



ENVIRONMENTAL STUDY REPORT ADDENDUM

BLOOMINGTON GO STATION

Submitted to Metrolinx
by IBI Group
November 2016

Contents

Executive Summary	i
1. Introduction	1
1.1 Background.....	1
1.2 Statement of Project Change	2
1.3 GO Transit Class EA Addendum Process	2
2. Updated Problem Statement	4
3. Review of Existing Conditions	5
3.1 Planning Context.....	5
3.1.1 Provincial Policy Statement	5
3.1.2 Growth Plan for the Greater Golden Horseshoe	5
3.1.3 York Region Official Plan.....	5
3.1.4 York Region Transportation Master Plan	6
3.1.5 Town of Richmond Hill Official Plan.....	6
3.1.6 Oak Ridges Moraine Conservation Plan.....	7
3.2 Natural Environment.....	7
3.2.1 Aquatic Resources and Ecosystems	8
3.2.2 Vegetation.....	11
3.2.3 Wildlife and Wildlife Habitat	11
3.2.4 Endangered and Threatened Species.....	12
3.3 Socio-Economic Environment and Cultural Assessment	13
3.3.1 Land Use.....	13
3.3.2 Archaeological Resources	14
3.3.3 Built Heritage Resources	14
3.4 Groundwater and Surface Drainage	14
3.4.1 Site Topography.....	14
3.4.2 Site Physiographic, Geologic and Hydrogeologic Settings ..	14
3.4.3 Roadway Drainage	15
3.5 Transportation	16
3.5.1 Roads Infrastructure	16
3.5.2 Existing and Future Traffic Operations	18
4. Preliminary Design Alternatives	23
4.1 Background.....	23

4.2	Identification and Description of Design Alternatives	24
4.2.1	Design Standards	24
4.2.2	Screening Design Concepts	25
4.2.1	Evaluation of Preliminary Design Alternatives	35
4.3	Development of Site Layout Designs for the Preferred Alternative	37
4.3.1	MTO Commuter Parking Lot.....	37
4.3.2	Parking Lot Alternatives	38
4.4	Preferred Design	43
4.5	Assessment of Net Effects of the Preferred Design	45
5.	Stakeholder Consultation	48
5.1	Concerns Expressed during Original Class EA (2009)	48
5.2	Current Class EA Addendum	49
6.	Project Description of the Preferred Alternative Design.....	54
6.1	General Overview	54
6.2	Site Access/ Egress.....	55
6.3	Roadway Design	57
6.3.1	CN Rail Bridge	57
6.4	Site Development	58
6.4.1	Internal Site Circulation.....	58
6.4.2	Municipal Services and Utilities	59
6.5	Drainage and Stormwater Management.....	59
6.5.1	Roadway Drainage	60
6.5.2	Station Drainage	60
6.5.3	Stormwater Management Plan	61
6.6	Wetlands.....	62
6.6.1	Amphibian Crossing.....	62
6.7	Landscape	64
6.8	Property Acquisition.....	64
6.9	Construction Staging.....	64
7.	Environmental Effects and Mitigation Measures	65
7.1	Erosion and Sediment Control Measures.....	65
7.2	Aquatic Eco-Systems.....	66
7.3	Wildlife and Wildlife Habitat	68
7.4	Vegetation and Vegetation Communities	68
7.5	Cultural Environment.....	69
7.6	Groundwater.....	70

7.7	Property Waste and Contamination	70
7.8	Socio-Economic Environment.....	70
7.9	Compliance with Plans and Policies	71
7.10	Summary of Identified Concerns and Proposed Mitigation.....	71
7.11	Implementation and Monitoring.....	75
7.12	Commitments to Further Investigations.....	75

Exhibits

Exhibit E-1	Key Plan
Exhibit E-2	Preferred Design Plan
Exhibit E-3	Wetlands and Mature Upland Woodland Area
Exhibit 1-1	Bloomington Road GO Station Study Area
Exhibit 3-1	Natural Environment Features
Exhibit 3-2	Road, Rail, and Environmental Constraints
Exhibit 3-3	Existing (2013) Intersection Turning Movement Counts
Exhibit 3-4	Future (2031) Background Turning Movement Counts
Exhibit 3-5	Bloomington GO Station – Vehicle Trip Generation Estimation
Exhibit 3-6	Peak Period Passenger Load Profile by Train
Exhibit 3-7	Total Peak Hour Peak Direction Trips
Exhibit 3-8	Peak Hour Trip Generation
Exhibit 3-9	Site Trip Distribution
Exhibit 4-1	Original Design Concept for Bloomington GO Station (Richmond Hill Layover Facility EA, August 2009)
Exhibit 4-2	Design Alternative 1
Exhibit 4-3	Design Alternative 2
Exhibit 4-4	Design Alternative 3
Exhibit 4-5	Design Alternative 4
Exhibit 4-6	Design Alternative 5
Exhibit 4-7	Design Alternative 6
Exhibit 4-8	Design Alternative 7
Exhibit 4-9	Design Alternative 8
Exhibit 4-10	Conceptual Lane Configuration at CN Bridge
Exhibit 4-11	Evaluation of Design Alternatives
Exhibit 4-12	Alternative 2 – Preferred Alternative

Exhibit 4-13	Site Layout Option 1
Exhibit 4-14	Site Layout Option 2
Exhibit 4-15	Site Layout Option 3
Exhibit 4-16	Site Layout Option 4
Exhibit 4-17	Bloomington GO Station - Preferred Design
Exhibit 4-18	Comparison of Preferred Design Alternative with Original Design Concept
Exhibit 5-1	Summary of Stakeholder Correspondence and Meetings
Exhibit 6-1	Bloomington GO Station – Preferred Design Plan
Exhibit 6-2	Assessment of Risks and Impacts
Exhibit 7-1	Plan and Policy Compliance
Exhibit 7-2	Summary of Environmental Effects, Mitigation, and Monitoring Requirements

Appendices

Appendix A - Natural Heritage Assessment
Appendix B - Stage 1 and 2 Archaeological Assessment
Appendix C - Hydrogeological Assessment
Appendix D - Drainage and Stormwater Assessment
Appendix E - Traffic Impact Assessment
Appendix F - Design Criteria
Appendix G - Arborist Report for Tree Removal and Preservation

Glossary

AADT – Annual Average Daily Traffic
CAH – Controlled Access Highway
CNR – Canadian National (CN) Railway
CSP – Corrugated Steel Pipe
CSPA – Corrugated Steel Pipe Arch
DRM - Design Requirements Manual (GO Transit)
ELC – Ecological Land Classification
EMME – Traffic and Transportation Macro-Model
ESR – Environmental Study Report
ESA – Environmentally Sensitive Area
ESC – Erosion and Sediment Control
GDSOH – Geometric Design Standards for Ontario Highways
LOS – Level of Service (measure of traffic operational performance)
MBCA – Migratory Birds Convention Act
MOECC – Ministry of Environment and Climate Change
MNRF – Ministry of Natural Resources and Forestry
MTCS - Ministry of Tourism, Culture and Sport
MTO – Ministry of Transportation of Ontario
OMB – Ontario Municipal Board
OPSS – Ontario Provincial Standard Specifications
ORM – Oak Ridges Moraine
ORMCP – Oak Ridges Moraine Conservation Plan
PPS – Provincial Policy Statement
PSW – Provincially Significant Wetlands
PTTW – Permit to Take Water
Ramp W-S (W-S ramp) - Interchange ramp with traffic flow from west to south
Ramp N-E/W (N-E/W ramp) - Interchange ramp with traffic flow from north to east and west
Ramp E-S (E-S ramp) - Interchange ramp with traffic flow from east to south
RHOP – Richmond Hill Official Plan
ROW – Right-of-Way
SAR – Species at Risk
STEP – Sustainable Technologies Evaluation Program
TAC – Transportation Association of Canada (Geometric Design Guide for Canadian Roads)
TMC – Turning Movement Counts
TMP – Transportation Master Plan
TRCA – Toronto and Region Conservation Authority
TTC – Toronto Transit Commission
YROP – York Region Official Plan
YRT- York Region Transit

Executive Summary

Introduction

Metrolinx (previously GO Transit) is proposing to construct a new GO Station within the southwest quadrant of the Bloomington Road / Highway 404 interchange. The site will include a station building, a side platform, parking garage, surface and enclosed parking, a bus loop, kiss and ride, and adjacent (future) carpool lot.

Exhibit E-1: Key Plan



The site was selected as part of the *Richmond Hill Layover Facility Environmental Assessment [EA] and Preliminary Design* completed in August 2009 by AECOM on behalf of Metrolinx. IBI Group initiated schematic design of the station in October 2011. Based on this work, it was determined that the EA configuration needed to be revised to account for various site constraints including, but not limited to, the existing Canadian National (CN) rail bridge crossing of Bloomington Road, site traffic demands, current roadway design standards, and new Ministry of Transportation (MTO) Highway Access Management Guidelines.



Given that the changes to the preferred design may affect the environmental impacts of the project, this Environmental Study Report (ESR) Addendum has been undertaken to:

- Define the nature and scope of the change;
- Summarize the design changes associated with the preferred alternative;
- Consult with affected stakeholders; and,

- Document the potential environmental impacts associated with the design changes, and outline the proposed measures to mitigate these impacts.

Updated Problem Statement

The concept proposed in the 2009 ESR for the Bloomington GO Station consisted of one access point (grade separated with Highway 404 W-S ramp), 700 surface parking spaces, and potential for future expansion of the surface parking or the introduction of an MTO carpool lot. Based on traffic studies (undertaken by IBI Group as part of this ESR Addendum and documented herein), and an examination of the feasibility of the concept design, it was determined that the selected design needed to be modified to provide for additional parking and access changes (including a second access to the site). In turn, this led to the need to undertake adjacent roadway and interchange ramp modifications, as well as incorporate a multi-level parking structure as a key feature of the plan.

Development and Evaluation of Design Alternatives

To address the site access needs, alternatives were developed and evaluated based on their ability to serve site and background traffic demands in keeping with accepted design standards. For each alternative, the key design standards/constraints are detailed, as well as any deficiencies/critical issues which form the rationale of either eliminating or carrying the alternative forward. After an evaluation of all reasonable alternatives, with due consideration to operational and safety requirements, it was determined that the primary site access needed to be located west of the CN tracks. This will impact the woodland and wetland areas along the south side of Bloomington Road, west of the CN rail crossing. Modifications to the CN rail bridge will also be required to accommodate widening along Bloomington Road and the new west access road (this work is to be completed by CN and is not the subject of this addendum).

Upon selection of the preferred access configuration, various site layout options were developed and evaluated. The preferred design provides for the ultimate parking needs, while maintaining the existing provincially significant wetland centrally located on site and providing a 7m to 39m buffer around the wetland to hard surfaces including: parking areas, kiss and ride, parking garage, walkways, and/or bus loop around most of the perimeter. Mitigation will be built into the design to reduce the effects of hazards and stressors (i.e., vehicles, light, noise, salt spray) and maintain the ecological integrity of the wetland.

Preferred Design Layout

Exhibit E-2 below illustrates the modified design which provides for two accesses to/from the site, a parking garage and surface parking for a combined total of approximately 1,050 spaces, plus additional 150-200 spaces associated with a separate MTO carpool lot. Both accesses will be signalized. The easterly access requires relocation of the Highway 404 N-E/W ramp, 45m west of its current location, to accommodate a 90m radius (50km/h design speed) for the eastbound to southbound on-ramp (Highway 404 W-S ramp). The westerly access will be located 210 m west of the CN crossing.

Key elements of the preferred design are outlined below:

- A three storey parking structure with integrated station building to provide for approximately 765 spaces. Approximately 285 vehicular parking spaces adjacent to parking structure to accommodate GO Transit users, and provisions for an additional 150-200 parking spaces as part of a MTO carpool lot, located on the east side of the site.

- Two signalized accesses on Bloomington Road separated by 350m. The west access will serve all GO Station traffic, excluding buses and the majority of vehicles accessing the site from Highway 404 southbound (Ramp N-E/S/W). The east access will be located directly opposite the re-aligned Highway 404 southbound off-ramp (N-W/E ramp) connection to Bloomington Road and used by all buses, the majority of vehicles entering from Highway 404 southbound, and all traffic entering/exiting the MTO carpool lot (150-200 spaces).
- The internal road configuration is designed to minimize potential conflicts, accommodate forecasted queues and to ensure delays for vehicles entering and exiting the site are not excessive.
- The kiss and ride facilities are located as close as possible to the station building to minimize walking distance.
- The bus station area is located on the ground level of the parking garage adjacent to the rail and beneath the plaza to the rail platform.

Consultation with Stakeholders

As part of this ESR Addendum, the project team reached out to key stakeholders to provide project information, receive feedback, and identify and address issues associated with the design, potential environmental impacts and proposed mitigation measures. In this regard, the following stakeholders affected by the design changes were consulted during the study:

- Ministry of Transportation (MTO)
- Ministry of Natural Resources and Forestry (MNRF)
- Ministry of Tourism, Culture and Sport (MTCS)
- Toronto and Region Conservation Authority (TRCA)
- Region of York
- Town of Richmond Hill
- Town of Aurora
- Canadian National Railway (CN)
- Utility Companies (incl. Bell Canada, Power Stream, Hydro One, Enbridge, etc)

Agency and stakeholder input was largely secured through individual meetings and is documented herein. Given the range of options being considered, it was determined that a Public Information Centre would not be necessary. Property was acquired from a single landowner on the south side of Bloomington Road west of the CN rail crossing to accommodate the west access road. No other residents or businesses in the vicinity of the site will be directly impacted.

Environmental Impacts and Commitments

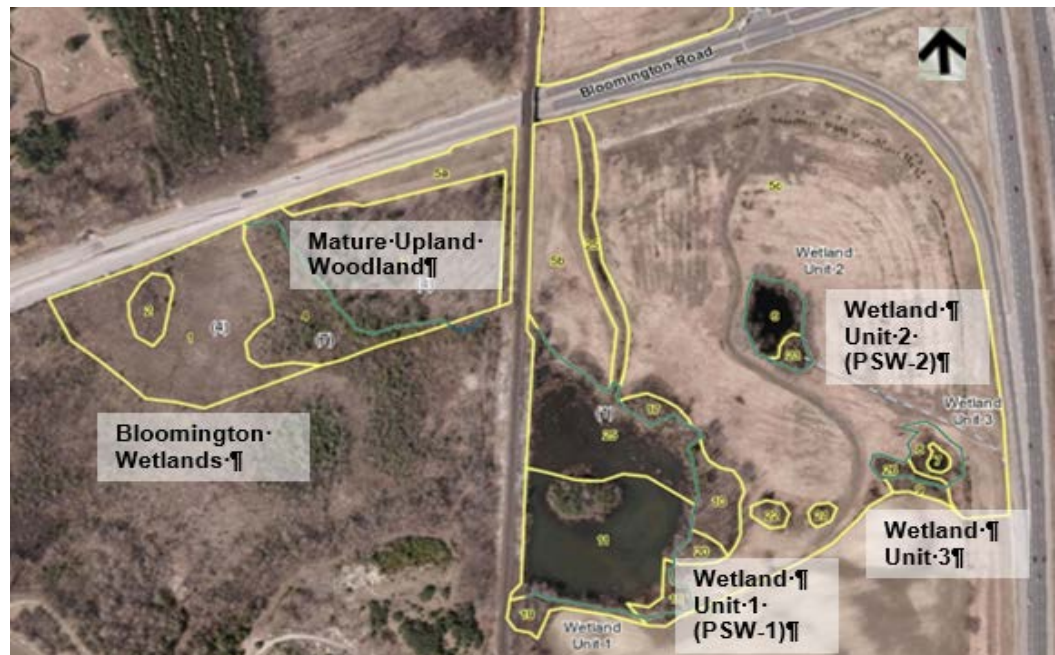
The ESR Addendum process included an update of all study area inventories and assessments to highlight areas of environmental sensitivity associated with the natural, social and cultural environments as documented in Section 3 of this ESR Addendum report. This report also documents commitments in Section 7 addressing environmental effects and proposed mitigation for the detailed design and construction phases. Several key items in this regard are noted below:

- a) **Wetlands:** The area of wetland loss from the Bloomington Wetlands to accommodate the new access road west of the railway will be approximately 0.10 ha (ref. **Exhibit E-3**). Given that the area to be removed is adjacent to the busy Bloomington Road, negative effects are expected to be minimal. An additional 0.005 ha will also be lost from the

largest of the three wetland areas east of the CN crossing (PSW-1) to accommodate the GO Station (beyond the requirements for the CN track widening). A compensation strategy will be developed through discussions with Ministry of Natural Resources and Forestry (MNRF), Toronto and Region Conservation Authority (TRCA), and the Town of Richmond Hill, as applicable.

With the implementation of identified mitigation measures (including permeable paving, discharging the clean roof water from the station into the kettle pond central to the site), the existing water supply and water quality to the wetland Unit 2 will be maintained (ref. **Exhibit E-3**). Additional measures are incorporated into the design to sustain the ecosystem in this area, including: installing two eco-passage culverts on the south side of PSW-2 for small to intermediate-sized wildlife; landscaping within the buffer around the pond, and controlling the amount of light spill into the area.

Exhibit E-3: Wetlands and Mature Upland Woodland Area



- b) **Woodland:** The design will result in a total loss of 0.46 ha of mature upland woodland west of the CN rail corridor. The balance of upland effects are primarily limited to the loss of disturbed meadowlands. A compensation strategy will be developed through discussions with MNRF, TRCA, and the Town of Richmond Hill, as applicable.
- c) **Water Quality and Quantity:** In general, existing drainage patterns across Bloomington Road and the Highway 404 interchanges will be maintained and existing peak flow rates will not be exceeded under proposed conditions. Storm sewer systems including an oil grit separator (OGS) unit will be installed along Bloomington Road in the vicinity of the CN rail bridge to convey runoff to receiving drainage systems. Most of the roadway runoff will continue to be conveyed by roadside swales/ditches.

At the station, on-site controls such as parking lot storage, ditch/swale storage and surface ponding will be implemented. Oil grit separators will be used in combination with flat bottom grass swales/bio-swales to provide enhanced water quality control.

The water balance analysis completed as part of this study indicates that the proposed mitigation measure will enhance the infiltration for wetland units, therefore, PSW-1 and PSW-2 will continue to receive the existing level of base flow.

Further mitigation measures and commitments to future work, based on the identified environmental sensitivities associated with the proposed design, are outlined in Section 7 of this report.

1. Introduction

1.1 Background

The existing Richmond Hill rail corridor runs along the Canadian National Railway (CNR) owned line (Bala Subdivision) from downtown Toronto to Richmond Hill, and includes four GO Stations: Oriole, Old Cummer, Langstaff and Richmond Hill. In August 2009, AECOM completed the *Richmond Hill Layover Facility Environmental Assessment and Preliminary Design* (Environmental Study Report, ESR), in accordance with the GO Transit Class Environmental Assessment (2003 Class EA, as amended August 2005), to identify suitable sites for a future layover facility and train stations within an expanded Richmond Hill rail corridor, as the Richmond Hill GO Station has reached capacity. In general, the environmental assessment included:

- A review of the need and justification for the addition of two new GO Stations and a layover facility to facilitate the expansion of GO Transit services further north;
- Rail corridor improvements to resolve operational conflicts between CN and GO Transit and to improve GO Transit rail service throughout the Richmond Hill rail corridor;
- Alternative preliminary designs (including the Bloomington GO Station); and
- An evaluation of the impacts on all aspects of the environment.

As part of this study, it was recommended that a new GO Station be located west of Highway 404 and south of Bloomington Road, as part of Metrolinx goal to deliver a more integrated and effective public transportation in the Greater Toronto Area. **Exhibit 1-1** below illustrates the Study Area.

Exhibit 1-1: Bloomington Road GO Station Study Area



Image source: Google

The concept proposed for the Bloomington GO Station in the 2009 ESR consisted of one access point (grade separated with Highway 404 W-S ramp), 700 surface parking spaces initially, as well as the potential for future expansion of the surface parking or the introduction of an MTO carpool lot.

1.2 Statement of Project Change

Based on traffic studies completed by IBI Group in 2013, using data obtained from Metrolinx, York Region, and MTO, it was determined that the selected design needed to be modified to accommodate additional parking and access changes (including an additional access to the site), while minimizing impact to the surrounding environment. The additional access is required to accommodate site demands and address geometric constraints associated with providing a full movement access to the site opposite the existing Highway 404 southbound off-ramp (N-E/W ramp), and a grade separation of the Highway 404 W-S ramp.

The design for the Bloomington GO Station has since been revised to include one additional access point west of the CN rail corridor, a three-storey parking garage and surface parking for a combined total of approximately 1,050 spaces, plus an additional 150-200 spaces for a MTO carpool lot. In general, the overall footprint of the site has not significantly increased. In addition, the revised design has been improved to ensure key wetland features have been retained. Therefore, the project change is not considered to be significant.

Metrolinx has prepared this ESR Addendum to assess the potential impacts of the change in the design of the Bloomington GO Station. Based on the proposed changes, this ESR Addendum will be published on Metrolinx website for 30 days and notification of the filing provided to all potentially affected and previously interested parties and agencies. Copies of the ESR Addendum will be provided upon request.

1.3 GO Transit Class EA Addendum Process

This ESR Addendum has been prepared in accordance with the revision and addenda provisions of the *GO Transit Class EA Document* (2003, as amended August 2005). This document outlines an approval process for project planning and implementation in accordance to the provincial *Environmental Assessment Act*.

Section 6.2 of the *GO Transit Class EA Document* recognizes that in some cases "it may not be feasible to implement a project in the manner as outlined in the ESR". Furthermore, the selected design, as originally identified or as outlined in the ESR, may change significantly enough prior to construction to affect the environmental impacts of the project.

As noted in Section 1.2 above, in the case of the Bloomington GO Station, Metrolinx has determined that an addendum to the ESR is required to accommodate a change in the proposed access configuration to the site (from one point of access to two points, including associated roadway improvements), and a change in the number of parking spaces (including the addition of a parking garage and MTO carpool lot).

As such, the ESR Addendum must describe the following:

- The nature and scope of the change in the problem or opportunity;
- The alternatives to address the problem or opportunity;
- The design changes associated with the preferred design alternative;
- The environmental impacts associated with the selected design;

- The affected stakeholders and the manner in which potential concerns identified through supplementary consultation are being addressed; and,
- Proposed measures to mitigate adverse environmental condition changes.

This ESR Addendum will be filed on the public record at Metrolinx Head Office for a 30 calendar day review period. Part II Order provisions can be triggered during this review period, however, such **provisions should only relate to the “change” in the design alternative pertaining to the site access (including interchange ramp modifications) and parking garage.**

2. Updated Problem Statement

The Richmond Hill Layover Facility Environmental Assessment (August 2009) outlined the need to alleviate congestion at the current Richmond Hill GO Station and service more riders within and beyond Richmond Hill. To address these needs, Metrolinx will be extending GO Transit train services further north and constructing new GO Transit stations at Stouffville Road (Gormley GO Station) and Bloomington Road (Bloomington GO Station).

With respect to Bloomington GO Station, the concept contained in the 2009 ESR, provided for a new rail station to be located in the southwest quadrant of the Bloomington Road / Highway 404 interchange. This station included 700+ spaces of surface parking plus a designated area for future expansion and MTO carpool lot, a bus loop, and a kiss and ride area. Support structures included the station building/parking garage and platform. Access to the station was to be provided by a single driveway located directly opposite the N-W/E ramp terminal of the Highway 404 interchange. The Highway 404 W-S ramp would be lowered to pass under the driveway connection to Bloomington Road.

The original concept presented in the 2009 ESR presented the following drawbacks:

- The concept does not accommodate traffic exiting the site to Highway 404 southbound;
- The required vertical clearance for a grade separation between the proposed access and the existing Highway 404 W-S ramp cannot be achieved given the constraints of the CN rail crossing and local drainage conditions;
- The concept does not follow MTO Design Guidelines for Access Roads at Freeway Ramp Terminals (which promote a second access to the site and restricted left turns into and out of the site opposite the interchange off-ramp); and,
- The projected site traffic demands will exceed the available capacity offered by a single grade separated access, located opposite the Highway 404 W-S ramp.

Based on the above, alternative access configurations were considered and a detailed traffic analysis undertaken to identify the transportation infrastructure required to adequately serve the station and satisfy the following additional design criteria:

- Provide a minimum of two access/egress points to the site;
- Provide access to Highway 404 southbound for vehicles exiting the site;
- Provide for up to 1,050 parking spaces for the GO Station, plus an additional 150-200 spaces for a MTO carpool lot.

A summary of the alternatives considered is provided in Sections 4.2 and 4.3 of this report.

3. Review of Existing Conditions

3.1 Planning Context

3.1.1 Provincial Policy Statement

The *Provincial Policy Statement* (PPS: 2014) provides general policies on land use patterns, transportation priorities, resources and public health and safety that guide development across Ontario. The PPS focuses on the need for community based planning that increases the opportunity for use of public transit including GO Transit. Consistency with goals, objectives and general policy direction of the PPS is necessary and appropriate for this project.

3.1.2 Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe (Growth Plan, 2006) supports development of a wide variety of transportation modes, including public transit and rail systems. The following sections are most applicable to this Metrolinx project.

- **Section 3.2.2c** states that transportation systems should “be sustainable by encouraging the most financially and environmentally appropriate mode for trip-taking”.
- **Section 3.2.2.3c** states that Ministries of the Crown, public agencies and municipalities will “consider increased opportunities for moving people and goods by rail, where appropriate”.
- **Section 3.2.3.2b** indicates that priority should be placed on “increasing capacity of existing transit systems to support intensification areas”.

3.1.3 York Region Official Plan

The York Region Official Plan (YROP; 2010) was approved by the Minister of Municipal Affairs and Housing on September 7, 2010. Although subject to a number of appeals, portions of the Official Plan are in effect and were last updated in April 2016.

According to Map 8 of the YROP (2010), the study area resides in a ‘Rural Area’. Uses permitted include agriculture, forestry, conservation and farm related activities. Non-agricultural uses are permitted in the Rural Policy Area; however, a needs and impact analysis must be completed.

Regional Transportation Policies

The Regional Transportation Policies for the YROP (2010) outlines the objectives of a transit network including provision of transit services that are convenient, accessible and equitable to all residents within the Region. Among others, it is the policy of Council to:

- Co-operate with area municipalities, Metrolinx, the Toronto Transit Commission (TTC), and the province in the planning, coordination, integration and operation of existing and new transit services;
- Encourage increases in transit modal splits across the Region;
- Develop effective transit services to connect rural communities and work with partners to complete the transit network (including Metrolinx program for two-way services on the Richmond Hill, Stouffville and Barrie GO Transit lines, extension of the Richmond

Hill GO rail line to the Highway 404/Bloomington Road area, and additional GO Transit rail inter-modal stations).

3.1.4 York Region Transportation Master Plan

The York Region Transportation Master Plan (TMP) was updated in 2016. The TMP defines the long-term transportation vision that will support the Region to the year 2041. The TMP recognizes significant GO Transit rail network improvements along the Barrie, Richmond Hill, and Stouffville corridors.

York Region TMP also outlines support of new policies and initiatives to ensure all residents and employees have “safe, reliable, convenient and economical transportation options”. York Region will work closely with Metrolinx to maximize York Rapid Transit and Viva access to the GO Transit rail station and increase shuttle and community bus services to meet train departures and arrivals in areas around GO Stations. The Region will also develop a procedure to ensure local municipalities, York Rapid Transit/Viva and GO Transit together explore Transportation Orientation Development opportunities around Viva and GO Stations. York Region will focus on enhancing the coordination of transit services and infrastructure with adjacent municipalities and other transit providers including GO Transit. The transit and active transportation components require close coordination with other agencies such as Metrolinx.

York Region has a five year action plan that will serve as the foundation to what is to come relative to enhancements for the Regional transportation system. The Region will partner with Metrolinx and local municipalities to assess the feasibility of new park and ride stations along several existing rail lines. They will also develop further promotion on active transportation such as walking, cycling, car sharing, and local transit connections to and from GO Rail Stations.

3.1.5 Town of Richmond Hill Official Plan

The Richmond Hill Official Plan (RHOP; 2010) was adopted by the Council of the Town of Richmond Hill on July 12, 2010. It was appealed to the OMB in April 2012. Since then the OMB has partially approved the RHOP and brought specific policies of the plan into effect. The site of the Bloomington GO Station is not affected by this appeal.

The RHOP identifies the site of the proposed Bloomington GO Station as Oak Ridges Moraine Natural Linkage. Transportation uses are permitted subject to Section 41 of the Oak Ridges Moraine Conservation Plan. See Section 3.1.6 for more information.

Town of Richmond Hill Transportation Policies

The RHOP states that the Town will work with York Region, Metrolinx and the Province to develop a coordinated transit system that will encourage residents to use transit as an alternative means of transportation.

The Town is pursuing with Metrolinx a northerly extension of the Richmond Hill GO Rail service to Vondorf. This extension will include an all-day, two-way service with a permanent equipment layover site in the general area between Bethesda Sideroad and Stouffville Road. It is also the policy of the Council that:

- “The Town shall work with Metrolinx and the Province to encourage all-day, two-way Transit rail service within the Town;
- Rail transit stations shall be encouraged to incorporate transit-oriented development and structured parking, where appropriate;

- Rail transit facilities including parking areas and train storage areas shall provide landscaping and buffering to mitigate the visual impact of the facility;
- Development adjacent to rail rights-of-way shall undertake appropriate measures to mitigate any adverse impacts from noise and/or vibration;
- Development abutting and adjacent to railway rights-of-way shall comply with all appropriate safety requirements including setbacks, berms and security fencing to the satisfaction of Provincial or Federal agencies; and,
- Development of residential or other sensitive land uses in proximity to a railway right-of-way shall be required to undertake noise and vibration studies to the satisfaction of the Town and applicable Provincial and Federal agencies.”

3.1.6 Oak Ridges Moraine Conservation Plan

The study area is located in a Natural Linkage Area of the Oak Ridges Moraine. As transportation infrastructure, this project is subject to Section 41 of the Oak Ridges Moraine Conservation Plan (ORMCP). Section 41 - Transportation, Infrastructure, and Utilities requires that the need for the project has been demonstrated and there is no reasonable alternative; and, that the applicant demonstrates:

- Area of construction disturbance will be kept to a minimum;
- Right-of-way widths will be kept to a minimum (consistent with keeping as many utilities within a single corridor as possible);
- Project will allow for wildlife movement;
- Lighting will be focused downwards away from Natural Core Areas; and
- Planning, design and construction will keep adverse effects on the ecological integrity of the Plan Area to a minimum.

Section 41 (4) prohibits new transportation uses within key natural heritage features or hydrologically sensitive features, except as permitted by Section 41(5). Section 41 (5) permits transportation uses to cross a key natural heritage feature if the applicant demonstrates that:

- The need for the project has been demonstrated and there is no reasonable alternative;
- Planning, design and construction practices will keep adverse effects to a minimum;
- Design practices will maintain and where possible improve or restore, key ecological and recreational linkages;
- Landscape design will adapt to the site circumstances of the site and use native plant species; and
- Long-term landscape management approaches will maintain and where possible improve or restore the health diversity, size and connectivity of the key natural heritage feature or hydrologically sensitive feature.

3.2 Natural Environment

The proposed Bloomington GO Station site is located within the Greenbelt, on the south slope of Oak Ridges Moraine, on land designated as Natural Linkage Area. It includes portions of the White Rose - Preston Lake Wetland Complex. The wetland is designated as Provincially Significant and is also considered to be an Environmentally Significant

Area by the TRCA. In the vicinity of the study area, the Vandorf Kettles and the Simcoe Lakes Areas are of Natural and Scientific Interest.

The main wetland area is located immediately south of Bloomington Road and west of the railway. However, there are three additional kettle-like features to the east. The larger one (referred to herein as wetland Unit 1 or PSW-1) is connected to the marsh west of the tracks via a culvert under the CN railway (**Exhibit 3-1**). The smaller two wetlands are not connected except perhaps during flood conditions. Wetland Unit 2 (PSW-2) receives untreated surface water drainage from the vicinity of Highway 404. Wetland Unit 3 is not part of the Provincially Significant Wetland (PSW) and is located closer to Highway 404. As part of the current project, the wetland boundaries were staked in the field in the presence of MNRF staff in June 2013.

For the most part, the site largely consists of cultural meadow and old field. There is an area of upland forest located just west of the CN rail corridor. From an ecological perspective, Highway 404 to the east and Bloomington Road to the north have a significant effect on the wildlife that use the area.

The existing natural heritage features and functions, identified through a review of background information and field investigations, are described in this section.

3.2.1 Aquatic Resources and Ecosystems

The site is located within the “Bruce Creek” Fisheries Management Zone of the Rouge River Watershed. Tributaries of the Bruce Creek flow southeasterly from the wetlands on the west part of the site (part of the Bloomington Wetlands). As part of the EA completed in 2009, the littoral area of the White Rose – Preston Lake Wetland Complex was surveyed and found to contain one species of warmwater baitfish. Therefore, it is expected that the wetland pockets especially PSW-1, and the wetland area alongside Bloomington Road, support warm water fish communities and species.

As part of this ESR Addendum, Beacon Environmental completed breeding amphibian call count surveys within and adjacent to the site in 2012, 2014 and 2015 (ref. Natural Heritage Assessment included in **Appendix A**). All surveys were conducted during the appropriate seasons and times of day, and environmental conditions (e.g., temperature, wind) were within the acceptable range of values for these types of assessments.

The surveys undertaken in 2012 focused on the marsh area on the south side of Bloomington Road (west of the railway) and the wetland units located on the south of Bloomington Road (east of the railway). The findings of the 2012 surveys are summarized below:

- A full chorus of Spring Peepers were calling from the main marsh more than 100 m south of the road outside of the study area. Four Gray Treefrogs were calling from the study area portion of the marsh;

Exhibit 3-1: Natural Environment Features



- In PSW-1, three individual Gray Tree Frogs were calling and American Toad may be present;
- A full chorus of Wood Frogs were recorded from PSW-2 and American Toad was observed;
- A full chorus of Spring Peepers was present in wetland Unit 3; and
- Green Frogs and American Toads were observed in the drainage ditch and two Green Frogs were also recorded calling.

The key results of the 2014 call count surveys are as follows:

- Wood Frog, Gray Treefrog, American Toad and Green Frog recorded from PSW-2. Full chorus of Wood Frog were documented at this wetland unit and approximately 20 Gray Treefrogs;
- A full chorus of Spring Peepers was present in wetland Unit 3. Approximately three Gray Treefrogs were documented in this wetland unit; and
- Calling amphibians at PSW-1 was limited to Gray Treefrog (chorus level 2).

Key results of the amphibian surveys undertaken in 2015, are provided below. These surveys focused primarily on PSW-2 and wetland Unit 3:

- On April 14, 2015 a small chorus level 2 of Wood Frog (maximum ten males) was noted in PSW-2. Spring Peepers were active in wetland Unit 3, but not in PSW-2; and
- On April 17, 2015 the Wood Frog chorus peaked at about 50 animals total in PSW-2, some individuals documented were females; no egg masses or amplexus were observed. These results are similar to the numbers recorded by field staff in 2014 (i.e., 40 males). Three Spring Peeper males were present in PSW-2, whereas a full chorus was present in wetland Unit 3.

Based on similar studies, it is expected that small numbers of this species may be moving away from key breeding ponds and calling from secondary locations which are lower quality or otherwise less preferred habitats.

- An egg mass survey was conducted on April 25, 2015. Forty-six egg masses of Wood Frog were documented in PSW-2. On this date, embryonic development was just less than 50 percent. It is estimated that 92% of suitable habitat was thoroughly assessed during this survey. Two parallel transects extending beyond suitable spawning areas were employed.
- On May 5, 2015 the calling count results indicated that calling levels of Spring Peepers had decreased at wetland Unit 3, and seven to ten individuals were documented at PSW-2. It is possible that these were non-breeding individuals. No other amphibians were seen or heard.
- During the June 25 survey two single calling Gray Treefrogs were recorded

Reptiles

Although targeted surveys were not conducted for reptiles, a number of Midland Painted Turtles were observed in PSW-1, PSW-2, and wetland Unit 3. While conducting detailed amphibian surveys in PSW-2 in 2015, one or two Midland Painted Turtles were observed foraging below the surface of the water after dark on April 17, 2015 and a minimum of eight individuals were observed basking on April 25, 2015. These early-season observations suggest that Midland Painted Turtle may be overwintering in PSW-2. A Snapping Turtle was observed in the area south of Bloomington Road and it is likely that individuals move between the on-site wetlands.

3.2.2 Vegetation

As part of this ESR Addendum, vegetation resources were inventoried on July 23 and August 8, 2012. Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) System for southern Ontario and a list was compiled of all vascular plant species observed. Mapping of the vegetation communities is provided in the Natural Heritage Assessment included in **Appendix A**.

Overall, a total of 163 plant species were identified in the study area. Of the species observed, only 24 species are non-native to Ontario and 29 are non-native to the TRCA region (18%). The majority of the native species are generally common and secure in Ontario (ranked S4 or S5 provincially) and the Toronto area (ranked L4 or L5 by TRCA); however, there are number of species of conservation concern in the study area. Species of conservation concern include those that are ranked:

- rare or uncommon by Varga et al. (2005)
- L1-L3 by TRCA
- S1-S3 by the Natural Heritage Information Centre (NHIC)
- Threatened, Endangered, or Special Concern (COSSARO).

The majority of these species occur in higher quality habitats within the study area, notably the larger wetland units and mature forests. Butternut is the only species regulated by and subject to the *Endangered Species Act*; the remaining species have no regulatory constraint.

Further details are documented within **Appendix A** of this report.

3.2.3 Wildlife and Wildlife Habitat

Breeding Birds

As part of this ESR Addendum, two breeding bird surveys were conducted for the subject property in June 2012 and three specifically for Endangered and Threatened species in June 2014. The latter survey followed MNRF protocols for surveys addressing Bobolink and Eastern Meadowlark. The survey was subdivided into three areas: southwest of the railway and Bloomington Road (woodland and marsh); northeast of the railway and Bloomington Road (grassland and woodland); and, southeast of the railway and Bloomington (grassland and wetland). Field work for the regular surveys involved a roving type survey, in which these areas were walked and all birds heard or observed were recorded as breeding. Details in this regard are included in the Natural Heritage Assessment in **Appendix A**.

In total 33 species were identified. None of the species recorded are listed as nationally (Committee on the Status of Endangered Wildlife in Canada) or provincially (Committee on the Status of Species at Risk in Ontario) Endangered, Threatened or of Special Concern.

The TRCA has ranked species based on their regional occurrence, where L1 to L3 are of Regional concern, L4 is of urban concern and L5 is secure throughout the region. The majority of species are identified as L5; twelve species are considered L4, while four species are considered L3 (Osprey, Common Raven, Virginia Rail, Northern Waterthrush, and Field Sparrow).

Two species considered by the MNRF to be area sensitive (i.e., requiring more than 10 ha of habitat for successful breeding) were recorded. These were: White-breasted Nuthatch and Savannah Sparrow. White-breasted Nuthatch was recorded from the small woodland associated with the largest wetland in the southeast area. Savannah Sparrow was recorded in the both the northeast and southeast areas. A total of eleven pairs were

recorded, the majority of which occurred in the southeast area. Both of these species are relatively common throughout the rural areas of the Greater Toronto Area.

The southwest area of the site is comprised of an upland deciduous woodland adjacent to a marsh, which is part of the White Rose-Preston Lake Provincially Significant Wetland Complex. Within this quadrant, twenty species were recorded, consisting of common woodland species such as: Eastern Wood-Pewee Black-capped Chickadee and Red-eyed Vireo. Marsh species recorded from the wetland included: Virginia Rail, Alder Flycatcher Northern Waterthrush, Common Yellowthroat, Swamp Sparrow, and Red-winged Blackbird. The most numerous species was Red-winged Blackbird.

The northeast area of the site is comprised of grassland and deciduous woodland. Ten species were recorded from this area, which included a mixture of grassland species such as Eastern Kingbird, and Savannah Sparrow, and edge or thicket specialists, including Indigo Bunting and Song Sparrow. Woodland species included Great Crested Flycatcher, Black-capped Chickadee and Baltimore Oriole. An Osprey and a pair of Common Ravens were observed with a nest in the communications tower in this area.

The southeast area of the site is comprised of grassland, three pockets of wetland and some agricultural field. Twenty species were recorded from this area that included grassland species such as Eastern Kingbird, Field Sparrow, and Savannah Sparrow. The agricultural field had been ploughed and was bare earth at the time of the survey, providing breeding habitat for Killdeer and Horned Lark. A Red-tailed Hawk was observed and may have been nesting nearby. As the wetland pockets are relatively small, but surrounded by thicket and trees, the birds associated with these areas tended to be thicket or edge specialists such as Gray Catbird, Warbling Vireo, Yellow Warbler, Indigo Bunting, and American Goldfinch. However, a few woodland species were observed in the woodland associated with the largest wetland, including: Blue Jay, White-breasted Nuthatch, Red-eyed Vireo and Baltimore Oriole. A pair of Mallards was observed in the largest wetland, and Red-winged Blackbirds were associated with each wetland as well as the watercourse from the largest wetland.

Incidental Wildlife

Signs of White-tailed Deer were found throughout the site. Given the habitat, it is likely that other common mammals such as Red Fox and Coyote would also occur in the area.

3.2.4 Endangered and Threatened Species

As part of this study, the MNRF (Aurora District) was contacted to determine whether there are any records of the occurrence of endangered and threatened species on or adjacent to the site. In a letter from the MNRF (February 02, 2012), they identify the following records for the area:

- Butternut, an Endangered tree;
- Bobolink a Threatened bird;
- Redside Dace, an Endangered small fish; and
- Snapping Turtle, a species of turtle listed as Special Concern.

The plants and trees were inventoried by Beacon Environmental during the ELC mapping. Butternuts were located in the woodland north of Bloomington Road (see **Exhibit 3-1**).

No Bobolinks were present and none would be anticipated given the existing ecological communities.

Although there was no evidence of Snapping Turtle nesting within the areas searched during the bird breeding bird survey or the ELC mapping; the species was observed in PSW-1 and it is likely individuals move between the on-site wetlands. Snapping Turtle is

listed as special concern; and is therefore not subject to the constraints of the *Endangered Species Act*.

MNRF has indicated that the immediate study area is not considered regulated for Redside Dace.

3.3 Socio-Economic Environment and Cultural Assessment

3.3.1 Land Use

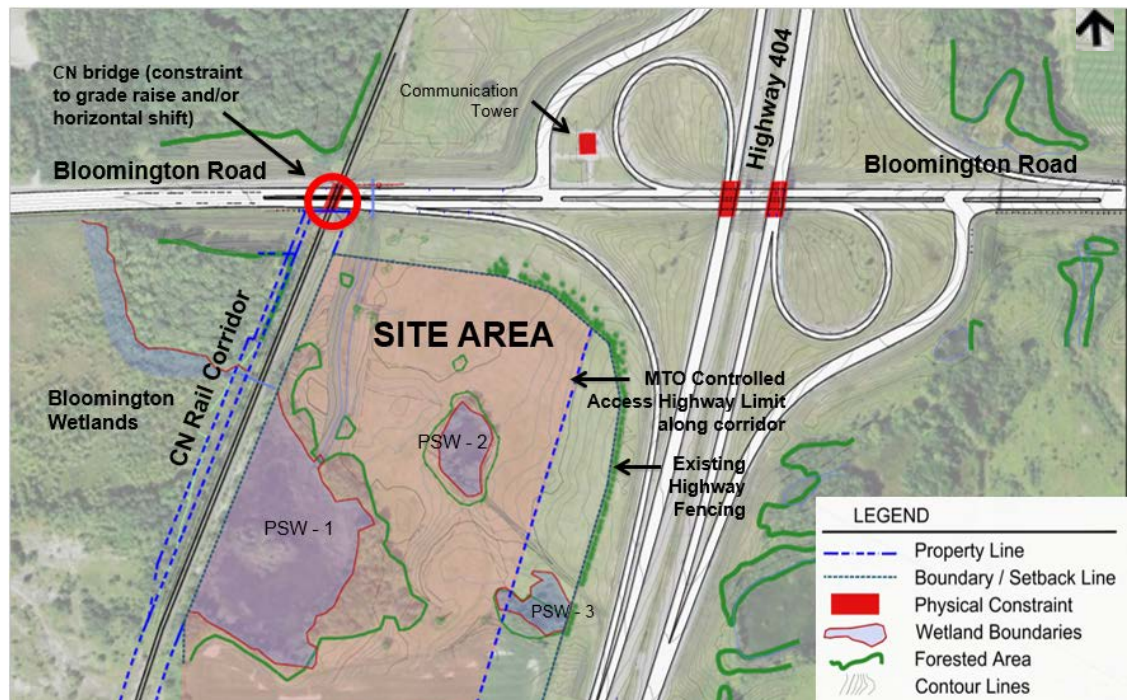
The site of the future Bloomington GO Station is located on the south side of Bloomington Road, immediately west of Highway 404. Bloomington Road is the border between the Town of Richmond Hill (south) and the Town of Aurora (north). Highway 404 is the border between the Town of Aurora/Richmond Hill and the Town of Whitchurch-Stouffville.

Site Condition

The site is bordered by Highway 404 to the east, and CN rail to the west. Lands east of the CN rail tracks are currently owned by the Ministry of Transportation. The Highway 404 Controlled Access Highway (CAH) designation surrounds the interchange defines the east boundary of the site (north-south boundary line formerly separating the Town of Richmond Hill and Town of Whitchurch-Stouffville).

The site is constrained by Bloomington Road to the north, the rail tracks to the west, and Highway 404 to the east. The topography of the site is relatively flat with wetlands located to the south and west. A portion of this site contains woodland and wetland features, however the majority of the site footprint is in scrub lands that have been previously been disturbed. Key constraints within and bordering the site are illustrated below.

Exhibit 3-2: Road, Rail, and Environmental Constraints



Adjacent Land Use

Beyond the immediate study area, the land use is predominantly rural in nature with low density residential developments.

West of the site, there are several residential buildings north of Bloomington Road (along Bovair Trail and Dafoe Court) beyond 300 m of the west project limit. These residents are set well back from Bloomington Road and accessed from Leslie Street.

East of the site, there is a cluster of residential and industrial/commercial land use in the Vandorf-Preston Lake secondary plan area of the Town of Whitchurch-Stouffville. Adjacent industrial/commercial land uses are limited to low-intensity activities (i.e. storage yards for mobile offices, etc.). There are no commercial buildings within 500 m of the site.

3.3.2 Archaeological Resources

As part of this ESR Addendum, Archeological Services Inc. (ASI) completed a combined Stage 1-2 archaeological assessment of the proposed future Bloomington GO Station study area. Details in this regard are included in **Appendix B**.

The Stage 1 background study indicated that the property had potential for both Aboriginal and Euro-Canadian archaeological resources. The Stage 2 property survey determined that 75% of the property had no archaeological potential due to deep and extensive land alterations associated with the construction of the Highway 404 and Bloomington Road East interchange, and low and wet conditions (12%). The remaining lands (13%) were determined to retain archaeological potential and these were thoroughly investigated by test pit survey at 5 m intervals as per the Standards and Guidelines for Archaeologists.

No archaeological resources with cultural heritage value were recovered during the course of the survey.

3.3.3 Built Heritage Resources

Review of the Rouge River Management Plan indicates that the Rouge River watershed consists of more than 1400 known archaeological and heritage sites. About 42 heritage structures are protected under the *Ontario Heritage Act*. Site reconnaissance activities did not identify built heritage resources within the vicinity of the Bloomington Road site.

3.4 Groundwater and Surface Drainage

3.4.1 Site Topography

The site is located in a rural neighbourhood immediately surrounded by undeveloped wooded areas and wetlands, bounded by major highways. It is bordered by Highway 404 to the east and CN rail to the west. The site itself is a lowland area bordered by the higher elevations of the rail bed, Highway 404 and the Bloomington Road. This is especially evident along the CN line, which has a steep drop-off to the site. The difference in grade for the bus bays is 5 to 6 metres higher at track level. The lowest point of the site is in the south-central area. The grade slopes up from this point towards the east where it meets Highway 404 and up towards the north to Bloomington Road. West of the CN rail line, ground elevations, its highest point, are approximately 5m above the track level (at the bridge) and 10m above the northwest corner of the site.

3.4.2 Site Physiographic, Geologic and Hydrogeologic Settings

The site is located within the Oak Ridges Moraine, a ridge of hilly land composed typically of sandy or gravelly materials and regarded as the recharge area for many streams as well as ground water supply. Locally, the ground surface is relatively flat with the exception of the hills to the southwest and northeast of the railway crossing at

Bloomington Road (elevations ranging from about 300 to 310 m) and low lying areas that are typically wetland or ponds. The flow of ground water is interpreted to be generally to the southwest to the Bloomington Wetlands.

The hydrogeology of the site is primarily controlled by topography and the Bloomington Wetlands. Based on the Ministry of Environment and Climate Change (MOECC) water well records and the monitoring wells drilled on site, the flow of ground water is interpreted to be generally southwest to the Bloomington Wetlands.

MOECC Water Well Records Review and Existing Water Wells

The available records of water wells in the vicinity of the site were obtained from the MOECC records and a door-to-door well survey was conducted within the 500 m radius of the site. The findings of the survey show that properties on Bovair Trail and Dafoe Court (located northwest of the site) have operating water wells, most with screens at depths of about 27 to 37 m below ground surface (bgs). The only other operating well within the study area was along Woodbine Avenue (northeast of the site), which appears to be a well recorded by the MOECC as having a screen at a depth of about 35 m.

No municipal water supply wells were noted in the study area. The nearest municipal water supply well is located about 6.6 km northwest of the site, in Aurora.

Hydrogeological Conditions

A hydrogeological investigation was undertaken as part of this study and available in **Appendix C**. This included borehole drilling, monitoring well and piezometer installation, soil sample collection, measurement of ground water level, in-situ borehole permeability testing, and ground and surface water sampling for chemical analysis and quality assessment.

In total, thirteen boreholes were drilled. Eight of them were installed with monitoring wells and two were installed with piezometers. As revealed in the boreholes, the ground water strike elevation varied from 298.5 to 304.2 (300.4 average).

3.4.3 Roadway Drainage

The existing drainage system along Bloomington Road consists primarily of open ditches, culverts and storm sewers. Two culvert crossings of Bloomington Road exist in the vicinity of the site (Culverts 1 and 2). A summary of the two culverts and their contributing drainage areas is provided below:

Culvert 1- 1150mm x 820mm CSPA

An 1150mm x 820mm corrugated steel pipe arch (CSPA) crosses Bloomington Road approximately 30 m east of CN rail bridge and west of Highway 404. The contributing drainage area to Culvert 1 is approximately 5 ha and consists entirely of Highway 404 N-E/W ramp and CN rail areas. Runoff generated from this drainage area is conveyed by side ditches to the culvert under Bloomington Road. The culvert drains to a downstream intermittent drainage channel that runs southerly and empties into PSW-1. The 50 year design storm safely passes through the culvert and the 100 year storm event does not overtop Bloomington Road.

Culvert 2 – 1800mm x 1200mm Concrete box

A twin 1800mm x 1200mm concrete box culvert run crosses Bloomington Road approximately 335m west of CN rail bridge and contributes flow to the Bloomington

Wetland area. The contributing drainage area to Culvert 2 is approximately 61 ha. This culvert has adequate capacity to convey major event design storm runoff.

Station Site

The terrain of the station site is gently undulating, sloping from north to south. Soils within the study area are predominantly sand, silty sand and/or silt till deposits.

The site contains an intermittent drainage channel which runs parallel to the CN rail from Bloomington Road and conveys runoff from Culvert 1 (noted above) to the White-Rose Preston Lake Wetland (Provincially Significant Wetland) PSW-1. The channel has a wetted width of approximately 3m and mean depth of 0.70m near the wetland.

From PSW-1, a concrete culvert (1030 mm x 740mm CSPA) of the CN crossing exists approximately 175m south of Bloomington Road (located in the north-west corner of the wetland, PSW-1), which conveys drainage flows from PSW-1 under the tracks.

In addition to the above, the site contains two smaller wetland pockets: one centrally located on site (PSW-2), and a smaller isolated unit adjacent to Highway 404 (wetland Unit 3).

Further details regarding existing drainage conditions are outlined in the *Drainage and Stormwater Report* provided in **Appendix D**.

3.5 Transportation

3.5.1 Roads Infrastructure

The site is located in the southwest quadrant of Bloomington Road and Highway 404 interchange, south of Bloomington Road and west of Highway 404. These roads are the only two major roads in with immediate vicinity of the site. The nearest north-south aerial roads are: Leslie Street (located 1500m to the west) and Woodbine Avenue (located 550m to the east).

Basic characteristics of Bloomington Road and Highway 404 are as follows:

Bloomington Road

Bloomington Road is a four-lane undivided rural road, extending from Bathurst Street (RR 38) to the York Region/Durham Region boundary. In the vicinity of the site, it is posted at 80 km/h and contains a raised median from approximately 60m west of CN Bridge to 130m east of Highway 404 S-E/W ramp. Bloomington Road was recently widened to four lanes west of the site (i.e. between the CN Bridge and Leslie Street). Based on discussions with the Region of York, there is a need to protect for the ultimate widening of Bloomington Road to six lanes west of Highway 404 (including three lanes in each direction at 3.5m and 1.8m bike lanes). As part of any widening in this regard, the posted speed limit along Bloomington Road would be lowered from 80 km/h to 60 km/h (i.e. 80km/h design speed).

Highway 404

Highway 404 is a provincial 400-series highway which extends from Highway 401 to Ravenshoe Road. In the vicinity of the site, Highway 404 includes three lanes in each direction (north-south). The interchange at Bloomington Road is a Parclo A-4 (Partial Cloverleaf) configuration. Under this configuration, the off-ramp from the Highway 404 southbound lanes (N-E/W ramp) is located in the north-west interchange quadrant (opposite the site). This ramp is signalized at its connection to Bloomington Road, located

approximately 185m east of the CN rail crossing. The on-ramp from the Bloomington Road eastbound lanes to the Highway 404 southbound lanes (W-N/S ramp) is a free flow ramp located in the south-west quadrant, immediately adjacent to the site.

The MTO Controlled Access Highway (CAH) designation currently extends along Bloomington Road approximately 350m west of the Highway 404 N-W/E ramp intersection (i.e. ±135m west of the CN crossing).

Grade Separations

Bloomington Road passes beneath both the CN rail tracks and Highway 404. The CN rail underpass is currently built to accommodate four travel lanes. The span is 24.5m between abutment faces, 9.9m wide deck with two rail tracks, a vertical clearance of 4.8m, and has two central piers protected with barrier median along Bloomington Road. The existing rail bridge represents a major constraint to locating the site access along Bloomington Road (given the short span and centre piers of the structure which limit the ability to accommodate turn lanes, as well as the limited vertical clearance, 4.8m).

CN is proposing to improve the vertical clearance to 5.2m by raising the track and replace the bridge as part of as part of providing an additional track on the east side of the CN rail line to accommodate an expansion of GO service along the corridor. However, even with this grade raise, the track elevation precludes raising the grade of the W-S ramp to carry it over the easterly access. Furthermore, there is no reasonable opportunity to lower the grade of Bloomington Road at the bridge and have the ramp cross under the access given the drainage requirements of the area. As such, a grade separation of the site access (as proposed in the 2009 EA report) with the ramp W-S is not achievable.

The Highway 404 underpass currently has a four-lane cross section. Abutments are approximately 21.6 metres apart which is sufficient to accommodate a left turn lane along Bloomington Road (if required) with reduction of shoulders and boulevard width.

Transit Network

Currently, there is no transit service available along Bloomington Road adjacent to the site. However, the design for the Bloomington GO Station is to remain flexible and able to accommodate bus access recognizing that York Region Transit (YRT) may wish to do so in the future.

Rail Network

The Bloomington GO Station will be the terminus station along the Richmond Hill rail corridor, which is part of the Bala Subdivision and owned by CN in the vicinity of Bloomington Road (CN leases track time to GO Transit).

The Richmond Hill rail corridor runs adjacent to the Bradford and Stouffville GO Transit lines, which all serve areas north of Toronto between Yonge Street and Highway 404. At present, GO Transit rail service along the Richmond Hill line extends from Toronto Union Station to the Richmond Hill GO Station. The Richmond Hill GO Station is located along the CN route just north of Major Mackenzie Drive. To improve GO Transit rail services throughout the Richmond Hill corridor, Metrolinx will be extending train services further north and constructing new GO Stations at Stouffville Road (Gormley Station) and Bloomington Road, as well as a train layover facility at Bethesda Road. To accommodate this expansion, one (1) additional track is being constructed on the east side of the CN rail line, north of Elgin Mills Road. The additional track, required to extend commuter service is being built by CN within the CN right-of-way.

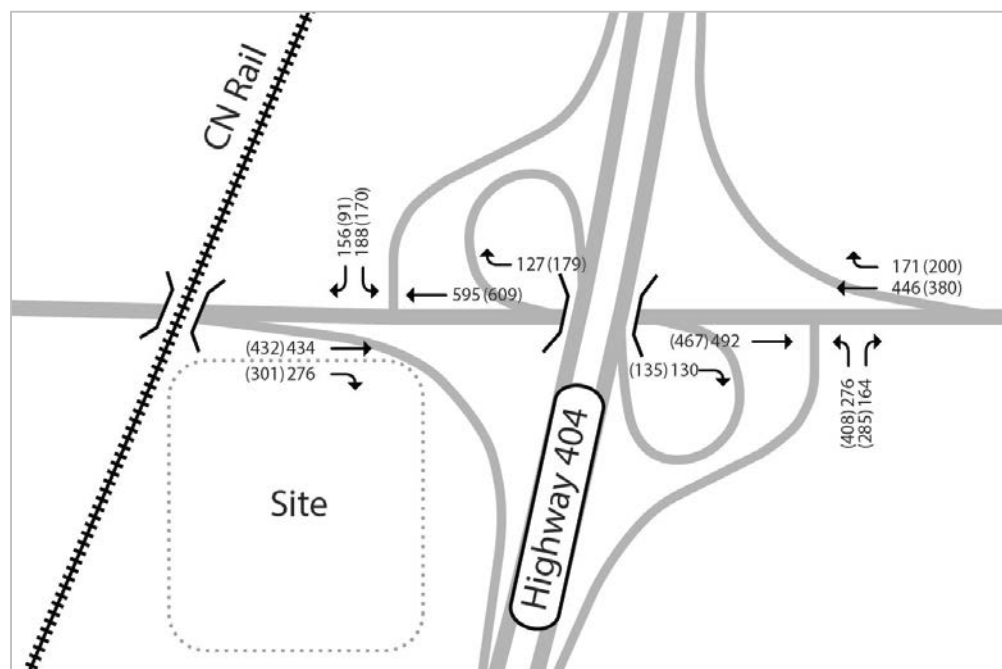
3.5.2 Existing and Future Traffic Operations

As part of this ESR Addendum, a *Traffic Impact Assessment* was undertaken for the Bloomington GO Station site. A copy of this assessment is provided in **Appendix E**.

Existing Conditions

To assess existing conditions and provide a base for establishing future 2021 and 2031 conditions, intersection Turning Movement Counts (TMCs) and Automatic Traffic Recorder (ATR) counts undertaken in November 2013 were obtained from MTO along Bloomington Road at the Highway 404 interchange. An illustration of AM and PM peak hour data is provided in **Exhibit 3-3**.

Exhibit 3-3: Existing (2013) Intersection Turning Movement Counts



For comparison purposes, and the June 2007 TMC counts and February 2010 ATR counts were also obtained for the interchange. This information was supplemented by annual average daily traffic (AADT) counts along Highway 404, over the 20 year period from 1989 to 2009. In 2009, the AADT along Highway 404 was equal to 72,800 vehicles per day, reflecting a five year average growth rate of approximately 2.2% per year.

Future Background Conditions

The Bloomington GO Station is scheduled to be completed year 2019.

Future traffic conditions were assessed for future year scenarios: 2021, 2026 and 2031. Years 2021 and 2031 correspond to typical forecasting years and the York Region travel demand model. The 2031 scenario looks forward a further 10 years and also includes demands for a potential expansion in parking supply (up to 1250 spaces, including the MTO carpool lot).

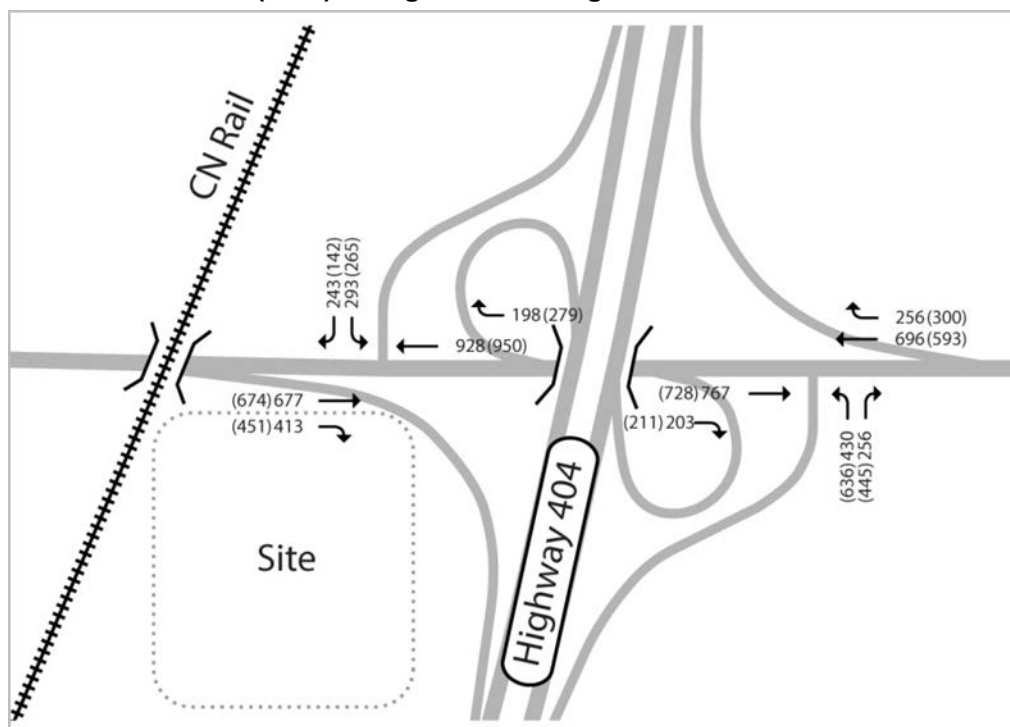
Future background traffic volumes were estimated along Bloomington Road and the Highway 404 ramps for 2021, 2026, and 2031 based on growth rates derived from York Region's transportation model (EMME) link volumes and link attributes. York Region's

EMME model takes into account future developments, road improvements and travel mode splits; however, it does not consider the proposed Bloomington GO Station.

Regional demand forecasting models are generally good for making decisions on a regional basis; however, it is generally not appropriate to apply its results directly to forecast individual turning movements. Growth rates were based on the EMME growth rates derived from the difference between the 2011 and 2031 volume plots and the rates were used to 'pivot' existing traffic counts. The volume plots for 2011, 2021 and 2031 used for this analysis are contained in the *Traffic Impact Assessment*, provided in **Appendix E**.

The background traffic projections for both the 2031 AM and PM peak periods and are illustrated in **Exhibit 3-4**.

Exhibit 3-4: Future (2031) Background Turning Movement Counts



Site Traffic Demands

Site generated traffic demands were developed for Years 2021, 2026, and 2031 in keeping with the following phasing of development and expansion of the GO Station and carpool lot: Opening day for the station is scheduled for 2019 with interim build out of the GO Station (approximately 800 spaces).

- Year 2021: Site demands as above for the GO Station (800 spaces) plus 50% build-out of the MTO carpool lot (100 spaces).
- Year 2026: Full build out of the GO Station (total 1050 spaces), as well as the MTO carpool lot (150-200 spaces). Reflects the addition of up to 350 spaces.
- Year 2031: 5 year post construction (i.e. site traffic demands as above, based on full build out of the GO Station at 1050 spaces and the MTO carpool lot at 150-200 spaces). Reflects an additional 5 years of background traffic growth.

For purposes of this analysis, mode splits are assumed as: 85% park and ride, and 15% kiss and ride and transit. This mode split are based on a review of other GO Stations, including ‘end of line’ stations in the GTA, and premised on the following assumptions:

- Vehicle occupancy is expected to be 1.2 passengers per vehicle;
- The number of passengers on transit vehicles is based on operating train-bus trips, with potential for operating Highway 404 service through the station (i.e. assume 4 GO Transit buses every 30 minutes plus local buses = 12 buses/hr). The station design currently provides for six bus bays for passenger pick-up/drop-off.

A detailed breakdown of the site traffic demands is provided in **Exhibit 3-5**.

Exhibit 3-5: Bloomington GO Station - Vehicle Trip Generation Estimation

ATTRIBUTE	2021	2026/2031
Total passengers (all modes)	1,130	1,480
Total park and ride passengers (85% mode split)	960	1260
Park and ride occupancy factor (GO passengers per vehicle)	1.2	1.2
Parking Capacity/Park and Ride Vehicles (per peak period)	800	1,050
Total other modes, 15% (i.e. bus, kiss and ride)	170	220
Total kiss and ride vehicles (per peak hour), as noted below.	60	80
Total kiss and ride vehicles (vehicles/hr)	48 veh/hr	58–68 veh/hr
Total buses (buses/hr)	12 buses/hr	12 buses/hr

Using the proportions above, the peak hour peak direction trips were calculated for 2021/ 2026 and 2031. Overall PM peak hour trips are slightly lower than AM peak hour trips due to the different peak hour profile.

The following are the key assumptions for trip generation:

- In line with typical GO Transit operations, 60% of AM train boarding and 55-56% of PM trains alighting were assumed to occur during the respective peak hour.
- GO Transit employees (e.g., station employees, maintenance workers, train drivers) are assumed to enter or exit the site outside of the AM or PM peak periods and therefore are not included in the traffic analysis.
- As the new station will be the new terminus of the Richmond Hill line, it is assumed that passengers departing during the AM peak period or board during the PM peak period be negligible.
- For the MTO carpool lot, demands generated for 60% of the provided spaces arrive/depart during the peak hour. A ratio of 2:1 vehicles, i.e. 2 cars entering and 1 exiting during AM peak hour was used for analysis purposes. The pattern is reversed for the PM peak hour.

An arrival profile was necessary to estimate the total trips per hour based on train arrival. The profile was provided by Metrolinx and it is based on observations at stations in similar contexts. The trains are assumed to be operating at a headway of 30 minutes which means no more than two trains per hour. Based on this profile, two trains during each peak period are estimated to contain equal peak loads totalling 60% of trips during the AM peak hour and 55-56% of trips during the PM peak hour.

Exhibit 3-6: Peak Period Passenger Load Profile by Train

Period	Train 1	Train 2	Train 3	Train 4	Train 5	Train 6	Train 7	Train 8	Sum
AM Peak	-	5%	15%	30%	30%	15%	5%	-	100%
PM Peak	4%	5%	13%	28%	28%	13%	5%	4%	100%

Using the proportions above, the peak hour peak direction trips were calculated for 2021/2026 and 2031. Overall PM peak hour trips are slightly lower than AM due to the different peak period to peak hour profile.

Exhibit 3-7: Total Peak Hour Peak Direction Trips

Site Generated Traffic (Peak Hour Volumes)	2021		2026/2031	
	AM	PM	AM	PM
Peak Period Site Traffic in Peak Hour	60%	55-56%	60%	55-56%
GO Station				
IN (park and ride + kiss and ride+ bus) - Rounded	540	60	710	70
OUT (park and ride + kiss and ride + bus) - Rounded	60	500	80	660
MTO Carpool				
IN	120	60	240	120
OUT	60	120	120	240

The GO Station trips headed in the opposite direction (outbound in the AM peak and inbound in the PM peak) are a combination of kiss and ride trips and buses. Total two-way trips including MTO carpool lots trips are presented in **Exhibit 3-8**:

Exhibit 3-8: Peak Hour Trip Generation

PERIOD	AM PEAK HOUR			PM PEAK HOUR		
<u>Year</u>	<u>In</u>	<u>Out</u>	<u>2-Way</u>	<u>In</u>	<u>Out</u>	<u>2-Way</u>
2021	660	120	780	120	620	740
2031	950	200	1150	190	900	1090

Bicycle trips to the station are expected to be negligible for the foreseeable future. If/when Bloomington Road is reconfigured to include bike lanes, there is a potential that that facility may induce some bike trips; however given the rural nature of the surrounding area bicycle trips are expected to remain relatively low. The site plan will be configured to facilitate bicycle circulation on-site or at least not preclude bicycle facilities in the future.

Walking trips to and from the station are not expected; however, the ultimate cross section of Bloomington Road includes sidewalks and the site plan will be configured to provide pedestrian crossing facilities to ensure safe crossings even though volumes may be low.

Site Traffic Distribution

Trip distribution for the Bloomington GO Station was based on a review of current a future land use patterns in the catchment and the volumes from the future EMME plots provided by York Region. Based on the EMME model results, planned developments in the area, and a general assessment of the population densities from satellite imagery, the following conclusions were made:

- The Town of Aurora is developing to the northwest with some development immediately west of the CN rail tracks; however is not expected to be provided with direct access to Bloomington Road in the vicinity of the site.
- The Town of Richmond Hill is developing to the southwest with several development applications throughout the Town. The current site plan applications map shows a relatively large development application at Bloomington Road and Yonge Street along with another fairly large development further south near Highway 404 and Stouffville Road.
- The Town of Whitchurch-Stouffville has a secondary plan area just east of Highway 404, however, much of the lands identified are already developed. The main urban area of Stouffville is already served by a GO Station as part of the Stouffville rail corridor.

Based on this review, most of the growth is to the west of the Bloomington GO Station (either northwest or southwest). A review of the volume outputs from EMME also show that a greater proportion of trips which are destined to Highway 404 are also approaching from the west. The estimated trip distribution for site traffic is outlined in **Exhibit 3-9**. This overall distribution formed the basis of assigning site trips to the road network.

Exhibit 3-9: Site Trip Distribution

ORIGIN/ DESTINATION	NORTH	EAST	SOUTH	WEST	TOTAL
Distribution	25%	20%	5%	50%	100%

Conclusions

The following are a series of conclusions and associated recommendations based on the analysis and findings of the traffic analysis.

- Based on 2031 projections, the site traffic demands are estimated to approximately 1150 vehicles/hr during the AM peak hour (950 In, 200 Out) and 1090 vehicles /hr during the PM peak hour (190 In, 900 Out);
- The design for the station should include allowance for 1050 parking spaces, plus an additional 200 spaces for the MTO carpool parking lot. The station allowance reflects approximately 70% the overall peak period passenger demand (i.e. 85% mode split divided by 1.2 vehicle occupancy); and,
- The kiss and ride facility is to be designed to accommodate approximately 27 cars and 3 taxi stalls (rather than 5% of available parking per GO Transit guidelines) with space available for future expansion (if technically feasible).

4. Preliminary Design Alternatives

This section summarizes the development and screening of design alternatives for the proposed GO Station at Highway 404 and Bloomington Road. Modifications to the original design (included as part of the Richmond Hill Layover Facility EA and Preliminary Design) were necessary to address geometric concerns regarding the proposed access configuration, allow for additional parking (approximately 350 additional spaces), and provide more than one access to the GO Station.

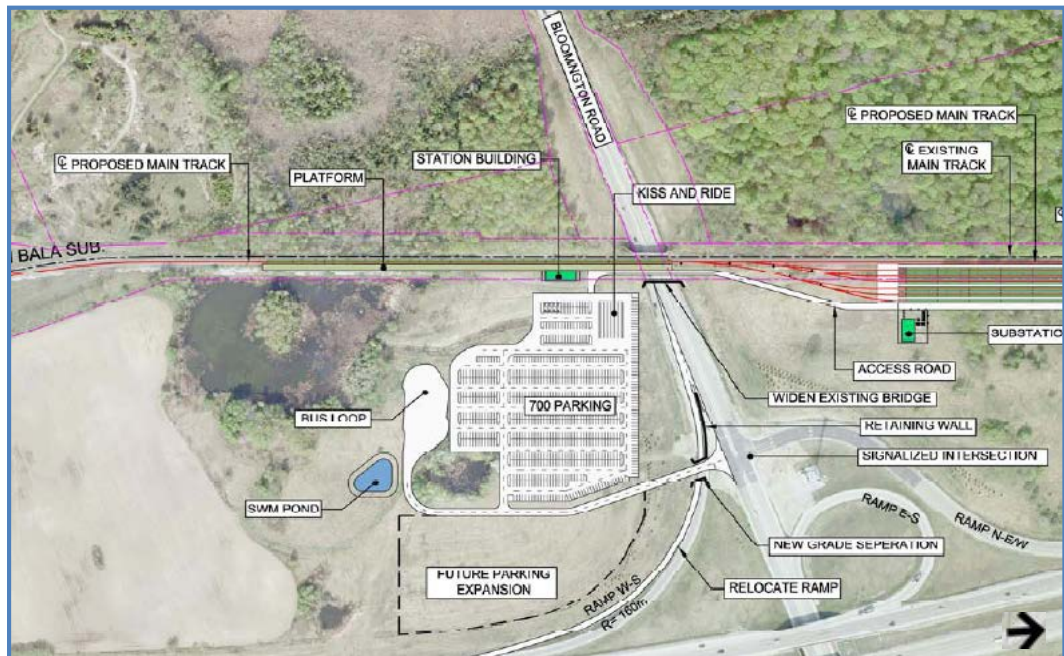
4.1 Background

As part of the Richmond Hill Layover Facility Environmental Assessment (August 2009), four (4) potential sites were evaluated for a new GO Station(s) to accommodate service commuters within and beyond Richmond Hill and alleviate congestion at the current Richmond Hill GO Station. Specifically, the following potential sites were considered:

- Stouffville Road GO Station site;
- Bloomington Road GO Station site;
- Vandorf Sideroad GO Station site; and,
- Aurora Road GO Station site

Based on a comparative evaluation, the Stouffville Road and Bloomington Road GO Station locations were selected as the preferred sites. The Stouffville Road site provided several advantages over the Vandorf and Aurora Road GO Stations given the adjacency to the Community of Gormley, as well as the West Gormley Secondary Plan and Highway 404. When the Stouffville Road GO Station reaches capacity, which is anticipated to be in the near future, the Bloomington Road GO Station will facilitate the expansion of GO services further north.

Exhibit 4-1: Original Design Concept for Bloomington GO Station (*Richmond Hill Layover Facility EA, August 2009*)



The original design for the Bloomington GO Station (ref. **Exhibit 4-1**) locates the facility in the southwest quadrant of the interchange at Highway 404 and infringes on a portion of the White-Rose Preston Lake Wetlands. With access located immediately adjacent to Highway 404, the site is favourable from a socio-economic perspective. It is ideally located for commuters to use GO facilities as an alternative route to Highway 404.

In addition to its compatibility with the Regional Municipality of York's *Transportation Master Plan*, it is also compatible with MTO's plans to consider a future carpool lot at this interchange.

4.2 Identification and Description of Design Alternatives

4.2.1 Design Standards

Roadway Design Standards

Proposed improvements along Bloomington Road, particularly through the interchange area east of the CN rail bridge, are to be undertaken in keeping with MTO design standards. West of the CN bridge either MTO or TAC standards may be applied. Internal to the site, GO Transit standards (as outlined in the *GO Transit Design Requirements Manual*) will be applied and supplemented by local standards where necessary. All efforts will be made to ensure pedestrian safety is paramount, and any potential conflicts between pedestrian, cyclists, and vehicles is minimized. Where possible, the internal circulation will provide dedicated access points to the park and ride lot (surface lot and/or parking garage), kiss and ride, and bus-bays.

A copy of the Design Criteria for roadwork along Bloomington Road and the Highway 404 interchange ramps is included in **Appendix F**.

4.2.2 Screening Design Concepts

The original design concept for the Bloomington GO facility included a single access point at Bloomington Road, which is grade separated from the W-S ramp. However, given the vertical constraint of the existing CN rail crossing, it is not feasible to reconfigure the W-S ramp over the site access. The local drainage conditions also make the option of an underpass configuration impractical. In addition to these design constraints, the traffic analysis undertaken as part of the design indicates that site traffic demands will exceed the available capacity offered by a single grade separated access located opposite the Highway 404 W-S ramp.

As part of this ESR Addendum, a broad range of concepts were developed to address these concerns, as well as accommodate the following design requirements:

- Provide two access/egress points to the site (i.e. preferably full access) to accommodate increased site demands;
- Provide access to Highway 404 south for all vehicles;
- Accommodate a 150-200 space MTO carpool lot, in the north-west or south-west interchange quadrant; and,
- Accommodate MTO Design Guidelines for Access Roads at Freeway Ramp Terminals.

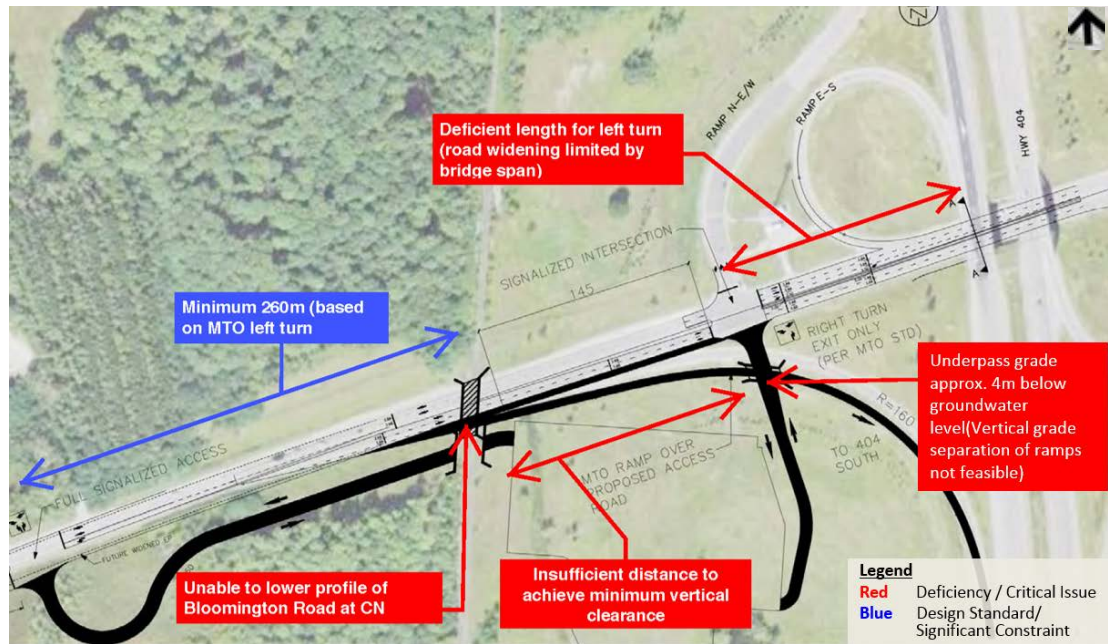
Given the constraints presented by the rail, highway, properties and environmental features to the south, the only reasonable access opportunity is Bloomington Road.

In total, eleven (11) design alternatives were initially considered and form the long-list of alternatives. A description of each of the design alternatives is provided below. Critical issues and deficiencies influencing the feasibility of each alternative are highlighted in 'red'. Based on an initial screening of these alternatives focusing on road geometry, traffic operations and safety, and potential environmental impacts, only two alternatives were deemed reasonable and carried forward for a detailed evaluation.

ALTERNATIVE 1

Description: This alternative is similar to the concept of the original ESR, however adds a second signalized accesses to the site to address the site demands. The westerly access intersects Bloomington Road approximately 260m west of the CN railway tracks. The easterly access remains directly opposite the existing N-E/W ramp is grade separated from the W-S ramp (if possible). To accommodate the reconfiguration of the W-S ramp, as well as the westerly access road to the site, a new CN bridge is required. The west access road will encroach into the wetlands on the south side of Bloomington Road and result in a loss of wetland and woodland removal west of the tracks.

Exhibit 4-2: Design Alternative 1



This alternative requires that the CN bridge be replaced and the W-S ramp separated sufficiently from Bloomington Road to allow lowering the grade of this ramp west of the CN crossing. The ramp will then need to pass under the east site access (approximately 4m below the existing groundwater table) before climbing significantly to match the grade of Highway 404, which passes over Bloomington Road. To provide acceptable grades, it will be necessary to extend the W-S ramp further south along Highway 404.

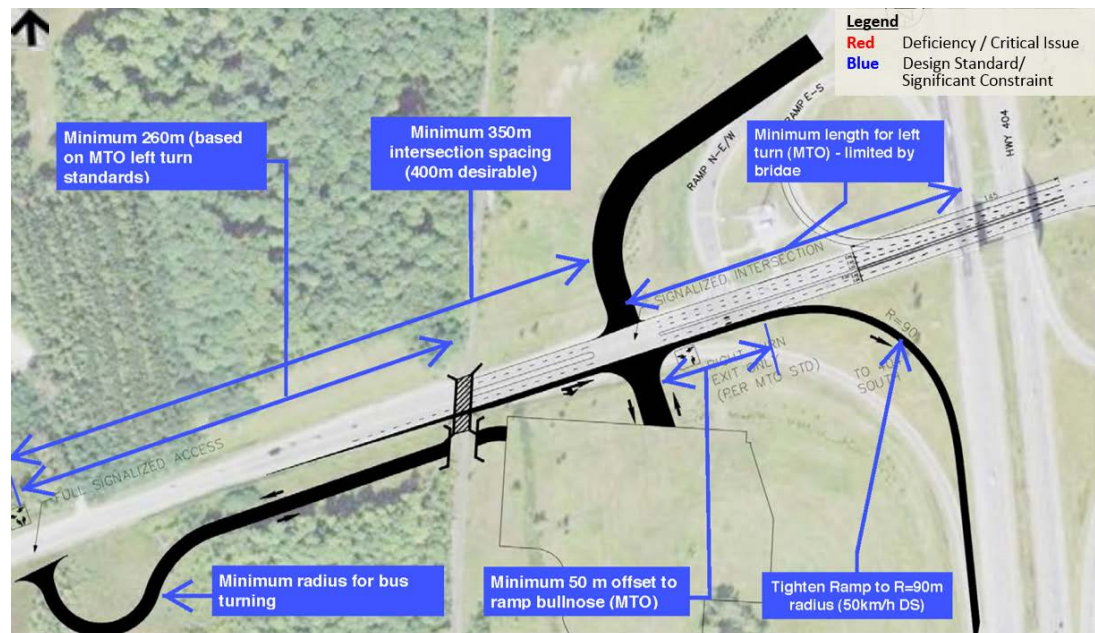
In addition to requiring that the span of the CN bridge be increased to accommodate the new W-S ramp alignment (shifting the ramp bullnose west of the bridge), an additional (fourth) span or separate underpass structure to accommodate the west site access road will be required. Lowering the grade of the W-S ramp remains a significant challenge from a drainage standpoint and likely impractical. As a minimum, an extensive pumping system will be required to accommodate stormwater along the ramp, as well as Bloomington Road.

RECOMMENDATION: Not carried forward. Given the limited spacing available between the CN rail crossing and the easterly site access, a grade separation if the W-S ramp is not practical. Efforts to address the groundwater and surface drainage requirements will impact the environment and when combined with the additional structure requirements, this alternative is cost prohibitive.

ALTERNATIVE 2

Description: This alternative provides for two signalized accesses to the site separated by approximately 400m. The westerly access is the same configuration as Alternative 1 and intersects Bloomington Road approximately 260m west of CN railway tracks. The easterly access is shifted further west to accommodate tightening of the Highway 404 W-S ramp from 130m radius (60km/h design speed) to a 90m radius (50 km/h design speed). The access to the site is located 50m west of the W-S ramp bullnose (in keeping with MTO minimum standard) and requires that the N-E/W ramp connection at Bloomington Road be re-aligned to the west.

Exhibit 4-3: Design Alternative 2



Similar to Alternative 1, this alternative provides for two signalized accesses to the site. The west access is expected to serve the majority of site traffic (particularly traffic traveling to/from the west). The westerly shift of the east access will allow for development of a full left turn lane into the site, with minimal narrowing of the shoulder along Bloomington Road beneath the Highway 404 bridge. Since the W-S ramp volumes are required to pass through an at-grade intersection, the traffic operations at the east access are expected to slightly worsen (compared to background conditions, but remain acceptable).

The west access road will encroach into the wetlands on the south side of Bloomington Road and result in a loss of wetland and woodland removal west of the tracks.

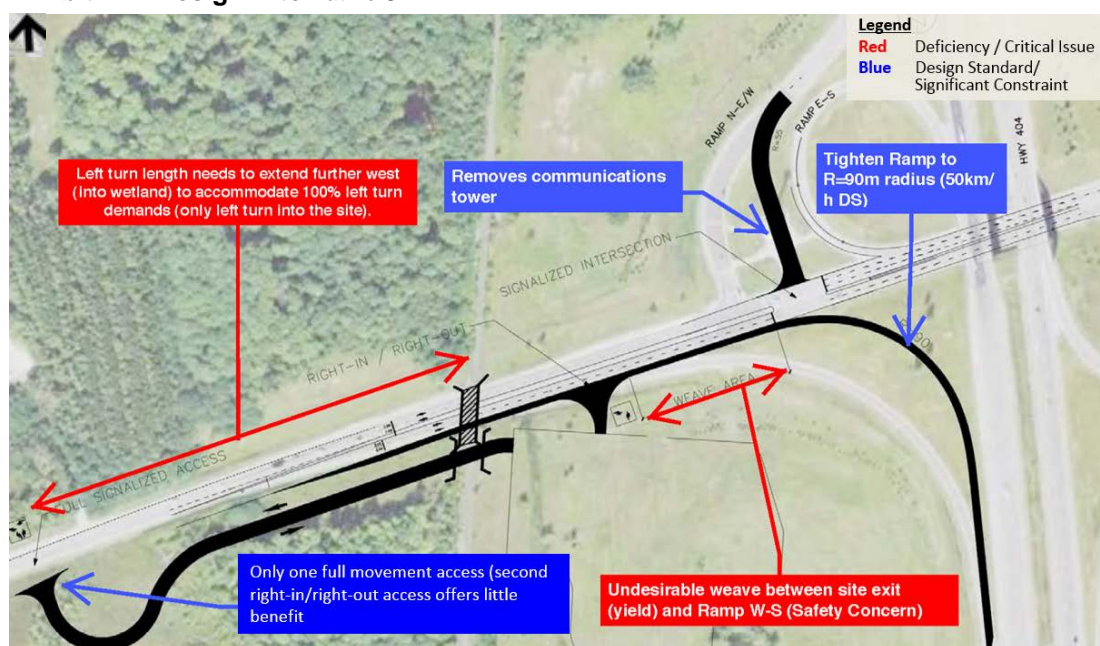
Eliminating the grade separation of the W-S ramp makes this option more constructible and cost effective, compared to Alternative 1.

RECOMMENDATION: Carried forward for comparison. Consider shifting the West Access Road further east to minimize encroachment into the Bloomington Wetlands.

ALTERNATIVE 3

Description: This alternative provides for a single signalized access to the site located west of the CN rail crossing and a second 'right-in/right-out only' access east of the CN bridge. The westerly access is required to accommodate all westbound left turns into the site. Limited spacing is available between the second 'right-in/right-out only' (east of the CN railway tracks) and the signalized ramp intersection. Although the exit will operate under a yield condition, the majority of traffic exiting the site at this location will be required to cross over (weave) the traffic demands of the W-S ramp movement. To maximize the resulting weave length, it is proposed to re-align the W-S ramp (tighten Ramp W-S radius to 90m, 50 km/h) and shift the N-E/W ramp to the east. This alternative will also require a new CN railway bridge to accommodate widening along Bloomington Road and west access road.

Exhibit 4-4: Design Alternative 3



This alternative relies heavily on the new access road west of the tracks to serve the majority of the site demands. The median bridge piers require that the left turn lane be fully developed west of the bridge. To accommodate the left turn demands, additional left turn storage and/or a dual left turn lane will be required. As a result, the westerly access will potentially need to be located further west, resulting in greater impacts to the wetlands on the south side of Bloomington Road.

Although a right-in/right-out has also been incorporated east of the tracks, direct access from the W-S ramp deceleration lane and the short traffic weave condition created along Bloomington Road is not optimal from a traffic operations and safety perspective. Also, the eastbound right-in movement at this location provides little benefit, given this right turn opportunity is available at the west access road

RECOMMENDATION: Not carried forward. This alternative offers minimal benefits compared to others and is expected to increase the impact to the wetlands west of the tracks.

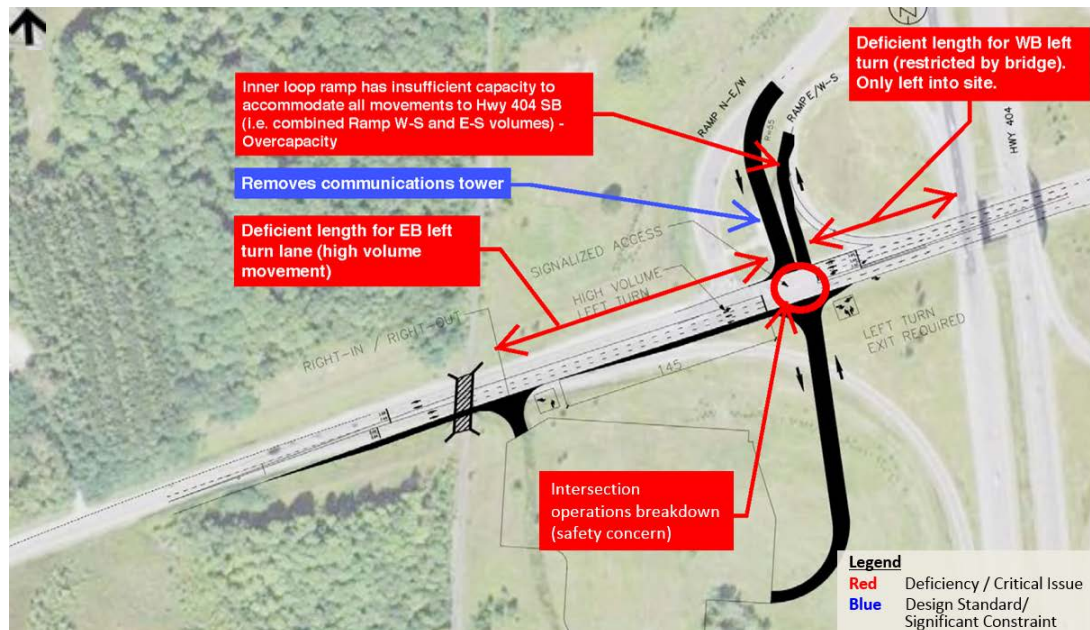
ALTERNATIVE 4

Description: This alternative provides for one signalized access and one right-in/right-out only access to the site. Unlike the previous alternatives, it does not provide for an access west of the CN tracks, but will still require replacement of the CN rail bridge to accommodate widening along Bloomington Road for the deceleration lane to the right-in/right-out only access.

With this alternative, it is proposed to replace the free flow W-S ramp with an eastbound (high volume) left turn on Bloomington Road, connecting to the E-S inner loop ramp. The N-E/W ramp will be shifted to the east to allow for a combined intersection treatment and maximize the eastbound left turn lane length.

The easterly site access would also be located directly opposite to relocated N-E/W ramp (high volume left turn exit from the site located opposite ramp, conflicts with MTO standard).

Exhibit 4-5: Design Alternative 4



Combining the Highway 404 W-S ramp with the existing E-S ramp, results in very high eastbound left turn demands at the intersection. The eastbound left turn lane will need to begin west of the CN bridge, requiring that the bridge be replaced and span lengthened. A similar concern exists with the westbound left (into the site) given the proximity of the easterly access to the Highway 404 underpass. The only opportunity to turn left into the site from the east, will be at this intersection and the Highway 404 underpass hampers the ability to develop a standard left turn lane (i.e. insufficient width under the structure to accommodate a full lane width).

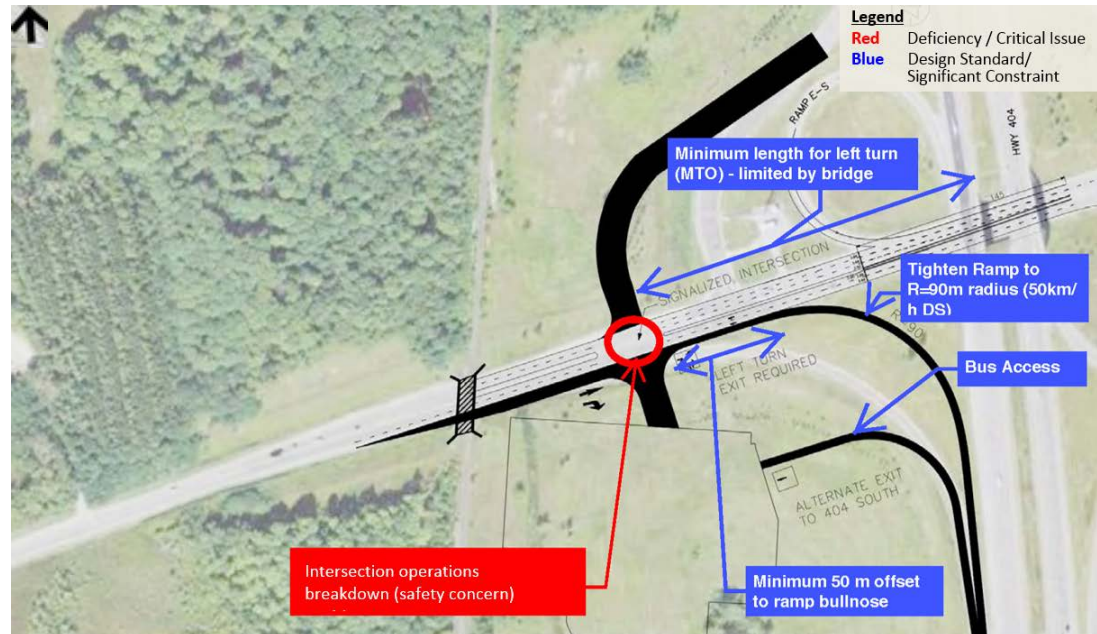
Given the high traffic demands at the intersection (including all left turns in/out of the site), the intersection will operate overcapacity.

RECOMMENDATION: Not carried forward. When combined with the high traffic demands at the intersection (including all left turns into the site) the operations at this intersection will breakdown.

ALTERNATIVE 5

Description: This alternative provides for one signalized access, plus an alternative exit from the site to Highway 404 south for buses only. The N-E/W and W-S ramps are to be re-aligned similar to Alternative 2 (i.e. tighten W-S ramp radius to 90m and relocate the N-E/W ramp further west). All vehicles are required to enter/exit the site through the signalized at opposite the N-E/W ramp. Requires replacement and lengthening of the CN rail bridge to accommodate widening along Bloomington Road.

Exhibit 4-6: Design Alternative 5



This is one of only a few options which does not include a new access west of the tracks, and as such, avoids impacts to the wetlands and woodland area west of the tracks. However, with the exception of buses destined to Highway 404 southbound, all site traffic is required to enter/exit the site through the N-W/E ramp intersection, and the intersection will operate over capacity, even if Bloomington Road is widened to six lanes. As a result, under this configuration, the extent of site development will be significantly constrained.

RECOMMENDATION: Not carried forward. This alternative will not accommodate site demands.

ALTERNATIVE 6

Description: This alternative provides for a single signalized access to the site, located west of the CN tracks, plus an alternative 'bus only exit' to Highway 404 southbound lanes. With this alternative, the Highway 404 ramps at Bloomington Road will be unchanged. To accommodate the west access road, a new CN railway bridge will be required.

Exhibit 4-7: Design Alternative 6



With exception of buses exiting the site to Highway 404 southbound, all site traffic will be required to enter/exit site at the single site access west of the tracks.

To accommodate the left turn demands, additional left turn storage and/or a dual left turn lane will be required. This movements represents approximately half of the total site demands. As a result, similar to Alternative 3, the westerly access will need to be widened and located further west to accommodate additional storage or a dual left turn lane (including two receiving lanes), resulting in greater impacts to the wetlands on the south side of Bloomington Road.

In addition to the concerns noted above, this alternatives does not provide for a second access and therefore fails to meet the design criteria for the site.

RECOMMENDATION: *Carried forward for comparison.*

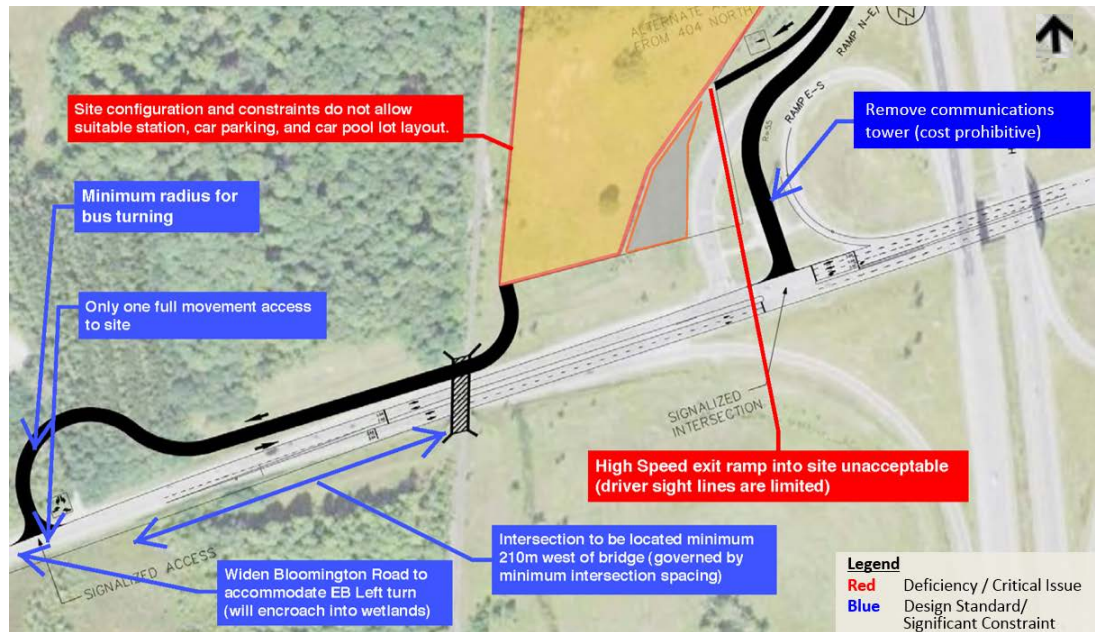
ALTERNATIVE 7

Description: This alternative provides for the GO Station on north side of Bloomington Road. To maximize the area available for the site development, the N-E/W ramp will be realigned to the east (directly impacting the existing communication tower).

Site access is provided through a new signalized intersection on Bloomington Road, located approximately 210 m west of CN rail tracks. A lengthy eastbound left turn will need to be provided to accommodate traffic entering the site (approximately half of the total site demands) or a dual left turn lane. Despite shifting the west access to the north side of Bloomington Road, impacts to the wetland and woodland areas can be expected. A new railway bridge is required to accommodate the west access road on the north site of Bloomington Road.

In addition to the concerns noted above, this alternatives does not provide for a suitable second access and therefore fails to meet the design criteria for the site. Although consideration may be given to a restricted access off N-E/W ramp (for traffic exiting from Highway 404 southbound lanes), given the constrained area of the site and limited deceleration opportunity, it is unlikely an acceptable access configuration can be accommodated.

Exhibit 4-8: Design Alternative 7



The site north of Bloomington Road is less desirable from an accessibility and size standpoint. Even with a realignment of the N-E/W ramp to maximize the site development area, the site remains undersized.

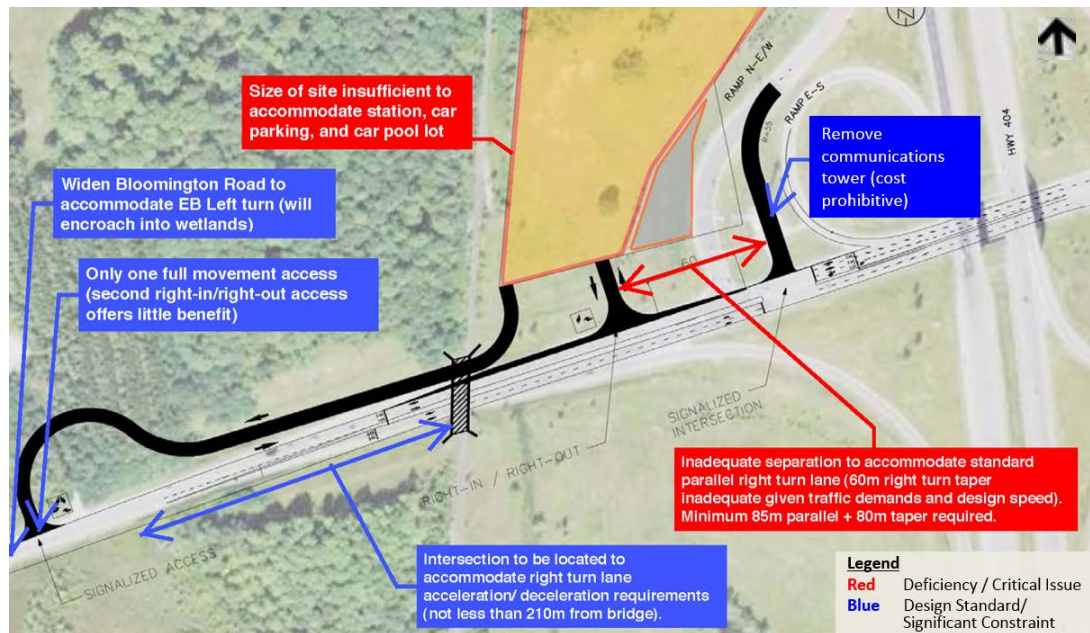
Consideration of an exit ramp from the N-E/W ramp is unconventional and would present numerous challenges from a traffic operations and safety perspective. As such, it is unlikely a suitable ramp configuration could be developed.

RECOMMENDATION: Not carried forward. This option fails to satisfy the design criteria and does not allow for a second exit from the site (i.e. relief) in the event of operational problems.

ALTERNATIVE 8

Description: This is one of two alternatives which provides for the GO Station on north side of Bloomington Road. The westerly access is similar to Alternative 7 and is proposed to be a full movement signalized access intersecting Bloomington Road approximately 210m west of CN rail tracks. This alternative differs from Alternative 7 with respect to the treatment of the second direct access, by providing for a right-in/right-out access from Bloomington Road rather than a direct exit from the N-E/W ramp. This access will be located between the CN rail tracks and the realigned N-E/W ramp (signalized intersection). This access has the advantage of serving additional traffic from east of Highway 404, as well as providing as second (relief) exit from the site. A new rail crossing and additional span to the CN rail bridge is required to accommodate widening along Bloomington Road and the westerly access road.

Exhibit 4-9: Design Alternative 8



The size of the site north of Bloomington Road remains a key constraint to address the needs of the site. Even with a realignment of the N-E/W ramp to maximize the site development potential, the site remains undersized.

This alternative has similar impacts to the natural environment and structural requirements as Alternative 7. Although preferable to Alternative 7 from an accessibility (adding a right-in/right-out access from Bloomington Road), the spacing between the right-in/ right-out access and the signalized ramp intersection is inadequate to accommodate a standard parallel right turn lane treatment

RECOMMENDATION: Not carried forward. For the reasons above, providing the GO Station on north side of Bloomington Road is significantly less desirable than providing the station on the south side.

ALTERNATIVE 9 (NOT ILLUSTRATED)

Description: Shift Bloomington Road to the north to minimize impacts to the wetlands and woodland area on the south side of Bloomington Road.

The centre piers of the bridge prevent an alignment shift of Bloomington Road to the north. To accommodate traffic during construction, the centre piers of the new bridge are to remain in-line with the existing. Even if a re-alignment was feasible, comparable impacts to the woodland area on the north side of Bloomington Road can be expected.

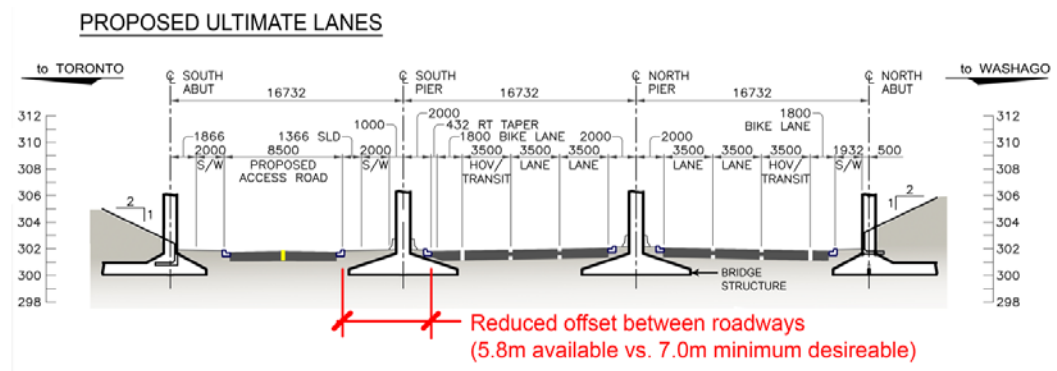
RECOMMENDATION: Not carried forward. Shifting Bloomington Road to the north will only slightly reduce impacts on the south side of the road, while introducing similar impacts to the woodlands and requiring additional property on the north side, as well as introducing traffic constraints during construction.

ALTERNATIVE 10

Description: Shift the west access road closer to Bloomington Road (reduce separation between the two roads) to minimize impacts to the wetlands and woodland area on the south side of Bloomington Road.

CN has indicated that the individual spans length of the future CN bridge are limited to 16.73m perpendicular to Bloomington Road (18m on skew), based on the structural needs of the crossing (i.e. girder depth) and the ability to raise the tracks. As illustrated below, approximately 5.8m (curb to curb width) is available to accommodate bridge pier and guiderail, light standards, headlight screening, and a future sidewalk. Driver sight line requirements prevent shifting the proposed access road further south (closer to the bridge abutment). Although minor adjustment may be possible (and will be considered during design development), it is not possible to provide a significant reduction beyond that current boulevard treatment reflected in Alternatives 1, 2, 3, and 6 (already reduced from desirable spacing).

Exhibit 4-10: Conceptual Lane Configuration at CN Bridge



RECOMMENDATION: Not carried forward. Any further reduction will compromise the ability provided adequate clearance for roadside safety, while offering little benefit.

ALTERNATIVE 11 (NOT ILLUSTRATED)

Description: Relocate surface parking to the north side of Bloomington Road.

As demonstrated with Alternatives 7 & 8, relocating surface parking and/or MTO carpool lot to the north side of Bloomington Road is not a viable alternative given accessibility constraints.

RECOMMENDATION: Not carried forward

4.2.1 Evaluation of Preliminary Design Alternatives

The evaluation of short listed alternatives was carried out using a Reasoned Argument Method, comparing differences in impacts in terms of Traffic Operations & Safety, Socio-Economic and Cultural Environment, Natural Heritage, and Construction Costs. A comparative examination of the alternatives is provided below.

Exhibit 4-11: Evaluation of Design Alternatives

CRITERIA	ALTERNATIVE 2	ALTERNATIVE 6
DESCRIPTION (ROADWAY AND STRUCTURAL)	<ul style="list-style-type: none"> • New full movement signalized intersection on Bloomington Road, west of the CN crossing. • Re-align N-E/W and W-S ramps and relocate signalize intersection. Tighten radius of W-S ramp (R=90) • Secondary access to the site provided opposite re-aligned N-E/W ramp. Prohibit left turns from the site at secondary access (per MTO standard). • Additional span to CN rail bridge required to accommodate access road (bridge to protect for future widening along Bloomington Road) 	<ul style="list-style-type: none"> • New signalized intersection on Bloomington Road, west of the CN crossing, serves as only access to the site. • No change to Highway 404 interchange ramps • Similar to Alternative 2. Additional span to CN rail bridge required to accommodate access road.
TRAFFIC OPERATIONS & SAFETY	<ul style="list-style-type: none"> • Site traffic distributed between two intersections, minimizing delays and on-site queuing. • The west access is expected to operate at Level of Service B during 2031 AM and PM peak hours. • The east access is expected to operate at Level of Service C during 2031 AM and PM peak hours. 	<ul style="list-style-type: none"> • All site traffic required to access site through a single intersection. Intersection expected to operate poorly. • Westbound left and eastbound through movements expected to operate at/over capacity during AM peak hour. • Requires all site traffic served via a low speed single lane condition where the west access road passes beneath the CN underpass. • No access alternative in the event of lane blockage. Does not provide flexibility for traffic to self-regulate, giving traffic only one option to enter or exit the site. • Creates additional out of way travel and adds to on-site congestion
SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT	<ul style="list-style-type: none"> • No significant impacts 	<ul style="list-style-type: none"> • No significant impacts
NATURAL ENVIRONMENT	<ul style="list-style-type: none"> • Minor encroachment into wetlands along south side of Bloomington Road, west of CN rail crossing. • Impact to woodland area west of CN rail crossing. 	<ul style="list-style-type: none"> • Increased impact to wetlands along south side of Bloomington Road compared to Alternative 2. Additional encroachment due to accommodate westbound left turn lane storage or dual left turn lane and widening for two receiving lanes. • Similar or greater impact to woodland area, west of the CN rail crossing.
COST	<ul style="list-style-type: none"> • Higher Cost 	<ul style="list-style-type: none"> • Lower Cost
RECOMMENDATION	<p>Carried Forward: Only alternative that will satisfactorily accommodate site demands and meets the design criteria.</p>	<p>Not Preferred: Does not include a second access, a proven need based on site specific traffic analysis and Metrolinx experience at other lots.</p>

Based on the comparative evaluation of the two alternatives carried forward from the long list of alternatives, it was determined that **Alternative 2 is the Preferred Alternative** and should be carried forward for further development. Alternative 2 addresses the access requirements for the proposed GO Station while maintaining MTO standards for the interchange.

Exhibit 4-12: Alternative 2 – Preferred Alternative



To minimize the extent of encroachment into existing wetlands west of the CN rail crossing, further consideration was given to shifting the west access road intersection at Bloomington Road, 50m east of that shown in Alternative 2; and determined that such a shift would be incorporated into all site layout options going forward. With this configuration the left turn parallel and taper length will remain in keeping with Region of York/TAC standards and queue lengths will be contained between the signalized intersections. Refer to **Exhibit 4-17** for further details.

4.3 Development of Site Layout Designs for the Preferred Alternative

Building upon the preferred configuration from a site location and access perspective (Alternative 2 as outlined in the previous section), this section focuses on the layout of the site. In total, 1050 spaces are required to serve the 2031 demands of the GO Station, while an additional 150-200 spaces are required for a MTO carpool lot (up to 1250 spaces total). To minimize the parking area footprint and in turn the impact on the environment, a 3-level parking garage is proposed.

4.3.1 MTO Commuter Parking Lot

The *MTO Central Region Carpool Lots Opportunity Study*, dated December 2009, identified the need for a new carpool parking lot adjacent to the Highway 404 - Bloomington Road Interchange. In an evaluation of alternatives, the site ranked 'Fair to Very Good' with respect to the following criteria:

- Site Compatibility - Good
- Property - Very Good
- Cost - Good
- HOV Program - Fair
- Transit Integration - Good

In addition to performing well in the detailed assessment, the study acknowledged that the Bloomington Road site was also proposed as a future GO Station and gateway to transit according to York Region's Transportation Master Plan; and that since modifications to the interchange would likely be required to accommodate the GO Station at this location, the carpool lot could easily be incorporated.

Given these factors, a new carpool lot is proposed for this site. Demand estimates as part of the MTO study indicate that 100 spaces should be provided in the medium-term (2021), with an additional 50-100 spaces provided in the long-term (2031).

The following minimum Design Criteria were used for the facility:

- Paved lot sized to accommodate 150-200 spaces (i.e. approx. 4875 to 6500 m², based on standard parking space = 2.75 x 5.75 m; Aisle width = 7.5 m);
- Configured to accommodate snow plows and maintenance vehicles, however discourage the use by longer commercial vehicles/ trucks; and,
- Lot is to be located adjacent to but separate from the GO Station. A shared access and maintenance agreement between MTO and Metrolinx is expected to be required.

Since the MTO Commuter Parking and the GO Station serve separate users, they are to be kept separate; however given the access constraints of the area, it is advantageous to locate the carpool lot in the south-west interchange quadrant and share access with the GO Station.

4.3.2 Parking Lot Alternatives

The following seven (7) site layout options were developed to accommodate the site demands.

SITE LAYOUT OPTION 1

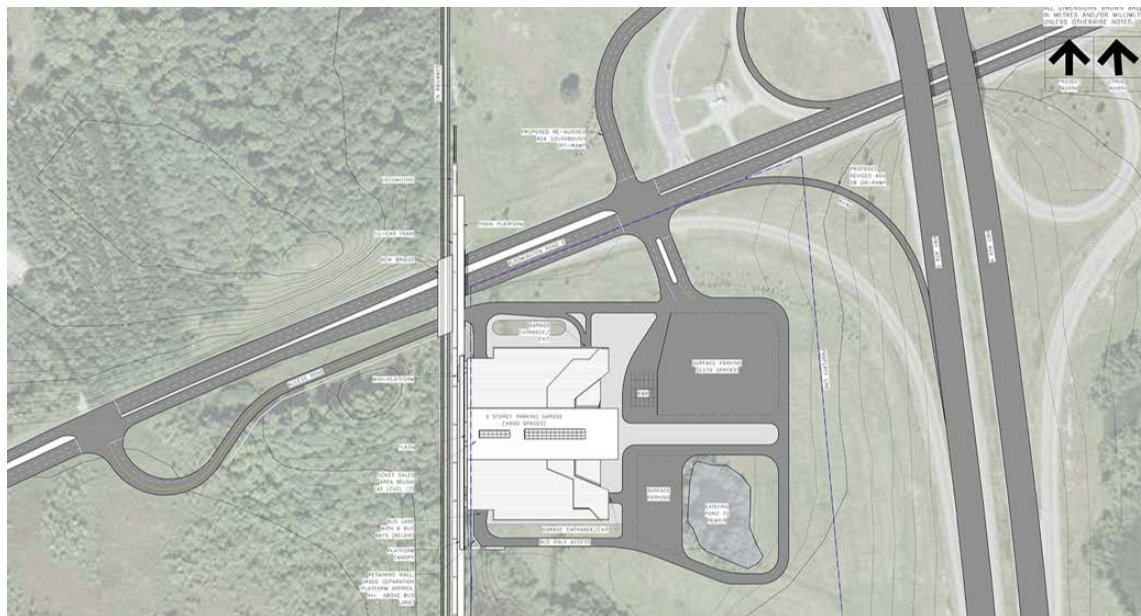
Description: This option is premised on accommodating all GO Station needs west of the MTO Controlled Access Highway (CAH) limit, east of the site. It provides for 1,050 spaces to serve the GO Station (765 spaces via garage and 285 surface parking, including kiss and ride); however, it does not include a future MTO carpool lot within the limits of the site. A parking garage is provided to minimize the overall footprint of the site. The existing drainage channel which runs parallel to the CN rail and conveys drainage from Bloomington Road will be relocated to an open ditch on the east side of the parking area. Storm drainage is to be treated through bio-swales on the south of the surface parking lot, prior to outletting to PSW-1.

This option maintains PSW-2 and therefore is in keeping with Section 41(4) of the ORMCP. A perimeter road is provided to accommodate buses around PSW-2 to access the bus bay area, abutting the rail bed embankment along the west side of the parking garage. However, given the site constraints there is limited opportunity to accommodate sufficient buffer (i.e. less than required 10-15m available) between the wetland and the parking area.

In addition to the above, several key impacts and/or requirements of this option are as follows:

- Results in 0.46 ha loss of woodland along south side Bloomington Road, west of CN rail crossing to accommodate the west access road;
- Requires minor encroachment into wetland areas, primarily along south side of Bloomington Road, west of CN rail crossing (combined 0.105 ha loss of wetland area); and,
- Design measures will be required to maintain water balance and integrity PSW-2 (i.e. permeable paving and discharging the clean roof water from the station).

Exhibit 4-13: Site Layout Option 1



RECOMMENDATION: *Not carried forward.* Does not accommodate the carpool requirements and/or sufficiently buffer PSW-2.

SITE LAYOUT OPTION 2

Description: This option is similar to Option 1, in that it provides for 1050 spaces to serve the GO Station (765 spaces via garage and 285 surface parking, including kiss and ride) and maintains PSW-2. It also addresses several key shortfalls of Option 1, in that it provides for a 200 space MTO carpool lot east of the GO Station surface lot, and increases the buffer around PSW-2 (providing 7m to 39m offset to parking areas and the bus loop).

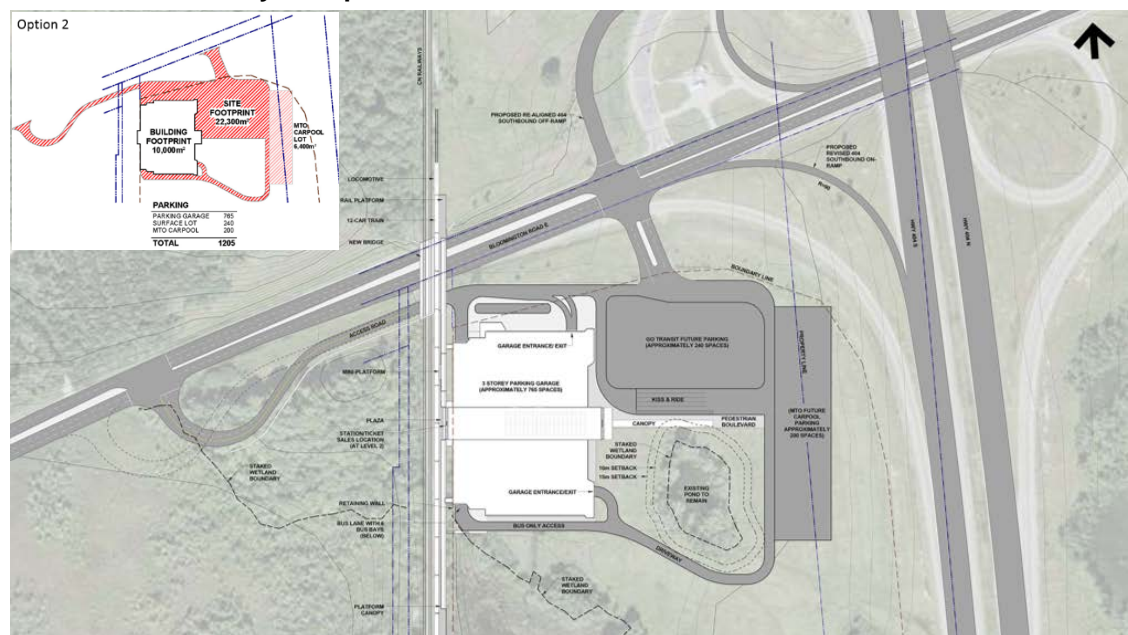
To accommodate the carpool lot, the majority of the lot will need to encroach into the MTO Controlled Access Highway (CAH) limits, east of the site. The existing drainage channel which runs parallel to the CN rail and conveys drainage from Bloomington Road will be diverted to a storm sewer system beneath this lot, before being treated through bio-swales on the south of the surface parking lot and outletting to PSW-1.

In maintaining PSW-2, this option is in keeping with requirements of ORMCP Section 41(4). As with Alternative 1, special efforts will be required to maintain water quantity and quality of PSW-2 and ensure the wetland does not become an “ecological trap”. This includes integrating amphibian culverts into the design to accommodate access to/from PSW-2. (targeting local species, i.e. Wood Frog and Spring Peeper).

Several key impacts and/or requirements of this option are as follows (similar to Option 1):

- Results in 0.46 ha loss of woodland along south side Bloomington Road, west of CN rail crossing to accommodate the west access road;
- Requires minor encroachment into wetland areas, primarily along south side of Bloomington Road, west of CN rail crossing (combined 0.105 ha loss of wetland area); and,
- Design measures will be required to maintain water balance and integrity PSW-2 (i.e. permeable paving and discharging the clean roof water from the station).

Exhibit 4-14: Site Layout Option 2



RECOMMENDATION: *Carried forward*

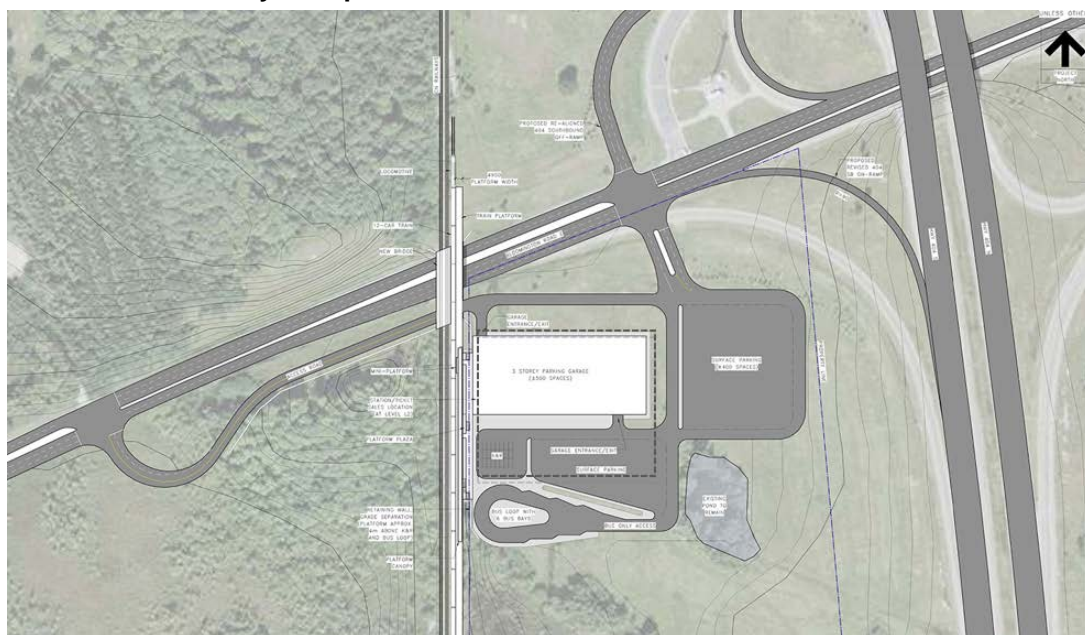
SITE LAYOUT OPTION 3

Description: This option provides for 900 spaces to serve the GO Station (500 spaces via garage and 400 surface parking, including kiss and ride) and maintains PSW-2. The number of spaces that can be provided is limited by the ability to provide a layout which avoids build-out east and south of PSW-2. With this option, the bus loop is kept separate from facility and is accessed from a drive isle passing through the middle of the site, directly in front of the parking garage. The capacity of the garage has been reduced to accommodate the bus loop on the south side of the structure.

Although PSW-2 is retained, the ability to accommodate a 10-15 buffer around the entire wetland remains a challenge. Design measures, similar to those of Options 1 & 2 are necessary, to ensure water balance and integrity of PSW-2 (i.e. permeable paving and discharging the clean roof water from the station) will also be necessary with Option 3.

With this option, impacts to the wetland and woodland areas west of the CN rail tracks are unchanged Options 1 and 2.

Exhibit 4-15: Site Layout Option 3



This option is not optimal from a pedestrian safety perspective as it requires the majority of pedestrians to cross entry/exit traffic to the site. It fails to accommodate the MTO carpool lot and/or the GO Station parking demands, with no expansion opportunity without later removing the wetland.

RECOMMENDATION: *Not carried forward.* Overall, any advantages to PSW-2 resulting from avoiding development east and south of the wetland, are outweighed by safety concerns and capacity limitations placed on the site (i.e. approximately 30% short-fall of 2031 parking demands).

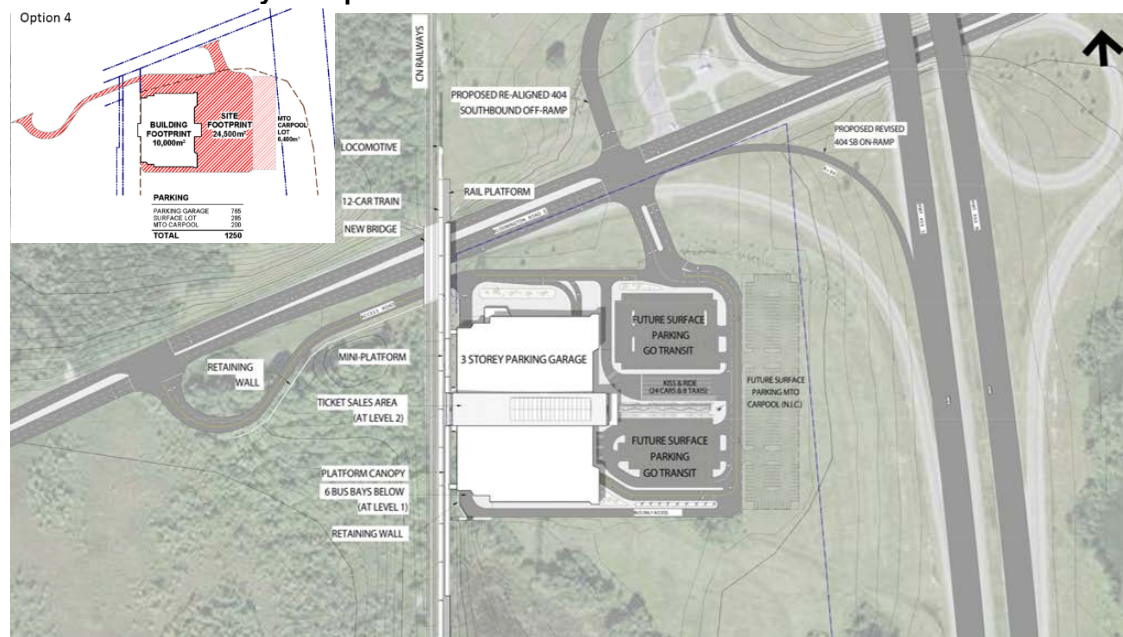
SITE LAYOUT OPTION 4

Description: This option provides for all 1,250 spaces (765 spaces via garage, 285 GO Station surface parking, and 200 space MTO carpool lot) without encroaching into the Highway 404 (CAH) right-of-way limit east of the site. MTO would retain ownership of the land in which the carpool lot is located.

This option is preferable from an overall site circulation and efficiency perspective (i.e. smallest footprint per space ratio, i.e. 32 m²/ space); however it requires the removal of PSW-2 (0.3 ha wetland unit). It is premised on the assumption that it may be difficult to maintain the integrity and function of the wetland over time, and therefore considers it better to replicate the wetland feature at a separate location away from the highway.

With this option, impacts to the wetland and woodland areas west of the CN rail tracks are unchanged Options 1 & 2.

Exhibit 4-16: Site Layout Option 4



Removal of the wetland is not specifically permitted under the Section 41(4) of the ORMCP, even if replicating the feature elsewhere (away from the highway). This existing policy only addresses the need for protection of key natural heritage features (wetlands and significant woodlands) within a Natural Linkage Area.

RECOMMENDATION: *Not carried forward* in recognition of the need to protect provincially significant wetlands, and specifically wetlands on the Oak Ridges Moraine (i.e. PSW-2).

SITE LAYOUT OPTION 5 (NOT ILLUSTRATED)

Description: Shift the eastern station entrance (and Highway 404 N-E/W ramp) further to the west to allow for additional parking to be opened up in the northeast corner of the site and in turn avoid impacting PSW-2.

This option considers extending the parking lot further to the north (closer to the realigned W-S ramp). MTO will be retaining ownership of these lands (including the site access) and will not allow extending the parking lot into this area. Furthermore, shifting the east access further west will limit the ability to channel traffic entering and exiting the site to the east side of the parking lot, and therefore potentially increase pedestrian/vehicular conflicts.

RECOMMENDATION: *Not carried forward*, given property constraints and safety concerns.

SITE LAYOUT OPTION 6 (NOT ILLUSTRATED)

Description: Expand parking structure to accommodate the demands while minimizing the development footprint within the ORM/Greenbelt Area and avoid impacting PSW-2.

Options 1, 2, and 4 include a three (3) level parking garage, accommodating approximately 765 parking spaces (i.e. in excess of 70% of the overall GO Station demands). Increasing the footprint of the garage would mean that the floor plates exceed 10,000 m², and require that the structure be equipped with an automated sprinkler system. The current site services supplied by the region do not allow for such sprinkler fire suppression system. There is no regional water service and all domestic water must be trucked in.

Providing an additional level or expansion of the garage footprint will significantly add to the cost of the facility making it cost prohibitive. Each additional floor constitutes approximately \$10 Million construction cost (i.e. \$35-40K per structure parking space vs. \$5K per surface parking space).

RECOMMENDATION: *Not carried forward*, recognizing the need to balance taxpayer dollar value with future growth and land use, and environmental impacts.

SITE LAYOUT OPTION 7 (NOT ILLUSTRATED)

Description: This option provides for reducing the overall parking requirement.

Based on the projected ridership levels, it is not practical to design for fewer than 750 spaces and the ultimate design plan for 1,250 spaces is appropriate. For example, at the Aurora Station, the current 1,250 parking spaces are fully occupied on a daily basis.

RECOMMENDATION: *Not carried forward*, does not accommodate required parking demands.

4.4 Preferred Design

Based on an assessment of site layout options outlined in Section 4.3, **Site Layout Option 2** was carried forward for further development. The preferred site layout of the proposed facility is illustrated in **Exhibit 4-17**.

The preferred design includes the realignment of the eastbound on-ramp to Highway 404 southbound, to accommodate access to the site between the CN rail bridge and Highway 404, as well as the realignment of the southbound off-ramp from Highway 404 (Ramp N-E/W) to align with the eastern site driveway. The intersection location has been set to maximize the turning radius for the eastbound to southbound on-ramp ($R=90\text{m}$), while maintaining a 50m offset west of the ramp W-S bullnose (in keeping with MTO design standards). The on-site access road configuration was subsequently modified to address MTO concerns regarding the proximity of the first intersection on-site to Bloomington Road. The revised configuration is presented in Section 6.0, and does not affect the evaluation of alternatives.

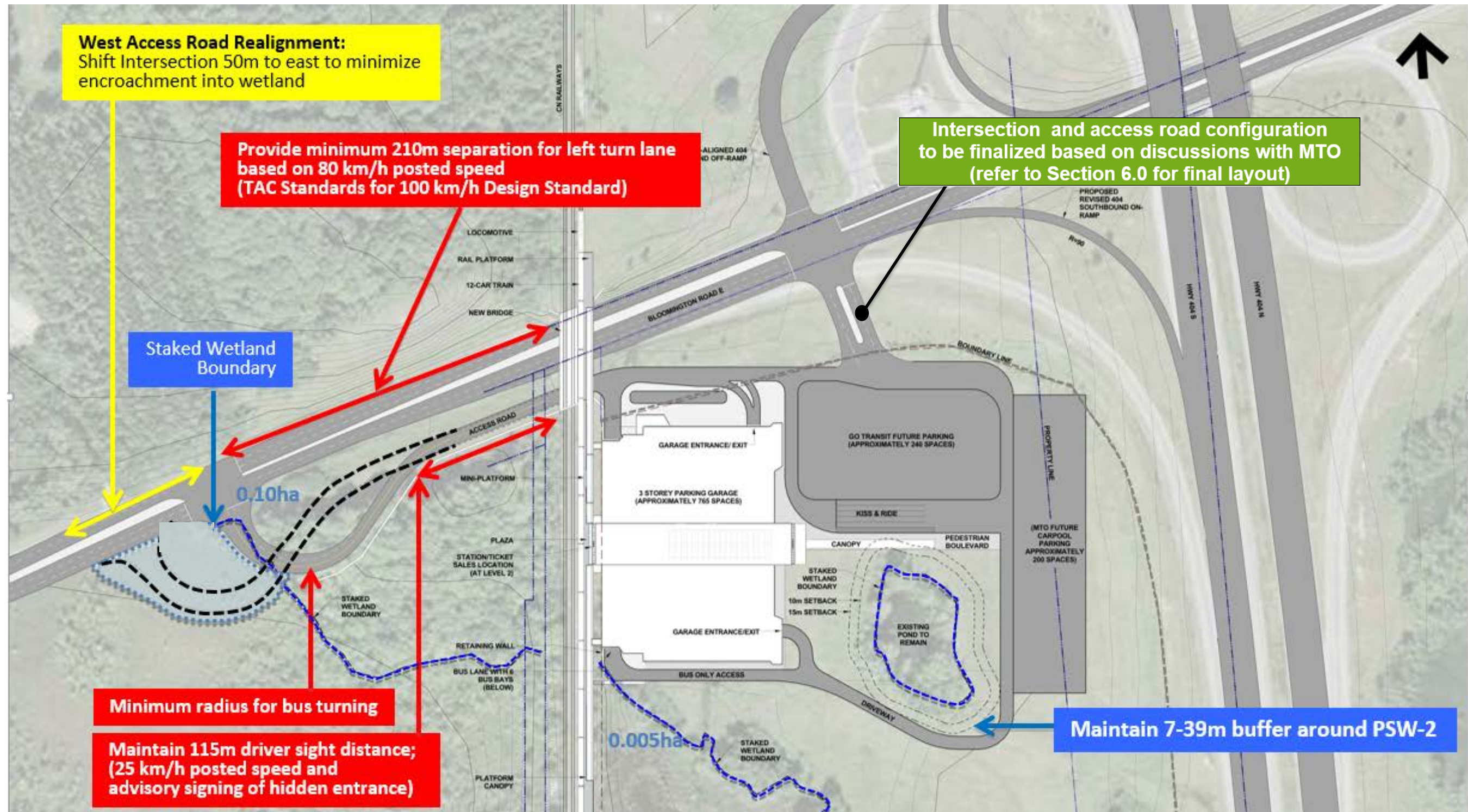
A second site access to/from Bloomington Road is provided west of the CN rail crossing. To minimize the extent of encroachment into the wetland west of the tracks, the west access road connection to Bloomington Road is shifted 50m further east from that originally reflected in Alternative 2 (per **Exhibit 4-17**). With this shift, the left turn parallel and taper length will remain in keeping with Region of York/TAC standards and queue lengths will be contained between the signalized intersections. Shifting the access road will significantly reduce the loss of wetland. Although this alternative will result in additional removal of upland forest, given its location adjacent to busy Bloomington Road, the effects will be minimal.

Other key elements of the preferred design are outlined below:

- Allowance for 1250 parking spaces (ultimate plan), including 150-200 surface parking spaces for a MTO carpool lot, located immediately east of the GO Station surface parking.
- Access and egress is to be provided via two signalized accesses on Bloomington Road separated by 350m.
- The west access is to be located approximately 210 metres west of the CN rail bridge. This access is expected to accommodate the majority of traffic entering and exiting the site.
- The east access will be located directly opposite the Highway 404 southbound off-ramp (N-W/E ramp) connection to Bloomington Road. The Highway 404 ramp will be realigned to the west approximately 45 metres to accommodate reconstruction and tightening of the Highway 404 southbound on-ramp (W-S ramp).
- The internal road configuration is designed to minimize potential conflicts, accommodate forecasted queues and to ensure delays for vehicles entering and exiting the site are not excessive.
- The kiss and ride facilities will be located as close as possible to the station building to minimize walking distance.
- The bus station area is located on the ground level of the garage adjacent to the rail and beneath the plaza to the rail platform.

Based on 2031 projections, the combined total traffic demands of the Bloomington GO Station and MTO carpool lot are estimated to be approximately 1150 vehicles/hr during the AM peak (950 In, 200 Out) and 1,090 vehicles / hour during the PM peak hour (190 In, 900 Out). Traffic demands are expected to be accommodated at Level of Service (LOS) D or better during 2031 peak hour conditions. Details of traffic analyses are provided in *Traffic Impact Assessment*, which is included as **Appendix E** of this report.

Exhibit 4-17: Bloomington GO Station - Preferred Design



4.5 Assessment of Net Effects of the Preferred Design

The Environmental Assessment completed in August 2009 by GO Transit provides for a station building with associated surface parking lot (700+ spaces) and a single point of access from Bloomington Road. The need to provide for additional parking and access changes (including a second access), led to refinements of the concept which included a parking structure as a key feature of the plan.

Exhibit 4-18 summarizes the key differences between the new site layout and that outlined in the original plan (as outlined in the 2009 ESR), using evaluation criteria from the 2009 EA. Based on this information, it is concluded that there is “No Material Change” that would alter the selection of Bloomington Road as a preferred GO Station site. The areas where significant differences have been identified are highlighted below:

- **Natural Environment (Impact on Environmentally Sensitive Areas):** The preferred design results in a loss of 0.46 ha of woodland west of the CN rail, and 0.105 ha loss of wetland areas. Proposed compensation and restoration strategies are included the Natural Heritage Assessment and Arborist Reports (included in Appendix A and Appendix G respectively). Details will be finalized through discussions with MNRF, TRCA, and Town of Richmond Hill (as applicable).
- **Improved Site Accessibility:** Increased site demands will be accommodated by two accesses on Bloomington Road.
- **Station Buildings /Facilities:** The Bloomington GO Transit Station is integrated with a three-storey parking garage (seeking LEED Gold design), allowing for increased parking demands with little change to the construction footprint.
- **Higher Construction Cost:** Additional costs primarily associated with the parking garage, west access road and CN bridge modifications, and realignment of interchange N-E/W ramp. These costs are somewhat offset by lower W-S ramp reconstruction costs, including grade separation.

Exhibit 4-18: Comparison of Preferred Design with Original Design Concept

CRITERIA	INDICATOR	ORIGINAL CONCEPT PLAN (2009 ESR)	PREFERRED DESIGN
NATURAL ENVIRONMENT	Impact on Water Resources (e.g., surface water and groundwater)	<p>Moderate to High</p> <ul style="list-style-type: none"> Station will displace ± 240m single line drainage swale immediately east of the tracks which outlets to the wetland on the south of Bloomington Road. Additional areas of intermittent ditching will also be impacted. The Station is situated within the TRCA Generic Regulation. A permit is required for placing fill in areas subject to flooding or erosion. Station footprint is situated within high aquifer vulnerability (i.e. contaminated water is more likely to reach the aquifer) Station will impact approximately 4 ha of the Bloomington Wetlands. A storm water management pond will be constructed on the south side of the bus loop 	<p>Minor Change</p> <ul style="list-style-type: none"> Post development peak flow will be controlled to pre-development levels. Water quantity control for the GO Station will be provided by parking lot storage and surface detention storage. Volume requirements will be met by storing first 5mm of rain on site. Permeable paving, roof top storage and bio-swale storage will be able to meet water balance requirements. Runoff from site will be discharged into the bio-swale to provide additional cleaning before discharging into PSW-1. Untreated drainage from the vicinity of Hwy. 404 will be directed to bio-swale prior to outletting to PSW-1
	Impact on Fisheries Resources (e.g., aquatic species and habitat)	<p>Moderate to High</p> <ul style="list-style-type: none"> Study Area support fish species. No Species at Risk were recorded within or adjacent to the proposed Station. 	<p>Minor Change</p> <ul style="list-style-type: none"> MNRF confirmed the project will not trigger regulatory intersects for Redside Dace. Results in loss of 0.105 ha wetland area, primarily adjacent to Bloomington Road, west of the CN rail crossing.
	Impact on Terrestrial Environment (e.g., wildlife and vegetation)	<p>Moderate</p> <ul style="list-style-type: none"> No Species at Risk were recorded within or adjacent to the proposed Station Will result in some disturbance to wildlife habitat (i.e. removal of approx. 3.35 ha of ground cover consisting primarily of grassland and old field) Additional ground cover will be disrupted to reconstruct the new on ramp to Highway 404. 	<p>Minor Change</p> <ul style="list-style-type: none"> Results in loss of 0.46 ha upland forest (wildlife habitat) adjacent to Bloomington Road (required to accommodate the west access road).
	Impact on Environmentally Sensitive Areas (e.g., Oak Ridges Moraine)	<p>Moderate to High</p> <ul style="list-style-type: none"> Site located within the Oak Ridges Moraine (ORM) Planning Boundary and designated in the ORM Conservation Plan as a Natural Linkage Area. Station traverses approximately 0.4 ha of the provincially significant Environmentally Sensitive Area (ESA) known as the Bloomington Wetlands. The White Rose - Preston Lake Wetland Complex is provincially significant and situated within the greater area of the Bloomington Wetlands. Design is expected to avoid this feature in its entirety. 	<p>Moderate Change</p> <ul style="list-style-type: none"> Results in loss of 0.46 ha of woodland and minor encroachment into wetland along south side of Bloomington Road, west of CN rail crossing. In total, development will result in 0.105 ha loss of wetland areas. Compensation to be provided as reflected in Natural Heritage Assessment and Arborist Reports (final level of compensation to be determined based on discussions with agencies).
SOCIO-ECONOMIC ENVIRONMENT	Property Acquisition Requirements	<p>Moderate</p> <ul style="list-style-type: none"> Direct access to the Station would be provided via Bloomington Road and would also require a portion of the MTO property Approximately 4.67ha Public Property Required (1 Owner - MTO) No Private Property Required or Owners Affected 	<p>Minor Change</p> <ul style="list-style-type: none"> Two landowners affected. Approximately 6 ha public property (MTO) Approximately 0.5 ha of property west of tracks (recently acquired by Metrolinx)
	Residential Homes Affected	<p>Low</p> <ul style="list-style-type: none"> Station location will not affect any residential homes on or offsite within 500 m. 	<p>No Change</p>
	Compatibility with Existing and Designated Land Use	<p>Moderate</p> <ul style="list-style-type: none"> Station is located within areas of old field/grassland, with intermittent ditching throughout. Not compatible with existing land uses as the land is currently being used as a natural area. Review of the Richmond Hill Official Plan delineates the site as a Rural Area. As per Official Plan Amendment 218, planned land use designations are consistent with ORM land use policies. 	<p>No Change</p>

CRITERIA	INDICATOR	ORIGINAL CONCEPT PLAN (2009 ESR)	PREFERRED DESIGN
	Permanent Noise and Visual Impacts of Train Station	Low <ul style="list-style-type: none"> The site is directly adjacent to Highway 404 and there are no noise sensitive features (i.e. residential, institutional land uses) within 500 m of the Study Area. Visual impacts of the proposed Station would be evident from the Highway, but are not considered to impact any adjacent land uses. 	Minor Change Station will be more visible (given parking structure) however will not adversely affect any adjacent land uses.
	Business Impacts	Low <ul style="list-style-type: none"> There are no business impacts 	No Change
	Agricultural Impacts	Low to Moderate <ul style="list-style-type: none"> Site not being used for agricultural related purposes, but has agricultural potential. 	No Change
COST	Construction Cost	Moderate <ul style="list-style-type: none"> Require the construction of a second track leading up to and beyond the Station location. Requires an onramp reconfiguration from Bloomington Road to south of Highway 404 (west-south on-ramp). The new track over Bloomington Road will also require widening modifications to the existing CN bridge over Bloomington Road. 	Higher Construction Cost <ul style="list-style-type: none"> Additional costs primarily associated with parking garage, west access road and CN bridge modifications, and realignment of interchange N-E/W ramp. These costs are somewhat offset by lower W-S ramp reconstruction costs, including grade separation.
CULTURAL HERITAGE	Impact on Built Heritage Features	Low <ul style="list-style-type: none"> No heritage features would be affected. 	No Change
	Impact on Archaeological Resources	High <ul style="list-style-type: none"> Area to be ploughed and assessed by pedestrian survey. 	No Impact <ul style="list-style-type: none"> Stage 1 & 2 Archeological Assessment was completed as part of this ESR Addendum. No archaeological resources with cultural heritage value were recovered during the course of the survey.
TECHNICAL REQUIREMENTS	Impacts on Accessibility to the Site	Low <ul style="list-style-type: none"> Access is provided from Bloomington Road via a grade separation over the Highway 404 on-ramp, which will need to be relocated. This option includes an additional future CN track leading to and from the station. The proposed access road will require relocation of the Highway 404 west-south ramp for approximately 550 m. 	Significant Change (Improvement) <ul style="list-style-type: none"> Improved access to the site (site demands accommodated by two accesses on Bloomington Road).
	Station Building / Facilities	Moderate <ul style="list-style-type: none"> The GO Transit station building is a 0.2ha, single-storey structure featuring energy efficient and eco-friendly finishes. For customer service functions, it contains kiosks for ticketing and security, washrooms, and a waiting area. 	Significant Change <ul style="list-style-type: none"> The GO Transit station is integrated with a three-storey parking garage (LEED design)
	Construction Footprint, including Staging and Grading	High <ul style="list-style-type: none"> Construction footprint includes filling an area. It is noted that a small portion of this proposed undertaking will be on wetland areas, which may include filling. 	Minor Change <ul style="list-style-type: none"> Footprint extends into Bloomington Wetlands west of the tracks (to accommodate new access road) and north of Bloomington Road (to accommodate N-E/W ramp realignment).
	Opportunities for Future Expansion of Parking Lot	Moderate <ul style="list-style-type: none"> Future parking expansion is to occur within old field/ grassland areas 	Minor Change (Improvement) <ul style="list-style-type: none"> Plan accounts for ultimate build-out (up to 1250 spaces), including 200 MTO carpool spaces.

5. Stakeholder Consultation

5.1 Concerns Expressed during Original Class EA (2009)

General Public

Overall, Public Information Centre participants were in agreement with the design alternatives/locations presented. No objection was received to a station at Bloomington Road.

Agencies, Municipalities, and Stakeholders

Key stakeholders were generally in agreement of the project and advised that this project will benefit the anticipated growth of the area, while alleviating traffic from Highway 404. The following comments were received specific to the Bloomington GO Station:

- CN confirmed that they do not anticipate any problems with this project and CN rail operations.
- The Town of Aurora noted that Bloomington Road site falls within a natural linkage designation. Although essential infrastructure/transportation facilities were permitted within natural link, the EA Study needs to demonstrate the need for this project and that implementation will have minimal impact on the surrounding environment.
- The Town of Richmond Hill noted several environmental constraints including wetlands, Environmentally Sensitive Areas (ESAs), and the Oak Ridges Moraine (ORM) for the Bloomington Road options. The Town noted that the site is constrained by drainage issues.
- TRCA expressed concern regarding the impact to watercourse/wetland features and suggested that more buffering is needed. TRCA recommended modifying the station footprint to further minimize negative environmental effects. The TRCA advised not to propose any sites on wetland features as they would occur on muck soil types, which is a hazardous type of soil from a development perspective.
- TRCA advised that strong mitigate measures will be required and that stormwater management should be presented with great detail; recommended implementing the Sustainable Technologies Evaluation Program (STEP) with regards to stormwater management implementation.
- The Region of York recommended consideration of bus bays for York Region Transit as part of the proposed design layout for the future GO Transit station.
- The Region of York identified a carpool lot at the Bloomington Road site as part of its Transportation Master Plan.
- MTO suggested providing 200m beyond the ramp access before a decision point is negotiated. The Ministry suggested that the project team refer to the Ministry's Access Guidelines for the design of the new ramp.

Notice of Study Completion

No requests for a Part II Order are received during the public review period and no concerns specifically related to the GO Bloomington Station.

5.2 Current Class EA Addendum

Upon initiation of the ESR Addendum to modify the design of Bloomington GO Station , several initiation meetings were held with MTO, MNRF, TRCA, York Region, Town of Aurora, and Town of Richmond Hill to discuss the project design requirements and constraints. At that time, it was indicated that Metrolinx intended to undertake an ESR Addendum to address the need for design modifications to accommodate higher traffic and parking demands at the future Bloomington GO Station. As previously described, these modifications are expected to include a second access on Bloomington Road west of the CN rail, as well as road widening along Bloomington Road and adjustments to the Highway 404 interchange ramps.

Upon initiation of the ESR Addendum in February 2014, key stakeholders potentially impacted by the design changes and/or expected to have an interest in the study were identified. Agency and stakeholder input was largely secured through individual meetings. A summary of key agency consultation and meetings (excluding utilities) are documented in **Exhibit 5-1**.

Given the range of options being considered, it was determined that a Public Information Centre would not be necessary. The landowner on the south side of Bloomington Road (west of the CN rail corridor) was contracted separately by Metrolinx staff to obtain permission to enter and ultimately enter into discussions regarding land acquisition. No other residents or businesses in the vicinity of the site will be directly impacted.

Exhibit 5-1: Summary of Stakeholder Correspondence and Meetings

AGENCY	DATE	DISCUSSIONS AND CONCERNS	RESOLUTION
Canadian National Railway (CN)	March 20, 2014	<p>Meeting held to confirm bridge spans and cross-section along Bloomington Road</p> <ul style="list-style-type: none"> • CN undergoing design of new rail bridge over Bloomington Road to accommodate new tracks and protect for widening Bloomington Road and potential GO Station access requirements. • Vertical Clearance requirements of 5.2 m (to accommodate Double Decker buses) will require raising track level. • Given site constraints, CN requested that efforts be made to minimize critical span length. Bridge design subsequently completed based on three equal spans of 16.7m (18m on skew). Any span over 18m will significantly increase costs and impacts associated with need to further raise tracks. 	<ul style="list-style-type: none"> • Metrolinx suggested 18m spans (perpendicular to Bloomington Road) • No opportunity to lower the road grade. • Cross-section to provide for 4m median, 3 travel lanes in each direction (including HOV and 1.5m bike lanes) plus future sidewalk. To minimize critical centre span provisions for sidewalk to be made on south side of bridge pier
	February 11, 2016	<p>Meeting held to discuss timing of CN bridge construction</p> <ul style="list-style-type: none"> • CN presented staging plans for CN bridge reconstruction. It was noted that work is expected to begin June 2016 and be completed by Dec 2017 • The earth stockpile (approximately 10,000m³) located in the northwest quadrant of the interchange consists of material excavated to build the temporary access road on the north side of Bloomington Road. This material is required at the end of their work to reinstate the embankment which was cut to accommodate the access road. • CN will backfill the area under the bridge at the new west access road with granular B and will restore the existing pavement surface of Bloomington Rd. 	<ul style="list-style-type: none"> • Metrolinx noted that they expect to begin construction in October 2016 and extend to November 2018. Majority of roadwork is expected to be completed in 2017; and resurfacing and minor works, landscaping, performed in 2018. • Metrolinx agreed to adjust phasing to begin on the east side of the site and move westward., to accommodate the CN bridge contract. Also to include provisions in the contract with respect to: <ul style="list-style-type: none"> - Co-ordination of road widening with the CN contractor in their tender documents. - Avoid roadwork within 30m of the bridge while piers and abutments are being constructed. - Earth Stockpile is expected to be partially impacted by grading associated with relocating the southbound off-ramp. The partial removal or relocation of this stockpile is to be further coordinated with CN
Ministry of Transportation (MTO)	March 20, 2014	<p>Meeting held to confirm cross-section along Bloomington Road. Further to CN/Region of York comments (under same date):</p> <ul style="list-style-type: none"> • MTO questioned use of 3.66m (existing) lane widths on Bloomington Road (versus 3.75m current standards) and requested Metrolinx document reasons why the proposed design cannot meet MTO standards. • MTO confirmed construction or construction related activities (staging, access, etc.) on MTO lands would require an Encroachment Permit. CN and/or GO to apply for permit(s) as needed. • MTO requested allowance be made to accommodate 200 space carpool parking lot (per MTO Central Region Carpool Lots Opportunity Study (2009)) 	<ul style="list-style-type: none"> • Distributed design standards and cross-section. • Rationale for lane widths included in Design Criteria • Provision made in design to accommodate MTO carpool lot (targeting 100 spaces by 2021, and 200 spaces by 2031)
	Miscellaneous Correspondence	<ul style="list-style-type: none"> • MTO provided initial comments on draft traffic report and updated traffic counts (May 2, 2014) • MTO provided comments on updated draft traffic report, preliminary design plans and criteria (Aug 8, 2014 and Aug 21, 2014) 	<ul style="list-style-type: none"> • Submitted draft traffic report, preliminary design plans and geometric criteria (April 21, 2014). • Submitted updated traffic report, roadway and site plans, evaluation of alternatives (June 20, 2014). • Responded to MTO comments on updated traffic report and geometric design (Technical Memo October 16, 2014) • Submitted updated traffic report, design plans, overall site plans, design criteria, reflecting 50m shift of west access (April 21, 2015)
	April 27, 2015	Meeting with MTO (and CN) to address property requirements and coordination with CN bridge design.	
	Miscellaneous Correspondence	<ul style="list-style-type: none"> • MTO provided comments on the revised plan (May 21, 2015) 	<ul style="list-style-type: none"> • Responded to MTO comments on traffic report (May 2015) and submitted updated preliminary design plans, design standards, drainage plan for review (Technical Memo July 10, 2015)
	September 25, 2015	Meeting held to confirm CN bridge requirements, and GO Station property, traffic, and roadway design	<ul style="list-style-type: none"> • Met with MTO (and CN) to discuss co-ordination with CN bridge contract (Sept 25, 2015). Submitted preliminary geotechnical investigation report to MTO
	Miscellaneous Correspondence	<ul style="list-style-type: none"> • MTO provided comments on traffic report (October 9, 2015) 	<ul style="list-style-type: none"> • Submitted initial design plans (30%) in advance of Senior Management Review (October 21, 2015)
	November 2, 2015 (MTO Senior Management)	<ul style="list-style-type: none"> • In general, MTO agreed with the proposed interchange modifications and agreed to two signalized access points are required based to accommodate site traffic demands. These accesses would serve both traffic associated with the GO Station and future MTO Carpool Lot. • MTO would prefer traffic use the west access to the site as much as possible to free up capacity at the Bloomington Road – Ramp N-E/W intersection. 	<ul style="list-style-type: none"> • Agreed to restrict westbound left at east access to buses only. • The design of the west site access would be updated to accommodate more traffic exiting the site, the south leg of the intersection would be modified to provide for a dual left turn and longer right turn lane • Submitted updated traffic analysis (Traffic Report, January 2016), and follow-up Technical Memorandums for follow-up clarifications

AGENCY	DATE	DISCUSSIONS AND CONCERNS	RESOLUTION
	Miscellaneous Correspondence	<ul style="list-style-type: none"> Received MTO provided comments on drainage report (March 10, 2016) MTO requested additional supplementary traffic analysis for east access (April 1, 2016) MTO requested traffic analysis completed for additional horizon years (May 6, 2016) 	<ul style="list-style-type: none"> Submitted final traffic report (January 2016) and supporting technical memo, updated design criteria, design plans (50%), and drainage report (January 2016_rev1) (February 19, 2015) Submitted supplementary traffic analysis (Technical Memo March 30, 2016), updated design criteria, design plans (75%), and overall site plan (April 1, 2015) Submitted traffic analysis for additional horizon years (Technical Memo dated May 9, 2016), updated Drainage/SWM report (rev_3), updated design plans and specifications (100%), and overall site plan.
	June 8, 2016	Meeting held to address MTO concerns regarding east access lane configuration, internal road configuration, and desire to maintain two eastbound through lanes along Bloomington Road at the east access.	Met with MTO (Highway Engineering, Traffic, and Corridor Control) to discuss site access/egress concerns. Metrolinx agreed to review feasibility of incorporating access changes and submit updated plan to MTO for review/approval.
	August 23, 2016	Meeting held to address MTO concerns regarding east access lane configuration, internal road configuration.	<ul style="list-style-type: none"> Metrolinx agreed to modify the proposed east access to address MTO concerns. The revised configuration would provide at least 200m spacing between Bloomington Road and the first intersection on-site. Subject to additional traffic analysis, it was agreed that all station traffic entering the site (excluding buses and cars from Highway 404 southbound) and station traffic exiting the site will utilize the west access. All buses and future carpool traffic will enter and exit the site at the east access (avoids car pool traffic cutting through the site).
	September 23, 2016	MTO provided comments on Updated Traffic Impact Assessment (September 2016)	<ul style="list-style-type: none"> Submitted updated Traffic Impact Assessment (Updated September 2016), design criteria, revised site plan, and supporting plans (i.e. pavement marking and signing, PHM-125) for review. Subsequently responded to MTO comments on Traffic Impact Assessment (primarily related to ideal saturation rates and optimal cycle lengths).
	October 17, 2016	MTO Executive Review	Met with MTO Senior Management to gain approval of the proposed site access/egress and interchange modifications. Agreement in principle was received.
Ministry of Natural Resources and Forestry (MNR)	December 4, 2014	<p>Meeting to discuss potential impacts and requirements</p> <ul style="list-style-type: none"> MNR acknowledged the need for the second access from Bloomington Road to the proposed facility is required and that, after all alternatives have been considered including the safety requirements of MTO and the Region, it must be located west of the CN tracks. Noted that Section 41(4) of the ORMCP is explicit in the requirement for protection of key natural heritage features (wetlands and significant woodlands) within a Natural Linkage Area. Requested Metrolinx expand the range of alternatives to include more options for maintaining wetlands and woodlands. Redesign westerly access road to reduce impacts to Wetland Unit 1. MNR confirmed Redside Dace are not a concern for this proposal. 	<ul style="list-style-type: none"> Development analysis expanded to include additional options. These include shifting the access road further north or west, relocating surface parking further north, reduction of the overall parking, etc. Subsequently redesigned westerly access to the extent of encroachment into the wetland west of the tracks (see below)
	February 13, 2015	<ul style="list-style-type: none"> The preferred alternative (Site Access - Alternative 2) was agreed to in principle. MNR expressed concern that Option 4 does not satisfy Section 41 (4) of the ORMCP and would only consider this only if there is no reasonable alternative to salvage PSW-2. MNR expressed a desire to retain the wetland rather than attempt to replicate its function in another area that had a higher connectivity to the larger system. Provide permeable surface parking lots. Requested further details regarding control of post development peak volumes and quality control. Requested water balance calculations be included in drainage report. 	<ul style="list-style-type: none"> Metrolinx reviewed site constraints road/rail/property/ and environmental constraints within and adjacent to the site. Also review access options as well as site layout design options Presented modified Alternative 2 to significant reduce the impacts to Bloomington Wetland, by shifting the west access 50m further east. Encroachment into the wetland and woodland areas have been kept to a minimum Presented preferred site layout options. Option 4 was proposed under the assumption that appropriate compensation plan provided (i.e. creation of new wetland away from the highway) Metrolinx agreed to revisit Option 2, update design to include underpasses crossings of the bus loop, as well as measures to mitigate impacts (i.e. proximity of vehicles, street lighting, landscaping, water quality and quantity). Where feasible, permeable paving will be provided on parking lots. Post development peak flow will be controlled to pre-development level. Volume requirements will be met by storing first 5mm of rain on site. Stormwater from site will be discharged into the bio-swale to provide additional cleaning of runoff before discharging into the PSW unit. Water balance calculations subsequently added to Drainage Report
	Miscellaneous Correspondence	<ul style="list-style-type: none"> Confirmed receipt of materials and will advise of any concerns (June 9, 2015) 	<ul style="list-style-type: none"> Notified MNR of the decision avoid PSW-2 and submitted a copy of the plan (April 15, 2015) Submitted memo of additional field work (i.e. pre-development productivity surveys of wetland) to MNR (May 14, 2015) Submitted draft Natural Heritage Report (January 2016), Drainage and Stormwater Management Report (January 2016_rev1), Civil Site and Roadway Design Plans (Feb 2016) for review.

AGENCY	DATE	DISCUSSIONS AND CONCERNS	RESOLUTION
	March 3, 2016	Meeting to review selected design alternative and confirm follow-up requirements: <ul style="list-style-type: none"> MNRF recommended the following modifications/additions to the preferred design plan, including the Drainage and Natural Heritage Reports: <ul style="list-style-type: none"> Provide a second eco-passage culvert at PSW-2 for redundancy. Clarify extent and need for encroachment into PSW-1. Provide plan outlining the catchment area for each wetland unit Ensure area of construction does not infringe on the catchment area for PSW-3. Minimize impacts to PSW-2 with respect to lighting and landscaping MNRF/TRCA requested that the contract provide for regular environmental monitoring during construction and follow-up maintenance contract for aminex fencing. MNRF/TRCA requested that consideration may be given to reforest lands between PSW-1 and PSW-3 (MTO lands) 	Metrolinx has/will update the design to address all items requested. In this regard: <ul style="list-style-type: none"> A second culvert has been added serve as an overflow/ relief culvert for water flow, to ensure the natural high water level of the wetland is maintained. Minor encroachment to PSW-1 is required to accommodate track widening and station requirements; however the design team subsequently reduced impact by eliminating the external stairway adjacent to tracks. <ul style="list-style-type: none"> A plan outlining catchment area for each wetland unit has been incorporated into revised drainage report The landscape design plans use native plant species where possible and incorporate best practices to maintain or improve the ecological integrity of the area. Design plans have been updated to divert highway water directed into bio-swale, not Unit 3. Lighting strategy uses shorter poles and shielding to mitigate negative impact on PSW-2. Metrolinx will incorporate environmental monitoring into the contract documents. Opportunities for compensation will be finalize in discussions with MNRF, TRCA and Town of Richmond Hill.
Toronto and Region Conservation Authority	March 3, 2016	In addition to MNRF comments above (under same date): <ul style="list-style-type: none"> TRCA requested the water balance calculations (desktop) be undertaken of a one year condition (an annual water balance). TRCA requested floodplain analysis for the area west of the CN crossing. 	<ul style="list-style-type: none"> Submitted draft Natural Heritage Report (January 2016), Drainage and Stormwater Management Report (January 2016_rev1), Civil Site and Roadway Design Plans (Feb 2016) for review in advance of meeting. Metrolinx design team confirmed that the design will provide the required Enhanced (Level 1) water quality control before discharging into the PSW Unit 1. Bio-swales, permeable paving and landscape areas have been maximized to retain and infiltrate runoff and increase on-site evapotranspiration. Clean (roof top) water will be diverted to PSW-2 to maintain water balance and enhance water quality. PSW-3 remains isolated and not affected by the construction The Drainage Report (January 2016_Rev 1) was subsequently amended to accommodate TRCA's request for a more intensive water analysis. Cut/Fill analysis was completed and confirmed no net loss of floodplain (analysis added to drainage report).
York Region	March 20, 2014	Meeting held to confirm cross-section along Bloomington Road. Further to CN/MTO comments above (under same date): <ul style="list-style-type: none"> York Region indicated potential for zoning additional lands in the area in the future (in 20-30 years) for urbanized development. Region has a mandate to tighten lane widths on urban-area roads in general, to be more pedestrian friendly. York Region confirmed intention to reduce posted speed limit on Bloomington Road from 80 km/h to a posted limit of 60km/h (in conjunction with any future improvements/widening) York Region requested that consideration be given to cyclists accessing the site. 	<ul style="list-style-type: none"> Letter received from the Region (dated Oct 23, 2014) confirming that "the Region will work with MTO staff to assess the appropriate speed limit and revise accordingly to satisfy the design standards as part of the ultimate road design if this section of Bloomington Road is widened to six lanes in the future"
	March 29, 2016	Meeting to review selected design alternative <ul style="list-style-type: none"> Regional staff were in agreement with selected alternative and access configuration It was noted that the Region's contract for widening of Bloomington Road to 4 lanes west of CN rail corridor (undertaken in 2014) is now complete other than some minor cleanup work. York Region requested that the that the design provide for the following: <ul style="list-style-type: none"> Protect for ultimate 6 lanes (4 lanes + HOV) along Bloomington Road from Bathurst to the Highway 404. Ensure west access intersection and traffic signals design is AODA compliant The cross culvert at the west access road be set back sufficiently to accommodate the future widening to six lanes. Headlight screening be provided within the boulevard between Bloomington Road and the west access road. York Region requested further details regarding pavement design. 	<ul style="list-style-type: none"> Metrolinx indicated that the topographical survey used for design was performed in late summer/fall 2015 and reflects the recent widening along Bloomington Road undertaken by the Region. It was confirmed that all concerns listed by the Region have been addressed with the design It was indicated that Bloomington Road will be widened and resurfaced within the project limits. Metrolinx will forward geotechnical reports to the Region of York once available. All Metrolinx Design drawings (dated April 2, 2016) subsequently submitted to Region of York staff for review. Metrolinx design team to meet with Regional Staff, as necessary, following review drawings, to co-ordinate traffic signal design
Town of Richmond Hill	March 29, 2016	Meeting to review selected design alternative <ul style="list-style-type: none"> Richmond Hill requested sufficient space be provided along Bloomington Road for both a future 	<ul style="list-style-type: none"> Design drawings (dated April 2, 2016) subsequently submitted to Town of Richmond Hill Staff for review.

AGENCY	DATE	DISCUSSIONS AND CONCERNS	RESOLUTION
		sidewalk and lighting. <ul style="list-style-type: none"> Richmond Hill requested headlight screening be provided within the boulevard between Bloomington Road and the west access road. Requested Metrolinx provide a brief presentation to City Council in the future (for information purposes). 	
Town of Aurora	March 29, 2016	Meeting to review selected design alternative <ul style="list-style-type: none"> Town of Aurora indicated support for development proposal (particularly given ridership and heavy parking demands at other sites). Requested Metrolinx provide a brief presentation to City Council in the future (for information purposes). 	<ul style="list-style-type: none"> Metrolinx provided and overview of the site constraints and reasoning behind the site plan strategy. Metrolinx noted that they will not be applying for site plan approval but will apply for building permit. Design drawings (dated April 2, 2016) subsequently submitted to Town of Aurora staff for review.

6. Project Description of the Preferred Alternative Design

6.1 General Overview

The proposed Bloomington GO Station will be located on the south side of Bloomington Road, along the east side of the CN rail corridor. To accommodate access to the station, minor roadway interchange modifications will be required adjacent to the site. The configuration of the east access to the site was updated from that reflected in the concept presented in Section 4.4, based on discussions with MTO and need to accommodate 200m of unobstructed access upon entering the site. The design modifications to the east access (detailed within this section), are relatively minor and do not affect the selection of alternatives.

The major components of the project are defined below:

Station

- A new three storey parking structure with integrated station building to provide for approximately 765 spaces;
- An additional 285 parking spaces adjacent to parking structure to accommodate GO Transit users, and provisions for an additional 150-200 parking spaces as part of a MTO carpool lot, located on the east side of the site;
- A bus platform (6 bus bays) located on the ground level of the garage adjacent to the rail corridor (beneath the plaza to the rail platform);
- Barrier-free parking and a kiss and ride with a barrier-free drop off lane;
- Bicycle and pedestrian access. A bike shelter will be integrated into the building through a canopy system. The shelter and canopy systems serve as a wayfinding element for pedestrian flow;
- A side rail platform to accommodate a 12-car train, a mini-platform, platform heated shelters, a snow melt system and canopy; and,
- New landscaping, fencing, information boards, signage, walkways and heated passenger shelters.

Station Access and Roadway/ Interchange Modifications

- Access and egress will be provided via two signalized accesses on Bloomington Road separated by 350m;
- The west access will intersect Bloomington Road approximately 210m west of the CN rail. The new access road will run parallel to Bloomington Road and utilize a third span incorporated into the CN rail bridge (to be replaced 2016/2017); and,
- The east access will be located directly opposite the realigned Highway 404 southbound off-ramp (Ramp N-W/E) and connect to Bloomington Road approximately 140m east of the CN bridge.

To accommodate the site access, the following interchange modifications are proposed:

- The Highway 404 southbound off-ramp (N-E/W ramp) will be realigned and intersect Bloomington Road approximately 45 metres west of the existing intersection; and,
- The Highway 404 southbound on-ramp (from the eastbound lanes of Bloomington Road, i.e. W-S ramp) will be realigned and reduced from 60km/h to a 50km/h design standard.

6.2 Site Access/ Egress

Two signalized access/egress points are proposed for the site to accommodate all vehicular movements to/from the proposed GO Station and MTO carpool lot.

West Access

The west access to the site will intersect with Bloomington Road approximately 210 metres west of the CN rail bridge. This roadway will be an urban cross-section consisting of two 3.5m lanes plus 1.5m bike lanes, and a 2.0m sidewalk along the south side of the roadway. At the approach to Bloomington Road, it will be configured with a dual left and separate right turn lane exiting the site.

This access is expected to accommodate approximately 75-80% of the GO Station traffic demands entering the site and 100% of GO Station demands (excluding buses) exiting the site. In turn, the signalized intersection at Bloomington Road is expected to operate at an overall Level of Service (LOS) B ($v/c = 0.69$, delay = 11.5 sec/veh) during the 2031 AM peak hour conditions, and LOS B ($v/c = 0.83$, delay = 19.6 sec/veh) during the 2031 PM peak hour conditions.

Where it crosses under the CN rail corridor, the access road will run parallel to Bloomington Road (at a centreline offset of 25.25m from the centreline of Bloomington Road). To minimize the extent of grading and impacts to the woodland area, a retaining soil systems (RSS) wall will be provided along the south side of the access road, immediately west of the CN rail crossing. This wall will be up to 6m high and extend over a length of approximately 165m.

To address headlight glare concerns associated with opposing vehicle flow (i.e. vehicles travelling westbound along the access road and eastbound along Bloomington Road), headlight screening (i.e. vegetation) will be provided within the boulevard between the two roadways.

To address driver sight line restrictions at the exit from the bus exit loading/ unloading area (limiting sight lines to 115m), a 25km/h speed limit and advisory signing of the hidden intersection will be posted along the west access road.

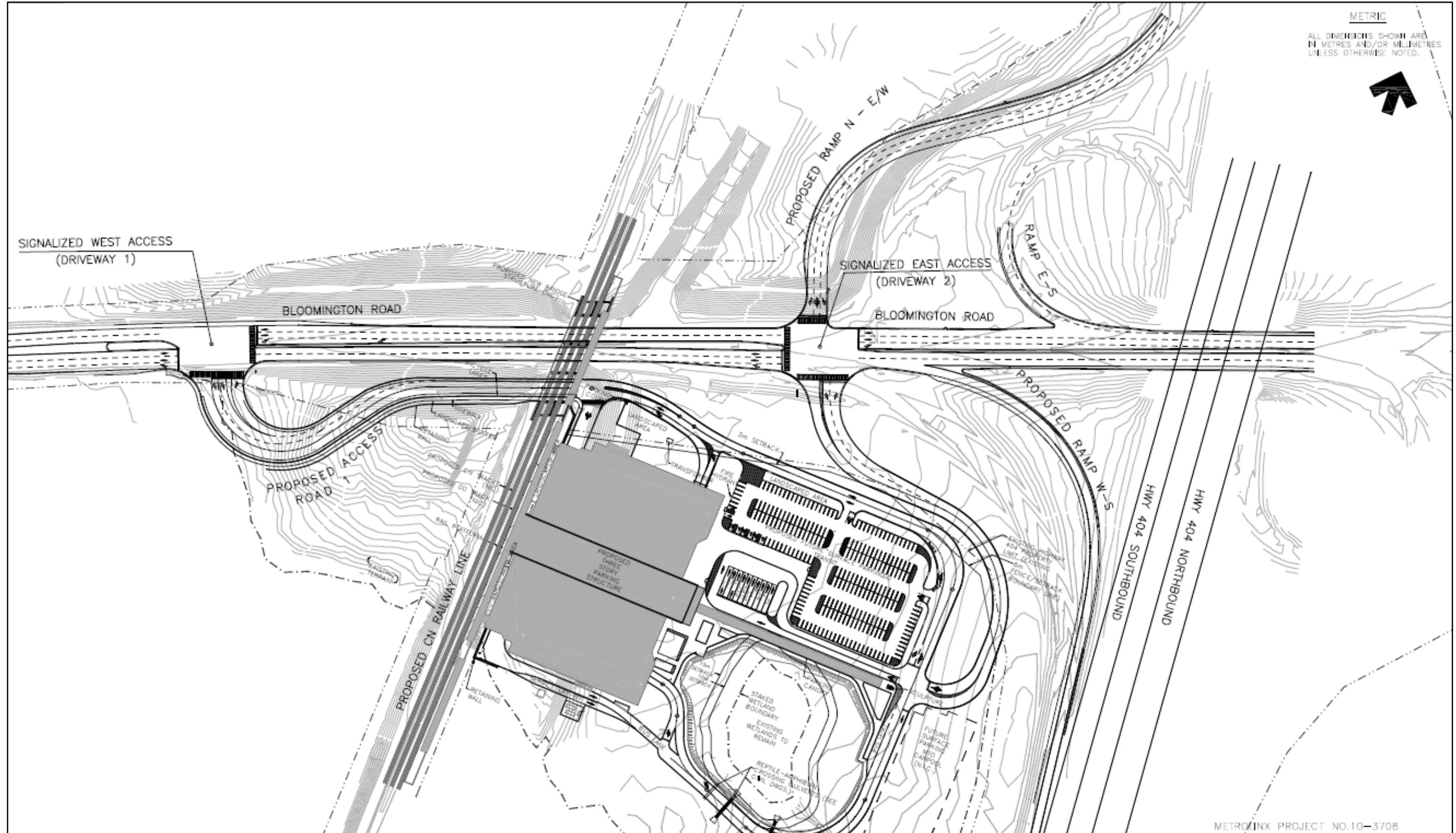
East Access

To accommodate the east access to the site, the Highway 404 W-S ramp radius will be tightened and the Highway 404 southbound off-ramp (on the north side of Bloomington Road) will be realigned and intersect Bloomington Road approximately 45 m west of the existing intersection. The east access to the site will be located directly opposite the realigned N-W/E ramp.

Initially this access will be used exclusively by buses entering/exiting the site, as well as the majority of vehicles entering from Highway 404 southbound. In the future it will also serve all traffic entering/exiting the MTO carpool lot (150-200 spaces). The access will be configured as a single left and single right turn lane exiting the site. It will operate under split phase signal control with a 'No Right Turn on Red' restriction placed on the right turn exit movement. No northbound left advance will be provided.

Under these conditions, the intersection is expected to operate at an overall LOS C ($v/c = 0.86$, delay = 33.2 sec/veh) during the 2031 AM peak hour conditions, and LOS C ($v/c = 0.88$, delay = 34.3 sec/veh) during the 2031 PM peak hour conditions.

Exhibit 6-1: Bloomington GO Station - Preferred Design Plan



6.3 Roadway Design

Bloomington Road

Minor widening will be required along Bloomington Road to accommodate 3.5m left turn lanes into the site at both accesses and a 3.5m right turn lane entering the site at the west access. Where Bloomington Road crosses the CN rail tracks two (2) 3.66m wide through lanes in each direction and a 4.0m centre median will be provided along Bloomington Road.

Longer-term, through lane widths may be reduced to 3.50m, in conjunction with a speed reduction along Bloomington Road to 80km/h design speed (60km/h posted speed) and the introduction of 1.8m bike lanes.

Highway 404 Interchange

Modification to the interchange ramps to/from the southbound lane of Highway 404 will be required to accommodate the east site access. Specifically:

- The W-S ramp will be reduced from a 130m radius (60km/h design speed) to a 90m radius (50 km/h design speed). The maximum grade of the ramp will be 4.0%.

The access to the site will be located 50m west of the W-S ramp bullnose (in keeping with MTO minimum standard) and requires that the N-E/W ramp connection at Bloomington Road be re-aligned to the west.

- Approximately 300m of the N-E/W ramp will be realigned to intersect Bloomington Road approximately 45m further west. The existing horizontal curve radii (R=130m and R=70m) will be maintained. The maximum grade of the ramp will be 3.1%. A three lane approach will be provided at its intersection with Bloomington Road (i.e. right, shared right/thru/left, and left turn lane configuration).

Grading will be undertaken between the ramps to remove the existing ramp and eliminate earth berming that may adversely affect drainage, driver sight lines, or vehicle access.

- The bullnose of the E-S ramp will be adjusted to accommodate widening along Bloomington Road.

Details in this regard are detailed in the Design Criteria in **Appendix F**.

6.3.1 CN Rail Bridge

The CN bridge is being replaced to accommodate a total of three (3) rail lines plus a portion of the platform for the station and additional track. To protect for the proposed access configuration, a third bridge span is being added to the bridge. The new bridge will provide for three equal spans of 16.73m and be sufficient to accommodate six (6) lanes of traffic along Bloomington Road, as well as the proposed west access road into the site. To keep the spans to a minimum, the future allowance for a 1.5m sidewalk along Bloomington Road has been shifted to the south span of the bridge.

Vertical clearance required for double decker buses, based on GO Transit Design requirement is 5.2 metres (minimum). The new bridge provides for 5.2m on Bloomington Road and the internal access road to ensure safe circulation of buses in the area.

6.4 Site Development

6.4.1 Internal Site Circulation

Internal circulation is largely accommodated by an uninterrupted perimeter roadway that has dedicated access points to the parking garage, kiss and ride, surface parking lots, and bus-bays. This roadway separates the GO Station and MTO carpool parking areas on site and loops around the south side of the wetland area (PSW-2) to provide access to the parking garage and bus terminal along the west side of the station building.

All vehicles (with exception the buses, MTO carpool, and majority of vehicles arriving from Highway 404 southbound) will be directed to use the west access to enter the site. The majority of these will in turn enter the north side of the parking garage, while the remainder will continue to the surface parking lot or kiss and ride areas. Buses and vehicles arriving from Highway 404 southbound will enter the site at the east access and proceed to an all-way stop along the perimeter road upon entry to the site.

Other than buses and MTO carpool traffic, all vehicles will be required to exit the site at the west access onto Bloomington Road. The east access will be restricted to buses and carpool traffic.

Pedestrian Access

A covered pedestrian walkway is provided centrally on-site which leads pedestrians directly into an atrium walkway on the ground floor of the parking structure. Within the station, pedestrian walkways and accessible ramps are provided leading to elevator banks which support vertical circulation to the station and upper parking levels.

Parking Areas

Approximately 765 parking spaces will be provided within the new parking garage. An additional 285 vehicular parking spaces are provided adjacent to parking structure to accommodate GO Transit uses.

In addition to the above, 150-200 vehicle spaces will be provided as part of a MTO carpool lot, on the east side of the site. This traffic will only use the east access and are not required to enter the station area.

Although the site access encroaches into the current Controlled Access Highway (CAH) designated limits of Highway 404, all station parking has been kept outside of these limits. The MTO carpool parking, is located east of the CAH limit and will operate separate from the GO Station. The MTO carpool lot has been located as close as possible to Bloomington Road and maintains a 14m offset from the existing fence line along the Highway 404 corridor (or projection thereof in the immediate vicinity of the interchange).

Bus Operations

The GO Station includes a bus terminal with six bus bays along the west side of the station building. The bus bays are covered and have direct vertical connection to the station building and platform level. It is anticipated that these bus bays will be used by GO Transit bus service and York Region Transit service. As a terminal station, it will naturally have some function as a transit hub for buses as well as rural service.

All buses will enter the site at the east access and once on-site turn left the first intersection (all-way stop) onto the perimeter road. Buses will then travel in a clockwise direction along the perimeter road to access the bus terminal area. Once leaving the bus terminal area, all buses will turn right onto the perimeter road, again circulating in a clockwise direction, and exit the site

by turning left at the all-way stop on the east side of the site. Buses will then be permitted to turn left or right at the signalized intersection at Bloomington Road opposite the Ramp N-E/W/S (i.e. East Access).

6.4.2 Municipal Services and Utilities

Water and Sanitary Services

Municipal water services are not available for the site. A drilled well, in proximity to the parking garage/ station building, will be required to provide domestic water or measures undertaken to import potable water.

Municipal sanitary service is also unavailable and new septic system (tank) will be provided.

Electrical Power

Power for the station building site will be supplied by the local electrical utility PowerStream through a connection from Bloomington Road. PowerStream will be providing a new pole along the south side of Bloomington Road. This pole line will end in the southwest corner of the proposed west access road, at which point two dip poles will be provided, one for power to the site and one for power to the new traffic signals. A primary duct bank will then be provided along the west access road and under the rail bridge to service the site.

Street lighting and traffic signal cables currently exist in the vicinity of the Highway 404 interchange ramps and signalized intersection. These facilities will be modified as required to accommodate new traffic signal (temporary and permanent) and illumination requirements resulting from the design changes.

Bell Fibre Optics

Bell Canada currently has a fibre optics cable along existing right-of-way south side of Bloomington Road. This cable passes through the site and will be impacted by the proposed construction within the site and along the west access road. Relocation of the cable will be required. Based on preliminary discussions with Bell Canada, the fibre optics will be diverted to the north side of Bloomington Road.

Communications Tower

The Communication Tower within the interchange area on the north side of Bloomington Road will not be impacted by the proposed construction. Access to the tower (currently available from both ramps and Bloomington Road) will be reinstated.

Enbridge Gas

There is no gas service in the area.

6.5 Drainage and Stormwater Management

In general, the existing drainage pattern across Bloomington Road and the Highway 404 interchanges will be maintained. The road runoff will continue to be conveyed by roadside ditches. At the station, runoff will be collected and conveyed by storm sewer systems. On-site controls such as: permeable paving, roof top storage, and surface ponding in landscaped areas will be implemented. The proposed stormwater detention measures will provide post-development peak flow attenuation to allowable release rate for all storm frequencies.

Details regarding the roadway and site drainage are provided below.

6.5.1 Roadway Drainage

The roadway improvements will consist of minor widening along Bloomington Road from approximately 400m west of the CN crossing to the Highway 404 Overpass. The quantity of runoff resulting from major storms will continue to be conveyed to low points as overland flow. Roadway drainage will continue to be collected by roadside ditches/ swales with eventual discharge to existing drainage crossings. A small segment of the road under CN rail bridge will be fitted with curb and gutter and storm runoff will be collected by storm sewers with eventual fall into north roadside ditch through an oil and grit separator. Runoff at the underpass will be collected by a new storm sewer and conveyed to adjacent roadside ditches. All storm sewers will provide sufficient capacity to convey the 10-year storm event.

The small increase in the peak flow generated by the roadway and interchange ramp modifications will not appreciably increase peak flow conditions at Culverts 1 & 2, which cross Bloomington Road east and west the CN rail corridor respectively. The results of the hydraulic analysis for the culvert crossings of Bloomington Road is provided below.

Culvert 1 (1150 mm x 820mm CSPA)

The existing culvert (1150 mm x 820mm CSPA) meets the freeboard criteria for the 50-year design flow (MTO criteria) and accommodates the 100-year flow (without overtopping the roadway). The 50-year freeboard (i.e. distance between the upstream water elevation and the road elevation) is estimated at 1.25m.

To accommodate the proposed station design, Culvert 1 will be replaced with a new culvert 85 m to the east, toward new access road opposite the N-E/W ramp. The replacement culvert will retain the existing culvert size.

Culvert 2 (1800 mm x 1200 mm Concrete Box)

The existing Culvert 2 (Twin 1800mm x 1200mm arch pipes) under Bloomington Road has adequate capacity to convey major event design storm runoff. The culvert has a freeboard of 1.43 m which is higher than the desired value of 1.0m. The culvert is designed for the 50 year storm and the 100 year storm does not overtop the roadway. Therefore replacement of Culvert 2 is not warranted. This culvert is to be extended ± 6 m to accommodate the proposed road widening.

Highway 404 Ditch System

The proposed N-E/W and W-S ramp realignments will not impact the existing drainage pattern at the interchange. The proposed ramp modification will maintain the existing storm outlets and the size of conveyance system.

6.5.2 Station Drainage

The existing drainage channel that flows through the site to PSW-1 will be realigned along the north boundary of the station and directed to a new underground storm pipe running through the site under the future parking lot. The storm pipe flow will be picked up by a new connecting drainage channel along the south property line with eventual discharge to the wetland (PSW -1).

The runoff from the GO Station will be collected and conveyed by storm sewer systems. Runoffs generated under proposed conditions will be controlled to pre-development level and conveyed to the realigned drainage channel after water quantity and quality controls.

The total length of new channel at the north and south station boundaries will be approximately 330m, which is more than the total disturbed length of approximately 190m. The south realigned

channel at the downstream end of the storm pipe will be planted with suitable vegetation to provide enough cover and shade over the channel. This method will employ the establishment of streamside vegetation to provide shade over the receiving water. The length of reach to be planted along the channel banks will provide enough cooling before discharging into the wetland. The downstream channel will be almost at flat gradient to provide for greater residence time for flows to achieve temperature equilibrium. The realigned channel bed will be planted with salt up-taking vegetation.

Pre and post flows to PSW -1 and velocities in the realigned drainage will be maintained. Drainage from the wetland will continue to flow through the concrete culvert under the tracks, westerly into the Bloomington Wetland area. The existing outlet at PSW-1 will require an extension to accommodate GO Station and CN track widening.

The second smaller wetland pocket (PSW-2) has a catchment area of 2.95 ha. The proposed station design will maintain the existing water balance of this kettle feature by providing permeable paving and discharging the clean roof water from the station into the kettle pond.

6.5.3 Stormwater Management Plan

Key aspects of the design and the proposed stormwater management system are summarized below. Guidelines for the preparation of an erosion and sediment control plan are outlined in subsequent Section 7.1. In general,

- Culvert 1 under Bloomington Road will be replaced with a new similarly sized culvert 85m further west (immediately east of the N-E/W ramp).
- The existing flows at MTO outlets (Culvert 1 and MTO ditch S-W Ramp) will not significantly change. Any runoff from Highway 404 ditching adjacent to the site which is currently directed to PSW-2, will be re-directed to the proposed bio-swale.
- A storm sewer system with an OGS unit will be installed immediately west of CN rail bridge underpass to convey Bloomington Road runoff to north roadside ditch. The grass ditch system will provide additional polishing of runoff before discharging to Culvert 2.
- Significant site area (1.75 ha) will have permeable paving that will allow rainfall to percolate to an underlying reservoir base where rainfall is infiltrated to underlying soils and gradually discharged into wetland units. Permeable paving will significantly reduce runoff volumes, thereby reducing the erosive power of stormwater entering storm outlet. Long term research on permeable pavers shows their effective removal of pollutants such as total suspended solids, total phosphorous, total nitrogen, chemical oxygen demand, zinc, motor oil, and copper.
- The intermittent drainage channel (ditch) located south of Bloomington Road will be realigned along north boundary of the station and directed to a future underground storm pipe under the future parking lots of GO Station. The pipe will discharge to the realigned channel along south property limit before draining into the wetland (PSW-1).
- Enhanced water quality control for the station will be provided by an OGS unit before discharging to the outlets in the realigned drainage channel. The realigned drainage channel at the downstream of the oil/grit separator will constitute a train of treatment capable of providing the required enhanced (Level 1) water quality control before discharging into the PSW-1.
- The water balance analysis indicates that the proposed mitigation measure will enhance the infiltration for wetland units, therefore, PSW-1 and PSW-2 will continue to receive the existing level of baseflow.

- Site grading will direct site runoff to the proposed bio-swale and landscape storage areas located within the property limits.

6.6 Wetlands

6.6.1 Amphibian Crossing

Two amphibian culvert crossings are proposed under the road (bus lane) that passes south of PSW-2 to provide safe passage for wildlife needing to maintain functional connectivity between the wetlands for mobile species. One of the two culverts will also function as an overflow culvert to control water level in PSW-2.

Each crossings will consist of a Corrugated Steel Pipe (CSP) culvert, approximately 13.7 m long and 1.2 m wide. Natural substrates will be provided in the culvert to promote and/or facilitate use of the culvert as an eco-passage by the primary target species (i.e., Wood Frog and Midland Painted Turtle). Larger species such as Snapping Turtle will also be able to move through the eco-passage. The grades at both the southern and northern ends of the culvert will be less than 33% and thus can be readily traversed by turtles and amphibians.

Specialized Barrier Fencing

In conjunction with the eco-passages, barrier fencing is to be installed to guide the target species to the passage. The fencing to the north forms a complete barrier around the wetland to prevent amphibians and reptiles from moving onto any of the adjacent roads or parking lots. The barrier fencing to the south of the eco-passage extends from wetland Unit 3 in the east to the intersection between PSW-1 and the CN rail tracks.

Exhibit 6-2: Assessment of Risks and Impacts

LOCATION	FEATURES AND FUNCTIONS OF NATURAL HERITAGE UNITS	DIRECT IMPACTS	INDIRECT IMPACTS	RISKS	MITIGATION	COMPENSATION (AFTER MITIGATION)
Wetland (PSW) (West of Railway)	<ul style="list-style-type: none"> Mostly marsh, some swamp Common wetland bird species L3 species Virginia Rail and Northern Waterthrush Breeding Gray Tree Frogs, but not concentration Ten plant species of conservation concern Fish habitat, subject to <i>Fisheries Act</i> Regulated by TRCA 	<ul style="list-style-type: none"> Loss of wetland area is anticipated to be 0.10 ha and given that the area to be removed is adjacent to the busy Bloomington Road, negative effects are expected to be minimal. 	<ul style="list-style-type: none"> Additional indirect effects to remaining wetland resulting from road noise, dust, visual disturbance, runoff. 	<ul style="list-style-type: none"> Moderate Risk 	<ul style="list-style-type: none"> Maximize avoidance Compensate for loss of wetland area 	<ul style="list-style-type: none"> Replace wetland loss at a suitable ratio based on discussions with TRCA/MNRF.
Woodland (ELC 3) (West of Railway)	<ul style="list-style-type: none"> Upland deciduous forest Four plant species of conservation concern 	<ul style="list-style-type: none"> Loss of upland forest anticipated to be 0.46 ha Negative effects are moderate – loss of 0.46 ha plant habitat and breeding bird habitat. 	<ul style="list-style-type: none"> Additional indirect effects to remaining woodland resulting from retaining wall (grading, root zone impacts). 	<ul style="list-style-type: none"> Low Risk No ESA protected species 	<ul style="list-style-type: none"> Maximize avoidance, protect new edge, edge plantings Compensate for loss of treed habitat 	<ul style="list-style-type: none"> Replace woodland loss at suitable ratio based on discussions with TRCA/MNRF.
Drainage Feature (East of Railway)	<ul style="list-style-type: none"> Contributes flow to Wetland Unit 1 Could be considered indirect fish habitat Regulated by the TRCA 	<ul style="list-style-type: none"> Loss of drainage ditch feature 	<ul style="list-style-type: none"> Limited effects 	<ul style="list-style-type: none"> Low Risk No ESA protected species 	<ul style="list-style-type: none"> Ensure water delivered to wetland Unit 1 	<ul style="list-style-type: none"> None
Wetland PSW-1 (East of Railway)	<ul style="list-style-type: none"> Breeding bird habitat (thicket and edge species, some wetland) Turtle habitat (likely Midland Painted and Snapping turtles) One plant species of conservation concern Fish habitat, subject to the <i>Fisheries Act</i> Regulated by the TRCA 	<ul style="list-style-type: none"> Loss of wetland area is anticipated to be 0.005 ha 	<ul style="list-style-type: none"> Potential loss of breeding bird habitat as a result of proximity to lighting, noise and general disturbance from parking lot 	<ul style="list-style-type: none"> Low Risk No ESA protected species Need to deliver water 	<ul style="list-style-type: none"> Maintain buffer from parking lot to the maximum extent feasible, ranging from 0 to over 30m Establish grades to ensure untreated water does not enter wetland via overland flows Establish Screening plantings as buffer from parking lot Ensure Hydrology maintained 	<ul style="list-style-type: none"> Replace wetland loss at suitable ratio based on discussions with TRCA/MNRF.
Wetland PSW-2 (East of Railway)	<ul style="list-style-type: none"> Reasonably productive breeding site for Wood Frog (46 egg masses in 2015), possibly by Gray Treefrog Limited use by other frog/toad species) Foraging & basking area for Midland Painted Turtles & possibly overwintering site Limited breeding bird habitat No fish documented 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Although connectivity for wildlife will be maintained to a degree with eco-passage, there will still be negative effects as a result of proximity to lighting, noise and general disturbance from parking lot. Hydrology must be maintained Water quality effects possible from vehicle spray 	<ul style="list-style-type: none"> Low Risk No ESA protected species Need to deliver water 	<ul style="list-style-type: none"> Maintain buffer that varies from 7 m to over 30 m, with no grading permitted within 10 m Install eco-passage (culvert) to facilitate safe passage between wetland Unit 2 and 1 Ensure hydrology maintained Install engineered barrier fencing to prevent wildlife from moving onto adjacent roads and parking lot Establish grades to ensure untreated water does not enter wetland via overland flows Monitor water quality 	<ul style="list-style-type: none"> None
Wetland Unit #3 (East of Railway)	<ul style="list-style-type: none"> Midland Painted Turtle present Spring Peeper Breeding 	<ul style="list-style-type: none"> No direct loss 	<ul style="list-style-type: none"> Limited non-significant effects 	<ul style="list-style-type: none"> Low Risk No ESA protected species 	<ul style="list-style-type: none"> None required 	<ul style="list-style-type: none"> None
Cultural Meadow (East of Railway)	<ul style="list-style-type: none"> One area sensitive Bird species One plant species of conservation concern 	<ul style="list-style-type: none"> Direct loss: Approx. 6 ha 	<ul style="list-style-type: none"> Limited non-significant effects 	<ul style="list-style-type: none"> Low Risk No ESA protected species 	<ul style="list-style-type: none"> None required 	<ul style="list-style-type: none"> None

6.7 Landscape

White spruce planted along the highway N-E/W and W-S ramp right-of-ways are within area subject to major regrading and/or to become bio-retention swales, thus need to be removed.

A landscape planting plan will be prepared as part of the detailed design to address the loss of existing vegetation, restore disturbed areas, and replace white spruce trees planted along the highway ramp right-of-way that serve as a snow drift barrier, as well as generally improve the aesthetics of the interchange area and associated access roads.

6.8 Property Acquisition

For the most part, the Bloomington GO Station will be located on lands east of the CN rail corridor, currently owned by MTO. A portion of this land is designated as Controlled Access Highway (CAH). Metrolinx will acquire lands outside of the CAH limits from MTO to accommodate the GO Station. If required, changes to the CAH limits will be resolved in discussions with MTO.

West of the CN rail corridor, Metrolinx currently owns land on the south side of Bloomington Road, beyond the existing Region of York/MTO right-of-way, necessary to accommodate the west access road. A portion of these lands (west of the new access) are required to accommodate the road widening along Bloomington Road and therefore will need to be transferred to the Region of York.

Between the west access and the CN rail corridor, a portion will land currently owned by the Region of York, is to be acquired by Metrolinx to accommodate the west access road. It is currently expected that the Region will retain lands up to 23 m from centerline as part of Bloomington Road right-of-way (subject to negotiations between MTO, Metrolinx, and York Region). A minor encroachment into the Bloomington Road ROW will be required to accommodate the west access road.

6.9 Construction Staging

Detailed construction staging plans will be developed maintaining all existing traffic movements except for short term restricted closures. Existing lane and shoulder widths will be maintained where possible with reductions to 3.5m and 1m respectively, as required.

The posted speed of 80 km/h on Bloomington Road will be reduced to 60 km/h during construction. Single lane closures will be required along Bloomington Road (maintain one lane of traffic in each direction at all times). Single lane closures will be required on Ramp N-E/W to accommodate ramp tie-in and staging along Bloomington Road. Short-term closure of Ramp W-S will be required to accommodate ramp tie-in.

7. Environmental Effects and Mitigation Measures

This section focuses on the specific direct and indirect effects on environmental features and highlights the environmental protection/mitigation measures proposed to manage adverse environmental effects related to natural sciences, socio-economic and cultural resources. Environmental effects are identified based on issues/concerns raised by the public, external agencies and the study team. The environmental protection/mitigation measures proposed will be refined during the final design phase of the project, if required.

Metrolinx environmental protection practices seek to avoid potential adverse environmental effects, where possible. For situations where avoidance is not environmentally, technically or economically feasible, Metrolinx has developed, or adopted, environmental protection/mitigation measures that are incorporated into construction contracts to bind the contractor to implement such measures during construction. The mitigation measures described below represent a combination of specific provisions/standards, and commitments Metrolinx is making during the detail design and construction phases of the project.

7.1 Erosion and Sediment Control Measures

Potential Effects

Soil disturbance associated roadway construction may result in erosion and sedimentation, potentially impacting sensitive receiving watercourses and water bodies.

Mitigation Measures

To minimize the potential environmental impacts to adjacent watercourses and water bodies, the following erosion and sedimentation control practices will serve to guide the design and implementation phase of the Erosion and Sediment Control Plan:

- limit size of disturbed area,
- limit duration of soil exposure,
- retain existing vegetation where feasible,
- limit slope length and gradient of disturbed areas,
- preserve overland sheet flow and micro-drainage (avoid concentrated channel flows),
- break and redirect flows to lower gradients,
- design and implement staged stripping,
- prevent disturbance of previously stripped and stabilized parcels, and
- stabilize stripped parcels with temporary vegetative controls.

The following elements should be included in the Erosion and Sediment Control Plan:

- provision of a series of temporary interceptor/conveyor ditches to direct runoff to the siltation/bio-swale;
- provision of rock or strawbale check dams within drainage swales/ditches; and
- placement of a series of silt control fencing for the interception of sheet flow drainage.

All sediment control measures should not be removed until final stabilization of the site. In addition, any accumulated sediment shall be removed, as part of a maintenance program, from all control measures when accumulation reaches 50% of the height or volume of the control structure.

Environmental Inspection Process: As a component of erosion and sedimentation control, environmental inspections of the construction site will be conducted. Environmental inspections will be conducted to assess the performance of erosion and sedimentation control measures and identify any required maintenance. The frequent inspections will also permit the identification of localized erosion and sedimentation control issues that require site specific attention.

Implementation and Recommendation: A 200 m standby supply of prefabricated silt fence barrier, in addition to silt fence requirements, shall be maintained at the construction site prior to commencement of grading operations and throughout the duration of the contract.

Where interceptor ditches and/or subsurface drains are specified, they shall be constructed prior to commencement of any related cut or fill activities.

Cut and fill earth slopes and ditches, shall be treated with the specified cover material (seed and mulch, seed and erosion control blanket, seed and sod, rip rap, etc.) within 45 days from the commencement of the cut, fill or ditching operation. Commencement of a cut, fill or ditching operation shall be considered to have occurred when the original stabilizing cover has been removed, including grubbing, or has been covered with fill material.

Run-off from construction materials and any stockpiles shall be contained and discharged so as to prevent entry of sediment to watercourses.

Where dewatering is required, and where culverts are cleaned by hydraulic means, the effluent shall be discharged in a manner that prevents the entry of sediments to watercourses, or scouring and erosion at the outlet.

The Erosion and Sediment Control Plan for the project must adhere to Erosion and Sediment Control (ESC) Guidelines for Urban Construction, December 2006, Greater Golden Horseshoe Area Conservation Authorities.

7.2 Aquatic Eco-Systems

Potential Effects

Given the scale and type of the proposed development, the ecological communities adjacent to the development footprint have the potential to be negatively affected. PSW-2 is most at risk because it will be isolated and in close proximity to vehicles and infrastructure. Possible negative effects on the wetland and its resident flora and fauna include changes in hydrology (quantity and quality), light and noise levels, roadkill, and loss of functional connectivity between the wetland and other habitats used by mobile animals.

West of CN rail corridor: The area of wetland loss from the Bloomington Wetlands (west of the CN rail corridor) to accommodate the new west access (including minor widening along Bloomington Road and culvert modifications) will be approximately 0.10 ha. Given that the area to be removed is adjacent to the busy Bloomington Road, negative effects are expected to be minimal.

East of CN rail corridor: An area of 0.005 ha will also be lost from PSW-1 to accommodate the GO Station (beyond the requirements for the CN track widening). In addition, PSW-2 may be potentially affected as it is centrally located within the site and is in close proximity to vehicles and infrastructure.

Mitigation Measures

West of CN rail corridor: With respect to the 0.10 ha of wetland loss, the compensation strategy will be developed and confirmed through discussions with MNRF and TRCA.

To reduce the likelihood and significance of potential adverse effects on aquatic habitat as a result of existing culvert modifications (i.e. 6m extension to twin cell concrete culvert crossing Bloomington Road) the following mitigation measures will be undertaken:

- Construction will be staged to minimize the duration of in-water work;
- In-water construction/demolition will commence only when all materials required for construction are at hand to minimize the duration of in-water work;
- In water works to be undertaken during the warmwater timing window beginning July 1st and ending March 31st (timing to be confirmed through discussions with TRCA and MNRF);
- Construction will be completed in a manner that will control sediment release with duration of in-water work kept to a minimum; and,
- Following construction, once disturbed areas have stabilized, all temporary erosion and sedimentation control measures will be remove.

East of CN rail corridor: With respect to the 0.005 ha of wetland loss from PSW-1, the compensation strategy will be developed and confirmed through discussions with MNRF and TRCA.

With respect to potential effects to PSW-2, in recognition of Section 41 (4) of the ORMCP, PSW-2 (centrally located within the site) will maintained and integrated into the design. However, there are risks associated with retaining this wetland, as traffic will be present all around the unit and salt spray, noise and light which have the potential to adversely affect its function. To minimize any negative effects to PSW-2, a wetland buffer of 7 m to 39 m (approximately 60% of the buffer being 15m or greater) will be maintained to surrounding hard surfaces. The following additional measures will be undertaken to sustain this wetland:

- Two eco-passages will be installed in the on the south side of PSW-2 and small to intermediate-sized wildlife will be able to move under the road between PSW-2 and wetland habitats to the south. Permanent barrier fencing will also be provided to ensure connectivity while reducing road mortality that would otherwise turn this isolated feature into an ecological sink for many species, especially turtles.
- The existing water balance PSW-2 will be maintained by providing permeable paving and discharging the clean roof water from the station into the kettle pond. A water balance analysis indicates the proposed measures will be able to maintain the existing water supply and improve water quality to the kettle pond.
- In the vicinity of PSW-2, shorter poles (6m) with luminaires aimed away from the wetland (including black light shields) will be used to limit the amount of spill light into the wetland behind the poles.

Proposed compensation and restoration strategies for the total 0.10 ha of wetland loss are included the Natural Heritage Assessment and Arborist Reports (included in Appendix A and Appendix G respectively). The final level of compensation will be determined through discussions with MNRF, TRCA, and Town of Richmond Hill (as applicable).

7.3 Wildlife and Wildlife Habitat

Potential Effects

Roadway and interchange improvements have the potential to result in the displacement of and disturbance to wildlife and wildlife habitat. Effects on wildlife related to roadway improvements may include:

- Habitat removals;
- Wildlife passage/barrier effects;
- Disturbance to wildlife from noise, lights and visual intrusion; and,
- Displacement of rare, threatened or endangered wildlife species and habitat.

Modifications to existing crossings, including replacement, extension, repair and clean-out, and any associated watercourse realignments, also have the potential to result in the loss of site-specific habitat or create barriers to movement.

Mitigation Measures

The increase in wildlife mortality above existing conditions as a result of the roadway and interchange improvements is considered minor. The design only marginally increases the road roadway footprint and will not eliminate culvert crossing opportunities or prohibit crossing of the roads within the study area by amphibians, reptiles, small and large mammals and birds.

Given that wildlife are acclimatized to the presence of the existing right-of-way and the limited increased zone of influence due to the proposed improvements along Bloomington Road and Highway 404 interchange ramps, disturbance to wildlife from noise, light and visual intrusion are not expected to have any significant adverse effects.

Bird Breeding: The area of wetland loss west of the railway will reduce habitat for wetland breeding birds, including Virginia Rail, an L3 species. However, given that the loss of wetland involves an area adjacent to an existing, busy road, it is unlikely that there will be a direct loss of nesting habitat. There will be some loss of breeding bird habitat, resulting from the loss of woodland west of the CN rail crossing, but also as a result of the encroachment of the road into the woodland.

To comply with the requirements of the *Migratory Birds Convention Act* (MBCA), vegetation clearing should not be undertaken from April 1 to August 31 to avoid the breeding season for the majority of the bird species, unless a pre-clearing nest search is undertaken to confirm the absence of bird nests.

7.4 Vegetation and Vegetation Communities

Potential Effects

Effects on vegetation related to the proposed development may include:

- Removal of vegetation to accommodate interchange ramp modifications and roadways;
- Disturbance or displacement of rare, threatened or endangered vegetation species, and provincially and locally significant vegetation species;
- Damage to vegetation by heavy equipment (root exposure, soil compaction, etc.); and,
- Changes in local drainage and soil moisture regime by cut/fill activities and ditching.

Over time, these disturbances may alter vegetation community structure, composition and function. Effects are generally most prominent in areas that have not been previously disturbed.

Mitigation Measures

The preferred design will result in a total loss of 0.46 ha of mature upland woodland west of the CN rail corridor. Otherwise, the balance of upland effects is limited to the loss of disturbed meadowlands. A compensation strategy will be developed through discussion with MNRF, TRCA and the Town of Richmond Hill, as applicable.

No rare, threatened or endangered vegetation or vegetation communities will be impacted by the proposed works. There were four species of conservation concern within the woodland west of the CN rail corridor (Sharp-lobed Hepatica, Plantain-leaved Sedge, Climbing Bittersweet, and Blue Bead Lily). Should any species be found within the development footprint, where possible, they should be salvaged and transplanted to other suitable habitat.

The following environmental protection measures will be incorporated into the design to minimize the vegetation impacts:

- Vegetation removals will be minimized to the extent possible;
- Tree protection barriers will be installed around trees to remain in accordance with OPSS 801-Construction Specification for the Protection of Trees. OPSS 801 describes protective measures required to safeguard trees from construction operations, equipment and vehicles where such trees are not designated for removal as part of the project, and covers the proper installation of protective barriers. Prior to construction, trees to be protected will be clearly identified in the field by the contract administrator and a protection barrier will be installed.

A detailed arborist report for removal and preservation is provided in **Appendix G**.

7.5 Cultural Environment

Potential Effects and Mitigation Measures - Archaeology and Built Heritage

A Stage 1-2 Archaeological Assessment was prepared to review the archaeological potential in the study area and no archaeological resources with cultural heritage value were recovered during the course of the survey. Furthermore, site reconnaissance activities did not identify built heritage resources within the vicinity of the Bloomington GO Station Site.

Prior to construction, the Contractor will be notified of the following:

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act; and
- The Cemeteries Act, R.S.O. 1990 c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

7.6 Groundwater

Potential Effects

The following potential impacts were postulated as a consequence of ground water level lowering during excavation/trenching, sewers and utility placement, and backfilling activities for the proposed development:

- Drop of ground water level in the existing (functional) water wells,
- Reduction of ground water flow to waterbodies, and
- Induced movement of contaminant plume.

Mitigation Measures

The estimated construction dewatering discharge rates for site construction activities are expected to be greater than 50,000 L/day. As such, a Permit-To-Take-Water will be required for the construction dewatering.

Dewatering activities on-site are expected to result in only relatively minor impacts. Any reduction in baseflow to PSW-1 is expected to be nullified by the discharge water being directed back to the pond.

No operating water wells are expected to be impacted by the construction dewatering, no contaminant plume is known to exist in the vicinity of the site, and the discharge of ground water is expected to have no significant impact on the aquatic habitat of the wetland pond.

7.7 Property Waste and Contamination

Excess materials will be managed in accordance with OPSS 180 – General Specification for the Management of Excess Materials.

7.8 Socio-Economic Environment

Potential Effects

The design has been modified to include modifications to Bloomington Road and Highway 404 interchange ramps. Construction operations have the potential to create temporary road/lane closures and increase traffic congestion in the study area.

There are no businesses or residences located immediately adjacent to the site that will be directly impacted by the project. As such, the proposed improvements are not expected to impact businesses and residences from an access, air quality, and/or noise perspective.

Mitigation Measures

During construction, it will be necessary to implement lane and short-term ramp closures. Signage and temporary traffic signals will be used to maintain traffic flow. Construction will be staged to minimize traffic delays.

As with any construction site, dust impacts should be mitigated through the use of proper controls, including periodic watering of unpaved areas, flushing of the entrances to the construction zones, etc.

The contractor is required to ensure that factory recommended mufflers are maintained on all construction equipment. Sound emissions from all construction equipment should comply with MOECC Guideline NPC-115 "Sound Levels from Construction Equipment".

These types of controls will help in minimizing the impacts on the environment during the construction phase.

7.9 Compliance with Plans and Policies

Exhibit 7-1 provides an overview of how the proposed design addresses provincial and municipal plans and policies.

7.10 Summary of Identified Concerns and Proposed Mitigation

Exhibit 7-2 summarizes the proposed mitigation measures and commitments to future work based on the identified environmental sensitivities and the proposed Preferred Design Plan.

Exhibit 7-1: Plan and Policy Compliance

POLICY	DESIGN COMPLIANCE
<p>Oak Ridges Moraine Conservation Plan</p>	<p>Section 41 (2) of the ORMCP with respect to permitted use for transportation, infrastructure, and utilities respect to land in a Natural Linkage Area, in that:</p> <p>(a) The need for Bloomington GO Station (including associated access and roadway improvements) has been based on planning studies, traffic analysis, growth projections and future ridership demands. Numerous detailed alternatives were assessed. The preferred alternative takes into consideration significant design constraints to optimize site access and minimize the station footprint.</p> <p>(b) The following requirements will be satisfied, to the extent that is possible while also meeting all applicable safety standards:</p> <ul style="list-style-type: none"> • Metrolinx will implement best practices during construction including undertaking regular monitoring inspections to ensure that disturbance is kept to a minimum • The design minimizes the impact of transportation, infrastructure and utilities by locating these uses within a single corridor. • The project allows for wildlife movement (including use of eco-passages). • Lighting is focused downwards and away from Natural Core Areas. • Metrolinx has assessed numerous detailed alternatives during the planning and preliminary design of Bloomington GO Station to minimize adverse effects on the ecological integrity of the Plan Area, as well as implement best practices during construction including undertaking regular monitoring inspections to ensure that adverse effects are kept to a minimum. <p>Section 41(5) of the ORMCP, which permits transportation, infrastructure, and utilities to cross a key natural heritage feature or a hydrologically sensitive feature, is satisfied in that:</p> <p>a) the need for the project has been demonstrated and there is no reasonable alternative;</p> <p>b) the planning, design and construction practices adopted will keep any adverse effects on the ecological integrity of the Plan Area to a minimum;</p> <p>c) the design practices adopted will maintain, and where possible improve or restore, key ecological and recreational linkages;</p> <p>d) the landscape design is adapted to the circumstances of the site and uses native plant species as much as possible; and</p> <p>e) the long-term landscape management approaches adopted will maintain, and where possible improve or restore, the health, diversity, size and connectivity of the key natural heritage feature or hydrologically sensitive features</p>
<p>Region of York Official Plan</p>	<p>The project as realized through a provincial EA would be in conformity.</p>
<p>Town of Richmond Hill Official Plan</p>	<p>The project as realized through a provincial EA would be in conformity.</p>
<p>TRCA Regulations (2006)</p>	<p>The wetlands and 120 m around the wetlands are regulated by the TRCA although as previously noted Metrolinx is exempt from the permit process</p>
<p>Endangered Species Act (MNR)</p>	<p>The Butternut trees are not within the development footprint and therefore are not of concern. No other Endangered or Threatened Species were found to occur on or adjacent to the subject property</p>
<p>Ministry of the Environment and Climate Change</p>	<p>Permits to Take Water (PTTWs) issued under Section 34 of the Ontario Water Resources Act.</p> <p>Compliance with Ontario Regulation 347, which identifies hazard waste disposal requirements.</p>

Exhibit 7-2: Summary of Environmental Effects, Mitigation, and Monitoring Requirements

I.D.#	ENVIRONMENTAL ISSUES/ CONCERNS	MITIGATION/ PROTECTION/ COMMITMENTS/ MONITORING REQUIREMENTS
1.	Erosion and Sedimentation	<ul style="list-style-type: none"> • Implement standard erosion and sedimentation control practices during construction, in accordance with Ontario Provincial Standard Specification (OPSS) 805 or current specification in place at the time of construction; • Minimize the duration that soils are exposed during construction; and, • Monitor measures during construction to ensure their effectiveness.
2.	Aquatic Eco-Systems	<ul style="list-style-type: none"> • No in-water work will occur from April 1st to June 30th to protect the spawning, incubation and emergence of warmwater fish species; • Install two eco-passage culverts and annex fencing in the vicinity of PSW-2 to ensure connectivity while reducing road mortality that would otherwise turn this isolated feature into an ecological sink. • Provide permeable paving and discharge the clean roof water from the station into the kettle pond (PSW-2) to maintain the existing water supply and improve water quality. • Limit the amount of spill light into PSW-2, by using shorter poles (6m) with luminaires aimed away from the wetland (incorporating black light shields). • Provide compensation at suitable location for wetland loss of 0.10 ha from Bloomington Wetlands and PSW-1. The compensation strategy will be developed and confirmed through discussions with MNRF, TRCA and the Town of Richmond Hill, as applicable.
3.	Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> • Culverts should not be entirely blocked, or if blockage of a culvert is necessary the blockage period should be kept to the shortest duration possible to minimize discouragement of the natural movements of wildlife species and to reduce potential road mortality; • To comply with the requirements of the <i>Migratory Birds Convention Act</i> (MBCA), vegetation clearing should not be permitted between April 1 to August 31 to avoid the breeding season for the majority of the bird species, unless a pre-clearing nest search is undertaken to confirm the absence of bird nests

I.D.#	ENVIRONMENTAL ISSUES/ CONCERNS	MITIGATION/ PROTECTION/ COMMITMENTS/ MONITORING REQUIREMENTS
4.	Vegetation and Vegetation Communities	<p>The following environmental protection measures will be incorporated into the highway design to minimize the vegetation impacts:</p> <ul style="list-style-type: none"> • Vegetation removals within the new right-of-way will be minimized to the extent possible; • Tree protection barriers will be installed around trees to remain in accordance with OPSS 801 - Construction Specification for the Protection of Trees. OPSS 801 describes protective measures required to safeguard trees from construction operations, equipment and vehicles where such trees are not designated for removal as part of the project, and covers the proper installation of protective barriers. Prior to construction, trees to be protected will be clearly identified in the field by the contract administrator and a protection barrier will be installed; and, • Wetland PSW-1, PSW-2, Wetland Unit 3 – Prior to any site excavation or commencement, full protection for all trees offset minimum 6.0m from staked wetland boundary • Develop compensation strategy for tree removals in consultation with TRCA, MNRF, and Town of Richmond Hill (as applicable).
5.	Cultural Environment	<ul style="list-style-type: none"> • Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the <i>Ontario Heritage Act</i>. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the <i>Ontario Heritage Act</i>; and • The <i>Cemeteries Act</i>, R.S.O. 1990 c. C.4 and the <i>Funeral, Burial and Cremation Services Act</i>, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.
6.	Groundwater	<ul style="list-style-type: none"> • A Permit to Take Water (PTTW) will be secured from the MOECC prior to groundwater dewatering or surface water pumping operations, as required.
7.	Property Waste and Contamination	<ul style="list-style-type: none"> • Undertake additional soils investigations on affected properties, as required, prior to construction; and • Manage excess materials (e.g. asphalt, concrete, earth, rock, etc.) in accordance with the appropriate OPSS.
8.	Socio-Economic Environment (Traffic Management, Air Quality, and Noise during construction)	<ul style="list-style-type: none"> • During the development of the detail design construction staging plan consideration will be given to providing signage and temporary traffic signals to maintain traffic flow, and limiting the duration and frequency of closures to the extent possible. • Monitor traffic flows during construction to prevent undue delays. • Dust impacts should be mitigated through the use of proper controls, such as: periodic watering of unpaved areas, flushing of the entrances to the construction zones. • Sound emissions from all construction equipment should comply with MOECC Guideline NPC-115 "Sound Levels from Construction Equipment".

7.11 Implementation and Monitoring

During construction, a Contract Administrator will be responsible for monitoring the Contractor's operations on a day-to-day basis to ensure compliance with the environmental requirements of the Contract. The Contract Administrator will be responsible for maintaining an environmental diary, which will include daily recording of activities related to the environment such as grading activities, the condition and effectiveness of erosion and sedimentation control measures, and weather conditions.

An emphasis will be placed on monitoring work conducted near watercourses. Environmental staff will be available to provide site-specific monitoring and corrections, where required. Following construction, the contractor will monitor the effectiveness and performance of newly seeded areas, and vegetation plantings, as applicable and will take remedial actions where necessary. Work performed by contractors is warranted for a certain period following construction to ensure that seeding, and other restoration measures, become established.

7.12 Commitments to Further Investigations

Based on the current design plans, it is estimated that compensation for the loss of approximately 0.46 ha of woodland and 0.105 ha of wetland will be required. A final compensation strategy, for both protected wetland and woodland loss, and for by-law tree removals, are to be finalized through negotiation between TRCA, MNRF, York Region, and Town of Richmond Hill.

To ensure the mitigation measures specific to PSW-2 remain effective, as well as to assess the status of fauna in the wetland, the following measures are recommended.

Prior and/or During Construction

- Where possible, salvage and transplant any plant species of conservation concern identified within the proposed development area (after the disturbance limit has been demarcated) to other suitable habitat in the vicinity during the growing season and prior to site disturbance;
- Adjust barrier fencing during construction, as required, based on expert installers on-site.

Post Construction

- Ensure regular site maintenance activities extend into the wetland and the buffer area to avoid accumulation of any garbage;
- Assess the structural integrity of the barrier fencing and its connection to the eco-passage each year in the early spring or late winter (i.e., after snowmelt), and once in August for five years, , to ensure that there are no gaps in the barrier;
- Undertake annual call count and egg mass surveys for amphibians for three years to assess any changes in the resident or local amphibian populations. If there are noticeable declines year over year consult with MNRF regarding corrective action;
- Measure and report on monthly water levels for the first year, and if there are noticeable changes post-development then a qualified ecologist needs to determine whether there could be adverse effects on resident flora and fauna that need addressing; and
- Undertake annual water quality sampling for the first three years (August sampling) to ensure that optimal water quality is being maintained.