APPENDIX K

DETAILED EVALUATION OF ALTERNATIVE ROUTES AND GENERAL STATION LOCATIONS

Spadina Subway Extension
Environmental Assessment
Downsview Station to Steeles Avenue

Appendix K

Alternative Methods of Carrying out the Undertaking

February 2006

Spadina Subway Extension

Environmental Assessment

Downsview Station to Steeles Avenue

Appendix K

Routes and Station Concepts

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1.0 Introduction

According to section 6.1(2) of the Ontario *Environmental Assessment Act*, an environmental assessment (EA) should include an evaluation of alternative methods of carrying out an undertaking. Thus, the study team put together this document that provides a step by step description of the approach used to evaluate and select the preferred subway route and general station locations. A detailed description of the data collection process has also been provided.

2.0 Multi Attribute Trade-Off System (MATS)

This section describes the numeric evaluation method used by the study team to evaluate the alternative subway routes and general station locations.

The numeric method used to evaluate alternatives is the Multi-Attribute Tradeoff System (MATS) – Personal Computer Version (2.02). MATS-PC is a computer program designed by the U.S. Department of the Interior, Bureau of Reclamation to help planners evaluate multi-attribute alternatives to reach a judgment of each alternative's relative worth or desirability. MATS-PC leads the user through a series of questions (a tradeoff analysis) which focuses on the relative importance of various characteristics of the alternatives. The program documents the judgments which lead to the development of a policy for evaluating alternatives. The program then applies this evaluation policy to up to forty alternatives. MATS-PC can be used to improve the planning process by structuring and documenting the judgments that must be made when evaluating plans. It is designed to be used both by technical planners and as a framework for public input into the planning process. MATS-PC can also be used to run sensitivity tests to determine how different weights and assumptions influence the results of the analysis.

The major components of MATS include: factors; function forms; weights; plans; impacts; and overall scores. These components are described below.

Factors

Factors are the key aspects of the analysis on which the final selection will be made. Each factor represents a feature that is influential to our decision. Factors are expected to have measurable coordinates and may be a range of potential impacts, on a numerical scale, and a yes/no variable.

Function Forms

Function Forms are curves describing the thresholds of desirability and undesirability of a factor. Function forms are important elements of the process as they allow you to translate facts about a factor into measures of worth.

Weights

Weights refer to the value/importance placed on a factor/indicator. Every factor must be assigned a specific weight that will represent the value or relative importance placed on that factor. As weights are discretionary, the weight placed on each factor must express the relative value/importance of the factor/indicator as perceived by the decision-maker. Assigning a relative value to a factor/indicator will ensure that the overall performance of a given alternative will not only depend on how the alternative is rated in relation to the factor/indicator, but also on the weight place on that particular factor/indicator. All weights are standardized to sum up to 1.0.

Plans

A plan is the term used to describe the options/alternatives/choices among which a selection must be made. As in the case of factors/indicators, the MATS process can evaluate up to 40 (forty) plans per analysis. All plans must be assigned a plan-name and description.

Impacts

Impacts refer to the raw facts about each alternative. This is often the raw data pertaining to each alternative or simply the way a plan performs on a factor. Impacts are the field data collected by the study team about each alternative subway route and general station location. Impacts are the determining and basic facts about each alternative; thus, to ensure consistency, it is important to select a specific mode of measurement for all impacts, preferably numerical values.

Overall scores

The overall scores refer to the sum total of the weighted – subjective scores obtained for each factor. It is important to note that overall scores of an alternative can be interpreted in two terms; they can be interpreted in terms of the absolute worth of an alternative or as the magnitude / significance of difference between two or more alternatives.

The MATS Evaluation Process

Figure 1 presents the mathematical formula used in the MATS process to produce the overall score for each alternative.

FIGURE 1 - THE MATS EVALUATION PROCESS

$$\text{Plan Score (k)} = \frac{\sum_{i=1}^{nfac} (\text{wgt (i)} * \text{util (i.k)})}{nfac}$$

Where:

k = plan
nfac = number of factors in project
wgt (i) = standardized weight of factor i

$$\text{wgt (i)} = \frac{\text{wgt (i)}}{\sum_{j=1}^{nfac} \text{wgt (j)}} \qquad \text{hence:} \quad \sum_{i=1}^{nfac} \text{wgt (i)} = 1.g$$

util (i, k) = the value of the utility function of factor 1, at impact k.

2.1 Factors

For our analysis, the study team developed a total of 22 factors based on the indicators generated at the route evaluation stage of the EA (discussed in EA Chapter 6.2.1). As most of the indicators were quantitative, the low end scale was set at 0 (zero) and the high end scale was set at the highest level of impact recorded for that indicator. The use of a ratio scale helped to maintain the integrity of the data and not create artificial separation between values that are similar. For example, for the first factor/indicator (Existing population and employment within 500 m walking distance of subway stations), the low end of

the scale was 0 and the high end of the scale was 6900. Table (1) presents the indicators and corresponding factor names and numerical scales developed for all 22 indicators.

TABLE 1 - INDICATORS AND NUMERICAL SCALES

Indicator	Factor Name	Numerical Scales
A1.1	EXISTING POP&EMPL	0 – 6900
A1.2	FUTURE POP&EMPL	0 – 24700
A1.3	STUDENTS, FACULTY & STAFF	0 – 76300
B.1.1	CON-FINCHW&KEELE	0 – 2000
B.1.2	EASE OF ACCESS	1 – 5
C.1.1	CONFORM-OBJ-CITY	1 – 5
C.1.2	CONFORM-OBJ-YORY	1 - 5
C.2.1	CONSIST-OBJ-CITY	1 – 5
C.2.2	CONSIDER-PARC&YORK	1 – 5
C.2.3	STIMULATE TRANS	1 – 5
C.3.1	INTEGRATE-EXIST	1 – 5
C.3.2	CREATE SAFE ENV	1 – 5
D.1.1	SUB-ADJACENT-REDVT.	0 – 2.2
D.1.2	SUB-KEELE INDUS	0 – 3.5
D.1.3	NO.SENSITIVE OPERATIONS	0 – 4.0
D.2.1	NO.NATURAL HERITAGE	0 – 4.0
D.2.2	GROUNDWATER-DISCH	0 – 20
D.2.3	NO.CULTURAL HERITAGE	0 – 2
E.1.1	LEN. OF SUBWAY	0 – 5.5
E.2.1	NO.AM PEAK PASS	0 – 26000
E.3.1	RIGHT-OF-WAY	0 – 3.0
E.4.1	ALIGNMENTS<600M	1 – 5

2.2 Function Forms

There was a need to determine the threshold of desirability and undesirability of each of the 22 factors. Function forms were identified for each factor to help measure the level of relative worth of each factor. The act of assigning threshold of desirability of a factor is comparable to assigning weights to factors; in that, the threshold of desirability of a factor is based on the value or worth of that factor to the decision. For some factors, a higher value was chosen to represent the best threshold of desirability while for other factors a lower value was chosen to represent the best threshold of desirability, as illustrated in Table 2.

Desirable Threshold **BT** = Best Threshold of Desirability
WT = Worst Threshold of Desirability

TABLE 2 - FACTORS AND CORRESPONDING FUNCTION FORMS

Factor Name	Function Form	
	WT	BT
EXISTING POP&EMPL	0	6900
FUTURE POP&EMPL	0	24700
STUDENTS, FACULTY & STAFF	0	76300
CON-FINCHW&KEELE	0	2000
EASE OF ACCESS	1	5
CONFORM-OBJ-CITY	1	5
CONFORM-OBJ-YORY	1	5
CONSIST-OBJ-CITY	1	5

CONSIDER-PARC&YORK	1	5
STIMULATE TRANS	1	5
INTEGRATE-EXIST	1	5
CREATE SAFE ENV	1	5
SUB-ADJACENT-REDVT.	2.2	0
SUB-KEELE INDUS	3.5	0
NO.SENSITIVE OPERATIONS	4.0	0
NO.NATURAL HERITAGE	4.0	0
GROUNDWATER-DISCH	20	0
NO.CULTURAL HERITAGE	2	0
LEN. OF SUBWAY	5.5	0
NO.AM PEAK PASS	0	26000
RIGHT-OF-WAY	0	3.0
ALIGNMENTS<600M	1	5

2.3 Plans

For our MATS analysis, eight plans were identified representing the eight alternative subway routes. Each plan was named after an alternative subway route.

Plan 1 Subway Route 1
Plan 2 Subway Route 2
Plan 3 Subway Route 3
Plan 4 Subway Route 4
Plan 5 Subway Route 5
Plan 6 Subway Route 6
Plan 7 Subway Route 7
Plan 8 Subway Route 8

2.4 Weights

For each round of MATS analysis, specific weights were assigned to all 22 indicators to represent the relative importance of that factor/indicator. A series of sensitivity tests/MATS analysis were conducted through modifying the weighting scheme to place greater importance on different variables.

Test 1 (Table 24) represents the initial analysis conducted with all weights being equal. Referring from the earlier discussion on weights, all weights in MATS are standardized to sum up to 1.0. Therefore to obtain an equal weight for each factor, 1.0 was divided by the total number of factors:

$$1.0/22 = 0.045$$

Thus, all factors in Test 1 were weighted at 0.045 as illustrated in Table (24).

2.5 Impacts

Impacts used in the analysis were obtained from the data compiled in the data matrix. All subjective data was converted into numerical coordinates and placed on an ordinal scale with 1 representing the low end of the scale and 5 representing the high end of the scale as illustrated in Table 3.

TABLE 3 – SUBJECTIVE SCALES AND NUMERIC SCALES ASSIGNED TO IMPACTS

Subjective Scales	Numerical Scales
High	5
Medium High	4

Medium	3
Medium Low	2
Low	1

2.6 Overall Scores

A total of seven sensitivity tests/MATS analysis were conducted using different relative weights. Table (24) presents the results for all seven MATS analysis. A complete presentation of the overall scores obtained by each alternative subway route for the MATS analyses are presented in chapter 5 of this appendix.

3.0 Reasoned Argument Method

The qualitative method used to evaluate alternatives is the Reasoned Argument Method. Reasoned argument is the art of getting from one sentence to another sentence by valid moves only, using the rules of logic. This method highlights the differences in net effects associated with the various alternatives. Based on these differences, the advantages and disadvantages or each alternative are identified. The relative significance of the effects are examined to provide a clear rationale for the selection of a preferred alternative.

All the work included in this summary is based on the detailed analysis table that utilizes a variety of measures to assess each of the eight subway routes.

For those indicators that were determined to differentiate the routes, all routes were ranked from most preferred to least preferred, using the following symbols:

Most preferred				**Least Preferred**
●	◕	◑	◔	○

In addition, the relative importance of each indicator was identified by assigning a size to the symbol:

TABLE 4 - REASONED ARGUMENT METHOD

Low Importance	•
Moderate Importance	●
High Importance	⬤

4.0 Data Collection and Analysis

The relevant field studies and data compilation processes were undertaken to produce information for each of the eight alternative routes. Data was compiled according to the 22 indicators and then standardized into numerical measurements in order to be compatible with MATS . The following section describes the data compilation process for the 22 indicators and for each of the eight alternative subway routes.

4.1 Indicator A 1.1 - Existing population and employment within 500m walking distance of subway station.

4.1.1 Methodology

Existing population was estimated by obtaining the population base numbers for 2001. They were further divided into Population and Employment. Forecasts for Steele and York University stations were not included because no such facilities exist and current population movement cannot be estimated. An example of the calculation is shown below.

Route 1: GO/Sheppard Station, Keele/Finch Station, Sheppard and Common Station.

Route 1 population: 18 (Go Sheppard Station – 2001 Base) + 2351 (Keele/Finch – 2001 Base) = 2400 (rounded to hundreds)

Route 1 employment: 1614 (Go Sheppard Station – 2001 Base) + 2085 (Keele/Finch – 2001 Base) = 3700 (rounded to hundreds)

Total population = Route 1 population + route 1 employment = 2400 + 3700 = 6100

4.1.2 Results

Table 5 shows the results for all 8 routes.

TABLE 5 - EXISTING POPULATION AND EMPLOYMENT

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
6100	5100	5100	6100	5000	5000	6900	6900

4.2 Indicator A 1.2 - Future population and employment within 500m walking distance of subway stations

4.2.1 Methodology

Existing population was estimated by obtaining the population base numbers for 2021. They were further divided into Population and Employment. Forecasts for the Steeles and York University stations were then included. Where there was a maximum criteria in the year 2021, that number was used instead of the base number. An example of the calculation is shown below.

Route 1: GO/Sheppard Station, Keele/Finch Station, Sheppard and Common Station.

Route 1 population: 1828 (Go Sheppard Station – 2021 Maximum) + 2875 (Keele/Finch – 2021 Maximum) + 10355 (Steeles and Common Stations – Zone 1063 Population Total) = 16100 (rounded to hundreds)

Route 1 employment: 1934 (Go Sheppard Station – 2021 Base) + 2026 (Keele/Finch – 2021 Base) + 4600 (Steeles and Common Station – Zone 1063 Employment Total) = 8600 (rounded to hundreds)

Total population = Route 1 population + route 1 employment = 16100 + 8600 = 24700

4.2.2 Results

Table 6 shows the results for all 8 routes.

TABLE 6 - FORECASTED POPULATION AND EMPLOYMENT

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
24700	23800	23800	24700	23500	23500	23600	23600

4.3 Indicator A 1.3 - Students/Faculty/Staff within 500m of York University Station

4.3.1 Methodology

To determine the number of students, faculty and staff within 500 meters walking distance of York University Station, a circle with a radius of 500m was drawn around York University. The concept was to capture all population for buildings that were included or were touched by the circle. To determine the placement of the circle, the centroid of the estimated general station location was used.

Centroids

The centroids of the general station locations for all 8 routes are estimated. Their Co-ordinates can be seen in Table 7. The co-ordinates for York University Common and York Sentinel were used as the reference point for the center of the 500m circle.

TABLE 7 - CENTROIDS FOR GENERAL STATION LOCATIONS

	Route 1 Sheppard A Common	Northing	Easting		Route 5 Finch Common	Northing	Easting
Station	Steeles	848449	303914	Station	Steeles	848449	303914
	York University Common	848041	304920		York University Common	848041	304920
	Keele/Finch Intersection	846866	305610		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Finch	846902	306339
	Route 2 Sheppard B Common	**Northing**	**Easting**		**Route 6 Finch Sentinel**	**Northing**	**Easting**
Station	Steeles	848449	303914	Station	Steeles	848417	303811
	York University Common	848041	304920		York Sentinel	847603	304576
	Keele/Hydro Corridor	847205	305440		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Finch	846902	306339
	Route 3 Sheppard B Sentinel	**Northing**	**Easting**		**Route 7 Central Common**	**Northing**	**Easting**
Station	Steeles	848417	303811	Station	Steeles	848449	303914
	York Sentinel	847603	304576		York University Common	848041	304920
	Keele/Hydro Corridor	847205	305440		Keele/Hydro Corridor	847205	305440

	GO/Sheppard	845871	306526		GO/Midblock	846549	306405
	Route 4 Sheppard A Sentinel	**Northing**	**Easting**		**Route 8 Central Sentinel**	**Northing**	**Easting**
Station	Steeles	848417	303811	Station	Steeles	848417	303811
	York Sentinel	847603	304576		York Sentinel	847603	304576
	Keel/Finch Intersection	846866	305610		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Midblock	846549	306405

It was later determined, however, that the co-ordinates may not truly reflect the buildings that were captured. The co-ordinates were then adjusted to reflect a more possible station location for York University Common and York Sentinel. The modifications are presented in Table 8.

TABLE 8 - MODIFIED GENERAL STATION LOCATIONS

	Route 1 Sheppard A Common	Northing	Easting		Route 5 Finch Common	Northing	Easting
Station	Steeles	848449	303914	Station	Steeles	848449	303914
	York University Common	848040	304811		York University Common	848040	304811
	Keele/Finch Intersection	846866	305610		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Finch	846902	306339
	Route 2 Sheppard B Common	**Northing**	**Easting**		**Route 6 Finch Sentinel**	**Northing**	**Easting**
Station	Steeles	848449	303914	Station	Steeles	848417	303811
	York University Common	848040	304811		York Sentinel	847553	304601
	Keele/Hydro Corridor	847205	305440		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Finch	846902	306339
	Route 3 Sheppard B Sentinel	**Northing**	**Easting**		**Route 7 Central Common**	**Northing**	**Easting**
Station	Steeles	848417	303811	Station	Steeles	848449	303914
	York Sentinel	847553	304601		York University Common	848040	304811
	Keele/Hydro Corridor	847205	305440		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Midblock	846549	306405
	Route 4 Sheppard A Sentinel	**Northing**	**Easting**		**Route 8 Central Sentinel**	**Northing**	**Easting**
Station	Steeles	848417	303811	Station	Steeles	848417	303811
	York Sentinel	847553	304601		York Sentinel	847553	304601
	Keel/Finch Intersection	846866	305610		Keele/Hydro Corridor	847205	305440
	GO/Sheppard	845871	306526		GO/Midblock	846549	306405

The center of the 500 m radius circle was placed on all four possible York University locations. Any building that were within or touching the 500 m radius circle were counted as possible destinations for students and staff.

Only number of students and staff allocated for each building were included. The buildings that intersected the circle were included because a student will still walk to the targeted building even if it is a few meters further than 500 m.

4.3.2 Results

Old Co-ordinates

By placing the centroids of the circle to the co-ordinates of the old general station locations for York University, the estimated number of people within 500 meters walking distance could be seen in the Table 6. In this particular case, York Sentinel served more people because the general station locations were not as ideal as planned previously.

TABLE 9 – POPULATION SERVED FOR YORK UNIVERSITY

	Old Co-ordinates	
	York Sentinel	York Common
Population	71471	54440

Modified Co-ordinates

The modified coordinates reflects a more realistic general station location for both York Sentinel and York Common. As seen in Table10, it is determined that York Common and York Sentinel reflects similar results in terms of population served.

TABLE 10 - MODIFIED POPULATION SERVED FOR YORK UNIVERSITY

	Modified Co-ordinates	
	York Sentinel	York Common
Population	70267	76288

4.4 Indicator B 1.1 - Connection to Finch West Bus (Route 36) and Keele Bus (Route 41) in the Keele/Finch Area

4.4.1 Methodology

To connect to the Finch West Bus (Route 36) and Keele Bus (Route 41), stations would have to be located at Keele/Finch intersection or GO/Finch station location. The base numbers for Keele/Finch station concept is 1077 + 454 (Transfer to station for Population and Employment) which is approximately 1500. The peak transfer to station for population and employment estimates were 2035 for GO/Finch station.

4.4.2 Results

Therefore, any route that have Keele/Finch station and GO/Finch station will have estimated population from 1500-2000 as seen in Table 11.

TABLE 11 - NUMBER # OF A.M PEAK TRANSFERS

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
1500-2000	0	0	1500-2000	1500-2000	1500-2000	0	0

4.5 Indicator B.1.2 - Ease of accessibility for other travel modes (taxi, bicycle, pedestrians, wheel trans, passenger pick up and drop off, commuter parking, ambulatory/non-ambulatory disabled persons).

4.5.1 Results

All routes are considered equal and were assigned high for this indicator. This is because all alternative routes/general station locations have equal potential to address accessibility by all modes of travel.

4.6 Objective C –Support Local Population and Employment Growth

Objective C consists of three criteria and corresponding indicators (7) that address the socio-economic goals of the subway extension. They are the listed as follows:

- C 1. Conformity with current, approved planning documents
  1. Conformity with the goals, objectives and policies of the city of Toronto planning documents including the Metroplan, City of North York Official Plan, York University Secondary Plan, and Downsview Area Secondary Plan.
  2. Conformity with the goals, objectives and policies of the Region of York and City of Vaughan planning documents, including the Region of York Official Plan and ROPA 43; and the City of Vaughan OPAs 450, 500, 529 and 620
- C 2. Maximize redevelopment potential in support of the subway extension
  3. Consistency with the objectives of the new City of Toronto Official Plan and the Keele Street Study
  4. Consideration of the development objectives of Parc Downsview Park and York University
  5. Potential to stimulate transit supportive development in proximity to station locations
- C 3. Maximize the potential to create a high quality urban/pedestrian environment
  6. Ability to integrate stations with the existing and future built form
  7. Potential to create a safe environment for pedestrians, cyclists and passengers

4.6.1 Methodology

As there are four basic station locations proposed along a subway route, each station location had at least two alternatives to be considered. The planning analysis was based on a review and assessment of station location alternatives because it is anticipated that the land use impact from the subway will occur primary at the subway stations and adjacent zones of influence. The aim of this analysis is to test each station location's relative ability to facilitate local population and employment growth in support of the subway extension. Thus, a comparative approach was adopted to evaluate and review the preferred station locations and routes against each other, instead of by any absolute measure.

4.4.2 Results

The evaluation process and results of the evaluation for objective C are presented in Tables 12 and 13.

TABLE 12 - SUMMARY EVALUATION OF ALTERNATIVE SUBWAY ROUTES

<table>
<tr><th>ROUTE 1
GO/SHEPPARD
KEELE/FINCH
YORK U
"COMMONS"</th><th>ROUTE 2
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Y ROSS
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<tr><td colspan="8">C.1.1 CONFORMITY WITH THE GOALS, OBJECTIVES AND POLICIES OF THE CITY OF TORONTO PLANNING DOCUMENTS</td></tr>
<tr><td colspan="8">Steeles Station - York University Secondary Plan neither precludes, nor requires transit supportive development in this location. As such, this station location generally conforms with the York University Secondary Plan - MEDIUM</td></tr>
<tr><td colspan="2">York University Common Station - York University Secondary Plan neither precludes, nor requires transit supportive development in this location. As such, this station location generally conforms with the York University Secondary Plan - MEDIUM</td><td colspan="2">York University Sentinel Station - York University Secondary Plan neither precludes, nor requires transit supportive development in this location. As such, this station location generally conforms with the York University Secondary Plan - MEDIUM</td><td>York University Common Station - MEDIUM (see Routes 1 and 2)</td><td>York University Sentinel Station - MEDIUM (see Route 3)</td><td>York University Common Station - MEDIUM (see Routes 1 and 2)</td><td>York University Sentinel Station - MEDIUM (see Route 3)</td></tr>
<tr><td colspan="2">1) Keele/Finch Station - City of North York Official Plan recognizes and promotes the existing, low intensity land use pattern in proximity to the Keele/Finch intersection. The Official Plan does not anticipate a subway station at this location, and a new planning regime would be required to facilitate transit supportive redevelopment – LOW</td><td colspan="2">2) Keele/Murray Ross Station - City of North York Official Plan recognizes and promotes the existing, low intensity land use pattern in proximity to the Keele/Finch intersection. The Official Plan does not anticipate a subway station at this location, and a new planning regime would be required to facilitate transit supportive redevelopment. The south University lands are subject to the York University Secondary Plan, which anticipates the potential for higher density forms of development - MEDIUM</td><td>3) Keele/Finch Station - LOW (see Route 1)</td><td colspan="4">Keele/Murray Ross Station - MEDIUM (see Routes 2 and 3)</td></tr>
<tr><td colspan="4">GO Rail at Sheppard Station - City of North York Official Plan recognizes and promotes the existing, low intensity land use pattern in proximity to the GO Rail/Sheppard intersection. The Official Plan does not anticipate a subway station at this location, and a new planning regime would be required to facilitate transit supportive redevelopment. Further, the Downsview Area Secondary Plan does not anticipate a subway station at this location, and a new planning regime would be required to facilitate transit supportive redevelopment – LOW</td><td colspan="2">GO Rail at Finch Station - City of North York Official Plan recognizes and promotes the existing, low intensity land use pattern in proximity to the GO Rail/Finch Station. The Official Plan does not anticipate a subway station at this location, and a new planning regime would be required to facilitate transit supportive redevelopment - MEDIUM</td><td colspan="2">GO Rail at Chesswood Station - City of North York Official Plan recognizes and promotes the existing, low intensity land use pattern in proximity to the GO Rail/Finch Station. The Official Plan does not anticipate a subway station at this location, and a new planning regime would be required to facilitate transit supportive redevelopment - MEDIUM</td></tr>
<tr><td>OVERALL - LOW/MEDIUM</td><td>OVERALL - MEDIUM</td><td>OVERALL - MEDIUM</td><td>OVERALL - LOW/MEDIUM</td><td>OVERALL - MEDIUM</td><td>OVERALL - MEDIUM</td><td>OVERALL - MEDIUM</td><td>OVERALL – MEDIUM</td></tr>
<tr><td colspan="8">C.1.2 CONFORMITY WITH THE GOALS, OBJECTIVES AND POLICIES OF THE REGION OF YORK AND CITY OF VAUGHAN PLANNING DOCUMENTS</td></tr>
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<tr><th>ROUTE 1
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<tr><td colspan="8">Steeles Station - The location of a subway station in this location at Steeles Avenue conforms with the approved planning documents of the Region of York and the City of Vaughan. Approved planning documents have been developed in anticipation of high order transit in this location. Planning documents considered include the Region of York Official Plan, the Region of York Transportation Master Plan, City of Vaughan Official Plan Amendments 450, 500, 528 and 529. Further, the Region of York has purchased land on the north side of Steeles in proximity to this station location specifically to establish a major transit hub and commuter parking lot in anticipation of the subway station – HIGH Region of York and City of Vaughan Planning documents have no relevance to any other station locations
OVERALL - HIGH</td></tr>
<tr><td colspan="8">C.2.1 CONSISTENCY WITH THE OBJECTIVES OF THE NEW CITY OF TORONTO OFFICIAL PLAN AND THE KEELE STREET STUDY</td></tr>
<tr><td colspan="8">Steeles Station – Figure 4-8 (EA document) Higher Order Transit Connections of the new City of Toronto Official Plan identifies a transit corridor connecting the Downsview Subway Station, through York University to Jane Street, north of Steeles Avenue. The corridor is conceptual in nature and identifies the intent of the City to establish an integrated transit network within the City, and with adjoining jurisdictions. No particular station locations are identified, but this station location can be considered to conform to the new City of Toronto Official Plan – HIGH</td></tr>
<tr><td colspan="2">York University Common Station – Figure 4-8 (EA document) Higher Order Transit Connections of the new City of Toronto OP identifies a transit corridor connecting the Downsview Subway Station, through York University to Jane, north of Steeles Avenue. The corridor is conceptual in nature and identifies the intent of the City to establish an integrated transit network within the City, and with adjoining jurisdictions. No particular station locations are identified, but this station location can be considered to conform to the new City of Toronto Official Plan - HIGH</td><td colspan="2">4) York University Sentinel Station – Figure 4-8 (EA document) Higher Order Transit Connections of the new City of Toronto OP identifies a transit corridor connecting the Downsview Subway Station, through York University to Jane, north of Steeles Avenue. The corridor is conceptual in nature and identifies the intent of the City to establish an integrated transit network within the City, and with adjoining jurisdictions. No particular station locations are identified, but this station location can be considered to conform to the new City of Toronto Official Plan - HIGH</td><td>- HIGH (see Routes 1 and 2)</td><td>HIGH (see Routes 3 and 4)</td><td>- HIGH (see Routes 1 and 2)</td><td>HIGH (see Routes 3 and 4)</td></tr>
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<tr><th>ROUTE 1
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<tr><td>Keele/Finch Station – Figure 4-8 (EA document) Higher Order Transit Connections of the new City of Toronto Official Plan identifies a transit corridor connecting the Downsview Subway Station, through York University to Jane Street, north of Steeles Avenue. The corridor is conceptual in nature and identifies the intent of the City to establish an integrated transit network within the City, and with adjoining jurisdictions. No particular station locations are identified, but this station location can be considered to conform to the new City of Toronto Official Plan. Further, the Keele Street Study identifies the Keele and Finch intersection as an area with some redevelopment potential, although it is not identified as an "Avenue" in the new Official Plan - HIGH</td><td colspan="2">Keele/Murray Ross Station – Figure 4-8 (EA document) Higher Order Transit Connections of the new Toronto Official Plan identifies a transit corridor connecting the Downsview Subway Station, through York University to Jane Street, north of Steeles Avenue. The corridor is conceptual in nature and identifies the intent of the City to establish an integrated transit network within the City, and with adjoining jurisdictions. No particular station locations are identified, but this station location can be considered to conform to the new City of Toronto Official Plan - HIGH</td><td>Keele/Finch Station - HIGH (see Route 1)</td><td colspan="4">Keele/Murray Ross Station - HIGH (see Routes 2 and 3)</td></tr>
<tr><td colspan="8">GO Rail at Sheppard Station – Figure 4-8 (EA document) Higher Order Transit Connections of the new City of Toronto OP identifies transit corridor connecting the Downsview Subway Station, through York University to Jane, north of Steeles Avenue. The corridor is conceptual in nature and identifies the intent of the City to establish an integrated transit network within the City, and with adjoining jurisdictions. No particular station locations are identified, but this station location can be considered to conform to the new City of Toronto Official Plan – HIGH</td></tr>
<tr><td colspan="8">OVERALL- HIGH</td></tr>
<tr><td colspan="8">C.2.2 CONSIDERATION OF THE DEVELOPMENT OBJECTIVES OF PARC DOWNSVIEW PARK AND YORK UNIVERSITY</td></tr>
<tr><td colspan="8">5) Steeles Station - York University is currently considering an update to their Master Plan. One of the key components of that planning exercise will be the ability to maximize development potential in proximity to planned subway stations. In this particular location, the University is currently considering a 25,000-seat sports stadium, in addition to an array of complimentary commercial and perhaps residential land uses. Given that much of the land in proximity to this station location alternative is currently used for surface parking, the future land use pattern can easily respond to the subway station location – HIGH</td></tr>
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<tr><th>ROUTE 1
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<tr><td colspan="2">York University Common Station - In a general sense, it has been the objective of York University over the past few years to develop the academic core of the University in the north-east quadrant of the campus, focused on the Common as the gateway to the school and the hub of student activity. In recent years, the University has invested over a half a billion dollars in buildings and site improvements in proximity to the Common in anticipation of the eventual development of a subway station in this location. In fact, some of the new buildings have been specifically designed with future subway access in mind - VERY HIGH</td><td colspan="2">York University Sentinel Station – In a general sense, it has been the objective of York University over the past few years to develop the academic core of the University in the north-east quadrant of the campus, focused on the Common as the gateway to the school and the hub of student activity. The Sentinel Station would certainly serve the existing residences, however, students who live on campus are not commuters, and would not likely utilize the subway service to any significant degree. Future plans for the vacant land holdings
6) in proximity to the Sentinel Station include residential infill and commercial development potential. Lands south of Assiniboine include the Tribute community, which is low to medium density residential and not considered transit supportive. The Sentinel Station does not conform with any development objectives of the University - VERY LOW</td><td>York University Common Station - VERY HIGH (see Routes 1 and 2)</td><td>York University Sentinel Station - VERY LOW (see Routes 2 and 3)</td><td>York University Common Station - VERY HIGH (see Routes 1 and 2)</td><td>York University Sentinel Station - VERY LOW (see Routes 2 and 3)</td></tr>
</table>

ROUTE 1 GO/SHEPPARD KEELE/FINCH YORK U "COMMONS"	ROUTE 2 GO/SHEPPARD KEELE/MURRAY ROSS YORK U "COMMONS"	ROUTE 3 GO/SHEPPARD KEELE/MURRAY ROSS YORK U "SENTINEL"	ROUTE 4 GO/SHEPPARD KEELE/ FINCH YORK U "SENTINEL"	ROUTE 5 GO/FINCH KEELE/MURRAY ROSS YORK U "COMMONS"	ROUTE 6 GO/FINCH KEELE/MURRAY ROSS YORK U "SENTINEL"	ROUTE 7 GO/CHESSWOO D KEELE/MURRAY ROSS YORK U "COMMONS"	ROUTE 8 GO/CHESSWO OD KEELE/MURRA Y ROSS YORK U "SENTINEL"
Keele/Finch Station - another key component of the York University Master Plan exercise will be the ability to maximize the development potential of the University owned lands just north of the Hydro Corridor and west of Keele Street. The University lands in this area are currently vacant and have favourable land use designations already in place for transit supportive development, however, the location of the station at Keele/ Finch will make access to the University lands more difficult – **MEDIUM**	7) **Keele/Murray Ross Station** - Another key component of the York University Master Plan exercise will be the ability to maximize the development potential of the University owned lands just north of the Hydro Corridor and west of Keele Street. The University lands in this area are currently vacant and have favourable land use designations already in place for transit supportive development - **HIGH**		**Keele/Finch Station** – **MEDIUM (see Route 1)**	**Keele/Murray Ross Station** –**HIGH (see Routes 2 and 3)**			
GO Rail at Sheppard Station - The current Parc Downsview Park Master Plan conforms to the Downsview Area Secondary Plan. It was, like the Secondary Plan, developed before the potential for a subway station was confirmed, and therefore does not consider the impact of a station on the Park itself, or on some of the other land uses that are proposed in the Master Plan. It is understood that the Master Plan, like the Secondary Plan, can be reconsidered to enhance intensification initiatives if the subway station were located adjacent to the Park boundary – **HIGH**				**GO Rail at Finch Station** - This station location moves the subway away from the planned Parc Downsview Park, and therefore the potential benefits to the Park and the redevelopment potential afforded by that investment is not achieved - **LOW**		**GO Rail at Chesswood Station** - This station location moves the subway away from the planned Parc Downsview Park, and therefore the potential benefits to the Park and the redevelopment potential afforded by that investment is not achieved - **LOW**	
OVERALL-HIGH	**OVERALL-HIGH**	**OVERALL-MEDIUM**	**OVERALL-MEDIUM**	**OVERALL-HIGH/MEDIUM**	**OVERALL-MEDIUM/LOW**	**OVERALL-HIGH/MEDIUM**	**OVERALL-MEDIUM**
C.2.3 POTENTIAL TO STIMULATE TRANSIT SUPPORTIVE DEVELOPMENT IN PROXIMITY TO STATION LOCATIONS							
Steeles Station - The potential to stimulate appropriate intensified development in proximity to this station location is excellent because: • current land uses in this location are not considered stable, and it is expected that the subway will have a substantial simulative impact on development potential in the general area. It is expected that new development will occur specifically to take advantage of the subway station; • the City of Vaughan has begun to establish an appropriate planning regime (Official Plan Amendment 620) to ensure a high quality, transit supportive urban environment on the north side of Steeles in anticipation of the subway station; and, • York University is currently reconsidering their planning objectives in anticipation of a new sports stadium and subway, as well as other transit supportive land uses along the Steeles Avenue frontage - **HIGH**							

ROUTE 1 GO/SHEPPARD KEELE/FINCH YORK U "COMMONS"	ROUTE 2 GO/SHEPPARD KEELE/MURRAY ROSS YORK U "COMMONS"	ROUTE 3 GO/SHEPPARD KEELE/MURRAY ROSS YORK U "SENTINEL"	ROUTE 4 GO/SHEPPARD KEELE/ FINCH YORK U "SENTINEL"	ROUTE 5 GO/FINCH KEELE/MURRAY ROSS YORK U "COMMONS"	ROUTE 6 GO/FINCH KEELE/MURRAY ROSS YORK U "SENTINEL"	ROUTE 7 GO/CHESSWOO D KEELE/MURRAY ROSS YORK U "COMMONS"	ROUTE 8 GO/CHESSWO OD KEELE/MURRA Y ROSS YORK U "SENTINEL"
York University Common Station - There remains substantial redevelopment potential on vacant lands in proximity to the Common. Key sites have been identified as having a high priority for development by the University on York Boulevard and Ian Macdonald Boulevard adjacent to the Common - **HIGH**		**York University Sentinel Station** - There remains substantial redevelopment potential on vacant lands in proximity to the Sentinel Station. However, current development plans do not indicate that future development would be transit supportive - **MEDIUM**		York University Common Station – HIGH (see Routes 1 and 2)	**York University Sentinel Station – MEDIUM (see Route 3)**	**York University Common Station – HIGH (see Routes 1 and 2)**	**York University Sentinel Station – MEDIUM (see Route 3)**
Keele/Finch Station - A subway station provides an excellent opportunity to stimulate new development at the Keele/Finch intersection, however, the simulative effect on the south University lands would be somewhat diminished. The issue here from a city-building perspective is that it is very unlikely that the land uses adjacent to the Keele/Finch intersection would redevelop into a more urban form without the subway station - **HIGH**	**Keele/Murray Ross Station** - A subway station provides an excellent opportunity to stimulate new development at the south University lands, however, the simulative effect on the Keele/Finch intersection would be substantially diminished. The issue here from a city-building perspective is that it is very unlikely that the land uses adjacent to the Keele/Finch intersection would redevelop into a more urban form without the subway station, and this particular station location is more remote from Keele/Finch - **MEDIUM**		Keele/Finch Station – HIGH (see Route 1)	Keele/Murray Ross Station – MEDIUM (see Routes 2 and 3)			
GO Rail and Sheppard Station - Parc Downsview Park will, in time, establish the type of image for the general area that will stimulate redevelopment opportunities. There are land areas associated with the Park's land holdings that could be replanned for much more density to further exploit a nearby subway station. The future could also see the decommissioning of the runway facilities at Downsview Airport, which would remove current land use and height restrictions on lands in proximity to this station location - HIGH **OVERALL - HIGH**				**GO Rail and Finch Station** - This area is characterized as transitional, where the historic industrial development is very slowly being replaced by commercial and auto-oriented commercial land uses. Notwithstanding the transitional nature of the area, there are some current industrial uses that are not likely to relocate even in the long-term (for example, the tank farms). This area also has a poor image that will frustrate redevelopment opportunities, and will be difficult to overcome, regardless of the location of a subway station - **LOW**		**GO Rail and Chesswood Station** - This area is characterized as a stable industrial area, where the historic development pattern will be very difficult to change over time. This area also has an image that is related to the existing industrial land uses, and that image is expected to frustrate redevelopment initiatives in the long-term, regardless of the location of a subway station in this area - **VERY LOW**	

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<tr><th>ROUTE 1
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<tr><td>OVERALL - HIGH</td><td>OVERALL - HIGH</td><td>OVERALL – HIGH/MEDIUM</td><td>OVERALL - HIGH</td><td>OVERALL - MEDIUM</td><td>OVERALL - MEDIUM</td><td>OVERALL – MEDIUM</td><td>OVERALL - MEDIUM</td></tr>
<tr><td colspan="8">C.3.1 ABILITY TO INTEGRATE STATIONS WITH THE EXISTING AND FUTURE BUILT FORM</td></tr>
<tr><td colspan="8">Steeles Station - Existing land uses are neither urban, nor pedestrian friendly. However, they are also not considered stable, and are expected to redevelop based on favourable planning policy and the development of the planned transit hub and sports stadium. Integration with existing development will be difficult, but anticipated redevelopment is being planned to integrate with transit facilities – MEDIUM</td></tr>
<tr><td colspan="2">University Common Station - It is the intention of the University to focus academic development in the north-east quadrant of the campus, utilizing the Common area as the gateway to the University and the hub of student activity. This area is planned to accommodate a subway station - VERY HIGH</td><td colspan="2">University Sentinel Station - It is the intention of the University to focus academic development in the north-east quadrant of the campus, utilizing the Common area as the gateway to the University and the hub of student activity. The Sentinel area has not been considered for a subway station or for transit supportive development - LOW</td><td>University Common Station - VERY HIGH (see Routes 1 and 2)</td><td>University Sentinel Station – LOW (see Routes 3 and 4)</td><td>University Common Station - VERY HIGH (see Routes 1 and 2)</td><td>University Sentinel Station – LOW (see Routes 3 and 4)</td></tr>
<tr><td colspan="2">Keele/Finch Station - The Keele/Finch area has a mixture of stable land uses, and land uses that are ready to redevelop. Land uses immediately adjacent to the intersection are transitional, and could redevelop in the future, but would require new planning policy to support intensified development that would integrate with a planned subway station - LOW</td><td colspan="2">Keele/Murray Ross Station - The Keele/Murray Ross area has a mixture of stable land uses, the hydro corridor and land uses that are ready to redevelop. Land uses in the north-east quadrant of the Keele/Finch intersection are transitional, and could redevelop in the future, but would require new planning policy to support intensified development that would integrate with a planned subway station - MEDIUM</td><td>Keele/Finch Station – LOW (see Route 1)</td><td colspan="4">Keele/Murray Ross Station – MEDIUM (see Routes 2 and 3)</td></tr>
<tr><td colspan="4">GO Rail and Sheppard Station - Existing and planned land uses in this area would not integrate well with a subway station. However, if a subway station were planned in this location, there is the desire to reconsider current plans to better integrate with the subway station - MEDIUM</td><td colspan="2">GO Rail and Finch Station - Existing and planned land uses in this area would not integrate well with a subway station. Further, given the nearby tank farms and other commercial/industrial land uses, it is expected that the current image of the area will serve to frustrate redevelopment and integration efforts for some time - LOW</td><td colspan="2">GO Rail and Chesswood Station - Existing and planned land uses in this area would not integrate well with a subway station. Further, given that substantial redevelopment is not expected to occur even in the long-term, the ability to integrate new transit facilities into the adjacent development context will be difficult - VERY LOW</td></tr>
<tr><td>OVERALL-MEDIUM</td><td>OVERALL-HIGH/MEDIUM</td><td>OVERALL-MEDIUM</td><td>OVERALL-MEDIUM/LOW</td><td>OVERALL-MEDIUM</td><td>OVERALL-MEDIUM/LOW</td><td>OVERALL-MEDIUM</td><td>OVERALL-LOW</td></tr>
<tr><td colspan="8">C.3.2. POTENTIAL TO CREATE A SAFE ENVIRONMENT FOR PEDESTRIANS, CYCLISTS AND PASSENGERS</td></tr>
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<tr><th>ROUTE 1
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<tr><td colspan="8">Steeles Station - Major redevelopment in this area will ensure that all new development will consider pedestrian, cyclist and passenger safety - HIGH</td></tr>
<tr><td colspan="2">University Common Station - This area already has an established pedestrian and cyclist environment that will be further enhanced through new development and the incorporation of a subway station - VERY HIGH</td><td colspan="2">University Sentinel Station - This area already has substantial vacant land and a relatively poor pedestrian and cyclist environment. Future development will likely improve the situation - MEDIUM</td><td>University Common Station - VERY HIGH (see Routes 1 and 2)</td><td>University Sentinel Station – MEDIUM (see Routes 3 and 4)</td><td>University Common Station - VERY HIGH (see Routes 1 and 2)</td><td>University Sentinel Station – MEDIUM (see Routes 3 and 4)</td></tr>
<tr><td colspan="2">Keele Finch Station - This area has existing issues related to pedestrian and cyclist safety. Only through the development of a subway station and the redevelopment of the area for more urban and transit supportive land uses will this area be able to become attractive for pedestrians and cyclists. This will require a major transformation - MEDIUM</td><td colspan="2">Keele/Murray Ross Station - This area has existing issues related to pedestrian and cyclist safety. Only through the development of a subway station and the redevelopment of the area for more urban and transit supportive land uses will this area be able to become attractive for pedestrians and cyclists. This will require a major transformation - MEDIUM</td><td>Keele Finch Station – MEDIUM (see Route 1)</td><td colspan="4">Keele/Murray Ross Station – MEDIUM (see Routes 2 and 3)</td></tr>
<tr><td colspan="4">GO Rail and Sheppard Station - The major investment anticipated by the Federal government in Parc Downsview Park will transform the image of this area, and will facilitate new forms of development. The detailed design of the station will need to consider pedestrian and cyclist safety - MEDIUM/HIGH</td><td colspan="2">GO Rail and Finch Station - Without major investment in an enhanced urban image, it is very unlikely that new development that creates a safe pedestrian and cyclist environment would be achieved in the short to mid-term, regardless of the location of the subway station in this area - LOW</td><td colspan="2">GO Rail and Chesswood Station - Without major investment in an enhanced urban image, it is very unlikely that new development that creates a safe pedestrian and cyclist environment would be achieved in the mid to long-term, regardless of the location of the subway station in this area - VERY LOW</td></tr>
<tr><td>OVERALL-HIGH</td><td>OVERALL-HIGH</td><td>OVERALL-MEDIUM</td><td>OVERALL-MEDIUM</td><td>OVERALL-HIGH/MEDIUM</td><td>OVERALL-MEDIUM</td><td>OVERALL-MEDIUM</td><td>OVERALL-MEDIUM</td></tr>
</table>

TABLE 13 - SUMMARY OF OBJECTIVE C RESULTS ACCORDING TO EACH SUBWAY ROUTE

Indicators	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
C.1 Conform with current, approved planning documents								
C.1.1 Conformity with the goals, objectives and policies of the City of Toronto planning documents, including: ▪ **Metroplan** ▪ **City of North York Official Plan** ▪ **York University Secondary Plan** ▪ **Downsview Area Secondary Plan**	MEDIUM/ LOW	MEDIUM	MEDIUM	MEDIUM/ LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM
C.1.2 Conformity with the goals, objectives and policies of the Region of York and City of Vaughan planning documents, including: ▪ **The Region of York Official Plan and ROPA 43** ▪ **The City of Vaughan OPAs 450, 500, 529 and 620**	HIGH	HIGH	HIGH/ MEDIUM	HIGH/ MEDIUM	HIGH	HIGH/ MEDIUM	HIGH	HIGH/ MEDIUM
C.2. Maximize redevelopment potential in support of the subway extension								
C.2.1 Consistency with the objectives of the new City of Toronto Official Plan and the Keele Street Study	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM
C.2.2 Consideration of the development objectives of Parc Downsview Park and York University	HIGH	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	MEDIUM
C.2.3 Potential to stimulate transit supportive development in proximity to station locations	HIGH/ MEDIUM	HIGH	HIGH	MEDIUM	HIGH	HIGH/ MEDIUM	HIGH/ MEDIUM	MEDIUM
C.3 Maximize the potential to create a high quality urban/pedestrian environment								
C.3.1 Ability to integrate stations with the existing and future built form	MEDIUM	HIGH/ MEDIUM	MEDIUM	MEDIUM/LOW	MEDIUM	MEDIUM /LOW	HIGH/ MEDIUM	MEDIUM/LOW
C.3.2 Potential to create a safe environment for pedestrians, cyclists and passengers	HIGH	HIGH	HIGH/ MEDIUM	HIGH / MEDIUM	HIGH / MEDIUM	MEDIUM	HIGH / MEDIUM	MEDIUM

4.13 Indicator D 1.1 - Length of subway route adjacent to residential neighborhoods.

4.13.1 Methodology

The length of subway route adjacent to residential neighborhoods was calculated by measuring distance in km. The measurements were made for sections that touch Keele Street and Tribute Homes (from Finch Hydro Corridor to Pond Road).

4.13.2 Results

The results for the eight routes are presented in Table 14.

TABLE 14 - LENGTH OF ROUTES ADJACENT TO RESIDENTIAL NEIGHBOURHOODS

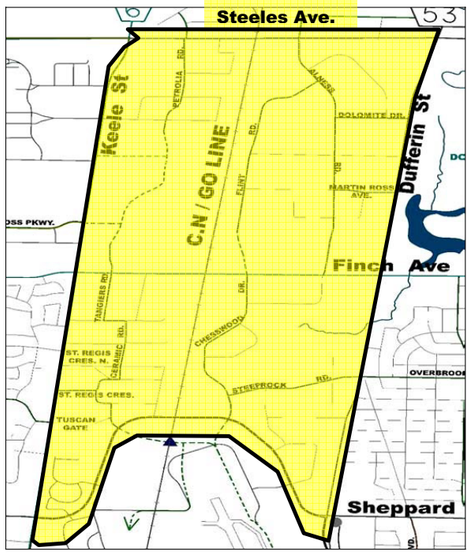
Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
2.1km	2.1km	2.2km	2.2km	0.8km	0.9km	0.8km	0.9km

4.14 Indicator D 1.2 - Length of Route within Keele Industrial Area

4.14.1 Methodology

The Keele Industrial Area is bounded by Dufferin Street, Keele Street, Steeles Avenue and Sheppard Avenue (Figure 2). The approach used to calculate this category was the same as that used in the calculations for the route length category. The route lengths located outside of the Keele Industrial Area was then subtracted from the total.

FIGURE 2 - KEELE INDUSTRIAL AREA



4.14.2 Results

As seen in Table 15, Routes 1, 2, 3 and 4 are the longest routes within the Keele Industrial Area while Routes 7 and 8 are the shortest.

TABLE 15 - MAXIMUM LENGTH WITHIN KEELE INDUSTRIAL AREA

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
3.5 km	3.5 km	3.5 km	3.5 km	2.9 km	2.9 km	2.8 km	2.8 km

4.15 Indicator D 1.3 - Number of Sensitive operations in York University within Zone of Influence

4.15.1 Methodology

The original indicator of proximity to sensitive operations at York University was not a meaningful indicator due to the fact that all routes will affect sensitive buildings. This will make proximity to sensitive operations at York University to be zero meters for all cases. Instead of measuring "proximity to sensitive operations at York University", "number of sensitive operations at York University in the zone of influence of the subway extension." was measured. The zone of influence was defined as the route and general station locations, which encompasses all potential alignments and conceptual station locations.

4.15.2 Results

In this case, it could be seen that any route that uses the Sentinel option will affect more buildings than ones that utilize the Common option. In this case, Routes 3, 4, 6 and 8 affects four buildings while routes 1, 2, 5 and 7 affects only two. Table 16 presents the affected buildings by route.

TABLE 16 - AFFECTED SENSITIVE BUILDINGS

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
Accolade East	Accolade East	TEL Building	TEL Building	Accolade East	TEL Building	Accolade East	TEL Building
Old York Stadium	Old York Stadium	Petrie	Petrie	Old York Stadium	Petrie	Old York Stadium	Petrie
		Chemistry	Chemistry		Chemistry		Chemistry
		Old York Stadium	Old York Stadium		Old York Stadium		Old York Stadium
2	2	4	4	2	4	2	4

4.16 Indicator D.2.1 - Number of important natural heritage features within the zone of influence of the subway extension

4.16.1 Methodology

The natural heritage features identified within the study area include vegetation communities, watercourses and waterbodies. Tables 13 and 14 provide a list of and calculations for natural heritage features located within the routes and general station locations. Table 13 offers the actual distance calculations (m) of the natural heritage features located within each proposed route and general station locations while Table 14 provides a numerical count of these same natural heritage features.

Only natural heritage features located within 100 m of the potential subway route were assessed. Two main categories were made, namely:

1. Natural heritage features located **within route** which refers to natural heritage features located > 100 m of a proposed subway route; and,

2. Natural heritage features located **not within route** which refers to natural heritage features located beyond 100 m of a proposed subway route.

4.16.2 Results

Using Geographic Information Systems (GIS), information outlining each proposed subway route and station locations was laid over a layer containing natural heritage features, based on Ecological Land Classifications (ELC). All important natural heritage features located **within route** for each proposed subway route were then traced and counted. The number of important natural heritage features are presented in Table 17 and 18.

4.17 Indicator D.2.2 - Area of groundwater discharge within the zone of influence of the subway extension

4.17.1 Methodology

Geology/subsurface stratigraphy, hydrogeology data of the study area was used to determine the areas of groundwater discharge within the zone of influence of the subway extension. The area distances were calculation in hectares. Field investigations revealed four main watercourse/aquatic systems located within the study area including the Dufferin Creek, the Black Creek and the Black Creek Pioneer Village Ponds, the Stong Pond and the York University Ponds. Due to the nature of the study area, it was observed that all eight alternative subway routes were located partially within areas of groundwater discharged. Thus, the key objective was to identify the total area of groundwater discharge within the zone of influence of the subway extension for each proposed subway route. Consideration was given to only areas that were directly **within routes.**

4.17.2 Results

Using GIS, information outlining each proposed subway route and station locations was laid over a layer containing geology/subsurface stratigraphy and hydrogeological data. The total size of area of groundwater discharge within the zone of influence of the subway extension was determined by summing up all areas of groundwater discharge for each proposed subway route. Table 17 and 18 provides the areas of groundwater discharge for all eight subway routes.

4.18 Indicator D.2.3 – Number of important cultural heritage features within the zone of influence of the subway extension

4.18.1 Methodology

Important cultural heritage features identified in the study area comprise both archaeological and built heritage features. Only cultural heritage features identified under *Ontario Heritage Act* were included in the analysis. Table 17 and 18 provides a list of cultural heritage features located within the routes and general station locations. Consideration was given to cultural heritage features located directly within each proposed subway route. It must be noted however that, all eight proposed subway routes pass through York University which is recognized as a single built heritage landscape.

4.18.2 Results

Using GIS, information outlining each proposed subway route and station location was laid over a layer containing cultural heritage features. All important cultural heritage features located directly **within route** for each proposed subway route was traced and counted. The number of important cultural heritage features for the eight subway routes are presented in Table 17 and 18.

TABLE 17 - CALCULATIONS FOR NATURAL, CULTURAL HERITAGE FEATURES AND GROUNDWATER DISCHARGE

Natural/Cultural Heritage Feature Calculations for Each Route									
Natural/Cultural Feature	**Route 1**	**Route 2**	**Route 3**	**Route 4**	**Route 5**	**Route 6**	**Route 7**	**Route 8**	**LEGEND**
Woodlots									
Osgoode Woodlot	430	420	0 **(PW)**	0 **(PW)**	440	0 **(PW)**	420	0 **(PW)**	
Boyer Woodlot	0 **(PW)**	0 **(PW)**	190	240	0 **(PW)**	190	0 **(PW)**	190	
Danby Woods	0 **(PW)**	0 **(PW)**	660	630	0 **(PW)**	640	0 **(PW)**	620	
Boynton Woods	0 **(PW)**	0 **(PW)**	250	180	0 **(PW)**	240	0 **(PW)**	220	**0 (PW) = Partially Within Route**
Saywell Woods	520	520	1	1	520	1	520	20	**0 (EW) = Entirely Within Route**
Vegetation									**Other # = Closest Distance (m) from Route**
FOD4 Toronto	370	390	400	400	1500	1500	1050	1000	
FOD4 Vaughan	450	450	500	500	450	500	450	500	
Watercourses									
Dufferin Creek	880	790	820	830	0 **(PW)**	0 **(PW)**	450	460	
Black Creek	390	390	0 **(PW)**	0 **(PW)**	390	0 **(PW)**	390	0 **(PW)**	
Stong Pond	520	520	0 **(EW)**	0 **(EW)**	520	0 **(EW)**	520	0 **(PW)**	
Groundwater Discharge Area (km2)	**0.04745**	**0.05606**	**0.1834**	**0.2011**	**0.04926**	**0.2005**	**0.03985**	**0.1695**	**GW DISCHARGE AREA - AREA OF GROUNDWATER DISCHARGE (KM2) WITHIN EACH ROUTE**
Archaeological Sites	0	0	0	0	0	0	0	0	0 **= Not Within Route**
Built Heritage Features	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	1 **= Within Route** EXCLUDING YORK UNIVERSITY KEELE CAMPUS

TABLE 18 - SUMMARY OF NATURAL/CULTURAL HERITAGE CALCULATIONS AND FEATURES FOR EACH SUBWAY ROUTE

Feature	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8	Legend
WOODLOTS									
OSGOODE WOODLOT	0	0	1	1	0	1	0	1	
BOYER WOODLOT	1	1	0	0	1	0	1	0	
DANBY WOODS	1	1	0	0	1	0	1	0	
BOYNTON WOODS	1	1	0	0	1	0	1	0	
SAYWELL WOODS	0	0	0 (BUT WITHIN 1 M OF ROUTE), THEREFORE COUNT AS 1	0 (BUT WITHIN 1 M OF ROUTE), THEREFORE COUNT AS 1	0	0 (BUT WITHIN 1 M OF ROUTE), THEREFORE COUNT AS 1	0	0	
VEGETATION									0 = NOT WITHIN ROUTE
FOD4 TORONTO	0	0	0	0	0	0	0	0	1 = WITHIN ROUTE
FOD4 VAUGHAN	0	0	0	0	0	0	0	0	
WATERCOURSES									
DUFFERIN CREEK	0	0	0	0	1	1	0	0	
BLACK CREEK	0	0	1	1	0	1	0	1	
STONG POND	0	0	1	1	0	1	0	1	
TOTAL # NATURAL FEATURES WITHIN EACH ROUTE	3	3	3	3	4	4	3	3	
GROUNDWATER DISCHARGE AREA	0 (PW)	0 (PW)	0 (PW)	0 (PW)	0 (PW)	0 (PW)	0 (PW)	0 (PW)	GW DISCHARGE AREA - AREA OF GROUNDWATER DISCHARGE (KM2) WITHIN EACH ROUTE
ARCHAEOLOGICAL SITES	0	0	0	0	0	0	0	0	
BUILT HERITAGE FEATURES	0	0	1	1	0	1	0	1	
TOTAL # CULTURAL FEATURES WITHIN EACH ROUTE	0	0	1	1	0	1	0	1	EXCLUDING 1 = YORK UNIVERSITY KEELE CAMPUS

4.19 Indicator E 1.1 - Length of Subway Route

4.19.1 Methodology

The length of subway route is calculated by measuring the medium of the respective routes. The subway routes start from the end of the tail tracks at Downsview station to the middle of the proposed Steeles Station.

4.19.2 Results

Routes 1 to 4 are similar in length. A detailed breakdown of the route lengths and routes can be seen in Appendix P.

TABLE 19 - ROUTE LENGTHS

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
5.5 km	5.5 km	5.5 km	5.5 km	5.4 km	5.2 km	5.1 km	4.9 km

The route lengths are shown in ranges. The lower range is calculated above. The RTES Alignment, which is included by Route 1, has a total length of approximately 6.2km. There is a difference of 0.7 km between the estimated route length and the length of the RTES alignment. Therefore, a difference of 0.7 km is applied to all the other routes for estimation purposes (Table 20).

TABLE 20 - ROUTE LENGTHS MODIFIED

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
5.5 – 6.2km	5.5 – 6.2 km	5.5 – 6.2 km	5.5 - 62 km	5.4 – 6.1 km	5.2 – 5.9km	5.1 – 5.8 km	4.9 – 5.6 km

4.20 Indicator E 2.1 - Total number of a.m. peak period passengers on the subway extension.

4.20.1 Methodology

This indicator is measured by the number of users boarding and alighting. The total base numbers for total board and alight categories were used. An example of the calculation is presented below.

Route 1: GO/Sheppard Station, Keele/Finch Station, Sheppard and York University Common Station

Route 1: 2661 (Go/Sheppard Total Board & Alight Base) + 2788 (Keele/Finch Total Board & Alight Base) + 20273 (Steels/Common Station Total Board & Alight Base) = 25700 (round off to hundreds)

4.20.2 Results

Table 21 presents the boarding and alighting data for all 8 routes.

TABLE 21 - TOTAL BOARDING AND ALIGHTING

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
25700	23700	23900	26000	23300	23500	21200	21500

4.21 Indicator E 3.1 - Length of Subway Route within Existing Right-of-Way

4.21.1 Methodology

The methodology used for this calculation is based on the assumption of maximum usage of road right-

of-way. The percentages and lengths presented in this category represent the maximum road right-of-way length that may be utilized. This is estimated by measuring the lengths of routes that covers any road.

4.21.2 Results

By comparing the routes (Table 22), it is found that Route 1 has the highest potential in terms of road usage while Route 8 has the lowest.

TABLE 22 - MAXIMUM LENGTHS WITHIN ROAD RIGHT-OF-WAY

Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
3.0 km	2.4 km	1.6 km	1.6 km	1.4 km	0.6 km	1.0 km	.2 km

4.22 Indicator E 4.1 7 - Ability to develop alignments with the routes that minimize the use of curves less than 600 m radiuses.

4.22.1 Methodology

The ability to develop alignments with the routes that minimize the use of curves that are less than 600 m radius was calculated in subjective terms.

4.22.2 Results

All eight subway routes can accommodate alignments that minimize the use of curves less than 600m radius. Therefore, all routes were assigned the same subjective indicator as high.

Overall Results for all 8 routes and station locations

Table (23) presents a compilation of all data collected for each of the 8 routes according to all the 22 indicators.

TABLE 23 - DETAILED RESULTS OF DATA COLLECTION PROCESS FOR ALL 8 ROUTES AND STATION CONCEPTS

Objectives	Criteria	Indicators	Measure	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
A) Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue.	A1) Convenience for riders to walk to local stations.	A1.1) Existing population and employment within 500 m walking distance of subway stations.	# of Residents	2400	2700	2700	2400	2700	2700	2700	2700
			# of Jobs	3700	2400	2400	3700	2300	2300	4200	4200
			Total	6100	5100	5100	6100	5000	5000	6900	6900
		A1.2) Future population and employment within 500 m walking distance of subway stations.	# of Residents	16100	15400	15400	16100	13600	13600	13600	13600
			# of Jobs	8600	8400	8400	8600	9900	9900	10000	10000
			Total	24700	23800	23800	24700	23500	23500	23600	23600
		A 1.3) Students, faculty and staff within 500 m walking distance of the York University station.	# of Students and Staff	76,300	76,300	70,200	70,200	76,300	70,200	76,300	70,200
B) Provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC buses.	B1) Convenience for other modes of travel.	B.1.1) Connection to Finch West Bus (Route 36) and Keele Bus (Route 41) in the Keele/Finch area.	# of a.m. peak period transfers (1)	1500-2000	0	0	1500-2000	1500-2000	1500-2000	0	0
		B 1.2) Ease of accessibility for other travel modes (taxi, bicycle, pedestrians, Wheeltrans, passenger pick up and drop off, commuter parking, ambulatory/non-ambulatory disabled persons).	Subjective (High, High Medium, Medium, Medium Low, Low)	High -all alternative routes / general station locations have equal potential to address accessibility by all modes of travel							
C) Support local population and employment growth.	C1) Conform with current approved planning documents.	C1.1) Conformity with the goals, objectives and policies of the City of Toronto planning documents including the Metroplan, City of North York Official Plan, York University Secondary Plan, and Downsview Area Secondary Plan.	Subjective	Medium Low	Medium	Medium	Medium Low	Medium	Medium	Medium	Medium
		C 1.2) Conformity with the goals, objectives and policies of the Region of York and City of Vaughan planning documents including the Region of York Official Plan and ROPA 43, and the City of Vaughan OPAs 450, 500, 529 and 620.	Subjective	High	High	High Medium	High Medium	High	High Medium	High	High Medium
	C2) Maximize redevelopment potential in support of the subway extension.	C2.1) Consistency with the objectives of the new City of Toronto Official Plan and the Keele Street Study.	Subjective	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
		C2.2) Consideration of the development objectives of Parc Downsview Park and York University.	Subjective	High	High	High	Medium	High	Medium	High	Medium
		C2.3) Potential to stimulate transit supportive development in proximity to station locations.	Subjective	High Medium	High	High	Medium	High	High Medium	High Medium	Medium

TABLE 23 - DETAILED RESULTS OF DATA COLLECTION PROCESS FOR ALL 8 ROUTES AND STATION CONCEPTS

Objectives	Criteria	Indicators	Measure	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
	C3) Maximize the potential to create a high quality urban/pedestrian environment.	C3.1) Ability to integrate stations with the existing and future built form.	Subjective	Medium	High Medium	Medium	Medium Low	Medium	Medium Low	High Medium	Medium Low
		C3.2) Potential to create a safe environment for pedestrians, cyclists and passengers.	Subjective	High	High	High Medium	High Medium	High Medium	Medium	High Medium	Medium
D) Minimize adverse environmental effects.	D1) Protect existing stable land uses.	D1.1) Length of subway route adjacent to residential neighbourhoods.	Length (km) of Route	2.1km	2.1km	2.2km	2.2km	0.8km	0.9km	0.8km	0.9km
		D1.2) Length of subway route within Keele Industrial area.	Length (km) of Route	3.5km	3.5km	3.5km	3.5km	2.9km	2.9km	2.8km	2.8km
		D1.3) Number of sensitive operations at York University within the zone of influence of the subway extension.	# of Sensitive Operations/ Buildings within Route	2	2	4	4	2	4	2	4
	D2) Minimize the potential effects on important natural and cultural heritage features.	D2.1) Number of important natural heritage features within the zone of influence of the subway extension.	# of Important Natural Heritage Features within Route	3	3	3	3	4	4	3	3
		D2.2) Area of groundwater discharge within the zone of influence of the subway extension.	Area (hectares) of Groundwater Discharge within each Route	4	4	19	19	5	20	4	19
		D2.3) Number of important cultural heritage features within the zone of influence of the subway extension.	# of Important Cultural Heritage Features	1	1	2	2	1	2	1	2
E) Achieve reasonable capital and operating costs.	E1) Minimize the capital and operating costs of the subway extension.	E1.1) Length of subway route.	Length (km) of Route	5.5 - 6.2 km	5.5 - 6.2 km	5.5 - 6.2 km	5.5 - 6.2 km	5.4 - 6.1 km	5.2 - 5.9 km	5.1 - 5.8 km	4.9 - 5.6 km
	E2) Maximize the revenue generated from the subway extension.	E2.1) Total number of a.m. peak period passengers on the subway extension.	# of Users Boarding and Alighting (1)	25,700	23,700	23,900	26,000	23,300	23,500	21,200	21,500
	E3) Maximize the subway extension in lands with no property costs to the project.	E3.1) Length of subway route within existing road rights-of-way.	Length (km) of Route	up to 3.0km	up to 2.4km	up to 1.6km	up to 1.6km	up to 1.4km	up to 0.6km	up to 1.0km	up to 0.2km
	E4) Quality of subway service.	E4.1) Ability to develop alignments with the routes that minimize the use of curves < 600 m radius.	Subjective	High	High	High	High	High	High	High	High

5.0 Results of MATS Analysis

This section describes the weighting process (how specific weights were assigned to each indicator/factor for the MATS analyses/sensitivity tests) as well as the MATS results (overall scores) of each alternative subway route and station concepts.

5.1 How specific weights were assigned to indicators/factors

The study team adopted two approaches for assigning weights to the objectives and indicators used for the MATS analysis.

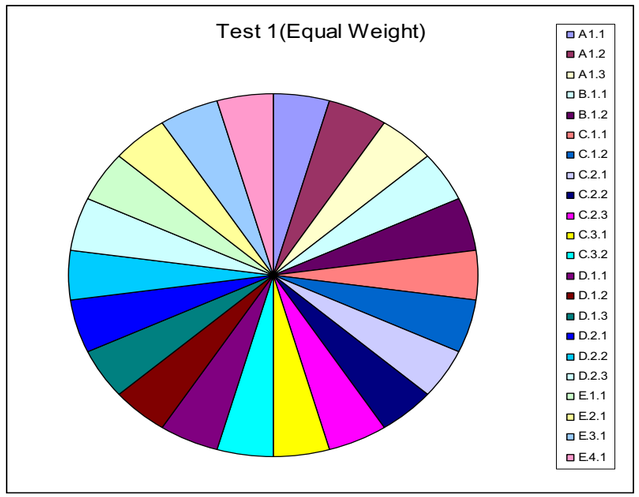
The first approach adopted by the study team was at the "indicator-level". This involved assigning weights to specific individual indicators. The indicator –level weights approach was adopted for Test 1 (Figure 3). This approach provided an opportunity to place equal emphasis (weight) on all indicators that were deemed as extremely vital decision-making indicators by the study team.

As described in section 4, we had a total of 22 indicators/factors. All these 22 indicators were used for each MATS analysis. Test 1 (Table 24) represents the MATS analysis conducted in which equal and specific weights were assigned to each indicator/factor. In MATS, all weights are standardized to sum up to 1.0. Consequently, to obtain an equal weight for each indicator, 1.0 was divided by the total number of indicators (22):

$$1.0/22 = 0.045$$

Thus, all indicators in Test 1 (Table 4) were given weights of 0.045 as illustrated in Figure 3.

Figure 3 - Indicator Level Weights



The second approach used by the study team was at "objective-level". This approach involved assigning weights to an entire objective. For this approach, weights were placed from the objective level and subdivided amongst the corresponding criteria and indicators. This approach ensured that the weight assigned to an entire objective was subdivided proportionally amongst the corresponding criteria and indicators of that objective, similar to a tier system. The objective – level weights approach was used for the sensitivity tests - Test 2, 3, 4, 5, 6 and 7 (of Table 24). These additional MATS Tests served as a means to substantiate the route selection process.

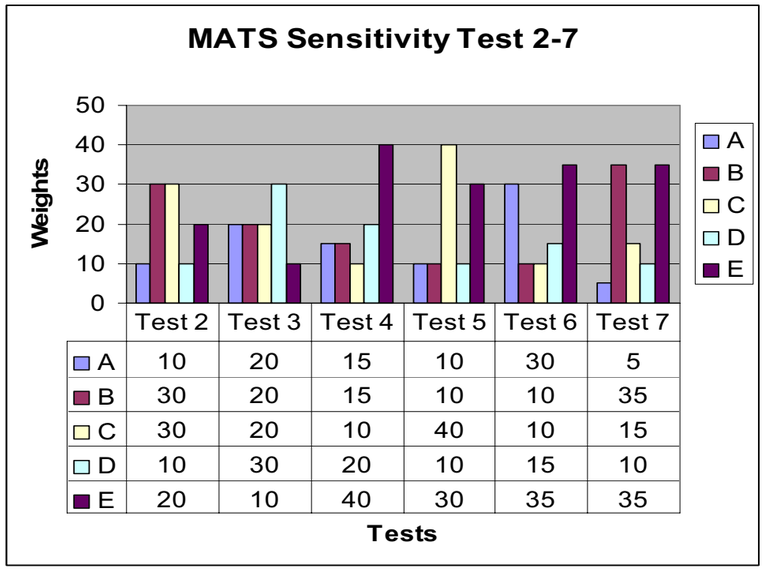
Referring from Table 23, the five objectives used for the MATS analysis were obtained from the ToR:

- Objective A Provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC Buses
- Objective B Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue
- Objective C Support local population and employment growth
- Objective D Minimize adverse environmental effects
- Objective E Achieve reasonable capital and operating costs

The weight structure used for the Sensitivity Tests (Table 24) is presented in Figure 4.

For Test 2, emphasis was placed on objective B (provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC Buses) and objective C (Support local population and employment growth).

Figure 4 - Objective Level Weights



	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
A	10	20	15	10	30	5
B	30	20	15	10	10	35
C	30	20	10	40	10	15
D	10	30	20	10	15	10
E	20	10	40	30	35	35

For Test 3, the study team placed emphasis on objective D (minimize adverse environmental effects). For Test 4, emphasis was placed on objective E (achieve reasonable capital and operating costs).

For Test 5, emphasis was placed on objective C (support local population and employment growth).

For Test 6, emphasis was placed on objective A (provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue) and objective E (achieve reasonable capital and operating costs).

For Test 7, emphasis was placed on objective B (provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC Buses) and objective E (achieve reasonable capital and operating costs).

5.2 Overall Scores

The overall score for a subway route refers to the sum total of the weighted – subjective scores obtained for each factor/indicator.

The overall score/result of the initial MATS analysis (all weights being equal) indicated that Route 1 was the preferred and highest ranking subway alternative. Route 1 obtained an overall score/result of 0.68, followed by Route 5 with a total overall score/result of 0.676 as presented in Table 24.

To confirm the preference for Route 1, a number of sensitivity tests were performed (Tests 2 - 7). As described in section 5.1(Figure 4), the sensitivity tests involved conducting numerous MATS computer runs using varying indicator and objective weights. In all cases, Route 1 received the highest overall score/result as presented in Table 24.

The selection of Route 1 as the preferred subway alternative was released during the second round of consultation. The study team received a high level of concurrence during the second round of consultation for selecting Route 1.

Route 1 captured the GO-TTC Interchange at Sheppard Avenue alignment identified in the RTES and the ToR. The other two alignments identified in the ToR, the 1994 EA approved alignment and the GO-TTC Interchange at Finch Avenue alignment, were removed from further analysis, since the route that captured these alignments (Route 5) was not selected. Route 1 was carried forward to Phase 2.

Table 24 presents the details of all the MATS analysis and sensitivity tests and weights assigned for all eight routes and station concepts.

TABLE 24 - COMPARATIVE EVALUATION OF ROUTES AND GENERAL STATION LOCATIONS USING MATS ANALYSIS AND SENSITIVITY TESTS

Objectives	Criteria	Indicators	Test 1 (Equal Weight)	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
A) Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue. **(10, 20, 15, 10, 30, 5).**	A1) Convenience for riders to walk to local stations.	A1.1) Existing population and employment within 500 m walking distance of subway stations.	4.545	3.3	6.7	5.0	3.3	10.0	3.0
		A1.2) Future population and employment within 500 m walking distance of subway stations.	4.545	3.3	6.7	5.0	3.3	10.0	1.5
		A1.3) Students, faculty and staff within 500 m walking distance of the York University station.	4.545	3.3	6.7	5.0	3.3	10.0	0.5
B) Provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC buses. **(30, 20, 15, 10, 10, 35).**	B1) Convenience for other modes of travel.	B1.1) Connection to Finch West Bus (Route 36) and Keele Bus (Route 41) in the Keele/Finch area.	4.545	15.0	10.0	7.5	5.0	5.0	35.0
		B1.2) Ease of accessibility for other travel modes (taxi, bicycle, pedestrians, Wheeltrans, passenger pick up and drop off, commuter parking, ambulatory/non-ambulatory disabled persons).	4.545	15.0	10.0	7.5	5.0	5.0	0.0
C) Support local population and employment growth. **(30, 20, 10, 40, 10, 15).**	C1) Conform with current, approved planning documents.	C1.1) Conformity with the goals, objectives and policies of the City of Toronto planning documents including the Metroplan, City of North York Official Plan, York University Secondary Plan, and Downsview Area Secondary Plan.	4.545	5.0	3.3	1.7	6.7	1.7	1.5
		C1.2) Conformity with the goals, objectives and policies of the Region of York and City of Vaughan planning documents including the Region of York Official Plan and ROPA 43, and the City of Vaughan OPAs 450, 500, 529 and 620.	4.545	5.0	3.3	1.7	6.7	1.7	0.0

Objectives	Criteria	Indicators	Test 1 (Equal Weight)	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
	C2) Maximize redevelopment potential in support of the subway extension.	C2.1) Consistency with the objectives of the new City of Toronto Official Plan and the Keele Street Study.	4.545	3.3	2.2	1.1	4.4	1.1	0.0
		C2.2) Consideration of the development objectives of Parc Downsview Park and York University.	4.545	3.3	2.2	1.1	4.4	1.1	4.5
		C2.3) Potential to stimulate transit supportive development in proximity to station locations.	4.545	3.3	2.2	1.1	4.4	1.1	4.5
	C3) Maximize the potential to create a high quality urban/pedestrian environment.	C3.1) Ability to integrate stations with the existing and future built form.	4.545	5.0	3.3	1.7	6.7	1.7	3.4
		C3.2) Potential to create a safe environment for pedestrians, cyclists and passengers.	4.545	5.0	3.3	1.7	6.7	1.7	1.1
D) Minimize adverse environmental effects. **(10, 30, 20, 10, 15, 10).**	D1) Protect existing stable land uses.	D1.1) Length of subway route adjacent to residential neighbourhoods.	4.545	1.6	5.0	3.3	1.6	2.5	3.3
		D1.2) Length of subway route within Keele Industrial area.	4.545	1.6	5.0	3.3	1.6	2.5	2.6
		D1.3) Number of sensitive operations at York University within the zone of influence of the subway extension.	4.545	1.6	5.0	3.3	1.6	2.5	0.7
	D2) Minimize the potential effects on important natural and cultural heritage features.	D2.1) Number of important natural heritage features within the zone of influence of the subway extension.	4.545	1.7	5.0	3.3	1.7	2.5	1.3
		D2.2) Area of groundwater discharge within the zone of influence of the subway extension.	4.545	1.7	5.0	3.3	1.7	2.5	1.7
		D2.3) Number of important cultural heritage features within the zone of influence of the subway extension.	4.545	1.7	5.0	3.3	1.7	2.5	0.3

Objectives	Criteria	Indicators	Test 1 (Equal Weight)	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
E) Achieve reasonable capital and operating costs. **(20, 10, 40, 30, 35, 35).**	E1) Minimize the capital and operating costs of the subway extension.	E1.1) Length of subway route.	4.545	5.0	2.5	10.0	7.5	8.6	8.8
	E2) Maximize the revenue generated from the subway extension.	E2.1) Total number of a.m. peak period passengers on the subway extension.	4.545	5.0	2.5	10.0	7.5	8.6	8.8
	E3) Maximize the subway extension in lands with no property costs to the project.	E3.1) Length of subway route within existing road rights-of-way.	4.545	5.0	2.5	10.0	7.5	8.6	8.8
	E4) Quality of subway service.	E4.1) Ability to develop alignments within the routes that minimize the use of curves < 600 m radius.	4.545	5.0	2.5	10.0	7.5	8.6	8.8
MATS Results									
Overall Scores		Route 1	0.68	0.794	0.714	0.734	0.739	0.773	0.793
		Route 2	0.648	0.657	0.617	0.634	0.707	0.692	0.437
		Route 3	0.517	0.573	0.49	0.531	0.604	0.604	0.384
		Route 4	0.506	0.676	0.566	0.604	0.589	0.66	0.688
		Route 5	0.676	0.772	0.713	0.681	0.705	0.714	0.766
		Route 6	0.503	0.656	0.566	0.554	0.557	0.603	0.682
		Route 7	0.651	0.632	0.647	0.616	0.663	0.688	0.412
		Route 8	0.487	0.522	0.502	0.508	0.525	0.593	0.32
Highest Ranked Route	Second Highest Ranked Route	Least Ranked Route							

6.0 Results of Reasoned Argument Method

This section describes the RAM weighting process and the RAM results (overall scores) of each alternative subway route and station concepts.

6.1 RAM analysis

As discussed in chapter 3, the RAM analysis is based on the rules of logic. In essence, the differences between the net effects associated with the various subway routes were highlighted. Symbols were then used to identify the advantages and disadvantages of each objective and route. The higher a route performs on an objective is an indication of its relative significance. The symbols used to determine preferences are described below:

● A fully shaded circle implies the most preferred;

◕ A three/quarter shaded circle implies higher than average preference;

◑ A half shaded circle implies an average preference;

◔ A quarter shaded circle implies a lower than average preference; and,

○ A circle that is not shaded at all implies the least preferred.

In addition, the relative importance of each indicator was identified by assigning a size to the symbol:

● **Low Importance;**

● **Moderate Importance; and**

● **High Importance.**

The five objectives were weighted based on their potential to differentiate the routes, and were ranked from most preferred to least preferred. Table 25 presents the RAM analysis.

TABLE 25 – RAM COMPARATIVE EVALUATION OF OBJECTIVES FOR SUBWAY ROUTES AND GENERAL STATION LOCATIONS

Objectives	Preferred Route (s) for Objective	Relative Importance with rationale	Order of Route preference (and rationale)
A. Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2, 3, 5 and 6 are the least preferred with the lowest catchment potential.	As an important route generation criteria, all 8 routes were specifically designed to serve the four identified areas. Of the four objectives, the Steeles terminal station is the most important and all eight routes can be considered equal in this regard. Similarly the Common station and the Sentinel station have similar service opportunities to serve the York University campus. Transfers from GO rail to the subway are likely similar for all routes. Given the subtle differences between each of the eight routes, this objective should be given low importance in selecting the preferred route.	Route 1 is the most preferred in that it provides a cost-effective solution with the best connections between other modes, good service to each of the four identified catchment areas and strong support for future growth, while minimizing adverse environmental effects. Route 4 provides the best connections between other modes, good service to each of the four identified catchment areas and strong support for future growth. Route 4 has some of the highest negative adverse environmental effects. It is also moderate in its cost effectiveness.
B. Provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC buses.	Routes 1, 4, 5 and 6 provide comparable transfers from the subway to the Finch bus (and vice versa). Transfers to/from Keele bus are limited and therefore do not factor into the analysis.	All eight routes can provide improved connections between the subway and other modes. However, only some provide this connection to the Finch West Bus (Route 36). As the busiest bus route in the Study Area and a significant connection to the northwest part of Toronto, this objective must be given high importance in selecting the preferred route...	Route 5 provides the important connection between the Finch bus and the subway and is also moderate in its cost effectiveness and is an alignment with some of the fewest negative adverse environmental effects. However, the existing walk in catchment is low and support of future growth is limited. Route 2 fails to provide the important connection between the Finch bus and the subway but does support future growth at reasonable cost with minimal adverse environmental effects. Route 6 provides the important connection between the Finch bus and the subway but has one of the lowest catchment potential. Support of future growth is limited and route 6 has some of the highest negative adverse environmental effects. It is also low in its cost effectiveness. Route 3 fails to provide the important connection between the Finch bus and the subway but has one of the lowest catchment potential. Support of future growth is limited and route 3 has some of the highest negative adverse environmental effects. It is also moderate in its cost effectiveness. Although route 7 provides good service into the centre
C. Support local population and employment growth.	Routes 1, 2 and 4 consistently are the most preferred and provide the greatest opportunity to support local population and employment growth.	It is important to select a route that maximizes the potential for redevelopment within the Study Area. However, even with the introduction of a subway extension, the timing and intensity of redevelopment cannot be assured. Redevelopment opportunities will compete with other locations within the City and the GTA. Therefore, long term potential should always be given less importance over short-term success. Therefore, this objective should be given a low importance.	
D. Minimize adverse environmental effects.	Route 7 is the most preferred since it has the lowest overall negative impacts. Routes 1 and 2 are the second choice since they have only minor negative impacts and avoid the groundwater issue to the maximum extent	Given that there are no significant environmental features within the study area and the eight routes avoid the few sensitive features, this objective should be given the low importance.	

TABLE 25 – RAM COMPARATIVE EVALUATION OF OBJECTIVES FOR SUBWAY ROUTES AND GENERAL STATION LOCATIONS

Objectives	Preferred Route (s) for Objective	Relative Importance with rationale	Order of Route preference (and rationale)
	possible. Route 5 is similar to routes 1 and 2 but have a slightly greater potential impact on groundwater. Routes 3, 4, 6 and 8 all have some impacts but are the least preferred from a groundwater issue.		of the Keele Industrial Area (good catchment), it fails to provide the important connection between the Finch bus. Support of future growth is limited but route 7 has some of the lowest negative adverse environmental effects. It is one of the least preferred in its cost effectiveness. Although the shortest route, Route 8 is the least preferred since it generates the lowest ridership and has the lowest potential to use road rights of way. Support of future growth is limited and route 8 has some highest negative adverse environmental effects.
E. Achieve reasonable capital and operating costs.	Although Route 1 has the potential to be longer, it does produce the highest ridership and has the greatest flexibility to avoid property impacts along the corridor. Route 2 is more preferred than route 4 due if property avoidance is considered more important than ridership (given the relative differences in the ridership projections. Routes 3 and 5 are some of the longest routes with only moderate potential to avoid property impacts and moderate ridership potential. Route 6 is preferred over route 7 since they are equal in length, both have limited opportunity to use road rights of way but 6 has greater ridership potential. Although the shortest route, Route 8 is the least preferred since it generates the lowest ridership and has the lowest potential to use road rights of way.	Achieving reasonable cost is a high priority of the project, but given the relative difference between all eight routes, should be considered as moderate in importance in selecting a route.	

6.2 Overall Scores

The results of the RAM analysis also indicated that Route 1 was the preferred alternative subway route. The advantages of Route 1 include:

- the Finch West Station directly connects to the 36 Finch West bus, one of the busiest routes in Toronto;
- the York University Station is in the Harry W. Arthurs Common area, a transit hub for the university;
- the Sheppard West station connects to the GO Bradford line and encourages redevelopment in the Downsview lands;
- the route uses Keele Street which reduces property impacts and costs;
- the route minimizes impacts to the natural environment and avoids Black Creek and Dufferin Creek;
- the route protects for a future expansion into York Region and Vaughan Corporate Centre.
- A summary of the results of the RAM analysis conducted for project objectives is presented in Table 26 and 27.

Table 26 provided the overall RAM scores for each subway route.

Table 26 - Results for the Reasoned Arguments Method

Objectives	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6	Route 7	Route 8
A) Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue.								
B) Provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC buses.								
C) Support local population and employment growth.								
D) Minimize adverse environmental effects.								
E) Achieve reasonable capital and operating costs.								
OVERALL ORDER OF PREFERENCE	1	4	6	2	3	5	7	8

TABLE 27 - COMPARATIVE EVALUATION OF INDICATORS FOR ROUTE AND GENERAL STATION LOCATIONS

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
A. Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue.	1. Convenience for riders to walk to local stations.	1) Existing population and employment within 500 m walking distance of subway stations	Yes	Low – based on RTES, the success of a subway line is a function of the density within the catchment area for a subway station. However, at 100 pop/emp per hectare, each station should account for 7,800. Total number for each route is significantly below this threshold and therefore the relative difference between the routes should not be considered important.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2,3,5 and 6 are the least preferred with the lowest catchment.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2,3,5 and 6 are the least preferred with the lowest catchment potential.
B. Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue.	1. Convenience for riders to walk to local stations.	1) Existing population and employment within 500 m walking distance of subway stations	Yes	Low – based on RTES, the success of a subway line is a function of the density within the catchment area for a subway station. However, at 100 pop/emp per hectare, each station should account for 7,800. Total number for each route is significantly below this threshold and therefore the relative difference between the routes should not be considered important.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2,3,5 and 6 are the least preferred with the lowest catchment.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2,3,5 and 6 are the least preferred with the lowest catchment potential.

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
C. Provide subway service to the Keele/Finch area, York University and a new inter-regional transit terminal at Steeles Avenue.	1. Convenience for riders to walk to local stations.	1) Existing population and employment within 500 m walking distance of subway stations	Yes	Low – based on RTES, the success of a subway line is a function of the density within the catchment area for a subway station. However, at 100 pop/emp per hectare, each station should account for 7,800. Total number for each route is significantly below this threshold and therefore the relative difference between the routes should not be considered important.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2,3,5 and 6 are the least preferred with the lowest catchment.	Routes 7 and 8 capture the most existing potential since the GO station is in the centre of the Keele Industrial area, as opposed to the Finch or Sheppard locations, which are at the periphery. Routes 1 and 4 are second and compensate for the lower employment catchment at Sheppard with a high catchment at Keele and Finch Routes 2,3,5 and 6 are the least preferred with the lowest catchment potential.
		2) Future population and employment within 500 m walking distance of stations	No - given the estimated nature of future population and employment statistics and the fact that current estimates are exclusive of a subway extension, the relative difference is considered insignificant.			
		3) Students, faculty and staff within 500 m walking distance of the York University station.	No – based on supplemental sensitivity testing, both station locations offer comparable service to the existing University.			

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
D. Provide improved connections between the TTC subway and GO Transit, York Region Transit and TTC buses.	1. Convenience for other modes of travel.	1) Connection to Finch West Bus (Route 36) and Keele Bus (Route 41) in the Keele/Finch area.	Yes	High – good interface with bus network is vital to the success of the subway extension. Service to Finch West Bus (Route 36) is very important to both existing transit users in the area as well as TTC service planning who respond to these demands.	Routes 1, 4, 5 and 6 provide comparable transfers from the subway to the Finch bus (and vice versa). Transfers to/from Keele bus are limited and therefore do not factor into the analysis. Routes 2, 3, 7 and 8 fail to provide a connection to the Finch bus and this is a significant negative in the route trade off analysis.	Routes 1, 4, 5 and 6 provide comparable transfers from the subway to the Finch bus (and vice versa). Transfers to/from Keele bus are limited and therefore do not factor into the analysis.
		2) Ease of accessibility for other travel modes (taxi, bicycle, pedestrians, Wheeltrans, passenger pick up and drop off, ambulatory/non-ambulatory disabled persons).	No – same response for all 8 routes			
C. Support local population and employment growth.	1. Conform with current approved planning documents.	1) Conformity with the goals, objectives and policies of the City of Toronto planning documents including the Metroplan, City of North York Official Plan, York University Secondary Plan and Downsview Area Secondary Plan.	Yes	None – the current City of Toronto Official Plan is only in effect due to challenges to the OMB for the New O.P. It is assumed that the new O.P. will be in effect by the time the subway is extended.		Routes 1 and 2 consistently are the most preferred and provide the greatest opportunity to support local population and employment growth. Route 4 provides slightly less opportunity than routes 1 and 2. Routes 3 and 5 offer some support to local population and employment growth. Routes 6, 7 and 8 have the lowest potential to support local population and employment growth.
		2) Conformity with the goals, objectives and policies of the Region of York Official Plan and ROPA 43, the City of Vaughan OPA's 450, 500, 529 and 620.	Yes	None – Although Vaughan's OPA 529 assumes that the Steeles station would align east-west, with a curve northward, intersecting 407 just west of Jane Street, all routes provide sufficient flexibility, to connect to the protected corridor north of Highway 407.		

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
	2. Maximize redevelopment potential in support of the subway extension.	1) Consistency with the objectives of the new City of Toronto Official Plan and the Keele Street Study.	Yes	Low – New Official Plan provides general support or intensified development in proximity to all subway stations and therefore all routes generally conform to New O.P. However, – Figure 4-8 (EA document) does conceptually identify the GO/Sheppard station.	Routes 1, 2, 3 and 4 all include the GO / Sheppard station and therefore these routes are more preferred.	
		2) Consideration of the development objectives of Parc Downsview Park and York University.	Yes	Medium – as major stakeholders that may accommodate up to 50% of the extension, routes that are consistent with the development objectives of York University and Downsview (PDP, ND and Bomdardier) will facilitate redevelopment faster and easier than a route, which requires a re-evaluation of plans.	Route 2 provides the maximum opportunity for both York University and PDP. Route 1 provides slightly less opportunity for York U and equal (to route 2) for PDP. Routes 3 and 4 satisfy PDP's plans but not York and Routes 5 and 7 satisfy York's but not PDP Routes 6 and 8 satisfy neither of the two key stakeholders.	

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
		3) Potential to stimulate transit supportive redevelopment in proximity to station locations.	Yes	High – as a major infrastructure investment, subways do not always generate redevelopment (e.g. Glencaim Station), selecting station locations that have opportunity for redevelopment based on past experiences within the city are strongly preferred.	Route 1 and 4 – strong opportunities at Keele / Finch (Keele Street corridor study), within York University (within campus and along Keele frontage) and Sheppard (Sheppard frontage and PDP) Route 2 and 3 – some opportunities at Keele / Murray Ross (SE York lands), and Sheppard (Sheppard frontage and PDP) Route 5 to 8 – some opportunities at Keele / Murray Ross (SE York lands)	

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
	3. Maximize the potential to create a high quality urban/pedestrian environment.	1) Ability to integrate stations with the existing and future built form.	Yes	Low – as suburban stations, surface footprints (bus stations, PPUDO, commuter parking) will provide limited opportunity to integrate within development (existing or future). Although there are differences between the routes, the differences will be better assessed at the alignment and station concept stage.	Route 2, followed by Routes 1, 3, 5 and 7. Routes 4 and 6 offers minor opportunities. Route 8 is the least preferred.	
		2) Potential to create a safe environment for pedestrians, cyclists and passengers.	Yes	Low – within each route, there will be considerable variation in the actual station concepts. Alignment and station concepts can be selected that mitigate potential adverse effects on safety.	Routes 1 and 2 are equally preferred, followed by Routes 3,4,5 and 7. Routes 6 and 8 are the least preferred.	
D. Minimize adverse environmental effects.	1. Protect existing stable land uses.	1) Length of subway route adjacent to residential neighbourhoods.	Yes	Low – as a route generation criteria, direct impacts to neighbourhoods is avoided. Relative impacts occur when the Keele corridor is utilized. However, through noise and vibration mitigating measures currently used by TTC in the construction of subway, impacts will be limited to construction effects.	Routes 5 to 8 are similar and more preferred. Routes 1 to 4 are similar and are less preferred.	Route 7 is the most preferred since it has the lowest overall negative impacts. Route 5 is similar to route 7 but has a slightly greater potential impact on groundwater. Routes 1 and 2 affects slightly more industrial area are comparable to choice since they have only minor negative impacts and avoid the groundwater issue to the maximum extent possible. Routes 3,4, 6 and 8 all have some impacts but are the least preferred from a groundwater issue.

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
		2) Length of route within Keele Industrial area.	Yes	High – all routes must pass through the Keele industrial area. Impacts will be localized. All businesses within the Keele Industrial area were considered to be of equal importance and therefore the impact is directly related to the length of the alignment.	Routes 5, 6 7 and 8 are more preferred since they are shorter routes through the Keele industrial area. Routes 1, 2, 3 and 4 are less preferred. However, impact may be reduced if an alignment south of Sheppard and extensively along Keele is selected.	
		3) Number of sensitive operations at York University within the zone of influence of the subway extension.	Yes	Medium – regardless of alignment. There is potential for negative impacts (noise, vibration and EMI) throughout the York University campus.	Routes 1, 2, 5 and 7 utilize corridor that is currently being protected for a subway extension. York University's plans take into consideration these types of effects. Routes 3,4,6, and 8 are not protected corridors and impact science and library buildings. These university facilities predate any plans for a subway extension and therefore are more susceptible.	
	2. Minimize the potential effects on important natural and cultural heritage areas and features.	8) Number of important natural heritage features within the zone of influence of the subway extension.	Yes	Low – no significant natural features within the Study Area.	Routes 1, 2, 3, 4, 7 and 8 are marginally more preferred. The impacts associated with routes 5 and 6 were anticipated in the original EA.	

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
		9) Area of groundwater discharge within the zone of influence of the subway extension.	Yes	High – as a significant process/permitting issue, impacts to groundwater should be avoided if possible	Routes 1, 2, and 7 are most preferred since they avoid the potential impact areas of Dufferin Creek and Black Creek. Route 5 impacts only the Dufferin Creek Routes 3,4, 6 and 8 are the least preferred since they potentially impact both watercourses.	
		10) Number of important heritage features within the zone of influence of the subway extension	Yes	No – features can be avoided during the alternative alignment development.		
E. Achieve reasonable capital and operating costs.	1. Minimize the capital and operating costs of the subway extension.	1) Length of subway route.	Yes	Moderate – all routes will have similar station costs and supporting features (e.g. EEB, substations, cross-overs, tail tracks). Differences in route length will generate a cost difference in running structures cost.	Route 8 is the most preferred since it is the shortest (straightest) alignment. Routes 6 and 7 have similar lengths. Routes 1 to 5 are the longest and therefore are the least preferred.	Although Route 1 has the potential to be longer, it does produce the highest ridership and has the greatest flexibility to avoid property impacts along the corridor. Route 2 is more preferred than route 4 due if property avoidance is considered more important than ridership (given the relative differences in the ridership projections. Routes 3 and 5 are some of the longest routes with only moderate potential to avoid property impacts and moderate ridership potential. Route 6 is preferred over route 7 since they are equal in length, both have limited opportunity to use road rights of way but 6 has greater ridership potential.
	2. Maximize the revenue generated from the subway extension.	1) Total number of a.m. peak period passengers on the subway extension	Yes	Low – overall, all routes have similar potential ridership. Variations in the station locations do create some differences in the potential to attract riders and generate revenue.	Routes 1 and 4 are the most preferred since result in the highest ridership estimates. Routes 2,3,5 and 6 produce similar ridership estimates Routes 7 and 8 are least preferred and have the lowest ridership.	

Objective	Criteria	Indicators	Significant Difference Among Alternatives	Preferred Routes for Indicator	Relative Importance with Rationale	Order of Route Preference and Rationale
	3. Maximize the subway extension in lands with no property costs to the project.	1) Potential length of subway route within existing road rights-of-way.	Yes	High – Recognizing that this subway extension does not follow an existing transportation corridor, property costs could represent a significant line item in the overall construction of the subway extension. Being able to reduce property needs by selecting a route that can utilize road rights of way may be a major advantage of one route over another.	Routes 1 and 2 have the greatest potential to utilize road rights of way and avoid property costs if property acquisition becomes a major determining factor in the extension of the subway. Routes 3,4, and 5 have fewer opportunities Route 7 has opportunities limited to the Steeles corridor. There are almost no opportunities for using road rights of way for Routes 6 and 8 and therefore, this is a significant negative impact.	Although the shortest route, Route 8 is the least preferred since it generates the lowest ridership and has the lowest potential to use road rights of way.
	4. Quality of subway service.	1) Ability to develop alignments within the routes that minimize the use of curves < 600 m radius.	No			

7.0 Conclusion

The results of both the MATS analysis and the RAM analysis indicate that Route 1 is the technically preferred subway alternative.

Route 1 captured the GO-TTC Interchange at Sheppard Avenue alignment identified in the RTES and the ToR. Route 1 was then carried forward to the next stage of the EA which is the EA Phase 2 - Alignments and Station Concepts Phase. Details of the evaluations process for the alignments and station concepts can be found in Appendix L – *Alternative methods of carrying out the undertaking – alignments and station concepts*.