New Tracks/Track Upgrades

New tracks, upgrades to existing tracks, or track re-alignments are required on various Metrolinx rail corridors as part of achieving targeted GO Expansion service levels. The locations/extent of the proposed tracks are outlined in Table E-0-2. The Study Area has been organized into distinct segments to allow a consistent assessment of potential effects at a manageable scale. This segment numbering is consistent throughout all aspects of the TPAP studies and reporting.

TABLE E-0-2 NEW TRACK & FACILITIES TPAP PROPOSED INFRASTRUCTURE, STUDY AREA SEGMENTS AND KEY MAP FIGURE REFERENCES

New Track & Facilities TPAP Study Area Segments		Proposed Infrastructure	Appendix Mapping Reference
Lakeshore West Corridor (LSW)			
Segment LSW-1	Mile 8.10 to Mile 8.60	Track upgrade Mile 2.45 to 2.60 (Canpa subdivision)	**Appendix A1**
Segment LSW-2	Mile 20.20 to Mile 20.70	Track upgrade from Mile 20.44 to 20.80 Track upgrade from Mile 20.58 to 20.88	**Appendix A1**
Segment LSW-3	Mile 20.70 to Mile 21.20	Track upgrade from Mile 20.44 to 20.80 Track upgrade from Mile 20.58 to 20.88	**Appendix A1**
Segment LSW-4	Mile 28.50 to Mile 29.00	New Walkers Line Layover from Mile 28.65 to 29.48	**Appendix A2**

[1] Includes new track proposed within layover/storage yard facilities.

[2] For further information regarding previous Electrification TPAPs, please refer to the GO Rail Network Electrification EPR, 2017 (http://www.metrolinx.com/en/electrification/electric.aspx).

New Track & Facilities TPAP Study Area Segments		Proposed Infrastructure	Appendix Mapping Reference
Segment LSW-5	Mile 29.00 to Mile 29.50	New Walkers Line Layover from Mile 28.65 to 29.48	
Kitchener Corridor (KT)			
Segment KT-1	Mile 12.90 to Mile 13.40	Track upgrade from Mile 13.19 to Mile 13.69 Track upgrade from Mile 13.19 to Mile 13.64 Track upgrade from Mile 13.35 to Mile 13.70	**Appendix A1**
Segment KT-2	Mile 13.40 to Mile 13.90	Track upgrade from Mile 13.19 to Mile 13.69 Track upgrade from Mile 13.19 to Mile 13.64 Track upgrade from Mile 13.35 to Mile 13.70	**Appendix A1**
Segment KT-3	Mile 16.10 to Mile 16.60	Track upgrade from Mile 16.20 to Mile 16.39 Track upgrade from Mile 11.54 to Mile 16.46 Track upgrade from Mile 11.56 to Mile 16.46 New track from Mile 16.50 to 11.11	**Appendix A-1**
Segment KT-4	Mile 16.60 to Mile 11.20 - (Weston/Halton Subdivision)	Track upgrade from Mile 11.54 to Mile 16.46 Track upgrade from Mile 11.56 to Mile 16.46 New track northside of Mile 16.50 to 11.11	**Appendix A1**
Segment KT-5	Mile 11.20 to Mile 11.80	New track from Mile 11.39 to Mile 11.75	**Appendix A1**
Barrie Corridor (BR)			
Segment BR-1	Mile 12.10 to Mile 12.60	New track from Mile 12.19 to 12.53.	**Appendix A1**
Segment BR-2	Mile 29.50 to Mile 30.00	Track upgrade from Mile 29.50 to 29.60 New track from Mile 29.54 to 34.62 Track upgrade from Mile 29.96 to 30.29	**Appendix A1**
Segment BR-3	Mile 30.00 to Mile 30.50	New track from Mile 29.54 to 34.62 Track upgrade from Mile 29.96 to 30.29	**Appendix A1**
Segment BR-4	Mile 30.50 to Mile 31.00.	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-5	Mile 31.00 to Mile 31.50.	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-6	Mile 31.50 to Mile 32.00.	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-7	Mile 31.90 to Mile 32.50.	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-8	Mile 32.50 to Mile 32.90	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-9	Mile 32.90 to Mile 33.50	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-10	Mile 33.40 to Mile 34.00	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-11	Mile 33.90 to Mile 34.50	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-12	Mile 34.40 to Mile 34.90	New track from Mile 29.54 to 34.62	**Appendix A1**
Segment BR-13	Mile 61.30 to Mile 61.80	New track from Mile 61.40 to 63.40	**Appendix A1**
Segment BR-14	Mile 61.80 to Mile 62.30	New track from Mile 61.40 to 63.40	**Appendix A1**
Segment BR-15	Mile 62.30 to Mile 62.80	New track from Mile 61.40 to 63.40	**Appendix A1**
Segment BR-16	Mile 62.80 to Mile 63.40	New track from Mile 61.40 to 63.40	**Appendix A1**

New Track & Facilities TPAP Study Area Segments		Proposed Infrastructure	Appendix Mapping Reference
Stouffville Corridor (ST)			
Segment ST-1	Mile 51.00 to Mile 50.60	Unionville Storage Yard from Mile 50.61 to 50.31 New platform at Unionville GO Station New track eastside of new platform from Mile 51.00 to 50.73 Track upgrade from Mile 52.00 to 51.01	**Appendix A1**
Segment ST-2	Mile 50.60 to Mile 50.00	Unionville Storage Yard from Mile 50.61 to 50.31	**Appendix A2**
Segment ST-3	Mile 46.30 to Mile 45.80	New platform at Mount Joy GO Station New passing track for new platform from Mile 46.35 to 45.42	**Appendix A1**
Segment ST-4	Mile 45.80 to Mile 45.30	New platform at Mount Joy GO Station New passing track for new platform from Mile 46.35 to 45.42	**Appendix A1**
Lakeshore East Corridor (LSE)			
Segment LSE-1	Mile 323.90 to Mile 323.40 (Kingston Subdivision)	New storage/reversal pocket track northside of Mile 323.36 to Mile 323.76	**Appendix A1**
Segment LSE-2	Mile 10.10 to Mile 10.70	New third track from Mile 10.44 to Mile 11.76 Thickson Road Bridge expansion north side of Mile 10.67 Retaining Wall at Thickson Road	**Appendix A1**
Segment LSE-3	Mile 10.70 to Mile 11.20	New track northside of new island platform from Mile 11.56 to Mile 11.74 New third track from Mile 10.44 to Mile 11.76 Retaining Wall at Thickson Road	**Appendix A1**
Segment LSE-4	Mile 11.20 to Mile 11.70	New platform at Oshawa GO Station Retaining Wall at Oshawa GO Station New track northside of new platform from Mile 11.56 to Mile 11.74 New third track from Mile 10.44 to Mile 11.76	**Appendix A1**
Richmond Hill Corridor (RH)			
Segment RH-1	Mile 1.60 to Mile 2.15	Electrification of the rail corridor (along the Bala subdivision) Track upgrade from Mile 1.90 to 2.86	**Appendix A1**
Segment RH-2	Mile 2.15 to Mile 2.50	Electrification of the rail corridor (along the Bala subdivision) Track upgrade from Mile 1.90 to 2.86 Track upgrade from Mile 2.37 to 2.86	**Appendix A1**

New Track & Facilities TPAP Study Area Segments		Proposed Infrastructure	Appendix Mapping Reference
Segment RH-3	Mile 2.50 to Mile 3.10	Electrification of the rail corridor (along the Bala subdivision) Track upgrade from Mile 1.90 to 2.86 Track upgrade from Mile 2.37 to 2.86 Track upgrade to Don Valley Layover from Mile 208.60 to Mile 209.50 (along Don Branch) Don Valley Layover (non-electrified) from Mile 209.00 to 207.93 (along the Don Branch) Retaining Wall at Don Valley Layover	**Appendix A1, Appendix A2**
Segment RH-4	Mile 3.10 to Mile 3.60	Electrification of the rail corridor (along the Bala subdivision) Don Valley Layover (non-electrified) from Mile 209.00 to 207.93 (along the Don Branch) Retaining Walls at Don Valley Layover	**Appendix A1, Appendix A2**
Segment RH-5	Mile 3.60 to Mile 4.10	Electrification of the rail corridor (along the Bala subdivision) Don Valley Layover (non-electrified) from Mile 209.00 to 207.93 (along the Don Branch) Retaining Wall at Don Valley Layover	**Appendix A1**
Segment RH-6	Mile 4.10 to Mile 4.65	Electrification of the rail corridor (along the Bala subdivision)	**Appendix A1, Appendix A2**

New Switches

A number of new switches are required within the existing track beds along a number of GO rail corridors to easily maneuver trains from one track to another. The locations of the proposed switches are illustrated on the mapping included in **Appendix A3.** Since the proposed new switches are located within Metrolinx existing rail corridor ROW, there are no anticipated environmental impacts associated with new switches and therefore discussion of these components has been generally omitted from this report.

Retaining Walls

As part of the conceptual design process, retaining walls were identified at the following locations along the Lakeshore East Rail Corridor to support the construction of the additional railway tracks to reduce property encroachment. Retaining walls are also required along the Don Branch (Richmond Hill Corridor) to support the construction of the Don Valley Layover. It should be noted that the locations and types of retaining walls will need to be further reviewed during future project phases and more detailed designs prepared.

- Track Segment LSE-2: Mile 10.10 to Mile 10.70
  - Retaining wall at Thickson Road
- Track Segment LSE-3: Mile 10.70 to Mile 11.20
  - Retaining wall at Oshawa GO Station
- Track Segment LSE-4: Mile 11.20 to Mile 11.70

  - Retaining wall at Oshawa GO Station
- Track Segment RH-3: Mile 2.50 to Mile 3.10
  - Retaining wall at Don Valley Layover
- Track Segment RH-4: Mile 3.10 to Mile 3.60
  - Retaining walls at Don Valley Layover
- Track Segment RH-5: Mile 3.60 to Mile 4.10
  - Retaining wall at Don Valley Layover

New GO Station Platforms

The following new platforms at existing GO Stations are proposed as follows and as outlined in Table E-0-2:

- Oshawa GO Station (Lakeshore East Rail Corridor)
- Unionville GO Station (Stouffville Rail Corridor)
- Mount Joy GO Station (Stouffville Rail Corridor)

It is assumed that any ancillary GO Station infrastructure has prior EA approval, therefore the focus of the impact assessment studies for the New Track and Facilities TPAP is on the proposed physical footprint/location of the new platforms only. Additional study may be required during future project phases to review and confirm potential environmental impacts of the new station platforms, as well as ancillary components such as drainage, pedestrian access, tunnels, etc.

New Layover and New Storage Yard Facilities

Two (2) new layover facilities and one (1) new storage yard facility are proposed as follows and as outlined in Table E-0-2.

- Walkers Line Layover Facility – Lakeshore West Corridor
- Unionville Storage Yard – Stouffville Corridor
- Don Valley Layover Facility – Richmond Hill Corridor

Selection of a Preferred Layover on the Lakeshore West Rail Corridor

The route capability and utilization studies referenced within **Chapter 3** identify the need for a layover facility near Burlington GO Station on the Lakeshore West rail corridor to accommodate:

- Turnback capabilities at Burlington GO Station;
- Peak rail services that originate at Burlington GO Station, as well as capability for services originating/terminating at Aldershot GO Station;
- Reduced rail congestion on the Lakeshore West rail corridor; and
- The ability to serve as the terminus of electrification of the Lakeshore West corridor.

An initial site was identified during the Pre-Planning Phase of the TPAP that met the above requirements in the vicinity of Plains Road/Fairview Street in the City of Burlington. This site was referred to by Metrolinx as the “Beach Layover” as part of the pre-planning phase of the TPAP studies. The Beach Layover site is currently being used for industrial purposes and significant property acquisition and business relocation would be required to implement the proposed layover.

Stakeholder concerns were identified for the Beach Layover site during the Pre-Planning Phase of the TPAP as Metrolinx completed environmental investigations and met with local stakeholders. This included the identification of several potential utility conflicts related to gas, watermain, sanitary sewer, storm sewer and culverts, and the potential for contaminates from both on-site and off-site sources.

Metrolinx carried out additional analysis upon consideration of this new information to determine whether an alternate site along the Lakeshore West rail corridor could provide sufficient storage space to meet service requirements. This resulted in the identification of a new location in the vicinity of Walkers Line/Harvester Road, in the City of Burlington and to the west of Appleby GO Station. The Walkers Line Layover Facility location provided many benefits compared to the Beach Layover location, including:

- The Walkers Line Layover location makes greater use of Metrolinx's existing property for track storage;
- The overall footprint of the Walkers Line Layover is smaller than that of the Beach site, reducing the extent of potential environmental impacts;
- The existing, undeveloped condition of the proposed Walker Line Layer site reduces the impacts associated site preparation (e.g. no demolition is required) and will result in less disruption or displacement to existing businesses; and
- The preliminary screening that was completed during the options analysis indicated that surrounding land uses pose less of a contamination risk at the Walkers Line site. This was subsequently confirmed during a follow-up Environmental Site Assessment (summarized within **Appendix O**).

The above considerations led Metrolinx to identify the Walkers Line site as the preferred location to host the required layover along the Lakeshore West rail corridor.

The selection of the Walkers Line site as the preferred location for a layover was made during the assessment of potential environmental impacts and following the collection of baseline conditions data. Therefore, the baseline conditions reporting contained within the Appendix to this EPR (e.g. **Appendix B1**, **Appendix C1**, **Appendix D1**, etc.) refer to both the previously considered Beach Layover site as well as the new Walkers Line location, which is beneficial for the following reasons:

- Any assessment work completed for the previously considered Beach Layover location may be of use to Metrolinx or others, should there be interest in developing this site in the future; and
- By documenting the Beach Layover within the EPR, Metrolinx's TPAP documentation reflects the iterative process that occurred during the Pre-Planning Phase of the TPAP, providing transparency and clarity to those individuals and stakeholders that may have been affected by, or had an interest in, consideration of the previous location.

The preferred Walkers Line Layover was therefore carried forward as part of the detailed Project Description contained in Chapter 3 and the related impact assessment studies as documented in Chapters 5, 6 and 7.

<u>Thickson Road Bridge Expansion (Lakeshore East Corridor)</u>

The existing overhead rail structure at Thickson Road South, in the Town of Whitby, is to be widened to accommodate a new third track extending from the Whitby Maintenance Facility to Oshawa GO Station. Refer to **Appendix A1** location mapping. Conceptual design details and assumptions were used as the basis for the impact assessment studies undertaken as part of the TPAP. Additional more detailed designs will need to be prepared as part of a subsequent project phase.

Electrification of a Portion of the Richmond Hill Corridor

The Richmond Hill corridor is to be electrified along the Bala subdivision within Metrolinx rail right-of-way from the limits of the Union Station Rail Corridor to approximately Mile 4.4 in the vicinity of Pottery Road, within the City of Toronto. Electrification includes three components (the Overhead Contact System (OCS), Grounding and Bonding, and Bridge Modifications), each of which are further articulated below.

- **Overhead Contact System** - The OCS is a fundamental component of the traction power distribution system and generally includes the following infrastructure components:
  - OCS pole foundations;
  - Portal/cantilever poles; and
  - Contact, autotransformer, and feeder wires.
- **Grounding and Bonding** - To ensure safe touch-and-step potential is in accordance with permissible limits, a grounding and bonding system will be implemented as part of the Project. Grounding and bonding systems serve two primary functions:
  - Minimize touch voltage, step voltage and ground return currents caused by the electrified system to provide for the safety of passengers, operating personnel and other wayside public, and to provide protection from the risk of electrical shock.
  - Provide the means to carry electric currents into the earth under normal and fault conditions without exceeding operating and equipment limits, or adversely affecting continuity of service.
- **Bridge Modifications** - The following bridge/rail overpass modifications may be required to accommodate electrification along the Richmond Hill corridor:
  - *OCS Attachments/Support Structures:* To run OCS wires under overhead bridges without attachments, there must be enough clearance between the messenger wire/catenary and the lowest part of the bridge structure. Where enough clearance does not exist, attachments (e.g., tunnel arms) on the structure are required to support the OCS. In addition, for rail overpass structures, OCS support structures (i.e., portals/cantilevers) may need to be installed on the structure to support the OCS system.
  - *Flash Plates*: In the case of concrete bridges, if the vertical clearance between OCS conductors and concrete overpasses is less than 1 m, protection panels (flash plates) will be installed above the OCS, attached to the underside of the bridge, and interconnected to the static wire. Flash plates are metallic plates that are grounded. For steel overpasses, the steel girders will be interconnected and bonded to the static wire.
  - *Modifications to Achieve Minimum Clearance*: Options include raising or replacing the overhead bridge structure and/or, lowering the tracks to achieve minimum vertical clearance requirements.
  - *Bridge Protection Barriers:* The purpose of a bridge protection barrier is to protect pedestrians and infrastructure users within the public right-of-way on overhead bridges from direct contact with adjacent live parts of the OCS. In addition, these barriers protect against damage to the OCS passing under bridges by providing an obstacle to debris that may be thrown onto the railway from overhead.
  - *Grounding and Bonding*: is required to prevent damage from flashovers to the bridge structures and to prevent step and touch potential from exceeding permissible limits as defined in the applicable standards.

Study Area

The Study Area for the New Track and Facilities TPAP is shown graphically in FIGURE E-1. It should be noted that the sizing/scale of infrastructure proposed within this Project is relatively small compared to the wide geographic extent where improvements are proposed (e.g. a proposed track upgrade may only extend for several hundred metres). It is for this reason that FIGURE E-1 does not show proposed switches (i.e., due to the scale of the key map in Figure E-1) and has been displayed for illustrative purposes. For detailed mapping that shows proposed switch locations, refer to **Appendix A3**.

Furthermore, it is notable that additional more detailed Study Area mapping has been included within the EPR documentation at varying scales. EPR **Appendices A1** (Conceptual Corridor Plans) and **Appendix A2** (Conceptual Layover Facility & Storage Yard Plans) are organized by rail corridor and present the most detailed mapping available. The starting point of each corridor map originates at the Union Station Rail Corridor and continues out to the furthest point of the corridor, with the exception of the Don Branch Subdivision along the Richmond Hill Corridor, the Uxbridge Subdivision along the Stouffville Corridor, and the Kingston Subdivision along the Lakeshore East Corridor.

A conservative Study Area was established for purpose of assessing baseline conditions as part of the TPAP. Based on the conceptual design information available at the time of preparing this report, the Study Area for the impact assessment phase was refined as follows for purposes of assessing potential effects:

- Areas where property is required to accommodate new/upgraded/reconfigured track infrastructure;
- Footprint areas associated with new layover facilities:
    - Proposed Walkers Line Layover Facility, including ancillary works (along Lakeshore West Corridor)
    - Proposed Unionville Storage Yard Facility, including ancillary works (along Stouffville Corridor)
    - Proposed Don Valley Layover Facility, including ancillary works (along Richmond Hill Corridor)
- Areas protected to accommodate new GO station platforms at the following locations:
    - Unionville GO Station
    - Mount Joy GO Station
    - Oshawa GO Station
- Preliminary footprint/impact area associated with Thickson Road Bridge Expansion; and
- The Richmond Hill Rail Corridor along the Bala Subdivision (up to approximately Mile 4.4/Pottery Road, in the City of Toronto) plus the OCS/Vegetation Clearing Zone.

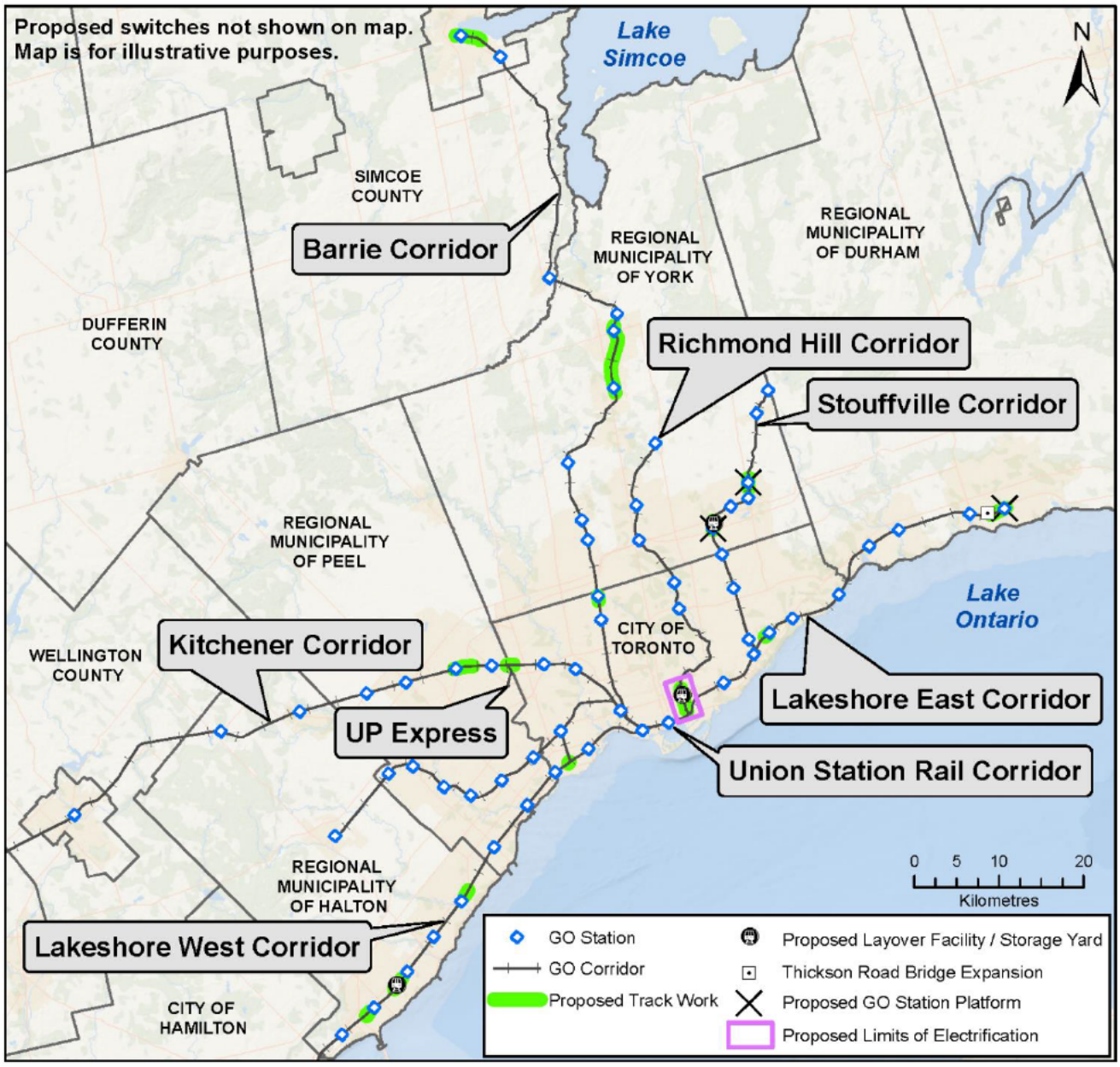

FIGURE E-1: NEW TRACK & FACILITIES TPAP STUDY AREA KEY MAP

Baseline Conditions

Baseline conditions studies were undertaken to establish a snapshot of the conditions within the study area prior to implementing the proposed project. The baseline conditions form the basis of an assessment of potential impacts. The EPR has condensed and amalgamated the methodologies and findings of the baseline conditions phase of the TPAP study in **Chapter 4**. Additional details concerning baseline conditions within the study area are contained within their respective supporting reports/studies included as appendices to this EPR. Distinct baseline conditions studies were completed for the following specialities:

- Natural Environment Baseline Conditions Report (**Appendix B1**)
- Hydrogeology Baseline Conditions Report (**Appendix C1**)
- Land Use and Socio-Economic Baseline Conditions Report (**Appendix D1**)
- Visual Baseline Conditions Report (**Appendix E1**)
- Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment- Volume 1: Baseline Conditions (**Appendix F1**)
- Archaeological Baseline Conditions Report (**Appendix G1**)

The following additional studies incorporated baseline/existing conditions information within their respective Impact Assessment Reports:

- Preliminary Stormwater Management Assessment Reports (**Appendix H**)
- Traffic Impact Assessment Reports (**Appendix I**)
- Utilities Impact Assessment Report (**Appendix J**)
- Noise and Vibration Facilities Construction Impact Assessment Report (**Appendix K**)
- Air Quality Facilities Construction Impact Assessment Report (**Appendix L**)
- Richmond Hill Corridor Operational Noise & Vibration Assessment (**Appendix M1**)
- Richmond Hill Corridor Operational Air Quality Assessment (**Appendix M2**)
- Electromagnetic Interference/Electromagnetic Fields (EMI/EMF) Impact Assessment Report (**Appendix N**)
- Environmental Site Assessment Summary (**Appendix O**)

Generally, baseline conditions data was collected and summarized through a combination of reviewing background information/reports and undertaking field investigations (as required).

Impact Assessment Process

Based on the conceptual engineering design developed for the Project, potential effects were assessed and mitigation measures developed based on the following four step approach:

Step 1 – Identify potential effects (positive and negative) resulting from the construction and/or operation of the Project infrastructure;

Step 2 – Establish avoidance/mitigation/compensation measures to eliminate or minimize potential negative effects (as required);

Step 3 – Carry out consultation with stakeholders/regulatory authorities; update impact assessment results and/or proposed avoidance/mitigation/compensation mitigation measures as appropriate; and

Step 4 – Document impact assessment results.

For the purposes of differentiating the various types of potential environmental effects related to the Project, effects were characterized and grouped as follows:

- **Footprint Impacts:** Potential displacement or loss of existing/planned features within the Study Area due to implementation of the physical project components (e.g., new tracks, new layover/storage facilities, etc.).
- **Construction Impacts**: Potential short-term effects (e.g., disruption/disturbance) on existing features due to construction activities associated with the Project (e.g., construction of new tracks, layover/storage facilities, bridge modifications, etc.).
- **Operations and Maintenance Impacts:** Potential long-term effects on existing study area features due to operations and/or maintenance activities associated with the Project (e.g., operation of the new layover/storage facilities).

The impact assessment documented in **Chapter 5** (Footprint Impacts), **Chapter 6** (Construction Impacts) and **Chapter 7** (Operation and Maintenance Impacts) align with the baseline studies completed for those specialties described above. More specifically, separate impact assessment studies were completed for the following disciplines:

- Natural Environment Impact Assessment Report (**Appendix B2**)
- Hydrogeology Impact Assessment Report (**Appendix C2**)
- Land Use and Socio-Economic Impact Assessment Report (**Appendix D2**)
- Visual Impact Assessment Report (**Appendix E2**)
- Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment - Volume 2: Impact Assessment (**Appendix F2**)
- Cultural Heritage Evaluation Report – Richmond Hill Rail Corridor Bridges, City of Toronto (**Appendix F3)**
- Stage 1 Archaeological Assessment Report (**Appendix G2**)
- Preliminary Stormwater Management Assessment Reports (**Appendix H**)
- Traffic Impact Assessment Reports (**Appendix I**)
- Utilities Impact Assessment Report (**Appendix J**)
- Noise and Vibration Facilities Construction Impact Assessment (**Appendix K**)
- Air Quality Facilities Construction Impact Assessment (**Appendix L**)
- Richmond Hill Corridor Operational Noise & Vibration Assessment (**Appendix M1**)
- Richmond Hill Corridor Operational Air Quality Assessment (**Appendix M2**)
- Electromagnetic Interference/Electromagnetic Fields (EMI/EMF) Impact Assessment Report (**Appendix N**)
- Environment Site Assessment Summary (**Appendix O**)

Following the impact assessment, mitigation measures were developed based on a combination of general best management practices and project-specific mitigation measures, as appropriate.

Summary of Potential Impacts – Proposed Layover & Storage Facilities

Construction and operational/maintenance impacts for each proposed facility were assessed in **Chapter 6** and **7**, respectively. Footprint impacts for each facility were also assessed in **Chapter 5**. The following is a summary of key footprint impacts for each layover/storage yard facility. Mitigation and monitoring measures were proposed to avoid/offset potential impacts and are summarized in Table 5-101 to 5-112. The table below includes references to the relevant mitigation/monitoring summary tables for each facility.

TABLE E-0-3 SUMMARY OF POTENTIAL FOOTPRINT IMPACTS AND REFERENCE TO MITIGATION TABLES FOR WALKERS LINE LAYOVER FACILITY - LAKESHORE WEST CORRIDOR

Walkers Line Layover Facility – Lakeshore West Corridor		
Discipline	**Potential Effects**	**Reference to Mitigation Summary Tables**
Natural Environment	• As the preferred site for the proposed layover facility contains potential wildlife habitat, it is anticipated that there will be loss of habitat due to the disturbances and/or displacement. • Encroachment into the Shoreacres Creek Valley is anticipated.	• Table 5-101 Summary of Natural Environment (including Vegetation) Mitigations and Monitoring Commitments
Hydrogeology	• Potential for groundwater quality impacts resulting from accidental leaks and spills associated with fuel handling, storage, and onsite equipment maintenance activities. • Potential for temporary lowering of the groundwater table due to excavation dewatering.	• Table 5-102 Summary of Hydrogeology Mitigations and Monitoring Commitments
Land Use and Socio Economics	• The preferred site will have footprint impacts limited to nuisance effects and property acquisitions, both temporary and permanent.	• Table 5-103 Summary of Land Use and Socio Economics Mitigations and Monitoring Commitments
Visual/Aesthetic	• There are visual impacts to existing viewsheds from nearby natural areas.	• Table 5-104 Summary of Visual/ Aesthetics Mitigations and Monitoring Commitments
Cultural Heritage	• No cultural heritage impacts are anticipated for this layover site.	• No mitigations are required
Archeology	• There is the potential for the disturbance of unassessed or undocumented archaeological resources.	• Table 5-106 Summary of Archeology Mitigations and Monitoring Commitments
Stormwater Management	• 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).	• Table 5-107 Summary of Stormwater Management- Walkers Line Layover Mitigations and Monitoring Commitments

Walkers Line Layover Facility – Lakeshore West Corridor		
Discipline	**Potential Effects**	**Reference to Mitigation Summary Tables**
	• Potential slope stability issues in the vicinity of the Shoreacres Creek are anticipated.	
Utilities	• As part of the impact assessment phase, potential effects on known utilities were considered and relocations may be required.	• Table 5-110 Summary of Utilities Mitigations and Monitoring Commitments
EMI/EMF	• Induced current in neighbouring wires and fences is possible. • Unintended contact with High-Voltage Sources is possible.	• Table 5-111 Summary of EMI/EMF Mitigations and Monitoring Commitments
Contaminated Soils, Excavated Materials and Groundwater Management	• No footprint impacts are anticipated; however. construction operations have the potential to expose contaminated materials.	• Table 5-112 Summary of Contaminated Soils, Excavated Materials and Groundwater Management Mitigations and Monitoring Commitments

TABLE E-0-4 SUMMARY OF POTENTIAL FOOTPRINT IMPACTS AND REFERENCE TO MITIGATION TABLES FOR UNIONVILLE STORAGE YARD FACILITY - STOUFFVILLE RAIL CORRIDOR

Unionville Storage Yard Facility – Stouffville Rail Corridor		
Project Site	**Potential Effects**	**Reference to Mitigation Summary Tables**
Natural Environment	• As the preferred site for the proposed layover facility contains potential wildlife habitat, it is anticipated that there will be loss of habitat due to the disturbances and/ or displacement.	• Table 5-101 Summary of Natural Environment (including Vegetation) Mitigations and Monitoring Commitments
Hydrogeology	• Potential for groundwater quality impacts resulting from accidental leaks and spills associated with fuel handling, storage, and onsite equipment maintenance activities.	• Table 5-102 Summary of Hydrogeology Mitigations and Monitoring Commitments
Land Use and Socio Economics	• The preferred site will have footprint impacts limited to nuisance effects and property acquisitions, both temporary and permanent. Minor zoning conflicts are also anticipated for this site.	• Table 5-103 Summary of Land Use and Socio Economics Mitigations and Monitoring Commitments

Unionville Storage Yard Facility – Stouffville Rail Corridor		
Project Site	**Potential Effects**	**Reference to Mitigation Summary Tables**
Visual/ Aesthetic	• There are visual impacts to existing viewsheds from nearby natural areas.	• Table 5-104 Summary of Visual/ Aesthetics Mitigations and Monitoring Commitments
Cultural Heritage	• No cultural heritage impacts are anticipated for this storage yard site.	• No mitigations are required
Stormwater Management	• 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). • Risk of erosion hazard (both slope stability and toe erosion) in the proposed storage yard area in proximity to the Rouge River.	• Table 5-108 Summary of Stormwater Management- Unionville Storage Yard Mitigations and Monitoring Commitments
Archeology	• No potential for the disturbance of unassessed or undocumented archaeological resources.	• No further archaeological assessment required.
Utilities	• As part of the impact assessment phase, potential effects on known utilities were considered and relocations may be required.	• Table 5-110 Summary of Utilities Mitigations and Monitoring Commitments
EMI/EMF	• Induced current in neighbouring wires and fences is possible. • Unintended contact with High-Voltage Sources is possible.	• Table 5-111 Summary of EMI/EMF Mitigations and Monitoring Commitments
Contaminated Soils, Excavated Materials and Groundwater Management	• No footprint impacts are anticipated; however, construction operations have the potential to expose contaminated materials.	• Table 5-112 Summary of Contaminated Soils, Excavated Materials and Groundwater Management Mitigations and Monitoring Commitments

TABLE E-0-5 SUMMARY OF POTENTIAL FOOTPRINT IMPACTS AND REFERENCE TO MITIGATION TABLES FOR DON VALLEY LAYOVER FACILITY - RICHMOND HILL CORRIDOR

Don Valley Layover Facility – Richmond Hill Corridor		
Project Site	**Potential Effects**	**Reference to Mitigation Summary Tables**
Natural Environment	• 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.	• Table 5-101 Summary of Natural Environment (including Vegetation) Mitigations and Monitoring Commitments
Hydrogeology	• Potential for groundwater quality impacts resulting from accidental leaks and spills associated with fuel handling, storage and onsite equipment maintenance activities.	• Table 5-102 Summary of Hydrogeology Mitigations and Monitoring Commitments
Land Use and Socio Economics	• 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.	• Table 5-103 Summary of Land Use and Socio Economics Mitigations and Monitoring Commitments
Visual/ Aesthetic	• There are visual impacts to existing viewsheds from nearby natural areas. • View of the culturally significant Prince Edward Viaduct will be altered.	• Table 5-104 Summary of Visual/ Aesthetics Mitigations and Monitoring Commitments
Cultural Heritage	• Indirect cultural heritage impacts are anticipated for this layover site.	• A Heritage Impact Assessment will be completed prior to construction.
Archeology	• There is the potential for the disturbance of unassessed or undocumented archaeological resources.	• Table 5-106 Summary of Archeology Mitigations and Monitoring Commitments
Stormwater Management	• 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) • Risk of erosion hazard (both slope stability and toe erosion) in the proposed layover area in proximity of the Don River.	• Table 5-109 Summary of Stormwater Management- Don Valley Layover Mitigations and Monitoring Commitments
Utilities	• As part of the impact assessment phase, potential effects on known utilities were considered and relocations may be required.	• Table 5-110 Summary of Utilities Mitigations and Monitoring Commitments

Don Valley Layover Facility – Richmond Hill Corridor		
Project Site	**Potential Effects**	**Reference to Mitigation Summary Tables**
EMI/EMF	• Induced current in neighbouring wires and fences is possible. • Unintended contact with High-Voltage Sources is possible.	• Table 5-111 Summary of EMI/EMF Mitigations and Monitoring Commitments
Contaminated Soils, Excavated Materials and Groundwater Management	• No footprint impacts are anticipated however construction operations have the potential to expose contaminated materials.	• Table 5-112 Summary of Contaminated Soils, Excavated Materials and Groundwater Management Mitigations and Monitoring Commitments

Public, Stakeholder and Indigenous Communities Consultation

Metrolinx undertook meaningful public and stakeholder consultation with the public, property owners, review agencies, Indigenous communities and other stakeholders in compliance with Section 8 of *Ontario. Reg. 231/08 Transit Projects and Metrolinx Undertakings* (the Regulation). **Chapter 8** of this EPR details the consultation methods Metrolinx used to engage a diverse set of participants, provide information and updates on the project, and to allow opportunities for interested persons to provide comments and feedback throughout the process. A snapshot of those methods employed include:

- Project website (https://www.metrolinxengage.com/en/engagement-initiatives/new-track-facilities-pic3);
- Online via Metrolinx Engage (https://www.metrolinxengage.com/en);
- Project email address (GOexpansionTPAP@metrolinx.com) or the appropriate Metrolinx Regional Representative at the following emails:
  - TorontoEast@metrolinx.com (residents east of Don River)
  - TorontoWest@metrolinx.com (residents west of Don River)
  - HaltonRegion@metrolinx.com
  - DurhamRegion@metrolinx.com
  - YorkRegion@metrolinx.com
  - Peel@metrolinx.com
  - SimcoeCounty@metrolinx.com
- Public open houses (i.e., both virtual and in-person meetings were held) and public review opportunities;
- Newspaper and radio advertisements;
- Notifications and email updates;
- Meetings with review agencies (provincial, municipal and conservation authorities);
- Meetings with elected officials;
- Meetings with Indigenous Communities and Nations;

- Meetings with other stakeholders (e.g., transit authorities, utilities), as required; and
- Meetings with property owners.
- These consultation methods were developed in the Stakeholder Consultation Plan at the outset of the Pre-Planning Phase of the TPAP, and further defined in the Communications and Consultation/Stakeholder Engagement Plan.

Commitments and Future Work

Chapter 9 documents the actions that will be adhered to by Metrolinx during the detailed design and construction phases of the project. This includes implementing all mitigation and monitoring measures as documented in **Chapters 5**, **6**, and **7** of this EPR during the detailed design, construction and operational phases of the project; ensuring that all mitigation and monitoring measures are captured in the Contract Documents for implementation by Metrolinx and/or their Contractor as appropriate; and, undertaking all additional studies/work as outlined in this EPR prior to implementation.