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**TO: MAYOR J. LEHMAN AND MEMBERS OF COUNCIL**

**FROM: R. SUTTON, P. ENG., DIRECTOR OF ENGINEERING**

**NOTED: D. FRIARY, ACTING GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH  
MANAGEMENT**

**C. MORTON, ACTING DIRECTOR OF ROADS, PARKS AND FLEET**

**A. BOURRIE, RPP, DIRECTOR OF BUILDING AND PLANNING SERVICES**

**M. PROWSE, CHIEF ADMINISTRATIVE OFFICER**

**RE: METROLINX REGIONAL EXPRESS RAIL – ELECTRIFICATION UPDATE  
(FILE: T03-GO)**

**DATE: JUNE 25, 2018**

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The purpose of this memorandum is to update members of Council on the Metrolinx GO Rail Network Electrification.

**Background**

As noted in the memorandum dated November 20, 2017, Metrolinx issued their Notice of Completion on October 11, 2017 and have subsequently received a Minister’s Notice to Proceed dated December 11, 2017 for the proposed electrification of GO-owned corridors (there is no update on the Metrolinx Regional Express Rail – Barrie Rail Corridor Expansion as these works are identified to occur post 2025).

Metrolinx has been moving forward with implementation based on the following schedule:

- Procurement/Design – 2017 to 2019
- Construction – 2020 to 2025

Proposed infrastructure specific to the Barrie GO Line (within City limits) include the following components:

- Hydro One tap location at the Barrie Transformer Station located at 306 Tiffin Street (or alternate site at 16 Patterson Road). This is the primary connection to the Hydro One transmission grid.
- Traction Power Station (TPS) at 323 and 329 Tiffin Street. The TPS transforms the 115kV Hydro One grid voltage to 25 kV for distribution to the locomotives via the Overhead Contact System (OCS).
- 25 kV transmission powerline between the TPS and Allandale Waterfront GO Station via the Barrie-Collingwood Railway (BCRY) corridor. This transmission powerline provides a connection between the TPS and the OCS at the Allandale Station.
- OCS within the Barrie GO Line. The OCS is the aerial supply system that delivers traction power to the locomotives operating in the rail corridor through a catenary system.
- Bridge Modifications – Big Bay Point Road Grade Separated Crossing:
  - Pedestrian Safety Barriers – Solid barriers are required where roads cross over the rail corridor to prevent the public from coming in contact with the OCS. Pedestrian safety barriers will be required at the Big Bay Point Road Bridge that crosses the Barrie GO line.
  - Electrification Appurtenances – Attachment of support brackets and flash plates to the bridge deck underside.



The following sections provide an update on proposed infrastructure that impacts City owned property/infrastructure.

**25 kV Transmission Powerline routed via the BCRY Corridor**

Metrolinx and City staff are continuing discussions regarding the use of the BCRY corridor for the 25 kV transmission powerline. Metrolinx is proposing to route a 25 kV transmission powerline within the BCRY corridor from the TPS (323 & 329 Tiffin Street) to the Allandale Waterfront GO Station (please refer to Appendix A).

Meetings have occurred between Metrolinx Real Estate and the City's Legal Department to consider options for providing Metrolinx an uninterrupted presence within the BCRY corridor. Options considered included partial sale of the corridor, lease of land within the corridor and a permanent easement. It was agreed that a permanent easement was the preferred agreement for both the City and Metrolinx.

Meetings have also occurred between Metrolinx and City staff (Engineering, Planning and Operations) to discuss the routing method for the transmission powerline. Metrolinx has provided an option of routing the powerline overhead on an aerial pole line or underground within a duct bank structure. Metrolinx has noted they prefer an overhead installation as it is less costly (underground is 3-4 times more costly) and more reliable due to ease of locating faults and completing repairs (Metrolinx is responsible for the capital and operational costs). Additionally, Metrolinx has noted that they prefer that the design, build, finance, operate and maintain (DBFOM) consortium be allowed to determine the optimal solution within the corridor.

City staff have assessed both physical and non-physical impacts associated with an overhead and underground installation of the transmission powerline with respect to BCRY operations and impacts to adjacent land uses.

- **BCRY Operational Impacts**

Staff and the City's rail operator CANDO have assessed Metrolinx's proposal for a transmission powerline within the BCRY corridor. Either an overhead or underground installation would be acceptable (overhead installation requires the pole line offset 2 m from the property line). Metrolinx would need to address corridor constraints at Essa Road to allow unimpeded BCRY rail operations if an overhead installation is pursued.

- **Adjacent Land Use Impacts – Western Installation Limit to the Urban Growth Centre Boundary**

The section of the BCRY corridor abuts lands zoned light, highway and general industrial between the western installation limit and Anne Street. Impacts to adjacent land use do not warrant a request for the transmission powerline to be routed underground within this section.

- **Adjacent Land Use Impacts – Urban Growth Centre Boundary to the Allandale GO Station**

This section of the BCRY corridor is within the Urban Growth Centre (UGC) and is also within an area designated as a mobility hub. The City's planned minimum density for this area is 150 persons + jobs per hectare. Metrolinx's transit supportive density for express rail is 150-300+ persons + jobs per hectare (Metrolinx Mobility Hub Guidelines, 2011). Given the planned intensification within this area, overhead utility installations are not desirable as they have a negative impact on the public realm and are not supportive of the type of development designated for UGC / mobility hub.

The City's Intensification Area Urban Design Guidelines, Section 3.2.9.a stipulates the following: "Where possible, utilities should be buried below grade, typically in the boulevard section of the right-of-way, where feasible." The use of a joint utility trench is encouraged for access and maintenance benefits. Additionally, Metrolinx's Mobility Hub Guidelines provide guidance on developing a vibrant, mixed use environment with high density levels and an attractive public realm.



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- **Staff Recommendations**

Given the planned intensification within the UGC and need of supportive actions including transitioning to buried utility installations in these areas to provide an uncluttered public realm, staff have recommended that the 25 kV transmission powerline be installed underground within the UGC (Marcus Street to the Allandale GO Station) with flexibility between Marcus Street and Innisfil Street if required by Metrolinx (overhead installation would be accepted if a technical barrier prevented an underground installation).

As the land use west of the UGC is generally zoned industrial (light, highway, general), staff have recommended that the 25 kV transmission powerline be installed either overhead or underground (at Metrolinx's discretion) from the western installation limit to the UGC boundary (323 & 329 Tiffin Street to Marcus Street).

- **Metrolinx Concerns**

Metrolinx has raised concerns regarding the City's request to install the 25 kV powerline within the UGC, specifically cost and inconsistency with existing overhead utility installations within the City's municipal right-of-ways. A follow-up meeting with Metrolinx will be scheduled to discuss the City's commitments within the UGC to support development and requirements for buried utility installations in this area.

### **Bridge Modifications – Big Bay Point Road Grade Separated Crossing**

- **Pedestrian Safety Barriers**

Pedestrian safety barriers are required to be installed on the City's Big Bay Point Bridge by Metrolinx as part of the electrification project. The barriers will be attached to the existing parapet walls and are approximately 2 m in height. The purpose of the barriers is to prevent pedestrians from making contact with the overhead conductor. Metrolinx provided material and colour options for the pedestrian safety barrier. Engineering, Planning and Operations staff completed an assessment that considered the bridge's design, location and ease of graffiti removal; the assessment concluded that solid light grey panels and light grey structural supports shall be utilized.

Metrolinx have noted, due to the nature of the DBFOM contract, that City staff cannot conduct any graffiti removal as it may violate terms of the contract. The DBFOM consortium will be responsible for graffiti removal (72 hour response for non-offensive tagging and 24 hour response for offensive tagging). Staff have communicated to Metrolinx that offensive graffiti must be addressed immediately upon notification to the City. Staff will work with Metrolinx to develop a policy and procedure to address offensive graffiti on Metrolinx infrastructure.

- **Electrification Appurtenances**

Attachments will be required on the underside of the bridge deck to support electrification, specifically conductor supports and flash plates (prevent arcing from the conductor to the bridge reinforcement bars).

- **Ownership of the Big Bay Point Bridge and Metrolinx Infrastructure**

The bridge is owned, operated and maintained by the City. All attachments to the Big Bay Point Bridge (pedestrian safety barrier and electrification appurtenances) will be the responsibility of Metrolinx.

- **Maintenance Agreement**

Metrolinx is developing a maintenance agreement for the inclusion of their infrastructure on the City's bridge. Metrolinx will be responsible for the maintenance of their infrastructure. The City is requesting that any additional costs/burden to complete capital improvements and maintenance (i.e. bridge rehabilitation) due to Metrolinx infrastructure will be borne by Metrolinx.



- **Big Bay Point Road – Bridge Rehabilitation**

Given the planned bridge modifications by Metrolinx, increased rail service and electrification works; staff are recommending that rehabilitation of this structure be completed in advance of the electrification work by Metrolinx. As part of the 2019 – 2028 Capital Plan, staff will be requesting funds for rehabilitation, specifically detailed design in 2019 and construction in 2020.

**Next Steps**

The City and Metrolinx will continue discussions pertaining to the 25 kV transmission powerline as well as the development of a maintenance agreement for inclusion of Metrolinx infrastructure on the Big Bay Point Road Bridge.

**APPENDIX "A"**  
**BCRY 25 kV Transmission Powerline Route**

