



Chapter 6

Implementation & Monitoring

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6.1 IMPLEMENTATION PLAN

To guide the City in managing the implementation of the infrastructure plans recommended in this Transportation Master Plan Update, a suggested timing for recommended projects has been developed based on technical assessment that considered a number of key elements.

- Forecasts of transportation demands for interim horizon years and assessment of when the improvements are required to address deficiencies. The transportation forecasts for each horizon year are based population and employment projections developed by the City Planning Department. Since there are a number of factors that could influence the pace of growth in Brantford over the next 25 years, these assumptions may change over time. With strong economic growth in the region, these forecasts could materialize faster than projected, triggering the need to undertake capital improvements sooner than outlined in this plan. Similarly, a slow down in the economy could have the reverse affect, and defer the need for some improvements to later horizon years. Thus, Table 6.1 summarizes the total Citywide population and employment forecasts for each interim horizon year, that could serve as an alternative measure to trigger the need for improvements. The horizon years assessed include:

Table 6.1 - Plan Implementation Horizons

Horizon	Time Frame	Projected City Population	Projected City Employment
2011	0- 5 year	100,600	45,600
2016	5-10 year	108,500	50,600
2021	10-15 year	116,400	55,700
2031	15-25 year	132,100	65,900

Note: Values have been rounded to the nearest 100

- The need to undertake future Class EA studies to determine the recommended design for road improvements projects. For Schedule C projects this could include route planning (for new road corridors), preliminary engineering design (initial design, mitigation of local impacts, refine cost estimates, etc), and property acquisition (where required). For Schedule A and B projects, this would include completion of detailed design and preparation of tender drawings.
- Opportunities to integrate bicycle / walking infrastructure work with road work where feasible
- The desire to distribute capital budget requirements across the life of the plan.

It should be noted that the City may chose to implement the recommended projects in a different order or phasing that has been suggested in the Master Plan to accommodate council priorities, the need to coordinate with other infrastructure works (i.e. sewer work), planned developments in the area, or other considerations beyond the scope of this project to consider.

6.1.1 Environmental Assessment Process

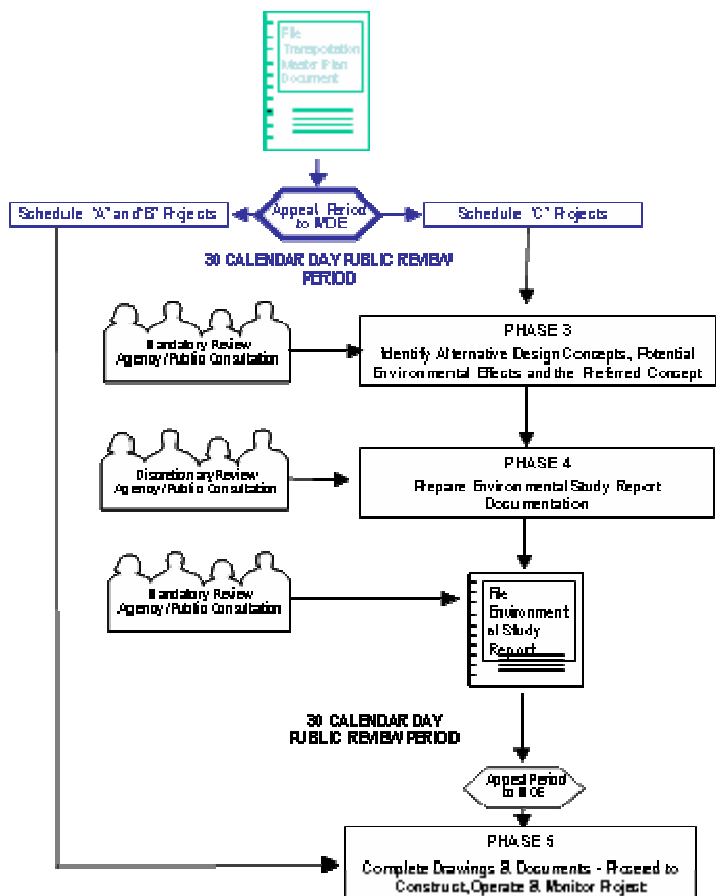
A Transportation Master Planning process is intended to address the requirements of Phases 1 and 2 Municipal Class EA planning process, providing an assessment of the problem or opportunity and an assessment of alternative solutions.

The recommendations from a Transportation Master Plan can be implemented in a number of ways. Many of the policy recommendations are incorporated into policy documents within the Official Plan update. These recommendations would be implemented through processing of land use applications under the Planning Act.

Figure 6.1 - EA Process for Recommended Projects

For infrastructure projects recommended as part of the Master Plan that fall within the Schedule B category, approval of the Master Plan will constitute approval to proceed with the project. The approval of the Master Plan requires the issuance of Notice of Study Completion, followed by a 30 day review period, which provides an opportunity for public and agency review of the plan and to submit comments.

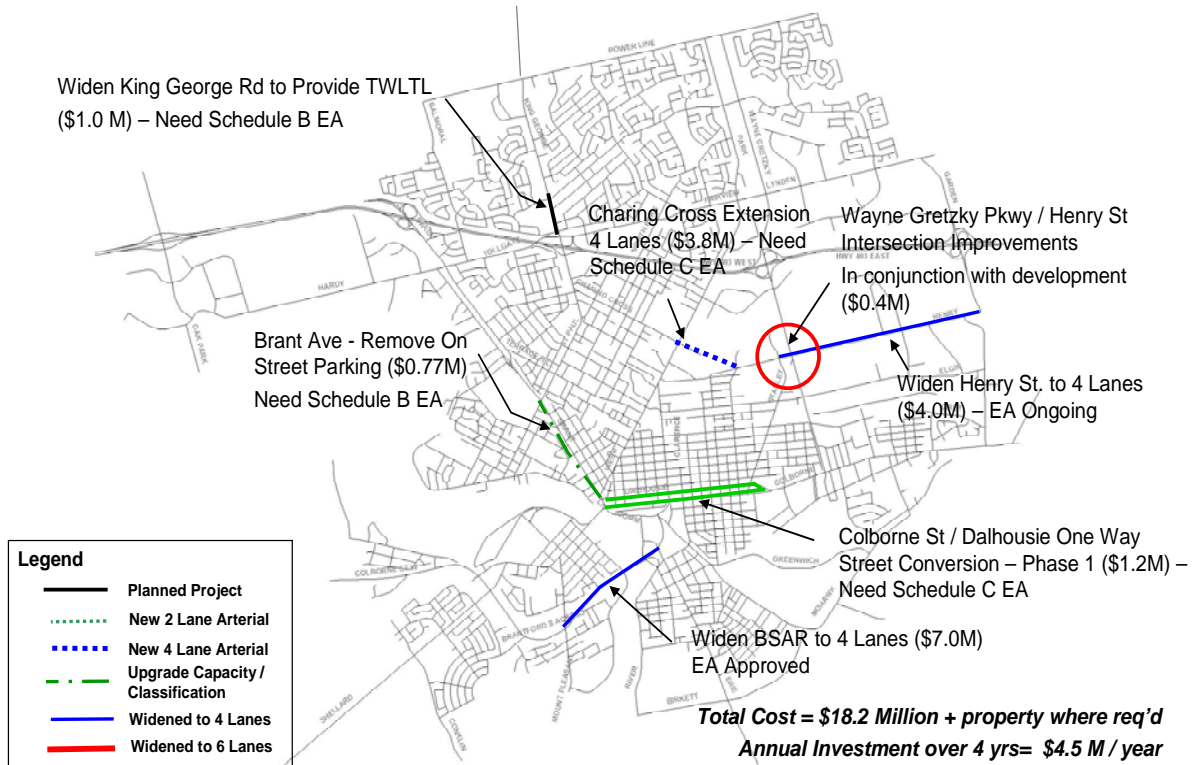
For more extensive Schedule C projects, with higher potential for environmental affects (both positive and negative), further project specific Environmental Assessment Studies may need to be completed by the City to examine alternative designs, identify environmental affects and mitigation treatments, and undertake additional public consultation, prior to implementation.



6.1.2 Road Network Implementation Plan

Figures 6.2 through 6.7 illustrate the recommend phasing and implementation plan for road works recommended as part of the Transportation Master Plan Update. A summary of each project has been completed outlining the rationale for the project, the estimated project cost (in 2006 dollars), the applicable EA schedule for the project, the implementation timing recommendation, and potential affects that should be considered during design or subsequent EA studies.

Figure 6.2 - Immediate Road Network Priorities 2006-2011



2006 – 2011 Project Summaries

Project: Henry Street Widening to 4 Lanes Henry Street/WGP Intersection Improvements	Cost Estimate: \$4.4 Million	EA Status: Schedule C - Ongoing
Rationale : To address increased east-west traffic growth and forecast longer term capacity deficiencies in the Henry Street corridor due to local growth and development of adjacent lands		
Potential Affects:		
<ul style="list-style-type: none"> • Potential affects include adjacent property impacts due to potential widening • Need for urbanization may require stormwater management treatments • Short term construction affects may require consideration of traffic management during construction, dust suppression, silt fencing and other standard mitigation treatments • Incorporating improvements required to accommodate future development may require additional consultation with affected parties • Intersection improvements required at Wayne Gretzky Parkway / Henry Street should be integrated with Henry Street improvements • A new on-road bicycle lane has been recommended for this corridor and should be implemented in conjunction with road work 		
Implementation Recommendation	0-5 Years subject to findings of ongoing EA	

Project: Widening King George Road to Provide Two Way Left Turn Lane	Cost Estimate: \$1.0 Million	EA Status: Schedule B *
Rationale : To optimize the capacity and improve safety of King George Road by providing a centre turn lane to access adjacent commercial properties.		
Potential Affects: <ul style="list-style-type: none"> • Potential affects include adjacent property impacts due to potential widening, • Short term construction affects may require consideration of traffic management during construction, dust suppression, maintaining accesses during construction, and other standard mitigation treatments • May need to undertake consultation with local business owners to address local access and design concerns 		
Implementation Recommendation	0-5 Years	

*Note – If construction value exceeds \$1.5M or impacts on private property are extensive, a Schedule C EA may be required

Project: Widening BSAR to 4 Lanes Mount Pleasant Avenue to Market Street	Cost Estimate: \$7.0 Million	EA Status: Has EA Approval
Rationale : To increase capacity across the Grand River to accommodate ongoing growth in West Brant and the new development areas in the Southwest quadrant of the City.		
Potential Affects: <ul style="list-style-type: none"> • Potential affects and mitigation treatments have been identified in approved EA document 		
Implementation Recommendation	0-5 Years	

Project: Charing Cross Extension – 4 Lanes	Cost Estimate: \$3.8 Million	EA Status: Schedule C
Rationale : To address projected capacity deficiencies on West Street due to the jog between Charing Cross Ave and Henry Street and provide a continuous east-west arterial road from King George Road to Garden Avenue..		
Potential Affects: <ul style="list-style-type: none"> • Potential affects include adjacent property impacts due to new road construction • Short term construction affects may require consideration of dust suppression and other standard mitigation treatments • Will need to obtain approval for new grade separate railway crossing of CN line. • May need to undertake consultation with local business owners to address local access and design concerns • A new on-road bicycle lane has been recommended for this corridor and should be implemented in conjunction with road work. 		
Implementation Recommendation	0-5 Years	

Project: Brant Avenue – Operational Improvements & Remove Parking	Cost Estimate: \$0.77 Million	EA Status: Schedule B
Rationale : To address projected capacity deficiencies on Brant Ave due to lack of left turn lanes at intersections and parking allowed in curb lane. Project would include optimizing the capacity of the existing road by constructing turning lanes at key intersections and the removal of		

on-street parking.	
Potential Affects:	
<ul style="list-style-type: none"> • Potential localized affects to properties where turn lanes require widening • Short term construction affects may require consideration of dust suppression and other standard mitigation treatments • Potential affects to local business owners may require alternative parking arrangements such as off street lots. • City has committed to undertake consultation with local business owners to address local parking, access and design concerns prior to implementation 	
Implementation Recommendation	0-5 Years

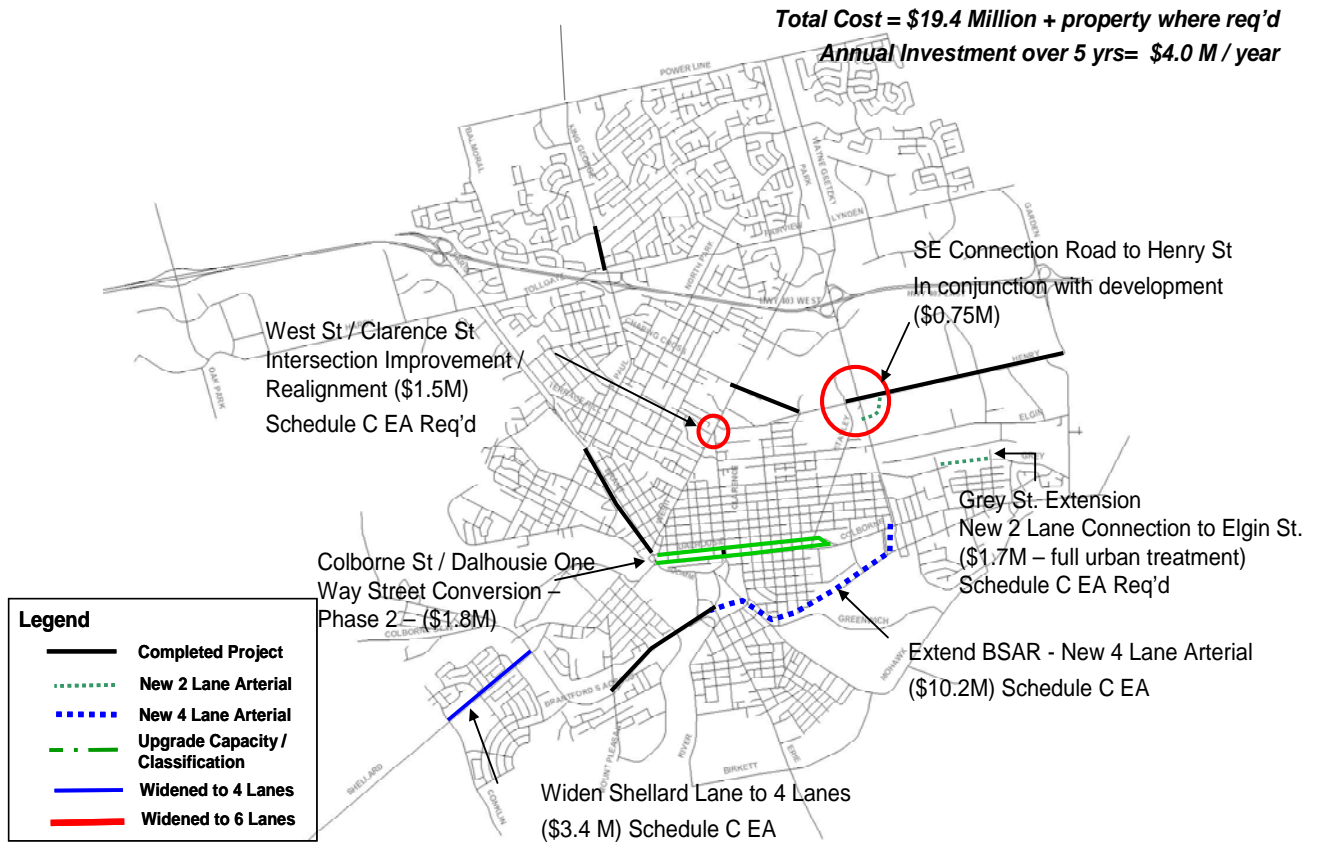
Project: Colborne Street / Dalhousie Street One Way Street Conversion–Phase 1	Cost Estimate: \$1.2 Million	EA Status: Schedule C*	
Rationale : The one way street conversion will contribute to the City of Brantford downtown revitalization initiative. A two way street system will reduce circuitous traffic routing, allow for improved pedestrian environment in the downtown, create opportunities for localized improvements to sidewalk widths, result in slower speeds through the downtown, and will promote removal of through traffic. The following improvements are required to implement phase 1 on the conversion.	Intersection/Location	Improvements	Cost
	Dalhousie/Brant	Southbound Left Turn Lane	\$110,000
	Colborne/Icomm	Westbound Left Turn Lane	\$60,000
	Dalhousie/Colborne	Intersection work - Adjustments to curb/island - turning lanes	\$210,000
	Minor Intersections Lane Configuration	Pavement Marking / Signs (27 @ \$1,700 per intersection)	\$46,000
	Signals	Modify Existing Traffic Signals (14 @ \$50,000/intersection)	\$700,000
	Class EA		\$70,000
	Total Cost		\$1,200,000
Potential Affects:			
<ul style="list-style-type: none"> • Potential affects include adjacent property impacts due to localized improvements (turning lanes) • Short term construction affects may require consideration of dust suppression and other standard mitigation treatments • May need to consult with CN Rail regarding existing rail spur line along Clarence Street and railway crossings on Colborne and Dalhousie Streets • Prior to implementing the one way street conversion it will be necessary to complete a Schedule C EA Study to refine the design details for the conversion and to provide an opportunity for local business owners to provide input into the study, particularly where improvements may affect on street parking. 			
Implementation Recommendation	0-5 Years		

*Note – Due to potential impacts of on street parking removal and impacts on adjacent businesses it is recommended that a Schedule C EA be undertaken rather than implement a series of stand alone Schedule B projects.

Figure 6.3 - Phase 1 Improvements in Downtown



Figure 6.4 – Medium Term Road Network Priorities 2012-2016



The BSAR extension is forecast to be required between 2012 and 2016, based on forecasts of population and employment growth for the 2011 and 2016 horizon years provided by the City planning department. Should development of the Southwest residential lands or growth in the downtown proceed more quickly than forecast, the need for this connection could be accelerated. The EA study for the BSAR extension through the Glebe lands will need to be completed in accordance with the Canadian Environmental Assessment Act requirements. The lead time for completion of this study to finalize the route and design features may require initiating this study prior to 2011.

The Grey Street extension is forecast to be required between 2012 and 2016 based on forecasts of population and employment growth, however there is potential for development in this area which may trigger the need for this connection earlier than forecast. The cost to implement this connection is based on providing a full municipal road cross section with urban drainage to arterial road standards.

The Wayne Gretzky Parkway / Henry Street intersection improvements may be required prior to 2012 to accommodate currently planned development in the area and so that the work is planned to coincide with the planned upgrade and widening of Henry Street.

2012 – 2016 Project Summaries

Project: BSAR Extension – 4 Lanes	Cost Estimate: \$10.2 Million	EA Status: Schedule C
Rationale : To address projected capacity deficiencies through the downtown area and remove through traffic and trucks out of the downtown core area and adjacent neighbourhoods. The extension is required to provide a connection between the rapidly expanding southwest development area and the Wayne Gretzky Parkway corridor which serves the major commercial area in the north end and the Highway 403 corridor. This route should be added to the designated Truck Routes when completed. In addition, the connection may provide new access to facilitate redevelopment of existing brownfield sites in the Echo Place neighbourhoods and would support potential initiatives by the First Nations to redevelop the Glebe lands.		
Potential Affects: <ul style="list-style-type: none"> • Potential affects to properties where a new corridor is required • Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments • Potential soil contamination in the area of the Glebe lands may require additional studies to identify treatment needs • Potential crossing to Mohawk Canal may require new bridge crossing or culvert. Unlikely for any fisheries impact, but stormwater management treatments may be required. • Potential negative affects to local neighbourhoods needs to be considered i.e. noise, trail connections, access and accessibility. • A new multi-use trail has been recommended for this corridor and should be included in EA Study / Design along with connections to existing trails in adjacent neighbourhoods • Federal EA (CEAA) will be required for route in vicinity of Glebe Lands, requiring consultation with First Nations stakeholders and Federal Departments. 		
Implementation Recommendation	5-10 Years – Due to extent of EA Study required this project may need to be initiated prior to 2011 to allow for construction within the 2012-2016 timeframe	

Project: Shellard Lane Widening to 4 Lanes	Cost Estimate: \$3.4 Million	EA Status: Schedule C
Rationale : To address traffic generated by build out of the southwest development area. This corridor has been identified as a key arterial route linking to BSAR and Colborne Street West. Initial Phase of works would provide 4 lane arterial road plus bicycle lane between BSAR and Conklin Road.		
Potential Affects: <ul style="list-style-type: none"> • Minimal affects on property as Right of Way has been dedicated to City • Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments • Potential negative affects to local neighbourhoods needs to be considered i.e. noise, trail connections, access and accessibility. • An on road bicycle lane has been recommended for this corridor and should be included in EA Study / Design 		
Implementation Recommendation	5-10 Years – Timing could vary based on build out of the southwest development area	

Project: Grey Street Extension – 2 lanes	Cost Estimate: \$1.7 Million	EA Status: Schedule C
Rationale : The Grey Street extension is a missing link in the road network in the south east section of the City. There is no connection across the CN Rail line and through traffic using Grey Street currently infiltrates through the parallel local roads to the south with Lyndhurst Street taking much of the traffic. Continued growth in the south east will increase the east-west		

demands through this area. Local development in the vacant lands between the two sections of Grey Street is possible in the future, which will compounding the potential for local traffic infiltration impacts in adjacent neighbourhoods. The Grey street extension will provide a continuous arterial road connection between Wayne Gretzky Parkway and Garden Ave to draw through traffic out of local neighbourhoods.

Potential Affects:

- Minimal affects on property – to be acquired as part of development
- Some modest amount of vegetation loss can be mitigated through new plantings / landscaping
- Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments
- Potential positive affects to local neighbourhoods as traffic infiltration reduced
- An on road bicycle lane has been recommended for this corridor and should be included in EA Study / Design
- Potential for phased implementation in conjunction with development

Implementation Recommendation

5-10 Years – Timing could vary based on build out of potential development area

Project: SE Connecting Road WGP to Henry Street	Cost Estimate: \$0.75 Million	EA Status: Schedule B*
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Rationale : To provide alternate access road connection between Wayne Gretzky Parkway (WGP) and Henry Street to avoid intersection turning movements reaching capacity and causing delays / queuing on WGP. Road connection would be implemented in conjunction with local development, and may be a condition of site plan approval.

Potential Affects:

- Minimal affects on property as Right of Way would be dedicated to City
- Minimal affects on natural or social-cultural environment.
- Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments
- Access to adjacent development lands would need to be negotiated.

Implementation Recommendation

5-10 Years – Timing could vary based on build out of the adjacent development and operation of WGP/Henry St intersection.

*Note – May be implemented in conjunction with site plan approvals for area development

Project: West Street / Clarence Street Intersection Realignment	Cost Estimate: \$1.5 Million	EA Status: Schedule C
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Rationale : Continued growth in the downtown will increase traffic demands on Clarence Street and West Street which provide direct access into the downtown core area. The current signal operation will not accommodate a significant increase in demand due to the complex signal phasing with the adjacent Henry Street intersection. A realignment of West Street at Clarence Street would eliminate the left turn movement and reduce the collision risk at this intersection.

Potential Affects:

- Minimal affects on property as Right of Way has been dedicated to City as part of adjacent development – some property required on South East side of West Street.
- Short term construction affects - need to maintain access to new Shoppers Drug Mart, may require consideration of dust suppression and other standard mitigation treatments
- Potential change to traffic patterns in area, and enhanced safety at intersection.

Implementation Recommendation

5-10 Years

Project: Colborne Street / Dalhousie Street One Way Street Conversion–Phase 2	Cost Estimate: \$1.2 Million	EA Status: Schedule C*															
Rationale : The one way street conversion will contribute to the City of Brantford downtown revitalization initiative. A two way street system will reduce circuitous traffic routing, allow for improved pedestrian environment in the downtown, create opportunities for localized improvements to sidewalk widths, result in slower speeds through the downtown, and will promote removal of through traffic.																	
The two way left turn lane on Clarence Street was also included in the recommended road network improvement plan, as this project is currently included in the City’s 5-10 year capital forecast and would be required with or without the One Way Street Conversion.	<table border="1"> <thead> <tr> <th>Intersection/Location</th> <th>Improvements</th> <th>Future (By 2016)</th> </tr> </thead> <tbody> <tr> <td>Signals</td> <td>Install Three New Traffic Signals + Pedestrian Signal</td> <td>\$350,000</td> </tr> <tr> <td>Dalhousie/Clarence</td> <td>Two Way Left Turn Lane along Clarence St</td> <td>\$1,000,000</td> </tr> <tr> <td>Colborne/Clarence</td> <td>Property Acquisition</td> <td>\$550,000</td> </tr> <tr> <td>Total Cost</td> <td></td> <td>\$1,900,000</td> </tr> </tbody> </table>		Intersection/Location	Improvements	Future (By 2016)	Signals	Install Three New Traffic Signals + Pedestrian Signal	\$350,000	Dalhousie/Clarence	Two Way Left Turn Lane along Clarence St	\$1,000,000	Colborne/Clarence	Property Acquisition	\$550,000	Total Cost		\$1,900,000
	Intersection/Location	Improvements	Future (By 2016)														
Signals	Install Three New Traffic Signals + Pedestrian Signal	\$350,000															
Dalhousie/Clarence	Two Way Left Turn Lane along Clarence St	\$1,000,000															
Colborne/Clarence	Property Acquisition	\$550,000															
Total Cost		\$1,900,000															
The following improvements are required to implement phase 2 of the conversion.																	
Potential Affects: <ul style="list-style-type: none"> • Potential affects include adjacent property impacts due to turning lanes on Clarence Street – opportunities to acquire rail spur should be investigated through discussions with CN Rail. • Short term construction affects may require consideration of dust suppression, traffic management during construction, and other standard mitigation treatments • Limited additional affects to adjacent businesses. • Improved safety at Clarence Street / Colborne Street intersection with addition of turning lane • Additional traffic signals will improve safety for pedestrian crossing in the downtown and pedestrian signal on Clarence Street will provide a safe crossing for bicycle trail. 																	
Implementation Recommendation		5-10 Years															

Figure 6.5 - Phase 2 Improvements in Downtown

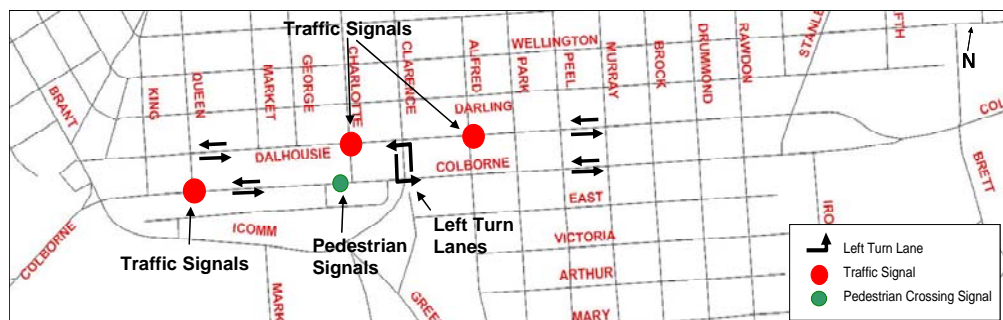
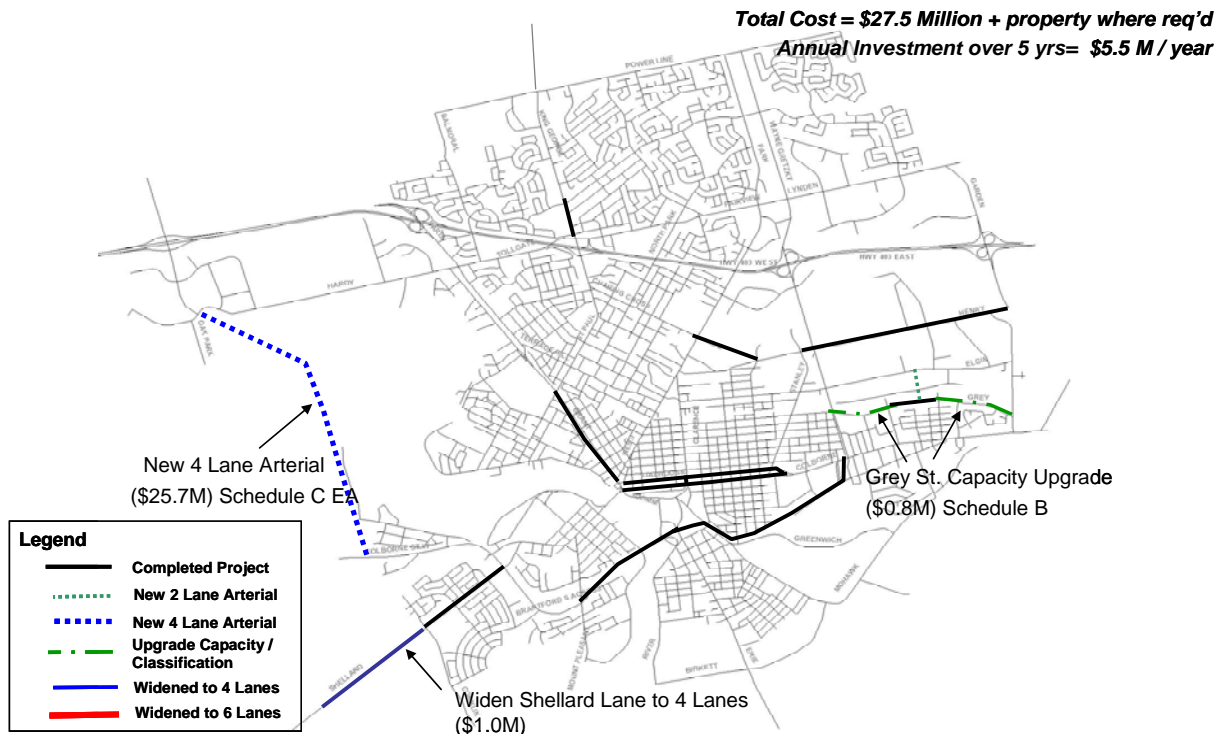


Figure 6.6 –Road Network Priorities 2017-2021



The Oak Park Road extension is forecast to be required between 2017 and 2021, based on forecasts of population and employment growth for the 2016 horizon year provided by the City planning department. Should development of industrial lands in the Northwest development area proceed more quickly than forecast, or if operational problems arise on Hardy Road at the CN Rail Crossing, the need for this connection could be accelerated.

Given the need to undertake detailed route planning and preliminary design for this new connection, the Environmental Assessment Study for this new road connection may need to be initiated well before 2017, to ensure that a corridor is protected from future development and that sufficient design work and public consultation can be included to address environmental concerns in the corridor.

2017 – 2021 Project Summaries

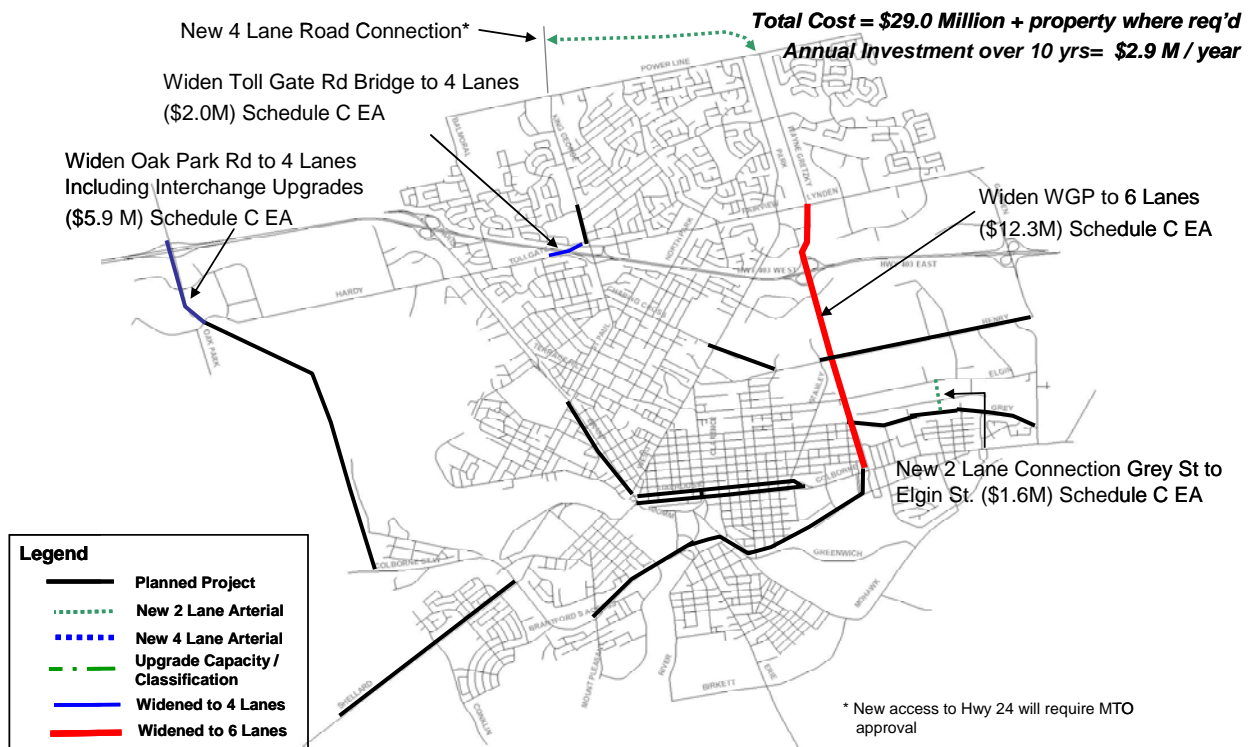
Project: Oak Park Road Extension – 4 Lanes	Cost Estimate: \$25.7 Million	EA Status: Schedule C
Rationale : To address projected capacity deficiencies across the Grand River Screenline, the Oak park Road extension is required. This improvement will also offer significant relief to the Brant Avenue corridor, which is forecast to be operating over capacity prior to 2021. The extension is also required to provide a connection between the rapidly expanding southwest development area and the new northwest industrial park and the Highway 403 corridor. This route should be added to the designated Truck Routes when completed.		
Potential Affects: <ul style="list-style-type: none"> • Significant property acquisition will be required for new road corridor • Potential affects to adjacent agricultural properties may require mitigation • Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments • Stormwater management plan may be required to accommodate roadside drainage • New crossing of Grand River required which is a navigable waterway. DFO approvals will be required. Fisheries impacts may require mitigation plans if any construction within the waterway is required for bridge piers. • Potential for archaeological sites within corridor. EA may require both stage 1 and stage 2 archaeological assessments. • A new multi-use trail has been recommended for this corridor and should be included in EA Study / Design along with connections to existing trails and the Conservation area • Provincially Significant wetland area on north shore of Grand River may be affected although there is potential to avoid this area during route planning and design. 		
Implementation Recommendation	10-15 Years – Due to extent of EA Study required this project may need to be initiated prior to 2017 to allow for construction within the 2017-2021 timeframe. EA should combine both projects and identify staging plan. Timing could vary depending on rate of development in Southwest residential and northwest industrial areas.	

Project: Shellard Lane Widening to 4 Lanes	Cost Estimate: \$3.4 Million	EA Status: Schedule C
Rationale : To address traffic generated by build out of the southwest development area. This corridor has been identified as a key arterial route linking to BSAR and Colborne Street West. Initial Phase 2 of works would provide 4 lane arterial road plus bicycle lane between Conklin Road and the west City limit.		
Potential Affects: <ul style="list-style-type: none"> • Minimal affects on property as Right of Way will be dedicated to City through development • Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments • Potential negative affects to local neighbourhoods needs to be considered i.e. noise, trail connections, access and accessibility. • An on road bicycle lane has been recommended for this corridor and should be included in EA Study / Design 		
Implementation Recommendation	10-15 Years – Timing could vary based on build out of the southwest development area	

Project: Grey St Capacity Upgrade	Cost Estimate: \$0.8 Million	EA Status: Schedule B
Rationale : To optimize the capacity of the existing Grey Street through the addition of intersection turning lanes, an on road bicycle lane, and other upgrades. This will improve the		

existing corridor to arterial road standards to reflect it's emerging role in serving east-west bicycle and auto traffic in the south east section of the City.	
Potential Affects:	
<ul style="list-style-type: none"> • Minimal affects on property • Short term construction affects may require consideration of dust suppression, traffic management, and other standard mitigation treatments • Potential positive affects to local neighbourhoods due to reduced traffic infiltration. • An on road bicycle lane has been recommended for this corridor and should be included in EA Study / Design 	
Implementation Recommendation	10-15 Years – Timing could vary based on build out of the development in area

Figure 6.7 –Road Network Priorities 2021-2031 and Beyond



The widening of Oak Park Road, between Hardy Road and north of Highway 403 is forecast to be required upon full build out of the Northwest Industrial Area. Based on projected population and employment growth estimates prepared by the City Planning Department, this is estimated to occur after 2021. Should the growth of this industrial park proceed more quickly, the interchange improvements and widening of Oak Park Road may need to be advanced.

The widening of Wayne Gretzky Parkway to 6 lanes is forecast to be required between 2022 and 2031, although this is based on projected population and employment growth estimates prepared by the City Planning Department. Should city wide growth proceed quicker than forecast, or if operational problems arise at key intersections in the corridor, the need for this improvement may occur prior to 2022.

The need for and timing of the new arterial road connection between Highway 24 and Wayne Gretzky Parkway is related to potential growth to the north of Powerline Road, within lands currently under the jurisdiction of Brant County. The need for this road connection may also be influenced by the recommendations resulting from Ministry of Transportation's Highway 24 corridor study, which is not scheduled to be completed until 2008 / 2009. The City and County should work together to protect a corridor should the need for this route be required in the future. Any future municipal road access to Highway 24 will require the approval of MTO.

2017 – 2021 Project Summaries

Project: Oak Park Road Widening to 4 Lanes	Cost Estimate: \$ 5.9 Million	EA Status: Schedule C – Oak Park Road Widening MTO Interchange Improvements – EA Approved
Rationale : To address projected capacity deficiencies on existing Oak Park Road and at the Highway 403 / Oak Park Road interchange as a result of full build out of the Northwest Industrial Park area and the Oak Park Road Extension across the Grand River.		
Potential Affects: <ul style="list-style-type: none"> • Some property acquisition may be required for road widening and interchange improvements • Short term construction affects may require consideration of dust suppression, silt fencing, and other standard mitigation treatments • Stormwater management plan may be required to accommodate roadside drainage • Co-ordination with MTO interchange improvements is highly recommended 		
Implementation Recommendation	15-25 Years – Timing could vary depending on rate of development in northwest industrial areas.	
Project: Wayne Gretzky Parkway Widening to 6 Lanes	Cost Estimate: \$12.3 Million	EA Status: Schedule C
Rationale : To address long term growth of the City and projected capacity deficiencies across the Highway 403 and CN Rail screenlines. Continued growth in traffic will deteriorate the level of service on this key arterial road and the widening will ensure that excess traffic does not spill over into local neighbourhoods. WGP is a key truck route and good movement corridor, and provides a key linkage between Highway 403 and the downtown, to support downtown growth.		
Potential Affects: <ul style="list-style-type: none"> • Minimal affects on property as Right of Way is sufficient to accommodate widening • Short term construction affects may require consideration of dust suppression, traffic management, silt fencing, and other standard mitigation treatments • Potential negative affects to adjacent neighbourhoods needs to be considered i.e. noise, access and accessibility. • A multi-use trail is currently located in this corridor and should be maintained following widening as per the Recommended Walking / Cycling Trail Plan 		
Implementation Recommendation	15-25 Years – Timing could vary. Operation of intersections along corridor may require upgrades before full 6 lane widening is required.	

Project: Toll Gate Road Bridge Widening to 4 Lanes	Cost Estimate: \$2.0 Million	EA Status: Schedule C
Rationale : To provide a continuous 4 lane arterial road connection linking Fairview Drive, Hardy Road and Toll Gate Road. This improvement provides additional capacity across the Highway 403 screenline which is forecast to be over capacity in 2031. On wide shared use lane has been recommended for this road as part of the on-road cycling network and widening this bridge is also necessary to provide the necessary pavement width.		
Potential Affects: <ul style="list-style-type: none"> • Modest affects on property as Right of Way is not currently sufficient to accommodate widening. City should acquire sufficient property as part of any redevelopment of adjacent lands • Short term construction affects may require consideration of dust suppression, traffic management, silt fencing, and other standard mitigation treatments • Potential negative affects to adjacent neighbourhoods needs to be considered i.e. noise, access and accessibility. • A wide shared use lane has been recommended for this facility as per the Recommended Walking / Cycling Trail Plan 		
Implementation Recommendation	15-25 Years.	

Project: Grey St / Elgin St Connection	Cost Estimate: \$1.6 Million	EA Status: Schedule C
Rationale : This proposed road facility will provide a new mid-block crossing of the CN Rail line between Wayne Gretzky parkway and Garden Avenue to support local traffic movements and pedestrian / cycling movements across rail corridor. Current evidence of informal pedestrian crossing paths in the area. New development in the Grey Street extension area will increase need for alternative connections to and from neighbourhood.		
Potential Affects: <ul style="list-style-type: none"> • Minor affects on property through new development area and on north side of CN Rail line • Short term construction affects may require standard mitigation treatments • Potential positive affects to local neighbourhoods due to reduced traffic infiltration. • An Multi-use trail has been recommended for this corridor and should be included in EA Study / Design • New crossing of CN Rail line will require consultation with Railways. May require grade separation if exposure level meets warrants. 		
Implementation Recommendation	15-25 Years – Timing could vary based on build out of the development in area	

6.1.3 Walking and Cycling Trail Network Implementation Plan

Figures 6.8 through 6.10 illustrate the recommend phasing and implementation plan for walking and cycling network works recommended as part of the Transportation Master Plan Update¹. A table summarizing each project has been completed outlining the estimated project cost (in 2006 dollars), the applicable EA schedule for the project, and the implementation timing recommendation that should be considered during development of the overall transportation capital program. Table 6.2 summarizes the key elements and cost breakdown for the recommended network and Table 6.4 provides a detailed cost estimate and implementation schedule by facility.

Table 6.2 – Summary of Recommended Walking Cycling Trail Network Costs

Type of Facility	Length (km)	Construction Cost (\$2006)
Multi-Use Trail Facilities	33.5	\$4,292,500
On Road Facilities		
On-road Bicycle Lane	2.1	\$ 55,650
On-road Bicycle Lane (new)	9.5	\$1,539,000
On-road Bicycle Lane (paint)	10.0	\$ 170,000
On-road Bicycle Lane (widen)	4.7	\$ 1,231,400
Paved Shoulder	5.0	\$ 985,000
Signed Route	46.4	\$ 78,150
Wide Shared Use Lane	9.2	\$3,662,000
<i>Sub Total On Road Facilities</i>	<i>86.9</i>	<i>\$7,721,200</i>
Total Network	120.4	\$ 12,013,700

¹ An overview of the specific changes from the recommendations of the 2000 “Multi-Use Trail / Bikeway Implementation and Design Plan” is summarized in Chapter 5.

Figure 6.8 - Immediate Walking / Cycling Network Priorities 2007-2011

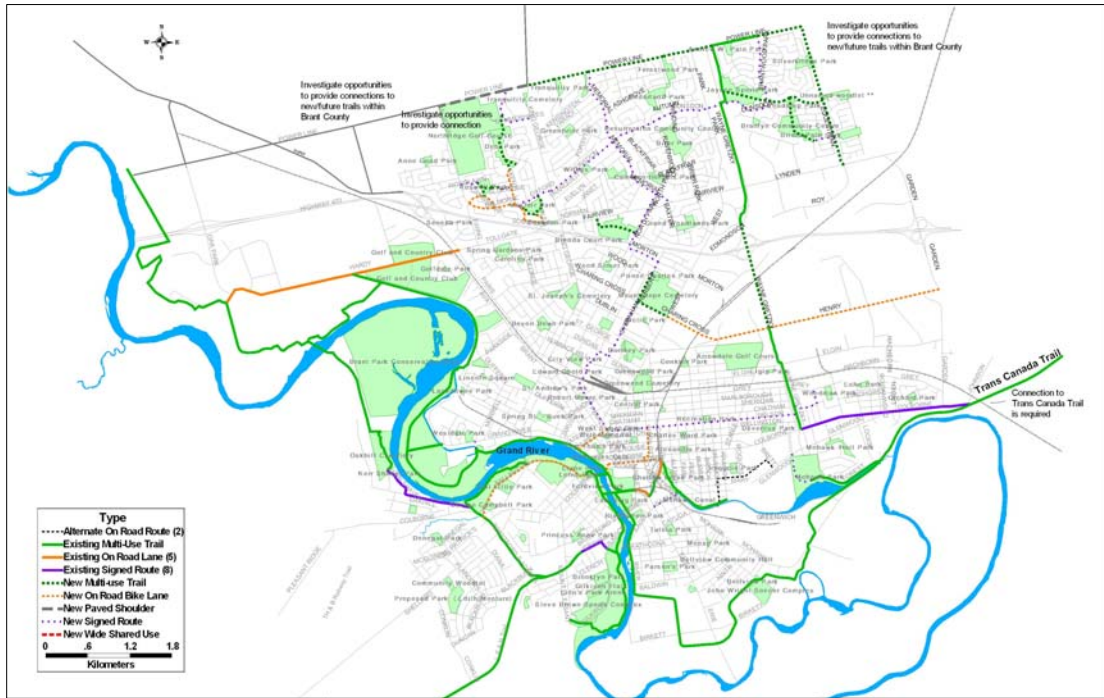


Figure 6.9 – Medium Term Walking / Cycling Network Priorities 2012-2016

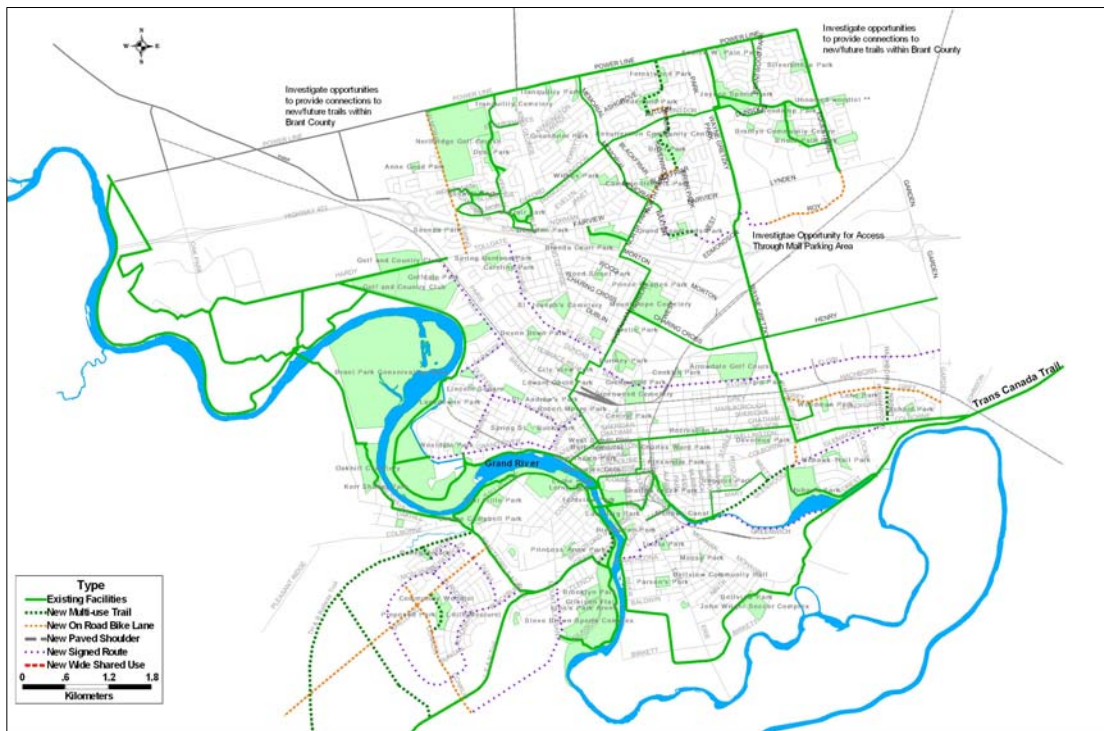
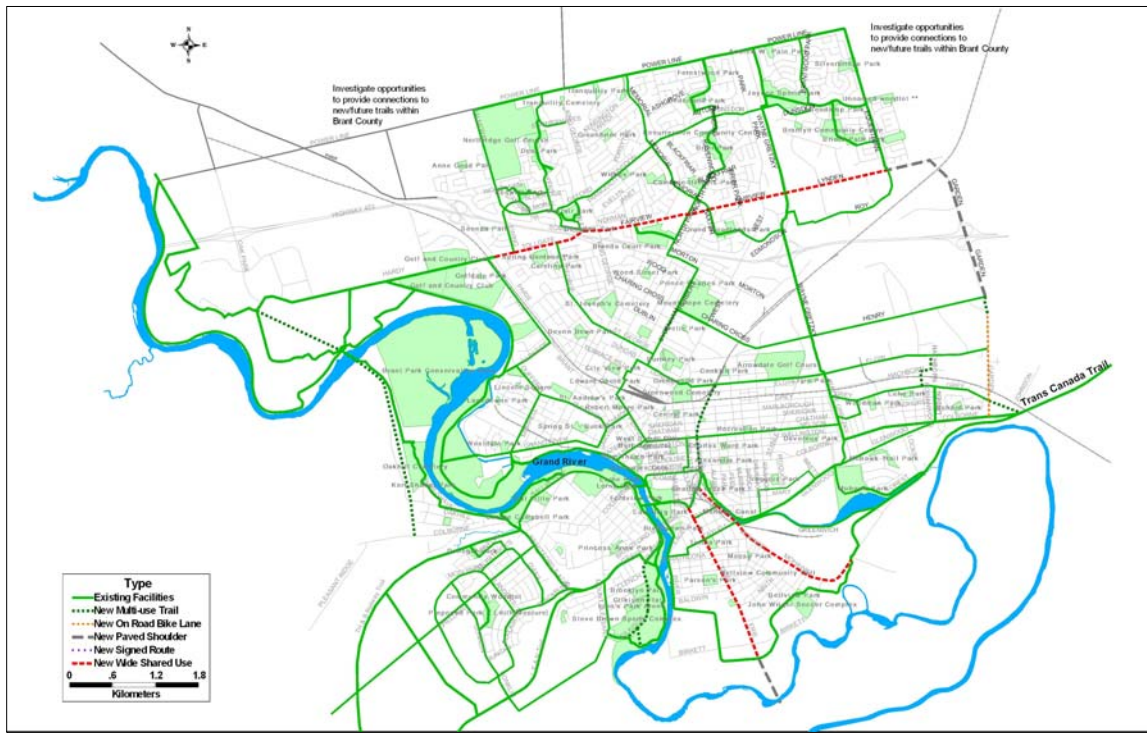


Figure 6.10 – Long Term Walking / Cycling Network Priorities 2017-2021



6.1.4 Capital Program Requirements

A detailed capital program summary and phasing plan for road improvements, walking and cycling trail infrastructure, and transit investments is provided in Tables 6.3 through 6.6.

Table 6.3 Implementation Plan Roadworks
Road Network Improvement Implementation Plan

Project	Description	Estimated Cost (2006\$)					EA Schedule	Notes
		2007-2011	2012-2016	2017-2021	2022-2031	Beyond 2031		
King George Rd Widening to 5 lanes	Dunsden Rd to Tollgate Rd	\$ 1,000,000					B	
Downtown One Way Street Conversion	Brant Ave to Colborne / Dalhousie	\$ 1,200,000	\$ 1,800,000				C	1
	Brant Ave / Dalhousie Southbound Left Turn Lane	\$ 110,000					B	
	Colborne St / Brant Ave / Icomm Dr Westbound Left Turn Lane	\$ 60,000					B	
	Localized Intersection Improvements (various locations)	\$ 210,000					B	
	Lane Marking	\$ 50,000					B	
	Traffic Signal Modifications	\$ 700,000					B	
	Class EA	\$ 70,000					B	
	Clarence St Widening to 5 Lanes - Install Turning Lanes between Colborne St to Dalhousie St		\$ 1,550,000				B	
	New Traffic Signals / Pedestrian Crossing Signals		\$ 250,000				B	
Brant Ave Upgrades	Localized Turning Lanes and Removal of On Street Parking, St Paul to Dalhousie	\$ 770,000					B	
Henry St Widening to 4 Lanes	Wayne Gretzky Pkwy to Garden Ave	\$ 4,000,000					C	
BSAR Widening to 4 Lanes	Mt Pleasant to Erie Ave including Grand River Bridge	\$ 7,000,000						
Clarence St / West St Intersection	Realign West St and Clarence St intersection		\$ 1,500,000				C	
Charing Cross Extension	New 4 Lane Arterial Road - West St to Henry St	\$ 3,800,000					C	
WGP / Henry St intersection improvements	Dual Turning Lanes	\$ 400,000					A	
	SE Connection Road to Henry St		\$ 750,000				B	
Shellard Lane Widening to 4 Lanes	Colborne St W to Conklin Rd		\$ 3,400,000				C	
Shellard Lane Widening to 4 Lanes	Conklin Rd to West City Limit			\$ 1,000,000			C	2
BSAR Extension	New 4 Lane Arterial Road Extension - Market St to Colborne St E		\$ 10,200,000				C	3
Grey St Extension	New 2 Lane Arterial Road - James to Rowanwood		\$ 1,700,000				C	4
Oak Park Rd Extension	New 4 Lane Arterial - Hardy Road to Colborne St W			\$ 25,700,000			C	5
Wayne Gretzky Parkway Widening to 6 Lanes	Widen Existing Oak Park Rd to 4 Lanes - Hardy Rd to N of Hwy 403				\$ 5,900,000		C	
	Colborne St to Lynden Road				\$ 12,310,000			
Grey St Capacity Upgrade	Wayne Gretzky Pkwy to James			\$ 480,000			B	
	Rowanwood to Garden Ave			\$ 290,000			B	
Grey St / Elgin St Connection	New 2 Lane Road Connection across CNR (Between James and Rowanwood)				\$ 1,600,000		C	
Tollgate Road Widening to 4 Lanes	Widening St George Rd to King George Rd including bridge across Highway 403				\$ 1,900,000		C	
New Arterial Road Connection Between Hwy 24 and Wayne Gretzky Parkway	New 2 Lane Arterial Road Connection					\$ 7,330,000	C	6
Total Capital Cost		\$ 18,170,000	\$ 19,350,000	\$ 27,470,000	\$ 21,710,000	\$ 7,330,000		
Annual Capital Program Needs		\$ 3,634,000	\$ 3,870,000	\$ 5,494,000	\$ 2,904,000			

Notes

- The need and justification for the Downtown One-Way Street Conversion and associated Schedule B improvements has been provided through the Transportation Master Plan. Prior to implementation it is recommended that a Schedule C EA (Phase 3 and 4) be completed for the One Way Street Conversion to refine the specific design treatments and to ensure adequate opportunity for detailed consultation with downtown business owners.
- The EA for the Shellard Lane widening should be completed for the entire section, although implementation could be phased to match development in the area.
- A coordinated Provincial / Federal EA will be required to be completed for the portion of the BSAR extension that was previously recommended to use portions of the Glebe Farm lands. For the portion of the corridor between Market St and the Glebe lands, the City has obtained EA approval, but this may need to be updated prior to implementation.
- Grey St extension may also be implemented in conjunction with future development of the adjacent lands through the Draft Plan Approval process. This could affect implementation timing, and the share of costs to be borne by the municipality.
- Although the Oak Park Road Extension is recommended for implementation between 2016 and 2021, the EA study and preliminary design should be completed between 2007 and 2016. This would allow the route to be protected from future development pressure and would provide flexibility to construct improvements in phases, which could include a two lane roadway as an initial phase between 2016 and 2021. A phased implementation could spread the financial commitment across a longer timeframe reducing the annual budget commitment. The Highway 403/ Oak Park Road interchange will be required upon full build out of the industrial park and connection of the new Oak Park Road extension. For planning purposes this has been assumed to occur between 2021 and 2031.
- The new arterial road connection should be protected for and implemented in conjunction with the County as part of any new development to the north of Powerline Road. The need for this connection may occur earlier depending on overall land needs and development patterns in the City. The route may be identified through future Secondary Plan studies / OP Amendments, and approvals would be subject to the requirements of the Planning Act. Access to Highway 24 would be subject to MTO review and approval.
- Project Cost Estimates have been completed based on 2006 construction unit cost estimates, excluding property costs, engineering costs and other non-roadway utility costs that may be included with capital projects. Project Costs have not been adjusted to reflect the contributions funded through development charges or shared funding agreements between the City and the province/ or County. Many growth related projects would be eligible for funding through development charges, reducing the financial impact on the property tax base.

Table 6.4 - Implementation Plan Cycling & Trail Network
Trail Network Improvement Implementation Plan

Project	Description	Length	Unit Cost	Estimated Cost (2006\$) by Horizon Year				EA Schedule	Notes
				2007-2011	2012-2016	2017-2021	2022-2031		
Walking / Cycling Corridors									
Powerline Road Trail	Multi use trail	3.4	\$ 75,000	\$ 255,000				A	
	Paved Shoulder	1.3	\$ 197,000	\$ 256,100				A	
Balmoral / Ewing	On-road Bicycle Lane	2.1	\$ 26,500		\$ 55,650			B	
Tollgate / Fairview	Wide Shared Use Lane	4.2	\$ 560,000			\$ 2,352,000		B	4
Downtown / CNR Trail	Multi use trail	1.4	\$ 75,000			\$ 105,000			
Wayne Gretzky Parkway	Multi use trail	1.6		\$ 1,900,000				B	1
Memorial Dr Dunsdon St	Signed Route	2.3	\$ 1,725	\$ 3,968				A	
	Signed Route	3.8	\$ 1,725	\$ 6,469				A	
North Park / Sydenham Route	Signed Route	1.9	\$ 1,725	\$ 3,278				A	
	Multi use trail	1.0	\$ 75,000	\$ 75,000				A	
Charing Cross Route	On-road Bicycle Lane (new)	0.6	\$ 162,000	\$ 97,200				B	3
	Signed Route	0.5	\$ 1,725	\$ 863				A	
Elgin St Route	Signed Route	4.8	\$ 1,725		\$ 8,194			A	
Garden Ave	Paved Shoulder	3.0	\$ 197,000			\$ 591,000		A	
	On-road Bicycle Lane (widen)	1.5	\$ 262,000			\$ 393,000		B	2
St George St Route	Signed Route	2.1	\$ 1,725		\$ 3,623			A	
Ava Road Route	Signed Route	1.4	\$ 1,725		\$ 2,415			B	
Nelson / Pearle St Route	Signed Route	4.7	\$ 1,725	\$ 8,108				A	
BSAR / Glenwood Route	Multi use trail	1.7	\$ 75,000		\$ 127,500			A	2
	Signed Route	1.4	\$ 1,500		\$ 2,100			A	
Grey St Route	On-road Bicycle Lane (new)	0.5	\$ 162,000	\$ 81,000				B	3
	On-road Bicycle Lane (paint)	1.8	\$ 17,000	\$ 30,600				B	
Erie Ave	Wide Shared Use Lane	2.3	\$ 262,000			\$ 602,600		B	
	Paved Shoulder	0.7	\$ 197,000			\$ 137,900		A	
Mohawk St	Wide Shared Use Lane	2.7	\$ 262,000			\$ 707,400		B	2
Greenwich St Route	Signed Route	2.0	\$ 1,725		\$ 3,450				
Oak Park Road	Multi use trail	4.2	\$ 75,000			\$ 315,000		A	2
Gilkison St	Multi use trail	1.9	\$ 75,000			\$ 142,500			
Henry St	On-road Bicycle Lane (widen)	0.8	\$ 262,000	\$ 209,600				B	
	On-road Bicycle Lane (new)	2.5	\$ 162,000	\$ 405,000				B	2
Ballantyne Dr	On-road Bicycle Lane (widen)	2.0	\$ 262,000	\$ 524,000				B	
Mount Pleasant Rd	Signed Route	2.5	\$ 1,725		\$ 4,313			A	
Shellard Lane	On-road Bicycle Lane (new)	3.8	\$ 162,000		\$ 615,600			B	3
Conklin Rd	On-road Bicycle Lane (new)	2.1	\$ 162,000		\$ 340,200			B	3
TH & B Railway Trail	Multi use trail	5.0	\$ 75,000		\$ 375,000			A	
Neighbourhood Walking Cycling Trails / Connections									
Mayfair Neighbourhood	Signed Route	1.2	\$ 1,725	\$ 2,070				A	
	Multi use trail	2.3	\$ 75,000	\$ 172,500				A	
	On-road Bicycle Lane (paint)	2.4	\$ 17,000	\$ 40,800				B	
Wayne Gretzky Sports Centre	Multi use trail	0.6	\$ 75,000	\$ 45,000				A	
Grandwoodlands Park Loop	Signed Route	1.0	\$ 1,725		\$ 1,725			A	
	Multi use trail	0.5	\$ 75,000		\$ 37,500			A	
Roy Blvd / Mall Loop	Signed Route	0.6	\$ 1,725		\$ 1,035			A	
	On-road Bicycle Lane (paint)	1.5	\$ 17,000		\$ 25,500			B	
Brantwood Park Trail	Signed Route	1.3	\$ 1,500	\$ 1,950				A	
	Multi use trail	4.3	\$ 75,000	\$ 322,500				A	
Brier Park Route	Multi use trail	1.8	\$ 75,000		\$ 135,000			A	
	On-road Bicycle Lane (paint)	1.0	\$ 17,000		\$ 17,000			B	
Holmedale Neighbourhood	Signed Route	5.7	\$ 1,500		\$ 8,550			A	
Downtown	On-road Bicycle Lane (paint)	2.0	\$ 17,000	\$ 34,000				B	
Cayuga St Eagle St	Signed Route	1.2	\$ 1,725		\$ 2,070			A	
	Signed Route	0.4	\$ 1,725		\$ 690			A	
Grey St / Cainsville	Multi use trail	1.5	\$ 75,000			\$ 112,500		A	
Mohawk Park	Signed Route	0.6	\$ 1,725		\$ 1,035			A	
	On-road Bicycle Lane (widen)	0.4	\$ 262,000		\$ 104,800			B	2
Shellard Lane Neighbourhoods	Multi use trail	2.3	\$ 75,000		\$ 172,500			A	
	Signed Route	7.1	\$ 1,725		\$ 12,248			A	
Mary St Neighbourhood Route	On-road Bicycle Lane (paint)	1.3	\$ 17,000		\$ 22,100			B	
Total Capital Cost by Horizon Year				\$ 4,363,404	\$ 2,191,396	\$ 5,458,900	\$ -		
Annual Capital Program Needs				\$ 872,681	\$ 438,279	\$ 1,091,780	\$ -		
Total Length of New Facilities				120.0	km				

Notes

- 1) Based on Draft EA Report by Phillips Engineering, August 2006
- 2) Assumes construction at same time as road works, normal reconstruction, or rehabilitation
- 3) Assumes widening would occur with construction, therefore no curb or drainage relocation
- 4) Assumes widening to implement Shared Use Lane only - includes removal and replacement of curbs, drainage, light poles, etc

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Transit Improvement Implementation Plan

The implementation of the Transit Improvement Plan has been phased over a 15 year horizon, between 2007 and 2021. The initial 5 year period focuses on modest service improvements and fleet upgrades and the introduction of a north end satellite terminal. In the 5 to 10 year period, in addition to fleet replacement, additional buses will be required for service expansion. A new downtown terminal would occur in this period, along with enhanced marketing and promotional activities. Beyond 2016, additional buses will be required for service expansion, including the enhanced service in the downtown, along with ongoing marketing and route optimization.

Table 9 summarizes the recommended transit investments by horizon period.

Table 6.5 – Transit Improvement Implementation Plan

Project	Description	Estimated Cost (2006\$) by Horizon Year				Total Program Cost
		2007-2011	2012-2016	2017-2021	2022-2031	
Bus Replacement	28 Buses	\$ 9,000,000	\$ 3,600,000			\$ 12,600,000
New Buses For Service Expansion	6 Buses		\$ 1,350,000	\$ 1,350,000		\$ 2,700,000
Existing Terminal Upgrades + Mall Terminal		\$ 1,700,000				\$ 1,700,000
New Downtown Terminal & Upgrades to Existing			\$ 3,800,000			\$ 3,800,000
Upgrade Stops / Shelters		\$ 200,000				\$ 200,000
Repairs to Transit Service Centre		\$ 900,000	\$ 800,000			\$ 1,700,000
Fare Box Replacement		\$ 800,000				\$ 800,000
Marketing / Promotion / Route Optimization		\$ 200,000	\$ 350,000	\$ 350,000		\$ 900,000

Total Capital Cost by Horizon Year \$ 12,800,000 \$ 9,900,000 \$ 1,700,000 \$ - \$ 24,400,000

Annual Capital Program Needs \$ 3,200,000 \$ 1,980,000 \$ 340,000 \$ -

Summary of Capital Expenditures

Table 6.5 provides a summary of the capital expenditure plan for the key capital infrastructure recommendations contained in the Transportation Master Plan Update. Approximately 20% of the program is directed towards investments in the City's transit system, 10% of the capital expenditures are required for walking and cycling trail expansion, and 70% of the program budget is for road network improvements. The annual transportation program investment is estimated at approximately \$6.8 million per year over the initial 15 years of the plan; not including any potential funding that may be obtained through development charges, provincial / federal funding programs, or other sources.

**Table 6.6 – Summary of Capital Expenditures
Capital Expenditure Plan**

Improvement Plan	Funding Allocation	Estimated Cost (2006\$) by Horizon Year				Total Program Cost
		2007-2011	2012-2016	2017-2021	2022-2031	
Transit Improvements	20%	\$ 12,800,000	\$ 9,900,000	\$ 1,700,000		\$ 24,400,000
Cycling and Walking Trails	10%	\$ 4,363,404	\$ 2,191,396	\$ 5,458,900		\$ 12,013,700
Road Network Improvements	70%	\$ 18,170,000	\$ 19,350,000	\$ 27,470,000	\$ 21,710,000	\$ 86,700,000

Total Capital Cost by Horizon Year \$ 35,333,404 \$ 31,441,396 \$ 34,628,900 \$ 21,710,000 \$ 123,113,700

Annual Capital Program Needs \$ 7,066,681 \$ 6,288,279 \$ 6,925,780 \$ 4,342,000

6.2 Transportation Plan Monitoring & Review

The success of long-range plans depends on the ongoing monitoring of relevant conditions, actions, and impacts. The City of Brantford must remain aware of its progress toward key objectives, so that it can add, modify, or delete priorities as needed.

Through the study, the City has adopted a transportation strategy and laid out a plan to attain the particular transportation goals associated with it. As identified in the plan, a number of transportation capital works projects would be required, along with an aggressive program of other initiatives. Many of these components of the plan are based on prevailing attitudes of Brantford residents and forecasted future travel demands over the transportation network based on future land use development patterns. The Plan must be able to respond to changes in these factors that might affect demand or the emphasis placed on alternative modes of transportation.

Ongoing monitoring would also be necessary in determining the effectiveness of the initiatives identified in the plan in meeting the adopted strategic direction. Ideally the performance measures can be tied to broader municipal management measures such as, the Municipal, Performance Measurement Program (MPMP).

A Transportation Master Plan is not intended to be a static document and must retain some measure of flexibility and be adaptable to changes in the travel behaviour, and other conditions in the City. As growth and economic conditions change over the next few years the City should consider the need to update this Master Plan to take advantage of or reflect changes beyond the scope of this study to address. This can be best accomplished through ongoing monitoring of relevant conditions and periodic updates to the Travel Demand Model and Master Plan.

The following recommendations should be considered in the ongoing monitoring of transportation conditions in the City.

6.2.1 Transportation Model & Data Management Program

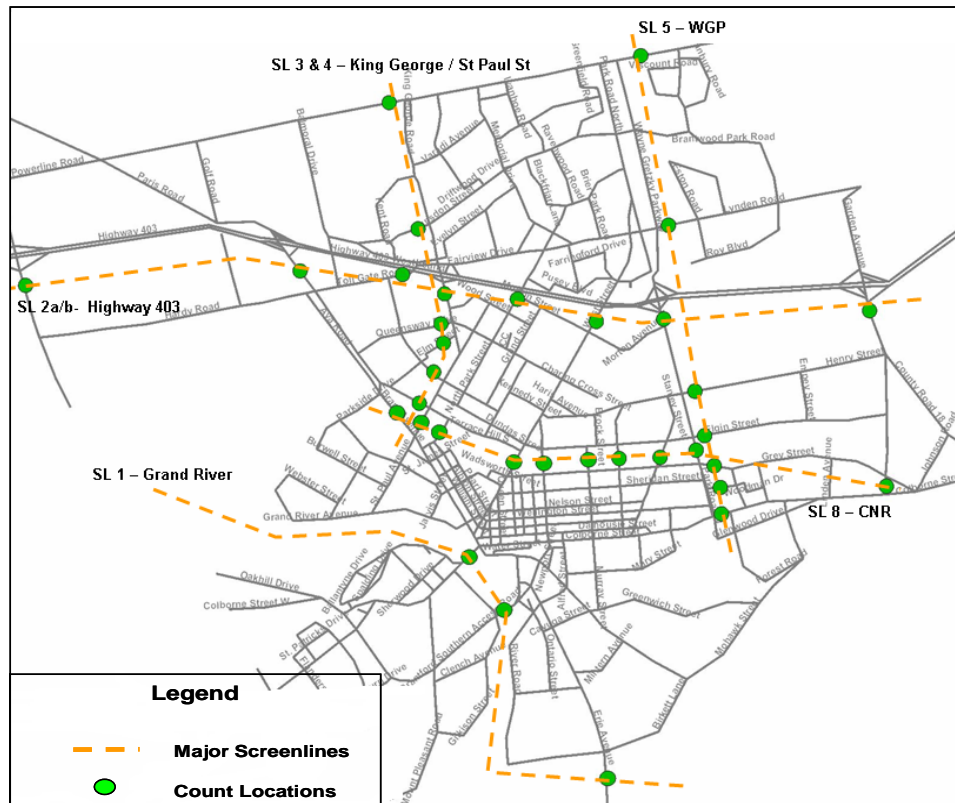
To facilitate the ongoing assessment of transportation conditions and updating of this Transportation Master Plan, the City should maintain a traffic demand forecasting model to assist in the development of forecasts of travel demands within and to/from the City.

The model should be updated at least every two years, using traffic count data from a screenline count program, and a review of the model should be completed every five years to determine the need to update and recalibrate the model parameters based on available data from the Census and Transportation Tomorrow Survey (TTS). This first update of the model should be completed upon receipt of the final TTS data from the 2006 / 2007 survey, currently scheduled for release by the end 2007. Accordingly the City should identify approximately \$50-75,000 in their 2007/2008 budget to complete this update.

A key aspect of the model review and update process is the regular schedule of traffic counts throughout the City. It is recommended that a two part count program be developed, as follows:

1. Cordon Count Program – As part of the validation process for the transportation model, base year forecasts from the model are compared to observed traffic counts at a series of traffic count stations on the key screenlines throughout the City. By undertaking a regular cordon count program at these screenline stations, any updates to the model can be readily validated, plus the City can monitor growth trends on these key roadways as an measure of how the road network is performing and how growth is affecting travel demands. The screenline count program should be undertaken every year at the stations illustrated in **Figure 6.11**. The estimated cost of this is approximately \$10,000.

Figure 6.11 – Screenline Count Stations



2. Intersection Traffic Count Program – The City strives to undertake traffic counts at every signalized on a yearly basis. In addition, traffic counts are undertaken every year by the city at various locations to investigate operational issues and monitor intersection performance. While the City has completed a number of counts over the past 3 years, a potential improvement to current practice would be to identify a series of intersections to count on a regular basis in addition to those that are already signalized. Each intersection on key corridors should be counted at least once every 3 years, unless there has been a significant change in the area, such as new development or a new road improvement that could dramatically change traffic patterns. Ad hoc counts will still be required at some intersection to address inquiries or operational issues, but an established intersection count program would allow improvement management of count activities and would assist with model updates and monitoring of prevailing traffic patterns and trends. An estimated budget of \$15,000-\$20,000 per year should be established for this count program.

The City should also continue to participate in the Transportation Tomorrow Survey (TTS), undertaken every 5 years, to provide an update of transportation patterns in the City and surrounding area and to ensure that up to date information is available to assess changing transportation trends in the community.

6.2.2 Transportation System Monitoring & Reporting

The Transportation Master Plan should be monitored on an annual basis, taking into consideration the following:

- the results of the annual traffic count program at key screenlines and on key roadways;
- the results of the annual traffic count program at selected key intersections and routes;
- new trends and technologies in traffic operations and management;
- private sector initiatives in implementing traffic demand management measures;
- the status and progress towards achieving transportation system performance targets;
- the status of transportation related provincial initiatives, policies and funding programs;
- population growth and land use changes within the community; and
- the need to re-assess, amend or update components of the Transportation Master Plan.

The Director of Transportation should provide a Transportation Perspective Report to Council every 5 years, (scheduled for 6 months following the release of published TTS data), to advise council on recent trends with respect to transportation patterns within the City, and the need to update the Transportation Master Plan. Some the areas identified for the monitoring program are highlighted below.

Transportation Mode Shares

The infrastructure requirements identified in this Master Plan are based on achieving a 10% reduction in auto usage over the 25 planning horizon. While it is recognized that the achievement of these targets will take time, the City should monitor progress towards achieving these targets so that implementation measures can be adjusted as required.

The TTS data provides the most comprehensive data on the overall travel patterns in the City and should be used as the primary source for this review. Statistics Canada Census information also provides some data through the Place of Work data to identify travel habits for work trips.

In addition to the formal TTS survey, the City should consider regular updates to the Public Attitude Survey undertaken as part of this Transportation Master Plan. Ideally these would be conducted around the mid point of the 5 year plan review cycle to provide input into the plan review and update process. Not only will this survey provide a snapshot as to overall travel trends in the City between successive TTS surveys, but the input on public attitudes towards transportation choices and barriers could be a valuable tool in understanding how the public's perceptions of transportation are changing over time, and to gauge the effectiveness of new programs implemented as part of this plan. The survey should capture a sufficient sample size to be accurate within +/-5% at a

confidence level of 95%. As part of the survey undertaken for this survey, a sample of 403 residents participated in the survey. The estimated cost for this type of survey is \$5000.

The following mode share targets should be achieved over the life of this plan.

Table 6.7 Travel Mode Share Targets by Horizon Year

Mode of Travel	Existing Mode Share % of Trips	2016 Target Mode Shares % of Trips	2031 Target Mode Shares % of Trips
Auto Driver	81%	77%	73%
Auto Passenger	9%	10%	10%
Transit	3%	4%	6%
Walk/Cycle	6%	8%	10%
Other	1%	1%	1%
Total	100%	100%	100%

Transit Monitoring

Citywide monitoring of transit use should also continue on a periodic (e.g., 5-year) interval using the TTS data and supplementary rider surveys and boarding counts to assess specific route performance. Monitoring of the transit system involves three components:

- The City of Brantford needs to continue to monitor individual route performance against established performance indicators on an ongoing basis and make minor adjustments accordingly;
- System performance should be based on criteria such as ridership increases, passengers per capita, percentage of accessible fleet, average age of fleet, and service provided per capita. Performance should be monitored and evaluated on an annual basis and required adjustments made; and
- Periodic (i.e., 5-year) comprehensive transit service reviews should be completed and should involve thorough assessments of system-wide and route performance.

Downtown Parking Monitoring

Progress towards the implementation of the downtown parking management program identified in this Master Plan will need to be monitored on a regular basis. In recent years the City had commissioned a downtown parking study to examine parking utilization within the downtown core. This should continue as regular review, following completion of the Detailed Downtown Parking Plan identified in this Master Plan.

A number of the components of the plan include recommendations with respect to the provision of new parking facilities, in the downtown area. Within this context the City should monitor progress in terms meeting the targets outlined in Chapter 5 in terms of per capita parking spaces within the downtown; the overall mix of parking between municipal lots, private lots and on street parking; and progress on the implementation of new municipal lots.

Ongoing monitoring should also be undertaken to assess the effectiveness of the parking strategy at supporting the transit and travel demand initiatives identified in the

plan. Particular attention should be paid to the mode share of trips to, from, and within the downtown

Walking & Cycling System Monitoring

The policy and infrastructure recommendations geared to improving cycling and walking in the City are a critical component of the Master Plan. By monitoring success in achieving or implementing these recommendations compared to the travel mode share targets, the City can monitor the effectiveness of the program and use this knowledge to facilitate future updates to the Master Plan. Based on the recommended walking and cycling plan developed, a few key indicators have been established to benchmark progress towards meeting these objectives.

Key Walking Cycling Indicators

- Share of Peak Hour Trips by Walking and Cycling (target 10% by 2031)
- Share of short trips >5 km by walking / cycling
- Length of Multi-use trail system (km)
- Length of On Road Cycling Lanes (km)
- Number / Length of New Cycling / Walking Links completed by Year
- % of Major Arterial Roads with walking / cycling facilities on both sides (% in terms of km of length)
- % of Collector / Local roads with sidewalks on at least one side (% in terms of km of length)
- % of municipal facilities (community centres, buildings, etc) with bicycle racks
- % of sidewalks that are accessible
- % of traffic signals that accessible cross walks

No targets have been developed for many of these specific indicators; however the City should monitor progress to improve upon these aspects of the walking and cycling network in the City.

6.2.3 Transportation Plan Review & Updates

As noted previously, a Transportation Master Plan is not intended to be a static document and must retain some measure of flexibility and be adaptable to changes in the travel behaviour, and other conditions in the City.

It is recommended that the Transportation Master Plan be reviewed and/or updated every 5 years, in conjunction with statutory requirements to review the Official Plan. Given the close integration between land use planning, land use policy, and transportation; any updates to the Transportation Master Plan should be undertaken in conjunction with the Official Plan Update, as was done with this study.

As public consultation is a key input to the completion of a strategic Transportation Master Plan, all future TMP updates should include a proactive and comprehensive public outreach program featuring formal Public Consultation Centres, stakeholder workshops, and other innovative outreach strategies to solicit input from a wide cross section of the Community.

6.3 Implementation Policies

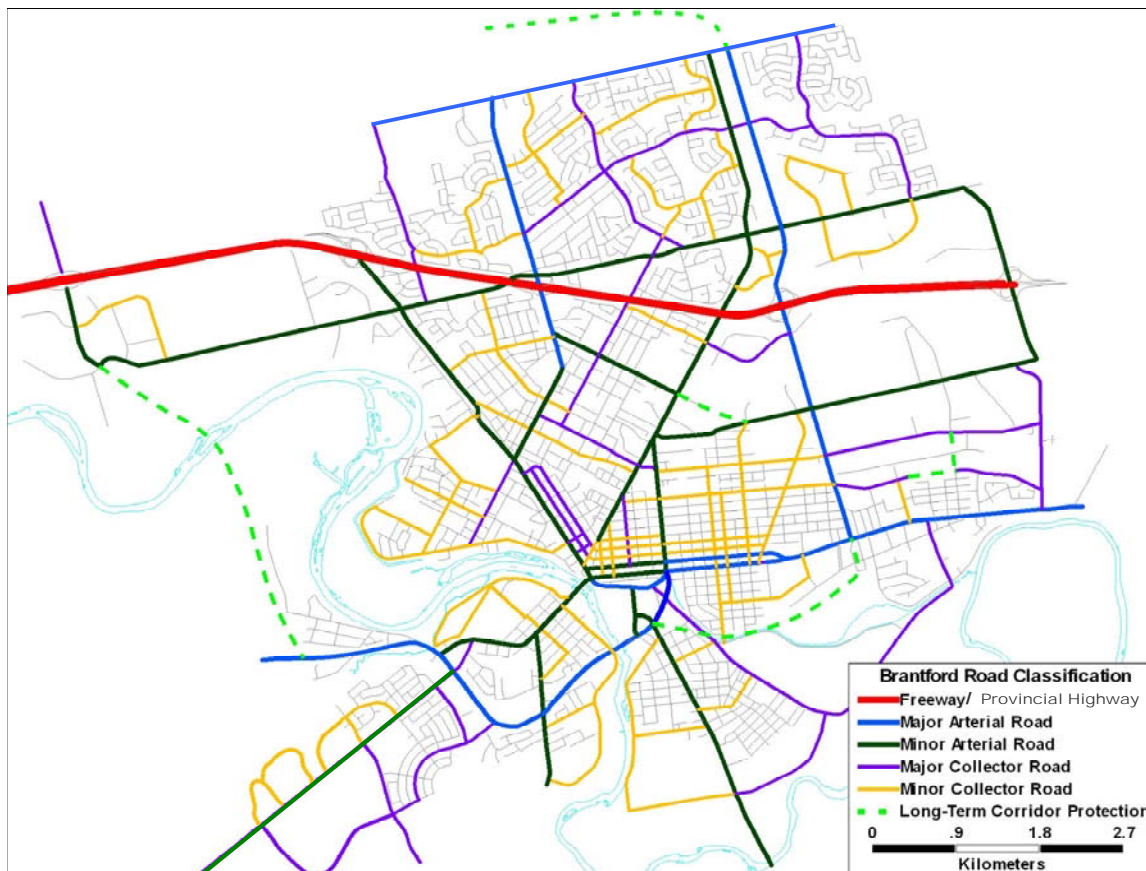
Many of the Transportation Master Plan recommendations are implemented through policies within the City's Official Plan. This ensures that new developments in the City are planned to respect and comply with the transportation objectives of the Master Plan.

Other recommendations are also provided as recommendations aimed at implementing best practices within the operational policies used by the City to manage their programs and infrastructure.

6.3.1 Roadway Classification Policies

The functional classifications of roads within the City, with the exception of Local Roads, are illustrated on **Figure 6.12** and are recommended for implementation in Schedule 5.1 of the Official Plan. Incorporation of new roads (excluding Local Roads), or the reclassification of existing roads shall require an amendment to this Official Plan.

Figure 6.12 – Roadway Classifications



Provincial Highways

The following general policies shall apply to Provincial Highways:

1. There are two provincial highways located within the City – Highway 403 and Highway 24. Development which falls within the Ministry of Transportation's permit control area is subject to the requirements of the Ministry of Transportation.
2. New entrances or the upgrading of entrances within the Ministry of Transportation's permit control area of a provincial highway shall be subject to the approval of the Ministry of Transportation. This may increase the access and traffic signal spacing requirements outlined for Major Arterial, Minor Arterial, Major Collector, Minor Collector and Local Roads which intersect with a provincial highway.
3. The City and the Ministry of Transportation will work cooperatively with respect to the planning of land development and associated access connections within the Ministry of Transportation's permit control area adjacent to all provincial highways and interchanges within the City, to protect the future capacity and operation of both the provincial highway network and the City's transportation facilities.

Major Arterial Roads

The following general policies shall apply to Major Arterial Roads:

1. A Major Arterial Road is designed to carry large volumes of intra municipal and inter regional traffic through the City in association with other types of roads;
2. The basic minimum right of way widths for Major Arterial Roads shall range from 30 to 40 metres, with 35 metres being the preferred minimum;
3. The right of way widths of Major Arterial Roads at major intersections should include left turn lanes. Right turn lanes may also be required to be provided at major intersections;
4. Traffic signals will be well spaced and at least 300 metres apart;
5. Major Arterial Roads will generally serve major commercial and industrial areas and driveway access will be controlled.
6. New Major Arterial Roads should generally be organized in a grid pattern with minor arterials and collector roads to provide direct routing for buses and pedestrians;
7. Where a Major Arterial Road has existing driveways at a density of 25 entrances per kilometre or greater, a centre left turn lane may be required to be provided, and
8. Residential development shall have controlled access onto Major Arterial Roads. Creative alternatives along new major arterials that support urban design objectives should be encouraged.

Minor Arterial Roads

The following general policies shall apply to Minor Arterial Roads:

1. A Minor Arterial Road is designed to carry moderate volumes of intra municipal and inter regional traffic through the City in association with other types of roads;
2. The basic minimum right of way widths for Minor Arterial Roads shall range from 26 to 30 metres;

3. Traffic signals should be spaced at 300m, but spacing may be reduced to 250 m if circumstances warrant;
4. Minor Arterial Roads will generally serve residential, commercial and industrial areas and driveway access will be permitted but controlled;
5. Minor Arterial roads should generally be organized in a grid pattern with collector roads to provide direct routing for buses and pedestrians;
6. New residential development shall have controlled access onto Major Arterial Roads. Creative alternatives along new major arterials that support urban design objectives should be encouraged; and;
7. On street parking may be permitted in some cases, where roadway width is not required to serve through capacity demands.

Major Collector Roads

The following general policies shall apply to Major Collector Roads:

1. A Major Collector Road is designed to carry moderate volumes of traffic within and through residential areas and connecting these areas to Minor Arterial Roads, Major Arterial Roads and Freeways;
2. The basic minimum right of way widths for Major Collector Roads shall range from 24 to 26 metres, with 26 metres being the preferred width. Where existing Major Collector Roads of less than this standard presently exist, and widening to achieve this standard may not be practical, a lesser right of way may be accepted by the City, where it is demonstrated that this preferred minimum is not attainable;
3. Traffic signals may be placed at intersections with higher classification roads, intersections with other minor collector roads will typically be stop controlled;
4. Major Collector Roads primarily serve residential areas but may also serve commercial and industrial areas;
5. Major collector roads should generally be organized in a grid pattern to provide direct routing for buses and pedestrians;
6. Access is generally permitted for any property having direct frontage onto a major collector road, although entrance location and spacing may be controlled within a corridor; and
7. On street parking may be provided in some cases.

Minor Collector Roads

The following general policies shall apply to Minor Collector Roads

1. A Minor Collector Road is designed to carry low to moderate volumes of traffic within residential areas;
2. The basic minimum right of way width for Minor Collector Roads shall be 20 metres;
3. Traffic control at intersections is generally by stop signs;
4. Minor collector roads generally serve residential areas and have fronting residential properties;
5. Minor collector roads should generally be organized in a grid pattern to provide direct routing for buses and pedestrians;

6. Access is generally permitted for any property having direct frontage onto a minor collector road; and
7. On street parking is permitted in most cases.

Local Roads

The following general policies shall apply to Local Roads:

1. A Local Road is designed to carry low volumes of traffic from abutting properties to Minor Collector, Major Collector and Minor Arterial Roads;
2. The basic minimum right of way width for Local Roads shall be 20 metres. Although a 20 metre right of way width is the preferred minimum, it is recognized that Local Roads of less than this standard presently exist and widenings to achieve this standard may not be practical, and a lesser right of way width may be accepted by the City where it is demonstrated that the foregoing standard is not attainable;
3. Additional right of way widths may be required at intersections;
4. Direct access to Local Roads from abutting properties shall be permitted;
5. Intersections of Local Roads with Freeways and Major Arterial Roads shall be discouraged in the design of new development;
6. Local Roads shall be designed to discourage through traffic and provide direct connections to minor arterial and collector roads; and
7. Design standards for Local Roads shall be established by the City.

Long Term Corridor Protection areas shall be preserved so that the corridors will be available to meet the long term transportation demands of the City. When the Long Term Protection Corridor are constructed and open to traffic they may be considered as either Major Arterial or Minor Arterial Roads without amendment to the Official Plan.

Rail Corridors

8. Council shall encourage the development of rail facilities in accordance with the facilities shown on Figure 6.9 and Schedule 5.1 of the Official Plan.
9. Conflicts between rail facilities and adjacent land uses will be minimized, wherever possible.
10. Coordination of the City's rail and road system shall be encouraged in order to provide for the efficient functioning of both transportation systems.
11. Council shall cooperate with the appropriate agencies and rail companies with respect to the location, planning, design, construction and safety of new rail facilities.
12. Where rail facilities are to be relocated or abandoned, Council shall ensure that the lands are redeveloped for uses appropriate to the City's overall land use and transportation plans. Where feasible, the City shall endeavour to acquire abandoned rail lines.
13. Council shall encourage the retention of the rail bridges across the Grand River once the rail lines have been abandoned and encourage their use as open space linkages, and as connections across the Grand River in the Bikeways and Trails Network.
14. Council shall cooperate with the appropriate agencies and rail companies to provide grade separated rail crossings, wherever possible.

15. The provision of rail facilities to industrial areas requiring these facilities shall be permitted wherever such facilities do not create an impact on any residential areas.

6.3.2 Policies & Programs to Support Walking and Cycling

To reach the Walking and Cycling goals outlined in this Transportation Master Plan Update, a comprehensive pedestrian and cycling network plan has been developed for the City (see Chapter 5). These walking and cycling trial plans have been developed based on a review and update to the “Multi-Use Trail/Bikeway Implementation and Design Plan”, in March 2000. To support the implementation of this recommended network, a Bikeways and Trails Network Plan should be incorporated as a new schedule to the Official Plan.

To support this plan and the strategy objectives, a number of walking and cycling policies and best practices will also need to be implemented. These include:

Leadership

The City of Brantford can promote walking and cycling in the community by setting an example as an employer and facility owner;

1. The City should encourage walking and cycling among its own employees with appropriate infrastructure at all municipal work sites;
 - i. secure bicycle racks / shelters,
 - ii. showers and change rooms,
 - iii. sidewalk connections between buildings and municipal sidewalks.
2. The City should develop an incentive program to encourage employees to cycle or walk to work at least one day per week that could include;
 - i. Payment of cycling mileage expenses for work related travel,
 - ii. Provision of a pool of city owned vehicles for use by office staff for daytime business travel,
 - iii. Provision of taxi vouchers for an emergency ride home for employees who cycle or walk to work,
 - iv. Provision of some transit day passes to employees who cycle or walk to work for use on poor weather days,
 - v. Flexible work hours for employees who regularly walk or cycle to work
3. As the owner and manager of a significant number of public facilities, the City can make certain that all public facilities (particularly transit stations and community centres) are pedestrian and bicycle friendly. This can encourage non-motorized travel to those facilities and set a leading example for other property owners for how to make their facilities accessible for pedestrians and cyclists. At a minimum this should include:
 - i. Provision of secure bicycle racks / shelters and
 - ii. Provision of direct sidewalk connections between buildings, activity centres, and municipal sidewalks.

4. The City should actively promote cycling / walking through a series of initiatives, such as:
 - i. The development of promotional information for all residents and visitors that promotes the personal benefits of walking and cycling. Information should be targeted to particular groups to help messages reach the residents who are most likely to walk or ride a bicycle. Information to schoolchildren should put strong emphasis on safety and identifying safe routes to schools. Information for commuters can identify cycling routes and public bicycle storage / locker facilities. Information to drivers should focus on respect for other road users, and safety information about sharing road space with bicycle lanes.
 - ii. Create a *Multi-Modal Access Guide*, which includes accurate and up to date maps and other information (i.e. type of trail, trail amenities, trail parking lots, etc), and on how to walk and cycle to a particular destination.
 - iii. Create *Tourist* promotion materials highlighting cycling and walking facilities and access to key attractions in the City.
 - iv. Development of a walking and cycling safety guide, covering general safety, rules of the road, trail courtesy, etc;
 - v. The development and coordination of promotional campaigns to encourage cycling and walking (i.e. Bike to Work week, Clean Air Day, etc);
 - vi. Support a Bicycle-Friendly and Pedestrian-Friendly Business Awards program;
 - vii. Assistance programs for employers and businesses to provide high or medium security cycling racks / storage facilities at major destinations.

Development and Maintenance of Trail Networks

A barrier free and comprehensive network of trails, and bicycle lanes will make travel by foot and bicycle more attractive for Brantford residents.

5. Where feasible, a system of pedestrian walkways, bicycle paths and/or mobility aid paths will link existing and proposed activity centres throughout the City. The linked system may be provided in parklands and open space in both new development and redevelopment areas.
6. Council will maintain a Bikeways and Trails Network Plan to establish a comprehensive network of bikeways and trails throughout the City to connect residential, institutional, commercial and industrial areas. The Bikeways and Trails Network Plan may include the following:
 - i. a concept plan that will guide the implementation of a comprehensive bikeways and trails network;
 - ii. design and maintenance standards for the construction and operation of the network;
 - iii. guidelines for the installation of appropriate signage and bicycle parking facilities;
 - iv. a publicity and education program;
 - v. a financial plan; and
 - vi. a phasing and implementation schedule.

To be effective, trails and sidewalks must be maintained regularly during all seasons, including surface treatments, signing, trail amenities, and pavement markings. Specific design and maintenance recommendations include:

7. New trails should be designed to be barrier free, with appropriate ramp down treatments leading to crosswalk locations.
8. Trail signage should be provided along each route, and key destinations that can be accessed from the trail should be signed at key staging areas, crossing or intersection locations, and at key trail links. Trails should have regular route marking along their length to provide assurance that users are still on the trail, particularly where the type of trail changes (i.e. multi-use trail transition to a signed route)
9. Trail staging areas should be developed at key points along the trial network and at key trail links that include parking facilities and basic user amenities such as trail maps, washrooms or portable toilets (where possible), secure bicycle racks, and shelters.
10. Benches and rest stops should be provided at regular intervals throughout the system. Key locations could include trail staging areas, trail intersections / nodes, key parks or open spaces along a trail route, or at other points of interest along the trail.
11. The City should encourage active and regular enforcement of parking restrictions on roadways with cycling facilities.
12. Trails and on road cycling facilities should feature appropriate traffic control devices to direct pedestrians and cyclists, without conflicting with auto users. Traffic control (signs) for trail / pedestrian users are typically smaller but conform to standard traffic signs designs (colour, shape, etc). An inventory of trail related signing should be maintained and all signs should be inspected at regular intervals to ensure that signs remain visible over time.

Walking / Cycling Policies in New Development Areas

13. Consideration will be given to providing safe and secure pedestrian, bicycle and mobility aid movements in new development and redevelopment proposals.
14. For development of secondary plan areas, a Master Cycling and Walking Plan for the area shall be developed to identify cycling and walking infrastructure and amenity requirements, define trail and roadway right-of-ways, and provide connections to existing trail network elements;
15. Encourage secure bicycle parking for all new multi-family residential buildings and bicycle parking and shower/change facilities for larger non-residential developments (e.g. more than 50 employees).
16. Create a cash-in-lieu program so developers can chose to provide money to a municipal fund for non-motorized trail if on-site non-motorized facilities are unreasonable.
17. Council will encourage the provision of accessible and conveniently located bicycle parking facilities at all public use buildings (commercial, industrial, institutional, and recreational) having a GFA greater than 2000 m² or where development generates the demand for such facilities;

18. New developments should be designed to emphasize pedestrian accessibility between the street and the front of buildings, and buildings should be located close to the street (where feasible) to encourage walking;
19. Work with developers to provide pedestrian amenities such as street lighting, benches, and parks.
20. Trail and sidewalk facilities should be planned to encourage crossing locations at intersections rather than mid block;
21. All collector and arterial roadways in new development areas shall provide sidewalks on both sides of the road,
22. Local roads shall provide sidewalks on at least one side of the road,
23. Connections between local streets and neighbourhood parks, schools, natural corridors and other open space areas should be provided in all new subdivision development plans.

Development and Maintenance of Sidewalk Networks

A barrier free and comprehensive network of sidewalks will make travel by foot more attractive for Brantford residents and is a key factor in supporting transit usage. To be effective, sidewalks must be maintained regularly during all seasons, including surface treatments, snow clearing, pavement markings at crosswalks, traffic control devices, and ramp down treatments. Specific design and maintenance recommendations include:

24. All major arterial roads in the City that provide direct access to properties should have walking facilities on both sides of the road. This can be achieved through a sidewalk on each side, or a sidewalk on one side with a multi-use trail on the other side of the road, or multi-use trails on both sides of the road;
25. Major arterial roads that have limited or controlled access should provide walking facilities (sidewalk or multi-use trail) along at least one side of the road;
26. Develop a pedestrian sidewalk network that maintains a maximum walking distance of 400 metres to all transit stops, for areas served by fixed route transit.
27. The City should develop a detailed Sidewalk Master Plan and annual sidewalk construction program to retrofit existing arterial and collector roads with sidewalks and should develop an implementation program that prioritizes new sidewalk construction for roadways with :
 - i. Existing schools or community centres,
 - ii. Existing observed walking demand,
 - iii. Existing / planned transit routes, and
 - iv. In the downtown core area.
28. All new sidewalks shall be designed to be accessible.
29. Existing sidewalks in the downtown area should be retrofit to ensure full accessibility, and key pedestrian crossing locations should feature audible pedestrian crossing devices.

Implementation & Monitoring

30. Council may establish a Pedestrian and Bicycling Advisory Committee to carry out the following activities related to the establishment of a bikeways and trails network:
 - i. advise Council and Committees of council on cycling and pedestrian issues, projects, policies and programs;
 - ii. monitor the implementation of the Bikeways and Trails Network;
 - iii. participate in cycling and walking initiatives and programs; and
 - iv. periodically report to Council regarding its activities.
31. Council will encourage other agencies with jurisdiction over routes shown on the Bikeways and Trails Network Plan to implement these routes through the review of planning documents, development proposals, capital works programs and other local initiatives.
32. Council will work in cooperation with adjacent municipalities to ensure that inter regional connections for pedestrians and cyclists are provided.
33. City Staff will facilitate ongoing consultation with adjoining municipalities, conservation authorities, school boards and other agencies and community groups (i.e. "Active and Safe Routes to School" (ASRTS) & "Walk to School Routes") to promote cycling awareness and opportunities
34. City staff and Council will continue with ongoing consultation with agencies responsible for publicly owned lands (i.e. federal and provincial governments) to establish alignments and priorities for extensions to the pathway network within and beyond the City.
35. Council will provide an annual report on the status of the Bikeways and Trails Network Plan, including links completed each year
36. Council will consider the need for revisions to the Bikeways and Trails Network Plan every five years.
37. The City should establish new cycling lanes, trails, and/or sidewalk (where recommended) in conjunction with new transportation construction and reconstruction projects, unless significant justification is provided otherwise.
38. As a priority, identify and modify as required any operational design practices which may impede cycling on roadways, including intersection geometry, location and type of on-street drainage. Implement bicycle compatible construction practices (i.e. bicycle friendly sewer grates with openings perpendicular or diagonal to the direction of travel as opposed to parallel sewer grates that can trap bicycle wheels).

Integration of Cycling and Other Modes

39. Explore opportunities to providing bicycle racks on buses, particularly on routes serving student populations, and large employment centres.

6.3.3 Downtown Parking Policies & Programs

While the City owns and manages municipal lots, it also regulates the provision of all private parking spaces through the comprehensive Zoning Bylaw 160-90. The parking standards of this Bylaw can be used to manage the supply of parking in ways that may provide better balance between automobile use and other modes of travel.

In conjunction with the Downtown Parking Strategy outlined in Chapter 5, the following policies and best practices should be considered with the Official Plan and operational policies of the City.

1. Review current parking by-law requirements to ensure that parking standards in the Zoning By-law accurately represent needs by specific use and do not result in excess parking supply. Consider adopting lower minimum parking standards for the downtown and along major transit routes and consider the use of maximum parking standards for developments in the downtown core, where parking in municipally controlled lots should be encouraged.
2. Parking standards, including facilities for disabled persons and reduced standards for senior citizens housing, will be established for all land uses in the implementing Zoning Bylaw and adequate off street parking shall be provided for new development or redevelopment in accordance with these standards.
3. On street parking facilities shall only be permitted where they do not interfere with traffic flows or create traffic hazards.
4. Where the City provides centralized off street parking facilities within the Core Commercial Area designation, Council should enact By laws for the following purposes:
 - i) To establish bylaws which reduce on site parking requirements in accordance with Section 7.3.2.4 of this Official Plan; and/or
 - ii) to establish cash in lieu of parking by laws, pursuant to, the Planning Act; and/or
 - iii) to establish benefiting assessment areas; pursuant to the Municipal Act.
5. The City should discourage construction of private surface lots and provide developers in the downtown with a “cash in lieu” program to reduce privately operated parking supply in the downtown. Provision of cash in lieu of parking should be encouraged within the core Commercial Area, subject to the following;
 - i) The subject site is within 400 m of an existing or planned off site parking facility that has capacity to accommodate projected parking demands;
 - ii) Sufficient parking and loading areas for delivery / service vehicles are provided on site or in established on street loading zones;
 - iii) The development of the subject site without the required on site parking facilities is compatible with adjacent existing and proposed land uses with respect to built form or intensity of utilization of the site;
 - iv) The applicant enters into a financial agreement with respect to the cash in lieu of parking contributions; and

- v) Cash In lieu of on site parking requirements will only be considered for multiple family residential developments within the Core Commercial Area if the developer can negotiate and secure sufficient off site parking to accommodate the needs of the development.
 - vi) Use funds raised from “cash in lieu” program to invest in construction of municipal off street parking lots
6. The City should develop a detailed downtown parking plan to provide new municipal parking lots at strategic locations in the downtown to maximize accessibility to employment generators, transit routes / stops / terminals, and the University Campus area.
 7. In conjunction with the supply of new municipal parking spaces in the downtown, the City should establish a preferential parking plan (Carpool/Vanpool Parking Plan) to support carpooling for downtown employment trips. The number of spaces should total about 5-10% of total municipal parking supply and should be distributed among all lots. These spaces should be located in the most convenient location within the lot with clear visibility and signing. Reduced parking rates could also be offered to attract carpoolers.
 8. The longer term pricing strategy for downtown parking should be structured to support alternative modes of transportation, including transit, walking and cycling. To achieve this, higher long term (all day) parking rates should be incorporated in the downtown. Current rates are \$5.00 per day with hourly parking charged at \$0.60 per hour. Monthly passes are offered at \$30.00 per month, the equivalent of 6 days of all day parking.
 9. The City should treat public and private parking as a limited resource, but this must be balanced with the need to encourage economic activity in the downtown. The city should consider increasing the hourly parking rate, above the current \$0.60 per hour, but implement a ½ hour free parking at all on street parking spaces and short term spaces in municipally controlled lots. Parking revenue should be used primarily for parking management to control how the public and permit parking supply is used.
 10. Consult with businesses and Business Improvement Associations (i.e. Brantford Brant Chamber of Commerce, The Brantford Downtown BIA, etc.) prior to initiating any changes to parking operations, and include these key stakeholders in the development of a detailed longer term parking plan for the downtown.
 11. Investigate alternative payment methods, such as pay and-display, for on-street parking and off street parking in surface lots. This can improve turnover, optimize parking supply, and improve sidewalk appearance. Pay and display units are estimated to cost between \$10, and \$15,000 per unit.
 12. Monitor actions by other municipalities and the Province regarding possible changes to municipal Act to allow charging a levy on private parking spaces.
 13. Recognize the needs of the tourism industry by providing for visitor parking in the vicinity of key downtown attractions, and develop a standby parking area or staging area for tour buses in the vicinity of the Sanderson Centre (an on street bus staging area on Darling Street, behind the building could accommodate 3-4 buses.)
 14. Establish urban design guidelines for parking lots and structures in the downtown that enhance the public/pedestrian realm and balance aesthetics and pedestrian/auto accessibility.

15. Provide sufficient level of parking monitoring and enforcement, particularly in the downtown fringe areas to ensure that parking problems do not migrate to adjacent neighbourhoods.

6.3.4 Policies & Programs to Support Transit

For transit to be successful it must be attractive to the user and competitive with the automobile. To achieve this, transit services must provide competitive travel times, improved reliability of schedules, increased service options and enhanced station facilities at each point along the trip from home to destination and back.

The full suite of policies to encourage increased transit use include a number of policies that are included in the TDM, parking and Walking / Cycling sections of this report. The policies within the transit section of the report outline specific transit service improvements to achieve the ridership increases outlined in the strategy.

Land Use Planning & Growth Management Policies

1. All official plan amendments, site plans, zoning applications and severance applications are circulated through the Brantford Transit department to ensure that transit concerns are identified and to provide transit with upfront information that will impact on transit requirements and planning (eg. Route extensions or realignments, new routes, etc.)
2. The City should increase employment and residential densities along current and planned major transit corridors and encourage intensification within designated intensification corridors through development incentives.
3. The City should encourage compact developments with a broad range and mix of uses that are compatible and transit and pedestrian friendly.
4. The City should provide transit service to new subdivisions in the southwest area of Brantford and in the northwest industrial area as people start moving in to help establish transit use.
5. Transit-supportive design features are required within all new developments or re-developments (e.g. incorporate transit stops in all new subdivisions and other trip generators, locate bus stops near major retail and business entrances, get the built form closer to street, provide a grid pattern of streets instead of cul-de-sacs and dead-end streets)
6. The City should develop Transit Supportive Urban Design Guidelines to be used in preparation of secondary, subdivision plans, site plans and intensification of employment lands and residential uses, particularly in close proximity of transit routes. These manuals should include a check list for site plan approvals that will ensure measures to encourage transit usage.
7. The City should improve customer convenience through a review of location and design of bus stops and provide consistent bus stop identifiers with route and schedule information.
8. To support cycling, the City should examine the feasibility of integrating cycling into the transit system facilities and vehicles (eg. Bike racks on buses, bike storage in terminal, etc).

Expand Transit Services

9. Provide expanded transit service on Sundays so that there are fixed routes that can accommodate the travel and minimize transfers
10. Extend period of operation in areas where off peak demands are higher (such as after 11:30 PM in the industrial areas to accommodate shift workers)
11. Expand geographical coverage by adding new routes and extending existing routes especially in the northwest industrial areas and in the Southwest residential growth centres

Enhance Service Efficiency & Reliability

12. Reduce service interruptions through the use of newer vehicles, proper maintenance, and the development of efficient incident management policies and examine opportunities to improve scheduling and dispatching on a regular basis
13. Improve on-road monitoring
 - o Where feasible, use advanced technology such as scheduling software, to provide real time scheduling or improve the operation of the zone bus system
14. Enforce parking restrictions, turn restrictions, HOV lanes, Yield to Bus, etc.
15. Route planning reviews should be carried out on a maximum of five year cycle
16. Improve adherence to schedule by investigating Transit Priority Measures on Key Corridors such as West St, Fairview Dr and King George Rd. and North Park St.

Reduce Travel Time

17. Review transit route operations on a regular basis (major review every five years with 2 year interim reviews) to assess opportunities for reducing travel times
18. Fare box replacement study in 2006 will explore opportunities for reducing times for customers to board the bus through the use of Smart Card Technology

Improve Convenience and Comfort

19. Continue to provide special event related services to the community including:
 - o Canada Day free shuttles to/from events on days when regular transit service is not available
 - o United Way Air show: free shuttle service between transit terminal and airport
 - o New Years Eve: free transit service on all regular routes after 6 pm on New Years Eve
 - o Clean Air Day: free service through out the day to promote use of transit to minimize environmental impacts
 - o Zone Bus Service: provided during the evening periods in areas where regular transit service is not viable
 - o School Specials: service provided throughout Brantford to address added demands during peak periods

20. To make cross boundary travel easier Brantford Transit terminal will continue to serve as terminal for Greyhound, Cherrey Bus Lines, Trentway Wager for passenger boardings
21. Continue to provided Transit service to/from Via train station and improve coordinated with the train schedule. In the longer term investigate opportunities to incorporate this stop into a trunk route (between terminals) or downtown shuttle service.
22. Improve transit facilities in the following ways:
 - Implementing a program to improve accessibility for stops on major transit routes by building bus stop pads, sidewalk connections to stops, signage and shelters which will be compatible with accessibility guidelines
 - Improved attractiveness, cleanliness and ambience of terminals by improving illumination and canopy at transit terminal
23. Procurement of low floor transit vehicle and initiate program to improve bus stop facilities to better accommodate persons with disabilities and other special needs (this will also help to convert riders from specialized to conventional transit). In compliance with the Accessibility for Ontarians with Disabilities Act (AODA) requirements, only fully-accessible vehicles should be purchased
24. The replacement of transit fare boxes will provide opportunities to introduce convenient payment methods
 - Easy access to tickets and passes at local merchants, employer sites, and vending machines
 - Electronic “smart cards” for local and cross boundary travel
25. To capture and maintain the student population, Brantford transit should continue to provide a reduced transit pass for students who use the bus in the summer months
26. Initiate a bus shelter request program in 2006 in order to receive feedback from customers to assist in the preparation of priorities for improvements

Pricing & Fare Media

27. Fare incentives will continue to attract specific markets (such as students and seniors)
 - Brantford Transit should continue negotiations this year with Laurier Brantford in order to establish a U-pass program for their students in 2007.
 - Seniors should continue to receive 10% discounts on multiple ride card and monthly passes.
 - Student should continue to receive discounts for monthly passes
28. Reward frequent users with bulk discount through passes
 - Monthly Pass holders- deep discounts
 - Swipe Card 45 Ride- Moderate discounts
 - Swipe card 10 Ride- Above average discount

29. Brantford Transit should explore opportunities to implement a payroll deduction program for transit passes, and should examine a pilot implementation at City Hall for municipal employees.
30. Brantford will attempt to ensure that Fare increases are reasonable (e.g. at rate of inflation) or tied to direct service improvements.

Marketing & Education

31. Ensure public participation in transit planning through:
 - the Transit Liaison Committee, comprised of transit users and community stakeholders, which meet monthly to discuss transit issues
 - Brantford Transit will hold public information sessions to obtain input from the public regarding service options and other transit initiatives early in the decision making process
 - Use surveys to identify needs, suggest opportunities and measure success and track complaints, inquiries and suggestions from the public as input and feedback into ongoing planning
 - Continue to hold regular Transit staff meetings to discuss issues and opportunities suggestions for service improvement
32. Improvements to the bus stop identifiers will help in developing branding to increase transit profile
33. Undertake a marketing study in 2006 to help develop marketing campaigns targeting current and potential customers, key influencers and specific groups (students, shoppers, business, etc.)
 - programs to change the public image of transit (e.g., elementary school education programs);
 - advertisement campaigns and promotions that target specific groups in an effort to increase ridership (i.e., high school students, seniors,);
34. Continue to partner with organizations such as the Sanderson centre for the Arts, local retailers at shopping malls and City operated recreational centre for marketing and advertising campaigns. Continue to coordinate with Local media outlets to advertise advertising events and services through press releases, newsletters, brochures, direct mail and electronically, often at little or no cost to Transit. Consider enhancements to the City Website to profile the transit services, provide information on routes, schedules, fares, specials and other initiatives under way.
35. Published newsletters quarterly for transit users and all residential households

Evaluation & Performance Measures

The majority of the proposed transit evaluation and performance measure noted below were developed and recommended as part of the Brantford Transit 2003 Service Review². These performance measures were adopted by City Council upon completion of the study.

² Brantford Transit 2003 Service Review, Entra Consultants, March 2004

Performance Standards

36. Financial Performance Standard: achieve a revenue to cost ratio of 43% in three years and 45% in five years.
37. Service Utilization: carry an average of 19 passengers per revenue hour in three years and 20 passengers per revenue hour in five years.
38. Monitor and report trends toward targets on an annual basis using cordon count data, transit ridership data and periodic surveys (e.g. Transportation Tomorrow Survey conducted every five years)

Service Design Standards (General)

39. Service Area: serve the entire urban area of the City of Brantford and explore opportunities to extend service to Paris, in consultation with Brant County
40. Bus Stop Placement: maintain bus routes within a maximum of 400 meter walking distance for the service area and provide bus stops at a minimum 250 meter spacing, except for future trunk routes which may run on express service schedules
41. Schedule Adherence: At least 90% on time within three minutes late and one minute early
42. Vehicle Loading: Maximum load will not exceed 150% seated capacity per bus on average; minimum loading (Sundays and evenings) will not be less than 10 per bus per revenue hour.
43. Frequency of Service: Minimum of 30 minutes frequency during AM and PM peak periods and 60 minutes on all other weekday periods and weekend, subject to meeting the required economic performance targets, except for specialized shuttle or trunk route services that may be implemented in the future .

Zone Bus Service Design Standards

44. Stop locations: Utilize standard conventional bus stop locations nearest to the passengers' origin or destination, as appropriate.
45. Conversion of Fixed Route to Zone Bus: To be considered when ridership consistently fall below 8 to 10 passengers per revenue hour
46. Convert Zone Bus Operation to Fixed Route operation: When ridership in candidate area exceeds 10 to 12 passengers per revenue hour and minimum service area maintained.
47. Level of Service: Add service when ridership performance consistently exceeds 8 passengers per revenue hour. Service shall be reduced when ridership falls below 5 passengers per revenue hour

6.3.5 Arterial Road Optimization Policies

The preferred strategy for road network optimization suggests an aggressive approach to maintaining and enhancing the capacity of key arterial roads in the City. This should be achieved through a combination of localized intersection improvements, signal system coordination/optimization, access management policies and improvements. The following policies and best practices should be implemented by the City.

1. The City should establish and maintain guidelines for the preparation of transportation impact studies to be carried out to assess the impact on the Transportation Master Plan, the road system and adjacent land uses from proposed developments and land use changes that will result in a significant increase in traffic.
2. **Arterial roads** are facilities where traffic movement is the primary consideration while land access is a secondary function. Urban arterials normally carry high traffic volumes and a high level of access control to be exercised along them. A high degree of access control to be exercised along arterial roads
3. All arterial roads in the City should be given signal priority during peak hours regardless of increased delays to side road traffic.
4. Accesses to major commercial, industrial or residential properties that generate significant volumes of traffic should be treated the same as local / collector roads, and a spacing of 300 m should be provided between access points / adjacent intersections.
5. Access to moderate to large size properties should emphasize access via local/collector side roads where feasible. Direct access should be avoided where possible. Where a side road access is unavailable, careful consideration should be given to design the entrance and ensure adequate spacing to adjacent entrances / signalized intersections. At the intersection of a two Arterial roads a private entrance should be located on the road carrying the lesser volume of traffic. At the intersection of two major arterial roads with similar traffic volumes, a private entrance should be located on the facility that allows the maximum corner clearance (distance from the existing intersection)
6. The City should adopt a maximum volume to capacity ratio of 0.90 as the relevant service target for overall signalized intersection performance before network improvements are required. At an intersection, a maximum volume to capacity ratio of 1.00 should be permitted for left turn movements, and a maximum volume to capacity ratio of 0.95 should be maintained for other individual movements.
7. The City should initiate an active program of intersection improvements along the following key arterial road corridors. For roadways where future widening is recommended, these operational improvements should be considered in advance of widening (in the hopes of deferring the need). For road that have not been identified for future widening, these improvements should be considered where intersection performance deteriorates to v/c ratio of 0.90 (as noted above):
 - i. Tollgate Rd. / Fairview Rd.
 - ii. Brant St. / Paris Rd.
 - iii. West St.
 - iv. Erie Ave.
 - v. Colborne St. W.

- vi. Henry St.
 - vii. Powerline Rd. (in conjunction with Brant County)
 - viii. Hardy Rd.
 - ix. Shellard Lane (in conjunction with development)
8. Signalized intersections on the above noted arterial roads should incorporate separate left turn lanes where turning volumes exceed 60 vph or where turning lanes can be shown to improve through capacity.
 9. Ensure that access management policies and associated warrants and design standards are readily made available to the development industry Attempt to identify access management concerns early in the site plan approval process and (if possible) during the site design process.
 10. Where safe access or intersection operations cannot be provided, or where a proposal either alone or in combination with existing conditions is determined by the City to be detrimental to arterial roadway operations, such access or intersection operation proposals may be denied. In these cases, the City will endeavour to identify alternative solutions for consideration by the applicant, including:
 - i. Use of mutually shared access arrangements with adjacent properties, (if land uses are compatible).
 - ii. Access consolidations for existing entrances.
 - iii. Other access restrictions including centre medians, right-in-right out entrance designs, turning restrictions, etc
 11. For high capacity arterial roads, Two Way Left Turn Lanes should be considered to improve capacity where the entrance density exceeds 25 commercial entrances per km (residential entrances should not be included in calculation of entrance density).
 12. Ensure application of acceptable design guidelines (i.e. TAC standards) for geometric design components of driveways.
 13. All driveways along major arterials within 50 m of an intersection should be restricted to right-in-right-out through appropriate design measures (i.e. delta islands)
 14. For commercial sites, the minimum distance back from the ultimate property line to the nearest parking stall or cross isle (clear throat distance) should be:
 - 6 m to 8 m for all developments with less than 50 parking stalls
 - 8 m to 15 m for developments with 50-199 parking stalls
 - 18 m for developments with 151-200 parking stalls
 - 15 m to 24 m for developments with over 200 parking stalls

6.3.6 Transportation Demand Management Policies & Programs

A Targeted Transportation Demand Management program was identified as the preferred strategy for implementation in the City over the 25 year planning period. A Targeted TDM Program will require policies aimed at encouraging the development of a formal TDM program for some of the largest employers in the City.

To gain credibility, particularly with large employers in the City, the city will need to demonstrate workable approaches to overcome common TDM barriers that are best demonstrated through direct experience. Since TDM programs essentially try to invoke change at an individual level, all successful TDM programs rely on a partnership between public sector agencies, private sector businesses and community interest groups. The following policy approaches are recommended to be incorporated into the City of Brantford approach to TDM:

Municipal Leadership

One of the most effective ways to demonstrate the viability and benefits of TDM measures is to lead by example. Municipalities are large employers and thus generate significant commuting activity. They also operate facilities that act as major travel generators for the public, including administrative buildings, arenas, libraries, conference centres and entertainment venues. Leadership is required to proactively seek out potential partner organizations and coordinate activities to establish and maintain interest in the program. The following policies should be implemented by the City:

1. Create and fill the position of TDM Coordinator, with the mandate to coordinate public and private sector TDM initiatives in the City of Brantford.
2. Develop a City of Brantford TDM program for municipal employees designed to achieve similar objectives as the broader City –wide program.
3. Develop an employee survey for City employees to identify travel needs and desires, identify common barriers to alternative modes of transportation, and seek feedback on potential incentives that may encourage change.
4. Based on the survey results, segment the respondents into homogenous categories based on their desires (i.e. want to spend more time with family, want to save money on auto costs, etc) or the barriers they most frequently cite with respect to TDM initiatives (i.e. Need a car for daytime travel, need a car to pick up children, etc)
5. Develop marketing material aimed at each group to show how TDM activities can address their desires or remove the most common barriers to participation. Highlight the benefits that individuals can realize in terms that they feel are important (i.e. for those who want to spend more time with family – TDM can promote flexible work hours, which can reduce peak hour travel demands)
6. Develop internal policies to facilitate and/or enable participation in the types of TDM programs that will address the common objectives and remove barriers to participation and secure senior management support for implementation.
7. Undertake consultation with Municipal employees about the TDM program opportunities and communicate the specific policies and benefits that can be achieved. Encourage employees to formally enroll in the pilot program for an 8 week trial period and provide incentives to encourage participation (awards program, recognition, prizes, etc).

8. Establish a monitoring program to track employee and corporate progress and issues / benefits experienced (either through a diary system, a comment form system, on an online feedback tracking system).
9. Adjust the pilot program to address issues and use positive comments or statistics to market the program externally.
10. Call for the active support and participation of the Province of Ontario and the federal government in TDM initiatives, including financial assistance for pilot projects and legislative amendments to encourage employer-provided transit benefits. Work with adjacent municipalities, particularly those in the GTA, to implement consistent and mutually-supportive TDM initiatives on a regional level.

Community Dialogue & Education and Awareness Program

Advisory Committees, public information sessions, stakeholder workshops and outreach to school boards or business groups are critical measures to build awareness and encourage Made in Brantford TDM programs that fit with the context of everyday lives of residents. The following policies approaches should be considered:

11. Based on the results of the internal TDM pilot program develop material to sell the idea of TDM to major employers to encourage participate in the program. Undertake research to identify examples of successful TDM applications in place at major work places in other jurisdictions, and find ways to promote TDM as “Good for business”.
12. Encourage and assist major employers in the development of TDM pilot programs in their workplaces, based on the experience gained in the Municipal program.
13. Reach out to community groups with similar objectives to gain their support in establishing and maintaining interest in TDM programs across the City.
14. Help community associations, interest groups and non-governmental organizations develop and implement TDM-related initiatives, particularly those aimed at families and individuals.
15. Develop an Education and Awareness Program to promote alternative modes of transportation (transit / walking / cycling / carpooling) and provide information on the benefits that can achieved for individual user groups or employers (individualized marketing)
16. Promote sustainable transportation choices through communications and outreach methods including Web sites, production of cycling route maps, cycling skills training and competitions, household flyers, media relations, and special events that raise the profile of sustainable transportation choices and encourage trial by individuals.
17. Participate in Clean Air Day or Smart Commute challenges and other City wide / national programs and encourage a healthy level of competition between employers, civic groups, and other municipalities to post the best results.
18. Consider the use of a TDM program identifier to link initiatives and provide a recognizable platform (or “brand”) for TDM tools, services and communications

Development of Tools & Incentives: Development of tools to support TDM at the local level and Incentive programs to encourage use are both key to encouraging employers to implement and maintain effective TDM programs throughout the city. As an example the City can use direct payments (potentially funded through fuel tax for TDM and Transit), property tax credits, development charge credits, or other financial inducements to encourage TDM supportive programs.

19. Develop or promote use of existing web based commercial ride matching service (carpool tool, carpool zone, etc) for use by City residents and employers for ridematching services.
20. Partner with community groups / taxi companies and employers to provide a guaranteed ride home service for all registered carpoolers, or those signed up to regularly use alternative transportation modes (i.e. walking, transit riders).
21. Provide reduced rates / preferential parking locations for carpools in municipal parking lots and parking garages.
22. Provide subsidized Transit Passes to Students who are not bussed to school.
23. Establish an incentive program to support TDM participation at the corporate level, and the individual level (i.e. ridesharing, alternative work hours and telecommuting to the employers).
 - ✓ Development of financial or other incentives for existing employers to participate in TDM programs.
 - ✓ Provide awards or ways of recognizing employers with exceptional TDM programs.
 - ✓ Participate in an annual survey and reporting effort as directed by the City

Monitor and Evaluate Programs

24. Survey and monitoring of TDM programs and usage and achievement of SOV reduction targets through an annual reporting program.
25. Monitor progress of participating member employers in implementing TDM programs, including participation rates.

Land Use Policies to Support TDM

26. Clearly consider TDM in all municipal transportation plans and studies (i.e. Municipal Class EA projects and Neighbourhood Traffic Management Plans) including the degree to which it can help achieve key objectives, and required actions.
27. Require the consideration for TDM measures and plans as a part of the Site Plan approval process for large industrial or other employment based land uses to ensure that infrastructure to support TDM is incorporated into the site design process.
 - Showers and change facilities
 - Preferential parking areas for carpools near building entrances
 - Convenient access to transit stops or integration of transit services within larger sites (ie Malls)
 - Location and orientation of buildings should promote easy street access for pedestrians / transit users
 - Ensure that compact development patterns and a broad range of uses are provided for in new development areas to encourage local trip making (walkable)
28. Ensure that infrastructure to support High Speed Internet Services is incorporated into new development areas and commercial core areas.
29. Actively support the development of carpool lots adjacent to the Highway 403 corridor or encourage MTO to provide carpool lots as part of interchange upgrade projects within the City.

6.3.7 Truck Routes Policies & Programs

A comprehensive truck route system should be identified and developed as part of the Transportation Master Plan that maintains adequate access to industrial and commercial areas while minimizing the impact on residential neighbourhoods. The network will respect the hierarchy of roads, focusing routes on freeways and arterial roads. The designated truck routes illustrated in Chapter 5 should be incorporated into the Official Plan.

The current truck route by-law designates existing roadways as suitable for truck traffic, and signs are posted that indicate the route is acceptable for truck traffic. The by-law prohibits trucks from using non-designated routes, although there are some provisions that allow for local deliveries and use of non posted routes where the route forms part of the short path to the truck's destination.

The strategic direction for the City includes the continued use of a permissive truck route system while identifying areas that may require the use of additional truck restriction signing to discourage inappropriate truck movements.

The City of Brantford has a truck route by-law already, and designated truck routes have already been established throughout many areas of the City. The following policies should be implemented with respect to truck routing in the City:

1. The City shall maintain a truck route network designed to regulate the movement of commercial vehicles designed for the transportation of cargo, and having more than four tires, within the City. Council shall consider the following when establishing a truck route network or amendments thereto;
 - i. The impact of the truck route on abutting lands;
 - ii. Service to major truck traffic generators;
 - iii. The provision of network continuity via inter connecting links;
 - iv. The structural capacity and geometric design of the roadway to accommodate truck weights and dimensions;
 - v. Adequate clearance from overhead structures and obstructions;
 - vi. Traffic lanes are of an adequate width;
 - vii. Steep grades, in excess of 4 per cent, are avoided, where practical; and
 - viii. The roadway has adequate capacity to accommodate the truck traffic.
2. The policy approach to combine permissive truck routes with localized restrictions should attempt to maintain the integrity of the permissive system, which provides positive guidance to truck drivers about routes that are considered appropriate for commercial vehicles
3. The implementation of truck restrictions should only be considered where existing permissive routing and other approaches have not addressed the problem of trucks using inappropriate or non designated routes.
4. Truck restrictions should only be implemented in areas where the enforceability of the current permissive route bylaw is not effective, based on consultation with local police.
5. Truck routes and truck restrictions should be established and amended from time to time to regulate the movement of commercial vehicles.

6. Land Use planning should encourage the location of activities that require heavy truck traffic to areas near or adjacent to freeways and major arterials.
7. Update the current by-law to include provisions for, and a listing of designated truck prohibitions, allowing for appropriate exemptions for local deliveries.
8. Provide adequate information and resources with respect to routing information and new truck restrictions to business within the affected areas, and all local goods movement carriers and provide a phase-in period prior to initiating enforcement of new restrictions.
9. Ensure Brantford is an integral part of the Provincial Goods Movement Advisory Council;
10. Increase enforcement of on-street loading zones to ensure appropriate use.
11. Establish a regular communication with police department and Transportation department personnel regarding outstanding trends and issues; and
12. Establish an improved summons tracking program and court monitoring program.
13. Incorporate the following new truck routes into the existing Truck Route By-Law:

New Designated Truck Routes

Route	From	To
Birkett Lane	Erie Ave	Mohawk St

6.3.8 Traffic Calming Policies

Traffic calming, as defined by the Institute of Transportation Engineers (ITE) Subcommittee on Traffic Calming, 1997 is:

“...the combination of mainly physical measures that reduce the negative affects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users.”³

The City of Brantford developed a policy for dealing with Traffic Calming requests which was approved by Council in June 2005. The intent of this policy was to develop a standardize procedure for the analysis of a street section to determine whether neighbourhood traffic issues could be addressed through traffic calming measures. A copy of the policy is included in Appendix I.

The implementation of Traffic Calming measures is subject to the requirements of the Municipal Class Environmental Assessment Process, and separate studies are required for each project to establish the need and justification for changes, investigate alternative solutions, and in some cases, investigate alternative design treatments. The Municipal Class Environmental Assessment Process includes the requirement to undertake public consultation as part of these studies.

As outlined in the Traffic Calming Policy, the following criteria must be met prior to the City conducting a traffic calming study.

- The street must have a classification of residential local or residential collector;

³ City of Brantford Traffic Calming Policy & ITE

- The posted speed limit on the street must be 50 km/h or less;
- The minimum length of the street or street segment under consideration for traffic calming shall not be less than 300 metres; and
- Traffic calming will be considered only after other less intrusive measures have been implemented and found to be ineffective (ie. public education, radar boards, enforcement, signing, etc.)

Once these criteria are met, a traffic calming study will be undertaken which may include traffic counts, speed studies, collision analysis, pedestrian counts, parking studies, documentation of geometric information, and a review of the surrounding street network.

Additional criteria taken into consideration in determining the need for traffic calming measures includes:

- School property fronting the street;
- Lack of sidewalks;
- Street wider than 9.0 metres measured from edge of pavement to edge of pavement.

The data is then applied to the Severity Scoring Point scale where a minimum of 6 points is required to continue with the program and a score of less than six may be considered again in three years. This Severity Scoring index is also used as a means of prioritizing projects for subsequent implementation.

Based on our review of this program we are recommending the City retain this policy and continue to address the need for a prioritization of traffic calming requests using this process. It is recommended that the Transportation Department set up a system to track traffic calming requests and report on the results of each request to determine the effectiveness of the current policy. This reporting should include the number of requests received, the number that met the criteria for further study, the number of studies completed, and the number of implementations installed.

Following the installation of traffic calming measures the City should include a follow up data collection program to review the effectiveness of each installation against the original severity criteria.

The City should monitor the effectiveness of this policy and review the criteria and policy guidelines at least every 5 years, in conjunction with updates to the Transportation Master Plan.