Eglinton West LRT: Development of Conceptual Grade Separations

STAGE TWO/THREE REPORT APPENDIX

January 11, 2018
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The many pros and cons of potential grade separation options are being considered according to a rigorous evaluation framework. The evaluation framework is divided into three stages: 1) Feasibility 2) Benefits and Costs, and 3) Strategic Values. This report details the findings of Stage 3 of the evaluation, in which each grade separation was evaluated in isolation of the others according to a list of strategic values.

### Evaluation Colour Code
- Grade separation significantly out-performs compared to an at-grade stop
- Grade separation performs similar to an at-grade stop
- Grade separation significantly under-performs compared to an at-grade stop

### Eglinton West LRT Grade Separation Study - Stage 3 Evaluation Matrix

**January 11, 2018**

#### RT Evaluation Framework Category

<table>
<thead>
<tr>
<th>Order</th>
<th>Criteria</th>
<th>Measure</th>
<th>Jane Scarlett</th>
<th>Royal York</th>
<th>Islington</th>
<th>Kipling</th>
<th>Martin Grove</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Creates Choices For Pedestrians</td>
<td>Measure: A description of the ability for access by pedestrians.</td>
<td>Both the grade separation and at-grade option provide direct connections to pedestrian infrastructure. (performs similar)</td>
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</tr>
<tr>
<td>2</td>
<td>Creates Choices For Cyclists</td>
<td>Measure: A description of the ability for access by cyclists.</td>
<td>Both the grade separation and at-grade option provide direct connections to the multi-use path along the south side of Eglinton to the west and its planned extension along the north side of Eglinton to the east. This is based on the assumption that the stops are designed to support access by cyclists. (performs similar)</td>
<td>Both the grade separation and at-grade option provide direct connections to the multi-use path along the south side of Eglinton. This is based on the assumption that the stops are designed to support access by cyclists. (performs similar)</td>
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<tr>
<td>3</td>
<td>Ability To Connect A Future Jane LRT To The Mt Dennis MSF</td>
<td>Measure: An assessment of whether LRT vehicles on a future Jane LRT can access the Mt. Dennis MSF or not. This criterion only applies to a grade separation at Jane Street.</td>
<td>The elevated option would require significant investment in order to be able to connect Eglinton West LRT with a future Jane LRT. However, it is not anticipated that LRT vehicles on Jane would utilize the Mt Dennis MSF. (under performs)</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>4</td>
<td>Provides Equal Access to Transit for All Users</td>
<td>Measure: An assessment of the ability of all users to access the stop, regardless of their level of physical mobility.</td>
<td>Both options are fully-accessible. The grade-separated option has two elevators to access the centre platform, greatly reducing the likelihood of the stop losing elevator access and becoming inaccessible. (performs similar)</td>
<td>Though both options are fully-accessible, the vertical transfer requirement of the grade separation would render the stop inaccessible for users with disabilities in the event that the elevator is out of service. (under performs)</td>
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Eglinton West LRT Grade Separation Study - Draft Stage 3 Evaluation Matrix

**RT Evaluation Framework Category**  
*Order* | *Criteria* | *Measure* | *Jane* | *Scarlett* | *Royal York* | *Islington* | *Kipling* | *Martin Grove*
--- | --- | --- | --- | --- | --- | --- | --- | ---
Ease Of Access For All Users | Measure: Consideration of vertical transfers, interchanges to access the stop (including doors, stairs, and traffic signals)  
Measure: A description of the access experience for pedestrians, cyclists, and transit transfers  
Measure: A description of the impact on passive way-finding* | There is a similar overall horizontal transfer distance between the options however, ease of access is reduced for disabled users, people with strollers, and cyclists bringing a bike on the LRT.  
The grade separation offers less ease of access as it requires a vertical transfer to access stop.  
The two platform configuration and assumption of only two elevators means that users requiring an elevator would need to cross Scarlett if they had to change directions and that if one of the elevators is out of service there would be no accessible access to that platform.  
Some transfer transfers may be more direct in the elevated option as entrances could be placed adjacent to bus stops.  
Passive way-finding will be relatively simple for the grade separation as both entrances lead to a shared platform. (under performs) | There is a similar overall horizontal transfer distance between the options.  
The grade separation offers less ease of access as it requires a vertical transfer to access stop.  
The two platform configuration and assumption of only two elevators means that users requiring an elevator would need to cross the street to change directions and that if an elevator goes out of service the platform it services would become inaccessible.  
The side platform configuration and assumption of only two elevators means that wayfinding would be less intuitive for all users, Ease of access would be reduced for disabled users, people with strollers, and cyclists bringing a bike on the LRT. (under performs) | There is a similar overall horizontal transfer distance between the options.  
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--- | --- | --- | --- | --- | --- | --- | --- | ---
Shelter From Weather Conditions | Measure: A description of the user experience of wind, precipitation, and temperature variation.  
Measure: A description of potential vehicle/user collision risks. | The elevated stop would likely have increased wind impacts for users waiting at the platform.  
The entrances to the stop would provide some shelter but this would not extend to the platform.  
The at-grade option is assumed to have shelter in line with the Eglinton Crosstown LRT (not fully enclosed or heated). (performs similar) | The elevated stop would likely have increased wind impacts for users waiting at the platform.  
The entrances to the stop would provide some shelter but this would not extend to the platform.  
The at-grade option is assumed to have shelter in line with the Eglinton Crosstown LRT (not fully enclosed or heated). (performs similar) | The below-grade stop would provide greater shelter from precipitation and likely improved shelter from wind and temperature conditions.  
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Impacts On Pedestrian/Cyclist Conflicts | Measure: A description of potential vehicle/user collision risks. | There is a reduced risk as fewer users would have to cross a street to access the stop as the entrances are located at the sidewalk as opposed to the middle of the roadway in the at-grade option.  
Though users approaching from the south will have to cross the entire width of Eglinton to access the elevated stop, all users in the at-grade option must cross traffic to access it. (out-performs) | There is a reduced risk as fewer users would have to cross a street to access the stop as the entrances are located at the sidewalk as opposed to the middle of the roadway in the at-grade option.  
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**Evaluation Colour Code**

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**Experience**
## Eglinton West LRT Grade Separation Study - Draft Stage 3 Evaluation Matrix

### RT Evaluation Framework

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<th>Measure</th>
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<th>Scarlett</th>
<th>Royal York</th>
<th>Islington</th>
<th>Kipling</th>
<th>Martin Grove</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts On Driver Sightlines</td>
<td>- Degree of impact from structure and/or partial on visibility on drivers approaching from all directions</td>
<td>8</td>
<td>-</td>
<td>(under performs)</td>
<td>(performs)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
</tr>
<tr>
<td>Construction Impacts On Traffic</td>
<td>- Description of the impact on traffic and the disruption to traffic</td>
<td>9</td>
<td>-</td>
<td>(under performs)</td>
<td>(performs)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
</tr>
<tr>
<td>Impact of Slopes and Curves on Passenger Comfort</td>
<td>- Elevation of track change</td>
<td>10</td>
<td>-</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
<td>(performs similar)</td>
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### RT Evaluation Framework Category

#### Healthy Neighbourhoods

<table>
<thead>
<tr>
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<th>Measure</th>
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<th>Scarlett</th>
<th>Royal York</th>
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</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Impact On The Surrounding Neighbourhood</td>
<td>Measure: Degree of visual intrusion from surrounding residential neighbourhoods, into account the proximity of adjacent residential neighbourhoods to the stop.</td>
<td>There are no residential neighbourhoods immediately adjacent to the stop that would be impacted. (performs similar)</td>
<td>The elevated structure would have a major visual impact to the neighbourhood north and south of Eglinton, including adjacent residential towers in close proximity. There is risk of noise impacts along the north side of Eglinton. (under performs)</td>
<td>The grade structure would have a somewhat increased proximity to surrounding areas due to the proximity of entrances, the residential developments do not front onto the intersection and are slightly offset from the entrances therefore impacts would be minimal. There would be reduced impacts in the middle of the roadway due to the lack of LRT poles and wires. (performs similar)</td>
<td>The elevated structure would have a somewhat increased visual impact due to the proximity of the entrances to residential uses, including townhouses recently constructed within metres of the planned north-east entrance. There would be reduced impacts in the middle of the roadway due to the lack of LRT poles and wires. (performs similar)</td>
<td>There is little residential development around the intersection, though the east portal would directly front existing townhomes. This minor visual intrusion is balanced by the removal of overhead wires and poles as the LRT goes below grade. (performs similar)</td>
<td></td>
</tr>
</tbody>
</table>

#### Impacts On Streetscaping And The Public Realm

<table>
<thead>
<tr>
<th>Order</th>
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<tbody>
<tr>
<td>12</td>
<td>Impacts On Streetscaping And Services</td>
<td>Measure: A description of impacts on public realm making opportunities.</td>
<td>In comparison to the at-grade option, the grade separation would have greater impacts on adjacent public space, including increased shadows and a reduced amount of land available for the proposed multi-use path extension. (under performs)</td>
<td>The elevated stop would have a high visual impact on the street and adjacent public spaces and generate significant intrusion into sightlines below the stop. (under performs)</td>
<td>The grade separation entrances create opportunities for place-making at the four corners of the intersection. However, the character of the street may be negatively impacted by the integration of the portal structure. (performs similar)</td>
<td>The elevated stop would have a high visual impact on the street and adjacent public spaces and generate significant intrusion into sightlines below the stop. (under performs)</td>
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#### Impact On Natural Surveillance

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<tbody>
<tr>
<td>13</td>
<td>Impact On Community Facilities And Services</td>
<td>Measure: Scale of physical impact on adjacent institutions and services.</td>
<td>Neither option creates significant impacts on community facilities or services. (performs similar)</td>
<td>Neither option creates significant impacts on community facilities or services. (performs similar)</td>
<td>Neither option creates significant impacts on community facilities or services. (performs similar)</td>
<td>The grade separation would have negative visual impacts on Richview Collegiate Institute on the south-west corner of the intersection. (under performs)</td>
<td>Neither option creates significant impacts on community facilities or services. (performs similar)</td>
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</tr>
</tbody>
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#### Construction Disruption To The Neighbourhood

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<tr>
<td>14</td>
<td>Impact On Natural Surveillance</td>
<td>Measure: A description of impacts on natural surveillance as a component of Crime Prevention Through Environmental Design (CPTED) both interior and exterior to the stop.</td>
<td>The elevated stop would have less natural surveillance than an at-grade stop. (under performs)</td>
<td>The elevated stop would have less natural surveillance than an at-grade stop. (under performs)</td>
<td>The below-grade stop would have less natural surveillance than an at-grade stop. (under performs)</td>
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<tr>
<td>15</td>
<td>Construction Disruption To The Neighbourhood</td>
<td>Measure: An assessment of construction related issues and impacts, such as proximity to existing division, and noise, visual disruption, duration of construction and waste generated.</td>
<td>The grade separation would cause greater disruption to the surrounding neighbourhood during construction due to increased vibration from pile-driving for the support structure. Duration of construction would be similar for both options. (under performs)</td>
<td>The grade separation would cause greater disruption to the surrounding neighbourhood during construction due to increased vibration from pile-driving for the support structure and the increased duration of construction. (under performs)</td>
<td>The grade separation would cause greater disruption to the surrounding neighbourhood during construction due to increased vibration from pile-driving for the support structure and the increased duration of construction. (under performs)</td>
<td>Construction of the grade separation would have a significantly greater impact on the surrounding neighborhood due to dust from digging, potential utility disruption and noise over a longer period of time. (under performs)</td>
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**Evaluation Key**

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<td>Impacts to Future Residential Development</td>
<td>Measure: A description of the impacts to residential development potential.</td>
<td>Neither option would impact future residential development. (performs similar)</td>
<td>The grade separation may impact the development potential of lands to the north-west of the intersection. (under performs)</td>
<td>The entrance for the below-grade stop may impact the residential development potential of a parcel at the north-west corner of the intersection, but this is a heritage-designated property it is not expected to be the site of significant residential intensification. The development potential of other adjacent properties are not impacted, including the large parcels to the east of the intersection. The portal structure will not preclude a future signalized intersection to the east of Royal York. (performs similar)</td>
<td>The entrances for the elevated stop may impact the residential development potential of parcels at the north-west and north-east corners of the intersection. (under performs)</td>
<td>Neither option would significantly impact future residential development. (performs similar)</td>
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#### Shaping the City

| 17 | Impacts On Esas, Parks, And The Natural Heritage System | Measure: A description and list of impacts to NHS and Environmentally Sensitive Areas, parks, trees or other vegetative elements lost due to proximity/construction of stop. | The grade separation would have greater impacts on Humber River Natural Heritage System, as well as on the surrounding parks. (under performs) | The grade separation would have increased environmental impacts as the support structure is within the Humber River Natural Heritage System, several trees will need to be removed, and part of Scarlett Bridge Parkette will be lost. (under performs) | More trees would likely be lost to construct entrances in the below-grade option. (under performs) | More trees would likely be lost to construct entrances in the elevated option. (under performs) | More trees would likely be lost to construct entrances in the below-grade option. (under performs) | Similar impacts for both options. No impacted ESAs, parks, or NHSs, including Mimico Creek to the west of the intersection. Any redesign of the portal that moves it further west may lead to conflicts with the flood plain. (performs similar) |

#### Public Health & Environment

| 18 | Impacts On Heritage Or Archaeological Sites | Measure: Identification of any impacts to Heritage Conservation Districts, heritage properties, or potential archaeological areas. | Neither option impacts heritage properties or archaeological sites. (performs similar) | Neither option impacts heritage properties or archaeological sites. (performs similar) | Mary Reid House is a heritage-designated property at 4200 Eglinton Avenue W to the northwest of the intersection, though it is separated from the intersection by 70m of forest and not significantly impacted by either option. While both options may result in impacts there is risk for more impact by development of the below-grade option than the at-grade option. (performs similar) | The intersection is an area of archaeological potential. While both options may result in impacts the support structure for the elevated option may result in increased impacts on these potential resources. (performs similar) | All but the north-east corner are an area of archaeological potential. While both options may result in impacts there is risk for more impact by development of the below-grade option than the at-grade option. (performs similar) | The south side is an area of archaeological potential. While both options may result in impacts there is risk for more impact by development of the below-grade option than the at-grade option. (performs similar) |

#### Affordability

| Criteria relating to affordability are included in the Stage Two analysis of Costs & Benefits. |

#### Supports Growth

| 20 | Impacts To Future Employment Development | Measure: A description of employment lands needed to construct the stop. | Neither option would significantly impact future employment development. (performs similar) | Neither option would significantly impact future employment development. (performs similar) | Neither option would significantly impact future employment development. (performs similar) | Neither option would significantly impact future employment development. (performs similar) | Neither option would significantly impact future employment development. (performs similar) | Neither option would significantly impact future employment development. (performs similar) |
Figure 01: Depiction of the base case at-grade stop looking north-west.
Figure 02: Depiction of what the studied grade separation might look like looking north-west.
Figure 03: Depiction of the base case at-grade stop looking north-west.
Figure 04: Depiction of what the studied grade separation might look like looking north-west.
Figure 05: Depiction of the base case at-grade stop looking south-west.
Figure 06: Depiction of what the studied grade separation might look like looking south-west.
Figure 07: Depiction of the at-grade base case stop looking south-west.
SCARLETT ROAD

ELEVATED, STRADDLING SCARLETT / NORTH SIDE / CENTRE PLATFORM

Figure 08: Depiction of what the studied grade separation might look like looking north-west.
Figure 09: Depiction of the at-grade base case stop looking north-west.
Figure 10: Depiction of what the studied grade separation might look like looking north-west.
Figure 11: Depiction of the at-grade base case stop looking south-west.
Figure 12: Depiction of what the studied grade separation might look like looking south-west.
Figure 13: Depiction of the Michigan Left originally studied in the at-grade base case looking east.
Figure 14: Depiction of what the tunnel portal of the studied grade separation might look like looking east.
Figure 15: Depiction of the at-grade base case stop looking north-east.
Figure 16: Depiction of what the studied grade separation might look like looking north-east.
Figure 17: Depiction of the at-grade base case stop looking north-west.
Figure 18: Depiction of what the studied grade separation might look like looking north-west.
ISLINGTON AVENUE

AT-GRADE BASE CASE

Figure 19: Depiction of the base case at-grade stop looking north-west.
Figure 20: Depiction of what the studied grade separation might look like looking north-west.
ISLINGTON AVENUE

AT-GRADE BASE CASE

Figure 21: Depiction of the base case at-grade stop looking east.
Figure 22: Depiction of what the studied grade separation might look like looking east.
Figure 23: Depiction of the base case at-grade stop looking south-west.
Figure 24: Depiction of what the studied grade separation might look like looking south-west.
KIPLING AVENUE

AT-GRADE BASE CASE

Figure 25: Depiction of the base case at-grade stop looking north-east.
KIPLING AVENUE

UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

Figure 26: Depiction of what the studied grade separation might look like looking north-east.
KIPLING AVENUE

AT-GRADE BASE CASE

Figure 27: Depiction of the base case at-grade alignment looking west.

Figure 27: Depiction of the base case at-grade alignment looking west.
Figure 28: Depiction of what the tunnel portal of the studied grade separation might look like looking west.
KIPLING AVENUE

AT-GRADE BASE CASE

Figure 29: Depiction of the base case at-grade alignment looking north-west.
Figure 30: Depiction of what the tunnel portal of the studied grade separation might look like looking west.
Figure 31: Depiction of the base case at-grade stop looking north-east.
Figure 32: Depiction of what the studied grade separation might look like looking north-east.
Figure 33: Depiction of the base case at-grade stop looking north-east at Mimico Creek.
Figure 34: Depiction of what the tunnel portal of the studied grade separation might look like looking north-east at Mimico Creek.
MARTIN GROVE ROAD

AT-GRADE BASE CASE

Figure 35: Depiction of the base case at-grade stop looking south-east.
MARTIN GROVE ROAD

UNDERGROUND / CENTRE OF ROADWAY / SIDE PLATFORMS

Figure 36: Depiction of what the studied grade separation might look like looking south-east.