TOWN OF CALEDON

August 27, 2021

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RE: Towards a Greater Golden Horseshoe Transportation Plan,
Discussion Paper, June 2021,
Town of Caledon Comments

Thank you for the opportunity to review and provide feedback on the Ontario Ministry of Transportation (MTO) vision for the regional transportation system to support the planned growth in the Greater Golden Horseshoe to 2051. This letter outlines Town of Caledon staff comments on the Discussion Paper titled *"Towards a Greater Golden Horseshoe Transportation Plan"* (the Plan), dated June 2021. Considering timing of release and comments deadline, the Plan, along with Town staff comments, will be presented to Town of Caledon Council on September 21, 2021, at which time further comments may be provided.

For context, the Town of Caledon is centrally located in the GGH area and is planning for significant and unprecedented growth in the coming years. Based on the Provincial and Regional Growth objectives, Caledon is expected to grow to a population of over 300,000 with an employment base of 125,000 jobs by 2051. The Town of Caledon objectives for this growth is that it be served by a multi-modal transportation system that support environmental stewardship, mitigate climate change, promote sustainability and livable communities.

The Town is generally supportive of the overall vision set out in the GGHTP Discussion Paper to create an interconnected and comprehensive transportation network with a diversity of travel modes targeted to reduce congestion. However, the Plan as presented appears to be auto-centric, with limited transit improvements planned to 2051, especially within Caledon. In fact, Map 1 of the GGHTP Discussion Paper identifies no planned or conceptual future transit infrastructure and service in Caledon. It is imperative that the new denser urban communities mandated by the Province are planned, designed, and serviced with a multi-modal transportation system providing a full range of mobility options for residents to get around. We can no longer continue to build the car-centric communities of the past.

Town of Caledon comments on action plans related to improving transit and GO Transit Rail Service Expansion

The Discussion Paper states that *"the first pillar of the proposed 2051 vision is the transformation of the regional transit system from today's radial commuter network with most connections centered on Union Station, to an expansive grid, so you can get where you need to go without going through the core. With new routes, more frequent services and more connections, you will be able to quickly and easily travel across the Region."* The Plan goes on to prioritize *"increasing the frequency of local transit service to every 10 minutes, across all urban areas."*

The priority of improved transit service is a supportable goal and we understand the desire to expand transit from the Toronto-centric radial system. We note, however, that there are still some high growth areas and provincially designated employment areas (including the Bolton southwest expansion area) that are not connected to the high order transit system.

There is a higher priority need for supporting new transit services for urban expansion areas where the public does not have a viable alternative for non-auto mobility. The Caledon Settlement Area Boundary Expansion (SABE) area is where support is needed for a new high-order transit connection. GO Rail service to Bolton has been identified in Metrolinx's transit plans since the 2008 Big Move and more recently in the Metrolinx 2041 RTP, which identifies it as a project beyond 2041. However, more recently, the Minister of Municipal Affairs and Housing recently issued a Minister's Zoning Order for the Caledon GO station. Also, the Region has designated this area as a primary Major Transit Station Area (MTSA). Region of Peel and Town of Caledon staff have been continually advocating to the Province to bring the Caledon-Vaughan GO line to an in-service date as close to 2031 as possible and move forward with implementing this improvement to connect Caledon, West Vaughan and East Brampton to extended Regional transit system. The planned Caledon GO Rail station and GO Rail service would provide that connection and should be explicitly included in the Plan to address future growth in Caledon, Vaughan and Brampton.

The Town has retained consulting services from CPCS to update the Caledon-Vaughan GO Rail services Business Case, and the findings of the study support the provision of the service in the 2030s. There is an underlying strategic value in pursuing this system from a transit accessibility and mobility lens. Connecting the Bolton, Kleinburg, Woodbridge communities and the intervening Provincially Significant Employment Area by direct transit lines to major attraction areas is in line with Metrolinx's Regional Transportation Plan and a value that may not be easily quantified. Moreover, the line is expected to connect to numerous major local and regional transit operations, enhancing the overall transit network. In addition, population and employment within a six-kilometre catchment area of the proposed stations are expected to grow from 574,000 to nearly 1,100,000 by 2051. A copy of the Caledon-Vaughan Commuter Rail Initial Business Case Update, prepared by CPCS and dated August 26, 2021 is attached to this letter for MTO's review and consideration.

Also, there are few references to MTSAs or Transit-Oriented Developments. Aligning transportation planning and land use planning is key to achieving a more efficient and sustainable transportation system. The Discussion Paper does not mention MTSAs specifically, and there is only one reference to transit-oriented community opportunities (p.18-19).

Staff recommends the Ministry utilize and optimize existing transportation infrastructure in addition to new infrastructure such as the Caledon-Vaughan GO Rail line using the existing railway tracks. This opportunity will also allow the Ministry to efficiently support the development of transit-oriented communities. **Map 1** of the paper illustrates the "areas with Frequent Local Transit Service". However, if this is a plan for 2051 addressing the needs as articulated by the Minister of Transportation in this document, it would be more relevant to incorporate growth areas, including the additional 6,000 Ha of urban expansion in Caledon (above and beyond the planned Mayfield West and Bolton Expansion Area) and 220,000 additional people in south Caledon. Furthermore, there is an obvious gap in the Rail and Regional transit service network between the Barrie Rail Line and Kitchener Rail line where substantial growth is planned. The Caledon-Vaughan GO Rail service is needed in the near term.

Staff suggest a new action item be included: "Add transit in rapidly growing designated greenfield areas and new settlement expansions as they are built to create transit-supportive communities with a sustainable transportation modal split." Taking this action will allow residents to use transit and prevent them from having to settle into auto-oriented habits and transition later. The designated greenfield areas in Caledon are being built at higher densities than in previous planning horizons and can better support transit and reduce greenhouse gas emissions. Some settlement areas in Peel with high population and employment growth forecasts include Mayfield West and Bolton. Staff also suggest in new growth areas, MTO consider investing in transit infrastructure prior to the community being built-out, so residents and businesses moving into these communities can fairly assess transportation options prior to investing in personal vehicles and/or corporate fleet and to this end the Plan should also acknowledge north-south transit links into the growth areas of Caledon, including Highway 10, Dixie Road and Airport Road.

Town of Caledon comments on GTA West corridor and alternative modes

The Plan speaks of *"delivering major highway projects at various stages of planning and design including the GTA West corridor."* Staff acknowledge the inclusion of the GTA West Corridor in the Plan and recognize the need for a transportation corridor of this capacity and connectivity to support the planned growth in Caledon by 2051. The Plan should explicitly speak to and elaborate on the inclusion of the transitway along the corridor and the timing of both the corridor and transitway. In addition to the noted highway widenings, the Plan appears auto-centric and Caledon staff suggest this Plan explore investment into multi-modal options and transportation demand measures to relieve congestion. Given the public and business response to the Covid-19 pandemic, the Province has a unique opportunity to work with regional and local municipalities to leverage opportunities and provide funding to support and enhance active transportation and carpooling facilities, transit incentive programs, and telecommuting to relieve congestion in the GGH region.

Town of Caledon comments on Goods Movement

Map 3 of the Plan identifies the current, planned, and future conceptual Strategic Goods Movement Network. Staff understand and support the significance of goods movement in the GGH Region and its role in economic development. However, to encourage separation of goods movement traffic to regular business traffic, staff recommend encouraging Off-Peak Delivery across Ontario and would like to see this as a permanent program in the Province. Staff also note a few road segments identified in **Map 3** that should be removed given the natural environmental constraints and the impacts to existing established communities and offer the following corrections:

- Highway 50 shouldn't be used for trucks to travel through the downtown core of the Village of Bolton. The Town has established a bypass for truck traffic. Map 3 should be updated to replace Highway 50 through Bolton with the Bolton Bypass (Coleraine-Emil Kolb Pkwy).
- Horseshoe Hill Road between Olde Baseline Road and Highway 9, and Mountainview Road between Olde Baseline Road and Charleston Sideroad appear to be identified as goods movement corridors, but these Town Roads are restricted to trucks given the rural context, natural environment, and the road structure and geometry.
- Similarly, the following goods movement corridors that are included in the Region of Peel Strategic Goods Movement Network should be included in Map 3:
    - Emil Kolb Parkway between King Street and Highway 50 (Bolton Bypass);
    - Albion-Vaughan Town Line; and
    - Charleston Sideroad between Airport Road and Highway 10.

Future Ready Considerations

Staff strongly encourages including mitigation measures for transportation-related air pollution and acknowledging the public health impacts from transportation in the Plan. Currently, the Plan is auto-centric and needs to more fulsomely address mitigation of environmental and health impacts through enhancing sustainable modes of travel. Climate change is at the forefront of almost all long-term planning decisions for municipalities within the GGH, and this Plan should reflect that mindset. Staff are taking steps to reduce the share of GHG emissions in Caledon from the transportation sector through a combination of land use planning and advocating for sustainable modes of transportation. The GGH Transportation Plan could assist Caledon, and other municipalities, in this work by implementing guiding policies and funding programs to maintain and enhance sustainable modes of travel. The Town of Caledon looks forward to continuing working with MTO in the development of the Greater Golden Horseshoe Transportation Plan.

Staff note that there is an opportunity for the Plan to have an explicit goal related to encouraging Ontarians to be active and providing related infrastructure consistent with Provincial policy. Included in that objective could be major active transportation corridors. There is an opportunity, and there are current efforts underway to convert unused railway corridors in Caledon into a multi-use trail to promote active transportation and alternative modes of travel. An example of this is the existing Caledon Trailway that extends across Caledon and connects with our neighbouring municipalities. Given the public and business response to the Covid-19 pandemic, the Province has a unique opportunity to work with businesses and residents to leverage opportunities for telecommuting as a solution to the transportation needs of the GGH region. It would be a good opportunity to investigate the efficiencies associated with work-at-home / telecommuting solutions and related incentives as an option to address Regional transportation needs. Staff also note that the Plan does not speak to innovative technologies for managing and mitigating traffic operations.

It is also to be noted that the Town is preparing a Town-wide Multi-Modal Transportation Master Plan in connection with the Town's growth management strategy and Official Plan review with the goal of completion of the study in Q1, 2022. The Towns MMTP will address the necessary infrastructure improvements in response to the integration of GTA west corridor and establish the transportation needs for the planned growth in the Town to 2051.

We look forward to continuing to work with MTO and our municipal partners on the Greater Golden Horseshoe Transportation Plan. As noted earlier, Town staff comments on the GGHTP-Discussion Paper will be presented to Town of Caledon Council on September 21, 2021, at which time, further comments may be provided.

Should you have any questions, please feel free to contact the undersigned at 905-584-2272 ext.4073 or Arash.Olia@caledon.ca.

Sincerely,

Arash Olia
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TOWN OF CALEDON

cc: Dan Labrecque, Acting Chief Administrative Officer
Andrew Pearce, Director, Engineering Services
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Enclosure: Caledon-Vaughan Commuter Rail-Initial Business Case (IBC) Update – August 27, 2021
Prepared for: Town of Caledon
Prepared by: CPCS

FINAL REPORT

Caledon-Vaughan Commuter Rail Initial Business Case (IBC) Update

(Client Ref PO: 98823)

Prepared for:

Town of Caledon

Prepared by:

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August 27, 2021

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Caledon-Vaughan Commuter Rail Initial Business Case (IBC) Update

The Town of Caledon contracted CPCS to update an Initial Business Case (IBC) that investigated a limited commuter rail shuttle service operating between Bolton and Weston, ON. The IBC was previously completed by WSP Canada.

Updated report

This updated report utilizes material and findings from the previous WSP IBC "as-is" with specific update elements to project initial capital costs, an addition of a 2051 ridership and benefits horizon year, and updates to a portion of previously used economic assessment parameters and assumptions. It was not the mandate of CPCS to validate the previous WSP IBC and therefore CPCS cannot take responsibility for any errors or omissions from the previous WSP IBC. A detailed table summarizing specific CPCS updates to the previous work can be found in Section 2.

Acknowledgements

The CPCS Team acknowledges and is thankful for the input from the Town of Caledon, City of Vaughan, and City of Brampton particularly as they relate to providing 2051 population and employment regional forecasts.

Confidentiality statement

This Updated Report contains material which is deemed commercially sensitive and/or confidential. This document may not be shared with third parties without prior written approval by the Town of Caledon.

Contact

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Cover image source: Sections of a 40-foot mural at CPCS headquarters in Ottawa painted by Toronto artist Mike Parsons.

Disclaimer

The Caledon-Vaughan Commuter Rail Initial Business Case Update (Project) scope of work includes updates to findings of a previous IBC developed by WSP Canada entitled “Bolton GO Commuter Rail Line IBC, June 2020”.

The specific purpose of this work is to use previous WSP IBC analysis and findings “as-is” and update specific parameters to address Metrolinx comments received by the Town in July 2021 as well as to update ridership estimates based on unofficial 2051 population and employment forecasts as developed by the Ministry of Municipal Affairs and Housing, Town of Caledon, City of Brampton, and City of Vaughan. A detailed list of changes to the previous WSP IBC are summarized in Section 2.

Therefore, CPCS cannot independently verify the process, analysis, opinions, findings, or reporting undertaken to develop the WSP IBC, nor is CPCS accountable for previous findings, errors or omissions. We understand that the Town of Caledon has all rights to this work, such as to allow CPCS undertake this effort.

Moreover, CPCS makes efforts to validate data obtained from third parties, but CPCS cannot warrant the accuracy of these data. Unofficial 2051 regional population and employment forecasts provided by the Town of Caledon, City of Brampton, and City of Vaughan for the proposed Caledon-Vaughan GO line stations are based on a preliminary forecast presented in March 2021 for the purpose of consultation as part of the York Region Land Needs Assessment and MCR. The preliminary forecast numbers have not been adopted by York Region Council or other regional councils and are subject to change through finalization of the ongoing MCR and adoption of the draft Regional Official Plan by York Region Council and other regional official plans. Due to this timeline request, the aggregate numbers have not been verified by York Region staff.

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Acronyms / Abbreviations

BAU	Business-as-Usual
BCR	Benefit-Cost Ratio
CP	Canadian Pacific Railway
CTC	Centralized Traffic Control
GGHM	Greater Golden Horseshoe Model
GGH	Greater Golden Horseshoe
GHG	Greenhouse Gases
GTHA	Greater Toronto and Hamilton Area
HOT	High-Occupancy Toll
IBC	Initial Business Case
MTO	Ontario Ministry of Transport
NPV	Net Present Value
O&M	Operation & Maintenance
PSEZ	Provincially Significant Employment Zones
R/C	Cost Recovery Ratio
RER	Regional Express Rail
ROW	Right-of-Way
TTC	Toronto Transit Commission
UP	Union-Pearson
VKT	Vehicle Kilometers Travelled
YRT	York Region Transit

Executive Summary

In June of 2020, WSP Canada produced an Initial Business Case (IBC) entitled "Bolton GO Commuter Rail Line IBC" that investigated a limited shuttle service commuter rail option operating between the existing GO Weston station and a proposed station in Bolton, Ontario with intermediate proposed stations at Emery, Woodbridge, Elder Mills, and Kleinburg. The initial IBC was loosely based on a previous Metrolinx investigation of a commuter rail extension completed in 2010 and entitled "Bolton Commuter Rail Service – Feasibility Study". Since then, the Town of Caledon (the Town) received high-level comments from Metrolinx on the WSP Canada IBC. Subsequently, the Town contracted CPCS to update the previous IBC to address Metrolinx comments and include 2051 unofficial population and employment forecasts not previously considered in the IBC. A list of specific updates to the previous WSP Canada IBC are detailed in Section 1.

The following sub-sections of Executive Summary provide a summary of IBC outcomes and include a comparative summary of findings and economic and financial metrics between the original IBC (produced in June of 2020) and this subsequent IBC update. The final sub-section compares updated Caledon-Vaughan metrics to other GO rail lines and general GO rail operations.

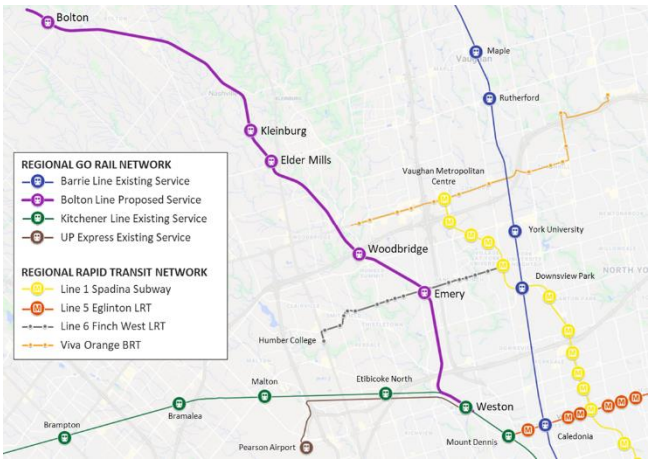
Investment Introduction

Previous WSP Canada IBC analyses indicate that the Caledon-Vaughan region is one of the largest GTHA areas without GO Train service, with the communities of Bolton, Kleinburg, and Woodbridge facing issues of disconnectedness from the regional transit network, creating accessibility and mobility constraints.

A vision for a commuter rail service between Toronto and Bolton had previously been investigated by Metrolinx in 2010 to determine its feasibility. However, given the magnitude of change in implemented and anticipated development patterns, growth projections, and infrastructure investments, the previous 2010 analysis has become outdated and a reinvestigation of a service that provides a limited, initial, low-cost option in light of local needs is required.

As such, the previous WSP Canada IBC investigated a limited commuter rail shuttle service (the Caledon-Vaughan GO Line) operating between the current Weston GO station and a proposed station in Bolton. The service would consist of two train sets each consisting of two bi-level GO coaches pulled/pushed by one locomotive and would operate an anticipated two one-directional peak period trips (AM or PM period). Minimal upgrades to existing track infrastructure were estimated to be required to achieve this option scenario. The connection at Weston Station allows for cross-platform transfers between the Kitchener GO line running between Union and Bramalea and the Caledon-Vaughan GO Line, as well as connections to the UP Express on an adjacent platform. These lines offer connections to three TTC subway lines as well as various local bus services. The proposed service is adopted "as-is" for this IBC update effort.

Figure E-1: Proposed Caledon-Vaughan GO Service



Source: WSP Bolton GO Commuter Rail Line IBC, 2020

Regional Growth

Recent 2051 population and employment forecasts indicate that intensification along the existing CP rail corridor in the Caledon-Vaughan region is expected. To understand the impact of said growth on proposed Caledon-Vaughan station ridership, CPCS conducted an initial analysis based on previous WSP Canada 2041 population and employment forecasts as well as data received from the Town of Caledon, City of Vaughan, and City of Brampton within a 6km catchment of proposed stations. The below tables (Table E-1 and Table E-2) summarize these findings.

Table E-1: Forecasted 2051 regional population within a 6km station catchment

Area	Population growth within 6km corridor catchment			
	2016 Pop.	2041 Pop.	2051 Pop.	2016 to 2051 Growth
Caledon	29,987	73,798	106,504	255%
Vaughan	90,876	140,510	226,773	150%
Brampton	44,640	76,978	78,025	75%
Toronto	248,485	303,700	313,879	26%
Total	**413,988**	**594,986**	**725,181**	**75%**

Source: CPCS analysis of regional 2051 forecasts from the Town of Caledon, City of Vaughan, and City of Brampton

Table E-2: Forecasted 2051 regional employment within a 6km station catchment

Area	Employment growth within 6km corridor catchment			
	2016 Pop.	2041 Pop.	2051 Pop.	2016 to 2051 Growth
Caledon	15,321	34,842	51,126	234%
Vaughan	57,854	114,663	191,420	231%
Brampton	3,452	16,175	18,536	437%
Toronto	83,197	93,899	98,547	18%
Total	**159,824**	**259,579**	**359,628**	**125%**

Source: CPCS analysis of regional 2051 forecasts from the Town of Caledon, City of Vaughan, and City of Brampton

When comparing previous population and employment forecasts (2016 and 2041) to unofficial 2051 forecasts, it is evident that significant intensification around proposed station sites is expected to occur, with the largest growth expected to occur within the Caledon, Vaughan, and Brampton regions. Between 2016 and 2051, Caledon is expected to see a 255% increase in population within a 6km catchment of stations, while Vaughan is expected to see a 150% increase. Similarly for employment, Brampton expects a 437% increase from 2016 to 2051, Caledon a 234% increase, and Vaughan a 231% increase.

Updated Economic Case

CPCS updated WSP's previous economic assessment to reflect changes to economic assumptions and parameters, capital costs, and estimated ridership beyond 2041. Following the updates, and from an economic standpoint, the Caledon-Vaughan GO Line has a Benefit-Cost Ratio (BCR) of 1.1, indicating that for every dollar spent implementing and operating the line, society gains 1.1 dollars in benefits. Additionally, the line was found to have a positive Net Present Value (NPV), indicating a net benefit for the region. These economic metrics indicate that the region, and the future passengers and residents within it, can reap benefits that outweighs the fiscal costs of

constructing and operating the line. Table E-3 below presents a summary of updated economic costs and benefits.

Table E-3: Economic Case summary (000s) Present Value 2021$ discounted at 3.5% p.a.

Impact type	Value (Real 2021$ 000s)
Total Costs (Present Year $ Discounted at 3.5% p.a.)	**95,745**
Total Impacts (Present Year $ Discounted at 3.5% p.a.)	**108,658**
BCR	**1.1**
NPV (Present Year $)	**12,913**
Payback Period (Years)	**27.7**

Updated Financial Case

CPCS also updated WSP's previous financial assessment to reflect changes to capital costs and estimated ridership beyond 2041. Following the updates, the Caledon-Vaughan GO Line financial case did not considerably change. Original WSP Canada financial NPV was estimated at - $34 M and operating cost recovery ratio at 106% compared the updated financial NPV of - $33M and operating cost ratio of 117%. Table E-4 below presents a summary of updated financial costs and revenues.

Table E-4: Financial Case summary (000s) Present Value 2021$ discounted at 3.5% p.a.

Impact type	Value (Real 2021$ 000s)
Total Caledon-Vaughan GO Train Revenue	**28,756**
Total Costs (inclusive of capital, O&M, and debt service costs)	**61,689**
Net Present Value	**-$32,933**
Operating Cost Recovery Ratio (Incremental)	**117.3%**

Comparative Analysis to Original IBC

Table E-5 below summarizes the findings of the Updated IBC and compares them to the original WSP Canada IBC outputs.

Table E-5: Comparitive analysis of Initial Business Case update

Measure/Metric	Original WSP IBC	Updated IBC
Initial Capital Costs (undiscounted 2021$)	$41 millIon	$68 millIon
Economic Benefit-Cost Ratio (BCR)	1.62	1.13
Economic Net Present Value (NPV)[1]	$41 million	$13 million
Operating Cost Recovery Ratio	106%	117%

[1] Discounted at 3.5% per annum

Financial Net Present Value (NPV)[2]	- $34 million	- $33 million
2051 Population within a 6km catchment of proposed line stations	Not Previously Assessed	660,766
2051 Employment within a 6km catchment of proposed line stations	Not Previously Assessed	304,159
2041 WSP Projected Limited Service Daily Ridership	632	632
2051 Projected Limited Service Daily Ridership	717	853

Source: CPCS Analysis Update

Comparison to other GO commuter rail lines

When compared to other GO commuter rail lines from an economic Benefit-Cost Ratio standpoint, the Caledon-Vaughan GO Rail line performs similar to other lines that have either been further investigated or proceeded to implementation. Table E-6 below summarizes BCR outputs of different GO Train line business case BCR values relative to the updated Caledon-Vaughan GO Line.

Table E-6: Comparison of Caledon-Vaughan BCR relative to other GO rail investment options

	Bowmanville Peak-Period Service – 2015 IBC	Bowmanville IBC Update - 2020	Niagara Falls Rail Extension Business Case - 2018	Kitchener Midterm Service Extension Business Case - 2017	Caledon-Vaughan Limited Shuttle Service
BCR	**0.56**	**1.20**	**1.25**	**0.95**	**1.13**

From a financial viability perspective, a key performance indicator is the operating cost recovery ratio, or ratio of fare revenues to total operating costs. The Caledon-Vaughan GO Line has an updated operating cost recovery ratio of 117%. This means that the Caledon-Vaughan line operation is expected to earn operational surplus. The previous WSP Canada IBC indicated Metrolinx's 2018-2019 average GO Train cost recovery ratio to be estimated at 80%. **This means that the Caledon-Vaughan GO rail operation is expected to outperform the worst performing GO Line and is likely to raise Metrolinx's overall cost recovery ratio for GO rail operations.**

[2] Discounted at 5.5% per annum

Finally, and when compared to other GO rail lines in close proximity current rail corridor, the Caledon-Vaughan GO line presents comparable development metrics. For example. five stations along the Kitchener Line and four stations along the Barrie Line (Figure E-2) were investigated from a ridership perspective relative to population and employment densities within a 6km station catchment. The five stations along the Kitchner line draw a 2019 annual ridership of 2.9 million riders/year while having a 2016 population of 534,963 and employment of 297,497. Moreover, four stations along the Barrie line draw a 2019 annual ridership of 1.5 million riders/year while having a cumulative 2016 population of 292,655 and employment of 133,611. Summarized in Table E-7 below, the five proposed stations along the Caledon-Vaughan line have a cumulative 2016 population of 413,988 and employment of 159,824.

Figure E-2: Comprable GO network segments along the Barrie and Kitchener Lines

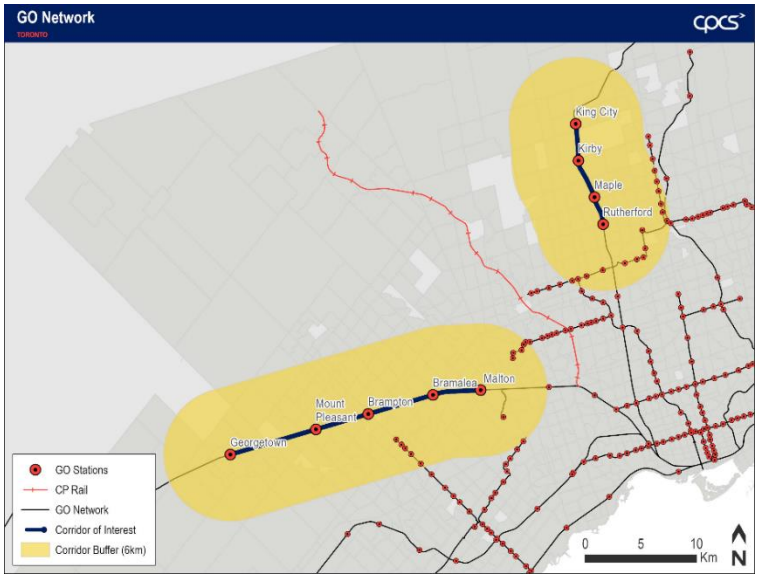


Table E-7: Line comparison of population and employment within a 6km station buffer

Line	2016 Pop.	2016 Emp.	2041 Pop.	2041 Emp.	2019 Annual Ridership
Kitchener GO Line (5 stations)	534,963	297,497	840,070	442,976	2,908,533
Barrie GO Line (4 stations)	292,655	133,611	455,744	216,330	1,467,466
Caledon-Vaughan GO Line (5 stations)	413,988	159,824	594,986	259,579	

Source: CPCS analysis; Metrolinx for ridership

Given that the Kitchener and Barrie lines currently have high-frequency full-service GO operations that extend to Union station, this indicates that should a high-frequency full-service Caledon-Vaughan GO Line be proposed, ridership could potentially range between 123,250 riders/year[3] to 1,990,000 riders/year[4].

[3] Representing the low end of modelled limited-service Caledon-Vaughan operations.

[4] Representing full-service Caledon-Vaughan extension of Kitchener line based on a per-capita population and employment density ridership relative to the Kitchener and Barrie lines.

1 CPCS Mandate

Key chapter takeaway

This chapter introduces CPCS's mandate and summarizes updates made to the previous Initial Business Case.

1.1 Introduction & scope of work

In June of 2020, WSP Canada produced an Initial Business Case (IBC) entitled "Bolton GO Commuter Rail Line IBC" that investigated a limited shuttle service commuter rail operating between the existing GO Weston station and a proposed station in Bolton, Ontario with intermediate proposed stations at Emery, Woodbridge, Elder Mills, and Kleinburg. The initial IBC was loosely based on a previous Metrolinx investigation of a commuter rail extension completed in 2010 and entitled "Bolton Commuter Rail Service – Feasibility Study".

Since then, the Town of Caledon (the Town) met with the Ontario Ministry of Transportation (MTO), Metrolinx, and Peel Region to discuss the proposed GO rail extension. In July 2021, Metrolinx conducted a high-level review of the WSP Canada IBC and provided comments in memo form to the Town. Subsequently, the Town of Caledon contracted CPCS to update the previous IBC to address Metrolinx comments and include 2051 unofficial population and employment forecasts not previously considered in the IBC.

Specifically, CPCS's scope of work includes:

- Updates of initial project capital cost estimates to reflect current cost unit rates
- Updates of specific economic analysis assumptions
- Extrapolation of expected ridership based on 2051 unofficial population and employment forecasts from WSP 2041 ridership demand analysis
- Update of report materials update to reflect the above changes

Moreover, CPCS's scope of this work excludes other updates or changes to the original IBC not within the above-described activities, including and such as service patterns, operational scenarios, and travel demand modelling.

As such, this updated report utilizes material and findings from the previous WSP Canada IBC "as-is" with specific updates to elements pertaining to CPCS's scope of work.

1.2 Incorporated IBC updates

As highlighted in Section 1.1 above, the overall purpose of this update is to address Metrolinx comments to the extent possible and to incorporate unofficial 2051 regional population and employment forecasts. The below sub-sections summarize received Metrolinx comments, updates made to address those comments where possible, and the approach for incorporating 2051 population and employment forecasts.

1.2.1 Addressing Metrolinx comments

Metrolinx commentary on the previous WSP Canada IBC is summarized in Table 1-1 below. The comments provided by Metrolinx largely pertained to capital cost estimates and economic analysis approach and assumptions.

Table 1-1: Metrolinx comments on WSP Canada IBC

Metrolinx comment topic	Comment
Underestimated capital works	The required capital works are expected to be more significant and overall costs to be higher than assumed in the IBC, and likely to require additional track and station investments.
Midday storage	The IBC assumes that trains would travel to Willowbrook Yard after stopping at Weston station in the morning for midday storage – Metrolinx indicated that in their experience new train movement along CP's Galt Subdivision would consume significant track capacity.
Train-Bus service	The new GO Rail line will require "train-bus" service to connect to stations when the rail service is not running, requiring additional bus service operating costs have not been captured in the IBC.
Economic analysis parameters	That some economic analysis parameters are not fully consistent with Metrolinx's Business Case Guidance, specifically that: • Auto operating cost savings rate should be $0.09/Km not $0.24/Km • Emissions savings rate should be $0.012/Km not $0.03/KmT • The use of roadway maintenance savings is not recommended • Growth rates should be applied up to the 30th year from the year of evaluation rather than the start of operations
Travel time savings	That previous WSP travel demand model runs indicate higher travel time savings per rider than expected

Source: Metrolinx; Town of Caledon

Through this IBC Update work, CPCS addressed Metrolinx comments that fall within the previously described scope of work. Specifically, and related to initial capital costs, CPCS applied changes summarized in Table 1-2 that reflect an overall increase of 67% to the original IBC cost estimates.

Table 1-2: Updated cost estimate summary relative to original cost estimates (in undiscounted 2021$)

Cost element	Updated cost estimate	Original IBC cost estimate	Percent change	Comment
Below Track Infrastructure Costs				
Linear Track Infrastructure	$472,146	$295,000	60.0%	0% to 50% increase on unit costs + 50% contingency added. Reflective of Metrolinx comments on track requirement.
Switches, Crossovers, & Signaling	$7,471,875	$5,383,000	38.8%	0% to 50% increase on unit costs + 50% contingency added. Reflective of Metrolinx comments on signaling and switches requirement.
Total Below Track Infrastructure	**$7,944,021**	**$5,678,000**	**39.9%**	
Above Track Costs				
Locomotive	$4,000,000	$4,000,000	0.0%	Estimate unchanged.
Coaches	$13,696,000	$13,696,000	0.0%	Estimate unchanged.
Total Above Track Costs	**$17,696,000**	**$17,696,000**	**0.0%**	
Beside Track Costs				
Platforms	$7,015,163	$4,209,000	66.7%	0% to 50% increase on unit costs + 50% contingency added. Reflective of Metrolinx comments on platform cost estimate magnitude.
Paving, Utilities, & Misc.	$11,223,750	$6,834,000	64.2%	0% to 50% increase on unit costs + 50% contingency added. Includes paving and grading estimates based on parking lot size.
Property Acquisition	$24,463,404	$6,512,000	275.7%	275.7% increase in property acquisition cost[5]. Size of complete land for each station in hectares by a 10$/sqft land price.
Total Beside Track Costs	**$42,702,317**	**$17,555,000**	**143.2%**	
Grand Total	**$68,342,338**	**$40,929,000**	**67.0%**	

Source: CPCS analysis

[5] It should be noted that while Emery, Woodbridge, and Caledon station properties are currently partially or fully owned by Metrolinx, Province of Ontario, and ARGO/Mosaik respectively, these costs were incorporated to reflect the opportunity cost of the land.

Additional CPCS updates and commentary with respect to Metrolinx input are summarized in the table below (Table 1-3).

Table 1-3: Summary CPCS updates and commentary addressing Metrolinx comments

Metrolinx comment topic	CPCS IBC update and commentary
Midday storage	• CPCS cannot verify Metrolinx's commentary on CP Galt Subdivision and infrastructure requirements without a detailed assessment. • CPCS notes that a revised service could be further investigated in the future to allow for midday storage at Bolton station, for example, however that would likely change service patterns to two peak-period trains in each direction (an addition of four trips) and would require an in-depth investigation.
Train-Bus service	• Following a review of the original IBC, CPCS notes that although the Train-Bus service was noted as a supplementary service, it was neither modelled for nor incorporated for benefit or cost imapacts. • Given that the Train-Bus service was proposed as a potential service and not included in the overall assessment of the commuter rail line, reference to it has been removed.
Economic analysis parameters	• To address Metrolinx comments regarding economic analysis parameters, CPCS included the following changes: ○ Base Valuation Year was updated from 2019 to 2021 ○ Benefits growth rate was capped at 30 years from the Base Valuation Year (2021) as oppossed to from the start of operations ○ Roadway maintenance reduction benefit was removed from consideration in line with Metrolinx's comment ○ Emissions reduction benefit rates were changed from $0.24/VKT to $0.09/VKT ○ Value-of-Time was updated from $18.04/hr to $18.64/hr ○ Safety benefits from foregone collisions were updated to match Metrolinx Business Case Guidance (from $0.08/VKT to $0.10/VKT) ○ Safety benefit annual reduction rate of 5% was subsequently applied ○ Unpercieved auto operating costs were reduced from $0.24/VKT to $0.09/VKT
Travel time savings	• CPCS cannot comment on previous WSP Canada modelling outputs as it is out of scope, however, we understand that the Greater Golden Horseshoe Model (GGHM) was previously used for travel demand modelleing purposes, which is standard practice for the GTHA region.

1.2.2 Incorporating unofficial 2051 population and employment forecasts

The Town also requested that CPCS reflect unofficial 2051 regional population and employment forecasts in the economic and financial assessments of the Caledon-Vaughan GO Line. With the understanding that the original IBC modelled travel demand up to a 2041 horizon year, CPCS conducted an additional analysis to account for 2051 expected intensification (see Section 2.3.1 for a more detailed population and employment summary). The applied methodology to estimate 2051 ridership and demand is detailed as follows:

1. Identify relative population and employment growth from 2041 to 2051 within a 6km station buffer as provided by the Town of Caledon, the City of Vaughan, and the City of Brampton.[6]

2. Apply elasticity factors for relative increase in population and employment on ridership. Elasticities of transit ridership to regional employment and population estimate the relative impact of employment and population increases on ridership[7]. An elasticity of 0.25 for regional employment factors to ridership was applied and a conservative elasticity of 0.51 for population factors to ridership was applied.[8] [9]

3. Percent increase in ridership from population and employment changes between 2041 and 2051 were then applied to station-to-station WSP Canada ridership summaries and extrapolated based on regional growth relative to ridership origin-destination.

The below Table 1-4 presents a summary of updated daily ridership estimates.

Table 1-4: Impacts of 2051 population and employment forecasts on daily ridership

Year	Updated Daily Ridership	Original IBC Daily Ridership	Percent change
2024	493	493	-
2041	632	632	-
2051	853	717	18.8%

Source: CPCS analysis

1.3 Updated report

Subsequent sections of this updated report were largely reproduced "as-is" from the previous WSP Canada IBC with updates applied to reflect incorporated changes and are summarized as follows:

- Section 2 establishes the context of the Caledon-Vaughan region, provides an introduction to the Business-as-Usual and Investment Option scenarios, and presents an overview of existing and planned transit systems that the Project may tie into.

- Section 3 describes the economic benefits and costs of the Caledon-Vaughan GO Line and the larger societal impact of the project relative to the Business-as-Usual scenario. This includes assumptions, inputs, a detailed benefits and costs summary, and economic case sensitivity testing.

- Section 4 describes the financial costs and revenues of the Caledon-Vaughan GO Line from a cash flow perspective. This includes capital, operating, and maintenance costs, revenues, and debt service among other elements. This section also includes a financial case sensitivity testing.

[6] The aggregate numbers for the proposed Caledon-Vaughan GO line stations are based on a preliminary forecast presented in March 2021 for the purpose of consultation as part of the York Region Land Needs Assessment and MCR. The preliminary forecast numbers have not been adopted by York Region Council or other councils and are subject to change through finalization of the ongoing MCR and adoption of the draft Regional Official Plan by York Region Council. Due to this timeline request, the aggregate numbers have not been verified by York Region staff.

[7] It should be noted that increases in population and employment do not necessarily translate to a 1:1 increase in ridership (for example, if population and employment doubles, that does not necessarily equate to a doubling of ridership).

[8] Summary elasticity values were derived from: T.Litman, "Evaluating Public Transit Benefits and Costs: Best Practices Guidebook", Victoria Transport Policy Institute, 202. Accessed on August 21, 2021 through: https://www.vtpi.org/tranben.pdf

[9] An example of elasticity application is as follows: an elasticity of 0.25 for a regional employment factor to ridership means that a 1% increase in regional employment is likely to increase ridership by 0.25%.

- Section 5 describes the deliverability and operability conditions of the Caledon-Vaughan GO Line. It highlights the requirements needed to successfully deliver the investment from a technical, institutional, and operational perspective and identifies potential risks and challenges to project delivery.

- Section 6 presents a summary of outcomes developed in Sections 2-5 and presents overall investment recommendations and next steps.

2 Introduction

Key chapter takeaway

The Caledon-Vaughan region is rapidly growing and remains one of the most highly dense regions in the GTHA without GO rail access. Previous WSP Canada analysis indicates that the line has a strategic implementation value both in terms of tying the Caledon-Vaughan region with the greater transit network as well as accommodating expected intensification in the region.

As one of the largest GTHA areas without GO Train service, the communities of Bolton, Kleinburg, and Woodbridge are facing issues of disconnectedness from the regional transit network, creating accessibility and mobility constraints. This, in turn, limits development and growth, and encourages a private vehicle-dependent culture. Moreover, planned and anticipated developments over the coming decades are expected to further highlight and exacerbate these issues.

A vision for commuter rail service between Toronto and Bolton had previously been investigated by Metrolinx in 2010 to determine its feasibility. However, given the magnitude of change in implemented and anticipated development patterns, growth projections, and infrastructure investments, the previous analysis 2010 analysis has become outdated and a reinvestigation of a service that **provides a limited, initial low-cost option in light of local needs** is required.

Moreover, a Caledon-Vaughan GO rail service was originally in the Metrolinx Big Move as a desired service in the near-to-medium (15 year) timeline. Over the past 10 years, it has been pushed further into the future and remains in Metrolinx's long-term timeline without any commitment for implementation. However currently, Caledon and western Vaughan are poorly serviced by public transit relative to other communities and municipalities with similar characteristics. The region of Bolton, Kleinburg, and Woodbridge is the second largest Greater Toronto and Hamilton Area (GTHA) region without GO Train service potentially limiting the densification of these areas and encouraging a car-dependent culture.

2.1 Existing context

The Greater Toronto and Hamilton Area (GTHA) and wider Greater Golden Horseshoe (GGH) area are experiencing rapid growth and development. **The population of the GGH is forecasted to increase by nearly 50% to 14.8 million by 2051, with over 1.43 million in population growth** expected in the Regions of Peel and York alone. As the greater region develops, the economies of the constituent municipalities continue to integrate, necessitating improved intercity and interregional rail connections. The urban areas of Bolton, Kleinburg, and Woodbridge are relatively disconnected from the GO Transit GTHA service area, with limited-to-no direct service to major urban and employment centers. A freight rail corridor serves the area, however GO Trains do not operate on that line.

Intercity transit between municipalities on the Caledon-Vaughan corridor is limited. Service along and in the vicinity of the corridor is currently provided by GO Bus, the Toronto Transit Commission (TTC), and York Region Transit (YRT), with Brampton Transit operating in close proximity to the line. However, no services provide direct transit connectivity between Bolton & Downtown Toronto or the Pearson Airport Precinct, often requiring multiple transfers and an extended travel time. In

addition, transit connectivity and accessibility issues along the corridor are further highlighted by current and anticipated developments due to the limited connections to anticipated attraction/production sites.

2.2 Case for change

2.2.1 Drivers shaping the need for a Caledon-Vaughan GO line

An identification of key drivers was conducted to define and describe the issues that shape the problem/opportunity along with a hypothesis of potential impacts that may occur if the problem/opportunity is not addressed (Table 2-1). Internal drivers are defined as the components that make up the network and the resulting traveller behavior. External drivers are defined as the factors that influence or direct travel behavior and transport infrastructure/technology.

Table 2-1: Key drivers shaping the need for a Caledon-Vaughan GO Commuter Rail Line

	Driver	Driver Influence	Impact Hypothesis
INTERNAL	Travel Behavior	• Auto-oriented culture with reliance on the private vehicle. Initial 2041 Business as Usual WSP Canada travel demand modelling estimates that approximately 86% of Bolton residents are car-dependent. • Fragmentation between local transit network and regional transit network. Currently, Caledon does not have direct and efficient transit access to regional attraction sites (e.g. Downtown Toronto), often requiring multiple transfers.	Travel behavior will continue to rely on private vehicles, increasing environmental, financial, and mobility costs.
	Transport Service Provision	• Unreliable transit service continuity with previous 2020 plans to discontinue running GO Bus service to the region.	Service adoption will remain slow and the reliability factor of service continuation will increase.
	Transport Infrastructure & Technology	• Direct train service does not run between Bolton and major attraction sites (e.g. Downtown Toronto)	Travel time, travel time reliability, and accessibility will continue to be a driving issue.
EXTERNAL	Government Policy & Planning	• Growth policy in Caledon and Vaughan region geared towards intensification along the rail corridor • Ministry of Municipal Affairs and Housing's December, 2019 update to the Region's Provincially Significant Employment Zones – PSEZ along the corridor • Metrolinx 2041 Regional Transportation Plan	Region would not align with the key pillars identified in the Metrolinx 2041 Regional Transportation Plan.

	Economic Activity, Land Use, & Demographics	• Intensification and economic development within Caledon, Vaughan, and Brampton communities in area.	More difficult to sustain the required economic and development growth in the area. Initial WSP Canada travel demand modelling estimates indicated that a portion of Bolton residents' work locations will continue to favor nearby areas such us Markham or Rural York as opposed to concentrating in Caledon.

Source: WSP Canada Bolton GO Commuter Rail Line IBC, 2020

2.3 Option development & description

In 2010, Metrolinx undertook a feasibility study of commuter rail service to Bolton, considering various options for analysis. **One of the options considered included a shuttle rail service between Bolton and Weston/Mount Dennis.**

The operational scenario of the shuttle service option included frequent bi-directional service with arrivals and departures designed to connect with the Georgetown GO service schedules at a proposed Mount Dennis station. The option serviced mid-line stations at Kleinburg, Elder Mills, Woodbridge, and Emery with midday equipment storage occurring at Bolton station. Ridership for that option was not specifically modelled and headway frequencies were assumed dynamic based on the Georgetown service schedule available at that time.

Since then, there have been notable changes in the region in terms of development, investment, and intensification and the previous 2010 Feasibility Study outcomes and analysis are likely outdated. Therefore, there is a need to re-assess the viability of a shuttle rail service between Bolton and the existing Weston station to match current conditions, scope, and scale requirements. To accomplish that, two scenarios were developed, a Business-as-Usual Scenario and a Caledon-Vaughan GO Commuter Rail Line scenario. Travel demand was modelled by WSP Canada for each of the two scenarios for a 2041 horizon year using the Greater Golden Horseshoe Model.

A description of both scenarios is detailed in the sub-sections below.

2.3.1 Business-as-Usual (BAU) scenario

The 'Business-as-Usual' scenario will see GO service operate as it is currently planned to operate, with proposed improvements to other aspects of the transit network fully implemented by the 2041 modelling year (detailed in Table 2-2). Operation of GO trains along the Caledon-Vaughan Line does not occur in this scenario. The following table includes all anticipated developments to the transit network by 2041.

Table 2-2: Transit improvements in the BAU scenario

Transit Agency	Changes
GO Transit	• Along the Kitchener GO Line, Regional Express Rail (RER) will see trains running every 10 minutes between Union and Bramalea, making all stops. Passengers travelling west of Bramalea will need to transfer. • New GO Station at Mount Dennis to open providing connections to TTC Eglinton Crosstown Line 5. • UP Express will continue to operate every 15 minutes as it does today. A new UP Express stop will also open at Mount Dennis, providing transit connections to Bolton.
Toronto Transit Commission	• In 2023, the Line 6 Finch West LRT will open, replacing bus service currently offered along the 36A Finch West route. • 36D/F Finch West buses will be replaced by the new route 151 Milvan, which will run in a counter-clockwise loop through the industrial areas north of Finch currently serviced by the 36D.
York Region Transit	• As part of York Region's 2031 Frequent Transit Network, service every 15 minutes or less will be operated along a number of major corridors: ○ Rutherford Road west to Highway 50 ○ Major Mackenzie Drive west to Highway 50 ○ Highway 27 from Steeles Avenue to King Road ○ Highway 50 from Steeles Avenue to Major Mackenzie Drive ○ Islington Avenue north to Major Mackenzie Drive ○ Pine Valley Drive north to Langstaff Road
Caledon Transit	• Caledon Transit Bus Line service along Highway 50 will continue to operate, with frequency enhancements to 20-minute peak periods and 30-minute midday service beginning in 2023. • New On-Demand service within the urban area of Bolton. • New service between Mayfield West, Caledon East, and Bolton will begin operation in 2023, operating every 20 minutes in peak periods and 30 minutes in midday by 2027. • New service will run along Mayfield Rd between Hurontario St and Highway 50, operating every 30 minutes in peak periods and 60 minutes in middays in 2020.

Source: WSP Canada Bolton GO Commuter Rail Line IBC, 2020

Land use around the line would be consistent with current growth plans and approved developments currently incorporated in Metrolinx's land use plans reflected in the 2041 population and employment projections. Land use will also include proposed intensive growth in Bolton along the line that are not yet approved and/or included in projected land use plans (Table 2-3). Future development impacts on population and employment in the Bolton area to 2041 that were not reflected in the original projections were estimated using a methodology and calculations based on Peel Region 2041 population and employment growth forecasts.[10]

[10] Population and employment growth forecasts were developed by Glen Schnarr & Associates Inc., 2019.

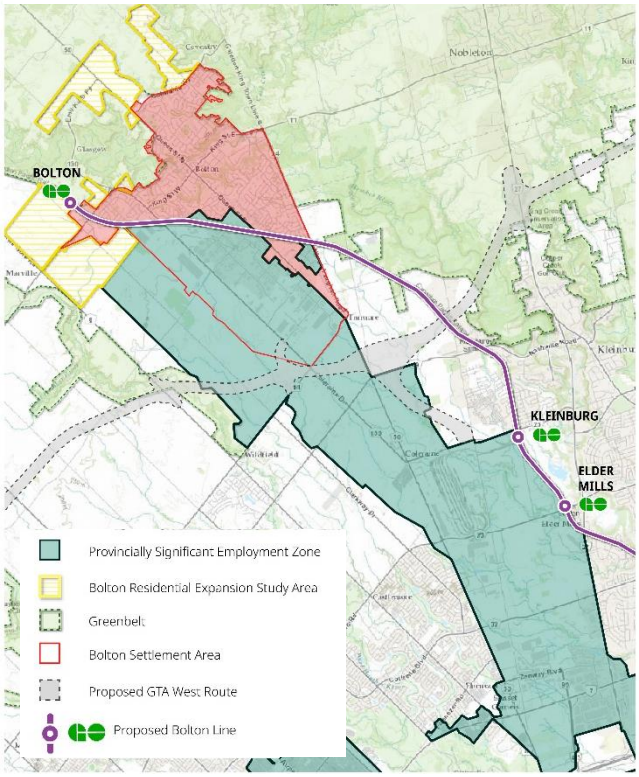
Table 2-3: Additional Population and Employment Density in the Bolton Area[11]

Total additional 2041 population	Total additional 2041 employment
2,273 (~3% Increase to 2041 Pop. Projections)	9,859 (~40% increase to 2041 Emp. Projections)

Source: WSP Canada Bolton GO Commuter Rail Line IBC, 2020

Following the Ministry of Municipal Affairs and Housing's December 2019 update to the Region's Provincially Significant Employment Zones (PSEZ), additional population and employment zones are expected to benefit from the Caledon-Vaughan GO Commuter Rail service (Figure 2-1). Expected PSEZ changes issued in December 2019 were not incorporated in scenario travel demand modelling and are not reflected in Table 2-3.

Figure 2-1: Provincially Significant Employment Zones (PSEZ) near Bolton



On the road network, the Highway 427 extension to Major Mackenzie would be fully open, including the proposed High Occupancy Toll (HOT) lanes running along the new alignment as well as the Viva Bus Rapid Transit line along Highway 7 and the Finch West LRT. The BAU travel demand modelling included anticipated and operational major linear infrastructure upgrades expected to occur.

Updated 2051 population and employment

Recent unofficial 2051 provincial, regional, and municipal growth plans and population and employment forecasts indicate that the Caledon-Vaughan region will experience significant intensification between the 2041 & 2051 planning horizons. These forecasts are included in the BAU scenario as a second horizon year to the 2041 model year, however they are not explicitly modelled.

Specifically, these forecasts are incorporated within a 6km catchment area of proposed stations and are summarized in Table 2-4 and Table 2-5 below.

Table 2-4: Forecasted 2051 regional population within a 6km station catchment

Area	Population growth within 6km corridor catchment			
	2016 Pop.	2041 Pop.	2051 Pop.	2016 to 2051 Growth
Caledon	29,987	73,798	106,504	255%
Vaughan	90,876	140,510	226,773	150%
Brampton	44,640	76,978	78,025	75%
Toronto	248,485	303,700	313,879	26%
Total	**413,988**	**594,986**	**725,181**	**75%**

[11] Population and employment growth forecasts were developed by Glen Schnarr & Associates Inc., 2019.

Source: CPCS analysis of regional 2051 forecasts from the Town of Caledon, City of Vaughan, and City of Brampton – 2041 forecasts were used "as-is" from previous WSP Canada analysis

Table 2-5: Forecasted 2051 regional employment within a 6km station catchment

Area	Employment growth within 6km corridor catchment			
	2016 Pop.	2041 Pop.	2051 Pop.	2016 to 2051 Growth
Caledon	15,321	34,842	51,126	234%
Vaughan	57,854	114,663	191,420	231%
Brampton	3,452	16,175	18,536	437%
Toronto	83,197	93,899	98,547	18%
Total	**159,824**	**259,579**	**359,628**	**125%**

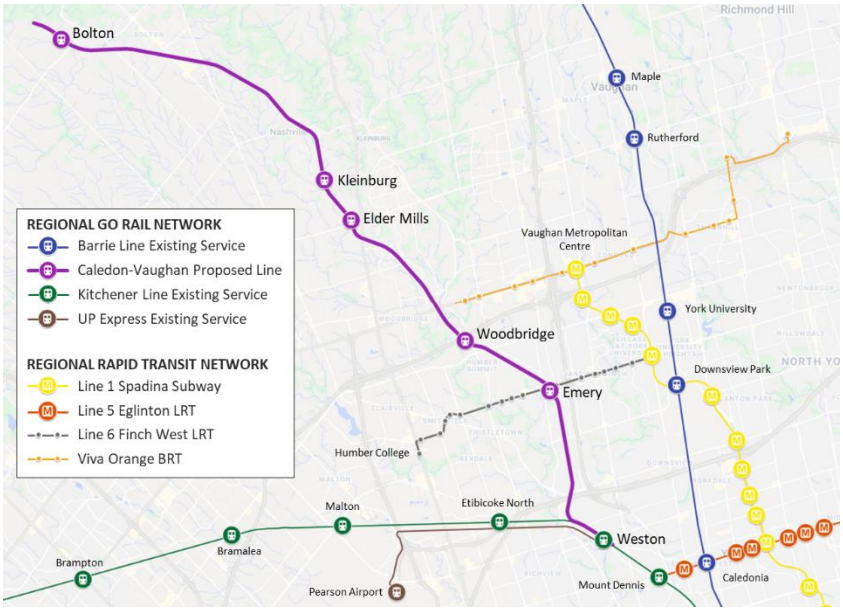
Source: CPCS analysis of regional 2051 forecasts from the Town of Caledon, City of Vaughan, and City of Brampton – 2041 forecasts were used "as-is" from previous WSP Canada analysis

When considered within this station buffer along the length of the corridor, significant population increases are noted, with expected aggregate increases of 75% between 2016 and 2051 and 22% between 2041 and 2051. Similarly, significant employment increases within a 6km station buffer are also noted, with an expected 125% increase between 2016 and 2051. Caledon is expected to see the highest degrees of population intensification around proposed station locations at 255% between 2016 and 2051, followed by Vaughan, Brampton, and Toronto with 150%, 75%, and 26% respectively. With respect to employment increases around station locations, Brampton is expected to increase by 437% between 2016 and 2051, followed by Caledon, Vaughan, and Toronto (234%, 231%, and 18% respectively).

2.3.2 Caledon-Vaughan GO Line investment option scenario

Train service on the Caledon-Vaughan GO Line would run between Weston GO Station on the Kitchener Line, and Bolton Station, located in Caledon.

Table 2-6: Proposed Caledon-Vaughan GO Commuter Rail Train Service



Source: WSP Canada Bolton GO Commuter Rail Line IBC, 2020

Two train sets each consisting of two bi-level GO coaches pulled/pushed by one locomotive would provide the service along the line. Service would run an anticipated two one-directional peak period trips (AM or PM period), with station stops detailed in Table 2-7 (additional station location details on station and station-surrounding land ownership history and land-use plans are available in Appendix A). This type of initial service on a new GO line is typical of GO early operations.

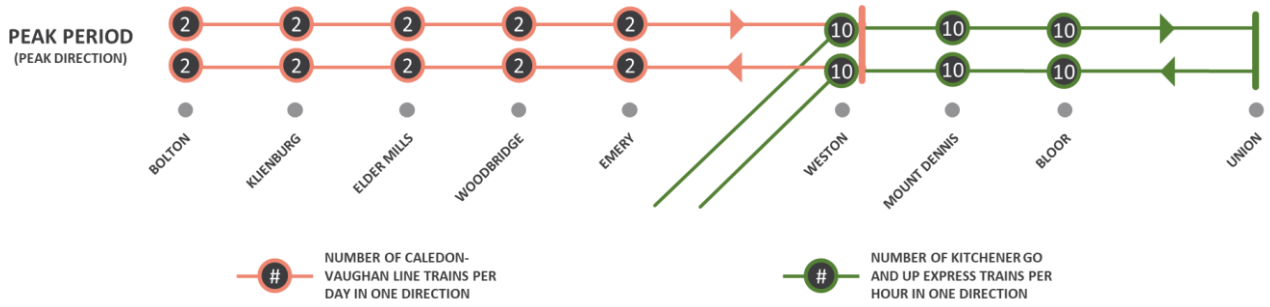
Table 2-7: Proposed Caledon-Vaughan stations and approximate locations

Station	Approximate location	Boarding / alighting
Bolton	14151 Humber Station Road	West Side Platform
Kleinburg	South of Major Mackenzie Drive at 6185 Major Mackenzie Drive	East Side Platform
Elder Mills	North of Rutherford Road at 6080 Rutherford Road	East Side Platform
Woodbridge	7170 Islington Avenue	East Side Platform
Emery	Zappacosta Drive - Providing connections to the Finch West LRT line	West Side Platform
Weston	Weston GO Station	West Side Platform – new platform extension beside the new Platform 4[12]

A passing track would be constructed just south of Langstaff Road, utilizing an existing tail track leading to the property at 8094 Kipling Avenue. This siding would allow trains to deadhead back to either Bolton or Weston, accommodate potential future bi-directional train service expansion, and provide emergency track sharing operations with CP.

The connection at Weston Station allows for cross-platform transfers between the Kitchener GO line running between Union and Bramalea and the Caledon-Vaughan GO Line, as well as connections to the UP Express on an adjacent platform. These lines offer connections to three TTC subway lines as well as various local bus services.

Table 2-8: Caledon-Vaughan line connections to Kitchener GO and UP Express



Source: WSP Canada Bolton GO Commuter Rail Line IBC, 2020

Minimal upgrades to existing track infrastructure are required to achieve this option scenario. The construction of five new stations and their amenities along the line at the proposed station locations would be required, as well as the modification to the platform currently under construction at Weston Station to accommodate the introduced service. The construction of a two-

[12] https://www.gotransit.com/en/the-future-go/improvements/weston

train layover at Bolton station would also be required for overnight storage and light servicing. Due to the fact that most of the corridor is a single track, constructing a passing track would be required to increase the span of service without requiring additional trainsets or limiting freight and transit service. Other track upgrades include extending the Centralized Traffic Control (CTC) signalling system by one signal block and relocating Hot Box detectors at Emery Station to accommodate the proposed platform location among other upgrades. Due to the infrequent service, and reduced train frequency, it is not expected that additional double tracking along the corridor or at station locations will be required.

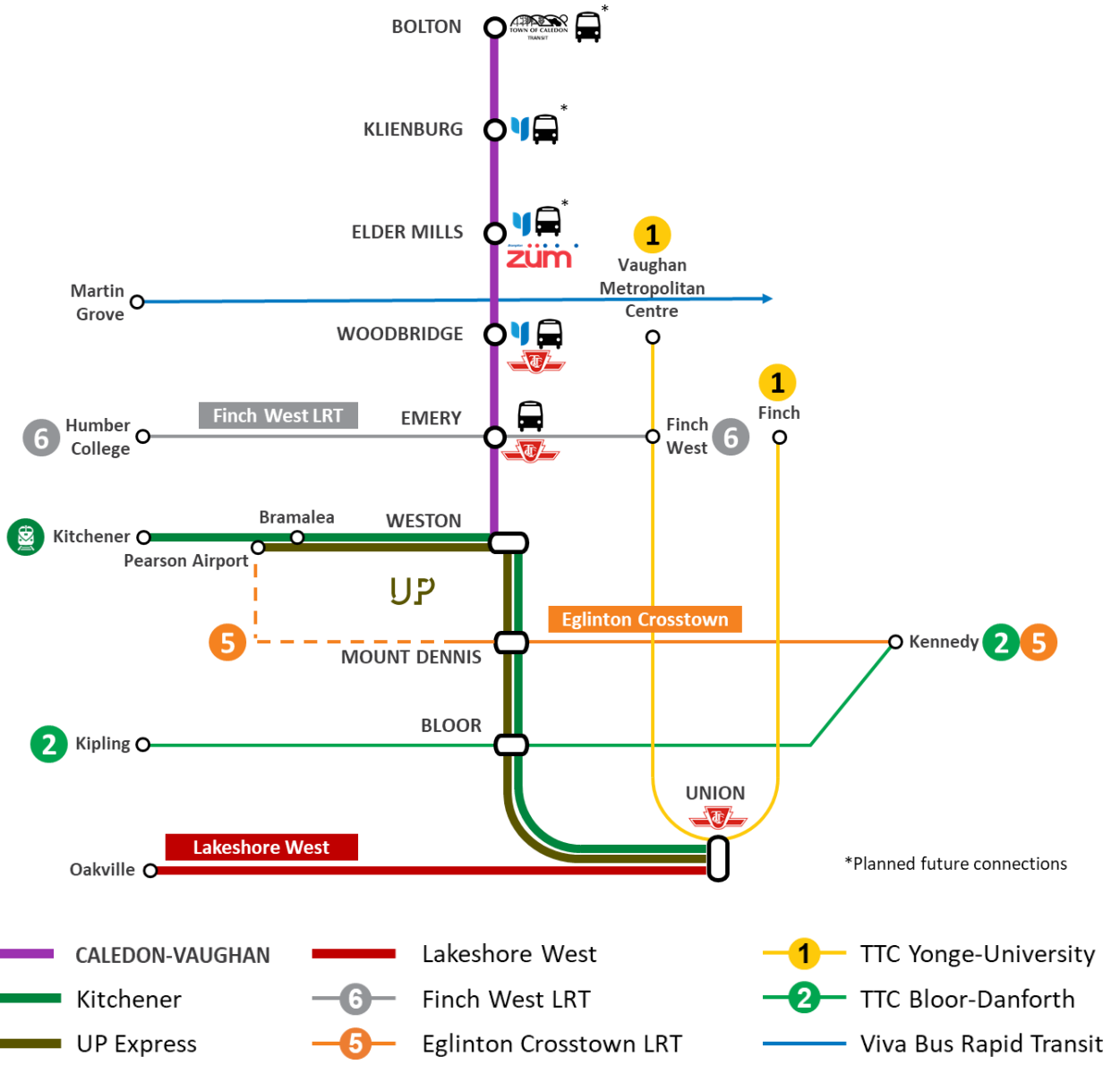
The Caledon-Vaughan GO Line investment option involves all of the transit improvements and expected land use growth described in the 'Business-as-Usual' scenario, along with the introduction of the GO Train service along the Caledon-Vaughan Line.

Pre-COVID-19 conditions
Both the BAU and investment option consider pre-COVID conditions and no subsequent analyses or adjustments were conducted to account for the current or future impact of COVID-19 on travel and development patterns. For example, when estimating 2051 ridership increase from previously modelled 2041 estimates, conditions are held static to pre-COVID patterns and no further adjustments to reflect pattern changes were included.

2.3.3 Tying into the big picture: a connected transit network

The Caledon-Vaughan GO Line will connect to local and regional transit networks, creating an accessible and connected network that enhances mobility and presents alternatives to private vehicle dependence (Figure 2-2).

Figure 2-2: Caledon-Vaughan GO Line connections to local and regional transit networks



Local transit operators provide bus and rapid transit that will connect the Bolton GO line stations to local destinations and are summarised in Table 2-9 below:

Table 2-9: Transit Network Connection with Caledon-Vaughan GO Line

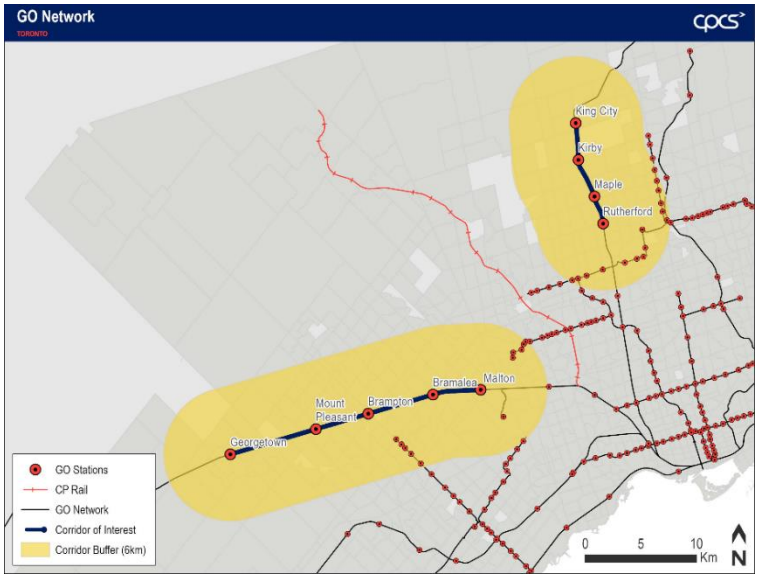
Transit operations	Caledon-Vaughan Line network connections
GO Transit	• Connections to Kitchener Line trains and UP Express trains at Weston GO station.
Toronto Transit Commission	• Future Finch West LRT connections at Emery GO station. • Local bus connections at Weston and Emery GO stations, as well as possible future connections at Woodbridge GO station. • Kitchener Line trains connect with Bloor Subway line and Eglinton Crosstown LRT
York Region Transit	• Local bus connections to Woodbridge GO station. • Future bus and on-demand connections to Elder Mills and Kleinburg GO stations. • Potential connection or extension to Viva BRT
Caledon Transit	• Bus and on-demand connections to the Bolton GO station are proposed to be operational by 2023, providing service within Bolton, as well as to Caledon East and Mayfield West.

Source: WSP Canada Bolton GO Commuter Rail Line IBC, 2020

2.3.4 Full-service potential

Should a full-service extension of the Kitchener GO line to Bolton be investigated in the future, it is expected that daily ridership will likely increase relative to the reduced service currently proposed. To draw comparisons, five stations along the Kitchener Line and four stations along the Barrie Line were examined (Figure 2-3). Stations were selected based on proximity and development comparability to proposed Caledon-Vaughan stations.

Figure 2-3: Comprable GO network segments along the Barrie and Kitchener Lines



Summarized in Table 2-10, the five Kitchener Line stations draw an estimated annual ridership of 2.9 million riders[13] while having a cumulative 2016 population and

[13] https://blog.metrolinx.com/wp-content/uploads/2020/02/click-here-to-see-the-above-ridership-map-in-detail.pdf

employment density of 534,963 and 297,497 respectively. The four stations along the Barrie Line draw an annual ridership of 1.5 million riders while having a cumulative 2016 population and employment density of 292,655 and 133,611 respectively[14]. When comparing the ridership derived from these stations along the two lines relative to population and employment densities around proposed Caledon-Vaughan stations, parallels can be drawn towards the potential full-service ridership derived from a Caledon-Vaughan GO Line extension. A full-service Caledon-Vaughan GO Line ridership could potentially range between 121,500 riders/year (modelled limited-service Caledon-Vaughan operations) to 1,990,000 riders/year (full-service Caledon-Vaughan extension of Kitchener line).

Table 2-10: Line comparison of population and employment within a 6km station buffer

Line	2016 Pop.	2016 Emp.	2041 Pop.	2041 Emp.	2019 Annual Ridership
Kitchener GO Line (5 stations)	534,963	297,497	840,070	442,976	2,908,533
Barrie GO Line (4 stations)	292,655	133,611	455,744	216,330	1,467,466
Caledon-Vaughan GO Line (5 stations)	413,988	159,824	594,986	259,579	

Source: CPCS analysis; Metrolinx for ridership

[14] https://blog.metrolinx.com/wp-content/uploads/2020/02/click-here-to-see-the-above-ridership-map-in-detail.pdf

3 Economic Case

Key chapter takeaway

From an economic standpoint, the Caledon-Vaughan GO Line has a BCR of 1.1, indicating that for every dollar spent implementing and operating the line, society gains 1.1 dollars. Additionally, the line has a positive NPV, indicating a net benefit for the region. These outputs indicate that the region, and the future passengers and residents within it, can reap benefits that outweighs the fiscal costs of constructing and operating the line.

The Economic Case focuses on the rationale for pursuing an investment and assesses the Caledon-Vaughan GO Commuter Rail Line in terms of social benefits (or changes in welfare for transportation users and society) in relation to the total cost of the project over the evaluation period. The key metrics used for assessing the economic performance of the options include:

- Benefit Cost Ratio (BCR) – The BCR is determined as the present value of benefits over the present value of total costs and represents the benefits that are realized per dollar spent. Investments with a BCR greater than one will generate benefits that exceed the initial and on-going project costs.
- Net Present Value (NPV) – the NPV is determined as the present value of benefits minus the present value of total costs and represents the total net economic benefits to the region. A positive NPV indicates a net benefit to the region.

3.1 Assumptions

The analysis in the Economic Case is conducted as an incremental analysis to the BAU scenario. This indicates that all benefits and costs are directly attributed to the Caledon-Vaughan GO Line. The analysis was conducted with a set of guiding assumptions and parameters, as outlined in Table 3-1 below.

Table 3-1: Economic Case assumptions

Input	Impact type
Analysis Approach	All benefits and costs are expressed in real 2021 dollars. Construction was assumed to be phased over a three-year period starting in 2021. Operations is assumed to begin in 2024. The assessment covers a 60-year period from start of construction in 2021 to 2080.
Evaluation Period	60 years
Growth Rate Flat-Line Year	2050
Economic Discount Rate	3.5%
Value of Time (2021$)	$18.65/hour
Benefit Annualization Factor	250
Safety Improvements (2021$)	$0.10/Vehicle Kilometre Travelled

Safety Benefit Annual Reduction Rate	5%/year
Unperceived Auto Operating Cost Savings (2021$)	$0.093/Vehicle Kilometre Travelled
Emissions Savings (GHG - 2021$)	$0.012/Vehicle Kilometre Travelled
Daily Ridership (2024)	486
Annual Ridership (2024)	123,176
Ridership and Benefit Growth Rate (up to 2041)	1.4%
Ridership and Benefit Growth Rate (beyond 2041)	3.0%
Locomotive Life	30 Years - End-of-Life Resale Value: $100,000
Passenger Coach Life	50 Years (with recurring refurbishment cost) – End-of-Life Resale Value: $50,000
Passenger Coach Depreciation Rate	Linear
O&M Cost (2021$)	$19/train-km
Real Property Value Growth Rate	4%

Source: CPCS analysis update of WSP Canada IBC economic assessment assumptions

In addition to the above assumptions:

- Capital costs include property acquisition costs based on a 10,000m2 required plot estimate per station for all stations except Bolton that was estimated based on a 15,000m2 required plot;
- Operating and maintenance costs are broken down between Canadian Pacific Train Service Agreement estimate and train set operation and maintenance costs; and
- Future development impacts on population and employment in the Bolton area to 2041 that were not reflected in the original projections were estimated using a methodology and calculations based on Peel Region 2041 population and employment growth forecasts. Similarly, unofficial 2051 forecasts were used to reflect potential changes to ridership beyond 2041 as detailed in Section 1.2.

3.2 Costs

The upfront capital costs include track infrastructure costs (linear track infrastructure, switches, crossovers, & signalling), equipment costs (locomotive & coaches), and beside track costs (platforms and stations, utilities and miscellaneous, & property acquisition). Beside track costs were estimated based on a 10,000m2 station site for all stations except Bolton, which was estimated at 15,000m2. The replacement & rehabilitation costs included locomotive and coach replacement costs and reoccurring coach refurbishment throughout the analysis period. Due to the short length of the train set and the low volume of train movements, major grade crossing separation or upgrades were determined not necessary beyond currently planned separation projects and therefore have no impacts on capital cost requirements.

Table 3-2 below summarizes the capital and operating & maintenance costs associated with the Caledon-Vaughan GO Line Investment option. Infrastructure capital costs include a 50% design and contingency factor with the exception of property acquisition.

Unlike the Financial Case, all analyses completed in this section use real values and a social discount rate, as opposed to nominal values and a financial discount rate. Real values do not include the impact of general inflation but consider real growth.

Table 3-2: Summary of economic costs (000s) in Present Value Real 2021$ discounted at 3.5% p.a.

Cost category		Sub-category	Quantity	Value (2021$ 000s)
Initial capital costs	Track Infrastructure	Linear Track Infrastructure	1135 m	449
		Switches, Crossovers, & Signalling	12 Upgrades	7,098
	Equipment	Locomotive & Coaches	2 Locomotives, 4 Coaches	16,811
	Beside Track	Platforms	6 Platforms	6,664
		Station Areas, Utilities, & Miscellaneous	6 Stations	10,662
		Property Acquisition	5 Properties	23,239
Replacement & Rehabilitation	Rolling Stock	Train Set Replacement[15]	2 Locomotives, 4 Coaches	3,520
		Coach Refurbishment		5,008
Total Capital Costs Including Rehab. and Replacement (Discounted at 3.5%)				**73,450**
Operating and Maintenance Costs (Discounted at 3.5%)				**22,295**
Total Present Value of Costs (Discounted at 3.5%)				**95,745**

3.3 User impacts

The user impacts in this analysis are net impacts — meaning that they are incremental to the Business-As-Usual (BAU) scenario and only attributed to the improvements for the Caledon-Vaughan GO Line. The user benefits capture the social benefits or changes in the welfare of transport network users. The benefits include Caledon-Vaughan GO Line potential users as well as non-transit modes of transportation as it captures a modal shift occurring throughout the network. The main users impacted by the improvements for the Caledon-Vaughan GO Line include:

- Existing Transit Passengers: The introduction of the Caledon-Vaughan GO Line Service will result in a number of benefits for existing transit users by improving connectivity between origins and destinations, as well as improving service wait and travel times. The resulting benefits to existing users are captured in travel time savings.
- New Transit Users: The reduced generalized cost of travel that will result from the Caledon-Vaughan GO Line will attract new users that previously travelled through other modes of transportation. The new user benefit is an incremental benefit between what they are willing to pay and the new generalized cost of travel.
- New Transit Users: The travel demand modelling accounts for the perceived fare cost for new transit users when calculating their generalized cost. A fare revenue correction is made to account for the fare cost as a transfer benefit for the service provider.
- Previous Automobile Users: As the Caledon-Vaughan GO Line attracts new users, including auto users off the road network, unperceived auto operating cost are reduced.

[15] Resale end-of-life value of rolling stock included in cost estimate

Table 3-3 below outlines the summary of benefits to users of the overall transportation network.

Table 3-3: User economic benefits (000s) in Present Value Real 2021$ Discounted at 3.5% p.a.

User type	Impact type	Value (2021$ 000s)
Transit	Travel Time	77,384
Transit	Fare Cost Resource Correction	11,347
Automobile User	Unperceived Vehicle Operating Cost Savings Due to Reduced Travel	6,398
Total User Economic Benefits		**95,129**

3.4 External impacts

The external or social impacts are a result of the negative impacts from auto trips to society through Greenhouse Gas emissions, and injuries or fatalities that can result from collisions. Through investment in the Caledon-Vaughan GO Line service, external impacts can be reduced by inducing more users to switch to public transit which decreases the overall number of auto trips being taken. This modal switch will result in a decreased amount of emissions and collisions, creating external benefits when compared to the BAU option.

For the Economic Case of the Caledon-Vaughan GO Line, external impacts were assessed based on the assumptions in Table 3-1 and the incremental automobile Vehicle Kilometres Travelled (VKT) between the proposed option and the BAU scenario. Table 3-4 below displays the present value of external impacts by option.

Table 3-4: External impact benefits (000s) in Present Value Real 2021$ Discounted at 3.5% p.a.

User type	Impact type	Value (2021$ 000s)
Well-being	Safety	2,353
Environment	Emissions (GHG)	826
Total External Benefits		**3,179**

3.5 Economic Case summary

Table 3-5 below summarize the results of the Economic Case of the Caledon-Vaughan GO Line. The BCR is above 1, indicating that the user and external benefits exceed the total cost of implementing and operating the line. Additionally, the positive NPV presented indicates a net benefit for the region. **These outputs indicate that the region, and the future passengers and residents within it, can reap benefits – such as a reduction in their time spent commuting – that outweighs the fiscal costs of constructing and operating the line.**

Moreover, as part of Metrolinx's new market-driven development strategy, Metrolinx may partner with third parties to deliver new transit infrastructure, with third parties designing and constructing the station infrastructure, and Metrolinx operating it. This approach may be applicable to a number of stations along the Caledon-Vaughan GO Line that are within prime development opportunities for mixed-use communities. Although cost sharing impacts on capital costs do not impact economic

case metrics such as BCR and NPV, they do apply to the financial case and are reflected in Section 4. It should be noted, that in implementation, market-driven strategies and cost sharing initiatives may bring additional benefits (such as travel time reduction and improved accessibility and mobility) to the system through densification and intensification around station sites. These benefits should be explored in future stages of the business case.

Table 3-5: Economic Case summary (000s) Present Value Real 2021$ discounted at 3.5% p.a.

Impact type	Value (2021$ 000s)
Total Costs (Present Year $ Discounted at 3.5% p.a.)	**95,745**
Capital Costs Incl. Recurring Rehabilitation and Replacement Costs	73,450
Operating and Maintenance Costs	22,295
Total Economic Benefits (Present Year $ Discounted at 3.5% p.a.)	**108,658**
User Impacts	95,129
External Impacts	3,179
End-of-Analysis Coach and Property Resale Value	10,350
Results	
BCR	**1.1**
NPV (Present Year $ Discounted at 3.5% p.a.)	**12,913**
Payback Period (Years)	**27.7**

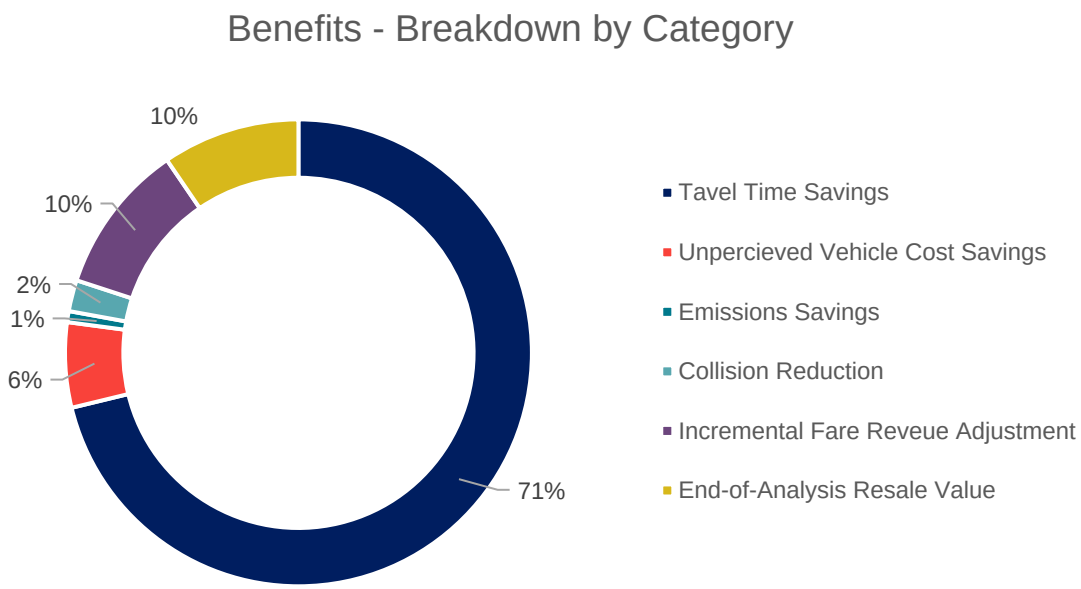
Caledon-Vaughan GO BCR in context:

Caledon-Vaughan GO NPV in Context ($M):

The majority of benefits are derived from travel times savings (Figure 3-1). This is likely due to improved transit accessibility and mobility as well as the line's integration with local and regional transit providers (such as the UP Express, GO Train network, TTC subway network) resulting in

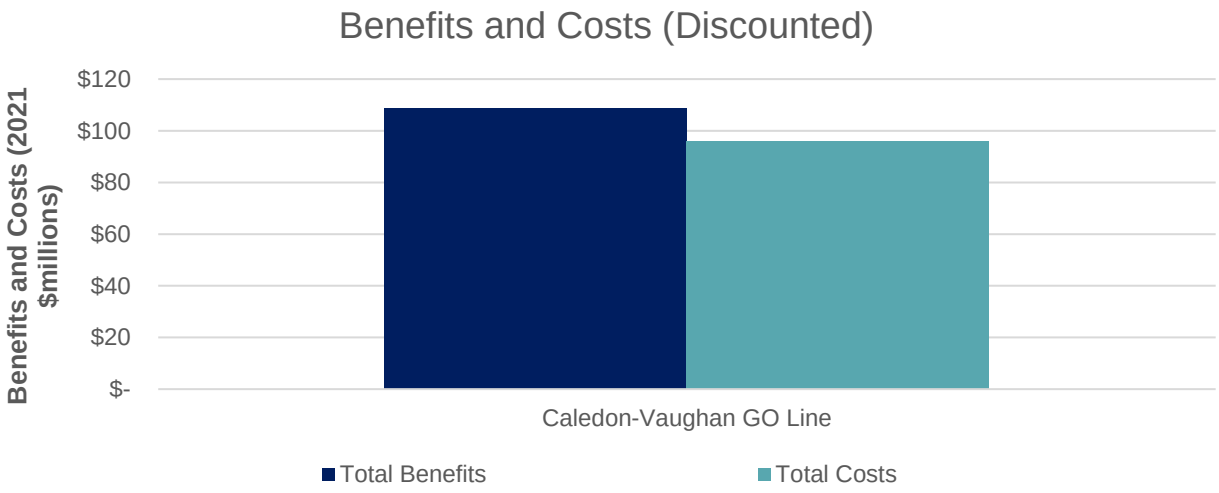
fewer & shorter trips being taken. Moreover, the large benefits derived from unperceived vehicle operating costs are consistent with the Caledon-Vaughan GO Line providing accessibility and mobility options to current car users.

Figure 3-1: Economic Case Benefits Breakdown



With respect to benefits versus costs, the total benefits offset the large initial and replacement capital costs associated with the fleet and station procurement and development. (**Error! Reference s ource not found.**).

Figure 3-2: Economic Case Benefits vs. Costs



3.6 Sensitivity analysis

As part of the Economic Case, a sensitivity analysis was performed on a number of the key variables and inputs to evaluate the performance of each option under varying conditions by testing each variable or input under low and high factors of +/- 20%. The sensitivity test holds all other variables equal and adjusts the variable or input being considered.

The largest impact to the BCR of the project is through travel time savings, followed by capital and rehabilitation costs, O&M costs, and Vehicle Kilometers Travelled (VKT) savings. From an NPV perspective, the largest impact is through travel time savings, followed by capital and O&M costs. Sensitivity results show that within +/- 20% margins of impact and/or estimation, the BCR remains between 1.0 and 1.3 and the NPV between -$3 million and $25 million. **This indicates that unanticipated changes in the tested variables are likely to maintain the overall benefit of the project with respect to costs as well as the overall viability of the project.**

Table 3-6: Economic Case – sensitivity analysis

	Low estimate of variable impact	Economic case results	High estimate of variable impact
BCR			
Capital Costs	1.3	**1.1**	1.0
O&M Costs	1.2		1.1
VKT Savings	1.2		1.1
Travel Time Savings	1.3		1.0
NPV (Present Value 000s 2021 Dollars)			
Capital Costs	24,990	**12,913**	-979
O&M Costs	18,695		5,318
VKT Savings	13,906		10,106
Travel Time Savings	27,339		-3,325

4 Financial Case

Key chapter takeaway

The Caledon-Vaughan GO Line has a negative NPV for the investment, indicating that the cost of implementing and operating the line is higher than the revenues generated by the system. However, this is typical of commuter rail lines in North America and is largely due to the large upfront capital cost. Moreover, the system was found to have a high operating cost recovery ratio that exceeds 100%, indicating that the revenues generated from the system are higher than the operating and maintenance costs associated with it. This indicates that the system is financially viable during operations.

The Financial Case assesses the overall financial impact of the Caledon-Vaughan GO Line and looks at the requirements to successfully deliver the investment. The assessment looks at the total gross revenues gained through fares and the expenditures to deliver the service over the entire analysis period. The key metrics used for assessing the financial performance of the options include:

- Net Present Value (NPV) – the NPV is determined at the present value of revenues minus the present value of total costs and represents the profitability of the investment.
- Operating Cost Recovery Ratio (R/C Ratio) – the R/C ratio evaluates the percent to which the annual revenues generated by the project recover the annual operating costs of the project.

4.1 Assumptions

Similar to the Economic Case, the financial assessment is conducted as an incremental analysis to the BAU scenario. The analysis was conducted with a set of guiding assumptions and parameters typical to any Metrolinx project analysis, as outlined in Table 4-1 below.

Table 4-1: Financial Case assumptions

Input	Impact type
Evaluation Period	60 years of operations
Financial Discount Rate	5.5%
Inflation	2%/year
Capital & Operating Cost Escalation	1%/year (for 30 Year Period)
Ridership Growth Rate – Up to 2041	1.4%/year
Ridership Growth Rate – Beyond 2041	3.0%/year
Ridership Growth Rate Flat-line Year	2050
Real Fare Escalation Rate	0%
Assumed GO Train Fare (2019$) – Using Presto	
Between Bolton & Woodbridge St (Intermediate Stations Inclusive)	$4.97
Between Bolton & Emery/Weston/Beyond to Bloor	$6.82

Between all Other Station Pairs	$3.70
Station Lines to Union/Bloor	$8.46
Assumed GO Train Fare (2019$) – W/Out Using Presto	
Between Bolton & Woodbridge St (Intermediate Stations Inclusive)	$5.90
Between Bolton & Emery/Weston/Beyond to Bloor	$8.10
Between all Other Station Pairs	$4.40
Station Lines to Union/Bloor	$10.05
Ratio of Presto Users to All Users	0.85
Debt Interest Rate	5.8%
Amortization Period	25 Years
Real Property Growth Rate	4%
Private Sector Station Cost Absorption Factor	50%

Source: CPCS analysis update of WSP Canada IBC financial assessment assumptions

4.2 Costs

The capital costs associated with building and delivering the Caledon-Vaughan GO Line option included an upfront capital investment phased over a three year period (10% Year 1, 30% Year 2, 60% Year 3) which consists of track infrastructure costs (linear track infrastructure + switches, crossovers, & signalling), equipment costs (locomotive & coaches), and beside track costs (platforms and stations, utilities and miscellaneous, & property acquisition) while the replacement & rehabilitation costs included locomotive and coach replacement costs and reoccurring coach refurbishment costs throughout the analysis period. Station property requirements such as paving, grading, lighting, and fencing were also included in the estimate.

The financial case assumes that station development costs will be shared between Metrolinx and third-party developers in line with Metrolinx's market-driven strategies. Station cost sharing contributions from private third-parties were estimated at 50%. This means that third-parties are responsible for half of the full station development costs that include platforms, utilities, grading and pavement, and property acquisition.

Initial debt was assumed for the initial capital costs minus the property acquisition costs and debt interest was included as a line item in the capital cost estimate. Unlike the Economic Case, the Financial Case evaluates the costs that would be incurred by the service provider (Metrolinx) over the life of the investment and includes borrowing interest.

Fleet procurement and replacement make up a considerable proportion of initial and replacement capital cost requirements. All initial capital costs developed, with the exception of fleet requirements and property acquisition costs, include a 35% markup to account for engineering design, construction allowance, and contingency allowance.

The replacement & rehabilitation costs were estimated from local expertise and published Metrolinx assumptions. Assumptions include a 55,000$ /year/coach refurbishment rate, a 30-year locomotive replacement requirement, and a 50-year coach replacement requirement.

The operating and maintenance costs were developed based on two main components. The first relates to the O&M associated costs of the train set based on a per kilometer basis for both revenue and non-revenue kilometers travelled. The second cost relates to infrastructure and is reflected by an estimated Train Service Agreement cost with CP Rail.

Table 4-2 below summarizes the capital and operating & maintenance financial cash flow costs associated with the Caledon-Vaughan GO Line investment option.

Table 4-2: Financial assessment cash flow cost summary (000s) in 2021 Present Value $ discounted at 3.5%

Cost category	Value (Real 2021$ 000s)
Operating and Maintenance Cost (Discounted at 5.5%)	**24,522**
Debt Service	20,426
Rehabilitation and Replacement Costs	9,390
Property Acquisition Costs	11,801
Coach and Property End-of-Analysis Resale Cost (-ve value = -ve cost)	-4,449
Total Cash Flow Capital Costs (Discounted at 5.5%)	**37,167**
Total Present Value of Costs (Discounted at 5.5%)	**61,689**

4.3 Revenue impacts

The proposed Caledon-Vaughan GO Line service offering has an impact to the entire network, connecting riders to the TTC Finch West LRT line at Emery Station, the UP Express at Weston GO station, Eglinton Crosstown, and to the GO Kitchener line down to the TTC line and Bloor/Union Station. Given this, the revenue associated with the investment is a direct result of the Caledon-Vaughan GO Line fares. The revenue estimates were based on GO fares running a similar service with similar distances. Daily 2024 ridership were estimated at 493 riders/day with 38% travelling between Bolton station and Emery/Weston and 52% past Weston after line transfers while daily 2051 ridership were estimated at 853 riders/day.

Table 4-3: Fare revenue impacts (000s) in 2021 Present Value $ discounted at 3.5%

Fare revenues	Value (Real 2021$ 000s)
Bolton & Woodbridge (And Intermediate Stn.)	1,569
Bolton & Emery/Weston/Beyond to Bloor	10,616
Between All Other Line Stations	1,460
Line Stations & Union/Bloor	15,112
Incremental Bolton GO Train Revenue (Discounted at 5.5%)	**28,756**

4.4 Analysis summary

Table 4-4 summarizes the results of the Financial Case of the proposed Caledon-Vaughan GO Line option. **The resulting NPV for the investment is negative,** indicating that the cost of implementing

and operating the line is higher than the revenues generated by the system. **This is in line with most other transit agencies in North America**.

The operating cost recovery ratio was determined using the incremental revenues and operating costs incurred by the option. **The system was found to have a high operating cost recovery ratio**, indicating that the revenues generated from the system are higher than the operating and maintenance costs associated with it. **This indicates that the system is financially viable and presents a unique opportunity above average earnings from operations.**

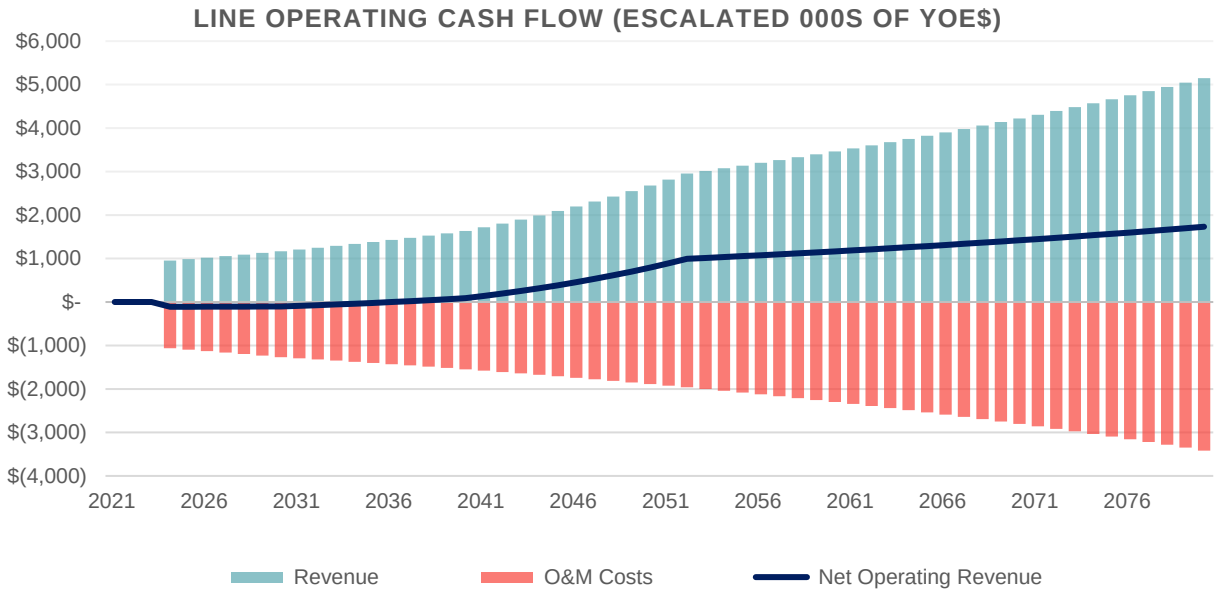
Table 4-4: Financial Case summary (000s) in 2021 Present Value $ discounted at 3.5%

	Value (Real 2021$ 000s)
Revenues	
Incremental Bolton GO Train Revenue (Discounted at 5.5%)	**28,756**
Costs	
Capital Costs	37,167
Operation & Maintenance Costs	24,522
Total Costs (Discounted at 5.5%)	**61,689**
Results	
Net Present Value	**-$32,933**
Operating Cost Recovery Ratio (Incremental)	**117.3%**

Early in construction and operation, the system will see a negative cash flow per YoE due to the initial propoerty acquisition costs, principal debt service for the remaining initial capital costs, and debt service interest expense. After the 25 year amortization period, the debt is expected to be paid off, and operating revenue and operating & maintenance costs remain. Main capital investments including locomotive and coach replacement costs occur in set years in the years 2053 and 2073 respectively. Finally, revenue from the end-of-analysis sale of coaches and property is noted on the last year of analysis.

Operational cash flow for the option is presented in Figure 4-1 below. Early in the operational life of the projects, the operating and maintance costs will exceed the fare revenue collected. However, with time, revenues will start to exceed O&M costs, indicating an overall financially healthy system operation.

Figure 4-1: Caledon-Vaughan GO Commuter Rail Line Operating Cash Flow (escalated 000s YoE$)



Incremental Operating Cost-Recovery Ratio in Context:

38%	139%	117%
NIAGARA FALLS RAIL EXTENSION	BOWMANVILLE IBC	CALEDON-VAUGHAN SHUTTLE SERVICE

4.5 Sensitivity analysis

As part of the Financial Case, a sensitivity analysis was performed on a number of the key variables and inputs to evaluate the performance of the Caledon-Vaughan GO Line under varying conditions based on +/- 20% variation of key input variables including ridership growth rate, capital costs, and O&M costs. The largest impact to the financial performance of the project from an R/C perspective is operations and maintenance costs, followed by ridership growth. From an NPV lens, the largest impact is through O&M costs followed by capital costs. **Sensitivity analysis results indicate that with positive and negative potential variations in key variables, the project maintains good operational financial health.**

5 Deliverability & Operations Case

Key chapter takeaway

As the largest risk, the Caledon-Vaughan GO Line would require resolution with CP on train operations and infrastructure requirements. However, the addition of commuter rail service along the corridor presents opportunities to fulfill Metrolinx's strategic objectives of private sector-supported transit development and a more connected regional transit network.

The Deliverability and Operations Case is an analysis of investment delivery, operations and maintenance, service plans and any other issues that may prevent the realization of the Caledon-Vaughan GO Line. The Deliverability and Operations Case is one of two cases (the other being the Financial Case) focused on requirements for delivering the investment.

5.1 Project governance

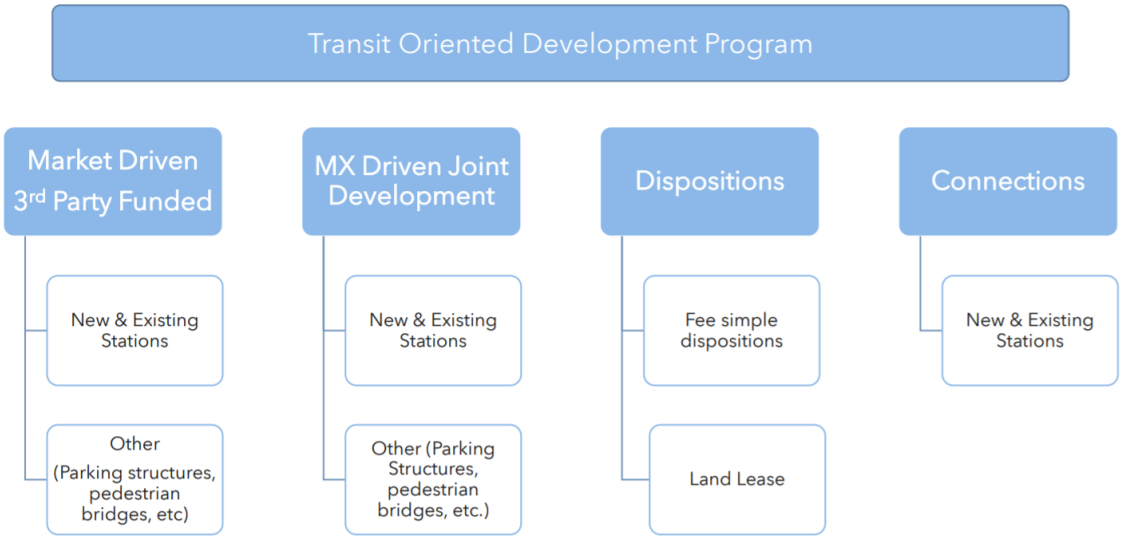
Metrolinx is responsible for the administration and oversight of transit expansion within the Greater Toronto area and is a key project sponsor.

Agreements between Metrolinx and Canadian Pacific Railway (CP), the line infrastructure owners, will rely on the key stakeholder role CP plays in this project. The corridor currently serves as CP's mainline to western Canada and houses the Vaughan Intermodal Yard, the largest CP yard in the Toronto area. As such, entering into an agreement with CP will allow for access to infrastructure investments on the Mactier Subdivision. Formal agreements will be required to ensure an understanding of the project scope and operations as well as to delineate expense or investment options. If Caledon-Vaughan GO level demand along the line increases beyond the proposed service levels or the capacity of the infrastructure, additional investment upgrades may be necessary and would require CP involvement in decision making.

5.1.1 Market-driven opportunities

For development, and as part of their new market-driven development strategy, Metrolinx may partner with third parties to deliver new transit infrastructure, with third parties designing and constructing the infrastructure, and Metrolinx operating it (see Figure 5-1 below for a summary of Metrolinx's Transit Oriented Development Program). This approach may be applicable to a number of stations along the line that are within prime development opportunities for transit-oriented and mixed-use communities. As part of the service expansion along the Caledon-Vaughan GO Line, new private sector partners may be sought out to design and construct these new stations, which may in turn ensure that passenger demand around these stations will be significant enough and demonstrate the future growth needed to justify their cost.

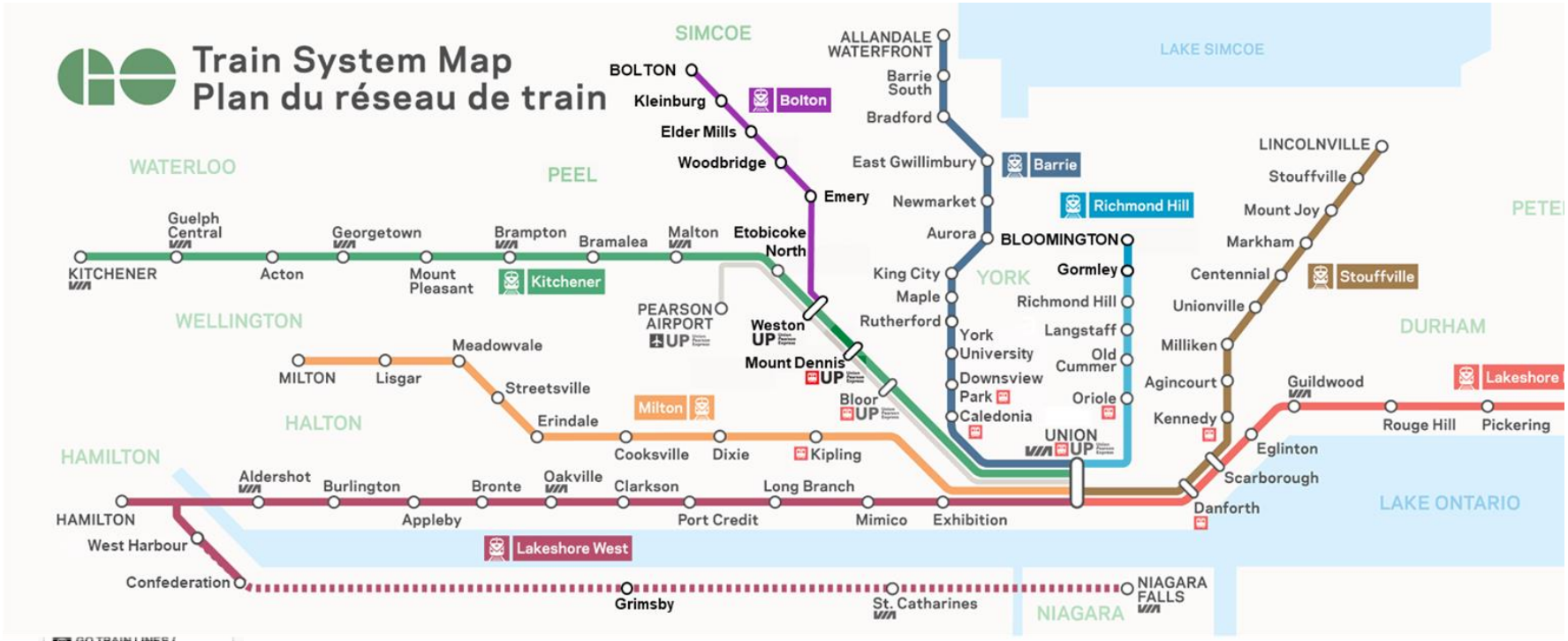
Figure 5-1: Metrolinx's Transit Oriented Development Program Work Streams



Source: "Transit Oriented Development Implementation", Metrolinx, April 10, 2019.

Moreover, alternative Third-Party contribution potential options that may be further investigated with Metrolinx, include, but are not limited:

- Full station design/build including grade-crossing access to platforms;
- Land acquisitions, parking, and road access to station costs;
- Track and Signal costs with the understanding that this is not currently a Metrolinx operated line;
- Purchase Metrolinx rolling stock (locomotives and coaches);
- Third-Party billing of Metrolinx Operation & Maintenance of rolling stock costs;
- Third-Party billing of Rehabilitation and Replacement of Metrolinx rolling stock costs;
- Maintenance of station, site, and access costs;
- Third-Party billing of Presto subsidy to reduce commuter fares; and
- Covered parking (parking garage or solar canopies) costs.


Train System Map
Plan du réseau de train
SIMCOE
LAKE SIMCOE
BOLTON
Kleinburg
Bolton
Elder Mills
Woodbridge
Emery
ALLANDALE WATERFRONT
Barrie South
Bradford
East Gwillimbury
Barrie
Newmarket
Richmond Hill
Aurora
BLOOMINGTON
Gormley
King City
Maple
Rutherford
YORK
Richmond Hill
Langstaff
York University
Old Cummer
Downsview Park
Oriole
Caledonia
UNION
LINCOLNVILLE
Stouffville
Mount Joy
Markham
Centennial
Stouffville
Unionville
Milliken
Agincourt
Kennedy
Guildwood
Rouge Hill
Pickering
Lakeshore
Eglinton
Scarborough
Danforth
DURHAM
LAKE ONTARIO
WATERLOO
PEEL
Guelph Central
Georgetown
Brampton
Bramalea
Malton
Etobicoke North
KITCHENER
Acton
Mount Pleasant
Kitchener
PEARSON AIRPORT
Weston
Mount Dennis
Bloor
WELLINGTON
Meadowvale
MILTON
Lisgar
Streetsville
Erindale
Milton
HALTON
HAMILTON
Aldershot
Burlington
Bronte
Oakville
Clarkson
Long Branch
Cooksville
Dixie
Kipling
HAMILTON
Appleby
Port Credit
Mimico
Exhibition
West Harbour
Lakeshore West
Confederation
Grimsby
St. Catharines
NIAGARA FALLS
NIAGARA
GO TRAIN LINES / LIGNES DE TRAIN GO
Lakeshore West
Niagara
Bolton
Milton
Kitchener
Barrie
Richmond Hill
Stouffville
Lakeshore East
UP Union Pearson Express
TTC subway connection / Correspondance au métro de la TTC
National passenger trains / Trains passagers nationaux
* Separate fare required / Titre distinct requis
416 869 3200
1 888 438 6646
TTY 1 800 387 3652
gotransit.com

5.2 Project delivery

5.2.1 Major project components

Initial operations would see an anticipated two one-directional trains per peak period, with no off-peak or weekend service. To achieve this service level and with the current corridor catering exclusively for freight traffic, new on-corridor infrastructure is required to support the operations of passenger trains.

On-corridor required construction includes track modifications to convert a tail track to a passing track in Woodbridge, extension of the CTC signalling system, required cross-overs, switches, and switch heaters, and hot-box detector relocation.

Off-corridor work consists of the construction of five new GO stations with their associated components, and modifications to an existing station to support the operations of Caledon-Vaughan line trains. New station amenities are anticipated to include station parking areas, ticketing/fare infrastructure, potential bus loops, and a 6-car concrete platform, and a two-track island platform at Bolton Station only.

As part of station expansions for the GO Expansion program, a fourth platform is currently under construction at the existing Weston GO Station, which parallels the existing CP track. This new east-side platform will need to be widened in order to accommodate GO trains servicing the station on the CP track. This approach requires minimal infrastructure upgrades at this station and allows for more seamless integration between Caledon-Vaughan line trains and existing GO and UP Express services at the station.

A summary of the associated line considerations and constructability of new stations along the Caledon-Vaughan GO Line are detailed in Table 5-1 below:

Table 5-1: Constructability and risk overview of potential new stations

New station	Estimated construction complexity	Rationale
Emery	Moderate	• Site contains potentially significant grade differences on the site, likely intentional as a crash berm, that will need to be addressed during construction (~6 metres) • Relocation of CP hot box detectors south of the station is required to accommodate the platform • Overhead presence of a hydro corridor might increase complexity of construction
Woodbridge	Moderate	• Site contains potentially significant grade differences beside CP tracks, likely intentional as a crash berm, that will need to be addressed during construction (~16 metres) • Station site perimeter may limit possible future platform extensions • Coordination with MTO required to ensure future provisions for potential 407 Transitway station
Elder Mills	Low	• Site contains potentially significant grade differences beside CP tracks, likely intentional as a crash berm, that will need to be addressed during construction (~6 metres) • Platform location near the Vaughan Intermodal Terminal spur may cause construction complexities due to high volumes of train traffic • Surrounding land is vacant and could potentially be developed through market-driven development strategy
Kleinburg	Low	• Surrounding land is vacant and could potentially be developed through market-driven development strategy • Platform location near the Vaughan Intermodal Terminal spur may cause construction complexities due to high volumes of train traffic • Due to the York Region construction of the Major Mackenzie Drive Grade Separation, additional property may need to be acquired to accommodate a connector road to from the station to Major Mackenzie Drive
Bolton	Low	• Road upgrades to Humber Station Road will occur as part of adjacent transit-oriented development to ensure adequate capacity to the station site • Surrounding land is vacant and could potentially be developed through market-driven development strategy

On and off-corridor construction could impact the operation of CP Rail service. Major construction impacts on CP operations to implement Caledon-Vaughan GO service include:

- Connecting the Bolton station layover/platform tracks to the main line
- Constructing a passing track near Woodbridge
- Connecting track work to Weston station
- Construction of new station infrastructure along the main line

- Upgrading signalling system from automatic block signalling to centralized traffic control
- Relocation of CP hot box detectors near the Emery GO Station
- Required cross-over and switch related investment upgrades along the main-line
- Potential deferred maintenance and/or upgrades required on bridge and culvert structures in order to accommodate increased service
- Investment upgrades that impact freight operations are subject to negotiations with CP

5.2.2 Project dependencies

GO expansion program

Although the implementation of this line will not impact GO expansion plans along the Kitchener line, it is dependent on these upgrades to ensure enough capacity exists for passenger transportation from Weston Station to Union Station. While current Kitchener line trains travelling through Weston Station are at or near capacity, the projected doubling of peak service along the Kitchener Line from three trains per hour to six trains per hour by 2025 is likely to ensure sufficient capacity for those transferring to the Caledon-Vaughan line. Likewise, service to/from Union to Weston GO is available on UP Express, indicating that adequate capacity is assumed to be available on the corridor south of Weston – a variation from the 2010 Metrolinx study conditions. Mitigation measures to ensure the proposed service is aligned with GO expansion plans include initiating early dialogue with Metrolinx and CP to ensure their participation as key stakeholders.

Rolling stock availability

Although Metrolinx is expected to be directly involved in the administration and operations of the Caledon-Vaughan GO Line, availability of rolling stock requirements may pose a direct risk to project implementation. As one of the major capital and operating cost investments, alterations to train consist setups may impact anticipated service operations and estimated costs. However, GO is renewing its fleet and it is assumed that the equipment required for the Caledon-Vaughan service may be made available from the GO fleet. Mitigation of rolling stock availability risks include early discussion and involvement with Metrolinx as well as the investigation of alternative rolling stock options including converted UP Express trains.

CP service agreement

Passenger service along the Bolton line is dependent upon Metrolinx negotiations with CP regarding operating along the Mactier Subdivision. This would include establishing the allowable passenger train frequencies, available time blocks for train movements, required infrastructure investments and costs, and inter-operability between passenger and freight rail services where sharing movements between tracks are required. GO currently has a working relationship with CP through its network most similarly illustrated by the Milton GO line. Any construction within CP's right-of-way will be subject to negotiations between Metrolinx and CP. Dialogue with and the involvement of CP should be a priority during future stages of business case development.

Other stakeholder considerations

Negotiations will be required with Toronto Hydro to utilize the lands on the Finch Hydro Corridor for the Emery GO Station. Use of these lands would need to be approved and coordinated with the future plans of Hydro One. Additionally, coordination with MTO will be required for Woodbridge GO Station to ensure that space reserved for the future 407 Transitway is maintained. Moreover, and in general, coordination with local and regional transit agencies is necessary to ensure the accessibility and mobility of Caledon-Vaughan GO passengers is preserved.

5.2.3 Construction impacts

Construction impacts for this line are expected to be minimal on existing residents, businesses, and transit operations. As there are no pre-existing transit services on the line, no disruptions are expected to impact current commuters. At Weston Station, temporary platform closures of the new Platform 4 may be necessary to facilitate expansion out to the CP tracks. Temporary road closures around new stations may also be necessary to allow for the construction of access roads, however these impacts are expected to be minimal to the general population. Currently, Emery GO Station is the only station with residential uses nearby the station that would be impacted by construction. The biggest impacts on existing operations will be to CP as discussed in the Project Delivery section above. However, it is assumed that CP encounters similar impacts across their system and have internal frameworks for addressing such impacts.

5.3 Project scheduling and phasing

This business case assumes that initial capital cost requirements are phased over a three-year period. Year one (2021) will see a 10% initial investment completed, with Year 2 (2022) and Year 3 (2023) seeing a 30% and 60% of the initial investment respectively. Project delivery times are excepted to be revised in the further stages of the business case after identification of funding sources, requirements, and timelines. The business case assessment period covers 60-years from the start of construction. Operations are scheduled to begin after the initial capital investment is complete in 2024.

5.4 Operation and maintenance plan

Under the proposed service scenario, two trains would be operated in each peak period in one direction. Each train would make one trip from Bolton to Weston in the morning peak period, before deadheading either to the Willowbrook yard for midday storage if capacity permits or to the Bolton station (which would require additional service analysis). Afternoon service would initiate from Weston, before each train would operate one trip back up to Bolton, where the train will be stored and serviced overnight. The proposed line will connect with various transit projects currently under development by Metrolinx, including the Finch West LRT and the Kitchener Regional Express Rail, as well as local buses operated by the Toronto Transit Commission, York Region Transit, and Caledon Transit.

5.4.1 Roles and responsibilities

Metrolinx and CP will be responsible for timetable planning, train control, dispatch, and infrastructure requirements and maintenance. The construction and maintenance costs will be determined by an operating agreement between Metrolinx and CP.

5.4.2 Operational impacts and future expansion

Similar to the Milton GO Line, Metrolinx will need to negotiate with CP for operation windows along the corridor. Any future service expansions will be subject to agreement by CP and the availability of GO Transit equipment. Given the importance of the line to CP's operations, additional infrastructure may be required for the expansion of service beyond the peak periods, to ensure that CP trains retain access to the Vaughan Intermodal Yard.

5.4.3 Fleet requirements

For initial start-up, two bi-level two-car diesel trains will sustain operations (one locomotive per two-car consist). As parts of the GO rail network are electrified through the GO Expansion program, diesel locomotives may become readily available and at a lower cost than new equipment. Used GO locomotive is anticipated to be used with new bi-level coaches.

5.4.4 Depot/storage arrangements

Bolton GO Station will have two platform tracks that act as layover tracks for evening and weekend storage of Bolton line trains. The station will include a direct connection to the Mactier Subdivision main line and will include provisions for future expansion. Due to the low level of service anticipated along this line, maintenance bays will not be constructed at this location, and any necessary maintenance will occur at GO Transit's Willowbrook Maintenance Centre in Etobicoke every week.

5.5 Procurement

Delivery of improvements on the Mactier Subdivision will be carried out as per the terms of a negotiated operating agreement between Metrolinx and CP. Procurement and delivery of rolling stock as well as operations require further investigation in future stages of business case development with Metrolinx involvement.

5.6 Case summary

The addition of commuter rail service along the Caledon-Vaughan Line presents opportunities to fulfill Metrolinx's strategic objectives. Specifically, this service expansion helps Metrolinx to achieve its target of private-sector supported Transit Oriented Development, improved access and service integration to a 60% station Connectivity index, and increased ridership.

An overview of key considerations for this business case is summarized below:

Table 5-2: Deliverability & operational considerations and risks

New station	Rationale
Constructability and Environmental Impacts	• Potential operating impacts on existing CP traffic on the Mactier Subdivision. • Stakeholder relations/social impacts within urban areas of Bolton, Woodbridge, and North York.
Approval and Permits Required	• TPAP approval and standard permits / approvals for works on rail transit corridors.
Third Party Agreements	• Requires continued collaboration with CP to optimize passenger and freight co-production. • Requires negotiations with Hydro One for station locations within Parkway Belt and Finch Hydro Corridor.
Operating Impacts	• Shared use of corridor with CP, resulting in potential delays and loss of operating flexibility.
Future Expansion	• Will require future agreements with CP for further corridor expansion. • Constrained ROW on the Mactier Subdivision through Woodbridge physically limits potential for expansion. • Adding frequency or service may necessitate the construction of additional corridor infrastructure.

6 Summary & Overview

Key chapter takeaway

Overall, the Caledon-Vaughan GO Line presents positive overall regional benefits and further investigation of the line's feasibility is recommended.

The Business Case Summary synthesizes the insights and key lessons learned identified in each preceding chapter. An overview of the key findings from analyses, including their respective pros and cons, as well as an outline of the option's performance compared to Business-as-Usual scenario. This section provides key information related to the Caledon-Vaughan GO Commuter Rail Line investment for decision-making purposes.

6.1 Case summaries

6.1.1 Economic Case summary

The Economic Case focuses on the rationale for pursuing an investment and assesses investment options by comparing their social benefits (or changes in welfare for transportation users and society) to the total cost.

Key assumptions for the Economic Case are described in Section 3.1 of this document. Results from the Economic Case are summarized in Table 6-1.

Table 6-1: Economic Case summary (000s) Present Value 2021$ discounted at 3.5% p.a.

Impact type	Value (Real 2021$ 000s)
Total Costs (Present Year $ Discounted at 3.5% p.a.)	**95,745**
Total Impacts (Present Year $ Discounted at 3.5% p.a.)	**108,658**
BCR	**1.1**
NPV (Present Year $)	**12,913**
Payback Period (Years)	**27.7**

From the Economic Case evaluation, the following conclusions were established:

- **The BCR is above 1 and the NPV is positive, indicating that the benefits are greater than the implementation and operation costs for the Caledon-Vaughan GO Commuter Line option**. Moreover, the implementation of third-party station development strategies by Metrolinx in later stages may be a viable option that further increases overall user and societal benefits and limits costs.
- **The positive results of the economic case of this alternative indicate that this investment option warrants further investigation** and refinement in detailed future business cases completed in coordination with Metrolinx and CP.

6.1.2 Financial Case summary

The Financial Case assesses the overall financial impact of the options and looks at the requirements to successfully deliver the investment. It looks at the total gross revenues and expenditures.

Key assumptions are described in Section 4.1. Results from the Financial Case are summarized in Table 6-2.

Table 6-2: Financial Case summary (000s) Present Value 2021$ discounted at 3.5% p.a.

Impact type	Value (Real 2021$ 000s)
Incremental Bolton GO Train Revenue	**28,756**
Total Costs	**61,689**
Net Present Value	**-$32,933**
Operating Cost Recovery Ratio (Incremental)	**117.3%**

From the Financial Case evaluation, the following conclusions were established:

- The NPV for the Bolton Go Commuter Rail option is negative, indicating that the cost of implementing and operating line is higher than the revenues generated by the system, which is in line with other transit agencies in North America.
- **The system has an operating cost recovery ratio of 117%, well beyond Metrolinx's 65% ratio of the whole transit system in 2018-2019 and their 80% GO Train recovery ratio.** The high operating cost recovery ratio shows that the revenues generated from the system are higher than the operating and maintenance costs associated with it. **This indicates that the Caledon-Vaughan GO Line is financially healthy and is earning a surplus from operations.**

6.1.3 Deliverability & Operability Case summary

The Deliverability and Operability Case reviews the proposed service option and compares it across capital, construction and operations factors to assess merits and drawbacks. From a risk and constructability perspective, the main risks relate to impacts on CP's freight operations on the Mactier subdivision. This risk is derived from the construction of the line as well as from its operations where CP runs freight operations during peak periods. Moreover, potential service growth will require future agreements with CP relating to the expansion of the currently constrained rail right-of-way.

Delivery and operability of the investment will require further investigation in future business case stages with the involvement of CP and Metrolinx.

6.2 Recommendations and next steps

In this Initial Business Case for the Caledon-Vaughan GO Commuter Rail Line, it was determined that the line presents many strengths that make it a viable alternative for future investigation. Following are the key recommendations derived from this study:

1. There is an underlying strategic value in pursuing this system from a transit accessibility and mobility lens. Connecting the Bolton, Kleinburg, and Woodbridge communities by direct transit lines to major attraction areas is in line with Metrolinx's Regional Transportation Plan

and a value that may not be easily quantified. Moreover, the line is expected to connect to numerous major local and regional transit operations, enhancing the overall transit network.

2. The Big Move envisions transit project investment forecasts to occur in the medium to long term. This is to encourage Transit Oriented Development and reduce auto-oriented developments. Although the proposed Caledon-Vaughan GO rail service is currently envisioned in the long-term, this low-cost alternative for initial GO Train service may be introduced quickly and effectively to provide attractive transit options for the communities of Caledon and Vaughan, making it a strong candidate for much earlier investment and implementation.
3. With large-scale development underway or imminent in the vicinity of the Bolton, Kleinburg, and Elder Mills Station locations, acknowledgement of future GO train service in the near-to-medium-term is essential to achieve the Transit-Oriented Development proposals sought by Metrolinx. This, in turn, will reduce auto-oriented development and encourage increased ridership in the region.
4. The viability of the line should be further investigated from an optimization of costs relative to benefits and revenues. Investigating third-party development options is recommended due to the potential economic and densification benefits they bring.
5. Development of subsequent business case stages will require the involvement of and coordination with CP and Metrolinx. Both CP and Metrolinx hold key stakeholder and sponsor roles and their outlook and interests are likely to heavily influence future assessment of the investment option.

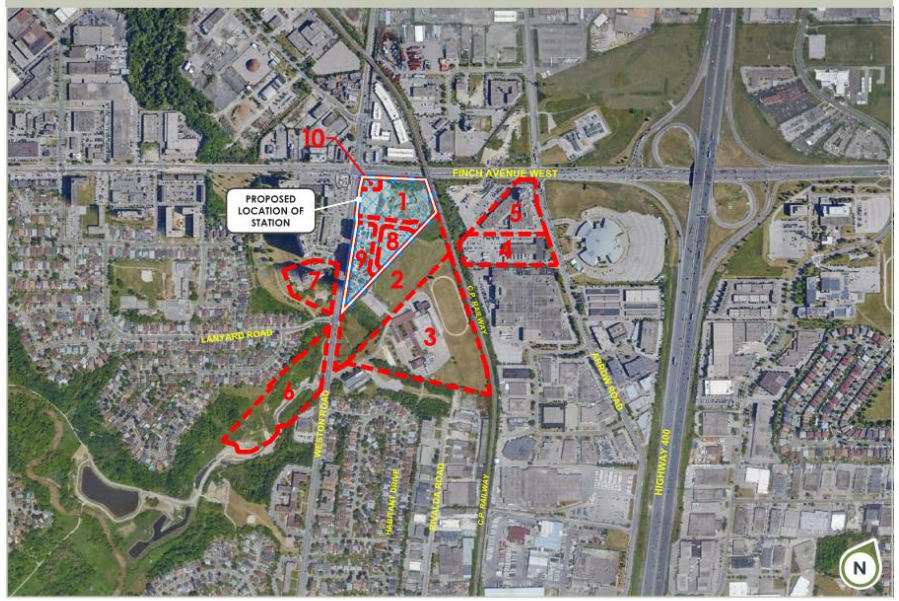
Appendix A Summary of Proposed Caledon-Vaughan GO Line Stations

As Prepared by Glen Schnarr & Associates inc., 2020 and Included in the Original WSP Canada IBC

Location of Site Proposed in 2010 Bolton Commuter Rail Feasibility Study (December 2010)

Source: Fig 9.3-1: Finch Avenue (Emery) Proposed Station Site

Landowner Information for Lands in Vicinity of Proposed Emery GO Station



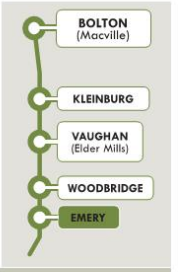
	Address	Owner	Area	Year Aquired
1	N/A	3415 WESTON ROAD LIMITED	2.24 ha (5.54 ac)	1996
2	N/A	THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO	4.60 ha (11.37 ac)	1941
3	3395 WESTON ROAD	BOARD OF EDUCATION FOR THE TOWNSHIP OF NORTH YORK	7.88 ha (19.47 ac)	1958
4	1100 ARROW ROAD	HERCULES FORWARDING ULC	2.16 ha (5.34 ac)	2013
5	2201 FINCH AVE WEST	THE WEST FOUR HUNDRED INC.	2.03 ha (5.02 ac)	2000
6	N/A	HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO	3.67 ha (9.07 ac)	1941
7	3390 WESTON ROAD	YORK CONDOMINIUM CORPORATION No.187	3.67 ha (9.07 ac)	2018
8	3415 WESTON ROAD	3415 WESTON ROAD LIMITED	0.72 ha (1.78 ac)	1996
9	3415 WESTON ROAD	3415 WESTON ROAD LIMITED	1.22 ha (3.01 ac)	1996
10	N/A	METROLINX	0.19 ha (0.47 ac)	N/A

LEGEND

Proposed Potential Site for Station

Adjacent Landowners

PROPOSED EMERY GO STATION



TORONTO OFFICIAL PLAN - MAP 13: LAND USE PLAN

**Land use designations have been altered to consolidate similar uses in the City of Toronto, City of Vaughan and Town of Caledon Official Plans.*

LEGEND

Proposed Potential Site for Station

Adjacent Landowners

LAND USE DESIGNATIONS

- Neighbourhoods
- Apartment Neighbourhoods
- Mixed Use Areas
- Natural Areas
- Employment Areas
- Utility Corridors
- Institutional Areas
- Parks

Location of Site Proposed in 2010 Bolton Commuter Rail Feasibility Study (December 2010)

Source: Fig 9.4: Highway 407 Proposed location of Station Site

Landowner Information for Lands in Vicinity of Proposed Woodbridge GO Station

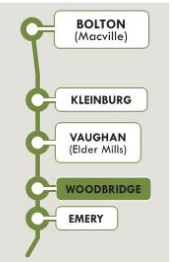
	Address	Owner	Area	Year Aquired
1	N/A	HER MAJESTY THE QUEEN, IN RIGHT OF ONTARIO AS REPRESENTED BY THE MINISTER OF GOVERNMENT SERVICES	4.66 ha (11.52 ac)	1991
2	N/A	PRIMONT (ISLINGTON) INC.	16.16 ha (39.93 ac)	2005
3	7082 ISLINGTON AVENUE	PRIMONT (ISLINGTON) INC.	12.82 ha (31.68 ac)	2019
4	N/A	HER MAJESTY THE QUEEN, IN RIGHT OF ONTARIO AS REPRESENTED BY THE MINISTER OF GOVERNMENT SERVICES	43.28 ha (106.94 ac)	1979
5	N/A	HER MAJESTY THE QUEEN, IN RIGHT OF ONTARIO AS REPRESENTED BY THE MINISTER OF GOVERNMENT SERVICES	16.54 ha (40.87 ac)	1991

LEGEND

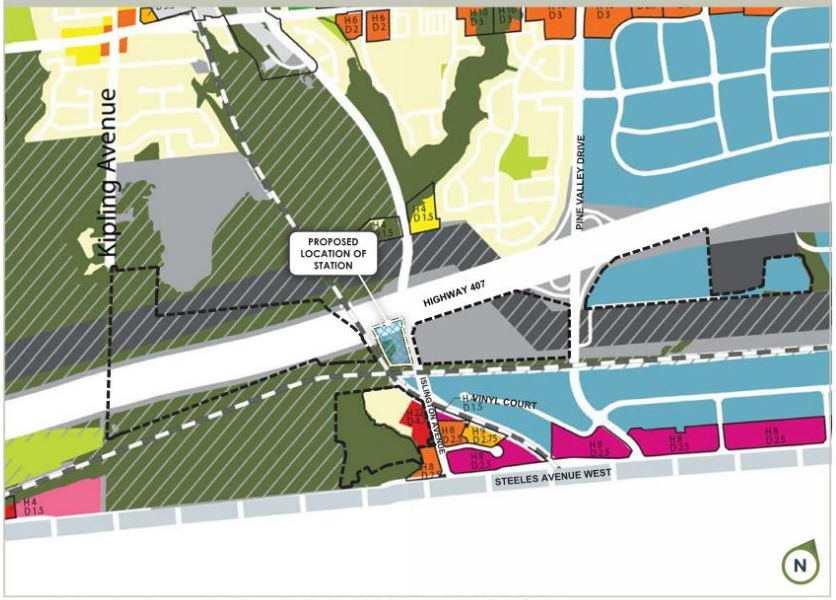
Proposed Potential Site for Station

Adjacent Landowners

PROPOSED WOODBRIDGE GO STATION



VAUGHAN OFFICIAL PLAN - SCHEDULE 13: LAND USE PLAN



**Land use designations have been altered to consolidate similar uses in the City of Toronto, City of Vaughan and Town of Caledon Official Plans.*

LEGEND

Proposed Potential Site for Station

Adjacent Landowners

LAND USE DESIGNATIONS

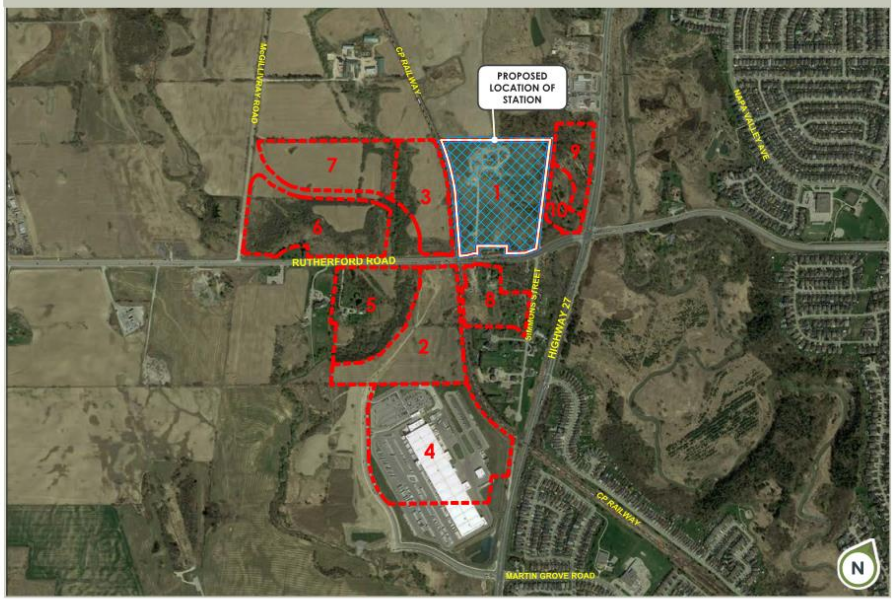
- Low Rise Residential
- Low-Rise Mixed-Use
- Mid-Rise Mixed-Use
- High-Rise Residential
- Employment Area
- Parks
- Natural Areas
- Parkway Belt West Lands
- Infrastructure and Utilities
- Railway
- Greenbelt Plan Area & Oak Ridges Moraine Conservation Plan Area
- Oak Ridges Moraine Natural Core
- Oak Ridges Moraine Natural Linkage
- Municipal Boundary
- Community Commercial Mixed Use
- Employment Commercial Mixed Use

Location of Site Proposed in 2010 Bolton Commuter Rail Feasibility Study (December 2010)

Source: Fig 9.5: Rutherford Road Proposed Station Sites

***Site #S4-2** was considered the preferred site due to its location relative to the east side of the right of way.*

Landowner Information for Lands in Vicinity of Proposed Vaughan (Elder Mills) GO Station

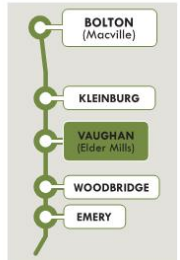


	Address	Owner	Area	Year Aquired
1	6080 RUTHERFORD ROAD	1233389 ONTARIO INC.	11.69 ha (28.89 ac)	1999
2	N/A	DI POCE REAL ESTATE HOLDINGS LIMITED	9.62 ha (23.77 ac)	2017
3	N/A	BRANOVA SOUTH DEVELOPMENTS INC.	5.86 ha (14.48 ac)	2007
4	8980 HIGHWAY 27	FKG VAUGHAN HOLDINGS LTD.	17.21 ha (42.53 ac)	2015
5	N/A	DI POCE MANAGEMENT LIMITED	8.02 ha (19.82 ac)	2017
6	N/A	A. DIMONTE AND SON LIMITED; SILVERSTRI, RALPH; MAUTI UMBERTO	10.0 ha (24.71 ac)	1974
7	N/A	A. DIMONTE AND SON LIMITED; SILVERSTRI, RALPH; MAUTI UMBERTO	7.41 ha (18.31 ac)	1974
8	N/A	GEMINI URBAN DESIGN (W) CORP.	3.80 ha (9.39 ac)	2017
9	9348 HIGHWAY 27	DI GIANNANTONIO, FIORA; DI GIANNANTONIO, EMIRENO	2.83 ha (6.99 ac)	1973
10	5970 RUTHERFORD ROAD	FIORA CATERING LIMITED	1.84 ha (4.55 ac)	1988

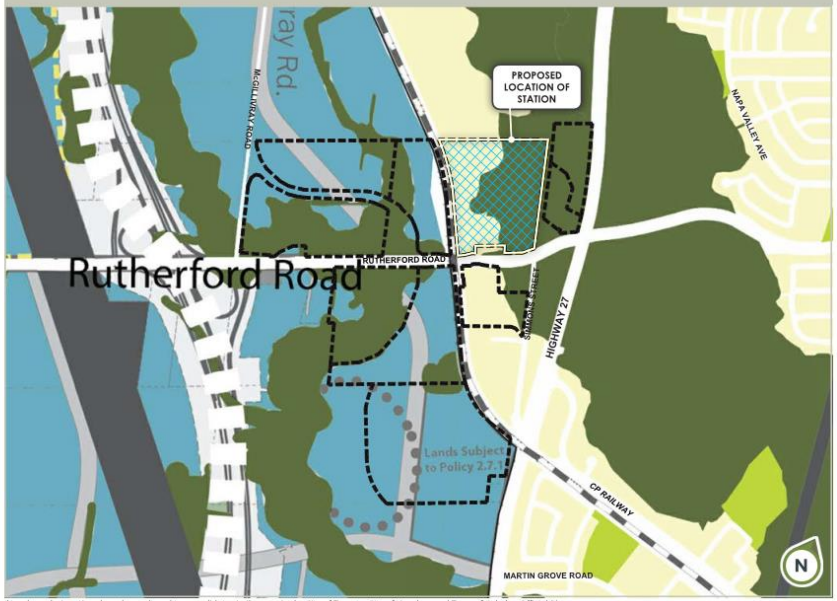
LEGEND

- Proposed Potential Site for Station
- Adjacent Landowners

PROPOSED VAUGHAN (ELDER MILLS) GO STATION



VAUGHAN OFFICIAL PLAN - SCHEDULE 13: LAND USE PLAN



**Land use designations have been altered to consolidate similar uses in the City of Toronto, City of Vaughan and Town of Caledon Official Plans.*

LEGEND

- Proposed Potential Site for Station
- Adjacent Landowners

LAND USE DESIGNATIONS

- Low Rise Residential
- Parks
- Natural Areas
- Parkway Belt West Lands
- Infrastructure and Utilities
- Railway
- Municipal Boundary

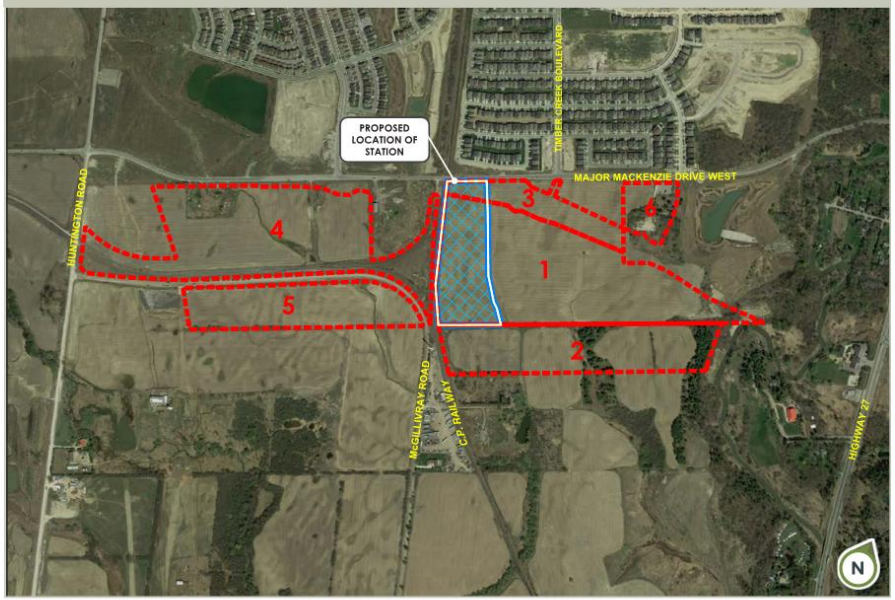
VAUGHAN SECONDARY PLAN (2019) - SCHEDULE 3: LAND USE

- Employment
- Proposed District Park

Location of Site Proposed in 2010 Bolton Commuter Rail Feasibility Study (December 2010)

Source: Fig 9.6: Major Mackenzie Drive Station Site

Landowner Information for Lands in Vicinity of Proposed Kleinburg GO Station



	Address	Owner	Area	Year Aquired
1	N/A	U-PAK DISPOSALS LIMITED	19.26 ha (47.59 ac)	1983
2	N/A	CASTLEPOINT GREYBOOK VAUGHAN INC.	10.27 ha (25.37 ac)	2018
3	N/A	THE REGIONAL MUNICIPALITY OF YORK	3.42 ha (8.45 ac)	N/A
4	6611 MAJOR MACKENZIE DR.	CANADIAN PACIFIC LIMITED	17.97 ha (20.88 ac)	1986
5	N/A	NORTH CAPITAL CORP.	7.57 ha (18.70 ac)	2006
6	6181 MAJOR MACKENZIE DR.	U-PAK DISPOSALS LIMITED	2.11 ha (5.21 ac)	2016

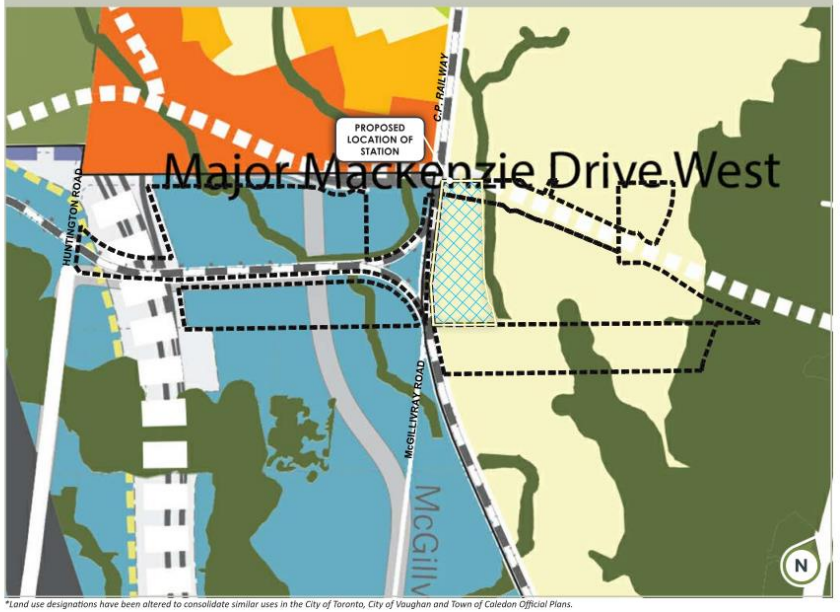
LEGEND

Proposed Potential Site for Station

Adjacent Landowners

PROPOSED KLEINBURG GO STATION

VAUGHAN OFFICIAL PLAN - SCHEDULE 13: LAND USE PLAN



**Land use designations have been altered to consolidate similar uses in the City of Toronto, City of Vaughan and Town of Caledon Official Plans.*

LEGEND

Proposed Potential Site for Station

Adjacent Landowners

LAND USE DESIGNATIONS

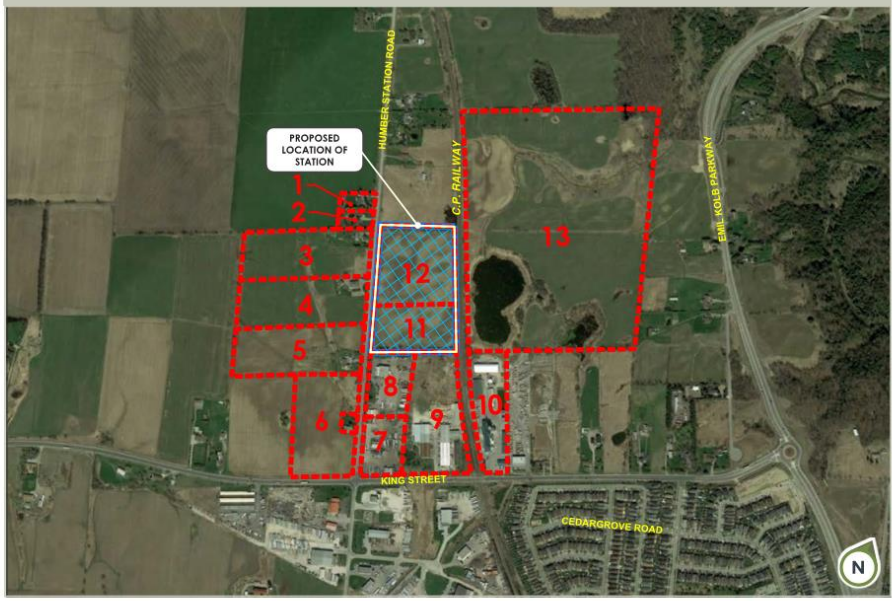
- Natural Areas
- Agricultural
- Low-Rise Residential
- Low-Rise Mixed-Use
- Mid-Rise Residential
- Mid-Rise Mixed-Use
- Parkway Belt West Lands
- Infrastructure and Utilities
- Railway
- Municipal Boundary

VAUGHAN SECONDARY PLAN (2019) - SCHEDULE 3: LAND USE

- Employment
- Proposed District Park

Location of Site Proposed in 2010 Bolton Commuter Rail Feasibility Study (December 2010)

Landowner Information for Lands in Vicinity of Proposed Bolton GO Station

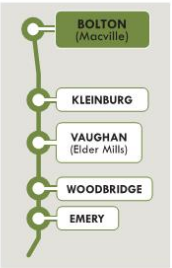


	Address	Owner	Area	Year Aquired
1	14226 HUMBER STATION RD	VENDITTI, ALEXANDER	0.41 ha (1.01 ac)	1975
2	14206 HUMBER STATION RD	QUADRINI, RICO; QUADRINI, NANCY	0.42 ha (1.04 ac)	2010
3	14196 HUMBER STATION RD	HUMBERKING (I) DEVELOPMENTS LIMITED	4.09 ha (10.1 ac)	2015
4	14166 HUMBER STATION RD	CONFORTI, PIETRO	4.05 ha (10.0 ac)	2018
5	14100 HUMBER STATION RD	HUMBERKING (II) DEVELOPMENTS LIMITED	4.13 ha (10.2 ac)	2016
6	N/A	HUMBERKING (II) DEVELOPMENTS LIMITED	4.15 ha (10.3 ac)	2015
7	14023 HUMBER STATION RD	HUMBERSTATION HOLDINGS LTD.	16.0 ha (39.5 ac)	2017
8	14079 HUMBER STATION RD	1063454 ONTARIO LIMITED	1.83 ha (4.52 ac)	1994
9	N/A	ONTARIO HARDWOOD PRODUCTS LIMITED	4.43 ha (10.9 ac)	1972
10	8112 KING ST	MAPLE FARM SUPPLY LIMITED	2.64 ha (6.52 ac)	1969
11	N/A	SEKHON, BHOPINDER SINGH	2.64 ha (6.52 ac)	1986
	N/A	CERVINI, IGINO; CERVINI, FRANCO; CERVINI, ANGELA; CERVINI, PIERINO	4.07 ha (10.1 ac)	1966
12				
13	N/A	SEKHON, BHOPINDER SINGH	28.9 ha (71.4 ac)	1986

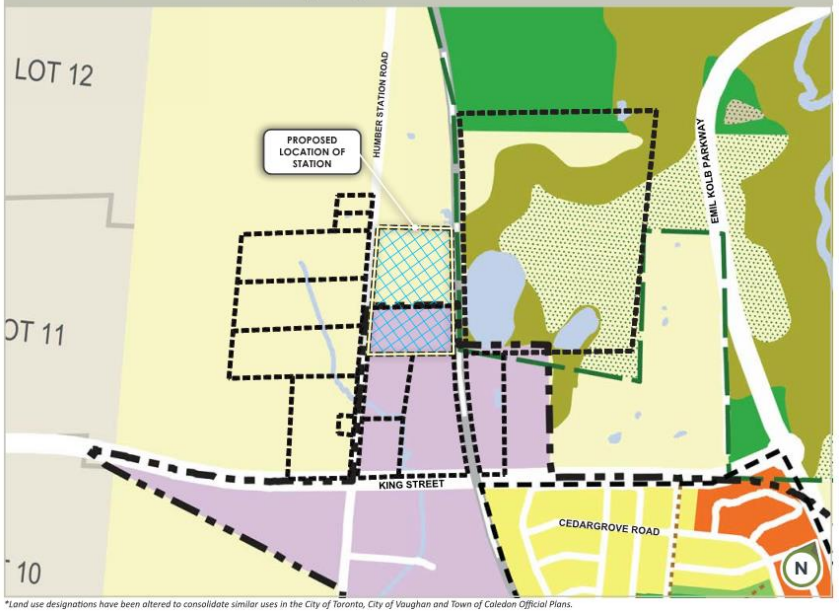
LEGEND

- Proposed Potential Site for Station
- Adjacent Landowners

PROPOSED BOLTON (MACVILLE) GO STATION



CALEDON OFFICIAL PLAN (2018) - SCHEDULE C: LAND USE PLAN



**Land use designations have been altered to consolidate similar uses in the City of Toronto, City of Vaughan and Town of Caledon Official Plans.*

LEGEND

- Proposed Potential Site for Station
- Adjacent Landowners

LAND USE DESIGNATIONS

- Prime Agricultural Area
- Low Density Residential (Proposed 2041)
- Dry Industrial
- Open Space Policy Area
- Environmental Policy Area
- Boundary of Greenbelt Plan Area
- Local Road
- Railway
- 2021 Settlement Boundary

WEST BOLTON SECONDARY PLAN SCHEDULE C-3: LAND USE PLAN

- Planning Area Boundary
- Medium Density Residential
- Low Density Residential
- Neighbourhood Park
- Tableland Forest
- Open Space Link

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