3. Alternative Design Concepts

The current undertaking supports the conclusions of the 1993 WWLRT IEA and subsequent transportation studies regarding the need for streetcar service in the Study Area: specifically, the short term improvements approved in the WWLRT IEA that included a connection of the Harbourfront LRT to Dufferin Street. The current project is being undertaken to establish a streetcar connection between Exhibition Place and Dufferin Street, in fulfillment of the WWLRT IEA short term improvements.

The following sections introduce the alternative design concepts (streetcar routes), outline the methodology used to evaluate these alternative streetcar routes, and present the evaluation that identified the Recommended Alternative Route between Exhibition Place and Dufferin Street.

3.1 Alternative Design Concepts

Based on the current conditions within the Study Area and the relocated Exhibition Place loop, several routes other than the WWLRT IEA approved route were developed. As well, routes very similar to the WWLRT IEA approved route, but reflecting some modifications along Strachan between Fleet and Lake Shore to reflect the Fleet Street dedicated streetcar right-of-way, were also included in the evaluation. The intent of all of these alternative routes is to provide a streetcar link from Exhibition Place to Dufferin Street.

The streetcar routes developed were identified as:

- **Alternative Route #1** (parallel to, and on the south side of the CN/GO rail corridor)
- **Alternative Route #2** (parallel to, and on the north side of the CN/GO rail corridor)
- **Alternative Route #3A** (centre of Lake Shore Boulevard and north on an extended Dufferin Street)
- **Alternative Route #3B** (south side of Lake Shore Boulevard and north on an extended Dufferin Street)

These routes are depicted in **Figure 11**. It should be noted that Alternatives #3A & #3B, which follow the originally approved WWWLRT route, include some modifications to Strachan Avenue between Fleet Street and Lake Shore Boulevard to reflect the Fleet Street dedicated streetcar right-of-way.

A “Do Nothing” alternative was also included in the evaluation as a “base case” for comparison.

3.2 Evaluation of Alternative Streetcar Routes

The methodology used for evaluating the streetcar routes involved the following five Tasks:

Evaluation of the Alternative Streetcar Routes and Selection of a Recommended Route	
Task #1:	*Develop evaluation criteria, indicators, and measures*
Task #2:	*Apply the evaluation criteria, indicators, and measures to each route*
Task #3:	*Develop avoidance/mitigation/compensation/enhancement measures*
Task #4:	*Apply the avoidance/mitigation/compensation/enhancement measures to the potential effects and identify the "net effects"*
Task #5:	*Undertake a comparative evaluation and identify the Recommended Streetcar Route*

With the existing Study Area conditions in mind, the four alternative routes, along with the "Do Nothing" alternative were comparatively evaluated according to a qualitative net effects assessment. A qualitative assessment was chosen rather than a numerical/quantitative assessment with weightings and rankings because numerical rankings can pose significant evaluation difficulties that often result in excessive controversy over the results. While a numerical approach may at first appear to provide a more scientific, or precise, method of comparing alternative solutions, developing a common comparative yardstick for individual weightings is usually subject to significant debate and may result in controversy that detracts from the results of the evaluation. The subjectivity inherent in many numerical ranking systems can lead to disagreement and focus attention on the weightings of the categories of consideration and the assignment of points, rather than concentrating on the primary objective – the comparative evaluation of each alternative route's strengths and weaknesses. A focus on comparing advantages and disadvantages will allow for identification of the best possible route by taking into consideration the various trade-offs presented.

Therefore, a descriptive or qualitative evaluation was undertaken, although numerical information was used wherever applicable.

The evaluation consisted of the following two-step assessment process:

1. **"Net Effects" Analysis**
2. **Comparative Evaluation**

A "net effects analysis" is a process of identifying the net effects associated with each alternative. The process begins with the identification of potential effects on the environment from each

alternative. Reasonable mitigation measures are identified and applied to the potential effects and the remaining effects are identified as the "net effects". Once the net effects have been identified, they are then used in a comparative evaluation. Therefore the overall process is known as a "net effects comparative evaluation".

3.2.1 Task #1: Develop Evaluation Criteria, Indicators and Measures

The first step in the net effects evaluation process was to develop criteria within the following categories of consideration that represent the broad definition of the environment described in the EA Act:

- Technical
- Natural Environment
- Land Use Planning
- Social
- Cultural Heritage and Archaeological Resources
- Financial

Based on these categories, the following evaluation criteria were presented at the first Public Information Centre (PIC) for review and comment:

- **Technical**
  - Potential effects on intersection operations
  - Ability to meet transit ridership objectives
  - Potential effects on transit network integration
  - Potential effects on pedestrian and bicycle facilities and operations
  - Potential effects on urban design
  - Potential constructability issues
  - Potential operation and maintenance requirements
- **Natural Environment**
  - Potential effects on terrestrial habitats and functions
  - Potential effects on wildlife
  - Potential effects on greenways/open spaces and linkages
- **Land Use**
  - Potential effects on approved/proposed land uses
  - Potential for conforming with existing Official Plan designations and zoning; Regional and Provincial plans and policies
  - Potential effects on projected population / employment growth

- **Social Environment**
  - Potential effects on existing residents, businesses, institutional uses, and recreational land uses and amenities.
  - Potential short and long-term effects of: construction noise, vibration and air quality; construction on roadways and sidewalks/pathways; construction on local accesses (driveways)
  - Potential for loss of private property
- **Cultural Heritage and Archaeological Resources**
  - Potential effects to archaeological resources
  - Potential effects to built heritage features and cultural landscapes
- **Financial**
  - Potential capital costs
  - Potential land acquisition costs
  - Potential operation and maintenance costs

Based on responses provided by the public and agencies, coupled with the results of field investigations and secondary source data, these evaluation criteria were subsequently modified as necessary to reflect the potential effects of each alternative on the existing environment. The criteria, indicators, and measures used in the evaluation are provided in Table 3.

Table 3: Proposed Criteria, Rationale, indicators and Measures for Evaluation of Alternatives

Factor	Proposed Criteria	Rationale	Indicators	Measures	Data Sources
Technical	Potential effects on intersection operations	▪ Potential effects on intersection operations	▪ The location and design of streetcar routes may affect level of service at intersections and queue lengths/vehicle delays within the Study Area.	▪ Potential to affect turning and through movement	▪ Predicted level of service with streetcar operation; ▪ Predicted capacity of the intersection movements and queue lengths.
	Ability to meet transit ridership objectives	▪ The location and configuration of the streetcar route must help to overcome any existing and projected future deficiencies in the transportation system through the study corridor while providing a high quality transit system that allows riders to travel around the city safely, quickly and conveniently with minimal walking distances to stops and transfers.	▪ Potential to affect local and secondary catchments of riders as well as the accessibility and convenience of riders. ▪ Potential to affect walking distances to transit stops and transfer points. ▪ Potential to affect safety of ridership when accessing stations.	▪ Existing population and employment within 300m walking distance of stations. ▪ Future population and employment within 300m walking distance of stations. ▪ Barriers to accessibility of stations.	▪ Proposed route alignments and future land use plans with population and employment estimates ▪ Route ridership catchment areas ▪ Central Waterfront Secondary Plan
	Potential increase in transit ridership (projected)	▪ To support the envisioned high capacity streetcar line the effect of the location and configuration of streetcar routes on transit ridership (both local - within the primary Study Area and end-to-end riders) needs to be considered.	▪ Potential effect of location; degree of exclusive operation; and number of local stops on streetcar routes on projected transit ridership.	▪ Increases in ridership forecast and transit mode share of travel within Study Area.	▪ Model outputs and mode share estimates.
	Potential effects on transit network integration	▪ The location and configuration of the streetcar route may affect the integration with existing and planned transit network. An efficient integration with other future transit networks will help to achieve the purpose of this undertaking.	▪ Potential to affect transit network connectivity and transfers between TTC and GO transit services; and among other TTC services.	▪ Change in the number of stops that provide connections between routes/services (TTC-GO and TTC-TTC) ▪ Distance between connections/stops (e.g., TTC-GO and TTC-TTC).	▪ Existing services and proposed new services, routes and stations
	Potential increase in speed and improvement in Level of Service for streetcar users.	▪ The potential increase in speed and improvement in Level of Service of the selected location and configuration of streetcar route is important to achieve the purpose of this undertaking to create of a continuous, high speed and high capacity streetcar line that provides efficient service.	▪ Potential to affect streetcar speed, average travel time, frequency of stops and rider comfort.	▪ Predicted streetcar speed and level of service (service frequency or headways and number of stops). ▪ Transit travel times on streetcar route within study corridor. ▪ Perceived comfort of riders due to frequency of stops, changes in vertical and horizontal alignment of streetcar route.	▪ Model output and proposed route alignments.
	Potential effects on pedestrian and bicycle facilities and operations	▪ The construction of a new streetcar route in a dedicated ROW could potentially affect sidewalk and bicycle route access along waterfront recreational trails, urban streets and within the Exhibition Place, especially at the Dufferin Gate.	▪ Potential to affect pedestrians and bicycle facilities.	▪ Amount of sidewalks and bike lanes closed during construction ▪ Amount of sidewalks and bike lanes permanently closed by route operation ▪ Perceived effect on trail facilities	▪ Proposed route alignments, field survey
	Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▪ Potential opportunities may exist for improving streetscape and urban design in the ROW ▪ The location of the streetcar route could provide more or less opportunity for urban design or streetscape improvements. ▪ Consideration should be given to safety, and aesthetics along ROW.	▪ Potential to integrate urban design/streetscaping measures along streetcar ROW ▪ Potential to address safety considerations along streetcar ROW ▪ Potential for providing aesthetic appeal along streetcar ROW	▪ Area available adjacent to route for urban design/streetscaping and station/stop development ▪ Ability to implement safety considerations along streetcar ROW (e.g., lighting, dedicated street-crossing signals, pedestrian protection barriers, etc.) ▪ Ability to provide aesthetically-pleasing urban design (e.g., addition of trees/plantings, high quality design of stops/stations, etc.)	▪ Engineering / Landscape architectural plans
	Potential constructability issues	▪ Construction of the project may require difficult construction/staging techniques.	▪ Potential to provide adequate working area for construction; the proximity of adjacent buildings & infrastructure; and/or the proximity of planned adjacent infrastructure.	▪ Description of construction area and distance to adjacent buildings/infrastructure, including planned infrastructure.	▪ Drawings of alternative designs, TTC/City plans for buildings & infrastructure.

Factor	Proposed Criteria	Rationale	Indicators	Measures	Data Sources
	Potential operation and maintenance requirements	▪ The configuration and track elements (i.e., length, number of bridges and shelters/stations) has an effect on the operation and maintenance requirements.	▪ Potential configuration and alignment of track.	▪ Length of route ▪ Number of bridges ▪ Number of shelters/stations	▪ Drawing of proposed routes
	Potential effects on traffic operations.	▪ The location, configuration and degree of exclusivity of streetcar routes may affect vehicular traffic operations - road link traffic flows, travel times, and possible rerouting (changes to traffic patterns) within the Study Area.	▪ Potential to affect travel times, number of general traffic lanes and traffic volumes on road links. ▪ Potential to affect any mid-block crossings and transit priority and reduced link traffic progression due to signal priority for transit.	▪ Travel time estimates on affected roadway links. ▪ Traffic volume estimates of roadways in the vicinity of the proposed location ▪ Reduced link capacity.	▪ Model outputs for both transit and auto.
	Potential effects on roadway parking/loading.	▪ The operation of the streetcar may affect roadway parking/loading, such as removal of on-street parking or on-street deliveries depending on the location and configuration of the streetcar route.	▪ Potential to affect supply of on-street parking and loading areas.	▪ Existing and future supply of on-street parking and loading spaces.	▪ Inventory of existing and plans for future supply of on-street parking and loading areas along proposed routes
	Potential approval requirements	▪ Approvals may be required depending upon the potential interaction of the proposed undertaking with the environment. This could result in additional approval time.	▪ Potential to require federal, provincial or local permits or approvals.	▪ Number and type of permits or approvals, and extent of information required.	▪ Functional design of alternative routes.
Natural Environment	Potential effects on terrestrial habitats, functions and biota	▪ The location of the streetcar route may remove terrestrial habitat, alter the functioning of terrestrial ecosystems and effect species at risk or of special concern.	▪ Potential effects on: -Vegetation communities -Wildlife and Wildlife Habitat -Species at Risk or of Special Concern	▪ Amount of vegetation removed by each of the routes. ▪ Number of trees >30 cm in diameter removed. ▪ Amount of wildlife habitat removed. ▪ Encroachment of route on Species at Risk or of Special Concern.	▪ Vegetation surveys (ELC) ▪ Tree survey ▪ Bird and mammal surveys ▪ Natural Heritage Information Centre database (MNR)
	Potential effects on greenways/open spaces and linkages	▪ The location of the streetcar route may sever, fragment or completely remove greenways and natural linkages.	▪ Potential effects on connectivity	▪ Encroachment of route into natural linkages/corridors.	▪ Field Surveys
	Potential effects of existing contaminated soil in the Study Area	▪ Potential for the need to remove and dispose of contaminated soils excavated during construction phase of project.	▪ Presence or absence of contaminated soils in the Study Area.	▪ Estimated area of potential contaminated soil (in ha or m^2) along the proposed route.	▪ Historical information on past structures and land uses in Study Area, including aerial photographs 1954-present and fire insurance plans from 1935, 1945, and 1955.
	Potential effects of existing contaminated groundwater in the Study Area	▪ Potential for the need to remove and dispose of contaminated groundwater during construction phase of project (e.g., if dewater is necessary).	▪ Presence or absence of contaminated groundwater in the Study Area.	▪ Estimated area of potential contaminated groundwater (in ha or m^2) along the proposed route.	▪ Historical information on past structures and land uses in Study Area, including aerial photographs 1954-present and fire insurance plans from 1935, 1945, and 1955.
Land Use Environment	Potential effects on approved/proposed land uses	▪ The rationale for identifying the potential effects on approved/proposed land uses is the potential for any particular route to affect the size and/or configuration of a development parcel that at is either approved/proposed for redevelopment.	▪ The indicators for this criterion include potential land takings from identified approved and/proposed development sites.	▪ i) the amount of land taken ▪ ii) the amount of road frontage affected	▪ Approved/Proposed Development Applications as identified on Map 5 of Planning Overview report.
	Conformity to existing Official Plan designations and zoning	▪ The Toronto Official Plan identifies Land Uses for the City including areas for redevelopment and stable neighbourhoods. The City of Toronto Zoning By-Law implements the planned urban structure and it must conform to the City's Official Plan. ▪ The rationale for this criterion is to understand whether or not a particular route conforms to the planned urban structure as articulated in the City's Official Plan and Zoning By-Law.	▪ The indicators for conformity include whether or not the proposed route is anticipated by the planning document and whether or not the planned route will have a potential effect on the planned urban structure.	▪ Qualitative assessment of the level of conformity with the City's planning documents.	▪ City of Toronto Official Plan (2006) ▪ City of Toronto Zoning By-Law No. 438-86 ▪ Central Waterfront Plan Part II (2001) ▪ Garrison Common North Secondary Plan (2006) ▪ Exhibition Place Development and Concept Plan (2004)

Factor	Proposed Criteria	Rationale	Indicators	Measures	Data Sources
	Conformity to existing Regional and Provincial plans and policies.	▪ Provincial Policy has evolved through the Provincial Policy Statement (2005), Places to Grow: Growth Plan for the Greater Golden Horseshoe (2006), The Greenbelt Plan (2005), and Bill 51 to promote intensification/compact urban form and a greater reliance on transit.	▪ The indicators for conformity include whether or not the proposed route is anticipated by the planning document and whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▪ Qualitative assessment of the redevelopment potential within 500 m (approximately 5 minutes) of a proposed transit stop.	▪ Existing Land Use Analysis as identified on Map 1 of Planning Overview report.
	Potential effects on projected population / employment growth in the Study Area.	▪ Transit facilities have the potential to promote intensification redevelopment within 500 m of a transit station.	▪ The indicators whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▪ Qualitative assessment of the redevelopment potential within 500 m (approximately 5 minutes) of a proposed transit stop.	▪ Existing Land Use Analysis as identified on Map 1 of Planning Overview report.
Social Environment	Potential for displacing existing residences, businesses, institutions and recreational features.	▪ If existing residences, businesses, institutions and / or recreational features exist within the planned ROW, there may be the potential for displacement of these features	▪ Potential for displacement of residences located within dedicated ROW. ▪ Potential for displacement of businesses located within dedicated ROW. ▪ Potential for displacement of institutions located within dedicated ROW. ▪ Potential for displacement of recreational features located within dedicated ROW.	▪ Number and type (i.e., single family, multi-unit) of residences within dedicated ROW. ▪ Number of businesses within dedicated ROW. ▪ Number of institutions within dedicated ROW. ▪ Number of recreational features within dedicated ROW.	▪ Detailed field inventory of existing residences, businesses, institutions, and recreational features.

	Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance).	▪ Construction of a streetcar ROW may result in noise, vibration, and dust, which may affect neighbouring residents, businesses, institutions, and recreational features.	▪ Sensitivity of residences within area of influence for noise, vibration, and air quality.
			▪ Sensitivity of businesses within area of influence for noise, vibration, and air quality.
			▪ Sensitivity of institutions within area of influence for noise, vibration, and air quality.
			▪ Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality.
				▪ Noise
				  ▪ Number and type of residences / businesses / institutions / recreational features within area of influence
				▪ Vibration
				  ▪ Number and type of residences / businesses / institutions / recreational features within area of influence
				▪ Air Quality
				  ▪ Number and type of residences / businesses / institutions / recreational features within area of influence
					▪ Model results showing area of influence (Noise, Vibration)

	Potential short-term effects on use of roadways, driveways, sidewalks and pathways (e.g., changes to property access, changes to access to the waterfront).	▪ Short-term potential effects on the use of roadways, driveways, sidewalks, and pathways may occur during the construction phase	▪ Potential for effects on vehicular traffic from lane closures ▪ Potential for effects on residences from driveway closures ▪ Potential for effects on pedestrians from sidewalk closures ▪ Potential for effects on users of recreational pathways	▪ Duration and extent of lane closures ▪ Number of driveways affected by lane closures and / or construction immediately adjacent ▪ Length of sidewalks and pathways affected by lane closures and / or construction immediately adjacent	▪ Detailed field inventory of existing residences, businesses, institutions, recreational features, sidewalks

	Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features.	▪ New streetcar ROW may produce long-term noise and/or vibration effects
		▪ It is hoped that by introducing a streetcar ROW, long-term air quality will improve due to a reduction in vehicular traffic
			▪ Sensitivity of residences within area of influence for noise, vibration, and air quality
			▪ Sensitivity of businesses within area of influence for noise, vibration, and air quality
			▪ Sensitivity institutions within area of influence for noise, vibration, and air quality
			▪ Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality
				▪ Noise
				  ▪ Number and type of residences / businesses / institutions / recreational features within area of influence
				▪ Vibration
				  ▪ Number and type of residences / businesses / institutions / recreational features within area of influence
				  ▪ Structural concerns for buildings as a result of long-term vibration issues due to the presence of a streetcar ROW (i.e., foundation cracking)
				▪ Air Quality
				  ▪ Number and type of residences / businesses / institutions / recreational features within area of influence
					▪ Model results showing area of influence (Noise, Vibration)
					▪ Federal Railway Guidelines

Factor	Proposed Criteria	Rationale	Indicators	Measures	Data Sources
	Potential long-term effects on use of roadways, driveways, sidewalks and pathways (changes to property access, and access to the waterfront).	▪ There may be long-term potential effects on the use of roadways by vehicular traffic ▪ Potential effects to driveways. ▪ The operation of the streetcar may affect pedestrian and bicycle facilities (sidewalks and pathways) and operations depending on the location and configuration of the streetcar route. ▪ Alteration of existing property access may be required to accommodate the streetcar ROW	▪ Potential delays to vehicular traffic on roadways. ▪ Potential for adversely affecting pedestrian and bicycle facilities and operations (e.g., more difficult pedestrian crossings, reductions in the width of sidewalks, removal or reduction in size of bikes lanes). ▪ Potential to affect access to the waterfront ▪ Potential to affect property access points	▪ Number of pedestrian access points ▪ Existing and future pedestrian and bicycle facilities (sidewalks and pathways) with proposed streetcar operation ▪ Number of points where the ROW interrupts existing recreational pathways ▪ Change to waterfront access, whether positive or negative ▪ Number of private driveways/pathways affected by presence of a streetcar ROW	▪ Detailed field inventory of existing residences, businesses, institutions, recreational features ▪ Existing inventory and proposed new pedestrian and bike paths ▪ Field work, City of Toronto traffic studies
	Potential opportunities for urban design and streetscape improvements (including safety considerations along ROW).	▪ Potential opportunities may exist for improving streetscape and urban design in the ROW ▪ The location of the streetcar route could provide more or less opportunity for urban design or streetscape improvements. ▪ Consideration should be given to safety, and aesthetics along ROW.	▪ Potential to integrate urban design/streetscaping measures along streetcar ROW ▪ Potential to address safety considerations along streetcar ROW ▪ Potential for providing aesthetic appeal along streetcar ROW	▪ Area available adjacent to route for urban design/streetscaping and station/stop development ▪ Ability to implement safety considerations along streetcar ROW (e.g., lighting, dedicated street-crossing signals, pedestrian protection barriers, etc.) ▪ Ability to provide aesthetically-pleasing urban design (e.g., addition of trees/plantings, high quality design of stops/stations, etc.)	▪ Engineering / Landscape architectural plans
	Potential for requiring private property.	▪ Location and design of alternative streetcar routes may result in the need for acquiring public property.	▪ Potential effect on existing property limits and private property.	▪ Amount of land required to achieve the intended design and location of route.	▪ Functional design of alternative routes.
	Potential short- and long-term effects on cultural events in the Study Area	▪ Construction (short-term) and operation (long-term) of the ROW may interfere with cultural events in the Study Area	▪ Potential to affect cultural events within or near the Study Area	▪ Number and type of cultural events affected	▪ Listing of planned cultural events in the Study Area
Cultural Environment	Potential effects to archaeological resources.	▪ Archaeological artefacts and finds represent an important resource. ▪ Alternatives may adversely affect potential archaeological resources within the Study Area. Where this is potentially the case, an archaeological resource assessment is required by provincial legislation.	▪ Potential for disturbance or destruction of known archaeological sites. ▪ Potential for disturbance of areas of archaeological potential.	▪ Number of known sites within or proximate to the alternative determined by: ▪ Type of sites ▪ Significance of sites ▪ Proximity of known archaeological sites ▪ Area of archaeological potential, within or proximate to the alternative determined by: ▪ Proximity of water sources ▪ Historic land use ▪ Other physiographic indicators of archaeological potential	▪ Ontario Ministry of Culture (Ontario Archaeological Sites Database) ▪ Archaeological/heritage studies and reports ▪ Historic mapping ▪ Other published and unpublished archaeological literature, as appropriate ▪ Topographic maps ▪ Field review as appropriate ▪ Local museums ▪ Other local informants as appropriate ▪ First Nation groups
	Potential effects to built heritage features and cultural landscapes.	▪ Built heritage features and cultural landscape units are irreplaceable assets and resources within a community ▪ Alternatives may adversely affect existing and potential built heritage features and cultural landscapes within the Study Area	▪ Potential for displacement or disruption of built heritage resources ▪ Potential for displacement or disruption of cultural heritage landscape resources. ▪ Significance of potentially displaced or disrupted cultural landscape resources.	▪ Number of built heritage resources displaced or disrupted within the property (or ROW) or adjacent. ▪ Qualitative assessment for significance or importance and sensitivity. ▪ Number of cultural landscape resources displaced or disrupted, adjacent to or within the property assessed for significance or importance and sensitivity. ▪ Qualitative assessment of the significance of cultural landscape resources that are displaced or disrupted.	▪ Historical mapping, photographs, municipal, provincial and federal inventories, listings and plaques and/or heritage reports and designations of National Historic Sites and under the Ontario Heritage. ▪ Windshield survey of the Study Area. ▪ Consultation with municipal and regional heritage planning staff or designates, municipal heritage committees, historical societies and other heritage groups as necessary. ▪ Consultation with Ministry of Culture.
Financial	Potential capital costs.	▪ Location and design of alternative streetcar routes to result in unacceptable significant capital costs.	▪ Potential effect on project budget.	▪ Cost estimates for each major component of the project; comparative cost analysis between alternative routes.	▪ Alternative routes design; cost estimates for alternative routes; standard TTC unit cost rates.
	Potential land acquisition costs.	▪ Potential design/location of streetcar route to result in minimal to substantive land acquisition costs.	▪ Potential effect of design/location on private land holdings.	▪ Number of acres of land required; cost/acre of land based on existing/future land use.	▪ Alternative routes design; land use data, land appraisal data.
	Potential operation and maintenance costs.	▪ Potential design/location of streetcar route to result in minimal to substantive operation/maintenance costs.	▪ Potential effect of design/location on operation/ maintenance costs.	▪ Number of km of track length; number of stations; number of bridges, signals, etc.; extent of steep grades, turns, etc.	▪ Alternative routes design; TTC operation and maintenance cost data.

3.2.2 Task #2: Apply the Evaluation Criteria, Indicators and Measures to Each Alternative Route

The second step in the net effect analysis was to apply the criteria, indicators, and measures documented in Table 3 to the alternative routes in order to identify the potential effects of each route on the environment. These potential effects were then documented in the first column of Table 4 ("Do Nothing" alternative), Table 5 (Alternative Route #1), Table 6 (Alternative Route #2), Table 7 (Alternative Route #3A), and Table 8 (Alternative Route #3B).

3.2.3 Task #3: Develop Mitigation/Compensation/ Enhancement Measures

Once the potential effects on the environment were identified and documented for each alternative route, the appropriate avoidance/mitigation/compensation/enhancement measures were developed and documented in the second column of Tables 4, 5, 6, 7 and 8 for each criterion. The intent behind these measures was as follows:

Avoidance: The first priority is to prevent the occurrence of negative effects (adverse environmental effects) associated with the implementation of an alternative. Consideration of avoidance is made before mitigation or compensation.

Mitigation: Where adverse environmental effects cannot be avoided, it is necessary to develop the appropriate measures to remove or alleviate the negative effects associated with implementing the alternative. These mitigation measures should only be considered if avoidance of adverse effects is not possible.

Compensation: In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation, compensation measures may be required to counterbalance the negative effect through replacement in kind, or provision of a substitute or reimbursement.

Enhancement: Wherever possible, the opportunity should be taken to enhance the positive environmental effects associated with the implementation of an alternative rather than simply mitigate and/or compensate.

3.2.4 Task #4: Apply the Avoidance/Mitigation/ Compensation/Enhancement Measures to the Potential Effects and Identify the Net Effects

Once the appropriate avoidance/mitigation/compensation/enhancement measures were developed and applied to the potential environmental effects for each alternative route, the remaining negative or positive effects were identified as the "net effects". The net effects allow for the various advantages and disadvantages of each alternative route to be clearly identified for each criterion. This then allowed for a detailed comparative evaluation in the next step.

Table 4: Net Effects Analysis of the "Do Nothing" Alternative

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
1. Technical			
1.1 Potential effects on intersection operations. 1.1.1 Effect on turning and through movement 1.1.2 Effect on driveways and accesses	▶ No effects on intersection operations.	▶ No mitigation/compensation/enhancement measures required.	▶ No effects on intersection operations.
1.2 Ability to meet transit ridership objectives. 1.2.1 Effect on local and secondary catchments of riders as well as accessibility and convenience of riders 1.2.2 Effect on walking distances to transit stops and transfer points 1.2.3 Effect on safety of riders	▶ No ability to meet transit ridership objectives.	▶ No mitigation/compensation/enhancement measures available.	▶ No ability to meet transit ridership objectives.
1.3 Potential increase in transit ridership (projected) 1.3.1 Effect on projected ridership	▶ No potential increase in transit ridership.	▶ No mitigation/compensation/enhancement measures available.	▶ No potential increase in transit ridership.
1.4 Potential effects on transit network integration. 1.4.1 Effect on transit network connectivity and transfers between TTC and GO transit services and among other TTC services	▶ Negative effect on transit network integration as no connections constructed.	▶ No mitigation/compensation/enhancement measures available.	▶ Negative effect on transit network integration as no connections constructed.
1.5 Potential increase in speed and improvement in Level of Service for streetcar users. 1.5.1 Effect on speed and average travel time 1.5.2 Effect on frequency of stops and rider comfort, etc.	▶ No increase, potential decrease in long-term due to increased travel demand and insufficient services.	▶ No mitigation/compensation/enhancement measures available.	▶ No increase, potential decrease in long-term due to increased travel demand and insufficient services.
1.6 Potential effects on pedestrian and bicycle facilities and operations	▶ Negative effect as limited ability to improve facilities along current ROW.	▶ No mitigation/compensation/enhancement measures required.	▶ Negative effect as limited ability to improve facilities along current ROW.
1.7 Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▶ Negative effects as no improvements implemented.	▶ No mitigation/compensation/enhancement measures available.	▶ Negative effects as no improvements implemented.
1.8 Potential constructability issues. 1.8.1 Adequate working area 1.8.2 Potential effect to buildings/infrastructure	▶ No potential constructability issues as nothing constructed.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential constructability issues as nothing constructed.
1.9 Potential operation and maintenance requirements. 1.9.1 Configuration and alignment of track	▶ Currently existing operation and maintenance requirements maintained in short term, will increase over time due to aging of/increased demand on the system.	▶ No mitigation/compensation/enhancement measures required.	▶ Currently existing operation and maintenance requirements maintained in short term, will increase over time due to aging of/increased demand on the system.
1.10 Potential approval requirements 1.10.1 Effect on Public lands 1.10.2 Design standards and regulatory requirements	▶ No approval requirements required.	▶ No mitigation/compensation/enhancement measures required.	▶ No approval requirements required.
2. Natural Environment			
2.1 Potential effects on terrestrial habitats, functions and biota. 2.1.1 Vegetation Communities 2.1.2 Wildlife and Wildlife Habitat 2.1.3 Species at Risk or of Special Concern	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes the fewest trees. ▶ Does not reduce natural connectivity	▶ No mitigation/compensation/enhancement measures required.	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes the fewest trees. ▶ Does not reduce natural connectivity
2.2 Potential effects on greenways/open spaces and natural linkages. 2.2.1 Connectivity	▶ No potential effects on groundwater greater than due to current operation.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential effects on groundwater greater than due to current operation.
2.3 Presence or Absence of Soil Impacts in Study Area.	▶ No potential for encountering contaminated soil greater than due to current operation.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential for encountering contaminated soil greater than due to current operation.
2.4 Presence or Absence of Groundwater Impacts in Study Area.	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes the fewest trees. ▶ Does not reduce natural connectivity	▶ No mitigation/compensation/enhancement measures required.	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes the fewest trees. ▶ Does not reduce natural connectivity

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
3. Land Use Environment			
3.1 Potential effects on approved/proposed land uses. 3.1.1 Potential land takings from identified approved and/proposed development sites.	▶ No potential adverse effects on approved/proposed land uses.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential adverse effects on approved/proposed land uses.
3.2 Conformity with existing Official Plan designations and zoning. 3.2.1 Whether or not the proposed route is anticipated by the planning document 3.2.2 Whether or not the planned route will have a potential effect on the planned urban structure.	▶ Conforms to existing plans and zoning.	▶ No mitigation/compensation/enhancement measures required.	▶ Conforms to existing plans and zoning.
3.3 Conformity with existing Regional and Provincial plans and policies. 3.3.1 Whether or not the proposed route is anticipated by the planning document. 3.3.2 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ Does not conform to regional and provincial transit policies such as the Growth Plan for the GGH.	▶ No mitigation/compensation/enhancement measures available.	▶ Does not conform to regional and provincial transit policies such as the Growth Plan for the GGH.
3.4 Potential effects on projected population / employment growth in the Study Area. 3.4.1 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ Negative effects on projected population/employment growth, as it will not be accommodated through transit improvements.	▶ No mitigation/compensation/enhancement measures available.	▶ Negative effects on projected population/employment growth, as it will not be accommodated through transit improvements.
4. Social Environment			
4.1 Potential for displacing existing residences, businesses, institutions and recreational features. 4.1.1 Displacement of residences located within dedicated ROW 4.1.2 Displacement of businesses located within dedicated ROW 4.1.3 Displacement of institutions located within dedicated ROW 4.1.4 Displacement of recreational features located within dedicated ROW	▶ No potential for displacement of residences, as nothing would be constructed. ▶ No potential for displacement of businesses, as nothing would be constructed. ▶ No potential for displacement of institutions, as nothing would be constructed. ▶ No potential for displacement of recreational features, as nothing would be constructed.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential for displacement as nothing would be constructed.
4.2 Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance). 4.2.1 Qualitative effect on air quality due to changes in vehicle delays/speeds, 4.2.2 Qualitative effect on air quality due to dust during construction.	▶ No potential short-term increase in noise and vibration effects on existing residences, businesses, institutions and recreational features. ▶ No change to air quality due to changes in vehicle delays/speeds. ▶ No change to air quality due to dust.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential short-term increase in noise, vibration and air quality effects on existing residences, businesses, institutions and recreational features.
4.3 Potential short-term effects of construction on the use of roadways, driveways, sidewalks and pathways (restrictions to access, including access to the waterfront). 4.3.1 Effect on vehicular traffic from lane closures 4.3.3 Effect on residences from driveway closures 4.3.4 Effect on pedestrians from sidewalk closures 4.3.5 Effect on recreational users of pathways	▶ No potential effects from construction as nothing constructed.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential effects from construction as nothing constructed.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
4.4 Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features. 4.4.1 Sensitivity of residences within area of influence for noise, vibration, and air quality 4.4.2 Sensitivity of businesses within area of influence for noise, vibration, and air quality 4.4.3 Sensitivity of institutions within area of influence for noise, vibration, and air quality 4.4.4 Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality	▶ Potential long-term increase in noise and vibration due to increased travel demand and resulting traffic congestion. Potential negative effect on air quality in long term due to increased auto traffic.	▶ No mitigation/compensation/enhancement measures available.	▶ Potential long-term increase in noise and vibration due to increased travel demand and resulting traffic congestion. Potential negative effect on air quality in long term due to increased auto traffic.
4.5 Potential long-term effects on use of roadways, driveways, sidewalks and pathways (e.g., changes to property access, changes to access to the waterfront). 4.5.1 Potential delays to vehicular traffic on roadways 4.5.2 Effect on driveways 4.5.3 Effect on pedestrian facilities an operations 4.5.4 Effect on bicycle facilities and operations 4.5.4 Effect on use of recreational pathways 4.5.5 Effect on waterfront access	▶ Negative long-term effects on use of roadways due to increased auto traffic and congestion from increased streetcar demand. ▶ Potential negative effect on pedestrian/bike safety and access to waterfront due to increased congestion.	▶ No mitigation/compensation/enhancement measures available.	▶ Negative long-term effects on use of roadways due to increased auto traffic and congestion from increased streetcar demand. ▶ Potential negative effect on pedestrian/bike safety and access to waterfront due to increased congestion.
4.7 Potential for requiring private property. 4.7.1 Effect on existing property limits and private property	▶ No potential for requiring private property.	▶ No mitigation/compensation/enhancement measures available.	▶ No potential for requiring private property.
4.8 Potential short- and long-term effects on cultural events in the Study Area. 4.8.1 Effect on cultural events in the Study Area	▶ No increase in potential to serve local communities and events.	▶ No mitigation/compensation/enhancement measures required.	▶ No increase in potential to serve local communities and events.
5. Cultural Environment			
5.1 Potential effects to archaeological resources. 5.1.1 Disturbance or destruction of known archaeological sites. 5.1.2 Disturbance of areas of archaeological potential.	▶ No potential effects as nothing would be disturbed.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential effects as nothing would be disturbed.
5,2 Potential effects to built heritage features and cultural landscapes. 5.2.1 Displacement or disruption of built heritage resources. 5.2.2 Displacement or disruption of cultural heritage landscape resources. 5.2.3 Significance of displaced or disrupted cultural landscape resources.	▶ No potential effects as nothing would be disturbed.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential effects as nothing would be disturbed.
6. Financial			
6.1 Potential capital costs. 6.1.1 Extent of Capital Cost.	▶ None	▶ No mitigation/compensation/enhancement measures required.	▶ None
6.2 Potential land acquisition costs. 6.2.1 Extent of land acquisition costs.	▶ None	▶ No mitigation/compensation/enhancement measures required.	▶ None
6.3 Potential operation and maintenance costs. 6.3.1 Effect on operation/maintenance costs.	▶ None above current rate in short term, but costs will increase as system ages/travel demand increases	▶ No mitigation/compensation/enhancement measures available.	▶ None above current rate in short term, but costs will increase as system ages/travel demand increases

Table 5: Net Effects Analysis of Alternative Streetcar Route #1

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
1. Technical			
1.1 Potential effects on intersection operations. 1.1.1 Effect on turning and through movement 1.1.2 Effect on driveways and accesses	▶ No significant effects on intersection operations. ▶ Minor effect on operation at parking access on the north side of Manitoba Dr just west of Nova Scotia Ave.	▶ Provide traffic signal control at the access.	▶ No significant adverse effects on intersection and access traffic operation
1.2 Ability to meet transit ridership objectives. 1.2.1 Effect on local and secondary catchments of riders as well as accessibility and convenience of riders 1.2.2 Effect on walking distances to transit stops and transfer points 1.2.3 Effect on safety of riders	▶ Improved accessibility and proximity/convenience for local riders, but far from Ontario Place and south end of the Exhibition Place catchments ▶ Good station accessibility to local riders on the north side of the Study Area. ▶ Fast/direct route to riders within the entire corridor.	▶ Some enhancements and modifications required at the GO/TTC station in Exhibition Place.	▶ Potential effects remain the same.
1.3 Potential increase in transit ridership (projected) 1.3.1 Effect on projected ridership	▶ Transit ridership comparable to Route 2. Higher transit ridership expected than Routes 3A and 3B.	▶ Some enhancements and modifications required at the GO/TTC station in Exhibition Place.	▶ Highest expected ridership and comparable to Route 2 Meets the high capacity objective of this undertaking.
1.4 Potential effects on transit network integration. 1.4.1 Effect on transit network connectivity and transfers between TTC and GO transit services and among other TTC services	▶ Route 1 offers good overall connectivity with existing and future transit network with good potential to promote mode shift to transit. ▶ Opportunity to design an integrated GO/TTC station in Exhibition Place.	▶ Opportunity to design an integrated GO/TTC station in Exhibition Place.	▶ Route offers efficient connectivity with existing and future transit network (TTC Bus Route 29 & Exhibition Place GO station), including the construction of an enhanced GO/TTC interface that further enhances the potential to promote mode shift to transit.
1.5 Potential increase in speed and improvement in Level of Service for streetcar users. 1.5.1 Effect on speed and average travel time 1.5.2 Effect on frequency of stops and rider comfort Etc.	▶ Lowest average travel time, due to short length of route ▶ Highest rider comfort due to shortest and most direct path or route.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
1.6 Potential effects on pedestrian and bicycle facilities and operations	▶ Some effect on pedestrian walking areas during CNE events in N/W area.	▶ Relocate temporary CNE kiosks to alternate location and enhance.	▶ Potential for adverse effects on existing and future pedestrian and bicycle facilities during special events such as CNE.
1.7 Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▶ Opportunity for urban design and streetscape improvements, particularly in N/W area of Exhibition Place and in vicinity of Dufferin Gate. ▶ Existing streetscaping on the north side of Manitoba Drive may be moved to accommodate streetcar route. ▶ Need for improved safety considerations for pedestrians and non-motorized vehicles at Dufferin Gate Crossing. Increased lighting at all stops and platforms may be needed to address safety considerations.	▶ Enhanced urban design features and pedestrian safety (increased lighting, panic buttons, etc.) at the Dufferin Gate and at other stops and platforms along the route. ▶ Replace removed streetscaping.	▶ Dufferin Gate is a narrow entrance to the CNE, also used by local and other traffic travelling to/from Lakeshore Blvd. north into the city. The area would benefit from safety and design enhancements through additional signalized intersections, wider sidewalks and potentially bicycle lanes. Safety enhancements may also be needed at Manitoba Drive (which is currently a relatively low-traffic street). ▶ Integrates GO/TTC stations at Exhibition Place.
8.1 Potential constructability issues. 1.8.1 Adequate working area 1.8.2 Potential effect to buildings/infrastructure	▶ Area is generally unoccupied and available for construction activity for most of the year. ▪ Some modifications required for improved integration with GO Station and platform considerations for crowds.	▶ Design integration with GO/TTC for improved passenger handling. ▶ Relocation of some seasonal CNE kiosks/buildings.	▶ Opportunity to provide integrated GO/TTC station at Exhibition Place.
1.9 Potential operation and maintenance requirements. 1.9.1 Configuration and alignment of track	▶ Route 1 is the shortest route and therefore is expected to have lowest operational and maintenance requirement.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
1.10 Potential approval requirements 1.10.1 Effect on Public lands 1.10.2 Design standards and regulatory requirements	▶ Approvals required from City of Toronto. Design of route would have to comply with City and TTC design standards and requirements, including minimum set-backs, clearances, grades, structural design requirements, etc.	▶ Intrusion into Exhibition Place lands to be minimized and located with least potential effect. Design to meet requirements of City/TTC.	▶ Design to be in accordance with TTC & City of Toronto standards.
2. Natural Environment			
2.1 Potential effects on terrestrial habitats, functions and biota. 2.1.1 Vegetation Communities 2.1.2 Wildlife and Wildlife Habitat 2.1.3 Species at Risk or of Special Concern	▶ Route 1 has the potential to remove approximately 8 trees with a diameter > 30 cm at breast height, and 15 trees with a diameter < 30 cm in diameter. These trees are streetscape trees, many of which are non-native ornamentals.	▶ Replace removed trees with urban-tolerant native trees (or non-invasive species) at a 3:1 replacement ratio for trees > 10 cm and 1:1 replacement ratio for trees < 10 cm in diameter; plant ~ 53 native, urban adapted trees within city parks.	▶ Removal of streetscape trees: approximately 8 trees with diameter > 30 cm at breast height and 15 trees < 30 cm in diameter. ▶ Planting of approximately 53 trees within city parks to replace trees that will be removed.
2.2 Potential effects on greenways/open spaces and natural linkages. 2.2.1 Connectivity	▶ No effects	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
2.3 Presence or Absence of Soil Impacts in Study Area	▶ Potential contaminated soil from possible fill materials along Gardiner Expressway	▶ Removal of any contaminated soils during construction phase of project.	▶ None expected based on information acquired in preliminary investigation.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
2.4 Presence or Absence of Groundwater Impacts in Study Area.	▶ From understanding of existing and proposed grading, no groundwater issues are expected based on information acquired in preliminary investigation.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3. Land Use Environment			
3.1 Potential effects on approved/proposed land uses. 3.1.1 Potential land takings from identified approved and/proposed development sites.	▶ A review of the proposed/approved development applications indicated that streetcar route will have no impact on potential land takings or frontage affected from identified approved and/or proposed development sites.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.2 Conformity with existing Official Plan designations and zoning. 3.2.1 Whether or not the proposed route is anticipated by the planning document 3.2.2 Whether or not the planned route will have a potential effect on the planned urban structure.	▶ Route is identified conceptually in Official Plan as a Transit Corridor on Map 4 Higher Order Transit Corridors ▶ Has potential positive effect on the ability to better serve transit needs for existing development in the northern half of the CNE grounds.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.3 Conformity with existing Regional and Provincial plans and policies. 3.3.1 Whether or not the proposed route is anticipated by the planning document. 3.3.2 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ This route is identified conceptually on Schedule 5 “Moving People – Transit” in Places to Grow: Growth Plan for the Greater Golden Horseshoe. ▶ Supports the development of infrastructure to meet current and projected needs (Policy 1.1.1g of the Provincial Policy Statement)	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.4 Potential effects on projected population / employment growth in the Study Area. 3.4.1 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ Promotes intensification of underutilized sites within 500 m of the station locations and has potential to enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
4. Social Environment			
4.1 Potential for displacing existing residences, businesses, institutions and recreational features. 4.1.1 Displacement of residences located within dedicated ROW 4.1.2 Displacement of businesses located within dedicated ROW 4.1.3 Displacement of institutions located within dedicated ROW 4.1.4 Displacement of recreational features located within dedicated ROW	▶ There is no potential for displacing residences or institutions along the ROW. ▶ Part of the CNE children’s play area, a games shed and a storage shed may be displaced.	▶ Relocate play area and structures if necessary.	▶ Relocation of children’s play area may occur; relocation of a games shed and a storage shed will likely occur.
4.2 Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance). 4.2.1 Qualitative effect on air quality due to changes in vehicle delays/speeds, 4.2.2 Qualitative effect on air quality due to dust during construction.	▶ There are no residents within the Study Area. ▶ The few businesses in the area are not likely to be affected by noise, vibration, or reduced air quality during construction. ▶ The Police Station should not be affected by noise, vibration, or reduced air quality during construction. ▶ Noise and vibration are not expected to affect users of recreational features within the Study Area. Reduced air quality due to dust and diesel fumes during construction may potentially affect users.	▶ Control dust and debris through the use of standard techniques within the construction industry in compliance with standards. ▶ If required, noise, vibration and/or dust generating construction activities should be avoided during recreational events.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions and recreational features will be minimized.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
4.3 Potential short-term effects of construction on the use of roadways, driveways, sidewalks and pathways (restrictions to access, including access to the waterfront). 4.3.1 Effect on vehicular traffic from lane closures 4.3.2 Effect on residences from driveway closures 4.3.3 Effect on pedestrians from sidewalk closures 4.3.4 Effect on recreational users of pathways	▶ There may be short-term lane closures during the construction of streetcar tracks or upgrade of existing tracks. ▶ No residences will be affected by construction. ▶ Temporary sidewalk closures may be required. ▶ Construction will affect access through Dufferin Gate.	▶ Develop a traffic management plan that will minimize the impact to traffic operations on Manitoba Drive during construction and provide temporary alternate access to areas under the Gardiner Expressway. The plan should include a detour route for the any sidewalks/pathways affected. ▶ Proper signage will be required to notify vehicular, pedestrian and cycling traffic of construction in the area.	▶ Short-term effects to Manitoba Drive, access to areas under the Gardiner Expressway and affected sidewalks/pathways will be minimized. ▶ Proper signage will be required for the safety of pedestrians and cyclists that use nearby recreational pathways.
4.4 Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features. 4.4.1 Sensitivity of residences within area of influence for noise, vibration, and air quality 4.4.2 Sensitivity of businesses within area of influence for noise, vibration, and air quality 4.4.3 Sensitivity of institutions within area of influence for noise, vibration, and air quality 4.4.4 Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality	▶ There are no residences within the Study Area. ▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise & vibration. ▶ There are no long-term anticipated negative effects due to noise, vibration or air quality on institutions. ▶ There are no long-term anticipated negative effects due to noise, vibration or air quality on users of recreational features. ▶ Positive effect on air quality through the use of streetcar versus private vehicle.	▶ No mitigation/compensation/enhancement measures required.	▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise & vibration.
4.5 Potential long-term effects on use of roadways, driveways, sidewalks and pathways (e.g., changes to property access, changes to access to the waterfront). 4.5.1 Potential delays to vehicular traffic on roadways 4.5.2 Effect on driveways 4.5.3 Effect on pedestrian facilities an operations 4.5.4 Effect on bicycle facilities and operations 4.5.5 Effect on use of recreational pathways 4.5.6 Effect on waterfront access	▶ Pedestrian sidewalk located on the north side of Manitoba Drive in the vicinity of the Food Building will need to be relocated as there is insufficient right-of-way to accommodate it between the streetcar and Manitoba Drive. ▶ No negative effect is anticipated to recreational pathways. ▶ Streetcar service will provide increased opportunity for waterfront access.	▶ Re-locate sidewalk along Manitoba Drive.	▶ Streetcar service will provide increased opportunity for waterfront access.
4.6 Potential for requiring private property. 4.6.1 Effect on existing property limits and private property	▶ No expropriation is expected.	▶ No mitigation/compensation/enhancement measures required.	▶ No expropriation is expected.
4.7 Potential short- and long-term effects on cultural events in the Study Area. 4.7.1 Effect on cultural events in the Study Area	▶ Cultural events may be disrupted in the short term by lane closures during construction of the streetcar ROW, especially at the Dufferin Gate. ▶ In the long-term, the presence of a dedicated ROW may result in the displacement of cultural events.	▶ Short-term: Attempt to organize periods of construction when there are no cultural events scheduled. ▶ Long-term: Relocate cultural events.	▶ Some cultural event routes may be disrupted by construction of a dedicated streetcar ROW.
5. Cultural Environment			
5.1 Potential effects to archaeological resources. 5.1.1 Disturbance or destruction of known archaeological sites. 5.1.2 Disturbance of areas of archaeological potential.	▶ No known archaeological sites in, or within proximity, of alternative. ▶ No archaeological potential identified.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
5.2 Potential effects to built heritage features and cultural landscapes. 5.2.1 Displacement or disruption of built heritage resources. 5.2.2 Displacement or disruption of cultural heritage landscape resources. 5.2.3 Significance of displaced or disrupted cultural landscape resources.	▶ Disruption to and/or removal of built heritage features: ▶ Potential effects on the Dufferin Street Bridge ▶ Potential effects to the Gardiner Expressway. ▶ Disruption to and/or removal of cultural landscape units: ▶ Potential effects to the Exhibition grounds.	▶ Confirm structural stability of built heritage features prior to construction and monitor vibration levels during construction.	▶ Potential effects on built heritage feature or cultural landscape unit would be mitigated. No net effect.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
6. Financial			
6.1 Potential capital costs. 6.1.1 Extent of Capital Cost.	▶ Low ($65,000,000)	▶ No mitigation/compensation/enhancement measures required.	▶ Low
6.2 Potential land acquisition costs. 6.2.1 Extent of land acquisition costs.	▶ No land acquisition thus no land acquisition costs.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
6.3 Potential operation and maintenance costs. 6.3.1 Effect on operation/maintenance costs.	▶ Low operating cost due to short track length ▶ Low maintenance cost due to short track length	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.

Table 6: Net Effects Analysis of Alternative Streetcar Route #2

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
1. Technical			
1.1 Potential effects on intersection operations. 1.1.1 Effect on turning and through movement	▶ Potential additional streetcar turning movement at Strachan/Fleet.	▶ Transit signal priority.	▶ Minor adverse effects on intersection traffic operation.
1.2 Ability to meet transit ridership objectives. 1.2.1 Effect on local and secondary catchments of riders as well as accessibility and convenience of riders 1.2.2 Effect on walking distances to transit stops and transfer points 1.2.3 Effect on safety of riders	▶ Good connectivity for local riders ▶ Minimum effect on secondary catchments of riders ▶ Good accessibility and convenience of local riders but far from Ontario Place and south end of the Exhibition Place catchments ▶ Good station accessibility to local riders on the north side of the Study Area.	▶ No mitigation/compensation/enhancement measures identified.	▶ Potential effects remain the same.
1.3 Potential increase in transit ridership (projected) 1.3.3 Effect on projected ridership	▶ Good potential increase in transit ridership. Comparable to Route 1.	▶ Build station at north side of current Exhibition Place station, integrated with GO Transit station.	▶ High expected ridership. Meets the high capacity objective of this undertaking.
1.4 Potential effects on transit network integration. 1.4.4 Effect on transit network connectivity and transfers between TTC and GO transit services and among other TTC services	▶ Route 2 offers good overall connectivity with existing and future transit network with good potential to promote mode shift to transit ▶ Access to the GO Station and platforms are to be facilitated by pedestrian crossing signals at the location of the TTC platforms. Generally maintain uninterrupted, continuous transit service.	▶ No mitigation/compensation/enhancement measures required. ▶ Pedestrian access at GO Station to be enhanced through creation of a pedestrian crossing of transit line/Front Street.	▶ Route offers an efficient connectivity with existing and future transit network (TTC Bus Route 29 & Exhibition Place GO station) with good potential to promote mode shift to transit
1.5 Potential increase in speed and improvement in Level of Service for streetcar users. 1.5.1 Effect on speed and average travel time 1.5.2 Effect on frequency of stops and rider comfort	▶ Moderate average travel time and high rider comfort	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
1.6 Potential effects on pedestrian and bicycle facilities and operations	▶ Ability to provide pedestrian and bicycle facilities on proposed Front Street is limited due to loss of ROW by transit line.	▶ Accommodate cyclists on roadway.	▶ Results in limited space for large sidewalks and bicycle lanes on Front Street extension due to limited R.O.W.
1.7 Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▶ This route may provide an opportunity to enhance the streetscape in the area within the ROW and at the station/platform. ▶ Need for increased safety at the GO station tunnel.	▶ Increase lighting and safety at the GO tunnel and new platform through enhancement measures such as increased lighting and safety barriers.	▶ This area is not currently a transportation corridor, so there is an opportunity to provide for high design and safety enhancements if constructed in conjunction with Front Street extension, although R.O.W. limitations may restrict potential. ▶ Integrates GO/TTC stations north of Exhibition Place.
1.8 Potential constructability issues. 1.8.1 Adequate working area 1.8.2 Potential effect to buildings/infrastructure	▶ The area for this route option is generally unoccupied and available for construction activity. Relocation of the westbound GO Station platform is required. The route allows for the future Front Street Extension, with some minor adjustments. No potential effects to buildings/ properties as route remains in planned Front Street Extension ROW ▶ New bridge structure required over CN corridor, in vicinity of Strachan Avenue.	▶ Design provides for a relocated GO platform and minor adjustments to planned Front Street Extension design.	▶ Minimal adverse effects.
1.9 Potential operation and maintenance requirements. 1.9.1 Configuration and alignment of track	▶ Moderate-High operation and maintenance requirements due to the length of the route and passage under the Gardiner Expressway and over the CN tracks for its alignment alongside the proposed future Front Street Extension alignment.	▶ No mitigation or compensation identified.	▶ Potential effects remain the same.
1.10 Potential approval requirements 1.10.1 Effect on public lands 1.10.2 Design standards and regulatory requirements	▶ Approvals required from City of Toronto. Design of route would have to comply with City, TTC, GO & CN design standards and requirements, including minimum set-backs, clearances, grades, structural design requirements, etc.	▶ Intrusion into future Front Street Extension ROW to be minimized and located with least potential effect. Design to meet requirements of City/TTC/GO/CN.	▶ Design to be in accordance with TTC/City/GO/CN standards.
2. Natural Environment			
2.1 Potential effects on terrestrial habitats, functions and biota. 2.1.1 Vegetation Communities 2.1.2 Wildlife and Wildlife Habitat 2.1.3 Species at Risk or of Special Concern	▶ Route 2 has the potential to remove 0.5-3.5 ha of naturalized vegetation (CUW and CUT) and wildlife habitat (provides nesting habitat for urban songbirds and small mammals) located along the railroad tracks. These vegetation communities are highly disturbed units that have naturally colonized the berm north of the tracks ▶ Route removes approximately 10 trees> 30 cm in diameter and 15 trees < 30 cm in diameter. Trees to be removed are a mixture of native (Black Walnut) and non-native (Norway Maple) species.	▶ Restore similar vegetation communities or wildlife habitat within the city (if they exist). ▶ Replace removed trees with urban-tolerant native trees (or non-invasive species) at a 3:1 replacement ratio for trees > 10 cm and 1:1 ratio for trees < 10 cm in diameter; plant ~ 55 native, urban adapted trees.	▶ Removal of 0.5-3.5 ha of naturalized vegetation and wildlife habitat. ▶ Removal of ~ 10 trees> 30 cm in diameter and 15 trees < 30 cm in diameter. ▶ Planting of approximately 55 trees within naturalized areas and city parks to replace trees that will be removed.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
2.2 Potential effects on greenways/open spaces and natural linkages. 2.2.1 Connectivity	▶ Route 2 has the potential to reduce natural connectivity by severing the east west vegetated corridor located along the train tracks. This is a berm that has naturally re-vegetated creating thicket habitat.	▶ Enhance other nearby east west running natural linkages that are structurally similar (if it exists).	▶ Reduction of connectivity between natural areas in the vicinity.
2.3 Presence or absence of soil potential effects in Study Area.	▶ Potential contaminated soil from railway fill materials along 50 m section of route in rail corridor. ▶ Potential contaminated soil from railway fill materials and past heavy industrial land uses along 1.4 km section of route north of Gardiner expressway.	▶ Removal of any contaminated soils during construction phase of project.	▶ None expected based on information acquired in preliminary investigation.
2.4 Presence or absence of groundwater potential effects in Study Area.	▶ None expected based on information acquired in preliminary investigation.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3. Land Use Environment			
3.1 Potential effects on approved/proposed land uses. 3.1.1 Potential land takings from identified approved and/proposed development sites.	▶ A review of the proposed/approved development applications indicated that Alternative Streetcar Route 2 will have no potential land takings or frontage affected from the sites identified on Map 5: Future Development of the Planning Overview report.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.2 Conformity with existing Official Plan designations and zoning. 3.2.1 Whether or not the proposed route is anticipated by the planning document 3.2.2 Whether or not the planned route will have a potential effect on the planned urban structure.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor. ▶ Serves the existing employment area (Liberty Village) and has the potential to stimulate significant intensified redevelopment in Liberty Village (Garrison Common North Secondary Plan).	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.3 Conformity with existing Regional and Provincial plans and policies. 3.3.1 Whether or not the proposed route is anticipated by the planning document 3.3.2 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ This route is identified conceptually on Schedule 5 “Moving People – Transit” in Places to Grow: Growth Plan for the Greater Golden Horseshoe. ▶ Supports Policy 1.1.1g) of the Provincial Policy Statement. ▶ Provides additional connectivity within the existing transportation system (Provincial Policy Statement). ▶ Promotes intensification of underutilized sites within 500 m of the station locations and could enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.4 Potential effects on projected population / employment growth in the Study Area. 3.4.1 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ Promotes intensification of underutilized sites within 500 m of the station locations and could enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
4. Social Environment			
4.1 Potential for displacing existing residences, businesses, institutions and recreational features. 4.1.1 Displacement of residences located within dedicated ROW 4.1.2 Displacement of businesses located within dedicated ROW 4.1.3 Displacement of institutions located within dedicated ROW 4.1.4 Displacement of recreational features located within dedicated ROW	▶ No potential for displacement exists along this route.	▶ No mitigation/compensation/enhancement measures required.	▶ No potential for displacement exists along this route.
4.2 Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance). 4.2.1 Qualitative effect on air quality due to changes in vehicle delays/speeds, 4.2.2 Qualitative effect on air quality due to dust during construction.	▶ Short-term construction may impact businesses along the ROW.	▶ Control dust and debris through the use of standard techniques within the construction industry in compliance with standards. ▶ If required, noise, vibration and/or dust generating construction activities should be avoided during recreational events.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions and recreational features will be minimized.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
4.3 Potential short-term effects of construction on the use of roadways, driveways, sidewalks and pathways (restrictions to access, including access to the waterfront). 4.3.1 Effect on vehicular traffic from lane closures 4.3.3 Effect on residences from driveway closures 4.3.4 Effect on pedestrians from sidewalk closures 4.3.5 Effect on recreational users of pathways	▶ Potential effect to traffic travelling on Strachan Ave and Dufferin St. ▶ No driveway closures are expected. ▶ Sidewalks at Strachan Ave and Dufferin St may be affected. Potential short-term effect on GO Transit tunnel access. ▶ Potential short-term effect on Strachan bike lanes.	▶ Develop a traffic management plan that will minimize the impact to traffic operations on Dufferin and Strachan.	▶ Potential short-term effects to roadways, driveways and pathways will be minimized.
4.4 Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features. 4.4.1 Sensitivity of residences within area of influence for noise, vibration, and air quality 4.4.2 Sensitivity of businesses within area of influence for noise, vibration, and air quality 4.4.3 Sensitivity of institutions within area of influence for noise, vibration, and air quality 4.4.4 Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality	▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise & vibration. ▶ Overall positive long-term effect on air quality due to modal shift.	▶ No mitigation/compensation/enhancement measures required.	▶ Overall positive long-term effect on air quality due to modal shift. ▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise & vibration
4.5 Potential long-term effects on use of roadways, driveways, sidewalks and pathways (e.g., changes to property access, changes to access to the waterfront). 4.5.1 Potential delays to vehicular traffic on roadways 4.5.2 Effect on driveways 4.5.3 Effect on pedestrian facilities an operations 4.5.4 Effect on bicycle facilities and operations 4.5.5 Effect on use of recreational pathways 4.5.6 Effect on waterfront access	▶ Potential impact on traffic due to at-grade intersection at Dufferin Street. ▶ Pedestrian crossing at Dufferin Gate and Strachan Ave may be affected due to increased traffic. ▶ Overall positive effect from increased access to the waterfront area.	▶ Enhance pedestrian crossings at Dufferin Gate and Strachan Avenue.	▶ Overall positive effect from increased access to the waterfront area.
4.6 Potential for requiring private property. 4.6.1 Effect on existing property limits and private property	▶ Property expropriation may be required along west side of Strachan Avenue within the CNE.	▶ Compensation may be required where expropriation may be necessary.	▶ Expropriation of property may be required.
4.7 Potential short- and long-term effects on cultural events in the Study Area 4.7.1 Effect on cultural events in the Study Area	▶ Minimal effect to cultural events is anticipated.	▶ No mitigation / enhancement / compensation required.	▶ Minimal effect to cultural events is anticipated.
5. Cultural Environment			
5.1 Potential effects to archaeological resources. 5.1.1 Disturbance or destruction of known archaeological sites. 5.1.2 Disturbance of areas of archaeological potential.	▶ Alteration to and/or loss of known and not yet known archaeological sites: ▶ No known archaeological sites in, or within proximity, of alternative. ▶ Archaeological potential	▶ Undertake a Stage 2 Archaeological Assessment within the area identified as having archaeological potential. ▶ Undertake a Stage 3 and/or Stage 4 Archaeological Assessment if further mitigation is required.	▶ No potential adverse effects with mitigation.
5.2 Potential effects to built heritage features and cultural landscapes. 5.2.1 Displacement or disruption of built heritage resources 5.2.2 Displacement or disruption of cultural heritage landscape resources. 5.2.3 Significance of displaced or disrupted cultural landscape resources.	▶ Disruption to and/or removal of built heritage features: ▶ Potential effects on the Strachan Ave. Street Bridge ▶ Potential effects on the Dufferin Street Bridge ▶ Potential effects on the industrial complex at 153 Dufferin Street ▶ Disruption to and/or removal of cultural landscape units: ▶ Potential effects on the CNR Railscape ▶ Potential effects on former railway spur	▶ Confirm structural stability of built heritage features prior to construction and monitor vibration levels during construction	▶ No potential adverse effects on built heritage features or cultural landscape units with mitigation.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
6. Financial			
6.1 Potential capital costs. 6.1.1 Extent of Capital Cost	▶ High ($130,000,000)	▶ No mitigation/compensation/enhancement measures required.	▶ None
6.2 Potential land acquisition costs. 6.2.1. Extent of land acquisition costs	▶ Minor land acquisition requiring minor land acquisition costs.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
6.3 Potential operation and maintenance costs. 6.3.1 Effect on operation/maintenance costs	▶ Moderate operating cost due to moderate track length ▶ Moderate maintenance cost due to moderate track length	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.

Table 7: Net Effects Analysis of Alternative Streetcar Route #3A

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
1. Technical			
1.1 Potential effects on intersection operations. 1.1.1 Effect on turning and through movement	▶ Degraded intersection operations at Strachan and Lake Shore and extended Dufferin at Lake Shore. Left turning traffic also impacted along Lakeshore.	▶ Transit signal priority, traffic signal phasing and timing improvements.	▶ Delays to intersection traffic operation for left turning movements to/from Lakeshore at: Strachan; Ontario Place Blvd; Ontario Dr; British Columbia Dr; and Dufferin.
1.2 Ability to meet transit ridership objectives. 1.2.1 Effect on local and secondary catchments of riders as well as accessibility and convenience of riders 1.2.2 Effect on walking distances to transit stops and transfer points 1.2.3 Effect on safety of riders	▶ Good accessibility and proximity/convenience for local riders from south Exhibition Place and Ontario Place but far for riders north of the primary Study Area ▶ Median location of station reduces number of lanes to cross by riders from north of Lakeshore. ▶ Most circuitous route for long distance riders, adding to travel time.	▶ Traffic signal improvements and pedestrian crossing enhancements.	▶ Route is remote (more than 300 m) from riders north of the primary study; but provides good accessibility and proximity/convenience for local riders from Exhibition Place and Ontario Place; location of station reduces number of lanes to cross by riders from north of Lakeshore. Added travel time for long distance riders.
1.3 Potential increase in transit ridership (projected) 1.3.1 Effect on projected ridership	▶ Daily transit ridership would be lessened due to long route and remoteness from residential areas north of the CN/GO corridor. Would better serve event crowds at Ontario Place. Would reduce attractiveness of route and adversely effect long distance ridership.	▶ No mitigation/enhancements but station locations along Lake Shore Boulevard would facilitate crowds at Ontario Place.	▶ Lower daily ridership due to location.
1.4 Potential effects on transit network integration. 1.4.1 Effect on transit network connectivity and transfers between TTC and GO transit services and among other TTC services	▶ Poor connectivity to existing and future transit network including the GO transit; poor connectivity with the existing TTC Exhibition Place loop ▶ Less direct route linking South Etobicoke to Downtown. ▶ Generally maintain uninterrupted, continuous transit service.	▶ No mitigation/compensation/enhancement measures identified.	▶ Potential effects remain the same.
1.5 Potential increase in speed and improvement in Level of Service for streetcar users. 1.5.1 Effect on speed and average travel time 1.5.2 Effect on frequency of stops and rider comfort	▶ High average travel time, and low rider comfort due to length or route and turns	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
1.6 Potential effects on pedestrian and bicycle facilities and operations	▶ Pedestrians required to cross Lake Shore Boulevard lanes to access station platforms. Negligible effect on bicycle facilities.	▶ New traffic signals provided to allow for pedestrians to cross Lake Shore.	▶ Some potential effect on existing and future pedestrian and bicycle facilities. The widening of Lakeshore to the south moves the Lakeshore sidewalk southerly as well; but does not affect the Waterfront Trail.
1.7 Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▶ The alignment along Lakeshore Boulevard will have the most visual impact, and has little potential opportunity for platform design enhancements. However, opportunities exist to enhance the streetscape within the ROW. ▶ Need for increased safety features along waterfront stops and at major intersections.	▶ Enhancement of safety features required.	▶ Increased safety measures needed at accesses, at streetcar turns and stops, along Lakeshore Blvd. at the streetcar stops, and along the waterfront trails. ▶ Enhancement of Dufferin Gate and access to waterfront at Princess Gate are opportunities for improvement.
1.8 Potential constructability issues. 1.8.1 Adequate working area 1.8.2 Potential effect to buildings/infrastructure	▶ The area for this route option is in the centre of existing Lake Shore Boulevard, Strachan Avenue and a future extended Dufferin Street. Significant construction staging techniques required along Strachan Avenue and Lake Shore Boulevard. Modifications required to existing pedestrian bridges across Lake Shore Boulevard. Minimal potential effects to buildings/properties.	▶ Detailed construction staging plans would be developed for work within Lake Shore and Strachan road allowances. Design would provide for extended pedestrian bridges across Lake Shore Blvd.	▶ Potential disruption to traffic along Lake Shore and Strachan.
1.9 Potential operation and maintenance requirements. 1.9.1 Configuration and alignment of track.	▶ High operational and maintenance requirements as this route is longest and will require approximately 6 transit signals.	▶ No mitigation or compensation identified.	▶ Potential effects remain the same.
1.10 Potential approval requirements 1.10.1 Effect on Public lands 1.10.2 Design standards and regulatory requirements	▶ Location of route is through existing public right-of-way and publicly owned lands (Exhibition Place). Approvals required from City of Toronto. Design of route would have to comply with City and TTC design standards and requirements, including minimum set-backs, clearances, grades, structural design requirements, etc.	▶ Intrusion into Lake Shore Boulevard and Strachan Avenue to be minimized. Design to meet requirements of City/TTC.	▶ Design to be in accordance with TTC/City standards.
2. Natural Environment			
2.1 Potential effects on terrestrial habitats, functions and biota. 2.1.1 Vegetation Communities 2.1.2 Wildlife and Wildlife Habitat 2.1.3 Species at Risk or of Special Concern	▶ Route removes approximately 17 trees with diameter > 30 cm at breast height and 35 trees with a diameter < 30 cm at breast height. These trees are streetscape trees, many of which are non-native ornamentals.	▶ Replace removed trees with urban-tolerant native trees (or non-invasive species) at a 3:1 replacement ratio for trees > 10 cm and 1:1 replacement ratio for trees < 10 cm in diameter; plant ~ 89 native, urban adapted trees within city parks.	▶ Removal of 17 trees with diameter > 30 cm in diameter and 35 trees < 30 cm in diameter at breast height. ▶ Planting of approximately 89 trees within city parks to replace trees that will be removed.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
2.2 Potential effects on greenways/open spaces and natural linkages. 2.2.1 Connectivity	▶ No effect.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
2.3 Presence or absence of soil potential effects in Study Area.	▶ Potential contaminated soil from lakefill materials along 1.2 km section of route near Lake Ontario shore. ▶ Potential contaminated soil from electrical transformer substation on east side of Study Area.	▶ Removal of any contaminated soils during construction phase of project.	▶ None expected based on information acquired in preliminary investigation.
2.4 Presence or absence of groundwater potential effects in Study Area.	▶ From understanding of existing and proposed grading, no groundwater issues are expected based on information acquired in preliminary investigation.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3. Land Use Environment			
3.1 Potential effects on approved/proposed land uses. 3.1.1 Potential land takings from identified approved and/proposed development sites.	▶ A review of the proposed/approved development applications indicated that this route will have no potential land takings or frontage affected from the sites identified on Map 5: Future Development of the Planning Overview report.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.2 Conformity with existing Official Plan designations and zoning. 3.2.1 Whether or not the proposed route is anticipated by the planning document 3.2.2 Whether or not the planned route will have a potential effect on the planned urban structure.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor. ▶ With 2 stations proposed that connect to existing roads, this route has the potential to stimulate significant redevelopment in the southern half of the CNE grounds and the northern edge of Ontario Place; also has the potential to better serve existing facilities at the CNE grounds and Ontario Place (Central Waterfront Plan Part II, Exhibition Place Development and Concept Plan - 2004).	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.3 Conformity with existing Regional and Provincial plans and policies. 3.3.1 Whether or not the proposed route is anticipated by the planning document 3.3.2 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ This route is identified conceptually on Schedule 5 “Moving People – Transit” in Places to Grow: Growth Plan for the Greater Golden Horseshoe. ▶ Supports Policy 1.1.1g) of the Provincial Policy Statement. ▶ Provides additional connectivity within the existing transportation system (Provincial Policy Statement). ▶ Promotes intensification of underutilized sites within 500 m of the station locations and could enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.4 Potential effects on projected population / employment growth in the Study Area. 3.4.1 Whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ Promotes intensification of underutilized sites within 500 m of the station locations and could enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
4. Social Environment			
4.1 Potential for displacing existing residences, businesses, institutions and recreational features. 4.1.1 Displacement of residences located within dedicated ROW 4.1.2 Displacement of businesses located within dedicated ROW 4.1.3 Displacement of institutions located within dedicated ROW 4.1.4 Displacement of recreational features located within dedicated ROW	▶ No displacement of residences, businesses, institutions, or recreational areas within ROW. ▶ May displace CNE grandstand for Champ Car series events. ▶ May displace some parking for CNE businesses in the vicinity of Liberty Grand.	▶ Relocate grandstand if required.	▶ Relocation of grandstand may be required.
4.2 Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance). 4.2.1 Qualitative effect on air quality due to changes in vehicle delays/speeds, 4.2.2 Qualitative effect on air quality due to dust during construction.	▶ There may be potential effects from noise, vibration and air quality to CNE businesses during construction. ▶ Potential effects from noise, vibrations and dust during construction could affect users of Exhibition Place, Ontario Place, and waterfront recreational features.	▶ Control dust and debris through the use of standard techniques within the construction industry in compliance with standards. ▶ Restrict construction to least sensitive times to avoid affecting recreational users of pathways and facilities at Exhibition Place.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions and recreational features will be minimized.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
4.3 Potential short-term effects of construction on the use of roadways, driveways, sidewalks and pathways (restrictions to access, including access to the waterfront). 4.3.1 Effect on vehicular traffic from lane closures 4.3.2 Effect on residences from driveway closures 4.3.3 Effect on pedestrians from sidewalk closures 4.3.4 Effect on recreational users of pathways	▶ Construction along Lake Shore will require realignment of the eastbound lanes further to the south creating delays to traffic as well as impacting the operations and alignment of Remembrance Drive located on the south side of Lake Shore Boulevard. ▶ Construction may also affect traffic operations along Strachan Avenue, Dufferin Street, and roads within Exhibition grounds. ▶ Access to Coronation Park may be affected.	▶ Develop a traffic management plan that will minimize impact to operations on Strachan Avenue, Dufferin Street, CNE streets and Lake Shore Boulevard during construction. ▶ Provide alternate access to pedestrian bridge.	▶ Potential traffic effects will be minimized.
4.4 Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features. 4.4.1 Sensitivity of residences within area of influence for noise, vibration, and air quality 4.4.2 Sensitivity of businesses within area of influence for noise, vibration, and air quality 4.4.3 Sensitivity of institutions within area of influence for noise, vibration, and air quality 4.4.4 Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality	▶ No effects on institutions, residences, or users of recreational features are anticipated. ▶ Businesses such as the Automotive & Arts and Crafts Buildings within the CNE grounds may experience long-term effects of noise and vibration.	▶ Mitigation measures are not required; noise and vibration increase is within accepted standards.	▶ Businesses such as the Automotive & Arts and Crafts Buildings within the CNE grounds may experience long-term effects of noise and vibration.
4.5 Potential long-term effects on use of roadways, driveways, sidewalks and pathways (e.g., changes to property access, changes to access to the waterfront). 4.5.1 Potential delays to vehicular traffic on roadways 4.5.2 Effect on driveways 4.5.3 Effect on pedestrian facilities an operations 4.5.4 Effect on bicycle facilities and operations 4.5.5 Effect on use of recreational pathways 4.5.6 Effect on waterfront access	▶ There may be some potential effects to use of roadways. ▶ May affect driveway access to Liberty Grand, Medieval Times, and Ontario Place. ▶ There are also potential effects to traffic flow at Dufferin Street. ▶ Positive effect on access to waterfront and Ontario Place.	▶ Design considerations may be required at the Princess Gate and along the Dufferin Street extension to consider alternatives for vehicle and pedestrian crossing of the ROW.	▶ Long-term positive effect on access to waterfront.
4.6 Potential for requiring private property. 4.6.1 Effect on existing property limits and private property	▶ Property expropriation may be required along the east side of Strachan Avenue and the south side of Lake Shore Boulevard.	▶ Compensation may be required where expropriation may be necessary.	▶ Expropriation of property may be required.
4.7 Potential short- and long-term effects on cultural events in the Study Area 4.7.1 Effect on cultural events in the Study Area	▶ Short-term: Seasonal (summer) events along the Lake Shore and at the CNE may be disturbed by noise, vibrations and air quality due to construction. The Strachan/ Lake Shore intersection is particularly vulnerable due to the high levels of motorized, non-motorized, and pedestrian traffic. ▶ Long-term: Potential effects are positive, due to increased access of the waterfront area. Route and grandstands for the Champ Car Series may be affected.	▶ Stage construction to avoid major festivals in the area.	▶ Cultural events may need to be rerouted, or streetcar service co-ordinated, during cultural events.
5. Cultural Environment			
5.1 Potential effects to archaeological resources. 5.1.1 Disturbance or destruction of known archaeological sites 5.1.2 Disturbance of areas of archaeological potential	▶ Alteration to and/or loss of known and not yet known archaeological sites: ▶ No known archaeological sites in, or within proximity, of alternative. ▶ Archaeological potential identified along the west and north side of Lakeshore Blvd. ▶ Archaeological potential along the lower extension of Dufferin St.	▶ Undertake a Stage 2 Archaeological Assessment within the area identified as having archaeological potential. ▶ Undertake a Stage 3 and/or Stage 4 Archaeological Assessment if further mitigation is required.	▶ Potential adverse effects to known or potential archaeological resources would be avoided or mitigated.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
5.2 Potential effects to built heritage features and cultural landscapes. 5.2.1 Displacement or disruption of built heritage resources 5.2.2 Displacement or disruption of cultural heritage landscape resources. 5.2.3 Significance of displaced or disrupted cultural landscape resources.	▶ Disruption to and/or removal of built heritage features: ▶ Potential effects on the Strachan Ave. Street Bridge ▶ Potential effects on the Dufferin Street Bridge ▶ Potential effects on the industrial complex at 153 Dufferin Street ▶ Disruption to and/or removal of cultural landscape units: ▶ Potential effects to the Exhibition grounds	▶ Confirm structural stability of built heritage features inside of Exhibition grounds prior to construction and monitor vibration levels during construction	▶ Potential adverse effects on built heritage feature or cultural landscape unit would be mitigated.
6. Financial			
6.1 Potential capital costs. 6.1.1 Extent of Capital Cost	▶ High ($115,000,000)	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
6.2 Potential land acquisition costs. 6.2.1 Extent of land acquisition costs	▶ Land acquisition costs may be required. Land is required from public agencies (i.e., Ontario Place).	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
6.3 Potential operation and maintenance costs. 6.3.1 Effect on operation/maintenance costs	▶ Higher operating cost due to longer track length ▶ Higher maintenance cost due to longer track length	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.

Table 8: Net Effects Analysis of Alternative Streetcar Route #3B

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
1. Technical			
1.1 Potential effects on intersection operations. 1.1.1 Effect on turning and through movement	▶ Degraded intersection operation at Strachan and Lake Shore and at the extended Dufferin at Lake Shore. Westbound left turning traffic also impacted along Lakeshore.	▶ Transit signal priority, traffic signal phasing and timing improvements.	▶ Degraded operation for Lakeshore through traffic at Strachan and Dufferin where the streetcar route crosses Lakeshore; ▶ Delays to some turning movements to/from Lakeshore at: Strachan; Ontario Place Blvd; Ontario Dr; British Columbia Dr; and Dufferin
1.2 Ability to meet transit ridership objectives. 1.2.1 Effect on local and secondary catchments of riders as well as accessibility and convenience of riders 1.2.2 Effect on walking distances to transit stops and transfer points 1.2.3 Effect on safety of riders	▶ Good accessibility and convenience for local riders from Exhibition Place and Ontario Place but far for riders north of the primary Study Area ▶ Increased walking distance for riders from Exhibition Place. ▶ Most circuitous route for long distance riders, adding to travel time.	▶ Traffic signal improvements and pedestrian crossing enhancements.	▶ Route provides good accessibility and proximity/convenience for local riders from Exhibition Place and Ontario Place but is far for riders north of the primary Study Area. Added travel time for long distance riders.
1.3 Potential increase in transit ridership (projected) 1.3.1 Effect on projected ridership	▶ Lower daily transit ridership due to longer route and remoteness from residential areas north of the CN/GO corridor. Would better serve visitors at Ontario Place. Would reduce attractiveness of route and adversely effect long distance ridership.	▶ No mitigation/enhancements but station locations along Lake Shore Boulevard would facilitate crowds at Ontario Place.	▶ Lower daily ridership.
1.4 Potential effects on transit network integration. 1.4.1 Effect on transit network connectivity and transfers between TTC and GO transit services and among other TTC services	▶ Poor connectivity to existing and future transit network including the existing GO transit and the TTC Exhibition Place loop ▶ Less direct route linking South Etobicoke to Downtown ▶ Generally maintain uninterrupted, continuous transit service.	▶ No mitigation/compensation/enhancement measures identified.	▶ Potential effects remain the same.
1.5 Potential increase in speed and improvement in Level of Service for streetcar users. 1.5.1 Effect on speed and average travel time 1.5.2 Effect on frequency of stops and rider comfort	▶ High average travel time, and low rider comfort due to length of route and turns.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
1.6 Potential effects on pedestrian and bicycle facilities and operations	▶ Pedestrians required to cross all lanes of Lake Shore Boulevard or use pedestrian bridges. Negligible effect on bicycle facilities.	▶ No mitigation/compensation/enhancement measures available.	▶ Some potential effect on existing and future pedestrian and bicycle facilities. Affects the location of the Waterfront Trail west of Strachan.
1.7 Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▶ Limited streetscape and urban design improvement opportunities along this route. ▶ Need for increased safety along waterfront stops and at major intersections.	▶ Enhancement of safety features required.	▶ Increased safety measures needed at accesses, at streetcar turns and stops, along Lakeshore Blvd. at the streetcar stops, and along the waterfront trails. ▶ Opportunity to enhance Dufferin Gate and access to waterfront at Princess Gate.
1.8 Potential constructability issues. 1.8.1 Adequate working area 1.8.2 Potential effect to buildings/infrastructure	▶ The area for this route option is along the south side of existing Lake Shore Boulevard and centre of existing Strachan Avenue. A future extended Dufferin Street accommodates the west end. Significant construction staging techniques required along Strachan Avenue. Moderate construction staging along Lake Shore Boulevard. Modifications required to existing pedestrian bridges across Lake Shore Boulevard. Minimal potential effects to buildings/properties.	▶ Detailed construction staging plans would be developed for work within Lake Shore and Strachan road allowances. Design would provide for extended pedestrian bridges across Lake Shore Blvd. ▶	▶ Potential disruption to traffic along Lake Shore and Strachan.
1.9 Potential operation and maintenance requirements. 1.191 Configuration and alignment of track	▶ Higher operational and maintenance requirements, as this route is longest and will require approximately 6 transit signals.	▶ No mitigation or compensation identified.	▶ Potential effects remain the same.
1.10 Potential approval requirements 1.10.1 Effect on Public lands 1.10.2 Design standards and regulatory requirements	▶ Location of route is through existing public right-of-way and publicly owned lands (Exhibition Place and Ontario Place). Approvals required from City of Toronto and Ontario Place. Design of route would have to comply with City and TTC design standards and requirements, including minimum set-backs, clearances, grades, structural design requirements, etc.	▶ Intrusion into Lake Shore Boulevard and Strachan Avenue right-of-ways to be minimized. Design to meet requirements of City/TTC.	▶ Design to be in accordance with TTC/City standards.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
2. Natural Environment			
2.1 Potential effects on terrestrial habitats, functions and biota. 2.1.1 Vegetation Communities 2.1.2 Wildlife and Wildlife Habitat 2.1.3 Species at Risk or of Special Concern	▶ Route removes approximately 21 trees with diameter > 30 cm at breast height and ~106 trees with a diameter < 30 cm at breast height. These trees are streetscape trees, many of which are non-native ornamentals.	▶ Replace removed trees with urban-tolerant native trees (or non-invasive species) at a 3:1 replacement ratio for trees > 10 cm and 1:1 replacement ratio for trees < 10 cm in diameter; plant ~ 223 native urban-adapted trees in city parks.	▶ Removal of 21 trees with diameter > 30 cm in diameter and 106 < 30 cm in diameter at breast height. ▶ Planting of approximately 223 trees within city parks to replace trees that will be removed.
2.2 Potential effects on greenways/open spaces and natural linkages. 2.2.1 Connectivity	▶ No effect.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
2.3 Presence or Absence of Soil Potential effects in Study Area.	▶ Potential contaminated soil from lakefill materials along 1.3 km section of route near Lake Ontario shore. ▶ Potential contaminated soil from electrical transformer substation on east side of Study Area.	▶ Removal of any contaminated soils during construction phase of Project.	▶ None expected based on information acquired in preliminary investigation.
2.4 Presence or Absence of Groundwater Potential effects in Study Area.	▶ From understanding of existing and proposed grading, no groundwater issues are expected based on information acquired in preliminary investigation.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3. Land Use Environment			
3.1 Potential effects on approved/proposed land uses. 3.1.1 Potential land takings from identified approved and/proposed development sites.	▶ A review of the proposed/approved development applications indicated that route will have no potential land takings or frontage affected from the sites identified on Map 5: Future Development of the Planning Overview report.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.2 Conformity with existing Official Plan designations and zoning. 3.2.1 Whether or not the proposed route is anticipated by the planning document 3.2.2 Whether or not the planned route will have a potential effect on the planned urban structure.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor. ▶ Only one station proposed and it is not connected to existing roads on the CNE grounds (Central Waterfront Plan Part II, Exhibition Place Development and Concept Plan - 2004).	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.3 Conformity with existing Regional and Provincial plans and policies. 3.3.1 whether or not the proposed route is anticipated by the planning document 3.3.2 whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ This route is identified conceptually on Schedule 5 “Moving People – Transit” in Places to Grow: Growth Plan for the Greater Golden Horseshoe. ▶ Supports Policy 1.1.1g) of the Provincial Policy Statement. ▶ Provides additional connectivity within the existing transportation system (Provincial Policy Statement). ▶ Promotes intensification of underutilized sites within 500 m of the station locations and could enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
3.4 Potential effects on projected population / employment growth in the Study Area. 3.4.1 whether or not the planned route promotes development intensification in proximity to station locations and subsequently enhances transit ridership.	▶ Promotes intensification of underutilized sites within 500 m of the station locations and could enhance transit ridership.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
4. Social Environment			
4.1 Potential for displacing existing residences, businesses, institutions and recreational features. 4.1.1 Displacement of residences located within dedicated ROW 4.1.2 Displacement of businesses located within dedicated ROW 4.1.3 Displacement of institutions located within dedicated ROW 4.1.4 Displacement of recreational features located within dedicated ROW	▶ Some business parking may be displaced at the CNE. ▶ Possible displacement of a road near Coronation Park. ▶ Some displacement of recreational features such as a portion of the Martin Goodman Trail. Possible infringement on Inukshuk Park and Coronation Park. ▶ Possible displacement of utility storage area.	▶ May require relocation of, or compensation for, displaced/infringed recreational features, parking and road.	▶ Potential effect on Martin Goodman Trail, other recreational features, parking and road.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
4.2 Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance). 4.2.1 Qualitative effect on air quality due to changes in vehicle delays/speeds, 4.2.2 Qualitative effect on air quality due to dust during construction.	▶ There may be potential effects from noise, vibration and air quality to CNE businesses during construction. ▶ Potential effects from noise, vibrations and dust during construction could affect users of Exhibition Place, Ontario Place, and waterfront recreational features.	▶ Control dust and debris through the use of standard techniques within the construction industry in compliance with standards. ▶ Restrict construction to least sensitive times to avoid affecting recreational users of pathways and facilities at Exhibition Place.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions and recreational features will be minimized.
4.3 Potential short-term effects of construction on the use of roadways, driveways, sidewalks and pathways (restrictions to access, including access to the waterfront). 4.3.1 Effect on vehicular traffic from lane closures 4.3.2 Effect on residences from driveway closures 4.3.3 Effect on pedestrians from sidewalk closures 4.3.4 Effect on recreational users of pathways	▶ There may be effects on traffic traveling along Lake Shore Boulevard, Dufferin Street, Strachan Avenue, and within the CNE. ▶ The access road on the south side of Lake Shore Boulevard between Strachan Avenue and Ontario Place Boulevard may be affected. ▶ Construction may impact Remembrance Drive requiring realignment further to the south. ▶ Users of Martin Goodman Trail may be affected.	▶ Develop a traffic management plan that will minimize impact to operations on Strachan Avenue, Dufferin Street and Lake Shore Boulevard during construction. ▶ Determine the need for and potential relocation of the access road. ▶ Reroute recreational pathway during construction.	▶ Impact to traffic operations will be minimized.
4.4 Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features. 4.4.1 Sensitivity of residences within area of influence for noise, vibration, and air quality 4.4.2 Sensitivity of businesses within area of influence for noise, vibration, and air quality 4.4.3 Sensitivity of institutions within area of influence for noise, vibration, and air quality 4.4.4 Sensitivity of users of recreational features within area of influence for noise, vibration, and air quality	▶ No effects on institutions, residences, or users of recreational features are anticipated. ▶ Businesses such as the Arts and Crafts Buildings within the CNE grounds may experience long-term effects of noise and vibration.	▶ Mitigation measures are not required; noise and vibration increase is within accepted standards.	▶ Businesses such as the Arts and Crafts Buildings within the CNE grounds may experience long-term effects of noise and vibration.
4.5 Potential long-term effects on use of roadways, driveways, sidewalks and pathways (e.g., changes to property access, changes to access to the waterfront). 4.5.1 Potential delays to vehicular traffic on roadways 4.5.2 Effect on driveways 4.5.3 Effect on pedestrian facilities an operations 4.5.4 Effect on bicycle facilities and operations 4.5.5 Effect on use of recreational pathways 4.5.6 Effect on waterfront access	▶ There may be effects to roadways, such as at Princess Gate where a transit line in the centre of Strachan Avenue would reduce access. ▶ There are also potential access effects at Exhibition Place due to the extension of the transit line along Dufferin Street. ▶ Potential effect on existing and future pedestrian and bicycle pathways. ▶ Positive effect in the long term due to increased transit access to the waterfront.	▶ Permanent relocation of recreational pathways may be required. ▶ Special design considerations are needed at the Princess Gate and along the Dufferin Street extension to consider alternatives for vehicle and pedestrian crossing of the transit way.	▶ Long-term positive effect on access to waterfront.
4.6 Potential for requiring private property. 4.6.1 Effect on existing property limits and private property	▶ Expropriation of private property may be required along the east side of Strachan Avenue and the south side of Lake Shore Boulevard (potentially affecting the Boulevard Club).	▶ Compensation provided for expropriated land.	▶ Some private property may be required.
4.7 Potential short- and long-term effects on cultural events in the Study Area 4.7.1 Effect on cultural events in the Study Area	▶ Short-term: Seasonal (summer) events along the Lake Shore and at the CNE may be disturbed by noise, vibrations and air quality due to construction. The Strachan/ Lake Shore intersection is particularly vulnerable due to the high levels of motorized, non-motorized, and pedestrian traffic. ▶ Long-term: Potential effects are positive, due to increased access of the waterfront area. Route and grandstands for the Champ Car series may be affected.	▶ Mitigation required; discussions must be entered into with Exhibition Place, Ontario Place, and the CNE event co-ordinators to determine the potential effect from construction and long-term route operation.	▶ Short-term net effects will be negative due to construction delays at major intersections, and affected access to waterfront recreational trails. Long-term effects will be positive due to increased access to cultural events to transit riders.

Evaluation Criteria / Indicators	Potential Effects	Mitigation / Compensation / Enhancement Measures	Net Effects
5. Cultural			
5.1 Potential effects to archaeological resources. 5.1.1 Disturbance or destruction of known archaeological sites. 5.1.2 Disturbance of areas of archaeological potential.	▶ Alteration to and/or loss of known and not yet known archaeological sites: ▶ No known archaeological sites in, or within proximity, of alternative. ▶ Archaeological potential identified along the west and north side of Lakeshore Blvd. ▶ Archaeological potential identified where Remembrance Dr. coincides with old Lakeshore Blvd ▶ Archaeological potential along the lower extension of Dufferin St.	▶ Undertake a Stage 2 Archaeological Assessment within the area identified as having archaeological potential. ▶ Undertake a Stage 3 and/or Stage 4 Archaeological Assessment if further mitigation is required.	▶ Potential adverse effects to known or potential archaeological resources would be avoided or mitigated.
5.2 Potential effects to built heritage features and cultural landscapes. 5.2.1 Displacement or disruption of built heritage resources 5.2.2 Displacement or disruption of cultural heritage landscape resources. 5.2.3 Significance of displaced or disrupted cultural landscape resources.	▶ Disruption to and/or removal of built heritage features: ▶ Potential effects on the Strachan Ave. Street Bridge ▶ Potential effects on the Dufferin Street Bridge ▶ Potential effects on the industrial complex at 153 Dufferin Street ▶ Disruption to and/or removal of cultural landscape units: ▶ Potential effects to the Exhibition grounds ▶ Potential effects to Lakeshore Blvd	▶ Confirm structural stability of built heritage features inside of Exhibition grounds prior to construction and monitor vibration levels during construction	▶ Potential adverse effects on built heritage feature or cultural landscape unit would be mitigated.
6. Financial			
6.1 Potential capital costs. 6.1.1 Extent of Capital Cost	▶ High ($105,000,000)	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
6.2 Potential land acquisition costs. 6.2.1 Extent of land acquisition costs	▶ Land acquisition costs required.	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.
6.3 Potential operation and maintenance costs. 6.3.1 Effect on operation/maintenance costs	▶ Higher operating cost due to longer track length ▶ Higher maintenance cost due to longer track length	▶ No mitigation/compensation/enhancement measures required.	▶ Potential effects remain the same.

3.2.5 Task #5: Comparative Evaluation of the Alternatives and Identification of the Recommended Streetcar Route

The identification of the net effects for each route completed in Task #4 allowed the alternative routes to then be comparatively evaluated in order to identify a Recommended Route. This comparison of alternatives was completed using a "Reasoned Argument" method, also referred to as a "Trade-off" method. This method highlights the relative advantages and disadvantages of each alternative route based on its identified net effects (see Table 9). This allows for a clear presentation of the key trade-offs between the various evaluation factors and the reasons why one alternative route is preferred over another. As a result, the relative differences and key trade-offs between each alternative route for the various factors can be clearly understood, and a traceable rationale for selection of the preferred route provided.

Each alternative route was then ranked from "most preferred" to "least preferred" for each Factor based on its advantages and disadvantages. The Reasoned Argument method was then applied to each Factor ranking and compared across each route in order to arrive at an Overall Ranking for each route compared to the others. The Factor Rankings and Overall Rankings are summarized in Table 9.

Table 9: Comparative Evaluation of the Alternative Routes

Evaluation Factors / Criteria	Advantages/Disadvantages of the "Do Nothing" Alternative	Advantages/Disadvantages of Alternative Route #1	Advantages/Disadvantages of Alternative Route #2	Advantages/Disadvantages of Alternative Route #3A	Advantages/Disadvantages of Alternative Route #3B
1. TECHNICAL					
1.1 Potential effects on intersection operations	▶ No effects on intersection operations.	▶ No significant adverse effects on intersection and access/driveway traffic operation. Manitoba Drive traffic operations generally remain as is.	▶ Some potential degraded intersection traffic operation at Strachan/Fleet.	▶ Delays to intersection traffic operation for left turning and some through movements on Lakeshore at: Strachan; Ontario Place Blvd; Ontario Dr.; British Columbia Dr.; and Dufferin Street	▶ Degraded operation for Lakeshore through traffic at Strachan and Dufferin where the streetcar route crosses Lakeshore; and delays to some turning movements to/from Lakeshore at: Strachan; Ontario Place Blvd; Ontario Dr; British Columbia Dr; and Dufferin St.
1.2 Ability to meet transit ridership objectives.	▶ No ability to meet transit ridership objectives.	▶ Provides good potential to meet ridership objectives including safety, accessibility and proximity/convenience to local riders on the north half of the primary Study Area. However, route is further away (more than 300 m) from Ontario Place and south end of the Exhibition Place catchments. ▶ Fastest/most direct route to the riders within the entire corridor.	▶ Provides good potential to meet ridership objectives including safety, accessibility and proximity/convenience to local riders (including those from the New Liberty Village) but is further away (more than 300 m) from Ontario Place and south end of Exhibition Place catchments. ▶ Longer route to the riders within the corridor.	▶ Remote (more than 300 m) from riders in north end of the primary Study Area; but provides good accessibility and proximity/convenience for local riders from Exhibition Place and Ontario Place. Median location of station reduces number of lanes to cross by riders from north of Lakeshore. ▶ Longest route for riders within the entire corridor.	▶ Remote from riders in north end of the primary Study Area; but provides good accessibility and proximity/convenience for local riders from Exhibition Place and Ontario Place. Compared to Route #3A, increased walking distance for riders from Exhibition Place. ▶ Longest route for riders within the entire corridor.
1.3 Potential increase in transit ridership (projected)	▶ No potential increase in transit ridership.	▶ Lowest travel time and most direct route. ▶ Accessible to community north of CN/GO corridor and Exhibition Place, but further away (more than 300 m) from Ontario Place.	▶ Provides higher travel time but still a generally direct route. ▶ Accessible to local riders (including those from the New Liberty Village) but further away (more than 300 m) from Ontario Place and south end of the Exhibition Place catchments.	▶ Highest travel time. ▶ Remote (more than 300 m) from riders north of the primary Study Area; but provides good accessibility and proximity/convenience for event-related riders from Exhibition Place and Ontario Place. ▶ Longest route for riders within the entire corridor.	▶ Highest travel time. ▶ Remote (more than 300 m) from riders north of the primary Study Area; but provides good accessibility and proximity/convenience for event-related riders from Exhibition Place and Ontario Place. ▶ Longest route for riders within the entire corridor.
1.4 Potential effects on transit network integration	▶ Negative effect on transit network integration as no connections constructed.	▶ Offers easy and efficient connectivity with existing and future transit network (TTC Bus Route 29 & Exhibition Place GO station) with good potential to promote modal shift to transit.	▶ Offers efficient connectivity with existing and future transit network (TTC Bus Route 29 & Exhibition Place GO station) with good potential to promote modal shift to transit.	▶ Offers poor connectivity to existing and future transit network including GO transit and the existing TTC services.	▶ Offers poor connectivity to existing and future transit network including GO transit and the existing TTC services.
1.5 Potential increase in speed and improvement in Level of Service for streetcar users.	▶ No increase, potential decrease in long-term due to increased travel demand and insufficient services.	▶ Lowest travel time and most direct route. ▶ Highest rider comfort with limited intersection crossings and turns.	▶ Provides a longer travel time than Route #1, and is a less direct route. ▶ High rider comfort with limited intersection crossings.	▶ Highest travel time. ▶ Longest route for riders within the entire corridor. ▶ Has the most intersections and turns to travel through.	▶ Highest travel time. ▶ Longest route for riders within the entire corridor. ▶ Has the most intersections and turns to travel through.
1.6 Potential effects on pedestrian and bicycle facilities and operations	▶ Negative effect as limited ability to improve facilities along current ROW.	▶ Potential for adverse effects on existing and future pedestrian and bicycle facilities during special events such as CNE.	▶ Results in limited space for large sidewalks and bicycle lanes on Front Street extension due to limited R.O.W.	▶ Pedestrians required to cross Lake Shore to access station platforms. ▶ Some potential effect on existing and future pedestrian and bicycle facilities. The widening of Lakeshore to the south moves the Lakeshore sidewalk southerly as well; but does not affect the Waterfront Trail.	▶ Pedestrians required to cross Lake Shore to access station platforms or use pedestrian bridges. ▶ Some potential effect on existing and future pedestrian and bicycle facilities. Affects the location of the Waterfront Trail west of Strachan.
1.7 Potential opportunities for urban design and streetscape improvements (including safety considerations at stations).	▶ Negative effects as no improvements implemented.	▶ Dufferin Gate is a narrow entrance to the CNE, also used by local and other traffic travelling to/from Lakeshore Blvd. north into the city. The area would benefit from safety and design enhancements through additional signalized intersections, wider sidewalks and potentially bicycle lanes. Safety enhancements may also be needed at Manitoba Drive (which is currently a relatively low-traffic street). ▶ Integrates GO/TTC stations at Exhibition Place.	▶ This area is not currently a transportation corridor, so there is an opportunity to provide for high design and safety enhancements if constructed in conjunction with Front Street extension, although R.O.W. limitations may restrict potential. ▶ Integrates GO/TTC stations north of Exhibition Place.	▶ Increased safety measures needed at accesses, at streetcar turns and stops, along Lakeshore Blvd. at the streetcar stops, and along the waterfront trails. ▶ Enhancement of Dufferin Gate and access to waterfront at Princess Gate are opportunities for improvement.	▶ Increased safety measures needed at accesses, at streetcar turns and stops, along Lakeshore Blvd. at the streetcar stops, and along the waterfront trails. ▶ Opportunity to enhance Dufferin Gate and access to waterfront at Princess Gate.
1.8 Potential constructability issues	▶ No potential constructability issues as nothing constructed.	▶ Area is generally unoccupied and available for construction activity. Some minor disruption to loading activity of Food Building. Construction can be scheduled around CNE, Grand Prix events to minimize effects.	▶ Area is generally unoccupied and available for construction activity. ▶ Relocation of existing westbound GO platform required. ▶ Allows for future Front St Extension.	▶ Requires significant construction staging techniques along Lake Shore Boulevard and Strachan Avenue. Modifications to pedestrian bridges along Lake Shore. ▶ Potential effect to CNE in having transit line through Exhibition Place along an extended Dufferin St. Minimal potential effect to Grand Prix.	▶ Requires construction staging techniques along Lake Shore Boulevard and Strachan Avenue. Modifications to pedestrian bridges along Lake Shore. ▶ Potential effect to CNE in having transit line through Ex. Place along an extended Dufferin St. Minimal potential effect to Grand Prix.

Table 9: Comparative Evaluation of the Alternative Routes

Evaluation Factors / Criteria	Advantages/Disadvantages of the "Do Nothing" Alternative	Advantages/Disadvantages of Alternative Route #1	Advantages/Disadvantages of Alternative Route #2	Advantages/Disadvantages of Alternative Route #3A	Advantages/Disadvantages of Alternative Route #3B
1.9 Potential operation and maintenance requirements	▶ Currently existing operation and maintenance requirements maintained in short term, will increase over time due to aging of/increased demand on the system.	▶ Shortest route and therefore should have less operational and maintenance requirements when compared to other route alternatives	▶ Higher operating and maintenance requirements than Route 1, as it is a longer alignment and must travel under the Gardiner Expressway and via a bridge across the CN tracks.	▶ Higher operation and maintenance requirements than the other routes due to its length, intersections and number of transit priority signal requirements.	▶ Higher operation and maintenance requirements than the other routes, but similar to Route 3A, due to its length and number of transit priority signal requirements.
1.10 Potential approval requirements	▶ No approval requirements.	▶ Approvals required from City, Exhibition Place, and TTC.	▶ Approvals required from City, TTC, CN, and GO.	▶ Approvals required from City, Exhibition Place, TTC, and Ontario Place.	▶ Approvals required from City, Exhibition Place, TTC, and Ontario Place.
Technical Factor Ranking and Rationale	**LEAST PREFERRED** ▶ Offers no improvements in existing services or travel time ▶ No opportunity for design or streetscape improvements ▶ Negative effect on transit system connectivity (does not create link to Dufferin Street).	**MOST PREFERRED** ▶ Offers the most direct streetcar route and optimizes transit travel time. ▶ Least impact on intersection operations. Serves majority of catchment area. ▶ Good transit connectivity. ▶ Excellent opportunity to improve urban design and pedestrian realm near Dufferin Gates. Constructability effects are low.	**MODERATELY PREFERRED** ▶ Offers a good direct route but slightly lower corridor travel time than Route #1. ▶ Low impact on intersection operations. ▶ Mainly serves north catchment area. ▶ Connectivity not as direct as Route #1 but better than Route #3. ▶ Constructability effects are low.	**LEAST PREFERRED** ▶ Offers longer route and higher corridor travel time with some degradation of intersection traffic operations at 4 at-grade signalized intersections. ▶ Serves least amount of catchment area. ▶ Least desirable for transit connectivity. ▶ Highest constructability effects.	**LEAST PREFERRED** ▶ Offers longer route and higher corridor travel time with some degradation of intersection traffic operations at 4 at-grade signalized intersections. ▶ Serves least amount of catchment area. ▶ Least desirable for transit connectivity. ▶ Highest constructability effects.
2. NATURAL ENVIRONMENT					
2.1 Potential effects on terrestrial habitats, functions and biota (including greenways/ open spaces and natural linkages).	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes the fewest trees. ▶ Does not reduce natural connectivity	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes few trees ▶ Does not reduce natural connectivity.	▶ Removes the greatest amount of naturalized vegetation and wildlife habitat. ▶ Removal of some trees. ▶ Reduces natural connectivity.	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes several trees. ▶ Does not reduce natural connectivity.	▶ Does not remove naturalized vegetation or wildlife habitat. ▶ Removes the greatest number of trees. ▶ Does not reduce natural connectivity.
2.2 Potential effects on groundwater.	▶ No potential effects on groundwater greater than due to current operation.	▶ Minimal potential effect on groundwater (due to construction dewatering).	▶ Minimal potential effect on groundwater (due to construction dewatering).	▶ Minimal potential effect on groundwater due to construction dewatering.	▶ Minimal potential effect on groundwater due to construction dewatering.
2.3 Potential effects from contaminated soils.	▶ No potential for encountering contaminated soil greater than due to current operation.	▶ Minimal potential for encountering contaminated soil.	▶ Moderate potential effect for encountering contaminated soil.	▶ Moderate potential effect for encountering contaminated soil.	▶ Moderate potential for encountering contaminated soil.
Natural Environment Factor Ranking and Rationale	**MOST PREFERRED** ▶ Does not remove naturalized vegetation / trees or wildlife habitat. ▶ Does not reduce natural connectivity ▶ No potential effects on groundwater ▶ No potential for encountering contaminated soil	**MODERATELY PREFERRED** ▶ No potential effects on naturalized vegetation, wildlife habitat and connectivity. ▶ Removes the second fewest trees. ▶ Minimal potential effect on groundwater. ▶ Minimal potential for encountering contaminated soils.	**LEAST PREFERRED** ▶ Removes the greatest amount of naturalized vegetation, and wildlife habitat. ▶ Reduces connectivity to other green spaces within the city. ▶ Minimal potential effect on groundwater. ▶ Moderate potential for encountering contaminated soils.	**MODERATELY PREFERRED** ▶ Removes several large and small trees, but does not potentially affect naturalized vegetation or connectivity. ▶ Minimal potential effect on groundwater. ▶ Moderate potential for encountering contaminated soils.	**LESS PREFERRED** ▶ Removes the greatest number of trees, but does not potentially affect naturalized vegetation or connectivity. ▶ Minimal potential effect on groundwater. ▶ Moderate potential for encountering contaminated soils.
3. LAND USE ENVIRONMENT					
3.1 Potential effects on approved/proposed land uses.	▶ No potential adverse effects on approved/proposed land uses.	▶ No potential adverse effects on approved/proposed land uses.	▶ No potential adverse effects on approved/proposed land uses.	▶ No potential adverse effects on approved/proposed land uses.	▶ No potential adverse effects on approved/proposed land uses.
3.2 Conformity with existing Official Plan designations and zoning.	▶ Conforms to existing plans and zoning.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor.	▶ The route is identified conceptually on Map 4 Higher Order Transit Corridors in the Official Plan as a Transit Corridor.
3.3 Conformity with existing Regional and Provincial plans and policies.	▶ Does not conform to regional and provincial transit policies such as the Growth Plan for the GGH.	▶ Promotes intensification of underutilized sites and it supports intensification and transit policies in the provincial plans.	▶ Promotes intensification of underutilized sites and it supports intensification and transit policies in the provincial plans.	▶ Promotes intensification of underutilized sites and it supports intensification and transit policies in the provincial plans.	▶ Promotes intensification of underutilized sites and it supports intensification and transit policies in the provincial plans.
3.4 Potential effects on projected population / employment growth in the Study Area.	▶ Negative effects on projected population/employment growth, as it will not be accommodated through transit improvements.	▶ Has the potential to promote some redevelopment of underutilized sites in and around the Study Area.	▶ Has the potential to stimulate significant intensified redevelopment in Liberty Village due to presence of two transit stops.	▶ Has the potential to stimulate significant redevelopment in the southern half of the CNE grounds and the northern edge of Ontario Place due to presence of two transit stops.	▶ Has the potential to promote some redevelopment of underutilized sites in and around the Study Area.
Land Use Environment Factor Ranking and Rationale	**LEAST PREFERRED** ▶ Does not promote development in the Study Area ▶ Not in conformity with plans and policies	**MODERATELY PREFERRED** ▶ Less likely to promote redevelopment in the Study Area than Routes #2 and #3A	**MOST PREFERRED** ▶ Potential to stimulate significant intensified redevelopment in Liberty Village.	**MODERATELY PREFERRED** ▶ Potential to stimulate significant redevelopment in the southern half of the CNE grounds and the northern edge of Ontario Place.	**MODERATELY PREFERRED** ▶ Less likely to promote redevelopment in the Study Area than Routes #2 and #3A.

Table 9: Comparative Evaluation of the Alternative Routes

Evaluation Factors / Criteria	Advantages/Disadvantages of the "Do Nothing" Alternative	Advantages/Disadvantages of Alternative Route #1	Advantages/Disadvantages of Alternative Route #2	Advantages/Disadvantages of Alternative Route #3A	Advantages/Disadvantages of Alternative Route #3B
4. SOCIAL ENVIRONMENT					
4.1 Potential for displacing existing residences, businesses, institutions and recreational features.	▶ No potential for displacement as nothing would be constructed.	▶ One storage area and one CNE structure may be displaced.	▶ No potential for displacement occurs on this route.	▶ Relocation of one Grand Prix Grandstand may be required.	▶ Potential to displace portion of Waterfront recreational trail and storage facility.
4.2 Potential short-term effects of noise, vibration, and air quality on existing residences, businesses, institutions and recreational features as a result of construction (disturbance).	▶ No potential increase in short term of existing noise, vibration and air quality effects on existing residences, businesses, institutions and recreational features.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions, and recreational features will be minimized.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions, and recreational features will be minimized.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions, and recreational features will be minimized.	▶ Short-term effects of noise, vibration and air quality on existing businesses, institutions, and recreational features will be minimized.
4.3 Potential short-term effects of construction on the use of roadways, driveways, sidewalks and pathways (restrictions to property access, including access to the waterfront).	▶ No potential effects from construction as nothing constructed.	▶ Potential short-term effects to roadways, driveways and pathways will be minimized.	▶ Potential short-term effects to roadways, driveways and pathways will be minimized.	▶ Potential short-term effects to roadways, driveways and pathways will be minimized.	▶ Potential short-term effects to roadways, driveways and pathways will be minimized.
Potential long-term effects of noise, vibration and air quality on existing residents, businesses, institutions and recreational features.	▶ Potential long-term increase in noise and vibration due to increased travel demand and resulting traffic congestion. Potential negative effect on air quality in long term due to increased auto traffic.	▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise and vibration. Overall positive long-term effect on air quality due to modal shift from vehicles to transit.	▶ There are no long-term effects anticipated at the Food Building within the CNE grounds due to noise and vibration. Overall positive long-term effect on air quality due to modal shift from vehicles to transit.	▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise and vibration. Overall positive long-term effect on air quality due to modal shift from vehicles to transit.	▶ There are minimal long-term effects anticipated at the Food Building within the CNE grounds due to noise and vibration. Overall positive long-term effect on air quality due to modal shift from vehicles to transit.
4.5 Potential long-term effects on use of roadways, driveways, sidewalks and pathways (changes to property access, including access to the waterfront).	▶ Negative long-term effects on use of roadways due to increased auto traffic and congestion from increased streetcar demand. ▶ Potential negative effect on pedestrian/bike safety and access to waterfront due to increased congestion.	▶ Overall positive effect from increased access to Exhibition Place.	▶ Overall positive effect from increased access to Exhibition Place.	▶ Overall positive effect from increased access to the waterfront area and Exhibition Place.	▶ Overall positive effect from increased access to the waterfront area and Exhibition Place.
4.6 Potential for requiring private property.	▶ No potential for requiring private property.	▶ No expropriation of private property is expected.	▶ Private property may be required.	▶ No expropriation of private property is expected.	▶ No expropriation of private property is expected.
4.7 Potential to serve local communities and event locations.	▶ No increase in potential to serve local communities and events.	▶ Moderately further away from residences/ businesses to the north of the Study Area. ▶ Provides direct access to events at Exhibition Place. ▶ Further away than Routes #3A & B for serving the waterfront (including Ontario Place).	▶ Provides direct access to residences/ businesses to the north of the Study Area. ▶ Moderately further away from serving events at Exhibition Place. ▶ Furthest away from serving the waterfront (including Ontario Place).	▶ Long distance away from serving the residences/businesses to the north of the Study Area. ▶ Provides direct access to Exhibition Place and the waterfront (including Ontario Place).	▶ Long distance away from serving the residences/businesses to the north of the Study Area. ▶ Provides direct access to Exhibition Place and the waterfront (including Ontario Place).
Social Environment Factor Ranking and Rationale	**LEAST PREFERRED** ▶ Does not provide improved access to the local catchment area nor the waterfront. ▶ No potential for displacement of residences or businesses, and no short-term construction effects ▶ Greater potential long-term effects of noise, air quality and congestion due to increased auto traffic from a lack of transit options.	**MOST PREFERRED** ▶ Provides direct access to events at Exhibition Place, while only being slightly further away from the residences/businesses than Route #2. ▶ Does not require the expropriation of private property.	**MODERATELY PREFERRED** ▶ Provides direct access to the residences/businesses north of the Study Area. ▶ Further away from events at Exhibition Place than Route #1, and furthest away from the waterfront and Ontario Place. ▶ May require the expropriation of private property.	**MODERATELY PREFERRED** ▶ Longest distance away from serving the residences/businesses to the north of the Study Area. ▶ Provides direct access to Exhibition Place and the waterfront (including Ontario Place). ▶ Does not require the expropriation of private property.	**LESS PREFERRED** ▶ Longest distance away from serving the residences/ businesses to the north of the Study Area. ▶ Provides direct access to Exhibition Place and the waterfront (including Ontario Place). ▶ Does not require the expropriation of private property. ▶ Limited streetscape and urban design improvement opportunities.

Table 9: Comparative Evaluation of the Alternative Routes

Evaluation Factors / Criteria	Advantages/Disadvantages of the "Do Nothing" Alternative	Advantages/Disadvantages of Alternative Route #1	Advantages/Disadvantages of Alternative Route #2	Advantages/Disadvantages of Alternative Route #3A	Advantages/Disadvantages of Alternative Route #3B
5. CULTURAL ENVIRONMENT					
5.1 Potential effects to archaeological resources.	▶ No potential effects as nothing would be disturbed.	▶ No known archaeological sites or archaeological potential.	▶ No known archaeological sites. Archaeological Potential would be mitigated.	▶ No known archaeological sites. Archaeological Potential would be mitigated.	▶ No known archaeological sites. Archaeological Potential would be mitigated
5.2 Potential effects to built heritage features and cultural landscapes.	▶ No potential effects as nothing would be disturbed.	▶ Potential disturbance of two heritage bridges, one built heritage feature and one cultural landscape.	▶ Potential disturbance of two heritage bridges, one built heritage feature and two cultural landscapes.	▶ Potential disturbance of two heritage bridges, one built heritage feature and two cultural landscapes.	▶ Potential disturbance of two heritage bridges, one built heritage feature and two cultural landscapes.
Cultural Environment Factor Ranking and Rationale	**MOST PREFERRED** ▶ No known archaeological sites or archaeological potential. ▶ No built heritage or cultural landscape features affected.	**MODERATELY PREFERRED** ▶ No known archaeological sites or archaeological potential. ▶ Least number of cultural landscape features potentially affected.	**MODERATELY PREFERRED** ▶ Archaeological potential and greater number of cultural landscapes.	**MODERATELY PREFERRED** ▶ Archaeological potential and greater number of cultural landscapes.	**MODERATELY PREFERRED** ▶ Archaeological potential and greater number of cultural landscapes.
6. FINANCIAL					
6.1 Potential capital costs.	▶ None	▶ Low ($65 M)	▶ High ($130 M)	▶ High ($115 M)	▶ High ($105 M)
6.2 Potential land acquisition costs.	▶ None	▶ None	▶ Some	▶ Moderate	▶ Moderate
6.3 Potential operation and maintenance costs.	▶ None above current rate in short term, but costs will increase as system ages/travel demand increases	▶ Low	▶ Moderate	▶ High	▶ High
Financial Factor Ranking and Rationale	**MODERATELY PREFERRED** ▶ No capital costs ▶ Increase in operation and maintenance costs over time.	**MOST PREFERRED** ▶ Lowest potential capital costs and potential operation and maintenance costs.	**LEAST PREFERRED** ▶ Highest potential capital costs and moderate potential operation and maintenance costs.	**MODERATELY PREFERRED** ▶ High overall costs, including land acquisition costs.	**MODERATELY PREFERRED** ▶ High overall costs, including land acquisition costs.
OVERALL RANKING AND RATIONALE	**LEAST PREFERRED** **RANKING: 5th** ▶ Offers no improvements in existing services or travel time ▶ Negative effect on transit system connectivity (link to Dufferin Street missing). ▶ Does not remove naturalized vegetation / trees or wildlife habitat. ▶ No potential effects on groundwater ▶ Not in conformity with plans and policies ▶ Does not provide improved access to the local catchment area nor the waterfront. ▶ No potential for displacement of residences or businesses, and no short-term construction effects ▶ Greater potential long-term effects of noise, air quality and congestion due to increased auto traffic from a lack of transit options. ▶ Increase in operation and maintenance costs over time.	**MOST PREFERRED** **RANKING: 1st** ▶ Lowest travel time and most direct route. Accessible to community north of CN/GO corridor and Exhibition Place. ▶ No potential effects on naturalized vegetation, wildlife habitat and connectivity. Removes the fewest trees of all alternatives. Has minimal potential effects on soil and groundwater. ▶ No expropriation of property is expected. ▶ No known archaeological sites or archaeological potential. Least number of cultural landscape features potentially affected. ▶ Lowest potential capital costs and potential operation and maintenance costs.	**MODERATELY PREFERRED** **RANKING: 2nd** ▶ Provides higher travel time but still a generally direct route. ▶ Accessible to local riders. ▶ Has the potential to stimulate intensified redevelopment in Liberty Village. ▶ May require the acquisition of some private property. ▶ Archaeological potential and greater number of cultural landscapes potentially affected. ▶ Has the least potential effect on groundwater and minimal effect related to contaminated soil. ▶ High potential capital costs and moderate potential operation and maintenance costs.	**MODERATELY PREFERRED** **RANKING: 3rd** ▶ Highest travel time. Remote from riders north of the primary Study Area; longest route for riders within the entire corridor. ▶ Removes several large and small trees; has moderate potential effects on soil. ▶ Has the potential to stimulate significant redevelopment in the southern half of the CNE grounds and the northern edge of Ontario Place. ▶ May require the acquisition of private property. ▶ Archaeological potential and greater number of cultural landscapes. ▶ High overall costs, including land acquisition costs.	**LESS PREFERRED** **RANKING: 4th** ▶ Highest travel time. Remote from riders north of the primary Study Area; longest route for riders within the entire corridor. ▶ Removes the greatest number of trees; has moderate potential effects on soil. ▶ Less likely to promote redevelopment in the Study Area than Routes #2 and #3A. ▶ May require the acquisition of private property ▶ Archaeological potential and greater number of cultural landscapes potentially affected. ▶ High overall costs, including land acquisition costs.

3.2.6 Ranking of the Alternative Routes

The alternative routes were ranked in order of preference according to their net effects on the environment as identified in the comparative evaluation based on the reasoned argument approach summarized in Table 9. The results were as follows:

Rank	Alternative Route
1st	**Route #1 – Parallel to and south of the CN/GO rail corridor**
2nd	**Route #2 – Parallel to and north of the CN/GO rail corridor**
3rd	**Route #3A – Centre of Lake Shore Boulevard and north on Dufferin Street**
4th	**Route #3B – South side of Lake Shore Boulevard and north on Dufferin Street**
5th	**Do Nothing**

The following paragraphs provide a comparative rationale for the ranking of each alternative route versus the other routes.

3.2.6.1 Alternative Route #1: Most Preferred (Recommended Route)

Advantages

Alternative Route #1 was found to have several key advantages over the other routes, thus accounting for its ranking as most preferred.

Firstly, from a social and cultural perspective, this route best serves the sporting, cultural and trade events at Exhibition Place. Its location would allow direct access for participants of events at Exhibition Place, which is especially important for larger events (e.g., CNE, events at BMO Field and the Ricoh Centre, etc.), while it still provides easy access for residents/workers travelling to/from Liberty Village (via the existing GO transit pedestrian tunnel). Additionally, this route does not require the expropriation of private property, and there are no known archaeological sites or built heritage resources disturbed along the route.

From a technical perspective, Route 1 is the most direct of the routes and has the lowest travel time. It offers efficient connectivity with the existing and future transit network (e.g., it utilizes the existing Exhibition Place loop, and connects with TTC streetcar and bus routes and the Exhibition Place GO station), including the construction of an enhanced GO/TTC interface that further enhances the potential to promote mode shift to transit. The route also serves the majority of the catchment area (both north and south of the CN/GO rail corridor), and has the least impact on intersection operations. Route #1 is also advantageous as it will be straightforward to construction, and has the lowest potential capital costs, operation costs and maintenance costs. While safety

enhancements may be needed at the Dufferin bridge to integrate streetcar operation in with cars, bicycles and pedestrians, this will ultimately benefit these users from a safety and design perspective through enhancements that do not currently exist (e.g., signalized intersection, improved design for sidewalks and the potential for dedicated bicycle lanes).

From a natural environment perspective, this route removes the smallest amount of vegetation and the least number of trees. Most importantly, the vegetation and tree removal that is required is largely ornamental tree plantings and located exclusively on the Exhibition Place grounds (conversely, Route 2, for example, would see the loss of naturalized vegetation along the CN/GO corridor berm). There is also a minimal potential for encountering contaminated soils during construction.

Disadvantages

From a social perspective, the greatest disadvantage of this route is the trade-off of being located within the Exhibition Place grounds (which serves the Exhibition events well) rather than on the north side of the CN/GO rail corridor (which would better serve the Liberty Village residences/businesses). While this means that Route #1 is not as close to the Liberty Village community as Route #2, the existing GO transit passenger tunnel would provide direct access across the rail corridor to the streetcar line. Therefore, while Route #1's location on the Exhibition Place grounds is further away from Liberty Village, there is direct access to the transit line provided by a short pedestrian tunnel under the rail corridor.

While the route removes the smallest amount of trees and vegetation compared to the other routes, it still requires the removal of approximately 8 mature trees (diameter greater than 30 cm at breast height), and 15 young trees (less than 30 cm in diameter at breast height) along the north side of Exhibition Place. However, the recommended mitigation involving the planting of trees within city parks in the area will replace the trees removed and enhance existing trees nearby.

The majority of the remaining disadvantages of this route occur during construction, and are therefore short-term effects that may be mitigated through careful planning of construction timing and staging. For example, appropriate construction timing/staging may allow for disruptions to cultural events to be minimized or avoided entirely. Proper signage during construction will be required for the safety of pedestrians and cyclists that use nearby recreational pathways, and detours provided for other traffic. Other short-term construction nuisance effects such as noise, vibration and air quality on existing businesses, institutions and recreational features are expected to be minimal due to the location and number of sensitive receivers (such effects would also be minimized through the use of appropriate mitigation measures such as controlling the timing of construction activities, choosing construction techniques aimed at minimized adverse effects, and maintaining construction equipment properly while avoiding idling).

Some long-term effects that need to be addressed/mitigated through proper design include reduced access to areas under the Gardiner Expressway for storage/parking; effects to existing sidewalks/pathways along Manitoba drive and around the Dufferin Gate; the permanent relocation

of an existing utility building adjacent to the Dufferin Gate; the potential permanent relocation of the CNE children's play area; and the potential for some long-term effects on the Food Building due to streetcar operational noise. Design elements will also be important to mitigate any potential adverse effects on the Exhibition Place cultural landscape.

3.2.6.2 Alternative Route #2: Second Most Preferred

Advantages

Alternative Route #2, while not chosen as the most preferred route, was found to have benefits as a transit route alternative. Most significantly, the route is located the closest to the Liberty Village community allowing it to better serve community users (shorter walk to transit stop). Similarly, this proximity affords a slight increase in the potential to stimulate further intensified redevelopment in this community. Additionally, this route also provides efficient connectivity with the existing and future transit network (TTC streetcar and bus routes, and the Exhibition Place GO station) with good potential to promote modal shift to transit. Finally, this route would not physically impact existing roads, buildings or vegetation at Exhibition Place, and there are no known archaeological sites along the route.

Disadvantages

There are several disadvantage of this route versus Route #1, resulting in its ranking of second, comparatively.

From a technical perspective, the route is longer and therefore results in a slightly longer travel time. In addition, construction of the transit ROW may require the acquisition of private property, something that was not required for Route #1. Coupled with this potential adverse effect is the need to integrate the streetcar ROW with the potential Front Street Extension road network in a very narrow corridor. The presence of existing buildings severely limits the potential to widen this corridor, thus requiring that the streetcar ROW take space away from planned boulevards/tree plantings, dedicated bicycle lanes and sidewalks. The space limitation also requires relocation of the existing westbound GO station platform.

While this route offers good potential to promote modal shift to transit through connectivity with the existing and future transit network (e.g., TTC bus routes and the Exhibition Place GO station), it does not take advantage of the existing Exhibition Place trackage or enhance access to the large sporting, cultural and trade events that occur at Exhibition Place throughout the year. The route is also the furthest from Ontario Place and the south end of Exhibition Place, thereby providing the least potential for improving waterfront access via this transit route.

Route #2 is also at a disadvantage when considering the natural environment, as it potentially removes the greatest amount of naturalized vegetation (CUW and CUT) and wildlife thicket habitat (provides nesting habitat for urban songbirds and small mammals) located along the CN/GO rail corridor. This also reduces connectivity to other green spaces east and west of the Study Area.

Other disadvantages include high potential capital costs, and moderate potential operation and maintenance costs. Unlike Route #1, Route #2 contains archaeological potential identified at Strachan Avenue and on the east side of Dufferin Street, north of CN/GO rail corridor. There are also cultural landscapes potentially affected, including Exhibition Place, the CN railscape, and a former railway spur.

A long term effect which requires addressing is the potential for degraded intersection operation at Strachan Avenue and Fleet Street due to the proposed route turning movement at this intersection.

3.2.6.3 Alternative Route #3A: Third Most Preferred

Advantages

The proximity of Route #3A to the waterfront (compared to Routes #1 and #2) provides greater access to waterfront recreation and cultural facilities such as Ontario Place, the Martin Goodman Trail, and annual events along the waterfront area (e.g., Dragon Boat races).

Disadvantages

The nearness of Route #3A to the waterfront unfortunately makes it the longest, least direct route to Dufferin Street and quite remote in comparison to the other routes when it comes to riders living/working in the northern catchment area.

Similar to Route #2, accommodation of the ROW may require the acquisition of private property. This route also removes a greater number of large, mature trees and smaller trees. Archaeological potential has been identified along the west and north side of Lake Shore Boulevard, and along the lower extension of Dufferin Street. This route has the potential to disturb or remove the same amount of built heritage features as Route #2, and affects a greater number of cultural landscapes. This route option also has the highest overall costs, including land acquisition costs.

3.2.6.4 Alternative Route #3B: Fourth Most Preferred

Advantages

Route #3B is similar to Route #3A in advantages and disadvantages, as both routes provide access to waterfront lands but are remote from the northern catchment area. Both Routes #3B and #3A are advantageous over the “Do Nothing’ alternative, as they increase public transportation capacity in the Study Area.

Disadvantages

This route has some disadvantages over Route #3A particularly pertaining to tree removal. Streetcar ROW construction would result in the temporary removal of 21 trees with a diameter greater than 30 cm and 106 trees with diameter less than 30 cm in diameter at breast height, which would be mitigated by planting approximately 223 trees within city parks to replace the removed trees.

3.2.6.5 Do Nothing Alternative: Least Preferred

Advantages

The “do nothing” alternative has many advantages over the other route options as it has no short-term construction nuisance effects on businesses, residents and institutions. In the short term, no effect on intersection operations, no constructability issues, no approvals are required, and no construction related traffic issues arise. As nothing is built, no naturalized vegetation/trees or wildlife habitat are removed, no natural connectivity reduced, and no potential effect on groundwater/soil or archaeological/built heritage resources.

Disadvantages

However, the “do nothing’ alternative will not meet the objectives of the project or fulfill the short term improvements identified in the WWLRT IEA. In addition, it does not fulfill provincial policies such as the Growth Plan for the Greater Golden Horseshoe (GGH), and the City’s OP policies and public transportation plans/studies. It offers no improvements in existing services or travel time, and has a negative effect on transit system connectivity (as the link to Dufferin Street would still be missing) and would not provide additional service for projected population/employment growth in the Study Area. This alternative would not provide improved access to/from the local catchment area, nor the waterfront; therefore it provides no increase in ability to serve events at Exhibition Place; and no opportunity to contribute to modal shift.

Future potential long-term effects include increased noise, decreased air quality due to increased congestion and auto traffic from a lack of transit options. Finally, to do nothing may cause an increase in streetcar operation and maintenance costs in the Study Area over time.