Attachment 6
Traffic Analysis

Traffic Analysis

City Council deferred consideration of item PW27.1 to permit the Toronto Transit Commission (TTC) to consider the long-term implications for surface level buses as well as overall City/York Region transit planning. City staff worked with the TTC, and other transit agencies, to update the traffic model to better understand the operational impacts associated with the “Transform Yonge” alternative.

Consistent with the PW27.1 report, a multi-modal transportation model was developed based on the City's 2011 and 2031 planning horizons to assess the impact of the proposed changes to the road network within the study area in the context of future approved land use and higher order transit plans citywide

During the previous round of traffic modelling, the microsimulation area (the area of the model from which the most detailed analysis results were extracted) generally covered the boundary of the “EA Focus Area”, as depicted in Figure 1 in the main report, and the traffic analysis focused on the Weekday AM peak period. In order to fully understand potential implications on traffic and transit operations in the study area, both Weekday AM and PM peak hour conditions were assessed and the microsimulation focus area was extended from Bishop Avenue/Hendon Avenue north to Steeles Avenue. Extending the modeled area up to Steeles Avenue allowed for appropriate analysis of Yonge Street in this area where it serves as the spine for numerous bus routes north of the Finch Terminal station (see Figure 1 below for the updated microsimulation area).

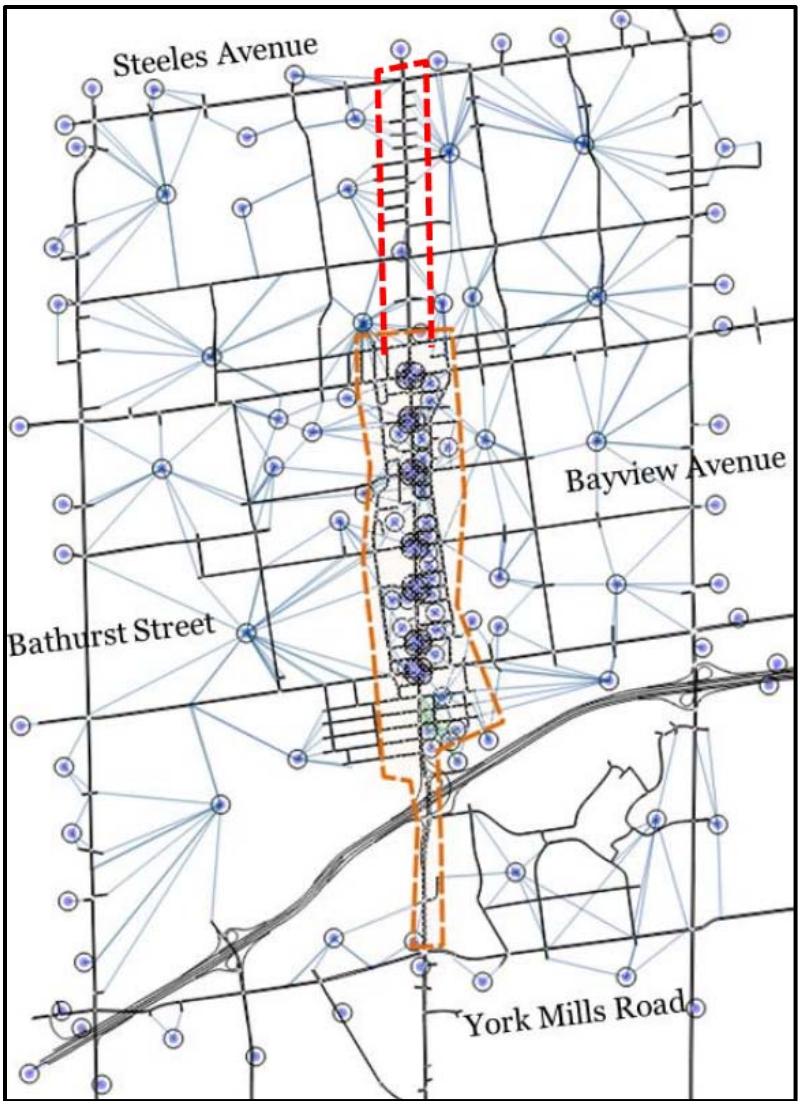

Figure 1: Extended Micro Simulation Area

Analysis was undertaken to test alternatives against existing and future baseline 2031 conditions. The scenarios modelled were as follows:

2016 Existing Conditions

Serves as a baseline reference point for existing conditions. Using the City's 2011 planning horizon, traffic demands are “grown” to 2016 levels (consistent with PW27.1 report) using updated turning movement counts.

2031 Do-nothing scenario (including Doris/Tradewind connection)

This scenario includes the existing road network (with the current 6-lane cross-section for Yonge Street) and projected 2031 traffic demand. It also includes 2031 pedestrian volumes and projected increases in transit service frequency (1.2% growth in bus frequency per year for TTC and YRT), and a connection of the North York Service Road

via Doris/Tradewind at Sheppard Avenue. This scenario has been evaluated for both the Weekday AM and PM peak periods.

2031 "Transform Yonge" Condition

Prior to identifying a preferred “Transform Yonge” transportation network scenario to compare against the Do-nothing scenario, approved and/or feasible network improvements that could be in place prior to, or in conjunction with, the implementation of “Transform Yonge” were considered. Attachment 5 provides further details on the three network scenarios considered.

The traffic evaluation did not identify significant advantages for one scenario over the others at the network wide level; however, Scenario 2 was preferred given its ability to best advance planning policy objectives, namely improving mobility and forming a finer grained street network.

2031 Transform Yonge Scenario 2 includes:

- A cross-section reduction from 6 to 4 lanes on Yonge Street from Sheppard Avenue to Finch Avenue;
- The addition of bike lanes on Yonge Street from Florence Avenue/Avondale Avenue to Hendon Avenue/Bishop Avenue;
- The removal of both northbound and southbound left-turns and left-turn lanes at the intersection of Yonge Street and Sheppard Avenue;
- New traffic signals at the intersection of Northtown Way/Horsham Avenue and Yonge Street and at the intersection of Ellerslie Avenue and Yonge Street;
- The conversion to right-in-right-out (RIRO) on Yonge Street at the intersections of Tolman Street/Olive Avenue, Norton Avenue, Parkview Avenue, Upper Madison Avenue, Harlandale Avenue, Bogert Avenue, Johnston Avenue/Glendora Avenue, as per the Transform Yonge design;
- Revised GO and TTC bus stops as per the Transform Yonge design; and
- The addition of the Doris/Tradewind connection at Sheppard Avenue.
- Beecroft Road extension from current terminus to Drewry Avenue with 4-lane cross section;
- Mid-block connection on the Beecroft Road extension at Turnberry Court with 4-lane cross-section;
- New signalized intersection at Beecroft Road and Drewry Avenue; and
- New two-way stop-controlled intersections at Beecroft Road and Hendon Avenue, and Beecroft Road and Turnberry Court.

Traffic Impacts on Yonge Street

Future traffic scenarios were modelled and compared against one another over a 3 hour simulation covering the AM and PM peak periods. Table 1 details network-wide performance metrics for the full three hour simulation for each travel period.

Table 1: Future Traffic Performance

Outputs	2031			
	Do-nothing AM	**Scenario 2 AM**	**Do-nothing PM**	**Scenario 2 PM**
At end of 3 hours				
Wanted to enter the network (total demand)	211,315	211,150	242,969	243,317
In the network	5,476	5,534	8,219	8,925
Waiting to enter the network	901	768	1,626	1,473
Exited the network	204,937	204,848	233,124	232,919
% of demand exiting	97%	97%	96%	96%
During the 3 hours				
Average number of vehicles sitting in a queue	2,472	2,503	3,849	4,115
Total vehicle hrs travelled*	18,977	19,070	24,345	24,982
Average speed (km/h)	32	32	26	25
Average delay (sec/km)	59	60	85	90
** Total veh-hrs travelled does not include time spent in the virtual queue*				
Network statistics are based on all vehicle types combined				

Overall, the reduction in the number of lanes on Yonge Street, from six to four lanes, results in minimal change to traffic performance in the overall peak-period (AM and PM) across the entire study area (as shown in Figure 1 from the main report). For example:

- the average speed (km/h) during the AM period shows no difference between the two scenarios, with both averaging 32 km/h. The average speed during the PM is only 1 km/h faster for the 'Do Nothing' scenario (26 km/h) over the "Transform Yonge" alternative (25 km/h)

- the average delay in seconds per kilometre ranges from one to five seconds longer for the "Transform Yonge" alternative during the AM and PM peak periods

- the vehicular demand entering the network for both scenarios is consistent during the AM and PM periods, while the percentage of vehicle demand exiting the network is also consistent

Impacts of Trip Diversion to the EA Study Area

The reduction of Yonge Street from six to four lanes under the “Transform Yonge” alternative will result in the redistribution of traffic throughout the study area. To better understand the impacts of trip diversion, traffic volumes travelling along parallel corridors were evaluated. To do this, screenline analysis was adopted, which uses an imaginary line drawn on a road network to capture trips crossing this line in both directions.

Comparing the peak-hour traffic flows on Yonge Street associated with the ‘Do-nothing’ and “Transform Yonge” scenarios at various screenline locations yields the net differences shown in Table 2. The net difference represents the traffic volumes likely to have been diverted away from Yonge Street.

Table 2: Diversion of traffic volume from Yonge Street - 2031

	Southbound			**Northbound**		
Yonge Street Screenline	**Do-nothing**	**Transform Yonge**	**Difference**	**Do-nothing**	**Transform Yonge**	**Difference**
AM peak-hour						
North of Cummer/Drewry	2,050	2,140	+90	1,420	1,430	+10
North of Finch	1,380	1,110	-270	1,160	760	-400
South of Finch	1,390	1,090	-300	1,040	700	-340
North of Sheppard	1,440	1,250	-190	1,440	1,200	-240
South of Sheppard	1,790	1,750	-40	1,600	1,540	-60
PM peak-hour						
North of Cummer/Drewry	1,700	1,700	-0	1,690	1,600	-90
North of Finch	1,130	950	-180	1,180	760	-420
South of Finch	1,120	930	-190	1,260	880	-380
North of Sheppard	1,320	1,170	-150	1,320	1,140	-180
South of Sheppard	1,520	1,620	+100	1,460	1,420	-40

Based on the traffic patterns at the multiple screenlines along Yonge Street forecasted in this analysis, anticipated changes in traffic rerouting and patterns resulting from the "Transform Yonge" proposal include:

- No significant changes in traffic volume on Yonge Street north of Cummer/Drewry or south of Sheppard Avenue, indicating that re-routing is largely confined to the stretch between Finch/Cummer/Drewry and Sheppard, and that there is little longer-distance re-routing to roads east or west of the study area.

- The projected change in traffic volume on Yonge Street, and the associated diversion of this traffic to alternative routes varies depending on the direction of travel and/or the time of day. For instance, during the morning peak hour, larger changes are expected for northbound traffic - between 240 and 400 vehicles per hour and between 180 and 420 vehicles per hour during the afternoon peak hour. In the southbound direction, the changes are smaller - between 190 and 300 vehicles per hour during the morning peak hour and between 150 and 190 vehicles per hour during the afternoon peak hour. Overall, these changes are not significant in the context of traffic volumes that can be expected on key arterial roadways during the peak periods.

Since Table 2 suggests that trips are likely being diverted from Yonge Street, a second set of screenlines was analyzed to determine where these trips are diverting to. Two screenlines were selected for review based on the logical re-distribution of traffic:

- north of Sheppard Avenue
- south of Finch Avenue.

Table 3 summarizes the traffic volumes crossing the screenline north of Sheppard Avenue under the 'Do-nothing' and "Transform Yonge" alternatives under the peak hour conditions by direction, while Table 4 summarizes the results for the screenline south of Finch Avenue.

Table 3: Traffic Volumes Passing Screenlines north of Sheppard Avenue

	Simulated peak hour volumes (veh/h) – screenline north of Sheppard Ave							
	2031 Do-nothing AM		**2031 Scenario 2 AM**		**2031 Do-nothing PM**		**2031 Scenario 2 PM**	
	NB	SB	NB	SB	NB	SB	NB	SB
Bathurst St	1,365	1,326	1,338	1,313	1,495	1,204	1,535	1,201
Senlac Rd	303	604	286	606	408	519	415	571
Beecroft Rd	739	1,067	745	1,112	628	1,185	721	1,158
Yonge St	1,438	1,438	1,201	1,246	1,316	1,321	1,142	1,168
Doris Ave	602	645	749	670	789	1,147	716	1,062
Willowdale Ave	362	653	374	668	504	678	594	769
Bayview Ave	1,786	1,640	1,787	1,674	2,043	1,314	2,068	1,309

Table 4: Traffic Volumes Passing Screenlines south of Finch Avenue

	Simulated peak hour volumes (veh/h) – screenline south of Finch Ave							
	2031 Do-nothing AM		2031 Scenario 2 AM		2031 Do-nothing PM		2031 Scenario 2 PM	
	NB	SB	NB	SB	NB	SB	NB	SB
Bathurst St	1,183	1,487	1,165	1,461	1,526	1,127	1,478	1,158
Senlac Rd	297	605	302	605	462	355	504	328
Beecroft Rd	397	854	541	972	922	654	1,072	683
Yonge St	1,039	1,394	696	1,093	1,262	1,120	879	928
Doris Ave	494	782	476	741	688	584	683	632
Willowdale Ave	334	591	355	619	709	534	730	576
Bayview Ave	1,261	1,515	1,256	1,552	1,467	1,354	1,484	1,322

The analysis demonstrated that the diverted traffic is expected to distribute across multiple alternative roads and the volume added to any single alternative road is not significant. Depending on the location, direction, and time period, the availability of east-west connecting roads, and the capacity available at key intersections, relatively modest increases in traffic volumes may be experienced on the service roads (Doris and Beecroft), the mid-block minor arterial roads (Willowdale and Senlac) and the 'next-adjacent' arterial roads (Bayview and Bathurst).

Travel Times and Speeds

Table 5 summarizes the peak-hour travel times along Yonge Street for the 2031 'Do-nothing' and "Transform Yonge" scenarios. Based on the traffic simulation results, it is observed that travel times for general traffic along Yonge Street between Wilson/York Mills and Steeles are expected to increase in conjunction with the "Transform Yonge" alternative, but these increases are less than 1 minute over a trip that would have required 16.6 to 16.9 minutes heading southbound during the AM and PM peak hours, and 16.7 to 24.1 minutes heading northbound during the same periods.

Comparing the average travel speed between the two scenarios, the greatest difference is 1.3 km/hr (southbound in the PM). Overall, the increases in travel time, and reductions in average travel speed, are relatively nominal and represent an acceptable trade-off against the implementation of safety improvements, including wider sidewalks, and cycle tracks on Yonge Street.

Table 5: 2031 Yonge Street - Travel Times and Average Speed

	2031 Do-nothing AM		2031 Scenario 2 AM		2031 Do-nothing PM		2031 Scenario 2 PM	
Section	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**
Wilson Ave to Hwy 401	2.2	2.7	2.1	2.9	2.0	2.5	2.1	2.8

Hwy 401 to Sheppard Ave	3.9	2.6	3.0	2.5	5.5	2.6	3.5	2.6
Sheppard Ave to Empress Ave	2.2	2.5	2.9	2.6	2.5	3.5	3.5	3.3
Empress Ave to Finch Ave	2.4	2.5	3.1	3.0	2.8	2.2	3.4	3.2
Finch Ave to Drewry Ave	2.5	2.5	2.6	2.5	3.9	2.5	3.0	2.6
Drewry Ave to Steeles Ave	3.5	3.8	3.3	4.0	7.4	3.6	9.5	3.4
Total Travel Time (mins)	**16.7**	**16.6**	**17.0**	**17.5**	**24.1**	**16.9**	**25.0**	**17.9**
Difference (relative to 2031 do-nothing)			+0.3 (1.8 %)	+0.9 (5.4 %)			+0.9 (3.7 %)	+1.0 (5.9 %)
Average Speed (km/hr)	**21.9**	**22.0**	**21.5**	**20.9**	**15.2**	**21.7**	**14.6**	**20.4**

Table 6 below summarizes the peak hour travel times along key road segments within the study area. Similar to Table 5 observations, the overall difference between the two scenarios is nominal. The greatest disparity among the key segments is as follows:

- Northbound: 0.9 minutes during the PM along Yonge Street, from Wilson to Steeles
- Southbound: 3.9 minutes during the PM along Doris Avenue, from Finch to Sheppard
- Eastbound: 4.5 minutes during the PM along Churchill/Church, from Senlac to Willowdale
- Westbound: 5.2 minutes during the PM along Park Home/Empress, from Senlac to Bayview

Table 6: Peak-hour travel times (min) on study area roads

	2031 Do-nothing AM		**2031 Scenario 2 AM**		**2031 Do-nothing PM**		**2031 Scenario 2 PM**	
Section	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**
Yonge – Wilson to Steeles	16.7	16.6	17.0	17.5	24.1	16.9	25.0	17.9
Beecroft – Finch to Sheppard	4.7	5.0	4.7	5.3	4.8	5.5	5.1	7.3
Doris – Finch to Sheppard	4.6	6.6	4.6	8.1	4.8	5.3	5.0	9.2
Senlac – Finch to Sheppard	3.0	2.7	3.0	2.7	3.5	2.7	4.2	2.7
Willowdale – Finch to Sheppard	3.0	3.3	3.0	3.3	3.2	3.3	3.3	3.7
Bathurst – Finch to Sheppard	2.7	2.8	2.7	2.8	3.0	2.9	2.9	2.8
Bayview – Finch to Sheppard	3.0	3.4	3.2	3.3	3.5	4.9	3.4	4.9
Section	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**
Finch - Bathurst to Yonge	3.6	3.8	3.4	4.1	3.9	4.1	3.6	4.4
Finch - Yonge to Bayview	3.5	5.9	3.5	3.6	5.0	4.2	4.0	3.6

Churchill/Church – Senlac to Willowdale	3.9	4.0	4.2	3.9	4.6	4.2	9.1	4.1
Park Home/Empress – Senlac to Bayview	7.4	8.7	7.9	8.7	8.9	16.0	8.2	21.2
Sheppard – Bathurst to Bayview	9.1	9.4	9.8	9.6	9.9	9.7	10.7	11.3

TTC Surface Transit Operations

As directed by Council, City staff worked with the TTC to better assess, and mitigate any potential impacts of alternative future scenarios for Yonge Street on its surface operations, particularly in connection with the Finch bus terminal. The performance outputs presented below include overall network statistics, delay and travel times along Yonge Street.

Table 7 summarizes the network statistics for TTC vehicles during the AM and PM peak periods. The revised growth rate of 1.2% per year is applied to all existing TTC routes, implemented in the models as a reduction in headway (thus increase in service frequency). TTC advised that no planned new or changed routes have been identified for 2031.

Table 7: TTC Surface Transit Network Statistics

	2031 Do-nothing AM	**2031 Scenario 2 AM**	**2031 Do-nothing PM**	**2031 Scenario 2 PM**
At end of 3 hours				
Wanted to enter the network (total demand)	1,068	1,067	926	926
In the network	26	27	34	32
Waiting to enter the network	0	0	2	0
Exited the network	1,043	1,040	890	894
% of demand exiting	98%	98%	96%	97%
Over the 3 hours				
Average number of vehicles sitting in a queue	19	19	19	17
Total veh-hrs travelled*	99	98	93	89
Average speed (km/h)	15	15	14	15
Average delay (sec/km)	145	135	160	138
Average density (veh/lane-km)	0	0	0	0
Average virtual queue (veh)	0	0	0	0
** Total veh-hrs travelled does not include time spent in the virtual queue*				

Based on the results of this analysis; it is observed that transit performance at the network level is generally no worse for “Transform Yonge” than it is for the ‘Do-nothing’ scenario. In some cases, the “Transform Yonge” shows a modest improvement for some metrics.

Table 8 summarizes the simulated AM and PM peak hour delay for key bus turning movements around the Finch bus terminal and the Sheppard-Yonge station.

Table 8: TTC bus relevant approaches at TTC access points

		2031 Do-nothing AM	2031 Scenario 2 AM	2031 Do-nothing PM	2031 Scenario 2 PM
Finch Terminal					
Enter Finch terminal from southbound Yonge via Bishop (Southbound left turn followed by eastbound right turn)					
SBL +EBR	Delay (sec)	57	59	82	85
Exit Finch terminal to northbound Yonge via Bishop (Northbound left turn followed by westbound right turn)					
NBL + WBR	Delay (sec)	150	90	192	101
Exit Finch terminal to northbound Yonge via Pemberton access (Westbound right turn followed by northbound through movement)					
WBR + NBthru	Delay (sec)	66	59	126	52
Enter Finch terminal from westbound Finch					
EBL	Delay (sec)	48	46	34	34
Enter Finch terminal from eastbound Finch					
WBR	Delay (sec)	16	14	17	15
Exit Finch terminal to eastbound Finch					
SBL	Delay (sec)	40	42	33	33
Exit Finch terminal to westbound Finch					
SBR	Delay (sec)	37	30	40	23
Sheppard terminal					
Enter Sheppard terminal from eastbound Sheppard					
EBL	Delay (sec)	13	10	17	18
Enter Sheppard terminal from westbound Sheppard					
WBR	Delay (sec)	10	16	9	9
Exit Sheppard terminal to eastbound Sheppard					
SBL	Delay (sec)	36	24	29	26
Exit Sheppard terminal to westbound Sheppard					
SBR	Delay (sec)	18	23	23	25

Key observations from Table 8, concerning the potential impact of the “Transform Yonge” scenario relative to the ’Do-nothing’ scenario, on the delay associated with buses entering or leaving the Finch and Sheppard terminals during the peak hours include:

- Entering the Finch terminal from southbound Yonge via Bishop, the simulation shows nominal increases in delay for the combination of the southbound left turn from Yonge Street and the eastbound right turn (2 seconds during the morning peak hour and 3 seconds during the afternoon peak hour). The delay reductions are primarily a result of improvement in operation of the Yonge/Bishop intersection resulting from the Beecroft extension and the rerouting of traffic between Yonge to the north and the west commuter parking lot via Beecroft and Drewry or Turnberry rather than through the Bishop/Hendon/Yonge intersection.

- Exiting the Finch bus terminal to northbound Yonge at the Pemberton access, including passage through the Yonge/Bishop intersection, results in a reduction in delay by up to 7 seconds in AM peak hour, and up to 74 seconds during the PM peak hour, as observed in the simulation. This includes a delay reduction associated

with being able to use a partially-reserved bus lane between the Pemberton access and Bishop, potentially resulting in a bus arriving at the Yonge/Bishop traffic signal a cycle earlier than previously. The revised design for the Pemberton access also allows buses to turn into the curb lane without encroaching into the adjacent lane, mitigating an existing operational issue.

- Buses using the Finch access to the Finch bus terminal and the Sheppard access to the Sheppard bus terminal would experience relatively modest changes in delay (mostly less than 5 seconds), with most of the changes being reductions.

The simulated travel times and delays are summarized for TTC buses serving Yonge Street are shown in Tables 9 and 10. The travel time includes the delay time, running time, and any dwell time at stops. Data is only summarized north of Bishop Avenue/Hendon Avenue as only one bus route runs south of Finch Avenue with a frequency of two buses per hour.

Table 9: Travel time for TTC buses on Yonge Street between Bishop Avenue/Hendon Avenue and Steeles Avenue

Simulated travel times (min) for TTC buses								
	2031 Do-nothing AM		2031 Scenario 2 AM		2031 Do-nothing PM		2031 Scenario 2 PM	
Section	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**
Bishop Ave/Hendon Ave to Finch GO Terminal	0.6	1.0	0.6	1.0	0.6	1.4	0.5	1.5
Finch GO Terminal to Turnberry Ct	0.5	0.4	0.6	0.4	0.6	0.5	0.6	0.5
Turnberry Ct to Drewry Ave/Cummer Ave	1.5	0.8	1.2	0.8	2.3	0.7	1.5	0.9
Drewry Ave/Cummer Ave to Patricia Ave	0.9	2.0	0.8	2.4	0.9	1.9	0.8	1.8
Patricia Ave to Moore Park Ave/Madawaska Ave	1.0	0.9	1.0	0.9	1.3	0.8	1.3	0.8
Moore Park Ave/Madawaska Ave to Athabaska Ave	0.6	0.8	0.6	0.8	0.8	0.7	0.8	0.7
Athabaska Ave to Steeles Ave	3.3	1.3	3.2	1.4	3.9	1.7	4.7	1.6
Total travel time (min)	**8.4**	**7.2**	**8.1**	**7.7**	**10.4**	**7.9**	**10.2**	**7.7**
Average speed (km/hr)	13.1	15.3	13.6	14.3	10.6	13.9	10.8	14.3

Table 10: Delay time for TTC buses on Yonge Street between Bishop Avenue/Hendon Avenue and Steeles Avenue

Simulated delay times (min) for TTC buses								
	2031 Do-nothing AM		2031 Scenario 2 AM		2031 Do-nothing PM		2031 Scenario 2 PM	
Section	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**
Bishop Ave/Hendon Ave to Finch GO Terminal	0.2	0.8	0.2	0.9	0.3	1.3	0.1	1.3
Finch GO Terminal to Turnberry Ct	0.3	0.1	0.3	0.1	0.3	0.2	0.4	0.1
Turnberry Ct to Drewry Ave/Cummer Ave	0.8	0.5	0.5	0.4	1.5	0.4	0.7	0.5
Drewry Ave/Cummer Ave to Patricia Ave	0.2	1.0	0.2	1.3	0.3	0.8	0.2	0.8
Patricia Ave to Moore Park Ave/Madawaska Ave	0.3	0.3	0.3	0.3	0.5	0.3	0.5	0.3
Moore Park Ave/Madawaska Ave to Athabaska Ave	0.2	0.3	0.3	0.4	0.4	0.2	0.4	0.2
Athabaska Ave to Steeles Ave	2.6	0.4	2.5	0.4	3.2	0.7	4.0	0.5
Total delay time (min)	**4.5**	**3.4**	**4.3**	**3.8**	**6.5**	**3.8**	**6.4**	**3.8**

As seen in Tables 9 and 10, the critical metrics for TTC services in the study area are those measuring performance along Yonge Street between Steeles Avenue and the Finch bus terminal. Multiple TTC bus routes, including the heavily-used Steeles East and West routes, and various York Region Transit and GO Transit routes use this stretch of Yonge Street.

South of the terminal, due to the presence of the subway, TTC bus service is limited to a single, low frequency service, although GO buses use this stretch of Yonge Street to connect to Highway 401. The discussion below focuses on the performance of TTC services in 2031, assuming that the Yonge subway extension is not completed in that timeframe. The northward extension of the Yonge subway would result in a re-organization of TTC bus routes and terminal facilities.

Assuming the Line 1 Yonge subway is not extended until post-2031, TTC travel time between Steeles Avenue and the Finch bus terminal is expected to undergo a minor increase for southbound travel under the “Transform Yonge” scenario, relative to the ’Do-nothing’ scenario during in the AM peak hour. During this period, travel time for buses is expected to increase by no more than 30 seconds over a trip that normally requires 7.2 minutes to complete. Travel time for TTC buses is expected to improve in the AM peak hour for northbound, and in the PM peak hour for both northbound/southbound travel.

The impact on the delay to transit buses, which includes stopped time and time-in-queue at traffic signals, has similar results to travel time, with again only southbound

buses during the morning peak hour experiencing an increase in delay (less than 30 seconds).

Optimizing "Transform Yonge" for Transit

The evaluation process included investigation of measures specifically focused on mitigating existing transit operational issues and somewhat offsetting the impact of growth-related increases in traffic and transit flows and the potential operational implications of the "Transform Yonge" alternative. Measures found to be beneficial and practical were incorporated in the evaluation. These include:

- Adjustments to traffic signals along Yonge Street;

- Reinstatement of the northbound far-side bus-stop at Yonge/Sheppard (GO buses are currently using an interim near-side stop due to construction activity) and reconfigured as a bus-bay able to accommodate two buses rather than as an on-street stop that would interfere with traffic flow;

- Reconfiguration of the bus terminal exit at Pemberton Avenue to allow buses to turn directly into the northbound curb lane (i.e., without having to occupy two lanes during the turn, as they do today). A short section of this lane would be reserved for buses (requiring the prohibition of on-street parking along this section), changing to an exclusive right-turn lane (buses exempted) at the Yonge Street/Bishop Avenue/Hendon Avenue intersection. This improvement is facilitated by the Yonge Street reconfiguration associated with the "Transform Yonge" proposal;

- Termination of the southbound High Occupancy Vehicle lane south of the GO terminal intersection as it is not needed for most bus movements. Removal of the current restrictions on its use will tend to reduce southbound queuing at Hendon Avenue / Bishop Avenue, and facilitate bus access to the southbound left-turn lane;

- Modification of the existing south-to-east left turn transit signal priority feature at the Yonge Street/Bishop Avenue/Hendon Avenue intersection, so that the left turn green arrow can be further extended. This will benefit the many buses entering the Finch bus terminal at this intersection; and,

- Another improvement included in the evaluation of the "Transform Yonge" proposal was the extension of Beecroft Road north to Drewry Avenue. By providing an alternative connection to Yonge Street north of the transit terminals and an alternative access route to the commuter parking lots west of Yonge Street, this extension would relieve pressure on the Yonge/Bishop/Hendon intersection which is key to transit operation related to the Finch TTC terminal, and should be considered an integral part of the overall "Transform Yonge" alternative.