Chapter 4 – Identification of Alternatives and Evaluation Process

407 TRANSITWAY – WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400

MINISTRY OF TRANSPORTATION - CENTRAL REGION

TABLE OF CONTENTS

4. IDENTIFICATION OF ALTERNATIVES AND EVALUATION PROCESS

4.1. Rapid Transit Technology

A Rapid Transit Technology evaluation for the entire 407 Transitway was conducted as part of the Transit Project Assessment Process (TPAP) of the Central Section (Highway 400 to Kennedy Road), and approved as part of the TP AP Environmental Project Report filed in February of 2011.

Five candidate technology alternatives were considered in developing a response to the need for inter-regional rapid transit in the ultimate 150-kilometre 407 ETR Corridor.

1. BRT;
2. LRT;
3. Automated Guideway Transit (AGT);
4. Heavy/Commuter Rail; and,
5. Subway.

Each of the above candidate technologies was evaluated against four major criteria reflecting the near and long-term needs and objectives for the 407 Corridor. These included:

- Transit service quality encompassing capacity required, user convenience and comfort, service speed and reliability and network connectivity/interlining;
- Planning considerations addressing infrastructure integration and the system's support of Provincial growth and planning policies;
- Environmental compatibility covering effects on the natural and socio-economic environment and energy consumption; and,
- Implementation considerations including right of way property needs, cost-effectiveness and implementation staging.

From the evaluation, it was evident that initially, BRT would be the preferred technology for the 407 Transitway but that conversion to LRT technology in the future should be protected for to respond to the anticipated growth in ridership volumes beyond the 2041 planning horizon. In addition to significant implementation staging flexibility to transition from operation in mixed traffic on the 407 ETR to higher speed service on a fully exclusive runningway, BRT provides capacity for the projected demand at the desired level of convenience and comfort.

Similar to the other technologies, BRT is a low emission and energy efficient vehicle technology. Other important advantages of the BRT system are: i) it provides implementation staging flexibility, allowing the opportunity to build specific segments of runningway while maintaining the Transitway operation on 407 ETR along un-built or under construction segments; and, ii) BRT's capital and operating costs are compatible with the size of the market for rapid transit service in the corridor compared to the other high capital investment technologies and the runningway and station infrastructure can be shared by other bus transit operators providing compatible services.

LRT technology was considered the best candidate technology for later implementation in the 407 Transitway corridor to meet the potential future increase in service demand. Unlike Diesel Multiple Units (DMU) and Heavy Rail, the alignment geometric standards do not limit alignment planning options and it can be implemented with adequate measures to mitigate most natural and socio-economic impacts. Experience around the world indicates that both BRT and LRT technologies can provide the capacities likely to be required in the 407 Corridor both in the medium and long-term provided investment is made in a fully exclusive, grade separated right of way with passing capability at stations in the case of BRT.

Notwithstanding the BRT technology's greater flexibility and high capacities achieved elsewhere in the world, protection for eventual conversion to LRT was recommended for the corridor to accommodate ridership capacity needs beyond 2041 (in the longer term) at lower operating cost. In addition to providing higher capacity, it is noted that conversion to LRT would bring additional benefits to the corridor such as, greater potential for transit oriented development and improved public perception of the technology, which could further increase ridership and provide additional environmental benefits.

4.2. Corridor Assessment

Both the north and south sides of 407 ETR were assessed to identify the preferred corridor alignment or right of way to be carried forward in this study. The south side of the 407 ETR was selected along the entire route from Hurontario Street to Highway 400 based on the following:

- The 30-metre wide right-of-way protected by MTO through the previous 1998 Corridor Protection Study (described in **Section 1.1 of the EPR**), was entirely on the south side of 407 ETR;
- The protected corridor is designated in the Parkway Belt West Plan and the property is almost entirely owned by the Province;
- Most of the properties adjacent to the highway on the north side have already been developed or the land is planned to be developed, including at potential station locations; and,
- Maintaining the alignment on one side would avoid costly long skewed bridges over 407 ETR.

4.3. Rationale to Identify Alignment Alternatives

To identify alignment alternatives several essential factors were considered including the following:

- **Land Availability** – Once the south side of 407 ETR was selected as the preferred corridor, land availability, avoiding environmental impacts of Provincial Significance and when possible impacts to major property and major utility plants such as the Hydro Corridor and the Park Belt Utility Corridor, were assessed to define potential swaths suitable to accommodate the runningway.
- **Potential Station Sites** – Optimizing integration with feasible locations for station sites which were identified based on ridership analysis, station spacing, optimum transit integration, etc. as discussed in Chapter 2, was considered.

- **MTO Transitway Design Standards** – Both horizontal and vertical potential alignments were developed in accordance with the approved Transitway Design Standards for BRT and potential future conversion to LRT.
- **Watercourse and Floodplain Crossings** – several factors to consider at watercourse and floodplain crossings include:
  - Avoiding or at least minimizing impacts to natural heritage and wildlife crossings (where appropriate) by providing sufficient height to clear the 100-year storm and/or the regional storm high-water level, and spanning to cover the floodplain when possible, or at least minimizing impact to water flow.
  - Assessing potential impact to flooding and erosion when crossing watercourses, by avoiding locations sensitive to meander. During the final design phase prior to construction, meander belt analysis will be conducted to verify potential impacts and mitigation measures, and will be discussed and coordinated with TRCA, CVC and MECP where appropriate.
- **Cultural Heritage** – Avoiding or at least minimizing impacts to cultural heritage by locating the runningway alternatives away from sensitive sites.
- **Hydro One Design Restrictions** – With the Hydro Corridor geographically located basically parallel to 407 ETR along the study area, Hydro One design restrictions and limitations were met including horizontal clearance from the towers to allow emergency and maintenance access and vertical clearance from the transmission cables to prevent electromagnetic impact.
- **Existing Road and Rail Line Crossings** – Crossing all existing and future vehicular and rail facilities will be grade separated. Impact of existing utilities, and minimum clearance requirements to cross over or under existing roads and rail lines were followed.
- **Construction Methods and Considerations –** Adequate construction methods, as well as detailed mitigation and control measures in areas where the footprint of the 407 Transitway may affect floodplains, existing utilities, local traffic in grade separations, traffic on 407 ETR, private property etc. caused by the Transitway, will be discussed and coordinated with Municipalities, Conservation Authorities, property owners, and all other affected stakeholders during final design/construction phase of the project.

4.4. Evaluation Approach

Based on the complexity of this segment of the 407 Transitway, the approach to developing the preferred alignment and station locations was divided into the stages listed below:

Stage 1: Screening of station locations.

Stage 2: Evaluation of station site and alignment alternatives.

4.5. Stage 1 – Station Location Screening

4.5.1 Station Locations

As an initial step, all 407 ETR crossings of existing and future arterial roads identified in the 1998 Corridor Protection Study (CPS) described in **Chapter 1 of the EPR**, were considered potential station locations as illustrated in **Figure 4.1**. Each location was individually assessed based on the criteria shown in **Figure 4.2.**

FIGURE 4.1: POTENTIAL STATION SITE LOCATIONS

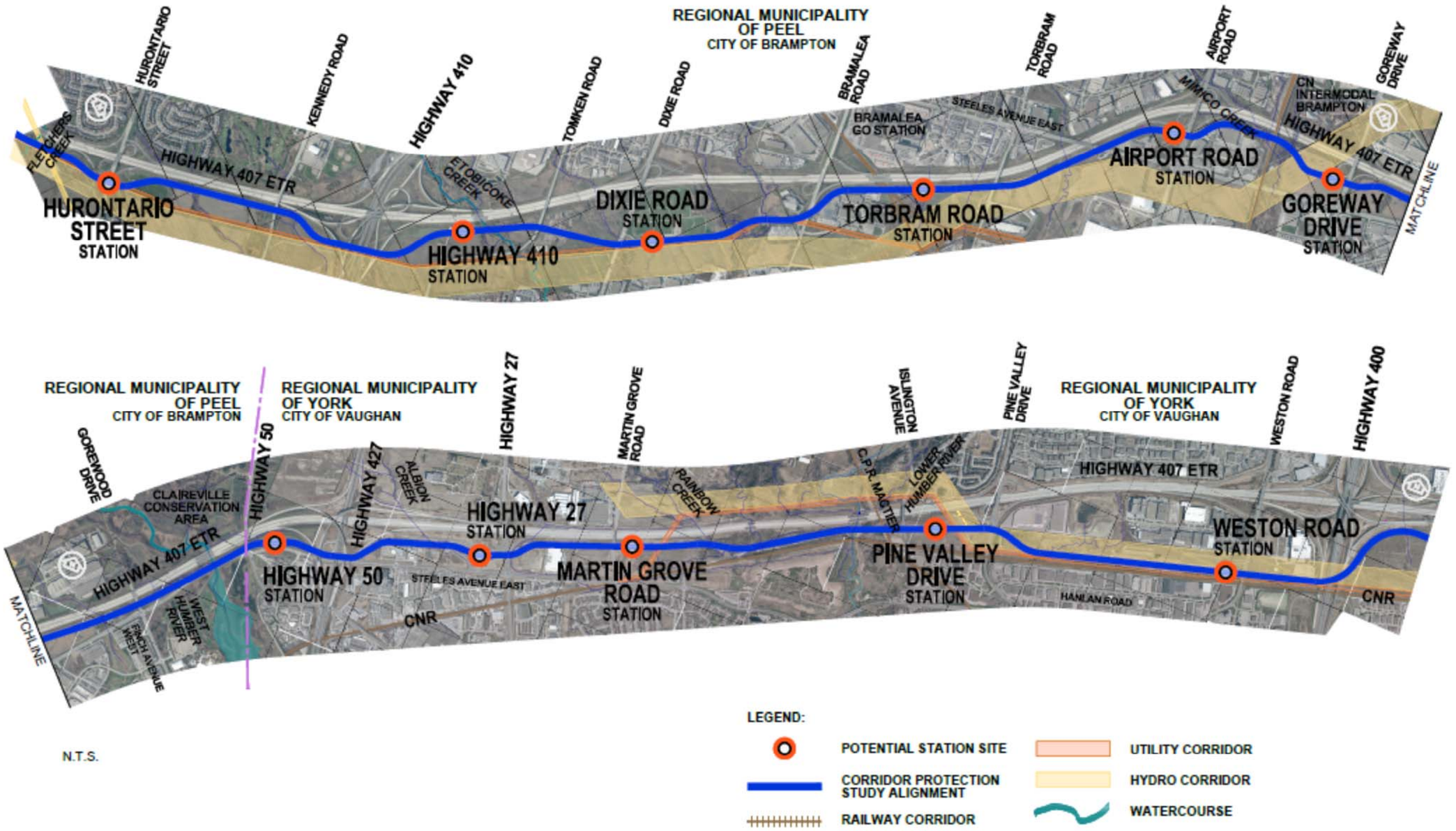
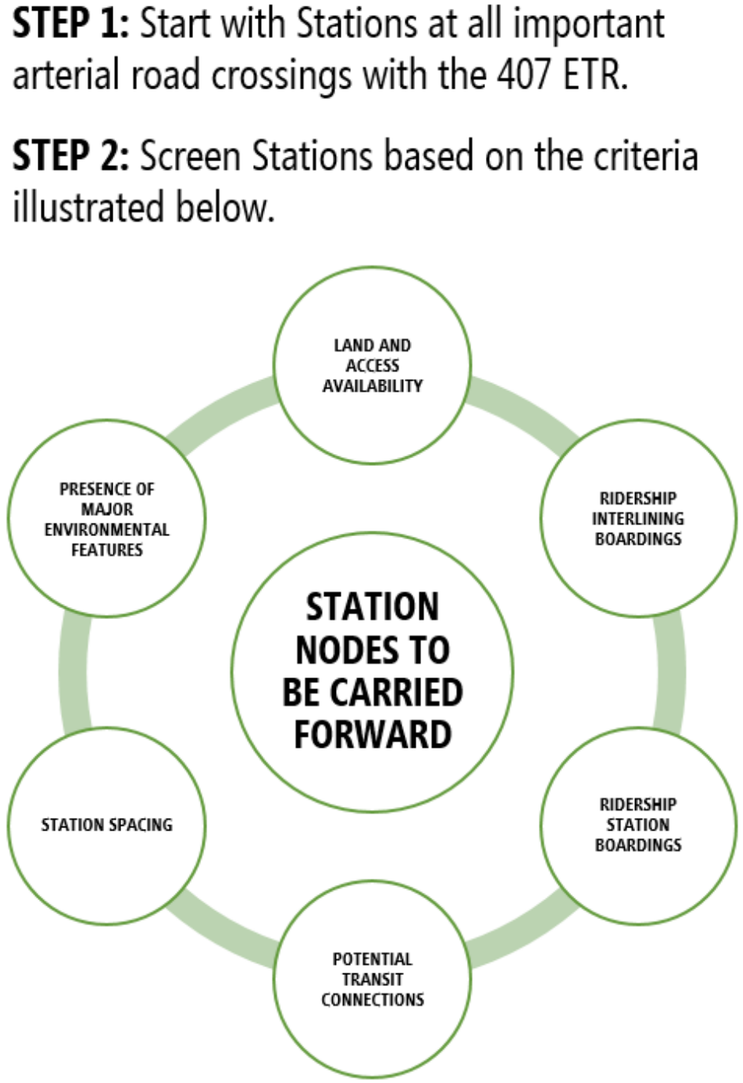


FIGURE 4.2: SCREENING OF STATION LOCATIONS



Screening of Station Locations Rationale

One of the main objectives of the study is to protect sufficient lands to meet the long term needs of the 407 Transitway for both the runningway and stations, given that unprotected private land may be developed and unprotected Provincial land may be released for development. The rationale at the planning stage of the project was to eliminate station locations only if the potential sites for the node did not comply with one or more of the noted criteria, including ridership forecast (discussed in detail in **Chapter 2 of the EPR**), land availability, access, and potential impacts to environmental features of Provincial significance.

The station location assessment screening process and results are summarized in **Table 4.1**.

TABLE 4.1: STATION LOCATION SCREENING ASSESSMENT

CRITERIA OF EVALUATION	HURONTARIO	HIGHWAY 410	DIXIE	TORBRAM	AIRPORT	GOREWAY	HIGHWAY 50	HIGHWAY 27	MARTIN GROVE	PINE VALLEY	WESTON
PRESENCE OF MAJOR ENVIRONMENTAL FEATURES	Area of archaeological potential within station site – Stage 2 archaeological assessment required. Cultural heritage landscape (CHL 7 – 7145 Kennedy Road, Mississauga between Hurontario Street and Kennedy Road) located in the vicinity of station site (not designated).	Station site located adjacent to/west of Etobicoke Creek West Branch (E5 – permanent, warmwater, direct fish habitat, low sensitivity). Area of archaeological potential within station site – Stage 2 archaeological assessment required. Station site located within cultural heritage landscape (CHL 5 - Benjamin Stewart Farm Well Ruin and Water Tower which is a listed City of Brampton cultural heritage site).	Tributary of Etobicoke Creek West Branch (E6 – permanent, warmwater, direct fish habitat, low sensitivity) located at the southwest limits of the station site.	Two branches of Tributary of Mimico Creek (M1 – permanent, warmwater, direct fish habitat, low sensitivity, and M2 – ephemeral, no fish habitat) located directly within proposed station site. Access road crosses Tributary of Mimico Creek (M3 – permanent, warmwater, indiret fish habitat, low sensitivity). Area of archaeological potential within station site – Stage 2 archaeological assessment required.	Area of archaeological potential within station site – Stage 2 archaeological assessment required.	Area of archaeological potential within station site – Stage 2 archaeological assessment required.	No major environmental features directy within proposed station site. Note: Cultural heritage landscape (CHL 15 – Historic Settlement of Claireville, not designated) and built heritage resources (BHRs 15-22 – Codlin Crescent properties, not designated) located north and south of Codlin Crescent (just south of station site). Properties with potential contaminants/issues of concern (Site 27) located north and south of Codlin Crescent (just south of station site).	Albion Creek (H4 – intermittent, wamwater, indirect fish habitat, low sensitivity) located directly within proposed station site. Area of archaeological potential within station site – Stage 2 archaeological assessment required.	Tributary of Rainbow Creek (H4 – ephemeral, coldwater, no fish habitat, low sensitiivity) located directly witinin proposed station site. Area of archaeological potential within station site – Stage 2 archaeological assessment required.	Area of archaeological potential within station site– Stage 2 archaeological assessment required. Station site located within vicinity of built heritage resource (BHR 9 – 7303 Islington Avenue, Vaughan, Registered on City of Vaughan Heritage Inventory).	No major environmental features within proposed station site.
LAND AND ACCESS AVAILABILITY	Potential sites at either side of Hurontario Street present some land availibility (private property) and access issues.	Not feasible road access to only available site.	Sufficient property available with opportunity to use Hydro Corridor for added parking. Feasible access.	Constrained available site. Major vehicular and pedestrian access.	Avalible site. Feasible access opportunity.	Available site. Only partial access opportunity from 407 ETR.	Limited site available within 407 ETR/Highway 27 ramp connections. Expansion to the south involves private property impacts.	Suitable site available between Highway 427 and Highway 27, besides 407 ETR headquarter property. Available access opportunity.	Limited site available. Only partial access from 407 ETR. Uncertainty regarding future ETR Interchange in the area.	Sufficient site to accommodate demand requirements. Adequate acces available from Pine Valley Drive.	Limited site precludes space to accommodate Transitway stop platforms, and associated station facilities.
RIDERSHIP EASTBOUND STATION BOARDINGS	1,700	100	200	Less than 100	400	500	1,000	500	300	200	200
RIDERSHIP INTERLINING BOARDINGS	# from LRT	0	0	3,100	0	0	0	0	0	0	0
DISTANCE TO ADJACENT STATIONS	4-km to Highway 410, 6-km to Dixie Road.	4-km to Hurontario, 2-km to Dixie Road.	2-km to Highway 410, 3-km to Bramalea Road.	3-km to Dixie Road, 3-km to Airport Road.	4-km to Bramalea, 2-km, Goreway Road.	2-km to Airport Road, 4-km to Highway 427.	4-km to Goreway, 3km to Highway 27.	2-km to Highway 427, 2-km to Martin Grove Road.	2-km to Highway 27, 3-km to Pine Valley Drive.	3-km to Martin Grove, 3-km to Weston Road.	3-km to Pine Valley Drive, 3-km to Jane Street.
POTENTIAL TRANSIT CONNECTIONS	Zum, BT, MiWay, GO Bus, Hurontario LRT.	GO Bus.	Zum, BT, MiWay, GO Bus, GO Bramalea Station.	Limited potential service due to accessibility issues from existing road network.	Zum, BT, MiWay, GO Bus, GO Bramalea Station.	Zum, BT, MiWay, GO Bus, GO Malton Station, Pearson Airport.	Highway 427 Transitway, Zum, BT, MiWay, GO Bus, GO Malton Station, Pearson Airport.	Zum, BT, GO Bus, Transitway, Pearson Airport.	Zum, YRT, TTC, GO Bus.	Zum, YRT, GO Bus.	Zum, YRT, TTC, Go Bus.
SELECTED STATIONS	**Carried forward to Stage 2.**	**Not carried forward.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Carried forward to Stage 2.**	**Not carried forward.**

4.5.1.1 Summary of Results of the Station Node Screening

Below is a summary of the station node evaluation and the reasons for selecting each node to be carried forward. As indicated in **Table 4.1**, each station node was screened based on major environmental impacts, land availability, accessibility, service quality and infrastructure needs, station spacing, forecasted ridership, transit connections, and overall impacts. This Station Node Screening was presented to stakeholder agencies in Technical Resource Group Meeting #1 held on November 6, 2016, to the public at the first Public Information Centre (PIC # 1) held on December 6 and 8, 2016, and posted

on the project website. Nodes that were carried forward for a 407 Transitway station included those that favourably complied with most criteria. Nodes requiring discussions with third parties, and/or further technical and environmental analysis were further evaluated to determine if they would be included in the 407 Transitway design. Nodes which present unfavourable results, and/or there are obstacles or barriers to the success or feasibility for a station facility, were not carried forward and no further station site assessment was performed.

Of the eleven potential station candidates, nine sites were carried forward and two sites were not carried forward. A summary of the results of the station screening is presented below and illustrated in **Figure 4.3.**

HURONTARIO STREET STATION

Potential station at Hurontario Street was **carried forward**. Main characteristics of this node include:

- Hurontario Street is the busiest north-south arterial road in Peel Region;
- High demand from transit transfer, Park and Ride, and pick-up/drop-off parking. Highest forecast demand of all stations;
- Provides integration opportunity with new Hurontario LRT; and,
- Existing and future employment within walking distance.

HIGHWAY 410 STATION

Potential station west of Tomken Road was **not carried forward**. Main characteristics of this node include:

- Low ridership forecast;
- No direct access possible from 407 ETR or Highway 410;
- Only possible station site located within Benjamin Stewart Farm Well Ruin and Water Tower (CHL 5) which is a listed City of Brampton cultural heritage site; and,
- There is no current local transit service in this area.

DIXIE ROAD STATION

Potential station at Dixie Road was **carried forward**. Main characteristics of this node include:

- High ridership forecast;
- Expansion opportunity for support facilities around station; and,
- Good potential for local transit integration.

TORBRAM ROAD STATION

Potential station west of Torbram Road was **carried forward**. Main characteristics of this node include:

- Site available is isolated from local roads and presents poor pedestrian access;
- Potential GO Station connection;
- High demand for transit to transit connectivity;
- No direct access from 407 ETR;
- Low Park and Ride demand; and,
- Complex geometry.

AIRPORT ROAD STATION

Potential station at Airport Road was **carried forward**. Main characteristics of this node include:

- High forecast demand;
- Airport Road connects to Malton GO Station and Pearson International Airport;
- Good access from 407 ETR;
- Good local transit integration opportunity; and,
- Limited space available for parking but opportunity for additional parking within Hydro Corridor south of Steeles Avenue.

GOREWAY DRIVE STATION

Potential station at Goreway Drive was **carried forward**. Main characteristics of this node include:

- Moderate forecast demand;
- Limited access from 407 ETR (partial interchange to/from east);
- Could relieve demand at Airport Road Station;
- Could relieve traffic congestion at Steeles Avenue, and;
- Fair local transit integration opportunity.

HIGHWAY 50 STATION

Potential station at Highway 50 was **carried forward**. Main characteristics of this node include:

- High forecast demand;
- Main function will be integration of 407 Transitway with future 427 Transitway (to the north) and potential transit service on Highway 427 (to the south);
- Local transit integration opportunity;
- Poor access to/from 407 ETR;
- May require land south of Codlin Crescent to satisfy parking demand; and,
- Potential cultural/built heritage and contamination issues in this area (north and south of Codlin Crescent).

HIGHWAY 27 STATION

Potential station at Highway 27 was **carried forward**. Main characteristics of this node include:

- High forecast demand;
- Good access to/from 407 ETR; and,
- Good local transit integration opportunity.

MARTIN GROVE ROAD STATION

Potential station at Martin Grove Road was **carried forward.** Main characteristics of this node include:

- Complex access from road network;
- Poor access to/from 407 ETR;
- May relieve demand at Highway 27 Station;
- Moderate forecast demand; and,
- Good local transit integration opportunity.

PINE VALLEY ROAD STATION

Potential station at Pine Valley Road was **carried forward**. Main characteristics of this node include:

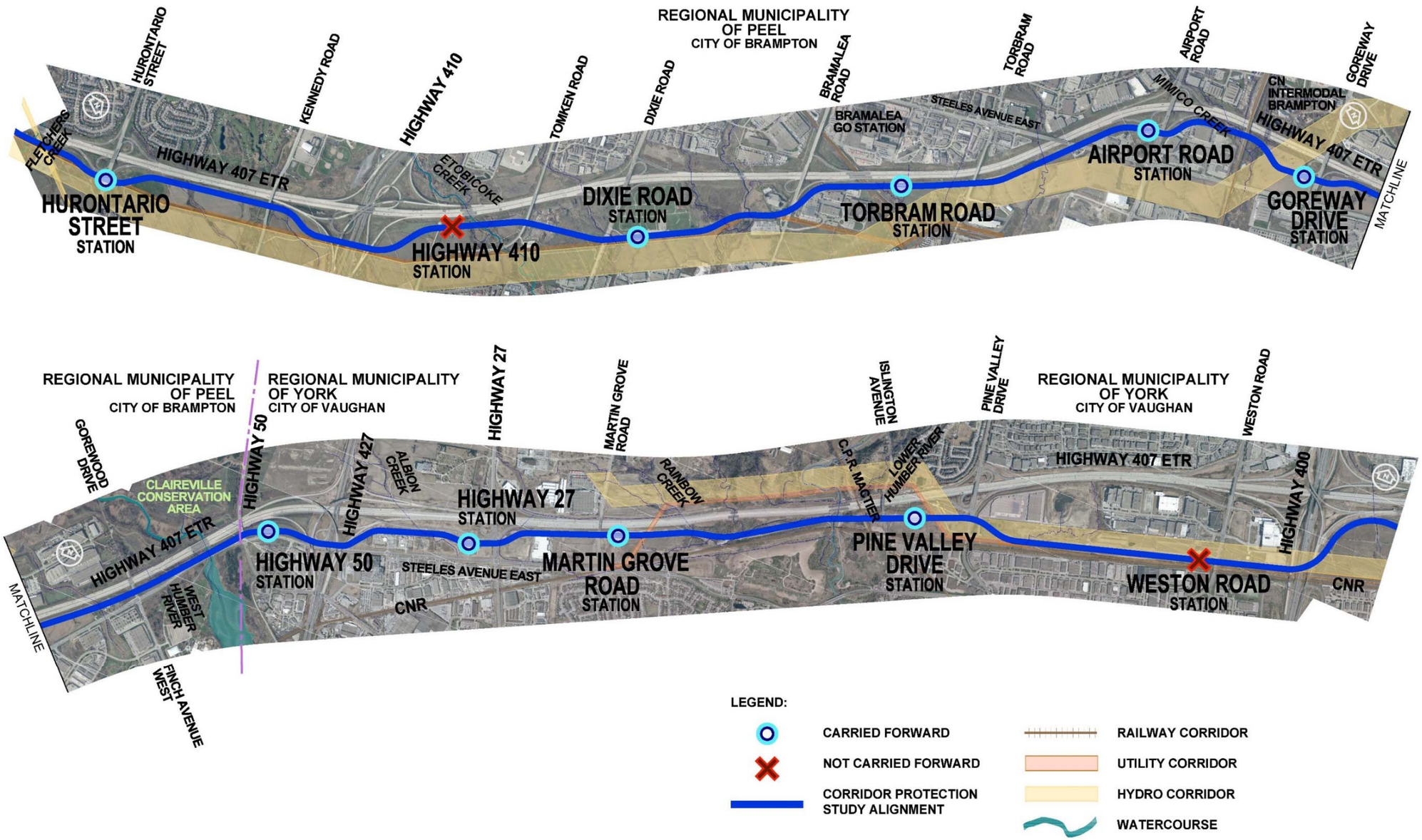
- Moderate forecast demand;
- Good access to/from 407 ETR;
- Long distance to next station to the east;
- Built heritage resource (BHR 9) located in the vicinity of station site; and,
- Good local transit integration opportunity.

WESTON ROAD STATION

Potential station at Weston road was **not carried forward.** Main characteristics of this node include:

- Limited demand given proximity of the Jane Street Station which will be integrated with the Spadina Subway 407 Station, and the VIVA service on Highway 7;
- Poor access to/from 407 ETR;
- Alignment wedged between Hydro and Utility corridors; consequently, there is no space to accommodate station platforms and by pass lanes;
- Potential integration with municipal bus routes; and,
- No possible off street bus loop opportunity within Hydro Corridor.

FIGURE 4.3: SCREENED STATION NODES



4.6. Stage 2 – Screening of Station Site and Alignment Alternatives

4.6.1 Identification of Station Site and Alignment Alternatives

The identification and assessment of station site and alignment alternatives were conducted in two steps:

STEP 1: The station site and alignment alternatives protected through the 1998 Corridor Protection Study (CPS) were first assessed to confirm if a feasible alignment and station facilities could be accommodated within the CPS lands. Aspects that were assessed included:

- Presence of environmental features of Provincial Significance pursuant to the MECP Regulations;
- Provincial, regional or local municipal land use and/or transportation plans, approved or proposed that were not identified/anticipated when the CPS was conducted;
- Significant socio-economic impacts caused by the CPS Transitway facilities;
- The CPS facilities meeting the current MTO Transitway design standards for both BRT and LRT technologies;
- The presence of major utilities located within the CPS lands;
- The CPS facilities impactsing Utility and/or Hydro Corridors, or land owned by other government agencies;
- Property or traffic issues preventing feasible accessibility to the station sites protected in the CPS;
- The alignment allowing bus interlining opportunities from/to major urban growth centres;
- The station platform and surface facilities providing adequate transit integration; and,
- Constructability of the CPS alignment being feasible and cost effective.

Note that the station site assessment was conducted only for the station nodes that were carried forward or conditionally carried forward from the Stage 1 screening process.

STEP 2: Where the CPS alternatives presented issues based on the foregoing analysis, potential alternative alignments and station site options were identified. This included better opportunities to attract users, fewer environmental and social impacts, fewer disruptions to the public and to the transportation network during construction. **Figures 4.5 to 4.12** illustrate the alignment alternatives and station options identified.

4.6.2 Evaluation of Station Site and Alignment Alternatives

All identified alternatives were evaluated following the criteria shown in **Figure 4.4.**

This Hurontario Street to Highway 400 section was broken down into segments based on Transitway functionality, and/or alignment alternatives as illustrated in **Figures 4.5 to 4.12**, and as described and evaluated in **Tables 4.2 to 4.9**.

SEGMENTS

SEGMENT A: WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD

SEGMENT B: EAST OF KENNEDY ROAD TO WEST OF TOMKEN ROAD

SEGMENT C: WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD (C.1 AND C.2)

SEGMENT D: EAST OF TORBRAM ROAD TO EAST OF GOREWAY DRIVE

SEGMENT E: EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427

SEGMENT F: EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD

SEGMENT G: EAST OF MARTIN GROVE ROAD TO WEST OF ISLINGTON AVENUE

SEGMENT H: WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 (H.1 AND H.2)

In each segment, the station site options were evaluated followed by the runningway alignment alternatives and by the profile options of the alignment alternative carried forward. The alternatives identified for each of these components of the 407 Transitway were assessed independently and then compared to each other. The overall result of the assessment of the alternatives evaluated in each segment is summarized at the end of the evaluation section.

FIGURE 4.4: STAGE 2 STATION SITE OPTION AND ALIGNMENT ALTERNATIVE EVALUATION APPROACH AND CRITERIA.

STEP 1: Identify all possible station sites in the areas of the selected nodes, and alignments linking the station site alternatives.

STEP 2: Evaluate all planning alternatives based on Service Quality and Infrastructure Considerations and on Environmental Impacts.

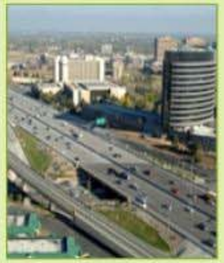
ENVIRONMENT

NATURAL

- Potential Effects on Natural Heritage Resources
- Potential Effects on Environmentally Significant Landforms/Features
- Potential Effects on Geology and Hydrogeology
- Potential Effects on Species/Habitats at Risk

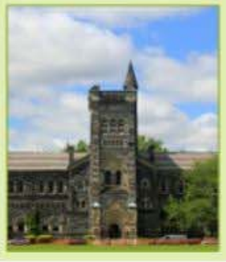
SOCIO-ECONOMIC

- Private Property Impacts
- Land Use Compatibility with Provincial and Municipal Plans and Policies
- Potential Effects on Adjacent Noise Sensitive Areas
- Impacts to Prime Agricultural Lands



CULTURAL

- Known Presence of Archaeological Potential
- Potential Impacts to Known Indigenous Lands
- Potential Effects on Cultural/Built Heritage



SERVICE QUALITY AND INFRASTRUCTURE

TRANSITWAY OPERATION

- Transitway Alignment (Safety, Ride Comfort, Travel Time)
- Suitability for Staged Implementation

TRANSPORATION ACCESS

- Impact to 407 ETR Operation
- Interlining Opportunity
- Platform Connection and Transit Connectivity
- Alignment Geometry
- Impact to Hydro/Utility Infrastructure

STATION SITE AREA

- Site Area and Opportunity to Expand

CONSTRUCTABILITY AND/OR COST FACTOR

- Major Constructability Issues
- Qualitative Cost Assessment

SEGMENT A: WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD

This segment includes the key future integration point between two major rapid transit services, the 407 Transitway and the Hurontario Light Rapid Transit line (HuLRT). Careful consideration was given to providing an efficient service connection between the two lines. The proposed HuLRT Maintenance and Storage Facility (MSF) will be located just west of Kennedy Road. Precise planning of the 407 Transitway alignment through this segment was required to avoid and/or minimize impacts on the MSF and associated lead tracks as well as the maintenance road.

This segment also includes crossing of the Hydro Corridor that involved discussions and agreements with Hydro One.

FIGURE 4.5A: SEGMENT A, WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES

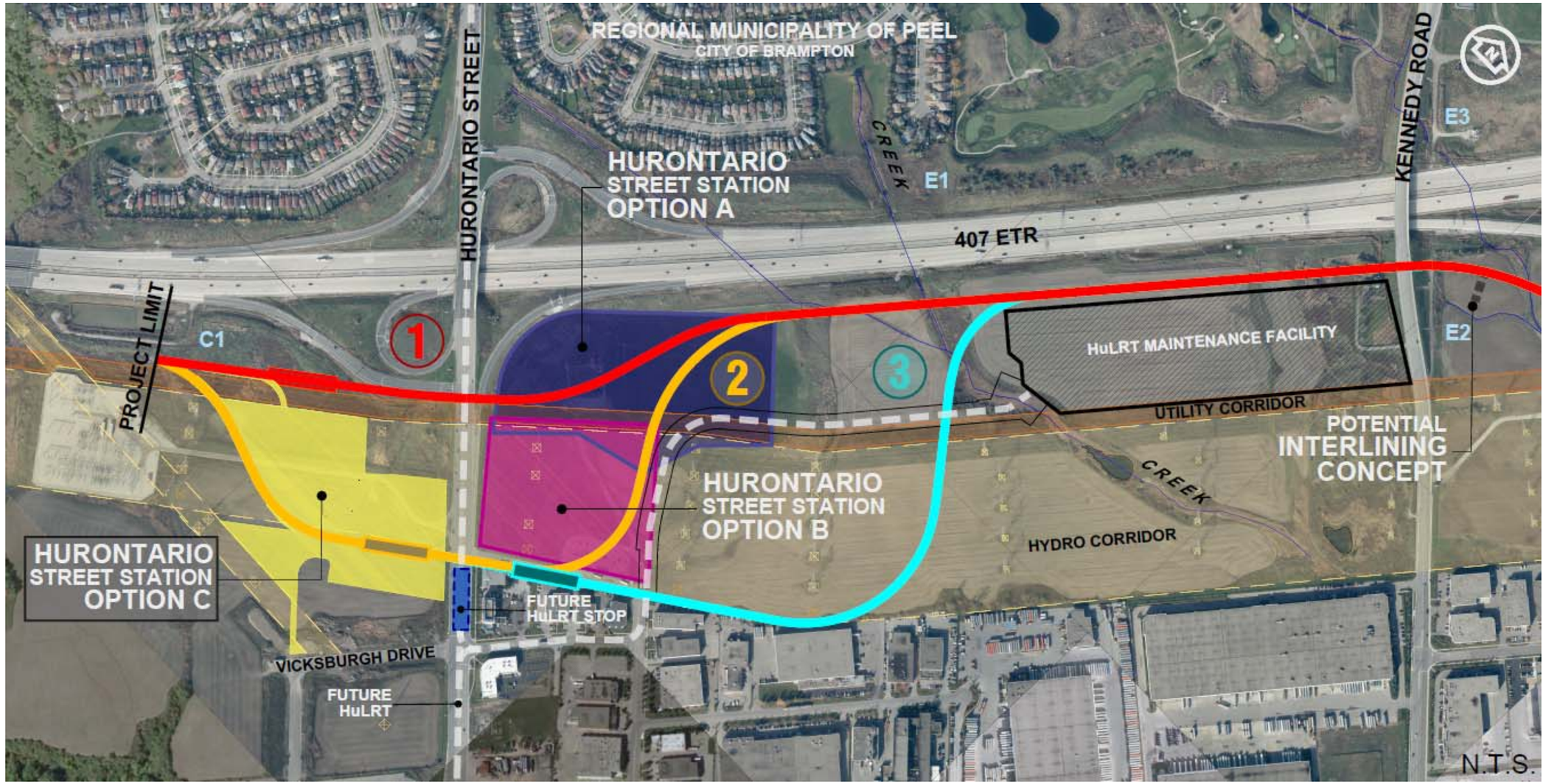


TABLE 4.2A: SEGMENT A, WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD STATION SITE OPTIONS

CRITERIA/INDICATORS	OPTION A	OPTION B	OPTION C
Location	Complete surface site east of Hurontario Street, adjacent to 407 ETR.	Complete surface site east of Hurontario Street, just north of Topflight Drive.	Complete surface site west of Hurontario Street.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured land), and no impacts to watercourses/fisheries habitat. Vegetation removals: CUM1-1a – 2.14 ha, Agricultural – 0.07 ha, Manicured – 5.02 ha. Distance from nearest watercourse: 212.66 m from Tributary of Etobicoke Creek West Branch (E1).	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured land), and no impacts to watercourses/fisheries habitat. Vegetation removals: CUM1-1a – 3.69 ha, Agricultural – 0.66 ha, Manicured - 0.38 ha. Distance from nearest watercourse: 286.41 m from Triburary of Fletchers Creek (C1).	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural land), and no impacts to watercourses/fisheries habitat. Vegetation removals: CUM1-1a – 2.93 ha, Agricultural – 3.43 ha. Distance from nearest watercourse: 15.9 m from Tributary of Fletchers Creek (C1).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Potential impacts to one well located within the station site.	No impacts.	Potential impacts to wells located within/directly adjacent to the station site.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Potential impacts to cultural heritage landscape (CHL 7 - 7145 Kennedy Road, Mississauga between Hurontario Street and Kennedy Road) – not a designated site.	Potential impacts to cultural heritage landscape (CHL 7 - 7145 Kennedy Road, Mississauga between Hurontario Street and Kennedy Road) – not a designated site.	No impacts.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive areas (residential subdivision) located in vicinity (but well removed) north of 407 ETR east of Hurontario Street.	Noise sensitive areas (residential subdivision) located in vicinity (but well removed) north of 407 ETR east of Hurontario Street.	Noise sensitive areas (residential subdivisions) located in vicinity (but well removed) north of 407 ETR west of Hurontario Street and south of 407 ETR west of station site (west of Fletchers Creek valley).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan, Provincial Highways, and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015).	Station located in lands designated as Parkway Belt West Plan, Provincial Highways, and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). The south portion of the station located directly adjacent to lands designated as Office, Business Employment and Intensification Corridor (as per City of Mississauga Official Plan March 2017).	Station located in lands designated as Parkway Belt West Plan, Provincial Highways and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). The south portion of the station located in lands designated as Office, Business Employment, Intensitication Corridor and Utility (as per City of Mississauga Official Plan March 2017).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 7.25 ha, Class 2 – 0 ha, Class 3 – 0.14 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 0.94 ha, Class 2 – 0 ha, Class 3 – 5.04 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 5.81 ha, Class 2 – 0 ha, Class 3 – 0.85 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	No private property impacts.	Impacts on existing MTO Hurontario-407 Park & Ride.	Impacts on a private property (empty lot) west of Hurontario Street, north of Vicksburgh Drive.
Impacts on Hydro/Utility Corridor	Low impacts to Hydro Corridor if Park and Ride lot is extended in the future. No impacts to existing or future Hydro infrastructure. Minor parking area (if expanded) within Hydro Corridor.	Park and Ride within Hydro Corridor.	Park and Ride within Hydro Corridor. Access to hydro station would require realignment.

CRITERIA/INDICATORS	OPTION A	OPTION B	OPTION C
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	Conflicting access to the station surface facility. Requires all traffic to access site through shared access with HuLRT service track along Topflight Drive. Opportunity for second access (right in/right out) from Hurontario Street not viable due to 407 ETR Ramp S-E.	Conflicting access to the station surface facility. Requires all traffic to access site through shared access with HuLRT service track along Topflight Drive. Opportunity for second access at Hurontario Street not possible due to 407 ETR Ramp S-E. Connectivity to local/regional bus service limited to on-street bus stops. Limited opportunity for bus pick-up/drop-off (outside of Hydro Corridor).	Significant improvement in traffic operations and access to station compared to site options A and B: Full access provided to station at Hurontario Street via connection to Vicksburgh Drive. Secondary right-In/right-out access provided on Hurontario Street. Reduces overall demands at Vicksburgh Drive – Hurontario Street intersection. Avoids conflict with HuLRT service track.
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Access to station approximately 500-metres south of 407 ETR.	Access to station approximately 500-metres south of 407 ETR.	Access approximately 500-metres south of 407 ETR.
Site Area and Opportunity to Expand	Irregular shape with opportunity to expand in I/O and Hydro lands.	Rectangular shape with no opportunity to expand. No land available for bus off-street facility.	Available land to accommodate required facility. Opportunity to expand parking on Hydro Corridor.
Constructability and/or Cost Consideration	Station access road to be shared with HuLRT yard tracks. Construction access would require close coordination with HuLRT and Hydro One.	Station access road to be shared with HuLRT yard tracks. Construction access would require close coordination with HuLRT and Hydro One.	Construction will require coordination with Hydro One.
OVERALL PREFERRED OPTIONS	**NOT CARRIED FORWARD.** Access very complicated with potential conflict.	**NOT CARRIED FORWARD.** Access very complicated with potential conflict. Available site not feasible to accommodate bus facility.	**CARRIED FORWARD.** Feasible access. Site suitable to accommodate all required facilities.

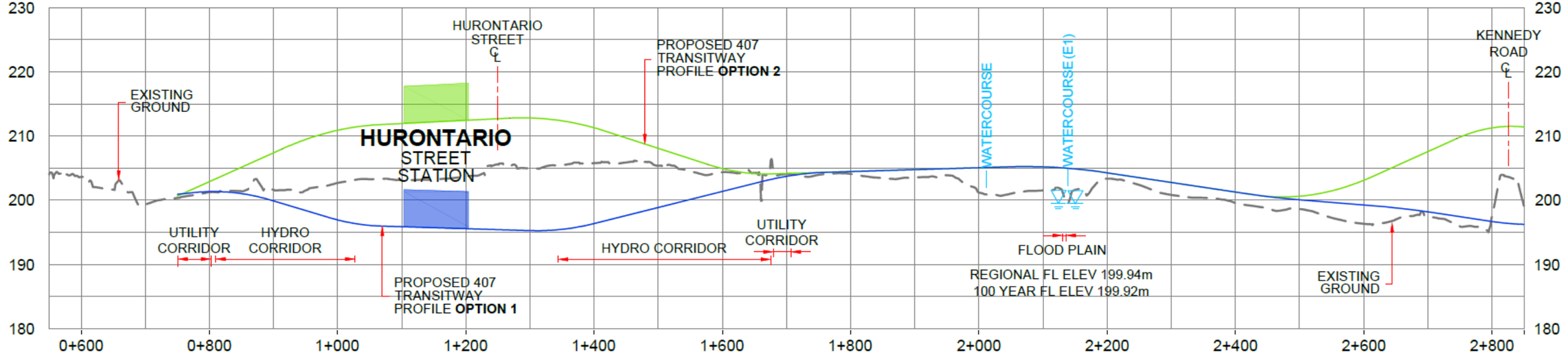
TABLE 4.2B: SEGMENT A, WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD ALIGNMENT ALTERNATIVES

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Description	Runningway located north of Hydro and Utility Corridors. It tunnels under 407 ETR Interchange, it basically remains at grade east of Hurontario Street, and crosses Kennedy Road under the Road. Hurontario Street Station platform located west of Hurontario Street.	Runningway crosses Hydro Corridor north to south, west of Hurontario Street, and south to north, between Hurontario Street and HuLRT future maintenance yard. 407 Transitway stop platform very close to HuLRT stop platform. Runningway crosses under Hurontario Street, in a cut section across the Hydro Corridor, at grade along provincial land just south of 407 ETR, and under Kennedy Road.	Runningway crosses Hydro Corridor north to south, west of Hurontario Street, and south to north, just east of future HuLRT future maintenance yard. It crosses HuLRT Yard Track twice. 407 Transitway stop platform very close to HuLRT stop platform. Runningway crosses under Hurontario Street, in a cut section across the Hydro Corridor, at grade along provincial land just south of 407 ETR, and under Kennedy Road.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural and wetland vegetation (marsh at Tributary of Etobicoke Creek West Branch), and agricultural/manicured land). Vegetation removals: CUM1-1a – 1.88 ha, MAM2/MAS2a – 0.02 ha, Agricultural – 1.68 ha, Manicured – 0.20 ha. Alignment begins just east of Tributary of Fletchers Creek (C1 – ephemeral, no fish habitat, high sensitivity, Redside Dace contributing). Crosses Tributary of Etobicoke Creek West Branch (E1 – intermittent, warmwater, seasonal fish habitat, low sensitivity).	Minimal impacts to wildlife and vegetation (cultural and wetland vegetation (marsh at Tributary of Etobicoke Creek West Branch), and agricultural/manicured land). Vegetation removals: CUM1-1a – 1.16 ha, MAM2/MAS2a – 0.02 ha, Agricultural – 1.94 ha, Manicured – 1.04 ha. Alignment begins just east of Tributary of Fletchers Creek (C1 – ephemeral, no fish habitat, high sensitivity, Redside Dace contributing). Crosses Tributary of Etobicoke Creek West Branch (E1 – intermittent, warmwater, seasonal fish habitat, low sensitivity).	Minimal impacts to wildlife and vegetation (cultural and wetland vegetation (marsh at Tributary of Etobicoke Creek West Branch) and agricultural/manicured land. Vegetation removals: CUM1-1a and CUT1a – 1.58 ha, MAM2/MAS2a – 0.04 ha, Agricultural – 3.52 ha, Manicured – 0.23 ha. Alignment begins just east of Tributary of Fletchers Creek (C1 – ephemeral, no fish habitat, high sensitivity, Redside Dace contributing). Crosses Tributary of Etobicoke Creek West Branch (E1 – intermittent, warmwater, seasonal fish habitat, low sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area. Potential impacts to wells located within/adjacent to alignment.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area. Potential impacts to wells located within/adjacent to alignment.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area. Potential impacts to wells located within/adjacent to alignment.

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Potential impacts to cultural heritage landscape (CHL 7 - 7324 Kennedy Road, Brampton between Hurontario Street and Kennedy Road) – not a designated site.	Potential impacts to cultural heritage landscape (CHL 7 - 7324 Kennedy Road, Brampton between Hurontario Street and Kennedy Road) – not a designated site.	Potential impacts to cultural heritage landscape (CHL 7 - 7324 Kennedy Road, Brampton between Hurontario Street and Kennedy Road) – not a designated site.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive areas located in vicinity (but removed) including residential subdivisions located north of 407 ETR west and east of Hurontario Street and south of 407 ETR (west of Fletchers Creek valley).	Noise sensitive areas located in vicinity (but removed) including residential subdivisions located north of 407 ETR west and east of Hurontario Street and south of 407 ETR (west of Fletchers Creek valley).	Noise sensitive areas located in vicinity (but removed) including residential subdivisions located north of 407 ETR west and east of Hurontario Street and south of 407 ETR (west of Fletchers Creek valley).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Lester B. Pearson Operating Area and Open Space (as per City of Brampton Official Plan November 2015).	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015), and in lands designated as Office and Intensification Coridor (as per City of Mississauga Official Plan March 2017).	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015), and in lands designated as Office, Business Employment and Intensification Coridor (as per City of Mississauga Official Plan March 2017).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 3.84 ha, Class 2 – 0 ha, Class 3 – 0.28 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 3.53 ha, Class 2 – 0 ha, Class 3 – 1.28 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 5.22 ha, Class 2 – 0 ha, Class 3 – 0.64 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	No private property impacts.	Alignment impacts to small portion of private property west of Hurontario Street, and to an entire tire business commercial property just east of Hurontario Street as well as adjacent business/parking lots. Easement to accommodate station access is required on west side of Hurontario Street. Alignment impacts existing MTO Hurontario-407 ETR Park & Ride. Potential for contamination exists at a property within alignment. Further investigation required for preferred alternative.	Permanent easement required under parking areas for properties on north side of Topflight Drive. Alignment impacts to small portion of private property west of Hurontario Street, and to a tire business commercial property just east of Hurontario Street as well as adjacent business/parking lots. Alignment impacts existing MTO Hurontario-407 ETR Park & Ride. Potential for contamination exists at a property within alignment. Further investigation required for preferred alternative.
Impacts on Hydro/Utility Corridor	No impacts.	Runningway crosses the Hydro Corridor. No impacts to existing or future Hydro infrastructure. Crossing/conflict with existing access road to hydro station.	Runningway crosses Hydro Corridor and runs parallel to future transmission line. No impacts to existing or future Hydro infrastructure. Crossing/conflict with existing access road to hydro station.
Impacts to 407 ETR Operation	No impacts.	No impacts.	No impacts.
Interlining Opportunity	Major transfer Station. Location not suitable for interlining operation.	Major transfer Station. Location not suitable for interlining operation.	Major transfer Station. Location not suitable for interlining operation.
Platform Location and Transit Connectivity	Approximately 650-metres walking distance from 407 Transitway platforms to HuLRT platforms. According to a sensitivity analysis, the long walking distance would lose at least 50% of the transfer riders between the two rapid transit services at this location.	Optimum transfer connection between two major future rapid transit services (407 Transitway and HuLRT).	Optimum transfer connection between two major future rapid transit services (407 Transitway and HuLRT).
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment and geometry compliant with BRT/LRT standards. No impacts on operation.	Substandard geometry required on either side of Hurontario Street to clear existing and planned future Hydro towers and minimize private property impacts.	Substandard geometry required on either side of Hurontario Street to clear existing and planned future Hydro towers and minimize private property impacts.

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Constructability and/or Cost Consideration	Approx. 210m. long, costly and complex tunnel required under 407 ETR Hurontario Interchange.	Approx. 45 m. long tunnel required to cross under Hurontario Street without disrupting future LRT operations.	Approx. 45m. long tunnel required to cross under Hurontario Street without disrupting future LRT operations. Runningway crosses twice HuLRT yard lead tracks. One of the crossing is under the track; the second crossing is at grade, which will represent issues during construction and during operation.
Impacts to HuLRT Planned Facilities	No impacts.	No impacts.	Runningway crosses HULRT non-revenue yard track twice. One crossing is under the track; the second is at grade which will represent operational issues to the HuLRT Operator.
OVERALL PREFERRED ALTERNATIVES	**NOT CARRIED FORWARD.** It precludes a direct connection between the 407 Transitway and HuLRT (650m. walk between platforms). It requires costly tunnel under 407 ETR-Hurontario Street Interchange.	**CARRIED FORWARD.** It achieves a direct connection between the 407 Transitway and HuLRT, major transit facilities, optimizing Park and Ride convenience and transit ridership. It avoids conflicts with HuLRT yard lead track and associated maintenance road. Comparing to Alternative 3, it minimizes private property impacts west of Hurontario Street.	**NOT CARRIED FORWARD.** Although it achieves a direct connection between the 407 Transitway and HuLRT, it conflicts with HuLRT yard lead track and associated maintenance road. Greater property impacts than Alternative 2, west of Hurontario Street.

FIGURE 4.5B: SEGMENT A, WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD



Vertical alignment options (**Figure 4.5B**) for the defined horizontal alignment described above were identified and evaluated. The elevated option is not feasible due to Hydro One transmission lines vertical electromagnetic clearance requirements. The underpass option was selected to be carried forward.

SEGMENT A, WEST OF HURONTARIO STREET TO EAST OF KENNEDY ROAD: EVALUATION SUMMARY

The Hurontario Street Station site option located west of Hurontario Street (Option C) was carried forward as the preferred station site option to optimize transfer connectivity with the future HuLRT and minimize traffic issues accessing the station facility. Alignment Alternative 2 minimizes impacts on the future HuLRT facilities and Hydro One existing and planned infrastructure and minimizes impacts on existing development within private property east of Hurontario Street and was carried forward as the preferred alignment alternative. Runningway profile Option 1, underpassing Hurontario Street, was carried forward as the only profile option, as Option 2 overpassing Hurontario Street, would not meet Hydro electromagnetic requirements.

SEGMENT B: EAST OF KENNEDY ROAD TO WEST OF TOMKEN ROAD

This segment includes the crossing of the Highway 410/407 ETR Interchange. It does not provide adequate transit or road network connection and consequently it does not include a station facility. A station at this location was screened out in **Section 4.4.3**. The runningway alignment is located south of 407 ETR and crosses over the Etobicoke Creek West Branch; this is the only available corridor for an alignment in this Segment, and it follows the CPS. The alignment impacts a cultural heritage landscape (CHL 5 – 7385 Farmhouse Court) including the farmhouse at this location, although the identified heritage attributes of the property (i.e. well and tower) are not expected to be impacted.

FIGURE 4.6A: SEGMENT B, EAST OF KENNEDY ROAD TO WEST OF TOMKEN ROAD ALIGNMENT ALTERNATIVES

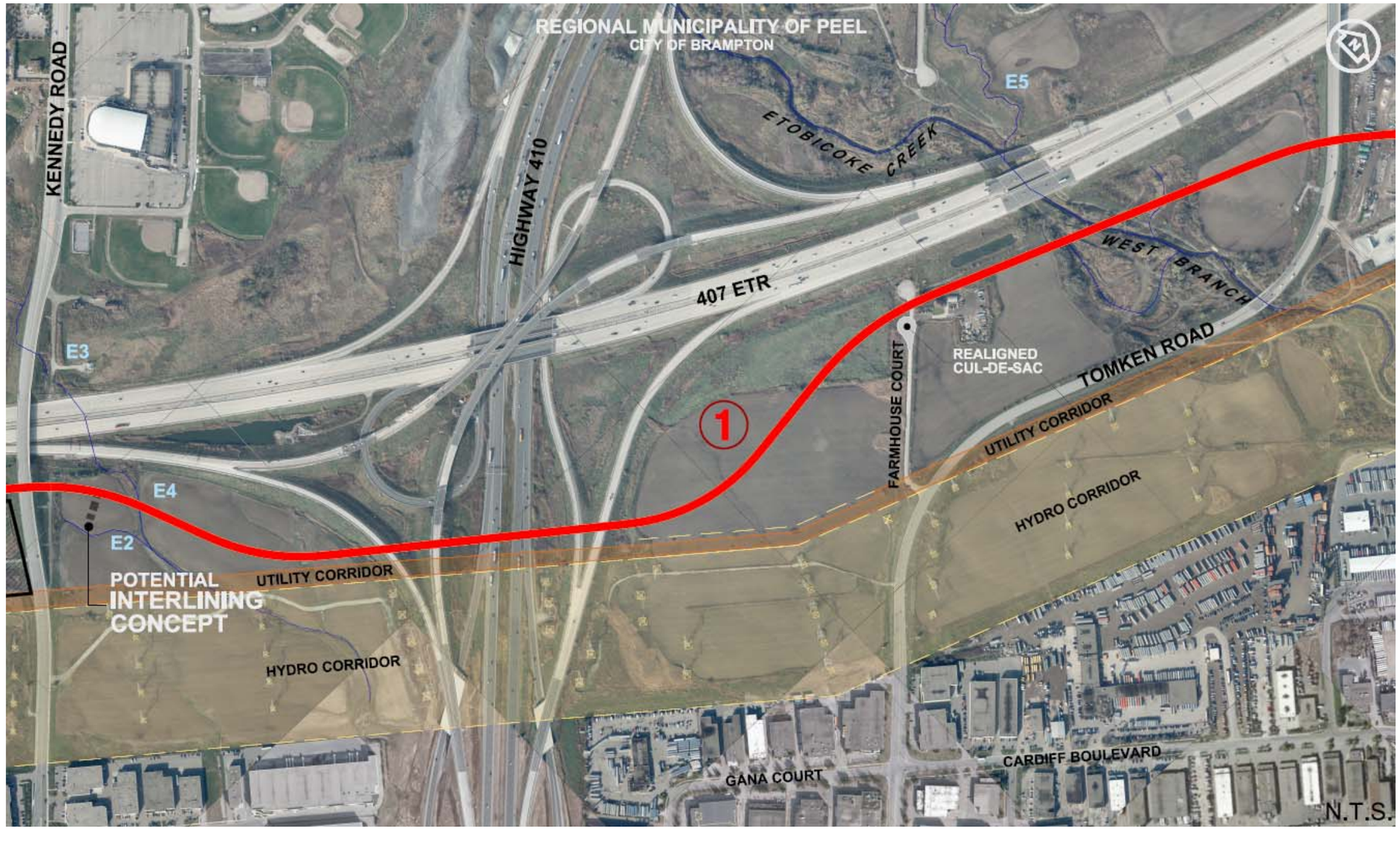
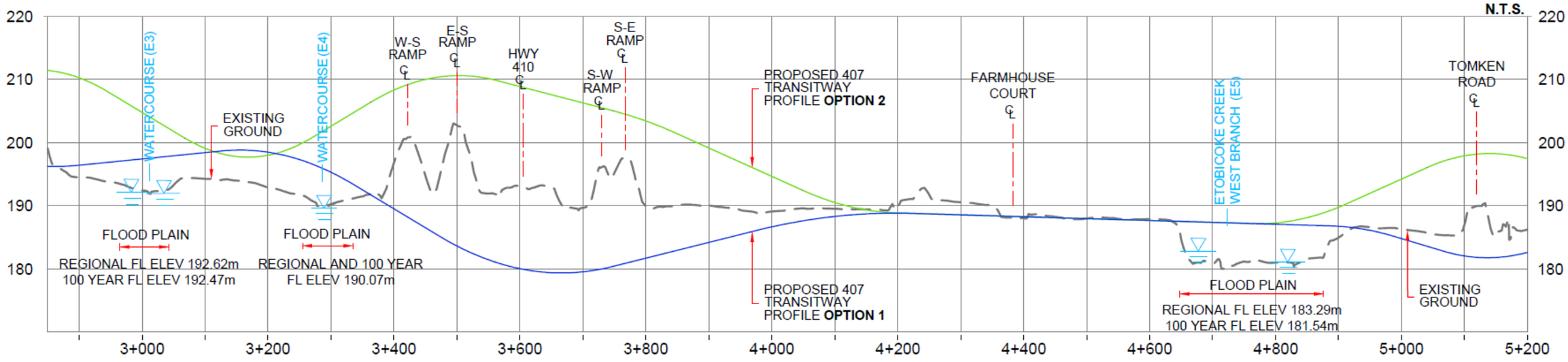


TABLE 4.3A: SEGMENT B, EAST OF KENNEDY ROAD TO WEST OF TOMKEN ROAD ALIGNMENT ALTERNATIVE

CRITERIA/INDICATORS	ALTERNATIVE 1
Description	Alignment within only feasible corridor along MTO protected corridor, south of 407 ETR. 1998 Corridor Protection Study alignment was refined to optimize grade separation with Highway 410 Interchange ramps. The runningway tunnels under the Highway 410 Interchange, as illustrated and described in the Segment profile below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (generally cultural and agricultural lands with impacts to small wetland communities surrounding the Etobicoke Creek West Branch (E5)). Vegetation removals: CUM1-1a to c and CUM 1-1/CUT1, CUT1/CUW1a – 2.86 ha, MAM2-2a and MAM2a – 0.33 ha, Agricultural – 3.15 ha Crosses two Tributaries of Etobicoke Creek West Branch (E3 – intermittent, warmwater, seasonal fish habitat, low sensitivity, and E4 – intermittent, indirect fish habitat, low sensitivity), and Etobicoke Creek West Branch (E5 – permanent, warmwater, direct fish habitat, low sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.
Natural Environmental: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	The alignment will impact a cultural heritage landscape (CHL 5 – 7385 Farmhouse Court/Benjamin Stewart Farm Well Ruin and Tower which is a listed City of Brampton cultural heritage site) including a farmhouse located in the vicinity of Farmhouse Court. However, the identified heritage attributes of the property (i.e. the well and tower) are not expected to be impacted.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Lester B. Pearson Operating Area and Open Space (as per City of Brampton Official Plan November 2015).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 5.30 ha, Class 2 – 0 ha, Class 3 – 0 ha..
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	No impacts to private property. Potential for contamination exists at one property within alignment. Further investigation required for preferred alternative.
Impacts on Hydro/Utility Corridor	No impacts, alignment contained within Parkway Belt West Plan Inter-urban Transit corridor.
Impacts to 407 ETR Operation	No impacts.
Interlining Opportunity	To provide transit connectivity from the redevelopment of the Powerade Centre site to the 407 Transitway, a potential interlining concept connecting the 407 Transitway with Kennedy Road is being proposed.
Platform Location and Transit Connectivity	N/A
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Geometry compliant with Transitway Design Standards.
Constructability and/or Cost Consideration	Construction under Highway 410 Interchange will result in high construction cost. The runninway will be located as south as possible to minimize tunneling costs.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD.**

FIGURE 4.6B: SEGMENT B, EAST OF KENNEDY ROAD TO WEST OF TOMKEN ROAD PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD



Vertical alignment options (**Figure 4.6B**) for the defined horizontal alignment described above were identified and evaluated. The elevated Option 2 was not carried forward as a feasible option as overpassing the 407 ETR and south off ramps at the Highway 410 Interchange would require a 700m. long and nearly 20m high viaduct. This viaduct would be very costly and visually obtrusive. The underpass Option 1 was selected to be carried forward.

SEGMENT B, EAST OF KENNEDY ROAD TO WEST OF TOMKEN ROAD: EVALUATION SUMMARY

This Segment does not include a station facility. Alignment Alternative 1 is the only feasible alignment. Runningway profile Option 1 underpassing Kennedy Road and the Highway 410/407 ETR Interchange was carried forward as the preferred profile option, as Option 2 would require a very long, and costly viaduct.

SEGMENT C.1: WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD – DIXIE ROAD AREA

For station and alignment evaluation purposes, Segment C (Tomken Road to Torbram Road) is divided into the **Dixie Road Area** and the **Bramalea Road Area**.

FIGURE 4.7A: SEGMENT C.1, WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES – DIXIE ROAD AREA

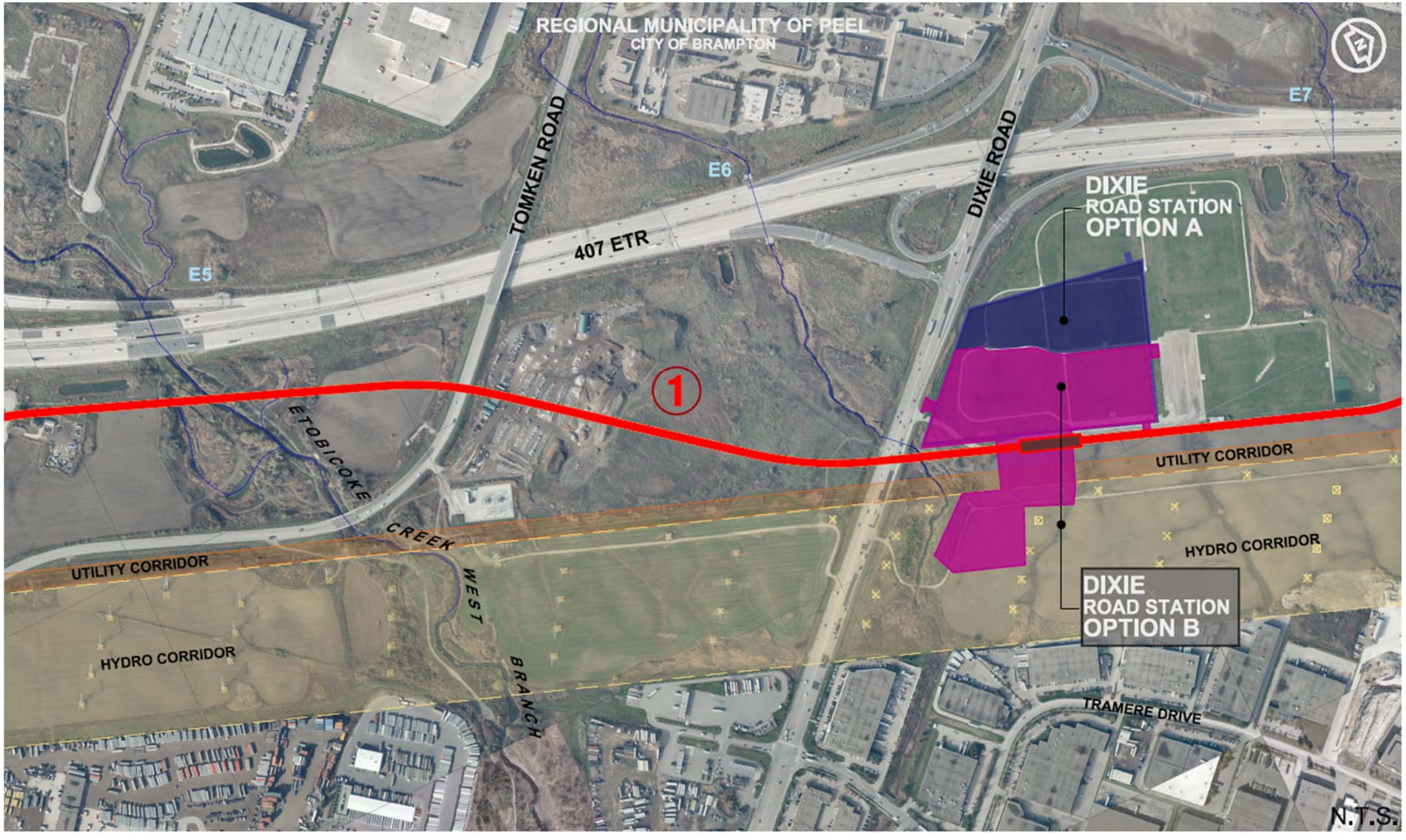


TABLE 4.4A: SEGMENT C.1, DIXIE ROAD AREA STATION SITE OPTIONS

CRITERIA/INDICATORS	OPTION A	OPTION B
Location	Complete Station facility located north of Utility Corridor, on existing soccer and cricket fields, on the east side of Dixie Road.	Split Station facilities north and south of Utility Corridor. Partial facility on existing soccer fields; partial facility on Hydro Corridor, on the east side of Dixie Road.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural and agricultural/manicured lands (soccer fields) with edge impacts to marsh community in the vicinity of Tributary of Etobicoke Creek West Branch (E6)). Vegetation removals: CUM1-1c – 0.37 h, MAM2b – 0.04 ha, Agricultural – 0.29 ha, Manicured – 7.47 ha. Tributary of Etobicoke Creek West Branch (E6 – permanent, warmwater, direct fish habitat, low sensitivity) located at southwest edge of the station site. Length of impactsed watercourse: 2.70 m (E6).	Minimal impacts to wildlife and vegetation (cultural and agricultural/manicured lands (soccer fields) with impacts to marsh community in the vicinity of Tributary of Etobicoke Creek West Branch (E6)). Vegetation removals: CUM1-1c – 0.73 ha, MAM2b – 0.06 ha, Agricultural – 2.19 ha, Manicured, 4.50 ha Tributary of Etobicoke Creek West Branch (E6 – permanent, warmwater, direct fish habitat, low sensitivity) located within/adjacent to proposed station site. Length of impacted watercourse: 21.41 m (E6).
Natural Environment: Potential Effects on Environmentally Significant Lanforms/Features	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Potential high water/shallow water table at location near watercourse and potential for groundwater impacts in this area. Potential impacts to wells located within/directly adjacent to station site.	Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area. Potential impacts to wells located within/directly adjacent to station site.
Natural Environmental: Potential Effects on Species/Habitats at Risk	No species at risk observed within station site. Barn swallow nesting colony identified in a structure east of the station site. Marginal wildlife species at risk habitat potential.	No species at risk observed within station site. Barn swallow nesting colony identified in a structure east of the station site. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	No areas of archaeological potential within station site. No impacts to previously registered archaeological sites/cemeteries.	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	No impacts.	No impacts.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.	No noise sensitive areas present.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015).	Station located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space, and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 7.61 ha, Class 2 – 0 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 5.73 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	Space available is insufficient to accommodate required parking-lot size without loss of leased soccer and cricket fields. Requires removal of approximately 50% of existing soccer fields (replace existing parking area with new replacement fields).	No private property impacts. No impacts to cricket fields. Minimizes impacts to leased soccer facility by locating majority of station parking within Hydro Corridor.
Impacts on Hydro/Utility Corridor	Park and Ride to be located on Provincial land north of Hydro/Utility Corridors.	Park and Ride partially located within Hydro Corridor with no impacts to Hydro One infrastructure and electromagnetic zone.
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	Signalized access to be located 210-metres south of 407 ETR ramp terminal. Bus loop can be accommodated on site. Transit stops along Dixie Road and pedestrian connection, from the stops can be provided. Site access separates station from parking area, potentially increasing vehicular/pedestrian conflicts.	Signalized access to be located 210-metres south of 407 ETR ramp terminal. Bus loop can be accommodated on site, north of Hydro Corridor. Transit stops along Dixie Road and pedestrian connection from the stops can be provided. Consider alternative signalized access to parking area within Hydro Corridor from Dixie Road, south of Utility Corridor. Split lot configuration minimizes vehicular/pedestrian conflict.

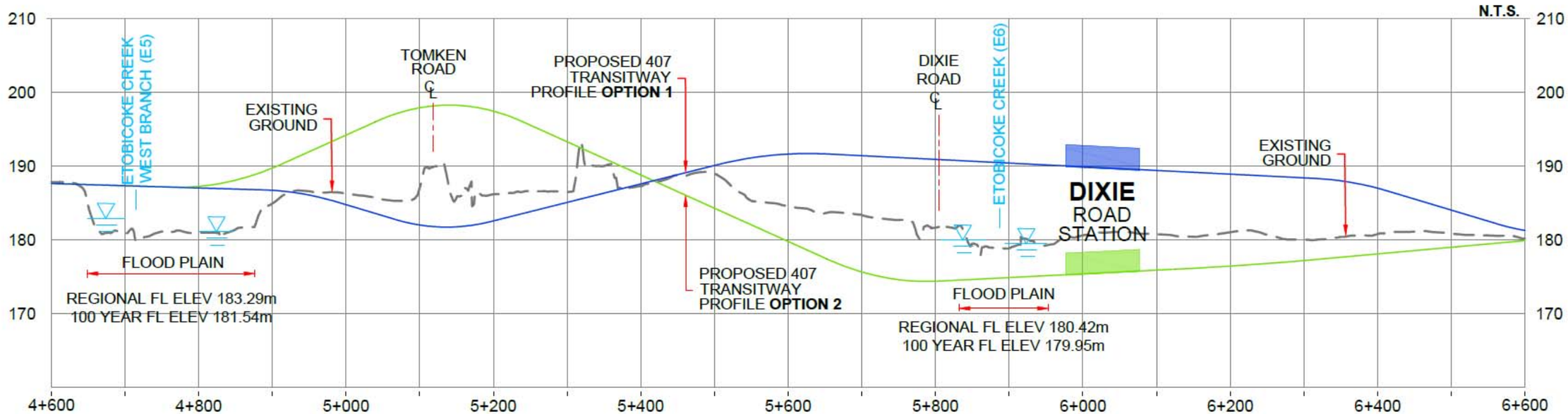
CRITERIA/INDICATORS	OPTION A	OPTION B
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Good access from 407 ETR via full interchange at Dixie Road. Staged implementation of Transitway viable with buses operating on 407 ETR.	Good access from 407 ETR via full interchange at Dixie Road. Staged implementation of Transitway viable with buses operating on 407 ETR.
Site Area and Opportunity to Expand	Space available is sufficient to accommodate required parking lot size. Approximately 620 (minimum) spaces and associated facilities. Additional could only be provided with removal of remaining soccer fields.	Space available is sufficient to accommodate required parking lot size. Approximately 620 (minimum) spaces and associated facilities. Opportunity to expand parking facility on Hydro Corridor.
Constructability and/or CostConsideration	No major constructability issues.	No major constructability issues.
OVERALL PREFERRED OPTIONS	**NOT CARRIED FORWARD.** Significant socio-economic impacts to Brampton community caused by major effects to soccer and cricket fields.	**CARRIED FORWARD.** Fewer impacts to soccer/cricket fields. Potential reconfiguration of soccer fields discussed and accepted by City of Brampton.

TABLE 4.4B: SEGMENT C.1, DIXIE ROAD AREA ALIGNMENT ALTERNATIVE

CRITERIA/INDICATORS	ALTERNATIVE 1
Description	Only available right of way that can efficiently serve the carried forward Dixie Road Station is along protected the 1998 Corridor Protection Study alignment, just north of Utility Corridor south of the existing soccer and cricket fields. The proposed runningway crosses under Tomken Road and over Dixie Road as illustrated and described in the profile options of this segment below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural and agricultural/manicured lands (soccer fields) with impacts to marsh community in the vicinity of Tributary of Etobicoke Creek West Branch (E6)). Vegetation removals: CUM1-1c – 1.39 ha, MAM2b – 0.04 ha, Agricultural – 0.38 ha, Manicured – 0.55 ha. Crosses Tributary of Etobicoke Creek West Branch (E6 – permanent, warmwater, direct fish habitat, low sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area. Potential impacts to wells located within/adjacent to alignment.
Natural Environmental: Potential Effects on Species/Habitats at Risk	Barn swallow nesting colony identified in a structure in the vicinity of alignment (east of Dixie Road).
Cultural Environment: Known Presence of Archaeological Potential	Area of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Alignment located at the eastern edge of a cultural heritage landscape (CHL 5 – 7385 Farmhouse Court/Benjamin Stewart Farm Well Ruin and Tower which is a listed City of Brampton cultural heritage site located west of Tomken Road). See **Table 4.3A** above.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Inter-urban Transit in Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 3.27 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	No private property impacts.
Impacts on Hydro/Utility Corridor	No impacts.

CRITERIA/INDICATORS	ALTERNATIVE 1
Impacts to 407 ETR Operation	No impacts.
Interlining Opportunity	Feasible interlining opportunity through Dixie Road.
Platform Location and Transit Connectivity	Platform located close to transit connections, parking and pedestrian access.
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment compliant with Transitway Design Standards.
Constructability and/or Cost Consideration	No major Constructibility issues.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD**

FIGURE 4.7B: SEGMENT C.1, WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD – DIXIE ROAD AREA



Vertical alignment options (Figure 4.7B) for the defined horizontal alignment described above were identified and evaluated. Option 1 consists of an underpass crossing of Tomken Road and an elevated section overpassing Dixie Road and the tributary of Etobicoke Creek watercourse and floodplain located just east of Dixie Road and was selected to be carried forward. Option 2 was eliminated as overpassing Tomken Road would require a 400m long bridge and at Dixie Road the underpass option was eliminated since the Transitway cannot cross under the tributary of Etobicoke Creek.

SEGMENT C.1, WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD – DIXIE ROAD AREA: EVALUATION SUMMARY

Following discussions and agreement with the City of Brampton, the Dixie Road Station site option, split between the protected provincial property and the Hydro Corridor (Option 2), was carried forward as the preferred option to minimize impacts on the community sports fields located on the provincial property. Alignment Alternative 1 is the only feasible alignment to allow adequate service to the selected station facility. Runningway profile Option 1, overpassing Dixie Road, was carried forward as the preferred profile option since Option 2 would cross under the Etobicoke Creek which is not feasible.

SEGMENT C.2: WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD – BRAMALEA ROAD AREA

This segment includes crossing of the GO Transit Kitchener rail line, which includes a station facility (Bramalea GO Station), north of 407 ETR. To provide connection opportunity to the GO service, potential station sites were investigated and a site west of Torbram Road, south of 407 ETR was identified as the only available lot for a station facility. Given that this site remains isolated from nearby major roads and is expected to have low park-and-ride demand, poor pedestrian access, and limited development potential in the immediate vicinity of the station, other transfer opportunities such as local or regional bus interlining service that could not only provide connectivity from GO passengers, but also potential users from Bramalea City Centre were analyzed.

FIGURE 4.7C: SEGMENT C.2, WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES – BRAMALEA ROAD AREA

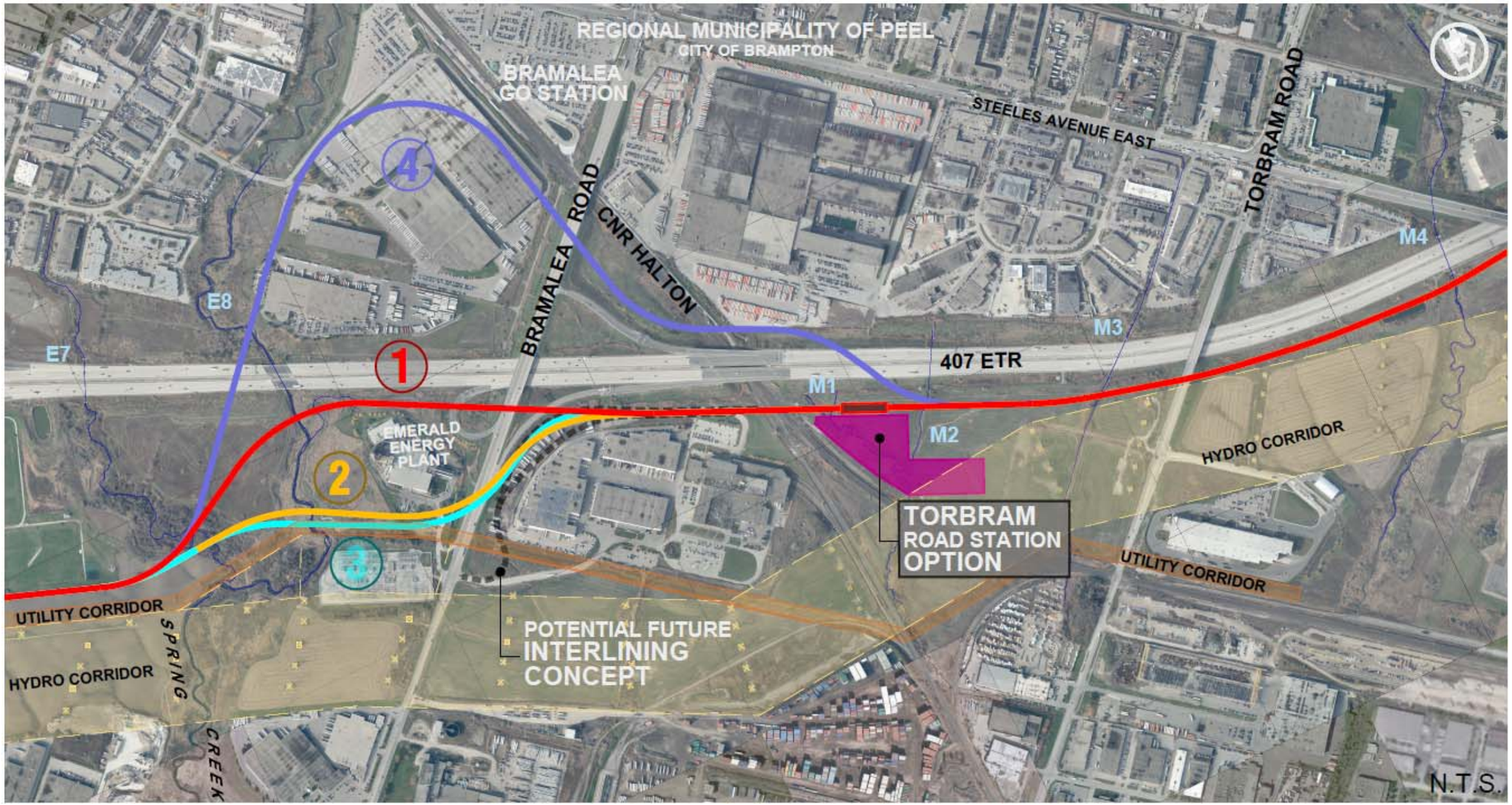


TABLE 4.4C: SEGMENT C.2, BRAMALEA ROAD AREA STATION SITE OPTION

CRITERIA/INDICATORS	TORBRAM ROAD STATION
Location	Only available site located just east of CN Halton Subdivision track, west of Torbram Road.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural land). Vegetation removals: CUM1-1f – 2.98 ha, Agricultural - 4.57 ha. Two Tributaries of Mimico Creek (M1 – permanent, warmwater, direct fish habitat, low sensitivity, and M2 – ephemeral, no fish habitat) located directly within station site. Length of impacted watercourses: 331.96 m (M1) and 45.37 m (M2).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in this area.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Station site directly adjacent to cultural heritage landscape (CHL 9 - Railscape) – not designated. CHL will be avoided.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). Site directly adjacent to GO railway.
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 6.68 ha, Class 2 – 0 ha, Class 3 -0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	No private property impacts.
Impacts on Hydro/Utility Corridor	Easement through Hydro Corridor is required to accommodate station's access from Torbram Road. Park and Ride partially located within Hydro Corridor with no impacts to Hydro One infrastructure and electromagnetic zone.
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	Signalized access to be located on Torbram Road, however station would be located greater than 500m from Torbram Road. Poor pedestrian access from arterial. Expected to function primarily as Park and Ride station. Bus service involves out-of-way travel. No viable connection to Bramalea GO Station.
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Poor access to/from 407 ETR. No interchange at Torbram Road. Not well suited for staged implementation of Transitway using 407 ETR.
Site Area and Opportunity to Expand	Space available is sufficient to accommodate required low demand parking-lot size. No opportunity for expansion.
Constructability and/or Cost Consideration	No major constructability issues.
OVERALL PREFERRED OPTIONS	**STATION NOT CARRIED FORWARD.** A station facility at this location was not carried forwarded due to low ridership, significant vehicular and pedestrian accessibility issues, and poor transit connection opportunities as indicated in Section 4.4.3. The site is being protected for environmental compensation purposes.

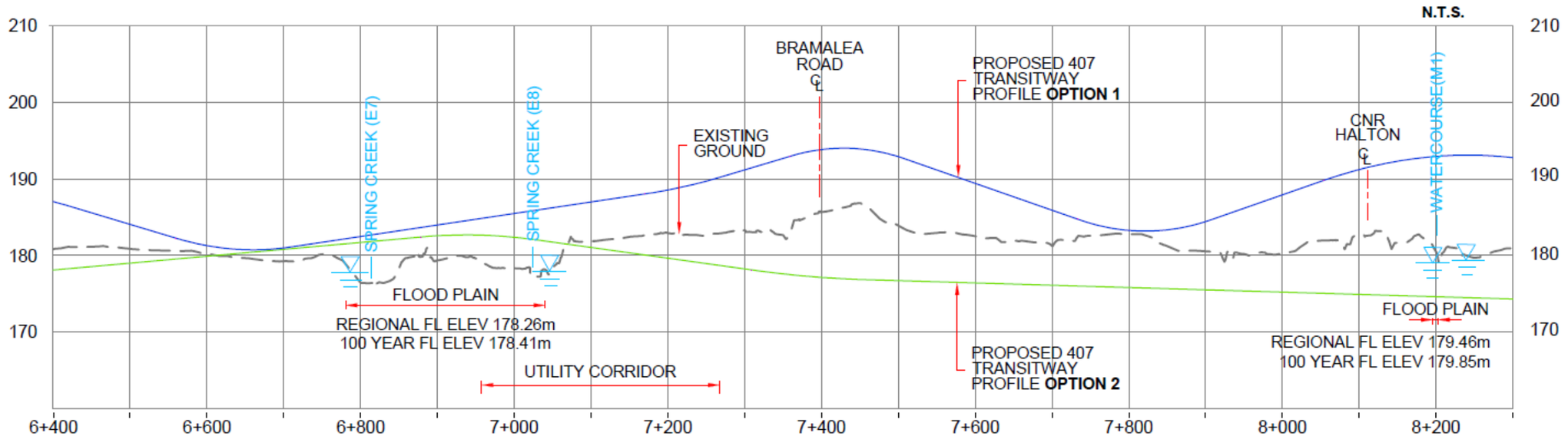
TABLE 4.4D: SEGMENT C.2, BRAMALEA ROAD AREA ALIGNMENT ALTERNATIVES

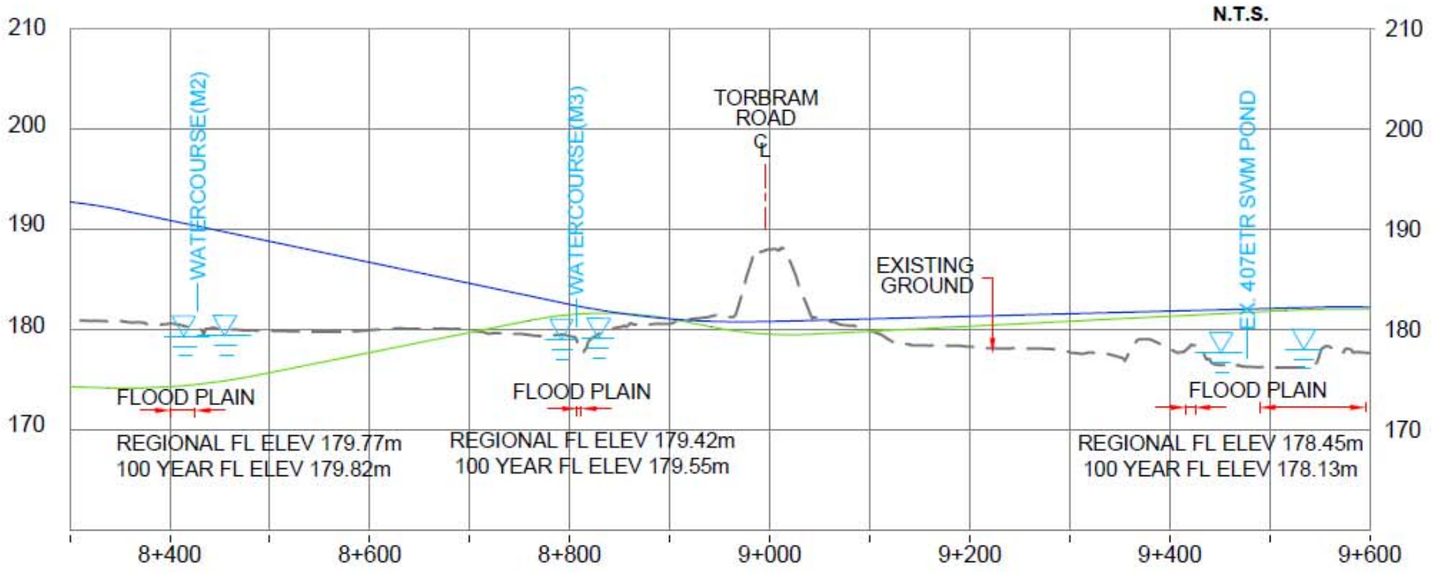
CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Description	Alignment north of Emerald Energy plant, south of 407 ETR, tunneling under 407 ETR Bramalea-Interchange. The runningway crosses over CNR tracks, Over watercourse M1, and under Torbram Road, as illustrated and described in the Segment profile below.	Alignment north of Utility Corridor, bridging over access road to the Emerald Energy plant, and over Bramalea Road. The runningway crosses over CNR tracks, Over watercourse M1, and under Torbram Road, as illustrated and described in the Segment profile below.	Alignment south of Emerald Energy plant and Enbridge pipe, over Utility Corridor, bridging over access road to the Emerald Energy plant, and over Bramalea Road. The runningway crosses over CNR tracks, over watercourse M1, and under Torbram Road, as illustrated and described in the Segment profile below.	Alignment crosses over 407 ETR twice to provide opportunity to connect with Bramalea GO Station. The runningway crosses over CNR tracks, Over watercourse M1, and under Torbram Road, as illustrated and described in the Segment profile below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands, and impacts to marsh community in the vicinity of Spring Creek (E8)). Vegetation removals: CUM1-1e and f, CUW1a – 4.92 ha, MAM2b – 0.30 ha, Agricultural -1.28 ha, Manicured – 0.73 ha Crosses five watercourses: Tributary of Spring Creek (E7 – permanent, warmwater, direct fish habitat, low sensitivity), Spring Creek (E8 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M1 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M2 – ephemeral, no fish habitat), and Tributary of Mimico Creek (M3 – permanent, warmwater, indirect fish habitat, low sensitivity). Alignment crosses approximately 250-metres of designated flood plain in the Spring Creek area.	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands, and impacts to marsh community in the vicinity of Spring Creek (E8)). Vegetation removals: CUM1-1e and f, CUT1b, CUW1a – 3.88 ha, MAM2b – 0.08 ha, Agricultural – 1.43 ha, Manicured – 0.98 ha Crosses five watercourses: Tributary of Spring Creek (E7 – permanent, warmwater, direct fish habitat, low sensitivity), Spring Creek (E8 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M1 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M2 – ephemeral, no fish habitat), and Tributary of Mimico Creek (M3 – permanent, warmwater, indirect fish habitat, low sensitivity). Alignment crosses approximately 120-metres of designated flood plain in the Spring Creek area.	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands). Vegetation removals: CUM1-1e and f, CUT1b, CUW1a – 4.10 ha, Agricultural – 1.73 ha, Manicured – 1.21 ha Crosses five watercourses: Tributary of Spring Creek (E7 – permanent, warmwater, direct fish habitat, low sensitivity), Spring Creek (E8 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M1 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M2 – ephemeral, no fish habitat), and Tributary of Mimico Creek (M3 – permanent, warmwater, indirect fish habitat, low sensitivity). Alignment crosses approximately 120-metres of designated flood plain in the Spring Creek area.	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands). Vegetation removals: CUM1-1 e and f, CUT1/CUW1b, CUW1a – 2.00 ha, Agricultural – 1.24 ha, Manicured – 0.34 ha (NOTE: only ELC communities south of 407 ETR have been calculated). Crosses five watercourses: Tributary of Spring Creek (E7 – permanent, warmwater, direct fish habitat, low sensitivity), Spring Creek (E8 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M1 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M2 – ephemeral, no fish habitat), and Tributary of Mimico Creek (M3 – permanent, warmwater, indirect fish habitat, low sensitivity). Alignment crosses approximately 120-metres of designated flood plain in the Spring Creek area.
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.	No impacts.	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas.
Natural Environment: Potential Effects on Species/Habitats at Risk	Barn swallow nesting colony identified in a structure in the vicinity of alignment (east of Dixie Road).	Barn swallow nesting colony identified in a structure in the vicinity of alignment (east of Dixie Road).	Barn swallow nesting colony identified in a structure in the vicinity of alignment (east of Dixie Road).	Barn swallow nesting colony identified in a structure in the vicinity of alignment (east of Dixie Road).
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Alignment crosses cultural heritage landscape (CHL 9 - Railscape) – not designated.	Alignment crosses cultural heritage landscape (CHL 9 - Railscape) – not designated.	Alignment crosses cultural heritage landscape (CHL 9 - Railscape) – not designated.	Alignment crosses cultural heritage landscape (CHL 9 - Railscape) – not designated.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.	No noise sensitive areas present.	No noise sensitive areas present.	No noise sensitive areas present.

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). Alignment crosses GO railway.	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). Alignment crosses GO railway.	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). Alignment crosses GO railway.	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space, Business Corridor, Industrial and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). Alignment crosses GO railway.
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 8.12 ha, Class 2 – 0 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 7.32 ha, Class 2 – 0 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 8.32 ha, Class 2 – 0 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 –6.46 ha, Class 2 – 0 ha, Class 3 – 2.44 ha.
Socio –Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	Municipal land west of Spring Creek. Impacts to private property located east of Bramlea Road. Potential for contamination exists at properties within alignment. Further investigation required for preferred alternative.	Municipal land west of Spring Creek. Impacts to private property located east of Bramlea Road. Impact on the the south end of Emerald Energy's property. Existing Emerald Energy infrastructure is not affected. Emerald Energy proposed expansion plans (not yet submitted for approval) would be affected. Potential for contamination exists at properties within alignment. Further investigation required for preferred alternative.	Impacts to private property located east of Bramlea Road. Municipal land west of Spring Creek. Potential for contamination exists at properties within alignment. Further investigation required for preferred alternative.	Significant property impacts. Requires purchase and removal private buildings adjacent to Bramalea GO Station. Potential impacts to one property (north of 407 ETR) - identified as a property with potential contamination issues. Further investigation required for preferred alternative.
Impacts on Hydro/Utility Corridor	No impacts.	Elevated runningway crosses Hydro Brampton low voltage pole lines running parallel to Bramalea Road.	Elevated runningway crosses Hydro Brampton low voltage pole lines running across Utility Corridor and parallel to Bramalea Road. Underground easement (for column footing) and approximately 250-metres long air easement (over Utility Corridor) concurrence required from Ministry of Municipal Affairs/Ministry of Housing west of Bramalea Road.	No impacts.
Impacts to 407 ETR Operation	Existing SWM pond located just north of Emerald Energy affected by alignment Alignment would preclude opportunity for future 407 ETR off ramp W-N/S). Current ETR expansion plans do not include W-N/S ramp.	No impacts.	No impacts.	No impacts.
Interlining Opportunity	Alignment prevents interlining service opportunity for transit service from Bramalea Mall and GO Transit Station.	Feasible interlining opportunity from Bramalea Mall and GO Bramalea Station via road connection opposite the access to Emerald Energy.	Feasible interlining opportunity from Bramalea Mall and GO Bramalea Station via road connection opposite the access to Emerald Energy.	Alignment provides mainline connection to Bramalea GO Station Alignment but prevents interlining service opportunity from Bramalea Mall.
Platform Location and Transit Connectivity	No Transitway stops in this Segment.	No Transitway stops in this Segment.	No Transitway stops in this Segment.	No Transitway stops in this Segment.
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	6% grade for 80m. Exceeds desirable standard gradient. This steep grade is necessary to meet clearance requirements over flood plain and under 407 ETR Interchange ramp. Travel time compatible with Options 2 and 3.	Standard geometry. Travel time compatible with Options 1 and 3.	Standard geometry. Travel time compatible with Options 1 and 2.	Substandard alignment required to connect with Bramalea GO Station. Considerable travel time increase by adding 0.5 km added to Transitway mainline.

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Constructability and/or Cost Factor	No traffic disruptions during construction. Complex and costly tunnel required under 407 ETR Interchange to avoid impacts to 407 ETR operations. Pumping station for drainage purposes is required at crossing under Bramalea Road. Bridge over existing 407 ETR dry pond, and Spring Creek flood plain required. Construction cost approximately twice as high as Alternatives 2 and 3.	No traffic disruptions during construction. This Alternative requires burying one 30m. span of Brampton low voltage lines which is feasible based on discussions with Hydro One Engineers. This Alternative requires partial acquisition of Emerald Energy property. Construction cost compatible with Alternative 3.	No traffic disruptions during construction. This Alternative requires burying three 30m. spans of Brampton low voltage lines which is feasible based on discussions with Hydro One Engineers. Construction cost compatible with Alternative 2.	Requires 2 overpasses of 407 ETR, 2 bridges over Spring Creek. Approximate construction cost close to three times higher than Alternatives 2 and 3. This Alternative also includes high cost private property requirements adjacent to the Bramalea GO Station.
OVERALL PREFERRED ALTERNATIVES	**NOT CARRIED FORWARD.** Due to the following: No interlining opportunity; high costs; constructability challenges; and drainage issues.	**NOT CARRIED FORWARD.** Impact on the the south end of Emerald Energy's property where they have planned expansion.	**CARRIED FORWARD.** No impacts to Emerald Energy's property and planned expansion. Agreeance by MMA to utilize the ROW above the existing Utility Corridor.	**NOT CARRIED FORWARD.** According to the ridership study results, direct transfer from the Bramalea GO Station forecast do not justify excessive construction and property costs, mainline travel time penalties and opportunity to provide interning services at this location.

FIGURE 4.7D: SEGMENT C.2, WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD – BRAMALEA ROAD AREA





Vertical alignment options (**Figure 4.7D**) for the defined horizontal alignment described above were identified and evaluated. At the crossing with Bramalea Road, the underpass option (Option 2) is not feasible as it conflicts with the recently installed high pressure Enbridge pipe and with the only access road to the Emerald Energy plant. Option 1 is selected to be carried forward.

SEGMENT C.2, WEST OF TOMKEN ROAD TO EAST OF TORBRAM ROAD – BRAMALEA ROAD AREA: EVALUATION SUMMARY

In this segment, there was only one site available for a station facility, located just east of the CNR track. This land-locked site would offer poor vehicular and pedestrian access and would preclude adequate transit transfer from the Bramalea GO Station as well as from local transit, which would result in poor ridership as described in **Chapter 2 of the EPR**. Consequently, the station site alternative in this segment was not carried forward.

Various runningway alignment alternatives were considered through the Bramalea Road area. The alternative carried forward as the preferred alignment is located just north and within an air easement in the Utility Corridor west of Bramalea Road and just south of 407 ETR, east of Bramalea Road. Runningway profile Option 1, overpassing Bramalea Road, was carried forward as the preferred profile option, as Option 2 conflicts with the recently installed high pressure Enbridge pipe and with the only access road to the Emerald Energy plant.

SEGMENT D: EAST OF TORBRAM ROAD TO EAST OF GOREWAY DRIVE

This segment covers an area of large developments north and south of 407 ETR, particularly on either side of Airport Road which includes an industrial development on the east side and the Convention Centre on the west side. Also in the case of the Goreway Drive area, the only available land for a potential station is the lot abutted by the Hydro Corridor, just west of Goreway Drive.

FIGURE 4.8A: SEGMENT D, EAST OF TORBRAM ROAD TO EAST OF GOREWAY DRIVE STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES

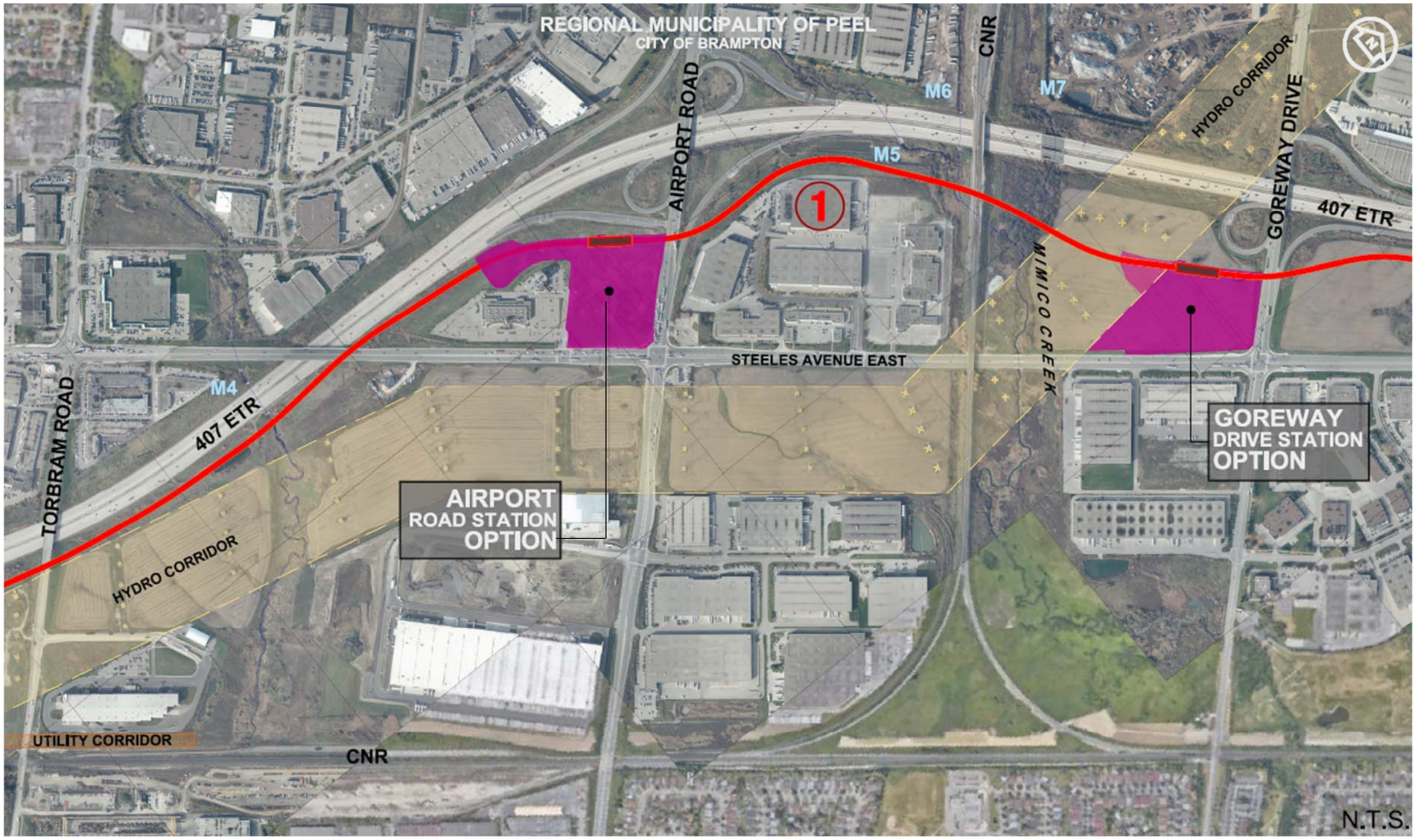


TABLE 4.5A: SEGMENT D, TORBRAM ROAD TO GOREWAY DRIVE STATION SITE OPTIONS

CRITERIA/INDICATORS	AIRPORT ROAD STATION	GOREWAY DRIVE STATION
Location	Facility located west of Airport Road and north of Steeles Avenue. Future potential parking expansion, south of Steeles Avenue.	Facility located north of Steeles Avenue and west of Goreway Drive.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and manicured lands), and no impacts to watercourses/fish habitat. Vegetation removals: CUM1-1g and CUT1c – 5.98 ha, Manicured - 0.49 ha. Distance from nearest watercourse: 146 m from a Tributary of Mimico Creek. No impacts to flood plain.	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured land), and no impacts to watercourses/fisheries habitat. Vegetation removals: CUM1-1g – 0.07 ha, Agricultural – 6.14 ha, Manicured – 0.30 ha Distance from nearest watercourse: 149 m from Mimico Creek. No impacts to flood plain.
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Potential impacts to one well located adjacent to station site.	Potential impacts to wells located within/directly adjacent to station site.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	No impacts.	No impacts.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Some potential impacts at picnic/outdoor area on the northern portion of the Hilton Garden Inn. The area is facing the existing 407 ETR thus elevated background sound levels may mask the proposed station.	No noise sensitive areas present.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan, Provincial Highways, and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015).	Station located in lands designated as Parkway Belt West Plan, Provincial Highways, and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 6.71 ha, Class 2 – 0 ha, Class 3 - 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 6.52 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	No private property impacts. Shared site access agreement is in place for the Transitway and Convention Centre.	No private property impacts. Minor property impacts in north-west quadrant of Goreway Drive/Steeles Avenue on Provincial land.
Impacts on Hydro/Utility Corridor	Potential additional Park and Ride within Hydro Corridor with no impacts to Hydro One infrastructure or electromagnetic zone.	Potential additional Park and Ride within Hydro Corridor with no impacts to Hydro One infrastructure or electromagnetic zone.
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	Existing signalized access on Steeles Ave, 200 m west of Airport Road will be utilized as primary access to commercial property and station. Pedestrian access via transit stops at Steeles Ave/Airport Road intersection. Traffic issues approaching the Station site are expected on peak periods.	New signalized access on Steeles Ave, 320 m west of Goreway Drive. Pedestrian access via transit stops at Steeles Ave/Goreway Drive intersection.
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Good access from 407 ETR from all ramps. Full 407 ETR interchange at Airport Road. Staged implementation of Transitway will be feasible with buses operating on 407 ETR.	Limited access from partial 407 ETR Interchange at Goreway Drive (to/from the east) may difficult adequate staged implementation of Transitway with buses operating on 407 ETR.
Site Area and Opportunity to Expand	Available space (including expansion south of Steeles Avenue) sufficient to satisfy demand Note that demand on Airport Road Station on its own, is greater than Goreway Drive Station.	Available space sufficient to satisfy demand. Opportunity to expand on Hydro Corridor.
Constructability and/or Cost Factor	No major constructability issues.	No major constructability issues.

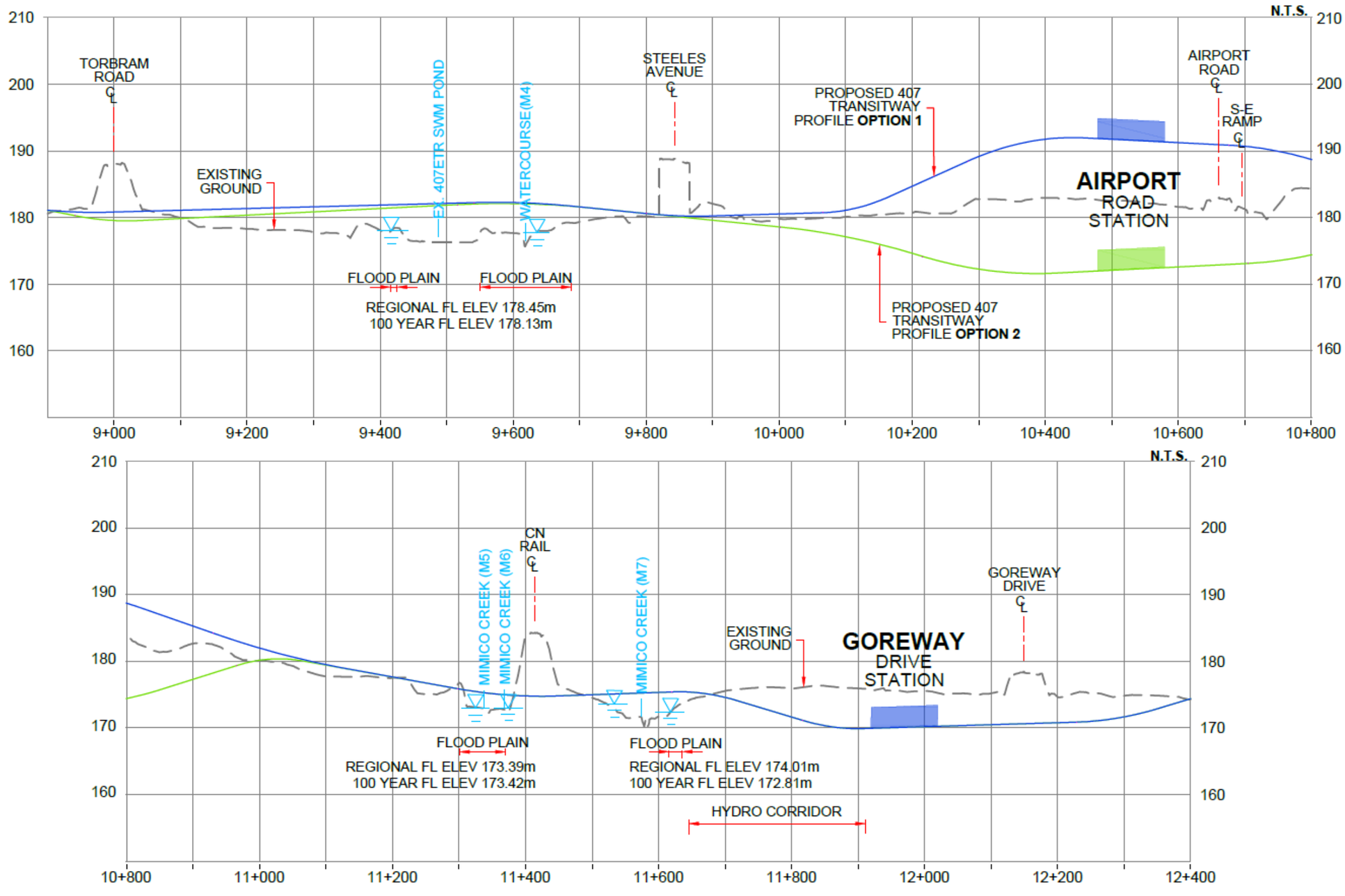
CRITERIA/INDICATORS	AIRPORT ROAD STATION	GOREWAY DRIVE STATION
OVERALL PREFERRED OPTIONS	**CARRIED FORWARD.** High demand; potential connection with Pearson; Airport expansion opportunity south of Steeles Avenue; adequate accessibility from both sides of 407 ETR will allow efficient implementation staging.	**CARRIED FORWARD.** Reduced accessibility from 407 ETR hinders efficient implementation staging. However, ridership demand as described in **Chapter 2 of the EPR**, is important due to high demand of developments west of Goreway Drive. thus, the site is carried forward for a future station.

TABLE 4.5B: SEGMENT D, TORBRAM ROAD TO GOREWAY DRIVE ALIGNMENT ALTERNATIVE

CRITERIA/INDICATORS	ALTERNATIVE 1
Description	Only available right of way is along the 1998 Corridor Protection Study protected corridor, abutted between Hydro Corridor, industrial development, and 407 ETR. 1998 Corridor Protection Study alignment refined to comply with MTO Transitway BRT and LRT Design Standards, avoiding major infrastructure and environmental impacts, and encroachment to private property. The proposed runningway crosses under Torbram Road, over the four watercourses, under Steeles Avenue and over Airport Road, as illustrated and described in the Segment profile below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (impacts to cultural communities and agricultural/manicured lands, and a marsh community in the vicinity of Tributary of Mimico Creek (M4)). Vegetation removals: CUM1-1g and CUT1d – 5.85 ha, MAM2-2b – 0.04 ha, Agricultural 0.57 ha, Manicured – 0.05 ha. Crosses Tributary of Mimico Creek (M4 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M5 – permanent, warmwater, direct fish habitat, low sensitivity), Tributary of Mimico Creek (M6 – permanent, warmwater, direct fish habitat, moderate sensitivity), and Mimico Creek (M7 – permanent, warmwater, direct fish habitat, moderate sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Alignment crosses cultural heritage landscape (CHL 9 - Railscape) – not designated.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, Open Space, Business Corridor and Lester B. Pearson Operating Area (as per City of Brampton Official Plan November 2015). Alignment crosses railway.
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 6.44 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	Impacts to private property (currently vacant land) east of Airport Road.
Impacts on Hydro/Utility Corridor	Alignment shifted closer to 407 ETR at Torbram Road to comply with Hydro One clearance requirements to existing towers. Transitway crosses Hydro Corridor west of Goreway Drive with no impacts to Hydro One infrastructure electromagnetic zone.
Impacts to 407 ETR Operation	No impacts if runningway bridges over ETR Interchanges. (This criterion is further assessed in the evaluation of vertical alignment options).
Interlining Opportunity	Feasible interlining opportunity at Airport Road Station.

CRITERIA/INDICATORS	ALTERNATIVE 1
Platform Location and Transit Connectivity	Transitway platforms located close to transit connections and Park and Ride.
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Horizontal curves around 407 ETR Interchanges compliant with MTO Design Standards in station areas. Alignment shifted to cross Steeles Avenue as close as possible to 407 ETR eastbound lanes, providing opportunity of utilizing southern span of Steeles Avenue Bridge to cross 407 ETR.
Constructability and/or Cost Factor	No major constructability issues.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD**

FIGURE 4.8B: SEGMENT D, EAST OF TORBRAM ROAD TO EAST OF GOREWAY DRIVE PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD



Vertical alignment options (**Figure 4.8B**) for the defined horizontal alignment described above were identified and evaluated. This segment has several watercourses and road and rail crossings that require grade separations. Option 1 was carried forward. It overpasses the watercourses, minimizing impacts and construction cost. Profile has a depressed stop platform and crosses under Goreway Drive.

SEGMENT D, EAST OF TORBRAM ROAD TO EAST OF GOREWAY DRIVE: EVALUATION SUMMARY

Both station sites considered in this segment (Airport Road Station and Goreway Drive Station) were carried forward due primarily to the significant ridership originating from different catchment areas. Selecting only one of the sites would reduce ridership potential and would over crowd the selected facility.

The only viable runningway alignment follows the 1998 Corridor Protection Study, just south of 407 ETR. Runningway profile Option 1 overpassing Airport Road was carried forward as Option 2 presented constructability issues and higher cost at the crossing of Airport Road.

SEGMENT E: EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427

This segment includes the future transfer station with the 427 Transitway which is planned to terminate at a station located between Highway 50 and Highway 427 just north of Steeles Avenue, and the crossing of the major Highway 427- 407 ETR Interchange. This segment also crosses tributaries of Mimico Creek and West Humber River.

FIGURE 4.9A: SEGMENT E, EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427 STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES

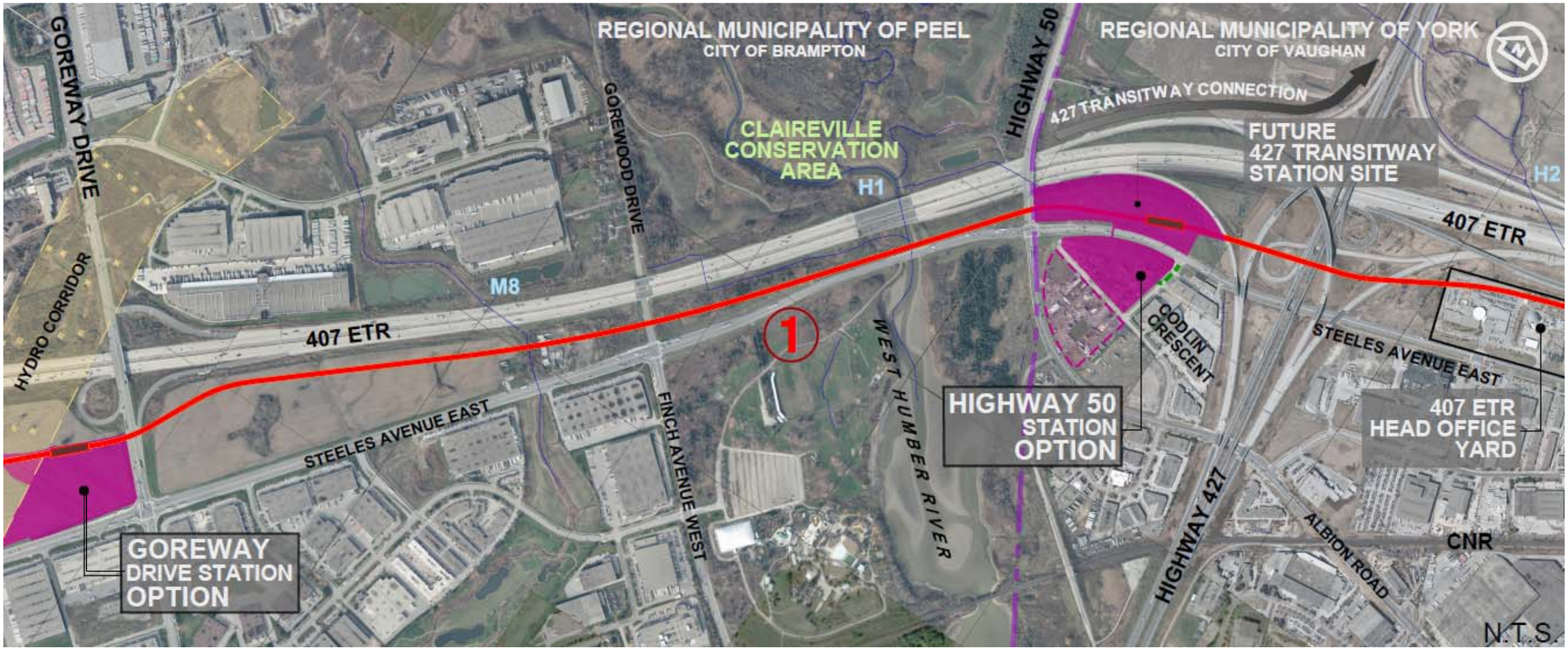


TABLE 4.6A: SEGMENT E, EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427 STATION SITE OPTION

CRITERIA/INDICATORS	HIGHWAY 50 STATION – INTEGRATED TO HIGHWAY 427 TRANSITWAY APPROVED STATION SITE
Location	Only feasible site integrated with Highway 427 Transitway approved station site, north of Steeles Avenue between Highway 50 (Albion Road) and Highway 427. Support facilities south of Steeles Avenue.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and manicured land), and no impacts to watercourses/fish habitat. Vegetation removals: CUM1-1h – 6.51 ha, Manicured – 0.09 ha. Distance from nearest watercourse: 139.40 m from West Humber River (H1).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Potential impacts to wells located within/directly adjacent to station site.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	No areas of archaeological potential within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Impacts to cultural heritage landscape (CHL 15 – Historic Settlement of Claireville, not designated) and to four built heritage resources (BHRs 15, 17, 19, and 21 – Claireville/Codlin Crescent properties, not designated) although these built heritage resources do not retain any cultural heritage significance from a local or provincial perspective. Potential indirect impacts to BHRs 16, 18, 20 and 22 – Claireville/Codlin Crescent properties, not designated.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Codlin Crescent properties/residences located within station site.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan (as per City of Vaughan Official Plan January 2017). Station located in lands designated as Employment Areas (as per City of Toronto Official Plan June 2015). The general footprint of the Highway 50 station site was identified/approved as part of the 427 Transitway EA. In the 427 Transitway Transportation Environmental Study Report (2015), the Highway 50 station was referred to as the 427/407 Transitway station site. The 407 Transitway (Hurontario to Highway 400) TPAP will confirm updates to the footprint and station design.
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 8.87 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	Municipal and private redevelopment properties south of Steeles Avenue required to accommodate parking. Potential for contamination exists at properties located directly within station site. Further investigation required for preferred alternative.
Impacts on Hydro/Utility Corridor	No impacts.
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	Signalized access on Steeles Ave, 400m east of Albion (opposite Alcide Street). Pedestrian tunnel required across Steeles Avenue to connect parking lot to station. Serves as Transit Hub, connecting to Highway 427 Transitway. Bus loop can be accommodated on site. Primarily serve Highway 427 Transitway transfers and demands to/from Highway 50.
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Poor access to/from 407 ETR (connection via Goreway Road or Highway 27). Not well suited for staged implementation of Transitway using 407 ETR.
Site Area and Opportunity to Expand	Site north of Steeles Avenue, sufficient to accommodate bus and PPUDO facilities. Site south of Steeles Avenue sufficient to accommodate parking.
Constructability and/or Cost Factor	Complex constructability due mainly to accessibility issues and adjacent Interchange.

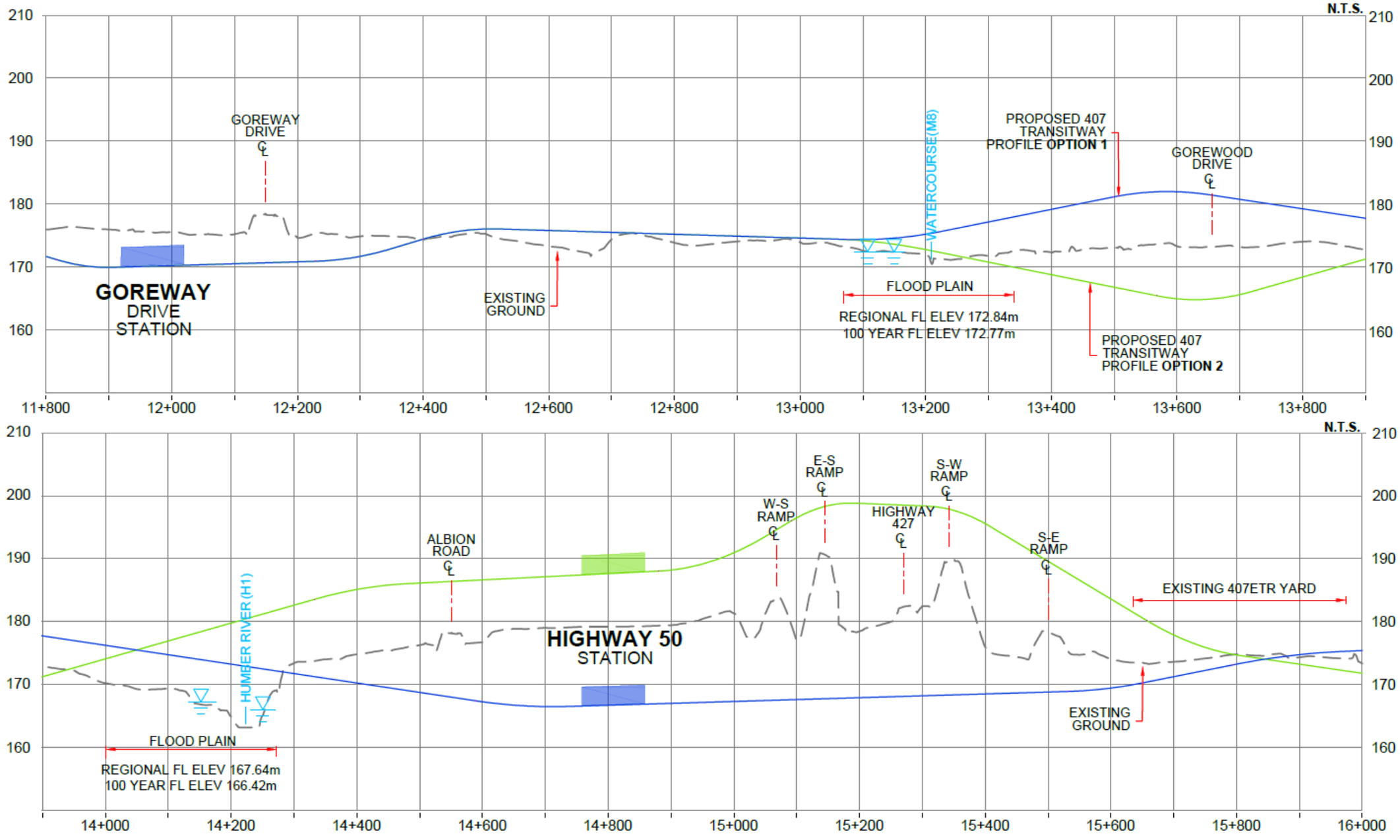
OVERALL PREFERRED OPTIONS	**CARRIED FORWARD.** Only site available in this Segment as it integrates with the 427 Transitway Station site proposed and approved. A Station at this location was carried forward as a result of the station nodes assessment summarized in Section 4.4.3.

TABLE 4.6B: SEGMENT E, EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427 ALIGNMENT ALTERNATIVE

CRITERIA/INDICATORS	ALTERNATIVE 1
Description	Only available right of way is along the 1998 Corridor Protection Study protected corridor, abutted between 407 ETR and Steeles Avenue. 1998 Corridor Protection Study alignment refined to comply with MTO Transitway BRT and LRT Design Standards, to avoid encroachment on private property. The proposed runningway profile runs under Goreway Drive, over Gorewood Drive, over the West Humber River, under Albion Road, und under the Highway 427 Interchange, as illustrated and described in the Segment profile below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands, and impacts to marsh community in vicinity of West Humber River (H1)). Vegetation removals: CUM1-1h, CUS1a, CUT1e and CUW1g – 4.81 ha, MAS2 – 0.05 ha, Agricultural 2.88 ha, Manicured – 0.01 ha Crosses Tributary of Mimico Creek (M8 – intermittent, warmwater, seasonal fish habitat, low sensitivity) and West Humber River (H1 – permanent, warmwater, direct fish habitat, moderate sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential .
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. Previously registered archaeological site (AkGv-121) requires Stage 3 archaeological assessment in the area of alignment west of West Humber River (H1).
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Impacts to cultural/built heritage in Highway 50 station south of Steeles Avenue (see **Table 4.6A**).
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Codlin Crescent properties/residences located south of alignment (within station site).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan, Provincial Highways, and Open Space (as per City of Brampton Official Plan November 2015). Alignment located in lands designated as Parkway Belt West Plan (as per City of Vaughan Official Plan January 2017). The general footprint of the Highway 50 station site (within the alignment in Segment E) was identified/approved as part of the 427 Transitway EA. In the 427 Transitway Transportation Environmental Study Report (2015), the Highway 50 station was referred to as the 427/407 Transitway station site. The 407 Transitway (Hurontario to Highway 400) TPAP will confirm updates to the footprint and station design. The 407 Transitway alignment in this area and a link to the 427 Transitway were also identified in the 427 Transitway TESR (2015).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 7.80 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	Impacts to private property between Goreway Drive and Gorewood Drive (and Codlin Crescent properties within Highway 50 Station). A property exchange is proposed between the Province and one private property owner (east of Goreway Drive) to acquire the runningway land requirement. Alignment within the 1998 Corridor Protection Study.
Impacts on Hydro/Utility Corridor	No impacts.
Impacts to 407 ETR Operation	No impacts.
Interlining Opportunity	Interlining opportunity with Highway 427 BRT or Highway 427 southbound at Highway 50 station.

CRITERIA/INDICATORS	ALTERNATIVE 1
Platform Location and Transit Connectivity	Poor access to/from 407 ETR (connection via Goreway Road or Highway 27). Not well suited for staged implementation of Transitway using 407 ETR; however, it provides connection to Highway 427 Transitway.
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment geometry restricted by 407 ETR Interchanges ramps.
Constructability and/or Cost Factor	Complex constructability of tunnel under Highway 427.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD.**

FIGURE 4.9B: SEGMENT E, EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427 PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD



Vertical alignment options (**Figure 4.9B**) for the defined horizontal alignment described above were identified and evaluated. Option 2 was not carried forward as a feasible option as overpassing the 427/407 ETR Interchange would require a 1600-metre long viaduct. This viaduct would be very costly and have an adverse visual impacts. The underpass Option 1 was selected to be carried forward.

SEGMENT E, EAST OF GOREWAY DRIVE TO EAST OF HIGHWAY 427: EVALUATION SUMMARY

In this segment there was only one site available for a station facility and one feasible runningway alignment. The station site will be integrated with the 427 Transitway at the site located west of the Highway 427/407 ETR Interchange, with Park and Ride facilities south of Steeles Avenue.

The alignment follows the 1998 Corridor Protection Study on the south side of 407 ETR. Runningway profile Option 1 underpassing the Highway 427/407 ETR Interchange, was carried forward as the preferred profile option as Option 2 would imply a very long, high and costly viaduct.

SEGMENT F: EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD

This Segment runs through areas of the City of Vaughan that will produce significant ridership for the 407 Transitway by means of transit transfer and/or Park and Ride.

FIGURE 4.10A: SEGMENT F, EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES

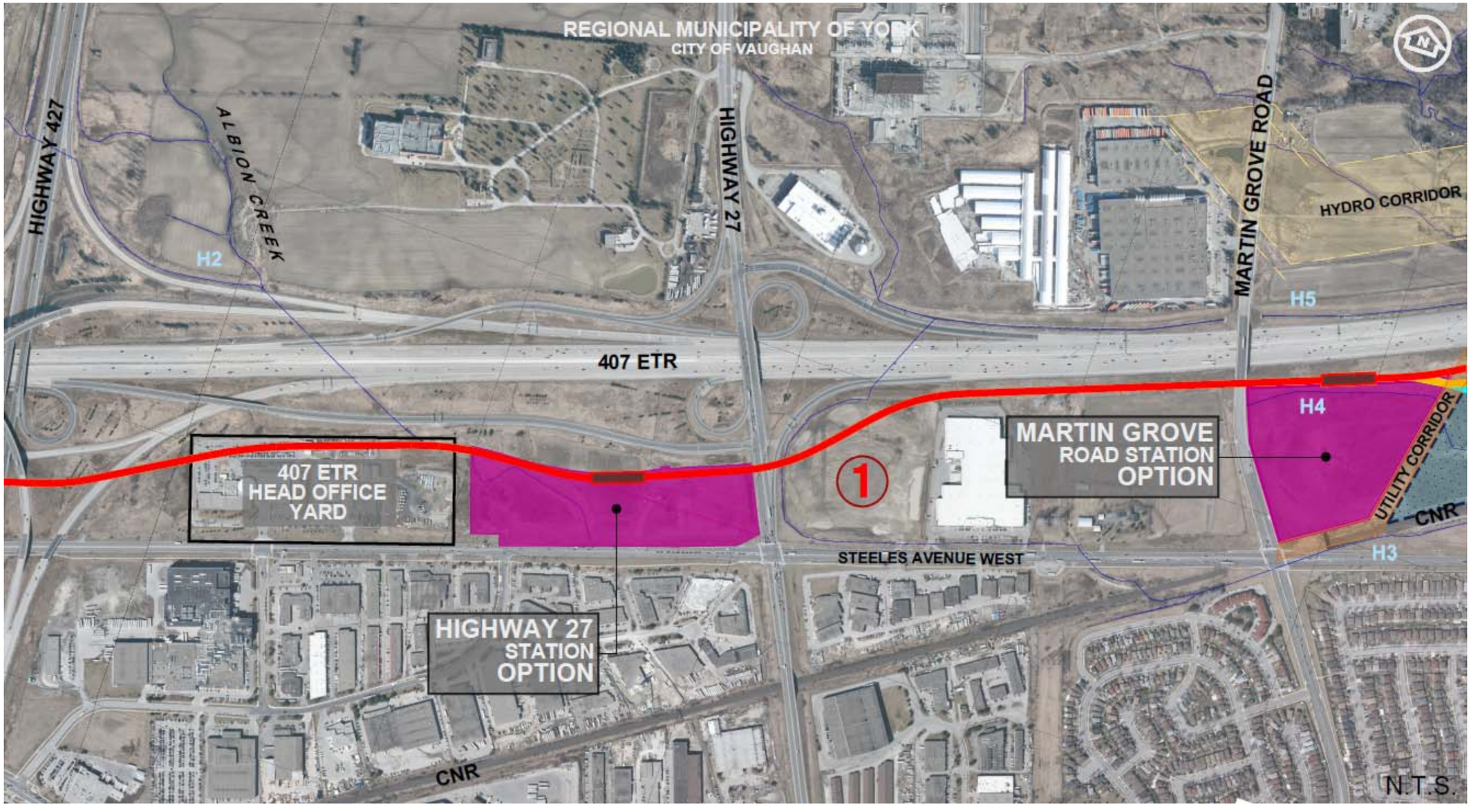


TABLE 4.7A: SEGMENT F, EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD STATION SITE OPTIONS

CRITERIA/INDICATORS	HIGHWAY 27 STATION OPTION	MARTIN GROVE ROAD STATION OPTION
Location	North of Steeles Avenue, west of Highway 27, east of 407 ETR headquarter facilities.	North of Steeles Avenue/CNR, east of Martin Grove Road.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands). Vegetation removals: CUM1-1h – 4.64 ha, Agricultural – 2.90 ha, Manicured – 0.02 ha Albion Creek (H2 – intermittent, warmwater, indirect fish habitat, low sensitivity) located directly within proposed station site. Potential channel realignment required. Length of impacted watercourse: 402.43 m (H2).	Minimal impacts to wildlife and vegetation (cultural vegetation). Vegetation removals: CUM1-1i – 7.63 ha. Tributary of Rainbow Creek (H4 – ephemeral, coldwater, no fish habitat, low sensitivity) located directly within proposed station site. Length of impacted watercourse: 375.41 (H4).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Potential high water/shallow water table at location near watercourse and potential for groundwater impacts in this area.	Potential high water/shallow water table at location near watercourse and potential for groundwater impacts in this area.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential. Redside Dace historical habitat (in Tributary of Rainbow Creek, H4) located directly within station site.
Cultural Environment: Known Presence of Archaeological Potential	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.	Area of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	No impacts.	No impacts. Avoids cultural heritage landscape (CHL 9 – Railscape, not designated) located south of station site.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	No noise sensitive areas present.	Noise sensitive area (residential subdivision) located in vicinity of station site (south of Steeles Avenue).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan (as per City of Vaughan Official Plan January 2017).	Station located in lands designated as Parkway Belt West Plan and Parks (as per City of Vaughan Official Plan January 2017).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 6.72 ha, Class 2 – 0 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 7.71 ha, Class 2 – 0 ha, Class 3 – 0 haImpacts.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	Shared access with 407 ETR Patrol Yard as agreed with ETR. Impacts to Provincial land west of Highway 27 that are leased for agricultural uses and these leases will need to be terminated. Potential impacts to property located west of station site (with potential for contamination).	Minor impacts on Provincial lands between Martin Grove Road and Utility Corridor.
Impacts on Hydro/Utility Corridor	No impacts.	No impacts.
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	Utilize existing signalized access on Steeles Ave and provide Right-In/Right-Out between site access and Highway 27. Bus loop can be accommodated on site. Pedestrian access via transit stops at Steeles Avenue/Highway 27 intersection.	There is no adequate accessibility to this site. Access on Martin Grove will require widening of 407 ETR overpass to accommodate left turn into the site. Access from Steeles Avenue will require grade separation of rail corridor and crossing of Utility Corridor. Pedestrian access via transit stops at Steeles Ave/Martin Grove intersection. Traffic congestion can be expected at site entrance and adjacent intersection (high site traffic and background traffic levels) at peak periods.
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Good access to/from 407 ETR via full interchange at Highway 27. Staged implementation of Transitway will be possible with buses operating on 407 ETR.	No direct access to/from 407 ETR. No interchange at Martin Grove Road. Not suited for staged implementation of Transitway using 407 ETR.

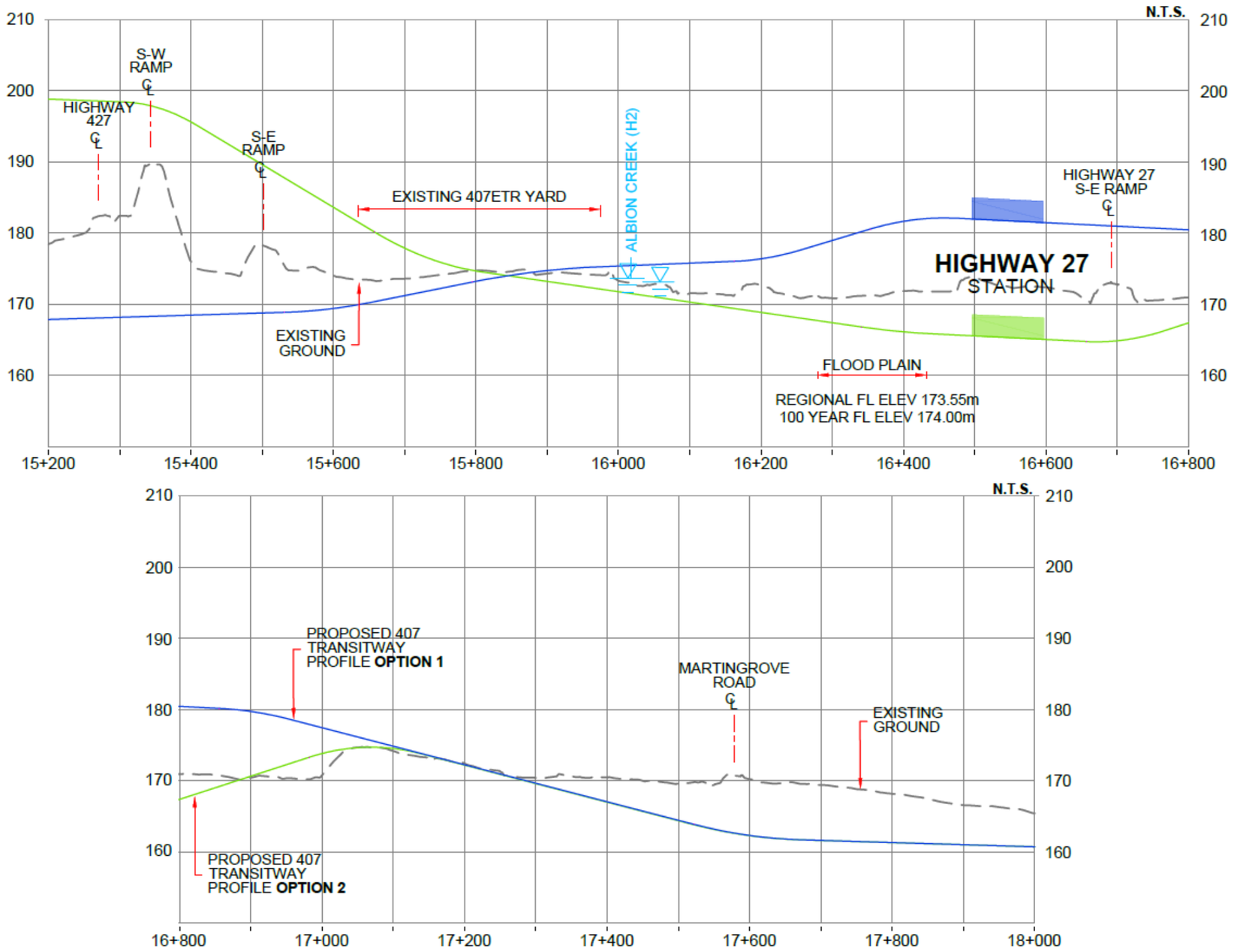
CRITERIA/INDICATORS	HIGHWAY 27 STATION OPTION	MARTIN GROVE ROAD STATION OPTION
Site Area and Opportunity to Expand	Sufficient site to accommodate short/medium term demand. No opportunity of future expansion.	Sufficient site to accommodate short/medium term demand. Opportunity of future parking expansion on Hydro Corridor.
Constructability and/or Cost Factor	No major constructability issues.	Complicated accessibility for station construction.
OVERALL PREFERRED OPTIONS	**CARRIED FORWARD.** Adequate accessibility from both sides of 407 ETR will allow efficient implementation staging. Direct access from Steeles Avenue. Site sufficient to satisfy demand.	**NOT CARRIED FORWARD.** Significant accessibility issues from the local road network. A signalized intersection to access the site from Martin Grove would require widening the existing bridge over 407 ETR to allow appropriate width for a required left-turn lane. Access from Steeles Avenue would require a grade separation from the existing CN track. No access from 407 ETR as there is no interchange at this location.

FIGURE 4.7B: SEGMENT F, EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD ALIGNMENT ALTERNATIVE

CRITERIA/INDICATORS	ALTERNATIVE 1
Description	Only available right of way is along 1998 Corridor Protection Study protected corridor, abutted between 407 ETR and industrial development, 1998 Corridor Protection Study alignment refined to comply with MTO Transitway BRT and LRT Design Standards, and to avoid encroachment on private property. The proposed runningway after tunneling under the Highway 427 Interchange, raises to cross over Highway 27, as illustrated and described in the Segment profile below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured lands). Vegetation removals: CUM1-1h and i – 2.95 ha, Agricultural – 0.79 ha, Manicured – 0.05 ha. Crosses Albion Creek (H2 - intermittent, warmwater, indirect fish habitat, low sensitivity) and runs immediately adjacent to/north of Tributary of Rainbow Creek (H4 – ephemeral, coldwater, no fish habitat, low sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential. Redside Dace historical habitat (in Tributary of Rainbow Creek, H4) located immediately south of alignment.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	No impacts.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive area (residential subdivision) located in vicinity of (but removed from/south of) alignment (south of Steeles Avenue and east and west of Martin Grove Road).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan (as per City of Vaughan Official Plan January 2017).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 4.87 ha, Class 2 – 0 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	Impacts to private property located east of Highway 27. Impacts to 407 ETR headquarters agreed with ETR. Potential for contamination exists at one property that the alignment crosses (immediately east of Highway 427).

CRITERIA/INDICATORS	ALTERNATIVE 1
Impacts on Hydro/Utility Corridor	Avoids Utility Corridor (crossing required within adjacent segment immediately east of Martin Grove Road). Alignment crosses Hydro Corridor between Highway 27 and Goreway Drive. No impacts to Hydro One infrastructure and electromagnetic zone.
Impacts to 407 ETR Operation	No impacts.
Interlining Opportunity	Location not suitable for interlining operation.
Platform Location and Transit Connectivity	Staged implementation of Transitway will be possible with buses operating on 407 ETR and connection at Highway 27 (adjacent connections to Airport Road, 6 km to the west, and Pine Valley, 4 km to the east).
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment constrained in vicinity of 407 ETR Patrol Yard.
Constructability and/or Cost Factor	Complex constructability. It requires four grade separations. Construction to be coordinated with 407 ETR to minimize impacts to 407 ETR headquarters operations.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD.**

FIGURE 4.10B: SEGMENT F, EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD



Vertical alignment options (**Figure 4.10B**) for the defined horizontal alignment described above were identified and evaluated. Option 2 underpassing Highway 27 was eliminated as it would cross under Albion Creek, which is not feasible. Option 1 overpassing Highway 27 was carried forward.

SEGMENT F, EAST OF HIGHWAY 427 TO EAST OF MARTIN GROVE ROAD: EVALUATION SUMMARY

Two station locations at Highway 27 and Martin Grove Road were investigated in this segment. The Highway 27 Station was carried forward as the site is strategically located, the ridership forecast is favourable as described in **Chapter 2 of the EPR**, it presents good potential transit connections and access is feasible from Steeles Avenue. Martin Grove Road Station was not carried forward due to unfeasible cost/efficient road network access, land-locked restricted site and no access from 407 ETR.

The only viable runningway alignment follows the 1998 Corridor Protection Study, just south of 407 ETR. Runningway profile Option 1, overpassing Highway 27, was carried forward as the preferred profile option, as Option 2 would cross under Albion Creek which is not feasible.

SEGMENT G: EAST OF MARTIN GROVE ROAD TO WEST OF ISLINGTON AVENUE

This segment crosses Rainbow Creek – Lower Humber River Valley lands located between 407 ETR and CNR right of way from Martin Grove Road to Islington Avenue. This section includes environmentally sensitive areas on the south side of 407 ETR. To avoid impacts to these sensitive areas, discussions have taken place with CNR to investigate the possibility of locating the 407 Transitway south of the CNR track, within CNR right of way. CNR officially responded on December 8th, 2017 stating that they do not support an alternative running parallel to their existing tracks, within their ROW (Alternative 3). Consequently, the other alignment alternatives impacting the valley lands have been assessed and discussed with regulatory agencies.

FIGURE 4.11A: SEGMENT G, EAST OF MARTIN GROVE ROAD TO WEST OF ISLINGTON AVENUE ALIGNMENT ALTERNATIVES

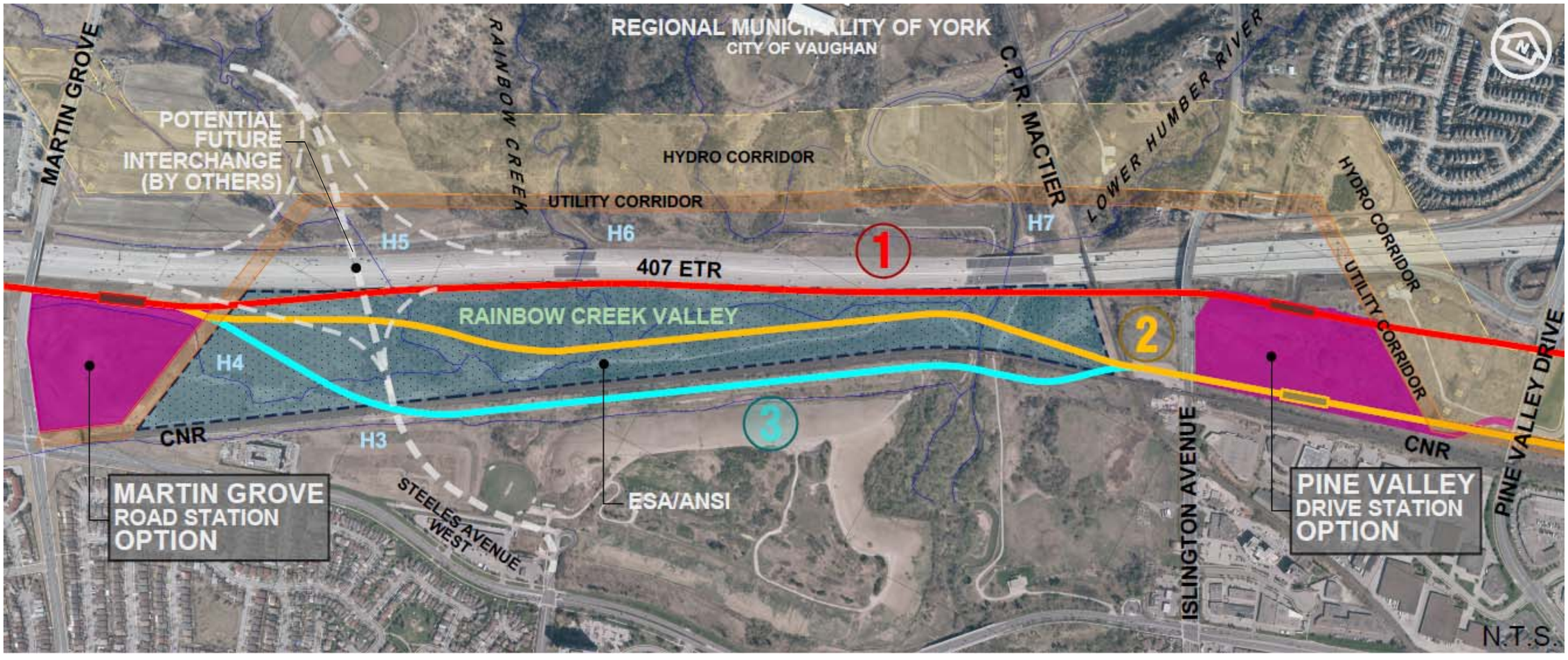
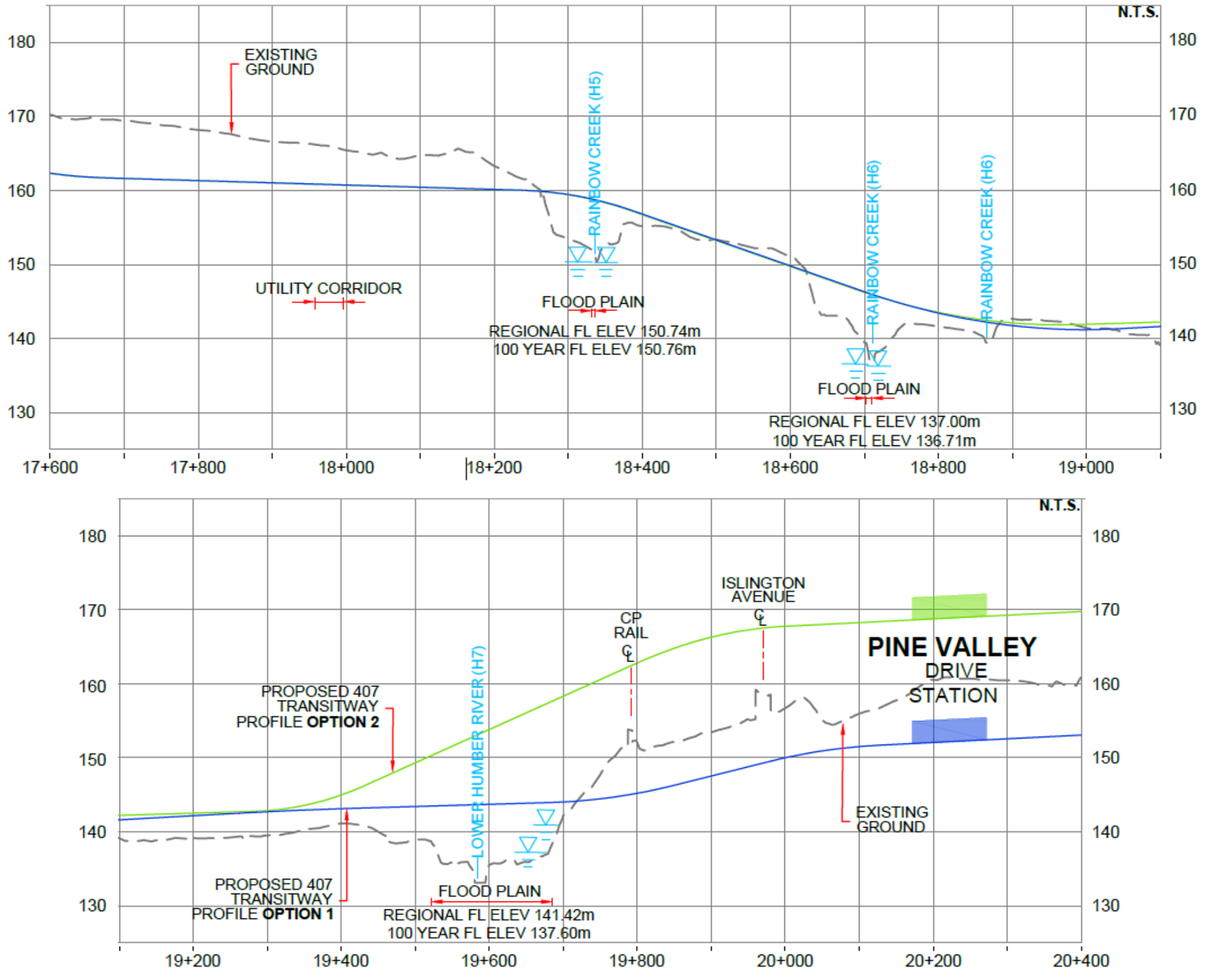


TABLE 4.8A: SEGMENT G, EAST OF MARTIN GROVE ROAD TO WEST OF ISLINGTON AVENUE ALIGNMENT ALTERNATIVES

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Description	Alignment very close to eastbound lanes of 407 ETR. 1998 Corridor Protection Study alignment, adjacent to 407 ETR. The runningway follows the 407 ETR profile, crossing over the Rainbow Creek/Lower Humber River watercourses, under the CP track, and under Islington Avenue, as illustrated and described in the Segment profile below.	Alignment between 407 ETR and CNR right of way. The runningway follows the 407 ETR profile, crossing over the Rainbow Creek/Lower Humber River watercourses, under the CP track, and under Islington Avenue, as illustrated and described in the Segment profile below.	Alignment within CNR right of way, south of existing tracks. The runningway crosses under the two freight rail lines and under Islington Avenue.
Natural Environment: Potential Effects on Natural Heritage Resources	Moderate impacts to wildlife and vegetation community edges (including high quality forest and wetland communities as well as cultural communities). Alignment runs parallel and adjacent to 407 ETR to minimize impacts on wildlife and vegetation communities. Vegetation removals: CUM 1-1i to k, CUT1g, and CUW1c and e – 5.22 ha, MAM2c and SWD4-1a and c – 0.16 ha, FOD 6-5b, FOD7-3, and FOM7 – 0.12 ha. Runs north of and parallel to Tributary of Rainbow Creek (H4 – ephemeral, coldwater, no fish habitat, low sensitivity), crosses Tributary of Rainbow Creek (H5 – permanent, coldwater, direct fish habitat, high sensitivity), crosses and runs immediately parallel to Rainbow Creek (H6 – permanent, coldwater, direct fish habitat, high sensitivity), and crosses Lower Humber River (H7 – permanent, warmwater, direct fish habitat, moderate sensitivity). Distance of watercourse realignment: Approximately 250 m of Rainbow Creek (H6).	Significant impacts to wildlife and vegetation communities including fragmentation of high quality forest and wetland communities as well as cultural communities (most impacts of the three alternatives). Vegetation removals:CUM1-1i, j and k, CUS1b, CUT1i, CUW1c and e – 4.79 ha, FOD6-5b, FOD7-3, FOM6-1, FOM7 – 0.64 ha, MAS2-1b, SWD4-1a, b and c – 0.54 ha. Runs north of and parallel to Tributary of Rainbow Creek (H4 – ephemeral, coldwater, no fish habitat, low sensitivity), crosses Tributary of Rainbow Creek (H5 – permanent, coldwater, direct fish habitat, high sensitivity) twice, crosses and runs immediately parallel to and south of Rainbow Creek (H6 – permanent, coldwater, direct fish habitat, high sensitivity), and crosses Lower Humber River (H7 – permanent, warmwater, direct fish habitat, moderate sensitivity). Realignment of Rainbow Creek potentially required. Distance of watercourse realignment: Approximately 300 m of Rainbow Creek (H6).	Minimized impacts to wildlife and vegetation (cultural communities and deciduous forest community in the vicinity of the Lower Humber River (H7)). Generally avoids significant wildlife habitat/vegetation communities. Fewest impacts of the three alternatives. Vegetation removals: CUM1-1i, j and k, CUW1f – 5.76 ha, FOD4 – 0.18 ha. Runs north of and parallel to Tributary of Rainbow Creek (H4 – ephemeral, coldwater, no fish habitat, low sensitivity), crosses H4, crosses and runs immediately parallel to/impacts Tributary of Lower Humber River (H3 – intermittent, coldwater, indirect fish habitat, moderate sensitivity) and crosses Lower Humber River (H7 – permanent, warmwater, direct fish habitat, moderate sensitivity). Realignment of Tributary of Lower Humber River (H3) potentially required. Distance of watercourse realignment: Approximately 400 m of Tributary of Lower Humber River (H3).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts. Avoids ANSI and ESA.	Potential edge impacts to ANSI and ESA.	No impacts. Avoids ANSI and ESA.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourses and potential for groundwater impacts in these areas. Potential impacts to wells located within/adjacent to alignment.
Natural Environment: Potential Effects on Species/Habitats at Risk	Eastern Wood Pewee observed in vicinity of alignment (in wooded area at Rainbow Creek (H6)). Barn swallow nesting colony identified under the Highway 407 bridge structure at the Lower Humber River (H7). Habitat for wildlife species at risk. Redside Dace historical habitat (in Tributary of Rainbow Creek (H4), Tributary of Rainbow Creek (H5) and Rainbow Creek H6)).	Eastern Wood Pewee observed in vicinity of alignment (in wooded area at Rainbow Creek (H6)). Barn swallow nesting colony identified under the Highway 407 bridge structure at the Lower Humber River (H7) north of the alignment. Habitat for wildlife species at risk. Redside Dace historical habitat (in Tributary of Rainbow Creek (H4),Tributary of Rainbow Creek (H5), and Rainbow Creek (H6).	No species at risk observed. Marginal wildlife species at risk habitat potential. Redside Dace historical habitat (in Tributary of Rainbow Creek (H4), and Tributary of Lower Humber River (H3)).
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Alignment crosses cultural heritage landscape (CHL 1 – Humber River, designated), and crosses cultural heritage landscape (CHL 9 – Railscape, not designated).	Alignment crosses cultural heritage landscape (CHL 1 – Humber River, designated), crosses and runs parallel to cultural heritage landscape (CHL 9 – Railscape, not designated), and runs parallel to built heritage resource (BHR 7 – York CNR Bridge, on TRCA Humber River Bridge Inventory).	Alignment crosses cultural heritage landscape (CHL 1 – Humber River, designated), and crosses twice and runs parallel to/within cultural heritage landscape (CHL 9 – Railscape, not designated).
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive area (residential subdivision) located in vicinity of/south of alignment (south of Steeles Avenue and east of Martin Grove Road).	Noise sensitive area (residential subdivision) located in vicinity of/south of alignment (south of Steeles Avenue and east of Martin Grove Road).	Noise sensitive area (residential subdivision) located in vicinity of/south of alignment (south of Steeles Avenue and east of Martin Grove Road).

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan and Parks (as per City of Vaughan Official Plan January 2017). Alignment crosses proposed GO Station and railway in the City of Vaughan. Alignment located in lands designated as part of the Region of York's Regional Greenlands System and Greenlands System Vision (as per Region of York's Official Plan October 2016).	Alignment located in lands designated as Parkway Belt West Plan, Parks and Natural Areas (as per City of Vaughan Official Plan January 2017). Alignment crosses railway in the City of Vaughan. Alignment located in lands designated as part of the Region of York's Regional Greenlands System and Greenlands System Vision (as per Region of York's Official Plan October 2016).	Alignment located in lands designated as Parkway Belt West Plan, Parks and Natural Areas (as per City of Vaughan Official Plan January 2017). Alignment crosses two railways in the City of Vaughan. Alignment located in lands designated as part of the Region of York's Regional Greenlands System and Greenlands System Vision (as per Region of York's Official Plan October 2016).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 4.40 ha, Class 2 – 0.51 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 3.86 ha, Class 2 – 1.07 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 4.06 ha, Class 2 – 0.85 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	No private property impacts. Alignment contained within Parkway Belt West lands.	No private property impacts. Alignment contained within Parkway Belt West lands.	No private property impacts. Uses CNR right of way along Rainbow Creek/Lower Humber River Valley area.
Impacts on Hydro/Utility Corridor	No impacts on Hydro or Utility Corridors.	No impacts on Hydro or Utility Corridors.	No impacts on Hydro or Utility Corridors.
Impacts to 407 ETR Operation	Runningway close to eastbound core lanes. 407 ETR has been consulted and has no objections.	No impacts.	No impacts.
Interlining Opportunity	Location not suitable for interlining operation.	Location not suitable for interlining operation.	Location not suitable for interlining operation.
Platform Location and Transit Connectivity	No station and no interlining requirements in this segment.	No station and no interlining requirements in this segment.	No station and no interlining requirements in this segment.
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment compliant with Transitway Design Standards.	Alignment compliant with Transitway Design Standards.	Alignment compliant with Transitway Design Standards.
Constructability and/or Cost Factor	Complex constructability to avoid effects on 407 ETR operation and environmental sensitive fixtures. Complicated construction access.	Complex constructability to avoid major effects on trails and environmental sensitive fixtures. Difficult construction access.	Requires additional tunnel under CNR track. Avoids viaduct along the valley.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD.** Being located as close as permissible to 407 ETR, this Alternative presents the least environmental impact to the Rainbow Creek/Lower Humber River Valley lands within available right of way.	**NOT CARRIED FORWARD.** This Alternative presents the most significant environmental effects to Rainbow Creek/Lower Humber River Valley; and the highest cost.	**NOT CARRIED FORWARD.** Following extensive communication, CNR conveyed that they do not support the Transitway running within their right of way.

FIGURE 4.11B: SEGMENT G, EAST OF MARTIN GROVE ROAD TO WEST OF ISLINGTON AVENUE PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD



Vertical alignment options (**Figure 4.11B**) for the defined horizontal alignment described above were identified and evaluated. Option 1 was carried forward as the preferred option. Option 2 is not feasible as the horizontal alignment just east of this segment crosses the Hydro Corridor precluding the possibility of an elevated profile. Option 1 crosses over Lower Humber River, under the CP track, and under Islington Avenue.

SEGMENT G, EAST OF MARTIN GROVE ROAD TO WEST OF ISLINGTON AVENUE: EVALUATION SUMMARY

This Segment does not include a station facility. The runningway alignment carried forward as preferred is the north option (Alternative 1) which is located very close to 407 ETR to minimize impacts on the Rainbow Creek/Lower Humber River Valley. Should CNR agree to negotiate a Transitway right of way with MTO in the future, the EPR may be amended to seek approval for Alternative 3.

SEGMENT H.1: WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 – PINE VALLEY DRIVE AREA

For station and alignment evaluation purposes, Segment H West of Islington Avenue to East of Highway 400 is divided into the **Pine Valley Drive Area** and the **Weston Road/Highway 400 Area**.

The Pine Valley Drive area is a segment that includes a station and two alignment alternatives located on either side of the Hydro Corridor.

FIGURE 4.12A: SEGMENT H.1, WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 STATION SITE OPTIONS AND ALIGNMENT ALTERNATIVES – PINE VALLEY DRIVE AREA

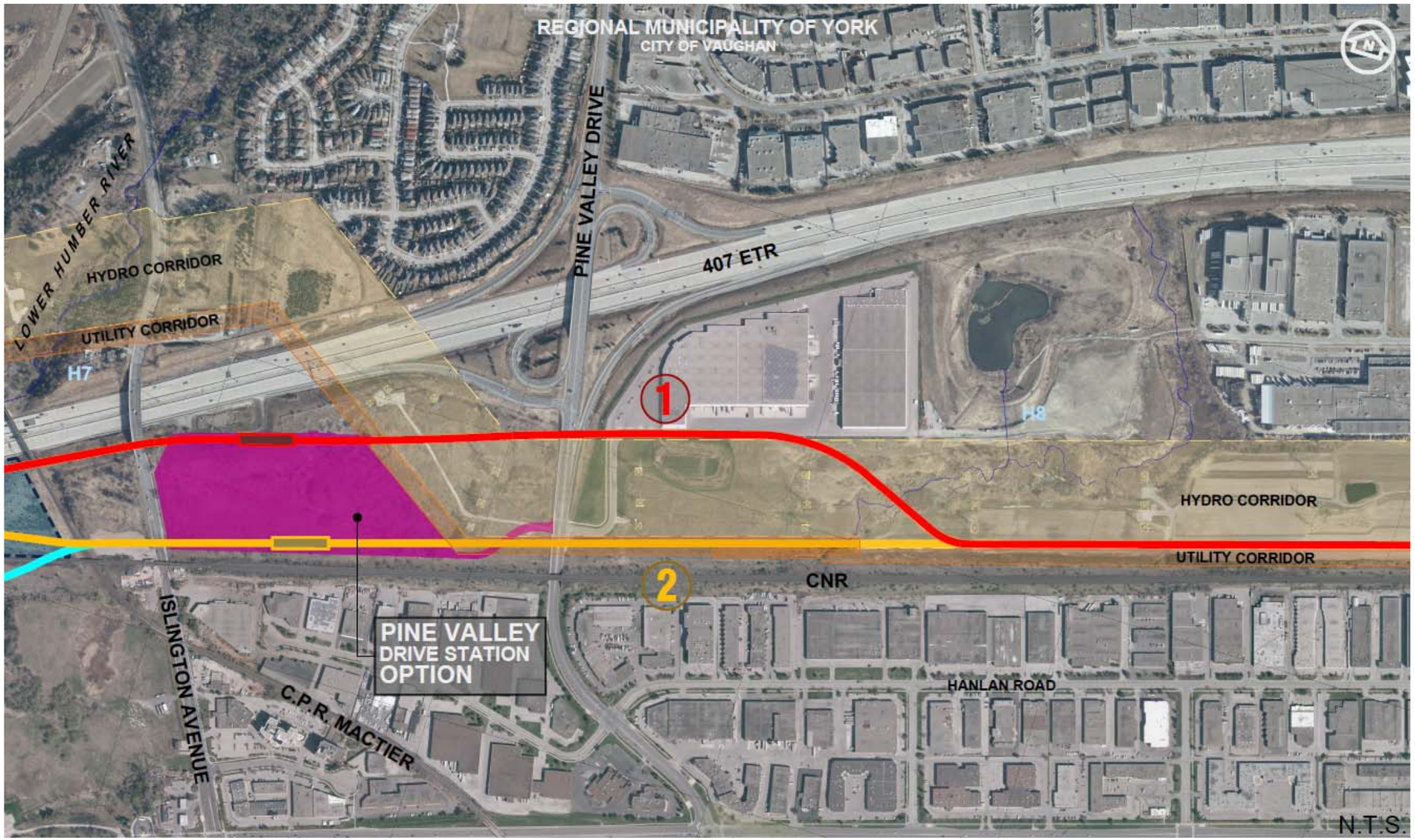


TABLE 4.9A: SEGMENT H.1, PINE VALLEY DRIVE AREA STATION SITE OPTION

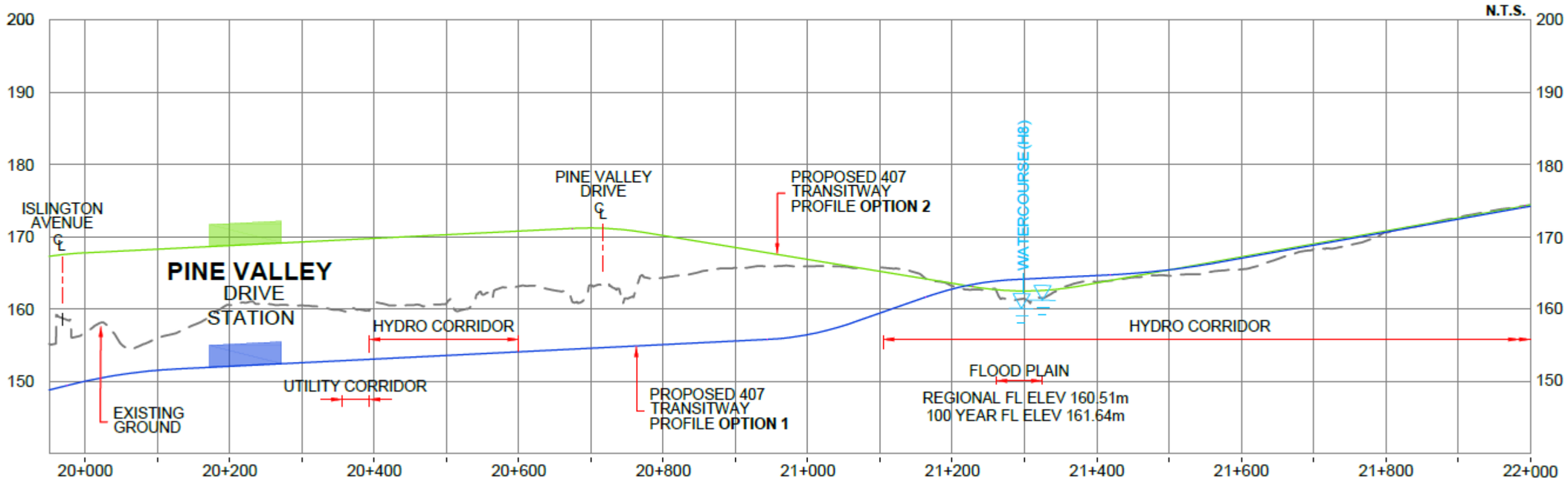
CRITERIA/INDICATORS	PINE VALLEY DRIVE STATION
Location	Only site available located just east of Islington Avenue, north of the CNR tracks.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation), and no impacts to watercourses/fish habitat. Vegetation removals: CUM1-1k – 9.05 ha. Distance from nearest watercourse: 229 m from Lower Humber River (H7).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	No impacts.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within station site. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Cultural heritage landscape (CHL 9 – Railscape, not designated) located immediately adjacent to/south of station site.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive area (residential subdivision) located in vicinity of/north of station site (north of 407 ETR and east of Islington Avenue).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Station located in lands designated as Parkway Belt West Plan, Natural Areas and Infrastructure/Utilities (as per City of Vaughan Official Plan January 2017). Station runs adjacent to/north of railway in the City of Vaughan. Station located in lands designated as part of the Region of York's Greenlands System Vision (as per Region of York's Official Plan October 2016).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 0 ha, Class 2 – 9.09 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for Private Property (Full or Partial Take)*	Site contained within Parkway Belt West, therefore no private property impacts.
Impacts on Hydro/Utility Corridor	No impacts.
Accessibility from Local Road Network *Relative ease of Vehicular/Pedestrian access to Station Location*	New traffic signals required on Islington approximately 200-metres south of 407 ETR and on Pine Valley approximately 200-metres south of EB 407 ETR off ramp signalized intersection. Potential delay to Islington and Pine Valley traffic during peak times that could be mitigated through demand actuated signal operation. Limited development within walking distance, but pedestrian access will be available from both Islington and Pine Valley.
Accessibility from 407 ETR *Close Ramp Access to/from 407 ETR*	Full access to/from 407 ETR at Pine Valley Drive.
Site Area and Opportunity to Expand	Potential expansion of parking in Hydro lands if needed.
Constructability and/or Cost Factor	No major constructibility issues.
OVERALL PREFERRED OPTIONS	**CARRIED FORWARD.** Only site available in this Segment. A Station at this location was carried forward as a result of the station nodes assessment described in Section 4.4.3.

TABLE 4.9B: SEGMENT H.1, PINE VALLEY DRIVE AREA ALIGNMENT ALTERNATIVES

CRITERIA/INDICATORS	ALTERNATIVE 1	ALTERNATIVE 2
Description	North of Pine Valley Drive Station site; crossing Hydro Corridor from north to south, 300-metres east of Pine Valley Drive. The runningway crosses under Pine Valley Drive and presents a depressed profile across the Hydro Corridor, as illustrated and described in the Segment profile below.	North of CNR right of way; south of Pine Valley Drive Station site.The runningway crosses under Pine Valley Drive and runs parallel to the Hydro Corridor at grade.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural/manicured land and fragmentation of marsh community in the vicinity of Tributary of Lower Humber River (H8)). Vegetation removals: CUM1-1k and l – 3.10 ha, MAM 2d – 0.24 ha, Agricultural – 1.72 ha, Manicured – 0.35 ha. Crosses Tributary of the Lower Humber River (H8 – permanent, warmwater, indirect fish habitat, low sensitivity).	Minimal impacts to wildlife and vegetation (cultural vegetation and impacts to very edge of marsh community in the vicinity of Tributary of Lower Humber River (H8)). Less impacts than Alternative 1 as this alternative generally follows the existing railway corridor. Vegetation removals: CUM1-1 k and l – 2.56 ha, MAM2d – 0.02 ha. Crosses Tributary of the Lower Humber River (H8 – permanent, warmwater, indirect fish habitat, low sensitivity).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area.	Properties not expected to be dependent on groundwater wells for water supply. Potential high water/shallow water table at location of watercourse and potential for groundwater impacts in this area.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Cultural heritage landscape (CHL 9 – Railscape, not designated) located immediately adjacent to/south of alignment.	Cultural heritage landscape (CHL 9 – Railscape, not designated) located immediately adjacent to/south of alignment.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive area (residential subdivision) located in vicinity of/north of alignment (north of 407 ETR and east of Islington Avenue).	Noise sensitive area (residential subdivision) located in vicinity of/north of alignment (north of 407 ETR and east of Islington Avenue).
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Parkway Belt West Plan, Infrastructure/Utilities, General Employment and Prestige Employment (as per City of Vaughan Official Plan January 2017). Alignment runs adjacent to railway in the City of Vaughan. Alignment located in lands designated as part of the Region of York's Greenlands System Vision (as per Region of York's Official Plan October 2016).	Alignment located in lands designated as Parkway Belt West Plan and Natural Areas, and lies adjacent to Infrastructure/Utilities lands (as per City of Vaughan Official Plan January 2017). Alignment runs adjacent to railway in the City of Vaughan. Alignment located in lands designated as part of the Region of York's Greenlands System Vision (as per Region of York's Official Plan October 2016).
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 3.11 ha, Class 2 – 2.52 ha, Class 3 – 0 ha.	Impacts to Class 1, 2 and 3 soils: Class 1 – 0.40 ha, Class 2 – 2.38 ha, Class 3 – 0 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	No private property impacts. Potential for contamination exists at one property within alignment. Further investigation required for preferred alternative.	No private property impacts.
Impacts on Hydro/Utility Corridor	Runningway parallel to Hydro Corridor. No impacts to Hydro One infrastructure and electromagnetic zone.	Runningway parallel to Hydro Corridor. No impacts to Hydro One infrastructure and electromagnetic zone.
Impacts to 407 ETR Operation	No impacts.	No impacts.
Interlining Opportunity	Location not suitable for interlining operation.	Location not suitable for interlining operation.
Platform Location and Transit Connectivity	Runningway runs along north side of station area. No interlining opportunity required at this location.	Runningway runs along south side of station area. No interlining opportunity required at this location.

Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment compliant with Transitway Design Standards.	Alignment compliant with Transitway Design Standards.
Constructability and/or Cost Factor	No major constructibility issues.	No major constructability issues.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD.** Only alternative alignment that connects with preferred alignment alternative west of Islington Avenue.	**NOT CARRIED FORWARD.** This alternative alignment does not connect with preferred alignment alternative west of Islington Avenue.

FIGURE 4.12B: SEGMENT H.1, WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD – PINE VALLEY DRIVE AREA



Vertical alignment options (**Figure 4.12B**) for the defined horizontal alignment described above were identified and evaluated. Option 2 is not feasible due to Hydro One transmission line vertical electromagnetic clearance requirements; consequently, Option 1 was carried forward as the preferred option.

SEGMENT H.1, WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 – PINE VALLEY DRIVE AREA: EVALUATION SUMMARY

In this segment, there was only one site available for a station facility, located between Islington Avenue and the Utility Corridor, which is the carried forward Pine Valley Drive Station site. The runningway alignment carried forward is the alternative that crosses Pine Valley Drive on the north side of the Hydro Corridor, as this is the profile connects best with the preferred alignment west of Islington Avenue.

SEGMENT H.2: WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 – WESTON ROAD/HIGHWAY 400 AREA

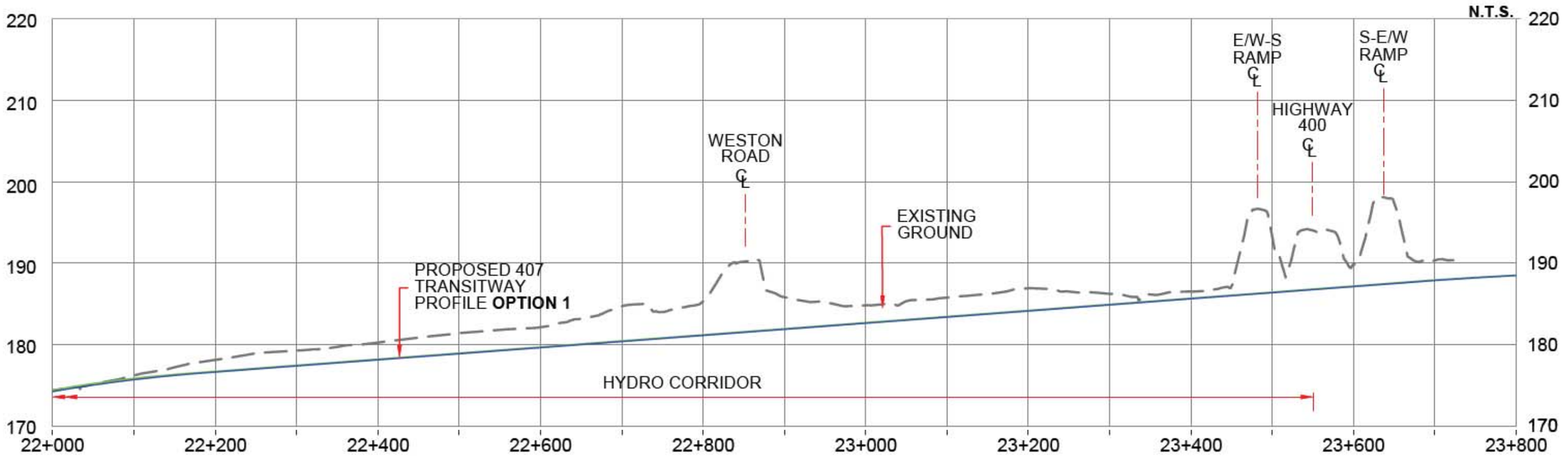
This segment does not include a station facility and provides only one alignment opportunity located on the south edge of the Hydro Corridor north of the Utility Corridor.

FIGURE 4.12C: SEGMENT H.2, WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400– WESTON ROAD/HIGHWAY 400 AREA

TABLE 4.9C: SEGMENT H.2, WESTON ROAD/HIGHWAY 400 AREA ALIGNMENT ALTERNATIVE

CRITERIA/INDICATORS	ALTERNATIVE 1
Description	Only feasible alignment abutted between the Hydro Corridor and the CNR right of way. The runningway runs parallel to the Hydro Corridor at grade, crossing under Weston Road and the Highway 400 Interchange, as illustrated and described in the Segment profile below.
Natural Environment: Potential Effects on Natural Heritage Resources	Minimal impacts to wildlife and vegetation (cultural vegetation and agricultural land), and no impacts to watercourses/fish habitat. Vegetation removals: CUM1-1 – 2.68 ha, Agricultural – 1.28 ha. Distance from nearest watercourse: 145.41 m from Tributary of Black Creek (East of Highway 400).
Natural Environment: Potential Effects on Environmentally Significant Landforms/Features	No impacts.
Natural Environment: Potential Effects on Geology and Hydrogeology	No impacts.
Natural Environment: Potential Effects on Species/Habitats at Risk	No species at risk observed. Marginal wildlife species at risk habitat potential.
Cultural Environment: Known Presence of Archaeological Potential	Areas of archaeological potential (requiring Stage 2 assessment) within alignment footprint. No impacts to previously registered archaeological sites/cemeteries.
Cultural Environment: Potential Impacts to Known Indigenous Lands	No impacts.
Cultural Environment: Potential Effects on Cultural/Built Heritage	Cultural heritage landscape (CHL 9 – Railscape, not designated) located immediately adjacent to/south of alignment.
Socio-Economic Environment: Potential Effects on Adjacent Noise Sensitive Areas	Noise sensitive area (hotel with an outdoor area) located south of the alignment in an industrial area.
Socio-Economic Environment: Land Use Compatibility with Provincial and Municipal Plans and Policies	Alignment located in lands designated as Inter-urban Transit in Parkway Belt West Plan and Infrastructure/Utilities (as per City of Vaughan Official Plan January 2017). Alignment runs adjacent to railway in the City of Vaughan.
Socio-Economic Environment: Impacts to Prime Agricultural Lands	Impacts to Class 1, 2 and 3 soils: Class 1 – 4.18 ha, Class 2 – 0 ha, Class 3 – 0.18 ha.
Socio-Economic Environment: Private Property Impacts *Requirement for private property (full or partial take)*	No private property impacts. Potential for contamination exists at one property within alignment. Further investigation required for preferred alternative.
Impacts on Hydro/Utility Corridor	Runningway parallel to Hydro Corridor with no impacts to Hydro One infrastructure and electromagnetic zone.
Impacts to 407 ETR Operation	No impacts.
Interlining Opportunity	Location not suitable for interlining operation.
Platform Location and Transit Connectivity	No station along this segment. No interlining opportunity required at this location.
Alignment Geometry *Level of Compliance with MTO Transitway Design Standards* *Impacts of Geometry on Operation (Travel Time)*	Alignment compliant with Transitway Design Standards. Restricted north shoulder width to comply with Hydro One clearance requirements to towers.
Constructability and/or Cost Factor	Tunnel required to cross under Highway 400.
OVERALL PREFERRED ALTERNATIVES	**CARRIED FORWARD.** Alignment connects Transitway alignment east of Highway 400, approved as part of the 407 Transitway from Highway 400 to Kennedy Road TPAP approved in 2012).

FIGURE 4.12D: SEGMENT H.2, WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 PROFILE OPTIONS FOR ALIGNMENT ALTERNATIVE CARRIED FORWARD – WESTON ROAD/HIGHWAY 400 AREA



This segment presents only one feasible vertical alignment (**Figure 4.12D**) that connects to the profile east of Highway 400, approved as part of the 407 Transitway from Highway 400 to Kennedy Road TPA approved in 2012. Profile under Weston Road and Highway 400.

SEGMENT H.2, WEST OF ISLINGTON AVENUE TO EAST OF HIGHWAY 400 – WESTON ROAD/HIGHWAY 400 AREA: EVALUATION SUMMARY

This segment does not include a station facility and provides only one alignment opportunity abutted between the Hydro Corridor and the Utility Corridor. The horizontal and vertical alignment connect with the horizontal and vertical alignment of the TPAP approved 407 Transitway Central Section from Highway 400 to Kennedy Road (TPAP aporoved in 2012).