

4. ALTERNATIVE SOLUTIONS CONTINUED: YONGE STREET ROAD IMPROVEMENTS BETWEEN MULOCK DRIVE AND GREEN LANE (CLASS EA PROCESS – PHASE 2)

4.1 BACKGROUND

Based on the analysis of transportation needs conducted for the 2002 York Region Transportation Master Plan (TMP), the widening of Yonge Street from four lanes to six lanes between Mulock Drive and Green Lane has been included as a “current commitment” in the foregoing evaluation of transportation improvement solutions within the project study area (refer to Chapter 3 of the ESR). This road capacity improvement, identified as a 2011 construction project in the Region’s 2008, 10 Year Roads Construction Program (refer to **Figure 2-6** in **Chapter 2**), is an important contributor to the ability of the preferred solution, Regional Public Transit Improvements, to meet the overall system capacity needs assessed in the screenline analysis. In addition, due to existing transportation capacity issues, the Town of Newmarket has requested the Region to make this improvement a key priority.

As a “current commitment”, the widening of Yonge Street was also included in the Road Expansion, Enhanced Inter-regional Transit and York Region Public Transit Improvements alternatives. Given that the local road widening is a committed improvement to the transportation system included in all alternatives except the Do Nothing alternative, the effectiveness of this improvement and any alternatives in contributing to the preferred undertaking requires a separate specific evaluation. Accordingly, the purpose of this section is to confirm that the Yonge Street road widening is the preferred current commitment as a key component of the Regional Rapid Transit strategy.

The horizon year used for the analysis of the road improvements was 2021, which differs from 2031 used in **Section 4.2**. The use of 2021 is reasonable for traffic conditions in the existing commercial areas along Yonge Street to reach saturation. The 2031 horizon year for transit infrastructure planning is intended to capture the redevelopment in the corridor to meet Regional OP and Provincial Places to Grow policies, and inherently will take longer to evolve than the initial greenfield development for low density commercial uses.

4.2 NEED AND JUSTIFICATION

4.2.1 Existing Traffic Operations

Within the study area, Yonge Street from Mulock Drive to Green Lane is a four lane arterial roadway with a posted speed limit of 60 km/hr. Existing signalized intersections along this section of Yonge Street are frequent due to the number of adjacent commercial developments.

A detailed traffic analysis was conducted for the North Yonge Street Corridor between Green Lane and Mulock Drive and documented in **Appendix B** of this ESR. Consistent with observed conditions, Yonge Street is shown to be operating at a poor level of service (LOS) during the weekday p.m. peak periods as well as the weekend peak periods. In fact, traffic volumes are higher on weekends than weekdays at many locations. This is primarily a result of the high level of commercial development in the corridor north and south of Davis Drive.

As shown in **Figure 4-1**, existing traffic volumes already exceed the practical capacity of Yonge Street based on its four lane cross-section.

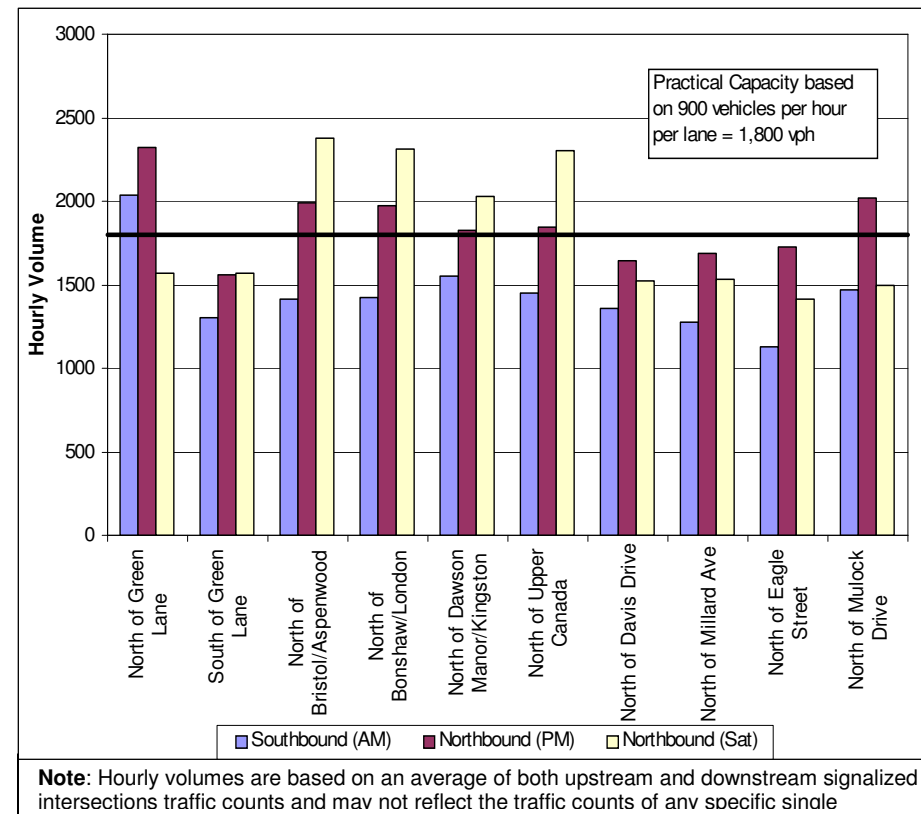


Figure 4-1
Yonge Street Existing (2005) Traffic Levels

This results in a poor level of service for most intersections on Yonge Street in the p.m. peak hour and on weekends. In the p.m. peak hour, 5 out of 14 intersections between Green Lane and Mulock Drive are operating at LOS E or F, with F representing failure. On Saturday, seven out of the 14 signalized intersections are operating at LOS E or F, as summarized in **Table 4-1**. On Saturday, the majority of problems occur at or north of Davis Drive.

Table 4-1
Existing Intersection Level of Service for Yonge Street Between Mulock Drive and Green Lane

Intersection Reference Yonge Street @	AM Peak		PM Peak		Saturday	
	Delay	LOS	Delay	LOS	Delay	LOS
Green Lane	32	C	104	F	61	E
Green Lane Centre	3	A	11	B	35	C
Aspenwood Drive/Bristol Road	16	B	70	E	204	F
Bonshaw Avenue/London Road	15	B	16	B	81	F
Dawson Manor Blvd/Kingston Road	8	A	21	C	74	E
Upper Canada Mall	3	A	89	F	134	F
Davis Drive	41	D	101	F	96	F
KFC/Chapters Access	10	A	7	A	21	C
Millard Avenue	18	B	27	C	58	E
Gladman Avenue/York Admin Access	3	A	9	A	6	A
Eagle Street	27	C	46	D	35	C
William Roe Blvd/Clearmeadow Blvd	10	A	11	B	10	A
Mulock Drive	36	D	142	F	30	C

Note: “Delay” is the average overall delay for the intersection in seconds per vehicle

4.2.2 Future Capacity and Demand

Based on the York Region Transportation Demand Model, volumes on Yonge Street between Green Lane and Mulock Drive are projected to increase by at least 2%-3% per annum until 2021, assuming current travel behaviour and the current transit infrastructure. Growth in Saturday traffic will likely be lower due to the fact that a large amount of commercial development has already taken place in the corridor and will reach a saturation point. Other big-box outlets will also open up elsewhere, thereby mitigating further growth. The effect of these traffic volume increases, assuming the more conservative figure of 2% for weekday traffic and 1% for Saturday traffic up to 2021, is shown in **Figure 4-2**. Considering that Yonge Street is already operating beyond its practical capacity in the p.m. peak

hour and weekend periods, the effect of further traffic growth would be substantial. Without any road widening, auto volumes would exceed existing road capacity by as much as 75% for the 2021 weekday p.m. peak hour. This could be expected to worsen for 2031 conditions; however, this horizon is not shown given that the practical capacity has been more than exceeded in 2021. Even under a road widening scenario, p.m. peak hour and weekend volumes would exceed the capacity of a six lane roadway at some locations suggesting that a comprehensive set of transportation improvements is required.

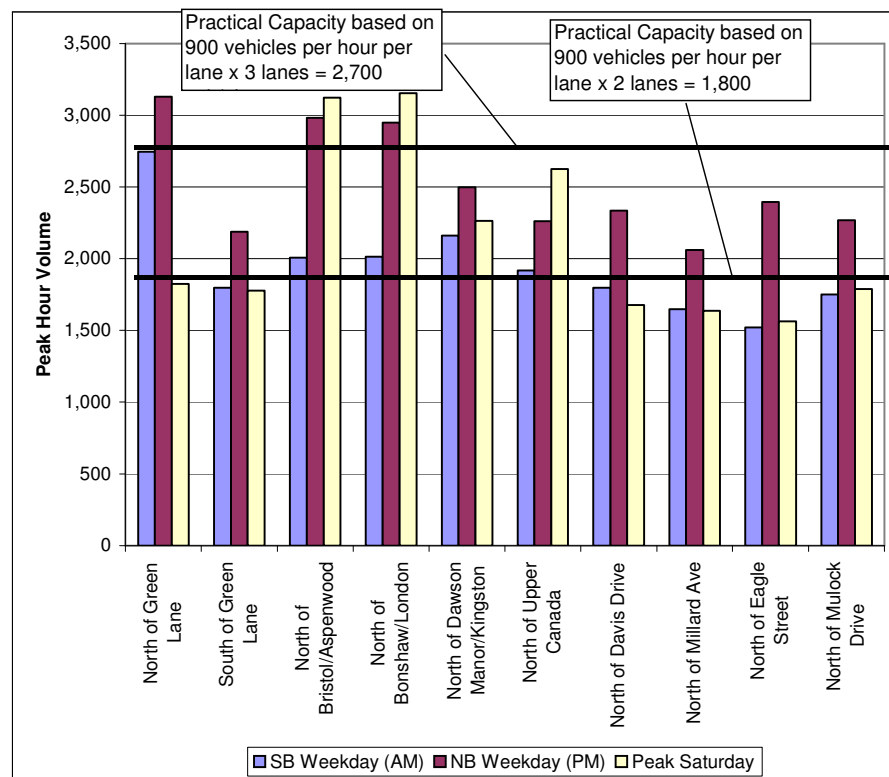


Figure 4-2
Future (2021) Volume to Capacity Ratios for Yonge Street and Existing Transit Mode Split

4.3 ALTERNATIVES TO YONGE STREET ROAD CAPACITY IMPROVEMENT

The demand/supply analysis described above shows that there will be a significant shortfall in road capacity in the future on Yonge Street, exacerbating existing congestion problems. Accordingly, a number of planning alternatives to address this problem were considered and analysed:

- No improvement in Yonge Street road capacity
- Travel Demand Management (TDM)
- Improve public transit service only
- Improve parallel roadways
- Improve Yonge Street capacity (a component of the preferred alternative developed in Section 3.2, Rapid Transit Initiatives including Other Current Commitments)

As can be observed, the planning alternatives listed above range from the status quo (no improvements) to an increase in the capacity of either the public transit or road system. Each alternative is discussed and evaluated in the next section.

4.4 EVALUATION OF ALTERNATIVES TO THE PROBLEM

4.4.1 No improvement in Yonge Street Road Capacity

In relation to the road improvement undertaking, a “do-nothing” option implies continuation of the status quo in terms of transportation capacity for the portion of Yonge Street, between Mulock Drive and Green Lane.

Considerable urban growth (residential, commercial and industrial) during the last decade or so in the Newmarket area, has necessitated plans for road network expansion, improvements to the existing arterial roadways in the area and consideration of implementation of rapid transit systems due to the increasing traffic congestion and decline in road safety.

Within the area, there are a large number of commercial developments along Yonge Street that attract numerous trips throughout the day and on weekends, and Yonge Street is the only means of accessing these developments. In fact, there are very few continuous north-south routes through Newmarket placing high pressure on the four main routes; those being Bathurst Street (somewhat outside the built up area), Yonge Street, Bayview Avenue (which is restricted through the old part of Newmarket) and Leslie Street. Continued development will place additional pressures on these routes.

While a “do-nothing” scenario avoids the short-term negative impacts usually associated with road/infrastructure improvements and the corresponding expenditure of public funds, it represents a “no-response” option. Clearly, the justification for any public undertaking must be that the preferred alternative provides the greatest net benefit to the overall environment.

Conclusion: Taking into account the significant negative consequences of a “do-nothing” scenario, this course of action cannot be considered a reasonable or acceptable option. In support of the approved Official Plan Regional Centre urban structure recommendations, some proactive measures must be considered to address existing traffic operational issues and growing travel demand in this corridor.

4.4.2 Transportation Demand Management (TDM)

An alternative to expanding transportation capacity is to reduce single occupant vehicle demand. This could be done through efforts to increase car and van pooling, telecommuting or other measures. One of the challenges with this solution in the North Yonge Street Corridor is that much of the traffic is related to the commercial developments along Yonge Street, as opposed to commuter traffic which is more responsive to TDM measures. This is re-enforced by the fact that traffic is highest on weekends. If an aggressive program of TDM measures were pursued, the traffic levels could be reduced by up to 5%, which is less than the amount required to address road capacity shortfalls. As discussed previously, future auto demand will exceed supply at some locations by 75%.

Under this alternative, the through traffic volumes may be slightly lower, but no significant reduction of the overall traffic congestion would be realized. Traffic increases due to existing and future adjacent developments will have an offsetting effect, increasing traffic delays over longer periods of time, as well as the potential for accidents, particularly the types associated with congestion. Vehicle occupancy increases (as a transportation solution) would also be complicated to initiate and enforce.

Conclusion: This alternative would only have a marginal positive effect on the available capacity and safety deficiencies. However, it is part of the overall commitments identified in the TMP and is currently being pursued separately through the Region’s Smart Commute Program.

4.4.3 Improvements to Public Transit Service Only

In the screenline analysis presented earlier in **Section 3.3.2.3**, all of the alternatives except the Do Nothing alternative included the widening of Yonge Street to six lanes between Mulock Drive and Green Lane, consistent with the 10-year roads capital plan and TMP. As a result, none of the alternatives considered public transit improvements as a stand-alone alternative.

One alternative to widening Yonge Street in Newmarket would be to implement public transit improvements only. **Table 4-2** shows the road capacity shortfall assuming no road widening and transit improvements

only. North of Davis Drive, it is estimated that even with public transit improvements and no road widening there will still be approximately 1,400 vehicles that cannot be accommodated by the road network. This is largely a result of the fact that transit only is attractive for a small portion of the trips in this section. The projected transit volume (YRT plus VIVA) is estimated to be 280 passengers per hour north of Davis Drive. This implies that it would be necessary to increase transit mode split by another five times to meet the projected travel demand needs. For the Saturday peak period, this conclusion on the effectiveness of transit improvements only on the section of Yonge Street north of Davis Drive would likely be magnified, as people are less likely to use transit for discretionary trips.

Table 4-2
Projected Auto Volumes with Public Transit Improvements Only

Section	Existing Weekday PMPKHR Auto Volume (max)	Projected Future PMPKHR Auto Volume (max) ⁽¹⁾	Existing Road Capacity ⁽²⁾	Capacity Shortfall
Davis Drive - Green Lane	2,200	3,190	1800	1,390
Mulock Drive - Davis Drive	1,800	2,310	1800	510

⁽¹⁾ Assumes 1.5% growth per annum to 2021 north of Davis and 1% per annum south of Davis, as projected by the EMME/2 model

⁽²⁾ Based on 4-lane capacity of Yonge Street

Conversely, south of Davis Drive public transit improvements have a greater impact on transit ridership attracting some 1,200 peak hour riders in 2021 on VIVA alone. A further 50% increase in transit ridership would eliminate the projected road capacity shortfall. This increase could be achieved through fare incentives, improvements to transit feeder services, or auto-disincentives.

Conclusion: The introduction of rapid transit service along Yonge Street, integrated with other transit systems serving the area, will contribute to a reduction in traffic volumes along Yonge Street and surrounding streets. However, this alternative is not expected to fully address the road capacity shortfalls that would occur if Yonge Street capacity improvements were not implemented, particularly north of Davis Drive.

4.4.4 Improvements to Other Roadways

As well as additional lanes on Yonge Street, the Region's 10-year capital plan includes north-south capacity increases on Bathurst Street and Leslie Street and, in addition some east-west improvements. These road improvements have been accounted for in the screenline analysis presented in Section 3.3.2.3 where it was demonstrated that additional transportation capacity is required over and above these committed

improvements.

The previous analysis focused on the screenline results and did not explicitly address the section of Yonge Street between Mulock Drive and Green Lane. Accordingly, a sub-area analysis was undertaken to explore the impacts of widening or improving parallel roadways on the capacity requirements for Yonge Street. A number of potential alternatives were identified and modelled, which are listed below. These are intended to be illustrative alternatives to explore the sensitivity of Yonge Street volumes to improvements on other parallel facilities and should not be considered an exhaustive list. These improvements are above and beyond what is already planned in the TMP and are analyzed here to see if they have potential to address the travel demand forecast for the Yonge Street Corridor.

- Widening Bathurst Street to six lanes between St. John's Sideroad and Green Lane
- Improvements to Davis Drive between Yonge Street and Leslie Street
- Widening of Mulock Drive to six lanes between Bathurst Street and Leslie Street

Another option that was explored was the impacts of the Bradford By-pass and the Highway 404 extension. These were found to have limited impact on traffic volumes on Yonge Street south of Green Lane. They are also included in the committed transportation improvements.

Widening of Bayview Avenue/Prospect Street through historic Newmarket was not considered to be a feasible option due to the sensitive nature of the surrounding properties.

As shown on **Table 4-3**, widening of other facilities does not have a significant impact on Yonge Street volumes between Mulock Drive and Green Lane, and in some cases may actually increase volumes on Yonge Street. Part of the reason for the insensitivity of Yonge Street volumes to improvements on parallel roadways is that many of the trips in the corridor are local trips. This is confirmed by the select link analysis shown in **Figure 4-3** which shows the travel patterns for a.m. peak hour trips using any portion of Yonge Street between Mulock Drive and Green Lane. It should also be noted that the results shown are for the a.m. peak hour, and which is less congestion than the p.m. peak hour, however, the York Region Model is calibrated to a.m. peak conditions. Even considering the differences in congestion levels between the a.m. and p.m. peak periods, the effects of improvements to parallel roads on the demand in the Yonge Street corridor are expected to be minimal.

The environmental impacts of improvements to other roadways are likely to be significant. For example, there may be environmental impacts resulting

from further widening of Bathurst Street given that it is less urbanized than Yonge Street. Similarly, widening of Davis Drive would have significant property impacts.

Table 4-3
Impacts of Road Improvements on Parallel Corridors (2021)

Improvement Alternative	Location	
	Green Lane to Davis Dr.	Davis Dr. to Mulock Dr.
Projected Capacity Shortfall (Max)	1,200	500
Widen Bathurst Street	-30	-30
Improvements to Davis Drive	+90	+40
Widen Mulock Drive	+80	+80

Conclusion: Overall, widening/improvements to other parallel roadways in the area does not represent a feasible alternative solution to increasing traffic congestion on Yonge Street.

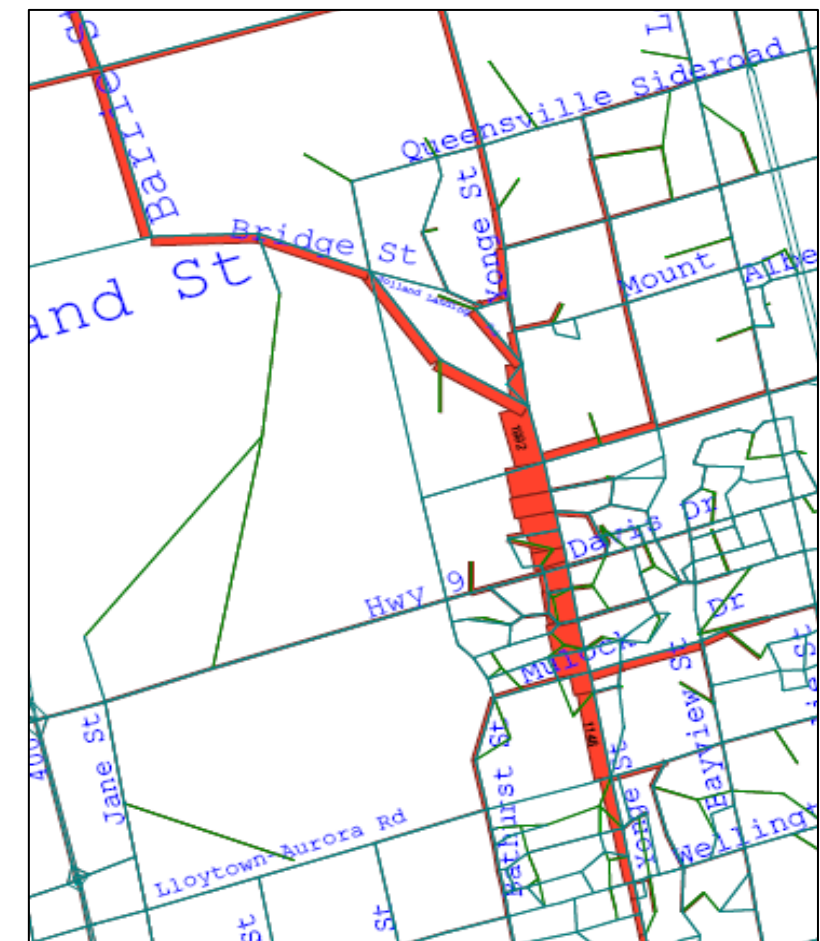


Figure 4-3
Select Link Analysis for Trips Using Yonge Street (Mulock Dr. to Green Lane)

4.4.5 Improvements to Yonge Street Capacity

This alternative involves improvements to enhance the capacity of Yonge Street which could include widening from the existing four through lanes and centre left turn lane to six through lanes and a centre left turn lane, and/or various intersection improvements to enhance the capacity and movements within the corridor. These improvements would be implemented in conjunction with transit improvements.

As shown previously in **Figure 4.3**, increased through-lane capacity by up to 50% (i.e. 4 to 6 lanes), would significantly improve traffic operations and safety on Yonge Street, however, temporary disruption and inconvenience during construction, will need to be minimized by including efficient staging plans and protective measures in the widening design.

Conclusion: Improvements to the Yonge Street capacity is the preferred transportation solution since it addresses both local and through traffic capacity, operations and safety between Mullock Drive and Green Lane.

4.5 EVALUATION SUMMARY OF ALTERNATIVES TO THE PROBLEM

Table 4-4 summarizes the evaluation of the transportation solutions considered as alternatives to the Yonge Street associated road improvements, included as part of this study. As noted in the table, the preferred solution is the **Yonge Street Road Capacity Improvements Solution**. This solution is actually part of the current commitments outlined in **Chapter 3** (and **Table 3-1**) of this ESR.

Table 4-4
Evaluation of Alternatives Transportation Solutions (Yonge Street between Mulock Drive and Green Lane)

Evaluation Objectives	ALTERNATIVE TRANSPORTATION SOLUTIONS				
	No Improvement in Yonge Street Road Capacity	Travel Demand Management (TDM)	Improve Public Transit Service Only	Improve Other Parallel Roadways	Yonge Street Road Capacity Improvements (part of the Current Commitments in the Preferred Alternatives to the Undertaking)
Transportation Environment					
Ability of transportation system to maintain and improve mobility.	2031 travel demand forecasts show that there would be a major shortfall in the road capacity of the corridor. The operational performance of the system would continue to degrade.	May reduce commuter-oriented trips but unlikely to impact commercial/shopping trips significantly	Transit ridership projections north of Davis Drive are well below amount required to off-set auto volume increases. This alternative has more potential south of Davis Drive	Improvements to other parallel roadways may benefit the overall traffic operation in the area but influence on Yonge St traffic congestion would be minor.	Addresses most road capacity shortfalls and provides balanced transportation network based on forecast demand.
Effect on transit mode share	Traffic congestion would make the existing road system less reliable including longer trip times.	Committed improvements already include significant transit improvements	The higher transit mode share will contribute to improved traffic operations on Yonge St.	This solution discourages the use of committed local and inter-Regional transit services resulting in a minimal increase in transit mode share.	May increase transit ridership, particularly for transit service in mixed traffic, by reducing congestion and delay overall.
RESPONSIVENESS	○	◐	◑	◒	●
Natural Environment					
Fisheries and Aquatic Resources	Potential impact to habitat as a result of increased traffic demand on the road network and resulting incremental contaminant runoff.	Potential impact to habitat as a result of increased traffic demand on the road network and resulting incremental contaminant runoff.	Potential impact to habitat as a result of increased traffic demand on the road network and resulting incremental contaminant runoff.	Potential for effects on aquatic habitat (HADD) associated with required widened or new structures, culverts etc...	Potential for effects on aquatic habitat (HADD) associated with required widened or new structures, culverts etc...
Surface/Ground Water Quality and Quantity	Potential impact to surface and ground water quality as a result of increased traffic demand on the road network and resulting incremental contaminant runoff.	Potential impact to surface and ground water quality as a result of increased traffic demand on the road network and resulting incremental contaminant runoff.	Potential impact to surface and ground water quality as a result of increased traffic demand on the road network and resulting incremental contaminant runoff.	Potential water quality effects associated with required widened or new structures, culverts, etc... (during construction and increased run-off during operations).	Potential water quality effects associated with required widened or new structures, culverts, etc... (during construction and increased run-off during operations).
Wetlands	None	None	None	Potential for removal of wetlands and incremental effects to the local ecosystem is high if widening to existing road right-of-way is required.	Potential for incremental effects to the local ecosystem if widening to existing road right-of-way is required.
Vegetation and Flora	None	None	None	Potential for removal of vegetation/flora or environmentally designated land such as ESA's, ANSI's etc...if widening to existing road right-of-way is required.	Potential for removal of vegetation/flora if widening to existing road right-of-way is required.
Wildlife Resources and Linkages	None	None	None	Potential for removal of wildlife habitat, and in turn wildlife itself if widening to existing road right-of-way is required.	Potential for removal of wildlife habitat, and in turn wildlife itself if widening to existing road right-of-way is required.
RESPONSIVENESS	◑	◑	◑	◒	◑
Social Environment					
Effects on Property	No property acquisition.	No property acquisition.	No property acquisition.	Property required if widening of the existing road right-of-way is necessary	Property required if widening of the existing road right-of-way is necessary.
Effect on Community Environment	Worsening road congestion will increase neighbourhood traffic infiltration. Indirect costs due to urban sprawl requiring additional facilities.	Worsening road congestion will increase neighbourhood traffic infiltration. Indirect costs due to urban sprawl requiring additional facilities.	Improved public transit will enhance access to community facilities. However, if traffic congestion levels continue to increase this access will in fact not be enhanced.	High capacity arterial roadways limit streetscaping opportunities.	An increase in capacity on Yonge St will reduce neighbourhood traffic infiltration. Required widening may create more of a barrier between communities.
Noise and vibration effects	Traffic congestion on Yonge St will increase ambient levels.	Traffic congestion on Yonge Street will increase ambient levels.	Noise levels may decrease slightly initially, however over time as traffic congestion levels continue to worsen ambient levels.	Potential for increase due to closer proximity to adjacent properties as a result of major road expansion.	Potential for increase due to closer proximity to adjacent properties as a result of major road expansion.

Table 4-4 (Continued)

Evaluation of Alternatives Transportation Solutions Continued (Yonge Street between Mulock Drive and Green Lane)

Evaluation Objectives	ALTERNATIVE TRANSPORTATION SOLUTIONS				
	No Improvement in Yonge Street Road Capacity	Travel Demand Management (TDM)	Improve Public Transit Service Only	Improve Other Parallel Roadways	Yonge Street Road Capacity Improvements (part of the Current Commitments in the Preferred Alternatives to the Undertaking)
Air Quality	Increased congestion within the corridor will have an impact on overall air quality and energy consumption.	Will have a minimal improvement in air quality, however increased congestion within the corridor will have an impact on overall air quality and energy consumption.	Marginally better than the No Improvement to Yonge St Capacity Solution since adding an alternative to auto use will result in decreased vehicle emission and energy consumption.	Marginally better than the No Improvement to Yonge St Capacity Solution since added road capacity will reduce overall traffic congestion.	Marginally better than the No Improvement to Yonge St Capacity Solution since added road capacity will reduce overall traffic congestion.
Effect on Cultural Environment <ul style="list-style-type: none"> Archaeological Resources Built Heritage Resources/Cultural Landscapes 	None	None	None	Any road expansion increases the potential for disruption to known archaeological sites or built heritage resources.	Any road expansion increases the potential for disruption to known archaeological sites or built heritage resources.
RESPONSIVENESS	●	●	●	●	●
Smart Growth & Economic Environment					
Effect on Regional and Municipal Planning Policies	Will prevent the achievement of OP land use and urban form objectives and policies.	Solution will be insufficient to promote OP land use and urban form objectives and policies.	Improved public transit supports OP objectives and policies however road capacity shortfall will hinder their achievement.	Minor benefit to Yonge St. congestion since it is not supportive of OP Regional Centre policy and urban form objectives.	Road capacity improvements in combination with improved public transit responds best to OP achievement of urban form objectives and goals.
Effect on Travel time	The loss of mobility will degrade the commute/travel in and to the Region and increase the cost of goods movements for business.	Worsening congestion over time will gradually increase time-related cost of travel and goods movement in the Region, and degrade employees' work commute in and to the Region.	Longer term congestion related travel time increases and costs for goods and people movement will still increase for intra-Regional travel.	Improvements would benefit the overall traffic operation in the area but influence on Yonge St traffic congestion would be minor.	Improved traffic operations along Yonge St will reduce travel time.
Business Activities	Will discourage business development due to significant loss of mobility.	Will result in less business investment due to continued congestion in the corridor.	This alternative alone will not reduce congestion and therefore will result in decreased business investment/development.	Improves goods and people movements in the Region due to a reduction in traffic congestion	Improves goods and people movements in the corridor due to a reduction in traffic congestion.
Costs	Doing nothing minimizes public sector capital costs and business displacement but will increase indirect business costs due to inefficiency of goods and people movement. Time-related cost of travel will be significantly increased.	Requires minimal capital investment in capital works.	Requires significant investment in capital works and intra-regional transit operation and maintenance.	Costs would be substantial if extensive widening of the existing road right-of-way is required.	Costs would be substantial if extensive widening of the existing road right-of-way is required.
RESPONSIVENESS	○	●	●	●	●
					PREFERRED SOLUTION

LEGEND: Least Responsive ○ ● ● ● ● Most Responsive

Note: ANSI – Area of Natural and Scientific Interest; ESA – Environmentally Significant Area; HADD –Harmful, Alteration, Disruption or Destruction; OP – Official Plan; TMP – Transportation Master Plan