Eglinton West LRT:
Development of Conceptual Grade Separations

STAGE ONE REPORT
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INTRODUCTION

The Eglinton Crosstown LRT is one of the first-wave projects of Metrolinx’s regional transportation plan. Originally envisioned to run from Pearson Internal Airport to Kennedy Station, the funded portion of the line is a 19-kilometre LRT corridor that runs from Kennedy Station to Mount Dennis. This portion of the line is currently under construction with estimated completion in 2021, while the western portion is approved but unfunded.

The second portion is being advanced as the Eglinton West LRT. It is proposed to extend the Eglinton Crosstown from Mount Dennis to Pearson Airport as part of the City of Toronto’s SmartTrack initiative. The extended LRT corridor will help to enhance connectivity between Pearson Airport and the City of Toronto connecting the substantial cluster of jobs located at the airport and surrounding areas to communities east along Eglinton Avenue.

A 2010 Environmental Assessment provided an understanding of the impact of the project if built entirely at grade. An initial business case determined that grade separations should be explored at three key locations to determine potential impacts on traffic and neighbouring properties. These locations are:

- East Grade Separation – Jane Street to Scarlet Road
- West Grade Separation – Martin Grove Road
- Kipling Grade Separation

Toronto City Council added two more locations to be studied for potential grade separations:

- Islington Grade Separation
- Royal York Separation
This report provides an overview of the long list of options to implement grade separations along the west portion of Eglinton. The high-level study and evaluation of potential grade separation concepts is intended to inform decision-making around the location and configuration of grade separations to ensure that options carried forward for more detailed evaluation deliver the greatest level of cost-benefit from a traffic perspective while responding to the needs of the local community and wider city.

The evaluation framework is divided into three stages: 1) Feasibility 2) Benefits and Costs, and 3) Strategic Values. This report summarizes the findings of Stage One: Feasibility. It contains a description of each grade separation location, an overview of key considerations, a summary of the options explored and the identification of a preferred option to be carried forward for further study.

For each preferred option the report provides a high-level overview of the potential impact on existing and planned neighbouring properties, relationship to floodplains, pedestrian/cyclist/bus transfer access, traffic impact, high-level cost estimates and a summary of the pros and cons in relationship to the other options. A description of the options which were not identified to be carried forward including a reasoning behind the decision is contained within the appendix of this report.

The next stages of the project will compare the impacts of each grade separation option with the at-grade LRT to determine the most beneficial configuration. This work will also involve a cost/benefit analysis, public realm impacts, and assessment of the outstanding planning issues to move the project forward. This analysis will include a presentation of the options to the general public and engagement of various communities to seek input on the design options.
ASSUMPTIONS

These are the assumptions that have been used as part of the analysis of grade separation options.

EA ALIGNMENT
The assessment assumes that each grade separation ties back to the original 2010 EA alignment, in the centre of the roadway. In several locations since the EA was conducted, land has been developed along the route. However, adequate right-of-way width has been preserved for the at-grade solution at all locations and so the development of these lands will not create conflicts with at-grade stops though grade separations may require additional land-taking.

FATAL FLAWS
An option is deemed to have a fatal flaw if they result in:

- an underground section or portal that is within a flood plain;
- a slope of between 4-5% for a distance greater than 250m or any slope above 5% - this is consistent with the latest LRT design parameters being applied to the Finch West LRT;
- conflict with a major gas main or utility corridor - though not necessarily fatal, this would constitute a major flaw that could compromise the ability to implement the option due to technical or financial feasibility as the cost of relocation the gas line has been estimated at $6-8 million per 100m;
- impact on existing neighbourhoods or uses such as schools; and
- the inability to service a planned mid-block stop.

PORTAL AND STRUCTURAL IMPACTS ON TRAFFIC
Portals can be located far enough away from the intersection to allow for an intersection design that is similar to the existing condition. In this configuration, left turns can be configured in an opposing layout resulting in no changes to the operations at the intersection (i.e. protected left turns would not be required) from the existing conditions. Sight lines would not be obstructed at intersections with this configuration. For the elevated condition, LRT crossings are generally offset, and would not require modification to the existing intersection lane geometry. For the elevated condition where the LRT crosses over the roadway, the median would require widening to accommodate the piers that may be necessary for the overhead structures. Piers would be located in a raised concrete median, and the median would generally be 5m in width. This widened intersection would require modification to lane geometry to accommodate the 5.0m wide median such that opposing left turns would be offset left turns, causing a change to the intersection operations (due to the need for protected left turns).

PARAMETRIC COSTING COMPARISON
Each of the grade separation options in the report have been analyzed for a high-level cost estimation. As the estimates are preliminary, a rating system representing a range of values has been utilized to give an approximation of the cost of constructing each option. The rating system is as follows:

$............... $0-$50m
$$............... $50-$100m
$$$............... $100-$150m
$$$$............. $150-$200m
$$$$$............ $200-$250m
$$$$$$+.........$250m+
IMPACTS ON HERITAGE PROPERTIES

There are four properties within 500m of the route that are listed on the City of Toronto’s Heritage Register. These are A) Richview Cemetery, B) La Rose House (324 La Rose Avenue), C) Mary Reid House (4200 Eglinton W), and D) the Mt. Dennis Bank of Nova Scotia (1151 Weston Road).

Mary Reid House is the only property directly adjacent to Eglinton and so would be most likely to be impacted by the grade separations, though it is set back from the road.
JANE STREET
OVERVIEW

The Jane/Eglinton intersection is located in the Humber Valley in an area known as Eglinton Flats. The future Crosstown LRT portal is to the east of the intersection. Due to its location in the valley, the intersection is within the flood plain of the Humber River, which creates challenges for below-grade options. Available land is less constrained than at other intersections as all four corners are occupied by green spaces including parks, sports facilities, and a golf course.

The City is planning a multi-use pathway and sidewalk along the north side of Eglinton from just west of Weston Road to Jane where it will cross to the south and connect into the existing MUP along Eglinton.

KEY CONSIDERATIONS
The following are key considerations that may influence the design and feasibility of the grade separation:

- Existing floodplain
- Connection to Mt Dennis tail track / Eglinton Crosstown
- Connection to Scarlett
- Impact on natural features
- Impact on adjacent sports facilities
- Impact on multi-use path/path extension
- Future passenger connection to Jane bus services
- Future passenger or track connection to Jane LRT

EXPLORED GRADE SEPARATION OPTIONS
The following table indicates options explored and key issues with options that are not to be explored further.

<table>
<thead>
<tr>
<th>Jane Street</th>
<th>North</th>
<th>Centre</th>
<th>South</th>
</tr>
</thead>
</table>
| Elevated    | Option 1
Advanced to Stage 2 analysis | Impact on road and adjacent properties
Feasible, not carried forward | Impact on MUP/sports facilities
Feasible, not carried forward |
| At Grade    | EA
Base option (2010 EA) | Below flood line
Below flood line |
| Below       | Below flood line
Fatally flawed | Below flood line
Fatally flawed | Below flood line
Fatally flawed |

Existing buildings / structures

The Jane/Eglinton intersection is located in the Humber Valley in an area known as Eglinton Flats. The future Crosstown LRT portal is to the east of the intersection. Due to its location in the valley, the intersection is within the flood plain of the Humber River, which creates challenges for below-grade options. Available land is less constrained than at other intersections as all four corners are occupied by green spaces including parks, sports facilities, and a golf course.

The City is planning a multi-use pathway and sidewalk along the north side of Eglinton from just west of Weston Road to Jane where it will cross to the south and connect into the existing MUP along Eglinton.

KEY CONSIDERATIONS
The following are key considerations that may influence the design and feasibility of the grade separation:

- Existing floodplain
- Connection to Mt Dennis tail track / Eglinton Crosstown
- Connection to Scarlett
- Impact on natural features
- Impact on adjacent sports facilities
- Impact on multi-use path/path extension
- Future passenger connection to Jane bus services
- Future passenger or track connection to Jane LRT

EXPLORED GRADE SEPARATION OPTIONS
The following table indicates options explored and key issues with options that are not to be explored further.
JANE STREET

OPTION 1: ELEVATED, STRADDLING / NORTH SIDE / CENTRE PLATFORM

NOTES:
1. ASSUMED DESIGN CRITERIA ARE SIMILAR TO FW LRT.
2. DESIGN SPEED IS 60KPH.
3. TRACK STATIONING IS BASED ON EA ALIGNMENT.
JANE STREET

OPTION 1: ELEVATED, STRADDLING / NORTH SIDE / CENTRE PLATFORM

Option 1 represents an elevated stop straddling Jane Street on the north side of Eglinton Avenue.

PEDESTRIAN ACCESS: Access at NW and/or NE corner of intersection. Pedestrians would travel up from the intersection to a centre platform where they could access both eastbound and westbound directions. Access from south side requires at-grade Eglinton crossing.

CYCLIST ACCESS: Cycling access to the stop would primarily be from the NE corner of Eglinton. The Eglinton MUP would cross Jane Street and then divert north across Eglinton where it would connect to the stop. From the stop the path would continue eastbound where it would connect to the planned Mount Dennis stop. While the elevated stop would complicate this MUP connection, there is potential to integrate the stop entrance and bicycle parking with the future path.

BUS TRANSFER ACCESS: Bus Routes: 35, 195. Northbound passenger transfer would be direct from the NE corner of the intersection. Southbound transfer would require an at-grade crossing of Eglinton unless the stop is shifted nearside.

IMPlications FOR ADJACENT STOPS:
- No impact to adjacent stops.
- It would be feasible to remain elevated and connect to an elevated Scarlett stop.

GENERAL COST ESTIMATE

$$$(Approx. 1000m long elevated structure)

IMPACT ON ADJACENT PROPERTIES
- Property requirements north of right-of-way in Eglinton Flats, a city-owned park.

IMPACT OF FLOOD PLAIN
- Elevated structure is above flood plain.

MAJOR PHYSICAL BARRIERS
- Detailed design will determine ability to connect to Mt. Dennis to the east.
- The options assumes a portal north of Eglinton.

TRAFFIC IMPACTS*
- Traffic operations may be better than the EA at-grade option due to avoidance of protected EB and WB left turns at intersection. Though, no capacity deficiencies with protected left turns.
* based on preliminary qualitative analysis

PROS*
- Centre platform allows an entrance to access both directions of travel, simplifying user experience
- Opportunity to shift southbound bus stop to improve quality of transfer
- Potential for more direct passenger connections to future Jane LRT should the Jane LRT platform be north of Eglinton
- Above grade structure minimizes the footprint of the stop within the floodplain

CONS*
- South side pedestrians and cyclists will need to cross Eglinton at-grade to access the stop
- Track connection with future Jane LRT very complex in the elevated option
- Visual impact of elevated structure
- May complicate MUP extension east to Mt. Dennis
- Above grade structure would be constructed in the flood plain

* In relationship to other grade separation options
SCARLETT ROAD
The Scarlett/Eglinton intersection is on the west side of the Humber Valley, adjacent to the Humber River and the Eglinton bridge. Existing high density residential buildings are located just west of Scarlett. Existing multi-use paths run along the east side of Scarlett, as well as along the south side of Eglinton.

**KEY CONSIDERATIONS**

The following are key considerations that may influence the design and feasibility of the grade separation:

- River valley, including embankment
- Flood line
- Existing bridge structure
- Existing development north and south of Eglinton, including limit of existing underground parking garage on the northwest of the intersection
- Significant grade moving west along Eglinton
- Pre-application development on the northwest
- Assumes existing pedestrian bridge located west over Eglinton Avenue will be removed and replaced

**EXPLORED GRADE SEPARATION OPTIONS**

The following table indicates options explored and key issues with options that are not to be explored further.

<table>
<thead>
<tr>
<th>Scarlett Road</th>
<th>North</th>
<th>Centre</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated</td>
<td>Option 1a (elevated return to centre)</td>
<td>Option 1b (dives below grade return to centre)</td>
<td>Impact on bridge and Eglinton alignment.</td>
</tr>
<tr>
<td></td>
<td>Advanced to Stage 2 analysis</td>
<td>Feasible, not carried forward</td>
<td>Feasible, not carried forward</td>
</tr>
<tr>
<td>At Grade</td>
<td>EA</td>
<td></td>
<td>Impact on existing development, MUP, and may require Eglinton to shift South</td>
</tr>
<tr>
<td>Below</td>
<td>Portal below flood line, chasing grade</td>
<td>Portal below flood line, Impact on bridge structure, chasing grade</td>
<td>Portal below flood line, chasing grade</td>
</tr>
<tr>
<td></td>
<td>Fatally flawed</td>
<td>Feasible, not carried forward</td>
<td>Fatally flawed</td>
</tr>
</tbody>
</table>

- Advanced to Stage 2 analysis
- Feasible, not carried forward
- Fatally flawed

Base option (2010 EA)
SCARLETT ROAD

OPTION 1A: ELEVATED, STRADDLING / NORTH SIDE / CENTRE PLATFORM

ELEVATED CONNECTION TO CENTRELINE WEST OF STOP

NOTES:
1. ASSUMED DESIGN CRITERIA ARE SIMILAR TO FW LRT.
2. DESIGN SPEED IS 60KPH.
3. TRACK STATIONING IS BASED ON EA ALIGNMENT.
SCARLETT ROAD

OPTION 1A: ELEVATED, STRADDLING / NORTH SIDE / CENTRE PLATFORM

ELEVATED CONNECTION TO CENTRELINE WEST OF STOP

Option 1a represents an elevated stop straddling Scarlett Road on the north side of Eglinton Avenue.

PEDESTRIAN ACCESS: Access at NW and/or NE corner of the intersection. Pedestrians would travel up from the intersection to a centre platform where they could access both eastbound and westbound directions. Access from south side requires at-grade Eglinton crossing.

CYCLIST ACCESS: The Eglinton MUP crosses Scarlett south of Eglinton and connects with the Humber River Trail crossing N-S east of Scarlett. Cyclists would cross to the north side of Eglinton to Access the stop. The design of the stop entrances would need to integrate these existing cycle routes.

BUS TRANSFER ACCESS: Bus Routes: 73, 79. Southbound transfer would be direct at the NW corner of the intersection and not require an at-grade street crossing. Northbound transfer would require passengers to cross Eglinton at-grade unless stop is shifted far-side.

IMPLICATIONS FOR ADJACENT STOPS:
- No impact to adjacent stops.
- Feasible to have overhead connection to an elevated Jane stop.

GENERAL COST ESTIMATE

$$$(Approx. 1300m long elevated structure.)

IMPACT ON ADJACENT PROPERTIES
- Requires partial permanent property taking at 1 Richview Road.
- No impacts anticipated to existing structure; however, alignment may conflict with property owner’s plans for 239 new units (in pre-application stage).

IMPACT OF FLOOD PLAIN
- Stop access east of Scarlett would be required to be outside flood plain.
- Support structure would be within the flood plain.

MAJOR PHYSICAL BARRIERS
- None

TRAFFIC IMPACTS*
- Traffic operations may be better than the EA at-grade option due to avoidance of protected EB and WB left turns at intersection.
- Overall, some impact expected for SB traffic due to reduced sight lines at intersection.

* In relationship to other grade separation options

PROS*
- Centre platform allows an entrance to access both directions of travel, simplifying user experience.
- Opportunity to shift northbound bus stop to improve quality of transfer.
- Elevated structure minimizes intrusion into the floodplain
- Elevated structure minimizes impacts on the existing bridge

CONS*
- South side pedestrians and cyclists will need to cross Eglinton at-grade to access the stop
- Cost of land acquisition at 1 Richview Road
- Visual impact of elevated stop

* In relationship to other grade separation options
ROYAL YORK ROAD
The intersection of Royal York/Eglinton is surrounded by residential development, including tall buildings on the northeast corner. A recent planning application for a high density residential development has been submitted on the “Plant World” property. Mary Reid House sits on the northwest corner of the intersection and is listed on the Heritage Register.

KEY CONSIDERATIONS

The following are key considerations that may influence the design and feasibility of the grade separation:

- Proximity to residential neighbourhoods
- Potential impact on park space
- Potential impact on east-west MUP
- Impact of existing culvert to the west
- Access to Plant World: right-in/right-out or signalized
- Development application for Plant World property
- Existing high pressure gas line below grade

EXPLORED GRADE SEPARATION OPTIONS

The following table indicates options explored and key issues with options that are not to be explored further.

<table>
<thead>
<tr>
<th>Royal York Road</th>
<th>North</th>
<th>Centre</th>
<th>South</th>
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</thead>
<tbody>
<tr>
<td>Elevated</td>
<td>Proximity to existing development</td>
<td>Cost, access challenges</td>
<td>Proximity to existing development, MUP</td>
</tr>
<tr>
<td></td>
<td>Feasible, not carried forward</td>
<td>Feasible, not carried forward</td>
<td>Feasible, not carried forward</td>
</tr>
<tr>
<td>At Grade</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advanced to Stage 2 analysis</td>
<td>Base option (2010 EA)</td>
<td></td>
</tr>
<tr>
<td>Below</td>
<td>Proximity to existing development</td>
<td>Below flood line</td>
<td>Option 1a - slope too steep to west</td>
</tr>
<tr>
<td></td>
<td>Feasible, not carried forward</td>
<td>Advanced to Stage 2 Analysis</td>
<td>Fatally flawed</td>
</tr>
<tr>
<td></td>
<td>(Centre platform) - access challenges</td>
<td>Feasible, not carried forward</td>
<td>Option 1b - slope too steep to west</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fatally flawed</td>
</tr>
</tbody>
</table>
ROYAL YORK ROAD
OPTION 2: UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

NOTES:
1. ASSUMED DESIGN CRITERIA ARE SIMILAR TO FWLRT.
2. DESIGN SPEED IS 60KPH.
3. TRACK STATIONING IS BASED ON EA ALIGNMENT.

LEGEND:
WEST TO PEARSON AIRPORT
EAST TO MOUNT DENNIS STATION

ISSUED FOR DISCUSSION
B 2017/03/08
ISSUED FOR DISCUSSION
C 2017/04/07
ISSUED FOR DISCUSSION
2017/05/02D
ISSUED FOR DISCUSSION
2017/05/09E
ISSUED FOR DISCUSSION
2017/05/23F
ROYAL YORK ROAD

OPTION 2: UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

Option 2 represents an underground stop with side platforms straddling Royal York Road

PEDESTRIAN ACCESS: Pedestrians could access westbound service via a tunnel from the NE and NW corners of the intersection. Pedestrians could access eastbound service via a tunnel from the SE and SW corners of the intersection. At grade Eglinton crossing will be required to switch direction of travel. Elevators would be included at opposite corners of the intersection and aligned to support bus transfers. Underground option to be evaluated for fire safety and emergency egress during design phase.

CYCLIST ACCESS: The Eglinton MUP crosses Royal York on the south side of Eglinton. Cyclists accessing westbound service would need to cross Eglinton at the intersection. The MUP would need to be integrated alongside with stop entrances.

BUS TRANSFER ACCESS: Bus Route: 73.
- NB-EB: no at-grade crossing required
- NB-WB: at-grade Eglinton crossing required
- SB-EB, at-grade Eglinton crossing required
- SB-WB: no at-grade crossing required.

IMPLICATIONS FOR ADJACENT STOPS:
- No impact to adjacent stops.
- Does not preclude a Mulham stop.

GENERAL COST ESTIMATE
$$$(Approx. 700m long below-grade structure)

- There is the risk that the stop conflicts with the 30” diameter east-west high capacity gas line. This would increase costs

IMPACT ON ADJACENT PROPERTIES
- Concept fits within the existing right-of-way

IMPACT OF FLOOD PLAIN
- Below-grade stop may need pumping stop due to water table, cost included in contingency

MAJOR PHYSICAL BARRIERS
- Gas line will need to be carefully considered

TRAFFIC IMPACTS*
- Traffic operations may be better than the EA at-grade option due to avoidance of protected EB and WB left turns at intersection. Though, no capacity deficiencies with protected left turns.
- Requires right-in/right-out access to Plant World, but Mulham stop still provides signalized intersection access

*based on preliminary qualitative analysis

PROS*
- Opportunity for entrances on all street corners
- No impact to adjacent stops

CONS*
- Prolonged impacts to traffic on both Eglinton and Royal York during construction
- Would prevent the development of a signalized access point to the Plant World development off of Eglinton
- Would require users to cross Eglinton to switch between eastbound and westbound directions
- Less intuitive pedestrian access and bus transfers
- Below grade stop results in less opportunity for natural surveillance

* In relationship to other grade separation options
ISLINGTON AVENUE

*EA Base Case needs amending to adjust LRT alignment into centre of right-of-way
OVERVIEW

The intersection of Islington/Eglinton contains Richview Collegiate Institute on the southwest corner. A church occupies the northeast corner of the intersection and the area is comprised primarily of low-rise residential development.

KEY CONSIDERATIONS

The following are key considerations that may influence the design and feasibility of the grade separation:

- Significant grade changes including a steep rise west of the intersection
- Adjacent school property
- Proximity to residential neighbourhoods
- Significant mature trees
- Potential impact on east-west MUP
- Limited ROW width as you move west on Eglinton
- Existing high pressure gas line below grade

EXPLORED GRADE SEPARATION OPTIONS

The following table indicates options explored and key issues with options that are not to be explored further.

<table>
<thead>
<tr>
<th>Islington Avenue</th>
<th>North</th>
<th>Centre</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated</td>
<td>Visual impact on adjacent properties Feasible, not carried forward</td>
<td>Option 1 Advanced to Stage 2 analysis</td>
<td>Option 2 (elevated, south) - precludes Russell stop, school impacts Fatally flawed</td>
</tr>
<tr>
<td>At Grade</td>
<td></td>
<td>EA Base option (2010 EA)</td>
<td></td>
</tr>
<tr>
<td>Below</td>
<td>slope west is too steep to make the grade Fatally flawed</td>
<td>Option 3 - slope west is too steep to make the grade, precludes Wincotte stop Fatally flawed</td>
<td>Option 4 - slope west is too steep to make the grade, gas line impacts Fatally flawed</td>
</tr>
</tbody>
</table>
ISLINGTON AVENUE
OPTION 1: ELEVATED. STRADDLING / CENTRE OF ROADWAY / SIDE PLATFORMS

NOTES:
1. ASSUMED DESIGN CRITERIA ARE SIMILAR TO FWLRT.
2. DESIGN SPEED IS 60KPH.
3. TRACK STATIONING IS BASED ON EA ALIGNMENT.

LEGEND:
- PROPOSED TRACKS
- PROPOSED PATHS
- EXISTING GROUND
- ELEVATION OF GROUND
ISLINGTON AVENUE

OPTION 1: ELEVATED, STRADDLING / CENTRE OF ROADWAY / SIDE PLATFORMS

Option 1 represents an elevated side platform stop in the middle of Eglinton straddling Islington Avenue.

PEDESTRIAN ACCESS: Pedestrians at north entrances (NW and NE corners) would travel up from the intersection and over Eglinton to access westbound LRT service while those at south side entrances (SW and SE corners) would travel up from the intersection and over Eglinton to access eastbound LRT service. An at grade Eglinton crossing would be required to switch direction of travel.

CYCLIST ACCESS: The Eglinton MUP crosses Islington along the south side of Eglinton. The path would need to be integrated alongside the eastbound stop entrances. Cyclists wishing to access the westbound platforms would need to cross Eglinton.

BUS TRANSFER ACCESS: Bus Route: 37
- NB-EB: no at-grade crossing
- NB-WB: at-grade Eglinton crossing required
- SB-EB: at-grade Eglinton crossing required
- SB-WB: no at-grade crossing required

IMPLICATIONS FOR ADJACENT STOPS:
- No impact to adjacent stops.

GENERAL COST ESTIMATE
$ (Approx. 600m long elevated structure with four access points)

IMPACT ON ADJACENT PROPERTIES
- Curb and cross-section updates required to determine property impacts
- Constrained boulevard may require trade-offs between property impacts and ROW.

IMPACT OF FLOOD PLAIN
- None

MAJOR PHYSICAL BARRIERS
- None

TRAFFIC IMPACTS*
- Traffic operations may be better than the EA at-grade option due to avoidance of protected EB and WB left turns at intersection
- Full impacts would need to be determined following curb and cross section updates.
- Overall, some impact anticipated for SB traffic due to reduced sight lines at intersection compared to other grade separation options.

CORR* In relationship to other grade separation options

PROS*
- Opportunity for entrances on all street corners.
- No impact to adjacent stops.

CONS*
- Prolonged impacts to traffic on both Eglinton and Royal York during construction
- Would require users to cross Eglinton to switch between eastbound and westbound directions
- Less intuitive pedestrian access and bus transfers
- The configuration would result in significant visual impacts
- Structure may impede visibility for drivers approaching the intersection

* based on preliminary qualitative analysis
KIPLING AVENUE

*EA Base Case needs amending to adjust LRT alignment into centre of right-of-way*
**KIPLING AVENUE**

**OVERVIEW**

The intersection of Kipling/Eglinton has seen recent residential development on the northeast and northwest corners which will limit the space available for a grade separation. The northwest corner of the intersection is a preserved woodlot and the southeast corner has green space maintained as well.

**KEY CONSIDERATIONS**

The following are key considerations that may influence the design and feasibility of the grade separation:

- The intersection is projected to be an area of high transfers
- Proximity to existing residential neighbourhoods
- Impact on EW MUP
- Impact on the woodlot
- Limited ROW to the west
- Existing high pressure gas line below grade

**EXPLORED GRADE SEPARATION OPTIONS**

The following table indicates options explored and key issues with options that are not to be explored further.

<table>
<thead>
<tr>
<th>Kipling Avenue</th>
<th>North</th>
<th>Centre</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elevated</strong></td>
<td>Impact on existing development</td>
<td>Impact on existing development</td>
<td>Impact on existing development</td>
</tr>
<tr>
<td></td>
<td>Feasible, not carried forward</td>
<td>Feasible, not carried forward</td>
<td>Feasible, not carried forward</td>
</tr>
<tr>
<td><strong>At Grade</strong></td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Base option (2010 EA)</td>
<td></td>
</tr>
<tr>
<td><strong>Below</strong></td>
<td>Will require to shift Eglinton south, conflict with townhouses</td>
<td>Option 2 (underground, centre)</td>
<td>Option 1 (trench, south side) - greater conflict with gas line</td>
</tr>
<tr>
<td></td>
<td>Fatally flawed</td>
<td>Advanced to Stage 2 analysis</td>
<td>Feasible, not carried forward</td>
</tr>
</tbody>
</table>
KIPLING AVENUE

OPTION 2: UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

NOTES:
1. ASSUMED DESIGN CRITERIA ARE SIMILAR TO FWLRT.
2. DESIGN SPEED IS 60KPH.
3. TRACK STATIONING IS BASED ON EA ALIGNMENT.
KIPLING AVENUE
OPTION 2: UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

Option 2 represents an underground stop with side platforms straddling Kipling Avenue.

PEDESTRIAN ACCESS: Pedestrians would travel down from intersection at the NW corner to access westbound LRT service. An entrance is not feasible at the NE corner given existing development. Pedestrians would travel down from the SE and SW corners to access eastbound LRT service. An at grade Eglinton crossing will be required to switch direction of travel. Underground option to be evaluated for fire safety and emergency egress during design phase.

CYCLIST ACCESS: The Eglinton MUP crosses Kipling on the south side of Eglinton. The path would need to be integrated alongside the stop entrances. Access and facilities will primarily be at SE and SW entrances. Cyclists wishing to access the westbound platforms would need to cross Eglinton.

BUS TRANSFER ACCESS: Bus Route: 45
- NB-EB: no at-grade crossing
- NB-WB: at-grade Eglinton crossing required
- SB-EB: at-grade Eglinton crossing required
- SB-WB: no at-grade crossing required

IMPLICATIONS FOR ADJACENT STOPS:
- No impact on adjacent stops.

GENERAL COST ESTIMATE
$$$
(Approx. 800m long below-grade structure.)

- There is the risk that the stop conflicts with the 30” diameter east-west high capacity gas line. This would increase costs

IMPACT ON ADJACENT PROPERTIES
- Curb and cross-section updates required to determine property impacts
- Constrained boulevard may require trade-offs between property impacts and ROW.
- A NE entrance would require land acquisition and demolition of recently completed residential development

IMPACT OF FLOOD PLAIN
- Below-grade stop may need pumping stop due to water table, cost included in contingency

MAJOR PHYSICAL BARRIERS
- Gas line will need to be carefully considered.

TRAFFIC IMPACTS*
- Traffic operations may be better than the EA at-grade option due to avoidance of protected EB and WB left turns at intersection.

* based on preliminary qualitative analysis

PROS*
- Does not impact Widdicombe stop

CONS*
- Prolonged impacts to traffic on both Eglinton and Kipling, both major arterials, during construction
- Recent development would prohibit the development of an entrance on the NE corner without property takings and demolition
- Would require users to cross Eglinton to switch between eastbound and westbound directions
- Less intuitive pedestrian access and bus transfers
- Below grade stop results in less opportunity for natural surveillance
- A signalized intersection between Wincott and Kipling not possible

* In relationship to other grade separation options
EGLINTON WEST LRT: DEVELOPMENT OF CONCEPTUAL GRADE SEPARATIONS

MARTIN GROVE ROAD

*EA Base Case needs amending to adjust LRT alignment into centre of right-of-way
The intersection of Martin Grove/Eglinton features a large amount of green space including Richview Park to the North East and the Martin Grove Collegiate Institute to the South-East of the intersection. There is also a gas feeder stop, a hydro corridor, a reservoir below Richview Park, and the Mimico Creek to the west that has an impact on elevated grade separation options.

**KEY CONSIDERATIONS**

The following are key considerations that may influence the design and feasibility of the grade separation:

- Supporting a connection west to the Renforth Station (Mississauga Transitway)
- Potential impact on properties at Lloyd Manor Rd and Eglinton (Shell and LCBO)
- Potential impact to the school lands
- Hydro corridor to the west
- Creek to the west
- Reservoir below Richview Park
- Existing high pressure gas line below grade
- Highway ramps to the west

**EXPLORED GRADE SEPARATION OPTIONS**

The following table indicates options explored and key issues with options that are not to be explored further.

<table>
<thead>
<tr>
<th>Martin Grove Road</th>
<th>North</th>
<th>Centre</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elevated</strong></td>
<td>Conflicts with the hydro corridor&lt;br&gt;Fatally flawed</td>
<td>Conflicts with the hydro corridor&lt;br&gt;Fatally flawed</td>
<td>Conflicts with the hydro corridor&lt;br&gt;Fatally flawed</td>
</tr>
<tr>
<td><strong>At Grade</strong></td>
<td><strong>EA</strong>&lt;br&gt;Base option (2010 EA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Below</strong></td>
<td>Conflict with townhouses and reservoir&lt;br&gt;Fatally flawed</td>
<td><strong>Option 1</strong>&lt;br&gt;Advanced to Stage 2 analysis</td>
<td><strong>Option 2</strong>&lt;br&gt;Would introduce complex geometry, and may conflict with the gas line&lt;br&gt;Feasible, not carried forward</td>
</tr>
</tbody>
</table>
MARTIN GROVE ROAD
OPTION 1: UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

NOTES:
1. ASSUMED DESIGN CRITERIA ARE SIMILAR TO FWLRT.
2. DESIGN SPEED IS 60KPH.
3. TRACK STATIONING IS BASED ON EA ALIGNMENT.
Option 1 represents an underground stop with side platforms connected by a concourse straddling Martin Grove Road.

**PEDESTRIAN ACCESS:** Pedestrians would travel down from the intersection at any corner to access both east and west bound platforms. Underground option to be evaluated for fire safety and emergency egress during design phase.

**CYCLIST ACCESS:** Eglinton MUP crosses Martin Grove on the south side of Eglinton. The path would need to be integrated alongside the stop entrances. Access and facilities will primarily be at SE and SW entrances.

**BUS TRANSFER ACCESS:** Bus Routes: 46, 111
- NB-EB: no at-grade crossing
- NB-WB: no at-grade Eglinton crossing required
- SB-EB: no at-grade Eglinton crossing required
- SB-WB: no at-grade crossing required
- EB-NB: no at-grade crossing required
- Bus loop not advisable with this configuration.

**GENERAL COST ESTIMATE**

$$$(Approx. 900m long below-grade structure.)

**IMPLICATIONS FOR ADJACENT STOPS:**
- No impact on adjacent stops.

**IMPACT ON ADJACENT PROPERTIES**
- Assuming the EA centreline is shifted south, this option should fit largely within the existing ROW with potential underground easements required beneath the hydro corridor.

**IMPACT OF FLOOD PLAIN**
- Below-grade stop may need pumping stop due to water table, cost included in contingency.

**MAJOR PHYSICAL BARRIERS**
- Gas line will need to be carefully considered and may impact SE entrance.

**TRAFFIC IMPACTS**
- Traffic operations may be better than the EA at-grade option due to avoidance of protected EB and WB left turns at intersection.
- No impact on highway ramps to west.

*In relationship to other grade separation options

**PROS**
- Opportunity for entrances on all street corners
- Supports easy transfers from connecting bus services
- Grade separation does not impact highway ramps

**CONS**
- Prolonged impacts to traffic on both Eglinton and Martin Grove, both major arterials, during construction
- Bus loop not advisable
- Below grade stop results in less opportunity for natural surveillance
## SUMMARY

The following list is a summary of grade separations to be analyzed further in Stage Two.

<table>
<thead>
<tr>
<th>Street</th>
<th>Option Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane Street</td>
<td>Option 1: Elevated / North Side / Centre Platform</td>
</tr>
<tr>
<td>Scarlett Road</td>
<td>Option 1A: Elevated / North Side / Centre Platform, Elevated Connection to Centreline West of Stop</td>
</tr>
<tr>
<td>Royal York Road</td>
<td>Option 2: Underground / Centre of Roadway / Side Platforms</td>
</tr>
<tr>
<td>Islington Avenue</td>
<td>Option 1: Elevated / Centre of Roadway / Side Platforms</td>
</tr>
<tr>
<td>Kipling Avenue</td>
<td>Option 2: Underground / Centre of Roadway / Side Platforms</td>
</tr>
<tr>
<td>Martin Grove Road</td>
<td>Option 1: Underground / Centre of Roadway / Side Platforms</td>
</tr>
</tbody>
</table>
NEXT STEPS

1. FURTHER EVALUATION OF OPTIONS
Forthcoming stages of evaluation for the options being carried forward, and comparison to EA, will include consideration of:

**Stage 2**
- Travel time savings for riders of the LRT
- Travel time savings for riders accessing the LRT at each stop
- Impacts on auto users along the Eglinton corridor
- Impacts on road congestion
- Cost/benefit analysis

**Stage 3**
- Impacts on mode choice
- Impacts on experience of users and drivers on Eglinton
- Impacts on surrounding neighbourhoods and public spaces
- Impacts on future development
- Impacts on the environment
- General affordability

2. CONFIRMATION OF OUTSTANDING PLANNING ISSUES
The team will assess planning issues yet to be addressed, including:

- Property impacts in the immediate vicinity of each grade separation
- Additional studies that may be required to confirm the results
- Opportunities to enhance integration of the grade separations

3. CREATION OF FINAL REPORT

4. REVISIONS TO GRADE SEPARATION DESIGNS
To address feedback on the final report, the design of each grade separation may be refined to reflect Metrolinx commitment to design excellence and the provision of community benefits.

5. CREATION OF PUBLIC-FACING MATERIALS

6. PUBLIC ENGAGEMENT AND STAKEHOLDER CONSULTATION
The designs will be presented to key stakeholders and the public at large to solicit feedback and address any outstanding issues.