

Welcome to the GO Expansion OnCorridor Program



On-Corridor Vegetation Removal And Compensation Program

Natural Heritage Features & Species At Risk (SAR)

Natural Heritage Assessment Studies

Project specific Natural Heritage Assessments are currently underway. Results of the studies will be shared once complete.

Key natural environmental components being reviewed include:

- Wildlife;
- Aquatic and Terrestrial Habitat;
- Designated Natural Areas (i.e. Provincially Significant Wetlands, Area of Natural & Scientific Interest etc.); and
- SAR.

Avoidance and Mitigation Measures

We anticipate general commitments will include:

Aquatic Habitat: All requirements of the *Fisheries Act* and the ESA will be met. Any 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.

Birds: Works will comply with the *Migratory Birds Convention Act* (MBCA), including timing windows for the nesting period (March 30th to August 31st in Ontario). If works are to occur during the general nesting period, they will be preceded by a breeding bird and nest survey.

Bats: Additional mitigation measures, such as those required for vegetation removals are anticipated to include installation of artificial roosting structures for SAR bats where suitable maternity roosting habitat (i.e. trees with cavities) is removed.

Butternut: A tree protection zone shall be implemented for trees being preserved. Where butternut tree removals are required, a natural-capital based compensation approach will be implemented as per terms agreed with MECP.

Species at Risk

A total of 17 SAR have been identified as having the potential to occur along the GO Rail Network or immediately adjacent. These species are summarized below:

Provincially and/or Federally Ranked Threatened / Endangered Species that may be encountered along the rail corridor – 9 Species

TREES

- Butternut (*Juglans cinerea*)

BATS

- Little Brown Myotis (*Myotis lucifugus*)
- Northern Myotis (*Myotis septentrionalis*)
- Eastern Small-footed Myotis (*Myotis leibii*)
- Tri-coloured Bat (*Perimyotis subflavus*)

AMPHIBIANS

- Western Chorus Frog (*Pseudacris triseriata*)

BIRDS

- Red-Headed Woodpecker (*Melanerpes erythrocephalus*)
- Eastern Whip-poor-will (*Caprimulgus vociferous*)
- Wood Thrush (*Hylocichla mustelina*)

Provincially and/or Federally Ranked Threatened/ Endangered Species that may be adjacent to the rail corridor – 8 Species

BIRDS

- Bank Swallow (*Riparia riparia*)
- Least Bittern (*Ixobrychus exilis*)
- Eastern Meadowlark (*Sturnella magna*)
- Bobolink (*Dolichonyx oryzivorus*)

REPTILES

- Blanding's Turtle (*Emydoidea blandingii*)

INSECTS

- Rusty Patched Bumblebee (*Bombus affinis*)

FISH

- Red-side Dace (*Clinostomus elongatus*)
- Silver Shiner (*Notropis photogenis*)

All requirements of the *Endangered Species Act*(ESA) and *Species at Risk Act* (SARA) will be met. Species-specific mitigation measures will be implemented on a project-by-project basis and in consultation with applicable regulatory agencies, such as the Ministry of the Environment, Conservation and Parks (MECP) and Environment and Climate Change Canada (ECCC).



On-Corridor Vegetation Removal And Compensation Program

Overview - Tree Removal & Management Strategy

Why Trees Need to be Removed

Vegetation removal is a GO Expansion program safety requirement. It ensures safe delivery and operation of the new infrastructure required to support electrification and service increases. A 7 metre Vegetation Clearance Zone, identified as part of the GO Rail Network Electrification 2017 Transit Project Assessment Process (TPAP), will be established to:

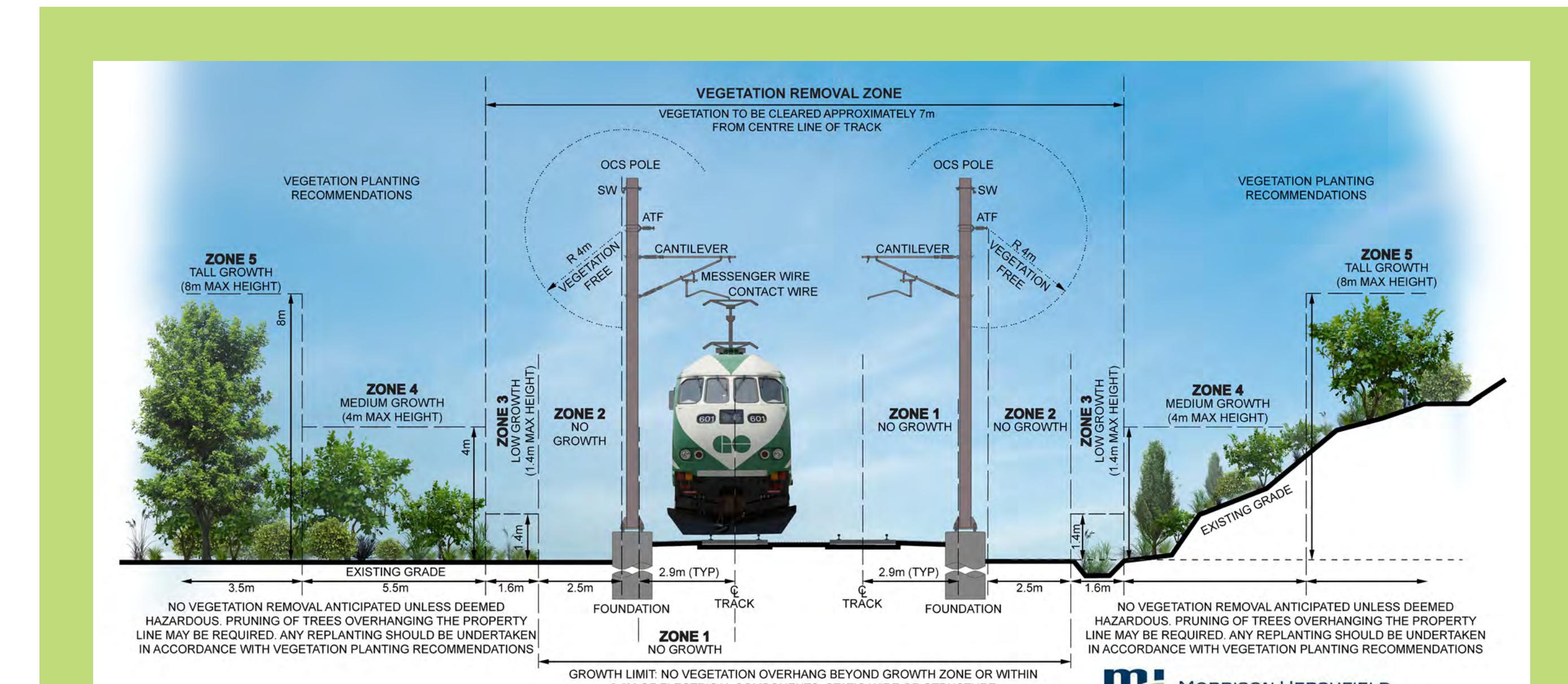
- Protect infrastructure, including that for electrification;
- Increase operational reliability and minimize safety concerns associated with the risk of tree limbs falling onto overhead wires; and
- Accommodate for worker and operational safety through the preservation of sightlines.

Vegetation Management Strategy

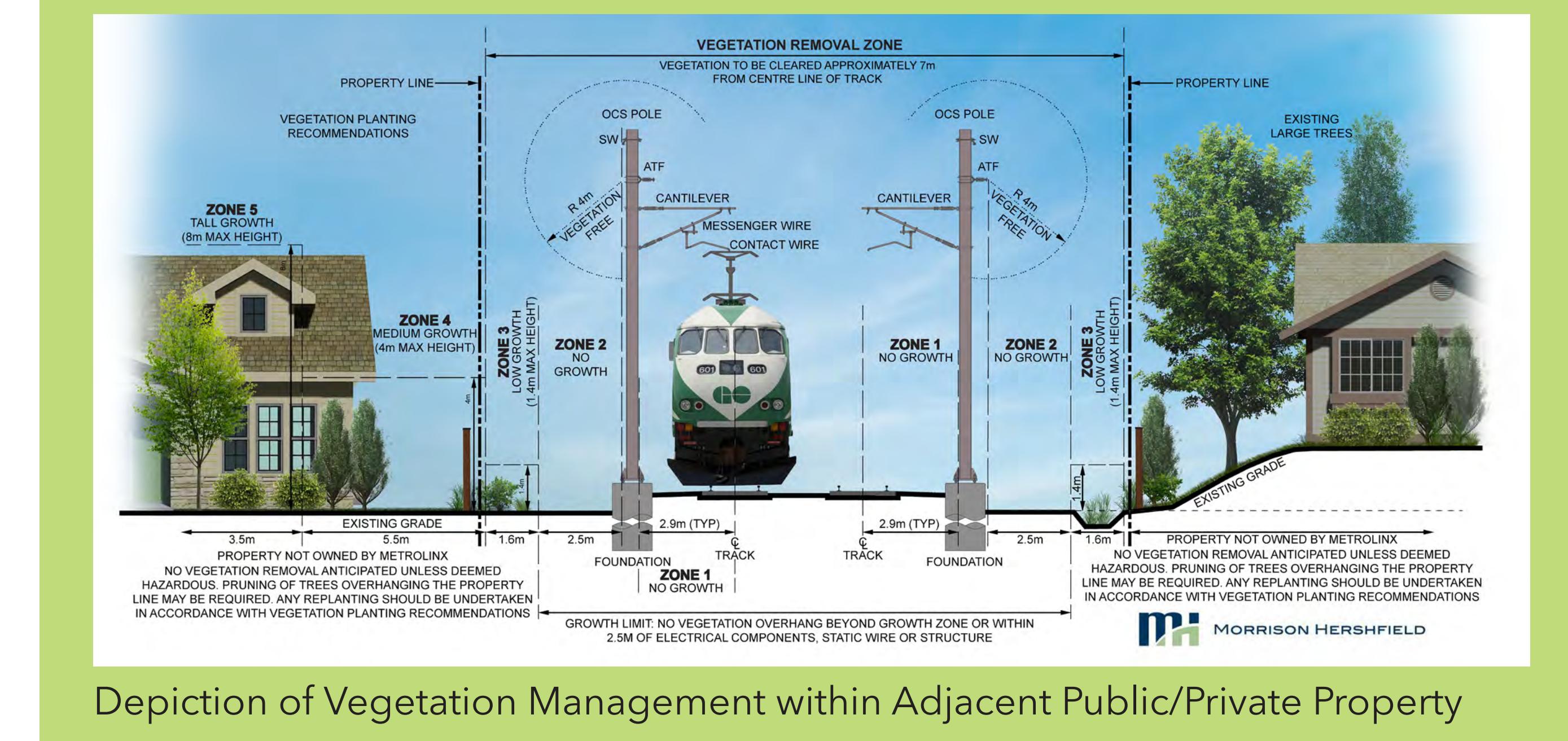
A strategy has been developed in an effort to proactively guide management of vegetation along the electrified corridor and for other infrastructure that falls within close proximity to the rail right-of-way (communication and signal installations, yard and station grounds etc.).

The strategy will contribute to the ecological natural heritage of the area through sustainable vegetation management practices, as well as to control the growth/ overgrowth of invading vegetation, noxious weeds, and invasive species.

Based on the objectives of the Vegetation Management Strategy, five (5) zones have been developed to address Metrolinx infrastructure and service reliability.



Depiction of Vegetation Management within Metrolinx Property



Depiction of Vegetation Management within Adjacent Public/Private Property

On-Corridor Vegetation Removal And Compensation Program

Overview - Tree Removal & Compensation Approach

System Wide Tree Inventory

A system-wide Arborist Survey is being undertaken to determine extent of necessary removals. The data collected will be used to calculate ecological loss, compensation requirements, and allow for identification of high value trees.

Vegetation Compensation

Metrolinx developed a compensation plan for trees with 10 cm Diameter at Breast Height (DBH) or greater to satisfy regulatory requirements. The plan is built on a well respected science-based approach, with the aim of going over and above standard compensation to ensure ecosystem preservation.

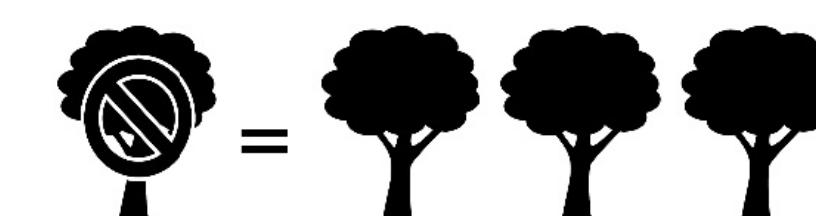
Baseline Compensation:

Trees removed would be compensated on a 1-for-1 basis



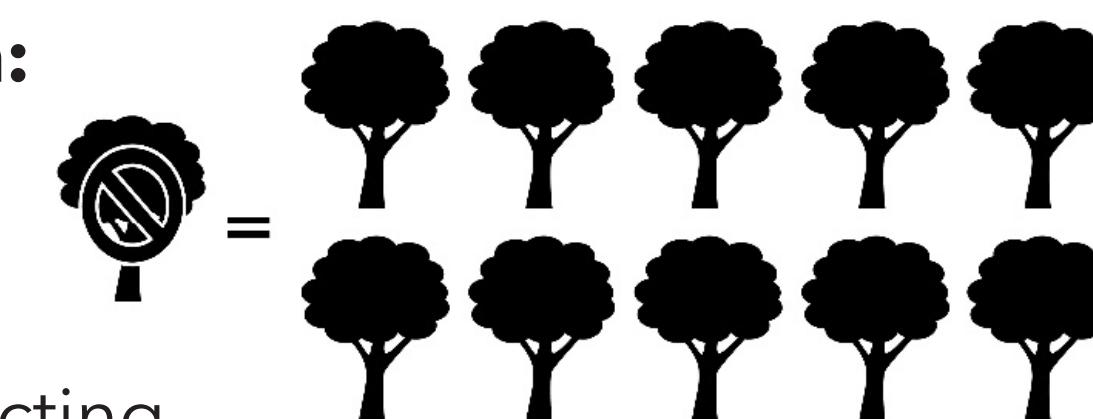
Bylaw Compensation for Public/Private Lands:

Trees will be compensated for based on applicable bylaws and regulations.

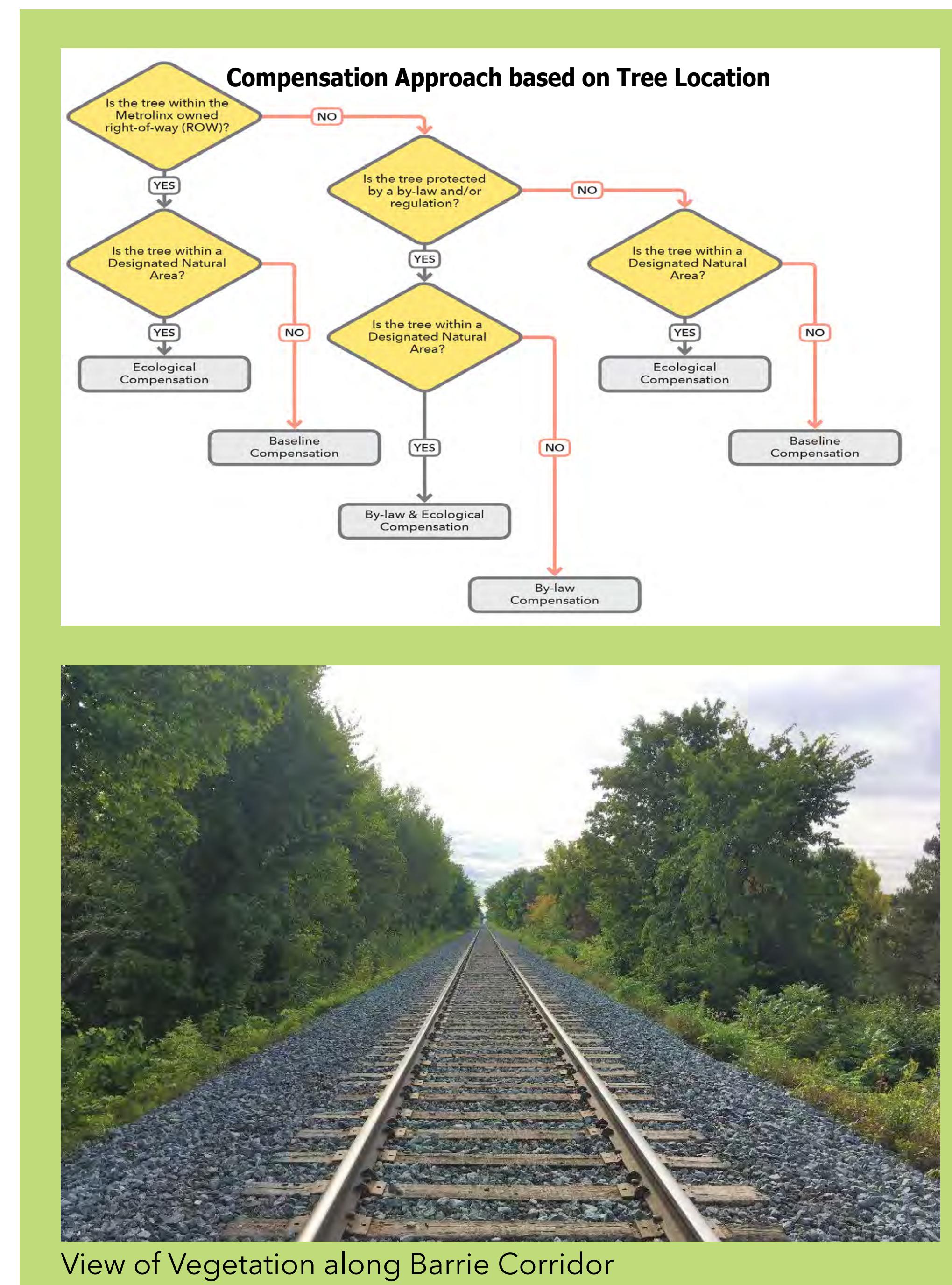


Ecological Compensation:

Trees within a designated natural area will be compensated through ecological restoration reflecting principles of the TRCA *Ecosystem Compensation Protocol* approach. It will replace loss of ecological functioning and will consider existing tree size or basal area.



***Any combination of compensation will not exceed the greatest applicable amount.**



Implementing Compensation with Private Landowners

Metrolinx will work directly with residents to obtain necessary permits (where required) and develop a compensation plan that is agreeable to the respective party and is consistent with Metrolinx's approach to direct compensation.

Implementing Metrolinx Compensation Projects

Compensation will be completed through partnerships with external organizations. Projects will be funded by Metrolinx and include the following key components:

- Ecological compensation, such as creation or enhancement of habitat to offset tree removals;
- Priority compensation to the same community; and
- Funds will be made available on a project by project basis.

Implementing Compensation for Public Lands/Parks

For trees subject to bylaws and regulations, compensation will meet or exceed those requirements. Metrolinx will work directly with each affected municipality.

When Will Vegetation Removals Occur

Removals will commence in 2020 and will be phased over several years:

Phase 1 - Metrolinx Corridors

Phase 2 - Public Lands

Phase 3 - Private Lands

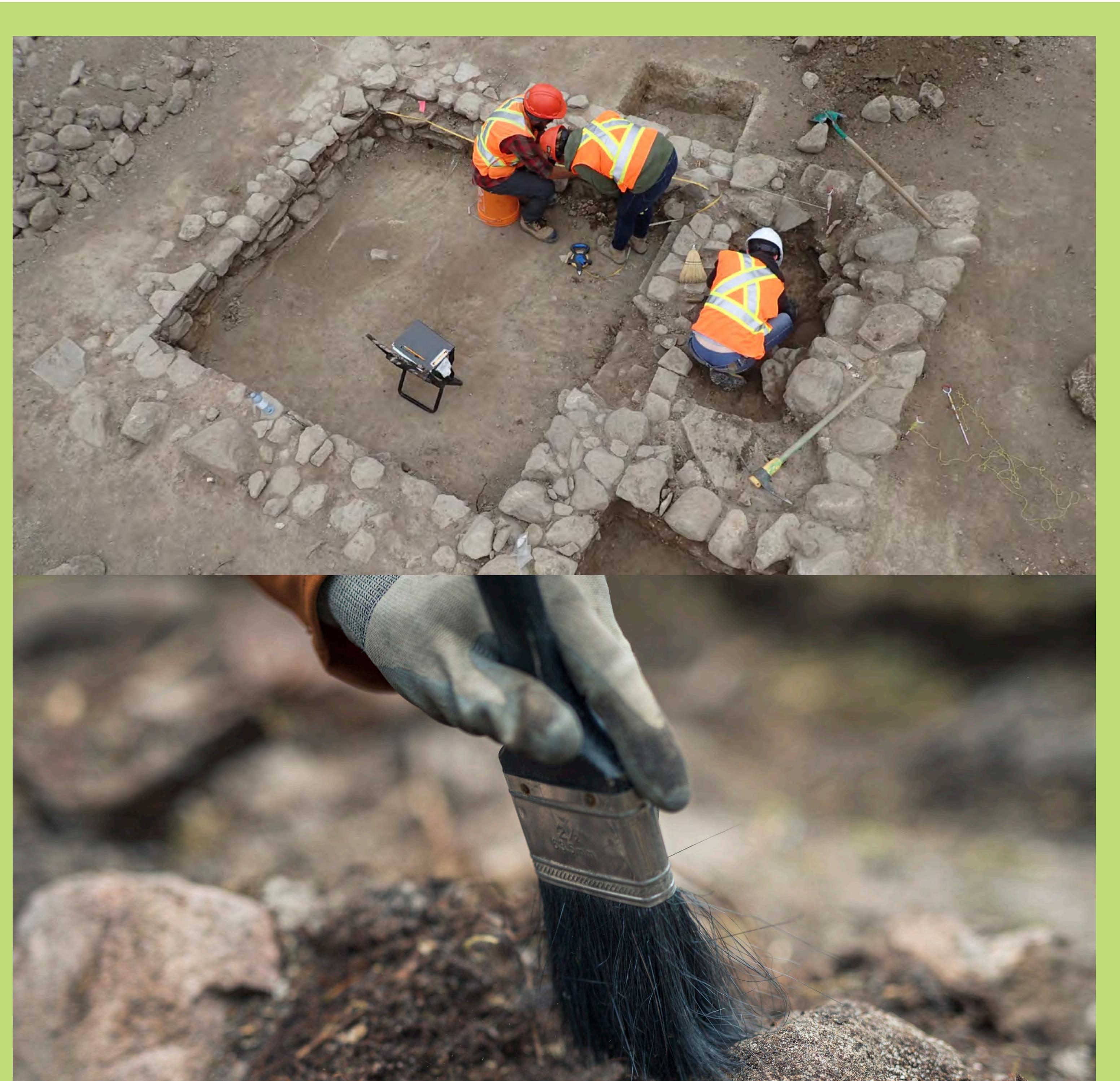
Archaeology

Assessment Process

- Governed by provincial standards and guidelines issued by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), the work is carried out by licensed professional archaeologists.
- All projects begin with a comprehensive Stage 1 Archaeological Assessment of the lands to be impacted to determine and evaluate areas of archaeological potential.
- Based on results of the Stage 1 assessment, further Archaeological Assessments (Stage 2 and Stage 3) and mitigation or salvage (Stage 4) may be required.
- Under MHSTCI guidelines, engagement with Indigenous communities may be required as part of the archaeological process.
- Metrolinx has committed to building relationships, and identifying how to work together and support engagement, with Indigenous communities and Peoples through its Indigenous Relations Office.

Impacts and Proposed Mitigation Measures

- For areas determined to have archaeological potential that will be impacted by project activities, Archaeological Assessments will be conducted.
- In the event that previously unknown archaeological materials or human remains are encountered during construction, all work will cease. The location will be protected from impact by employing a buffer, and further Archaeological Assessment will occur. The local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services will be contacted as appropriate.
- If final limits of the Project footprint are altered and fall outside of the assessed study area, additional Archaeological Assessments will be conducted.
- All Archaeological Assessment findings will be shared with Indigenous communities.





System Wide Cultural Heritage Resources

Metrolinx has undertaken cultural heritage studies for properties which are provincially owned or to be acquired; and will be directly or indirectly impacted by GO Expansion. Metrolinx will follow all mitigation recommendations set out in the cultural heritage studies completed to date for these heritage resources, including:

- Following and implementing recommendations during detail design, including strategies to protect heritage attributes.
- Undertaking additional cultural heritage studies such as Cultural Heritage Evaluation Reports and Heritage Impact Assessments, as required.
- Developing Strategic Conservation Plans, as required.

Structure/ Property	Corridor	Type of Impact	Photo
942 Brant Street, Burlington	Lakeshore West	Indirect impacts due to construction associated with the proposed Beach Layover	
Queen Street East Bridge, Toronto, Mile 1.98	Richmond Hill	Direct impacts due to Electrification of Richmond Hill Corridor	

Structure/ Property	Corridor	Type of Impact	Photo
Gerrard Street East Bridge, Toronto, Mile 2.45	Richmond Hill	Direct impacts due to Electrification of Richmond Hill Corridor	
Dundas Street East Bridge, Toronto, Mile 2.26	Richmond Hill	Direct impacts due to Electrification of Richmond Hill Corridor	
Prince Edward Viaduct (Bridge), Bloor Street East, Toronto	Richmond Hill	Indirect impacts due to construction activities associated with the Don Valley Layover	
CP Belleville Subdivision Bridge, Toronto	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future	



System Wide Cultural Heritage Resources

Structure/ Property	Corridor	Type of Impact	Photo	Structure/ Property	Corridor	Type of Impact	Photo
Don River Bridge, Mile 4.7	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future		Don River Bridge, Mile 7.4	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future	
Don River Bridge, Mile 4.92	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future		Leslie Street Bridge, Mile 11.86	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future	
West Don River Bridge, Mile 6.4	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future		Don River Bridge, Mile 12.9	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future	



System Wide Cultural Heritage Resources

Structure/ Property	Corridor	Type of Impact	Photo	Structure/ Property	Corridor	Type of Impact	Photo
East Don River Bridge, Toronto, Mile 14.8	Richmond Hill	No direct or indirect impacts anticipated at this time. Potential for direct and indirect impacts in the future		Ellis Avenue Bridge, Toronto, Mile 4.54	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	
Parkside Drive Bridge, Toronto, Mile 3.89	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure		Windermere Avenue Bridge, Toronto, Mile 4.70	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	
Colborne Lodge Drive Bridge, Toronto, Mile 4.17	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure		Gardiner On-Ramp at Riverside Drive, Toronto, Mile 4.90	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	



System Wide Cultural Heritage Resources

Structure/ Property	Corridor	Type of Impact	Photo
Queen Street Bridge (formerly), Toronto, Mile 5.15	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	
Mimico Creek Bridge, Toronto, Mile 5.95	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	
Cooksville Creek Bridge, Mississauga, Mile 11.80	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	

Structure/ Property	Corridor	Type of Impact	Photo
Mississauga Road Bridge, Mississauga, Mile 13.39	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	
Fourteen Mile Creek Bridge, Oakville, Mile 24.18	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	
Upper Hagar Creek Culvert, Burlington, Mile 31.90	Lakeshore West	Indirect impacts due to Construction- Installation of new/ modified track infrastructure	



System Wide Air Quality Studies

Key Points

- Metrolinx is committed to implementing electric rail service.
- Service on rail corridors not currently owned by Metrolinx will continue using diesel locomotives.

What Metrolinx is doing:

- Electrify system to the maximum extent possible.
 - » Electric trains have no local air pollutant emissions.
- When major lifecycle refurbishment is required, the locomotives will be rebuilt to a Tier 4 standards.
- If new diesel locomotives need to be procured, then they will be Tier 4 compliant.
 - » Legacy locomotives will be kept in service.
 - » Vehicles acquired for short term operational needs (e.g., leases) will be based on Market availability.

Air Quality Modelling

- As part of the 2019/20 GO Rail Electrification TPAP Addendum, Metrolinx is assessing the local air quality impacts of the project on major segments of the Lakeshore West, Kitchener and Richmond Hill Corridors, where diesel train service will continue to play a major role.
- This assessment involves detailed computer modelling of potential local air quality impacts under predictable worst-case conditions.
- The TPAP addendum includes also the regional air quality and greenhouse gas emission impacts of the entire project.
- All of this work is currently underway. The results will be available at future public meetings.



Model studies are underway and will be made available at next Public meeting.



System Wide Noise Studies

Key Points

- A lot has changed since 2017 GO Rail Electrification TPAP.
- New noise models are being undertaken.
- Exploring new ways to mitigate noise impact.

What has been done:

- The 2017 GO Rail Electrification TPAP evaluated where noise mitigation would be needed for a 15-minute electrified service.

What has changed:

- Since 2017, there has been a lot of planning work done to determine the service levels and infrastructure needed to meet future passenger demand.

Mitigation:

- 18 km of noise walls have been, or being, installed since the 2017 GO Rail Electrification TPAP.
- Metrolinx is looking to new technologies and innovative ways to further reduce noise impacts.

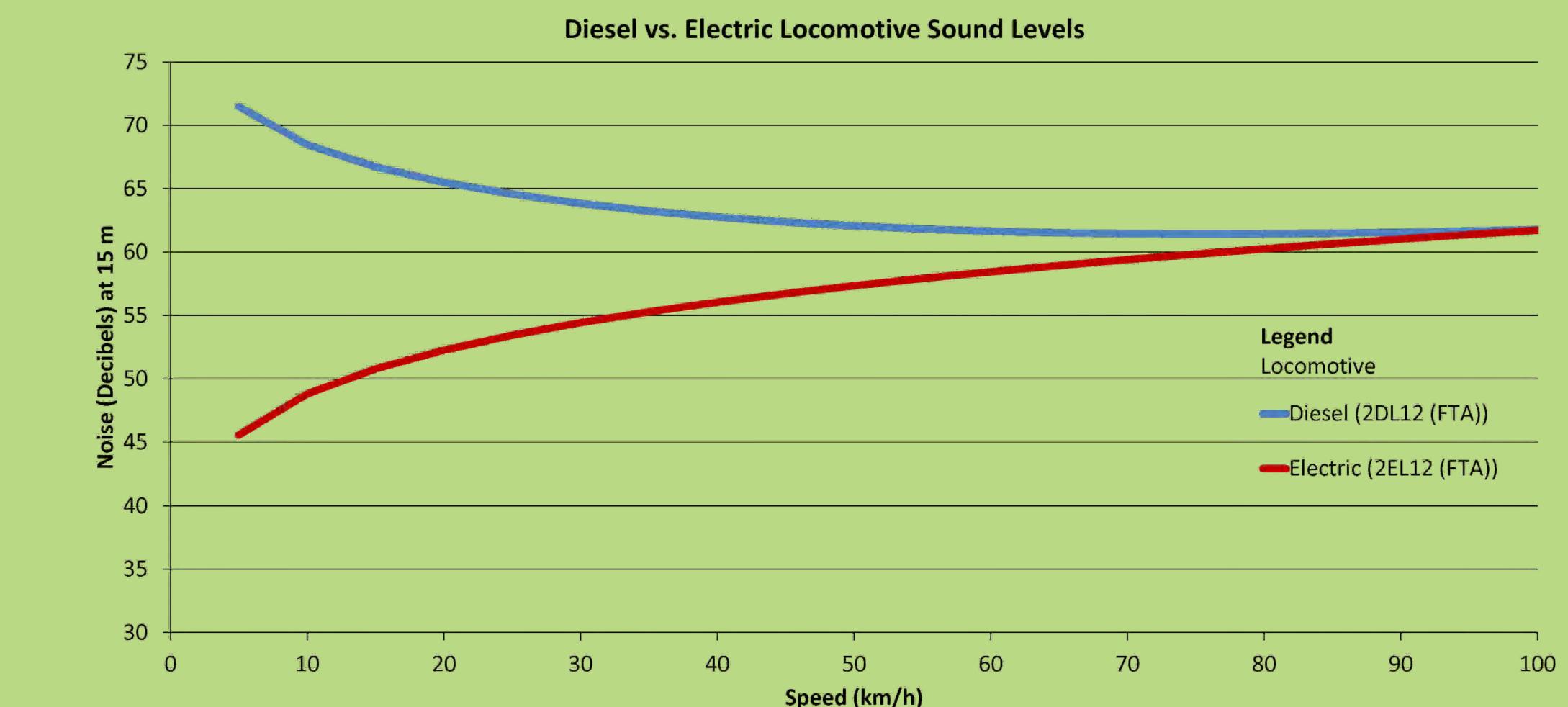
Modeling study:

- Given the significant changes to service levels and infrastructure Metrolinx is redoing the noise modeling.
- New modeling will explore innovative mitigation options.

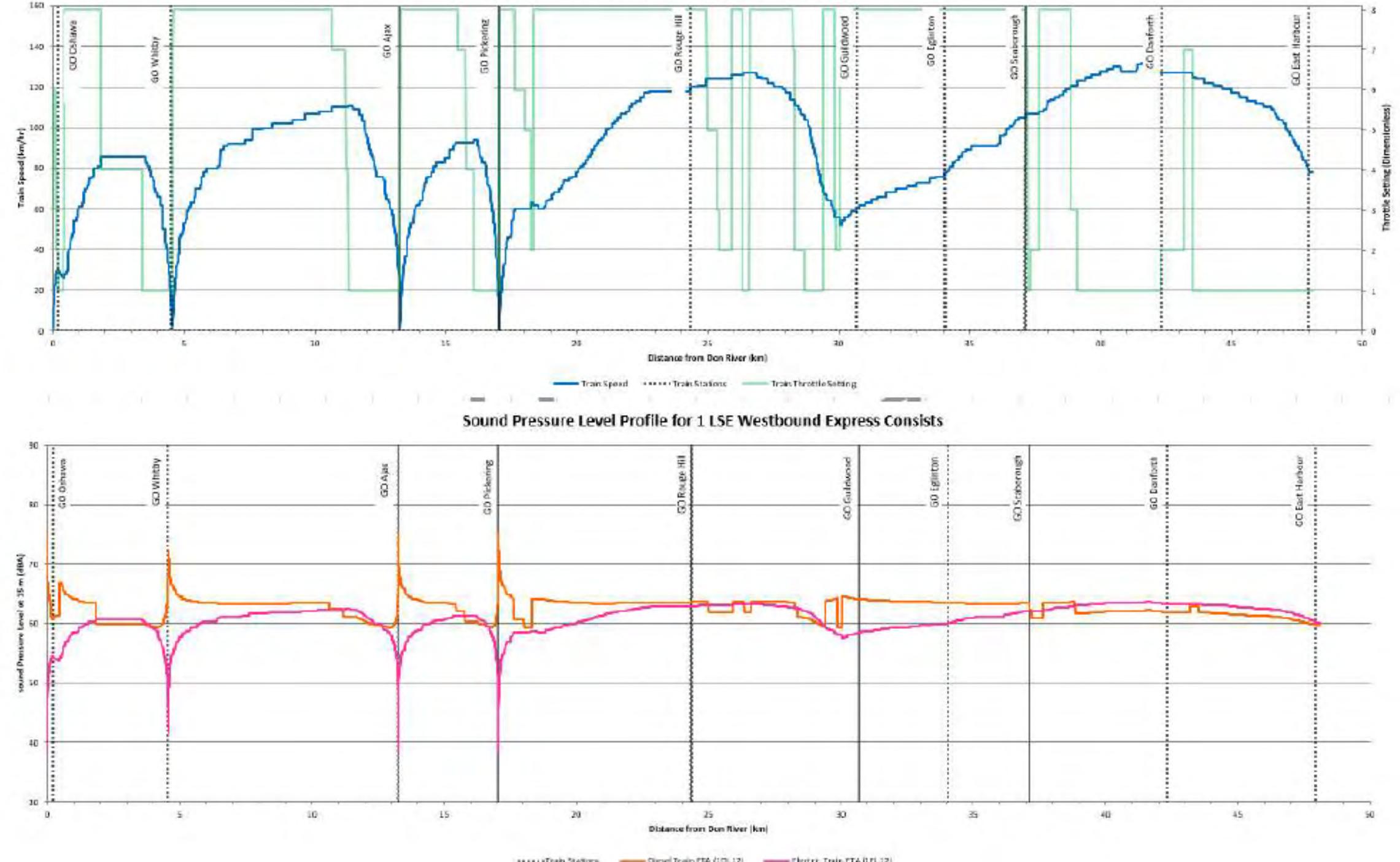
Metrolinx continues to explore ways to minimize noise impacts:

- Electrify system to the maximum extent possible:
 - » Electric trains are quieter at speeds less than 100 km/hr.
- Build noise barriers where necessary:
 - » Reduce noise by 5 - 15 dB
 - » Local benefit, where technically and economically feasible.
- Metrolinx is implementing silencers on all existing diesel locomotives over a 5-year period.
 - » This could reduce noise by 6 dB at the highest throttle setting.

Electric trains are quieter than diesel trains.



Speed and Throttle Setting Profile for LSE Westbound Express



Example of how a single electric train pass-by is quieter than a diesel train pass-by

Socio-Economic and Land Use



Assessment Process

- The socio-economic and land use study is conducted to understand current and future conditions in a study area and assess potential effects the project may have on those features.
- A desktop review of the study area is conducted using municipal documents and open data sources to identify significant socio-economic features, including commercial areas, institutional uses, employment lands, recreational uses, parks and open spaces.
- Where possible, design will avoid impacts to socio-economic and land use features. Where effects cannot be avoided, mitigation measures may include such recommendations as: maintain access for businesses and residents, aesthetics related to screenings and vegetation, and measures to reduce nuisance impacts.

Impacts and Proposed Mitigation Measures

- During construction, temporary access, aesthetic, and nuisance effects may occur.
- Projects may also impact property owners.
- Consultation and coordination is required with municipalities, property owners and residents to understand how a project may impact the community.
- Long-term benefits of projects include more efficient transit services, improved traffic connectivity and traffic flow, and enhanced pedestrian and cyclist access.
- Visual and aesthetic effects from projects are mitigated to the extent possible.