Town of Niagara-On-The-Lake

Transportation Master Plan Study

PW-1193-PWA-00

NOVEMBER 2004



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Executive Summary

BACKGROUND

As a result of careful preservation and protection of its grape and tender fruit lands and significant heritage features, the Town of Niagara-On-The-Lake has often been referred to as the prettiest town in Canada, with many attractions and historical sites indicating its long and distinguished history. With a base population of 14,500 and over 3.0 million visitors each year, there has been significant pressure on the roadway network which has resulted in continuous vehicular streams along major routes and community access points during various times of the day, especially to and from the Old Town community. Increased tourism over the years has also resulted in considerable growth in the Town's employment sector. With the absence of a proper inter-municipality and public transport system, employees within the Town mainly rely on the private automobile as their mode of travel. This results in additional pressure on the roadway network and the community. Apart from passenger car and pedestrian traffic, the Town of Niagara-On-The-Lake also features an unusual mix of vehicle types including bicycles, buses, trucks, vans, tractors, horse and buggy, harvesters and other agricultural vehicles.

This Transportation Master Plan is the Town of Niagara-On-The-Lake's first comprehensive system-wide transportation review, providing a short and long-term transportation strategy for the Town's roadway network. The Transportation Master Plan study was initiated in June 2003 to address the transportation issues for the Town as a whole and for the communities of the Old Town, Virgil, St. Davids, Queenston and Glendale, covering the various modes of ground transportation on affected area municipal roads, Regional roads and traffic related facilities. The study focused on providing long-term transportation planning direction in the form of policy statements and interim and ultimate network schemes for all transportation modes as input to the Town's Official Plan document. The Transportation Master Plan is a guiding document which allows for future changes in responsibilities, financial capability, needs, and land use to be incorporated readily, permitting a "reshuffling" of priorities in a manner appropriate for these conditions.

The Study process consisted of the identification of existing background conditions, an understanding of the operational/traffic issues, an assessment of future conditions, the identification of alternatives, and the development of a recommended improvement plan. Existing operational/traffic issues were determined based on a review of the background data. Future conditions were determined through the use of several models including the Region of Niagara Transportation Model, which integrates population and employment forecasts within the Town's transportation roadway network. The models were employed to examine various scenarios, ultimately identifying a range of roadway deficiencies throughout the Town of Niagara-On-The-Lake. In addition to the transportation modeling, the Study focused on cycling and pedestrian issues and draft transportation policies to address facilities such as roads, public transportation, and commercial vehicle traffic, pedestrian and parking issues. The cumulative results of the transportation modeling and policy issues produced a range of recommended infrastructure improvements.

In accordance with the *Municipal Class Environmental Assessment (June 2000)* document, an open and proactive approach to public and agency consultation was undertaken throughout the study. The consultation program provided for valuable information exchange, early identification of key issues and meaningful input to the development and evaluation of alternative solutions. As a result of the consultation efforts undertaken with members of the local public, special interest groups and other key stakeholders, the provision of local knowledge and insight was added to the project and project team, thereby assisting in the early resolution of issues and the development of optimal solutions. The consultation program developed for the Niagara-On-The-Lake Transportation Master Plan Study included the following:



- Project notifications, mailings and web site postings
- Technical and Steering Committee meetings
- Stakeholder Group meetings
- Public information centres (PIC) s
- Additional agency, group, individual consultation activities where required (i.e. Laidlaw Education Services, Virgil Businessmen's Association, Chamber of Commerce, Emergency Services, Region of Niagara, Niagara-On-The-Lake, Town Council)

EXISTING CONDITIONS

Pedestrians and Cyclists

There are essentially three groups of cyclists in Niagara-On-The-Lake; 1) migrant workers who use their bicycles to commute to/from work and the commercial center in Virgil, 2) recreational and tourist cyclists who are mostly interested in scenery, wineries and attractions in the Old Town, and 3) local residents who use their bicycles for transportation and/or recreation. These different groups of cyclists, as well as pedestrians, require safe, adequate and well-maintained on-road bikeways, multiuse trails, and sidewalks. Deficiencies identified in the overall pedestrian and bicycling system include the following:

- Lack of pedestrian and bikeway linkages between adjacent subdivisions in Virgil and other communities resulting from auto-oriented subdivision layout plans;
- Incomplete sidewalk networks within the Old Town and other communities;
- Overcrowding of sidewalks along Queen/Picton Street;
- Lack of sidewalk and pedestrian crossings along Queen's Parade between Fort George and the Shaw Festival;
- Lack of pedestrian and bicycling connections between the various developments in the QEW/ Glendale interchange area;
- Lack of a safe cycling route between the Old Town, the Niagara District High School and Virgil;
- Insufficient road widths for cycling routes such as Lakeshore Road and York Road;
- Inadequate signage;
- Migrant workers cycling after sunset without lights; and
- Development of the Upper Canada Heritage Trail and its extension to John Street.

Transit Service

The Town of Niagara-On-The-Lake's public transit system provides conventional and specialized bus service for residents through a private transit service provider (Laidlaw), which, at present, serves only a minor role in the Town's overall transportation system. Due to the Town's yearly tourist population, a well defined transit service, in terms of shuttle buses from various attractions within the Town, is required to help lower the volume of cars travelling on Town roads and reduce the need for on-street parking within the tourist areas. Another element of transit requiring improvement involves services for employees working in the Town. Over the years, as tourism has increased, so has tourism-related employment. This seasonal service industry employment generates an additional travel demand, both internal and external to the Town, which could be partially accommodated by improvements in the transit service. In general, the Town's transit services need to be improved for traveling from one urban area to the other (within Niagara-On-The-Lake) as well as to / from other Towns and Cities.

Road Network

The existing transportation infrastructure was evaluated to identify constraints in the system. These problems can be categorized as either intersection or roadway related. In order to address traffic



operational issues at the intersection level, localized sub area models were developed. A network evaluation of the Town of Niagara-On-The-Lake was undertaken to identify operational issues for roadway sections.

Intersection:

- Airport Road & York Road;
- Four Mile Creek Road & York Road;
- East & West Line & Niagara River Parkway; and
- Glendale Avenue & Taylor Road/Beechwood Road.

Roadway Sections:

- Niagara Stone Road from Line 3 Road to Niven Road;
- Beechwood Road/Glendale Avenue from Niagara College Entrance to York Road;
- Lakeshore Road from Garrison Village Drive to Nassau Street;
- Mississagua Street and Queen Street within the Old Town;
- Niagara River Parkway approaching the Old Town;

Regional and municipal intersection and mid-block collision data for a five year period (1999 – 2003) were analysed to identify locations with a high frequency of collisions or a high collision rate. The following conclusions were drawn from the collision review:

- Niagara Stone Road between Field Road & 4 Mile Creek Road exhibits a higher than normal collision rate. Review of the collision rates indicate that the majority of the collisions were attributed to driveway manoeuvres.
- Intersection of Church Road and Stewart Road has a higher than normal collision rate. The majority of incidents can be attributable to restricted sightlines.
- Intersection of Airport Road and Queenston Road shows a higher than normal collision rate and collision frequency. An all way stop control (AWSC) was introduced at the intersection of Airport Road and Queenston Road in 2002, which reduced the average annual number of collisions to one in the subsequent year. This location should continue to be monitored.
- The intersections with the highest collision frequencies include Four Mile Creek and Niagara Stone Road, Niagara Stone Road and York Road/Taylor Road, Glendale Avenue and Taylor Road, and Airport Road and Queenston Road. However, the collision rates (which reflect the amount of traffic utilizing the intersections) at these locations do not indicate a safety concern and therefore no corrective measures are warranted.
- Town collision data was reviewed for 2002 through 2004. The data indicated an increase in collisions at select intersections along East & West Line. Intersections to be monitored include Concession 2 Road, Four Mile Creek Road and Townline (Grantham) Road.

FORECASTED FUTURE ROAD NETWORK CONDITIONS (UNDER A "DO-NOTHING" SCENARIO)

The performance of the existing transportation infrastructure under the expected future transportation demands was undertaken (i.e. do-nothing scenario). For the purposes of this study, horizon years of 2011 and 2021 were chosen, with 2021 representing a long-term forecast and 2011 representing an intermediate-term forecast. The following represents the major identified transportation deficiencies over the two horizon years:

- 1. Niagara Stone Road (Regional Road 55) corridor will experience a deficiency of two travel lanes;
- 2. The number and severity of collisions along Niagara Stone Road (Regional road 55) within Virgil will continue to increase;



- 3. Queens Parade will experience greater periods of gridlock and Hospital access will be adversely impacted;
- 4. The intersection operation and safety of the Niagara River Parkway and East & West Line intersection will continue to degrade, causing vehicles to use other nearby roadways;
- 5. The Niagara River Parkway will continue to experience peak period congestion;
- 6. The roadway network within St. Davids will experience serious operational problems/delays;
- 7. Welland ship canal bridge crossing capacity/reliability will continue to be a route choice uncertainty;
- 8. Agricultural vehicles will have increased difficulty in crossing major roadways;
- 9. Commuter traffic will continue to disperse onto rural roadway network;
- 10. Traffic infiltration into the neighbourhoods will continue to increase as major roadway congestion/delay increases;
- 11. Mobility of residents in Virgil and Old Town will be severely impacted by congestion and periods of gridlock;
- 12. The Glendale Area will experience gridlock and delay on a frequent basis;
- 13. Connections to the provincial highway network will degrade and more emphasis will be placed on Stanley Avenue Interchange with Highway 405; and
- 14. Overall, safety on Town and Regional roadways will decrease.

<u>IDENTIFICATION AND EVALUATION OF ALTERNATIVE SCENARIOS/TRANSPORTATION</u> PLANNING SOLUTIONS

In accordance with the Municipal Class Environmental Assessment planning process, the impact assessment and evaluation of alternatives was based upon a defined set of criteria developed in consultation with the Technical and Steering Committees, Stakeholder Group, interest groups, members of the local business community and local residents through the public consultation process. The criteria developed served to represent the broad definition of the environment as described in the Environmental Assessment Act.

In developing a strategic transportation vision for the Town of Niagara-On-The-Lake, several planning or strategic options were considered (i.e. Do Nothing, Transportation System Management (TSM) / Total Demand Management Measures (TDM), Improvements to Transit Service, and a Blended Transportation System) to address the future mobility needs of the Town. Following the evaluation of the various strategic options, a blended transportation system, including roadway capacity improvements, TSM/TDM measures and improved transit service was carried forward in the study. Various alternative solutions were then developed to address the transportation requirements in the areas of:

- Transit:
- Bicycle and pedestrian systems;
- Parking/shuttle;
- Signage and visitor information;
- Operational and roadway network improvements.

RECOMMENDATIONS

Transit

The primary recommendation of the transit review is that the Town undertake a transit needs survey in cooperation with large employers in Town and local residents. These two groups would allow for the surveying of both the seasonal employee market and the commuter/personal trip market. It is recommended that the survey be designed by a transit system specialist so as to develop questions



that will help identify and target the future transit service requirements/needs for the Town of Niagara-On-The-Lake. The Town should continue to work with the Region on their inter-municipal transit initiatives and explore the opportunity to integrate the local service with the other transit properties that are currently operating services into the Niagara College Glendale Campus.

Bicycle and Pedestrian Systems

Pedestrians and different groups of cyclists require adequate and well-maintained sidewalks, multi-use trails, and on-road bikeways. For Niagara-On-The-Lake, the requirements by pedestrians and cyclists translate in the following infrastructure priorities:

- Measures promoting walking and cycling in the Community;
- Construction of sidewalks in the other communities where warranted;
- Connecting bikeways between the various communities of Niagara-On-The-Lake; and
- Upgrading Lakeshore Road as part of the Greater Niagara Circle Route.

The recommended implementation schedule builds upon the existing network of sidewalks, trails and on-road bikeways and incorporates some of the potential improvements described above. The proposed bikeway/trail improvements are detailed in **Figure E.1** and the associated costs and timing are presented in **Table E.1**. The recommendations include trails in Old Town and Virgil as well as paved shoulders along Regional roads as recommended in the Regional Niagara Bikeway Master Plan. Sidewalks should be provided particularly in the vicinity of major destinations such as schools, bus stops, public buildings and amenities. The proposed sidewalk improvements are detailed in **Figure E.2** and the associated costs and timing are presented in **Table E.1**.

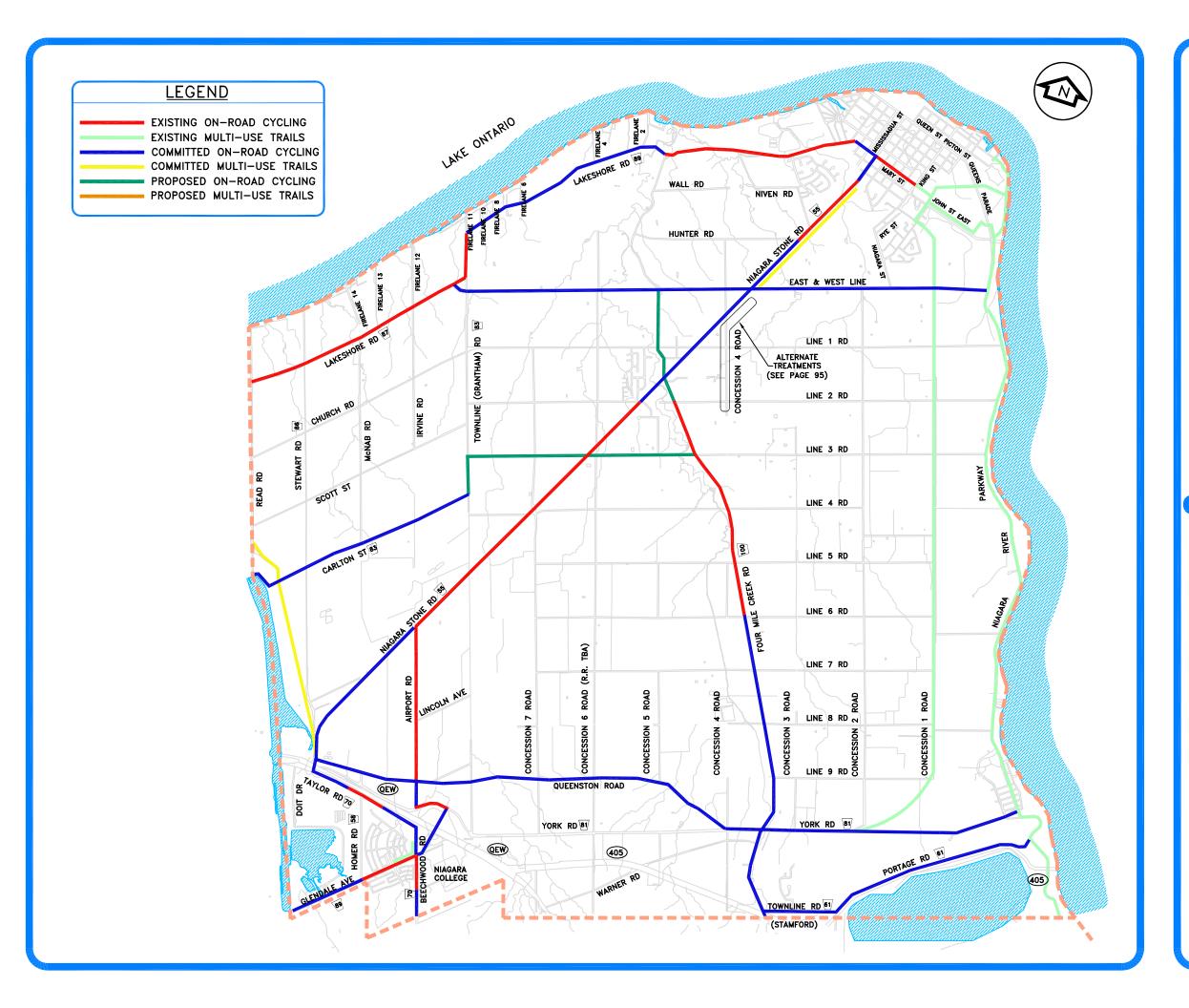
There are several locations where more formal street crossings should be established by constructing mid-block refuges with interlocking paving stone crosswalks, zebra crossing markings and signs.

The recommended crossing locations include the following:

- Queen Street
 - ⇒ Post Office and
 - ⇒ War Memorial Clock Tower.
- Queens Parade
 - ⇒ Fort George Bus Parking area and
 - ⇒ Otter Trail
- Niagara Stone Road
 - ⇒ Between Four Mile Creek Road and Line 1 Road

In addition, a continuous sidewalk should be provided between the Fort George parking lot and the Shaw Festival Theatre, and further west to the stores along Picton/Queen Street. The Town should continue the construction of sidewalks and multi-use trails, specifically, the extension of a sidewalk from Virgil to the Niagara District High School.





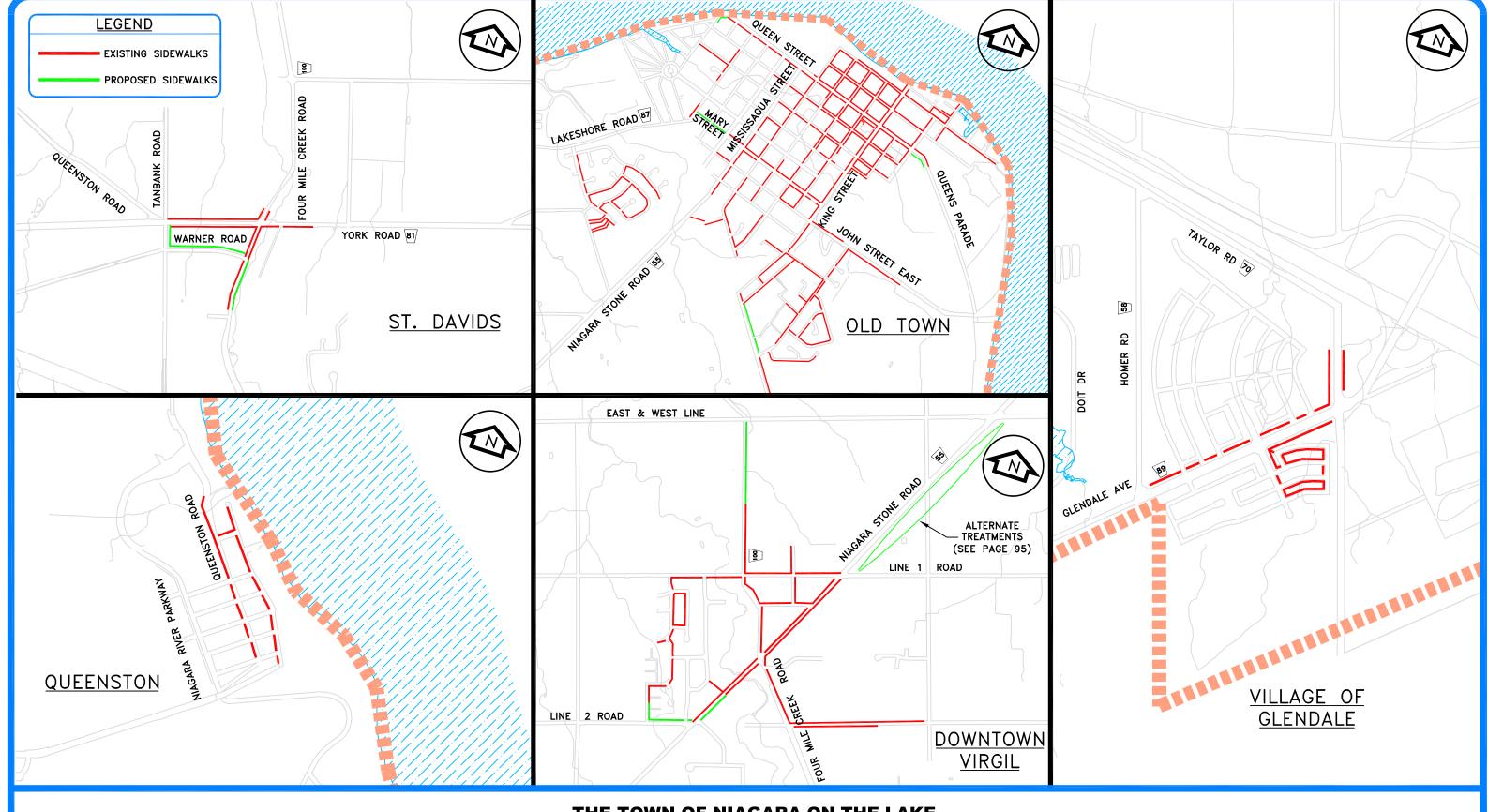
THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION MASTER PLAN STUDY

RECOMMENDED ON-ROAD CYCLING AND MULTI-USE TRAILS

FIGURE E.1





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THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION MASTER PLAN STUDY

EXISTING AND PROPOSED SIDEWALK LINKAGES

FIGURE E.2

Recommended Pedestrian and Bicycle Strategy

Table E.1

Road	From	То	Jurisdiction	Recommended Improvements	Construction	Contingency	Total Cost (\$)
					Cost (\$)	25%	
0-5 Years							
Queen's Parade	Wellington Street	Otter Trail Crossing	Town	1.5 m Sidewalk and 2 Pedestrian Crossings	\$9,500	\$2,375	\$11,875
Queen Picton Street at Post Office and War Memorial			Town	2 Pedestrian Crossings and Refuge Islands	\$1,900	\$475	\$2,375
East & West Line	Lakeshore Road	Niagara River Parkway	* Region	Shoulder Paving	\$461,192	\$115,298	\$576,490
Townline (Grantham) Road	Carlton Street	Line 3 Road	Region	Paved Shoulders	\$48,000	\$12,000	\$60,000
Carlton Street	St. Catharine's Boundary	Townline (Grantham) Road	* Region	Paved Shoulders	\$185,000	\$46,250	\$231,250
Mary Street	Nassau Street	Dorchester Street	Town	Sidewalk (north side)	\$6,800	\$1,700	\$8,500
Mary Street	Dorchester Street	Butler Street	Town	Sidewalk (north side)	\$7,500	\$1,875	\$9,375
Niagara Stone Road	Henegan Road	North of Henegan Road	Town	Sidewalk (east side)	\$8,000	\$2,000	\$10,000
Niagara Stone Road	York Road	Airport Road	* Region	Paved Shoulders	\$150,371	\$37,593	\$187,964
Niagara Stone Road	Anderson Lane	East & West Line	** Town	Multi-Use Trail and Special Traffic Safety Measures (Bollards, Gates)	\$304,000	\$76,000	\$380,000
Mary Street	Butler Street	Simcoe Street	Town	Signs and Pavement Markings	\$2,000	\$500	\$2,500
Niagara Stone Road	Four Mile Creek Road	Line 1 Road	Town	Pedestrian Crossing and Refuge Island	\$1,125	\$281	\$1,406
Niagara Stone Road	Hunter Road	Line 2 Road	* Region	Shoulder Paving	\$167,088	\$41,772	\$208,860
Four Mile Creek Road	East & West Line	Line 2 Road	Region	Shoulder Paving	\$108,000	\$27,000	\$135,000
Mountain Road/Portage Road	Niagara River Parkway	Stanley Avenue	Region	Paved Shoulders	\$195,410	\$48,853	\$244,263
Airport Road	York Road	Queenston Road	* Region	Paved Shoulders	\$18,650	\$4,663	\$23,313
Glendale Avenue	Beechwood Road	York Road	* Region	Incorporate Bikeways and Sidewalks in Selected Design	\$276,000	\$69,000	\$345,000
				0.5 Year Subtotal	\$1,950,536	\$487,634	\$2,438,170
6-10 Years							
Concession 4 Road	Niagara Stone Road	Line 2 Road	Town	Bicycle Lanes if Warranted by Traffic Volumes	\$104,000	\$26,000	\$130,000
Line 2 Road	Andres Street	Niagara Stone Road	Town	Sidewalk (north side)	\$840	\$210	\$1,050
Line 2 Road	Bordeaux Drive	Andres Street	Town	Sidewalk (north side)	\$11,800	\$2,950	\$14,750
Lakeshore Road	Townline (Grantham) Road	Four Mile Creek Road	* Region	Shoulder Paving Where Feasible Without Major Reconstruction	\$193,878	\$48,470	\$242,348
Niagara Stone Road	East & West Line	Concession 4 Road	*** Town	Multi-Use Trail and Special Traffic Safety Measures (Bollards, Gates)	\$79,200	\$19,800	\$99,000
Niagara Stone Road	East & West Line	Concession 4 Road	*** Town	Sidewalk (east side)	\$34,500	\$8,625	\$43,125
Niagara Stone Road	Concession 4 Road	Line 1 Road	Town	Sidewalk (east side)	\$38,100	\$9,525	\$47,625
Niagara Street	Charlotte Street	Rye Street	Town	Sidewalk (east side)	\$24,000	\$6,000	\$30,000
Line 3 Road	Townline (Grantham) Road	Four Mile Creek Road	Region	Paved Shoulders	\$280,000	\$70,000	\$350,000
Palatine Place	Niagara Boulevard	Queen Street	Town	Sidewalk (southeast side)	\$7,100	\$1,775	\$8,875
Glendale Avenue	St. Catharine's Boundary	Beechwood Road	* Region	Paved Shoulders	\$682,500	\$170,625	\$853,125
Taylor Road	York Road	North of Glendale Avenue	* Region	Paved Shoulders	\$78,552	\$19,638	\$98,190
Four Mile Creek Road	Line 6 Road	Niagara Falls Limit	* Region	Paved Shoulders	\$357,500	\$89,375	\$446,875
I was time wheels these		The gard of the case of the ca	, rogion	6-10 Year Subtotal	\$1,891,970	\$472,993	\$2,364,963
11-20 Years				o to roal outroid.	41,001,010	VII Z,000	42,001,000
Concession 1 Road Extension	East & West Line	John Street East/King Street	Town	Multi-Use Trail	\$120,000	\$30,000	\$150,000
Niagara Townline Road	Four Mile Creek Road	Stanley Avenue	* Region	Paved Shoulders	\$72,852	\$18,213	\$91,065
York Road	Seaway Haulage Road	Niagara Stone Road	* Region	Paved Shoulders	\$11,281	\$2,820	\$14,101
Queenston Road	Niagara Stone Road	York Road	* Region	Paved Shoulders	\$367,207	\$91,802	\$459,009
Warner Road	Tanbark Road	Four Mile Creek Road	Town	Sidewalk (north side)	\$25,800	\$6,450	\$32,250
Tanbark Road	Warner Road	York Road	Town	Sidewalk (east side)	\$660	\$165	\$825
Four Mile Creek Road	Warner Road	Johanna Drive	Town	Sidewalk (east side)	\$4,900	\$1,225	\$6,125
Bordeux Drive	Line 2 Road	Frontier Drive	Private	Sidewalk (east side)	\$6,900	\$1,725	\$8,625
Welland Canal East Trail	Port Weller Split	Glendale Avenue	* Region	Multi-Use Trail	\$192,247	\$48,062	\$240,309
York Road	Queenston Road	Niagara River Parkway	* Region	Paved Shoulders	\$244,071	\$61,018	\$305,089
Beechwood Road	Mountain Road	Glendale Avenue	* Region	Paved Shoulders Paved Shoulders	\$57,481	\$14,370	\$71,851
Deechwood Koad	INIOGIII AIII KOAG	Olelinale Welling	Region	11.20 Year Subtotal	\$1,103,399	\$275,850	\$1,379,249
					\$1,105,399 \$4,945,905		
				Total	\$4,540,900	\$1,236,476	\$6,182,381

Notes:

* - represents cost estimates illustrated in the Regional Niagara Bikeways Master Plan (publised by Marshall Macklin Monaghan)

** - represents cost estimates held by Town of Niagara-On-The-Lake Public Works Department

 $\ensuremath{^{+\!\!-\!\!-\!\!-}}$ - one or the other option to be conidered for construction

Signage and Visitor Information

A comprehensive approach must be taken with respect to road signing and integrating it with all of the TDM initiatives within the Town of Niagara-On-The-Lake. The signage should be developed to guide:

- Visitor/tourists to
 - ⇒ Old Town
 - ⇒ Wineries
 - ⇒ Other amenities and attractions
 - ⇒ Parking facilities
 - ⇒ Information locations
- Commercial vehicles
- International or border traffic
- Vehicular traffic utilizing the Welland Ship Canal Bridge crossings

The Town, in conjunction with the Ministry of Transportation, the Region of Niagara and the Niagara Parks Commission should develop a comprehensive signing strategy that reflects the routing modifications contained in the Town of Niagara-On-The-Lake Transportation Master Plan. The Region should consider, as part of their road closure action plan strategy, the use of Intelligent Traffic Systems to provide canal lift bridge status information to drivers via centrally controlled signs. This information would allow drivers to make appropriate route choices to avoid delay and improve reliability of the roadway network. A sign location strategy for Niagara-On-The-Lake would include four signs erected at key decision points along the roadway system:

- Stewart Road (Regional Road 86) and Lakeshore Road (Regional Road 87);
- Church Road (Line 1 Road), and Stewart Road (Regional Road 86);
- Carlton Street (Regional Road 83) and Stewart Road (Regional Road 86); and
- Niagara Stone Road (Regional Road 55) between Line 3 Road and Concession 7 Road.

Operational and Roadway Network Improvements

The recommended improvements include a strategy which manages the travel demands (try to do more with what you have) and responds to the access needs through capital improvements (travel needs).

Travel Demand Management

Since road widenings into the Old Town were not seen as conducive to the overall vision of the Town (i.e. protection of the local heritage features, etc.), the increase in traffic demand must be accommodated through other means. The concept recommended for Niagara-On-The-Lake is to implement strategically located perimeter parking relative to the Old Town and other destinations.

The concept of managing the traffic demand through the introduction of strategically located perimeter parking will eliminate the need for widened roadways and the creation of additional parking supply in the future. The area identified for consideration is in the vicinity of the intersection of East & West Line and Niagara Stone Road. More specifically, the area would extend from Anderson Lane to East & West Line along Niagara Stone Road and from Niagara Stone Road to the Niagara River Parkway along East & West Line.

This location is recommended for numerous reasons:

- ⇒ Can be serviced by an extension of the existing shuttle service operating from Fort George;
- ⇒ The area has good connection to area trails for cycling and walking;



- ⇒ Strategically located to attract visitors entering from the Niagara River Parkway, Niagara Stone Road and Lakeshore Road;
- ⇒ Visitors can continue their experience of Niagara-On-The-Lake after they return to their vehicle;
- ⇒ There are several partnering opportunities with area businesses; and
- ⇒ Employee day shift parking

A demonstration project should be undertaken for several seasons in cooperation with the Niagara District Secondary School, utilizing their parking lot during the summer months. The parking lot has an existing capacity of approximately 150 spaces.

Lot information should be distributed through tourist information publications, signage along the Niagara River Parkway, Niagara Stone Road and Lakeshore Road and other media. The Town should incorporate into their long-term plans the protection/purchase of property at this location for the purpose of developing satellite parking.

Access Management

As the Glendale area continues to develop along York Road (Regional Road 81) from Airport Road (Regional Road 90) to Concession 6 Road, access management and driveway alignment reviews should be undertaken. A protection plan should be created to ensure that new developments follow a roadway entrance guideline so that the number of access points does not create a safety concern between arriving/departing traffic and the main flow travelling along the roadway. This practice should be utilized in other growth areas to provide a safe and effective roadway system.

Network Improvements

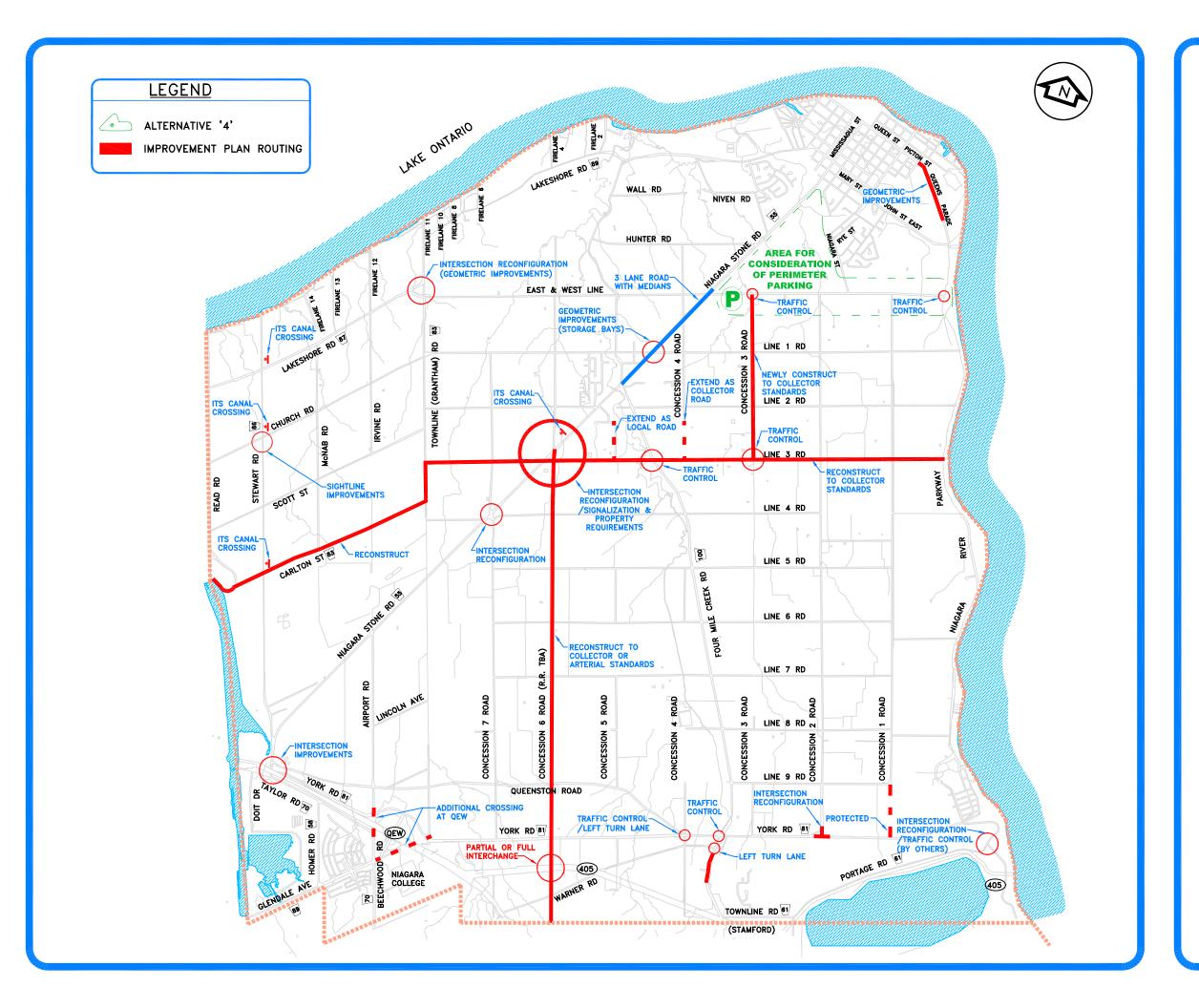
The roadway operation and network improvements are detailed in **Figure E.3** and the associated costs and timing are presented in **Table E.2**. These improvements include the introduction of a new interchange at Highway 405 and Concession 6 Road that would provide an alternate route for internationally destined auto and commercial vehicles relieving pressures in the St. Davids Community.

To support and move forward some of the recommendations of the Transportation Master Plan a series of actions or studies must be undertaken by either, the Town, Region or Province. These items/actions are identified below:

- 1. The Town should incorporate draft transportation policies into the Town's Official Plan update process.
- 2. The Region and Town should undertake an intersection alignment and feasibility study for the intersecting roadways of Niagara Stone Road (Regional Road #55), Concession 6 Road, and Line 3 Road. This study should identify the property impacts as the ultimate design of this intersection could potentially affect the lands for the proposed fire station.
- 3. The Town should coordinate with the Region and the St. Lawrence Seaway Authority for the Intelligent Transportation System (ITS) boards in accordance with the development of a Regional Niagara "Road Closure Action Plan (RCAP)". Coordination should also take into account the use of ITS boards for bridge status crossing to/from the Town and the City of St. Catharines.
- 4. The Region should incorporate the Town's current signing strategy. The Region and Town should also coordinate with the Ministry of Transportation during the development of any



- additional guide signage to/from the provincial highway system. The traffic routing recommendations of the Master Plan Study should be incorporated into the current Town strategy.
- 5. The Region and Town should meet with the MTO to initiate the new Glendale Avenue Interchange Preliminary design and EA Study. (The study should include the new Highway 405/Concession 6 Road Interchange).
- 6. The Town should prepare and plan for a perimeter parking demonstration project. The preparation should include discussion with the Board of Education and other area businesses for use of parking areas, identification of signing requirements and advertisement requirements.
- 7. Discussion between the Town and Regional Staff on the issue of access management in the Glendale Area to respond to the numerous expanding development applications.
- 8. Town to liaise with the Niagara Parks Commission as they monitor the operation and safety at the East & West Line / Niagara River Parkway Intersection.
- 9. The Town should undertake a transit needs survey prior to considering any modifications to the existing transit system.



THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION MASTER PLAN STUDY

ROADWAY IMPROVEMENTS AND OPERATIONAL RECOMMENDATIONS

FIGURE E.3



Recommended Roadway Implementation Strategy

Table E.2

Road	From	To	Jurisdiction	Improvement Types	Construction	Contingency (\$)	Total	Recommended Study to Undertake
					Cost (\$)	25%	Cost (\$)	
0-5 Years								
Concession 6 Road	Highway 405	Niagara Stone Road	Region	Upgrade to 2 lane Arterial	\$4,900,000	\$1,225,000	\$6,125,000	Schedule 'C' EA
Niagara Stone Road	Four Mile Creek Road	East & West Line	Region	Reconstruct to 3 lanes with raised Centre Median Islands	\$683,000	\$170,750	\$853,750	Schedule 'B' EA
Niagara Stone Road and York Road/Taylor Road			Region	Intersection Geometric Improvement	\$250,000	\$62,500	\$312,500	Schedule 'A' EA
Niagara Stone Road and Concession 7 Road			Region	Intersection Geometric Improvement	\$50,000	\$12,500	\$62,500	Schedule 'A' EA
Line 3 Road	Townline Road	Four Mile Creek Road	Region	Upgrade to 2 lane Arterial	\$2,650,000	\$662,500	\$3,312,500	Schedule 'B/C' EA
Line 3 Road and Niagara Stone Road			Region	Signalization/Geometrics/Configuration	\$400,000	\$100,000	\$500,000	Feasibility Study
Queen's Parade	Wellington Street	Otter Trail Crossing	Town	Operational and Geometric Improvement	\$69,000	\$17,250	\$86,250	Schedule 'A' EA
Stewart Road and Church Road			Region	Geometric Improvement and Daylight Triangles	\$250,000	\$62,500	\$312,500	Schedule 'A' EA
East & West Line and Niagara River Parkway			NPC	Signalization or Roundabout - Monitor for Need	\$250,000	\$62,500	\$312,500	Schedule 'A' EA
Carlton Street	St. Catharines Municipal Boundary	Townline (Grantham) Road	Region	Road Reconstruction	\$2,577,000	\$644,250	\$3,221,250	Schedule 'A' EA
Townline (Grantham) Road	Carlton Street	Line 3 Road	Region	Upgrade to 2 lane Arterial	\$437,250	\$109,313	\$546,563	Schedule 'A' EA
				0.5 Year Subtotal	\$12,516,250	\$3,129,063	\$15,645,313	
6-10 Years								
Line 3 Road	Four Mile Creek Road	Concession 3 Road	Town	Upgrade to 2 lane Collector	\$1,170,000	\$292,500	\$1,462,500	Schedule 'B/C' EA
Four Mile Creek Road and Line 3 Road			Region	Signalization	\$250,000	\$62,500	\$312,500	Operational Study
Concession 3 Road	Line 3 Road	East & West Line	Town	Open Road Allowance - Construct to 2 lane Collector	\$1,275,000	\$318,750	\$1,593,750	Schedule 'C' EA
Concession 3 Road and Line 3 Road			Town	Signalization	\$250,000	\$62,500	\$312,500	Operational Study
Concession 3 Road and East & West Line			Town	Signalization	\$250,000	\$62,500	\$312,500	Operational Study
King Street	Paffard Street	Cottage Street	Town	Upgrade to 2 lane Collector	\$212,250	\$53,063	\$265,313	Schedule 'B' EA
Cottage Street	King Street	Rye Street	Town	Upgrade to 2 lane Collector	\$48,000	\$12,000	\$60,000	Schedule 'B' EA
Rye Street	Niagara Street	Cottage Street	Town	Upgrade to a 2 lane Collector	\$195,000	\$48,750	\$243,750	Schedule 'B' EA
Lakeshore Road and East and West Line		-	Region	Intersection Geometric Improvement and Vertical Alignment	\$350,000	\$87,500	\$437,500	Schedule 'A' EA
Concession 4 Road	Line 2 Road	Line 3 Road	Town	Road Extension	\$600,000	\$150,000	\$750,000	Schedule 'B' EA or Planning Act Component
				6-10 Year Subtotal	\$4,600,250	\$1,150,063	\$5,750,313	
11-20 Years								
Line 3 Road	Concession 3 Road	Niagara River Parkway	Town	Upgrade to 2 lane Collector	\$2,200,000	\$550,000	\$2,750,000	Schedule 'C' EA
Four Mile Creek Road and York Road		1	Region	Signalization/Geometric Improvement	\$400,000	\$100,000	\$500,000	Schedule 'A' EA
Four Mile Creek Road and Warner Road			Region	NB Left Turn Storage Lane	\$27,000	\$6,750	\$33,750	Schedule 'B' EA
Four Mile Creek Road	Niagara Stone Road	East & West Line	Town	Upgrade to a 2 lane Collector	\$1,010,250	\$252,563	\$1,262,813	Schedule 'B' EA
Concession 5 Road	Walker Road	Line 3 Road	Town	Road Extension	\$428,000	\$107,000	\$535,000	Schedule 'B' EA or Planning Act Component
Concession 6 Road	Niagara Stone Road	East & West Line	Town	Upgrade to 2 lane Collector	\$1,770,750	\$442,688	\$2,213,438	Schedule 'A' EA or Planning Act Component
Concession 4 Road	Niagara Stone Road	Line 2 Road	Town/Private	Upgrade to 2 lane Collector	\$975,000	\$243,750	\$1,218,750	Schedule 'A' EA
Line 1 Road	Concession 6 Road	Concession 4 Road	Town	Upgrade to 2 lane Collector	\$1,500,000	\$375,000	\$1,875,000	Schedule 'A' EA
Townline (Grantham) Road	Line 3 Road	East & West Line	Town	Upgrade to a 2 lane Collector	\$1,912,500	\$478,125	\$2,390,625	Schedule 'A' EA
Tanbark Road and York Road			Region	Signalization/Geometric Improvement	\$400,000	\$100,000	\$500,000	Schedule 'A' EA
				11-20 Year Subtotal	\$10,623,500	\$2,655,875	\$13,279,375	
				Total	\$27,740,000	\$6,935,000	\$34,675,000	

Note:
- the costs in the above table do not include property acquisitions or utility relocations.



Transportation Policies

The Ontario Planning Act requires that all public works must conform to the Official Plan. As a result, the Official Plan of the Town of Niagara-of-the-Lake must be amended to reflect the Transportation Master Plan approved by Council. The Official Plan is one tool available to Council to implement the recommendations of the Transportation Master Plan. Another tool would be the 5-year capital budget.

Appendix F in the report contains an initial draft of an Official Plan Amendment that outlines the proposed Transportation Polices consistent with the Transportation Master Plan. An Official Plan Amendment will be formally processed through Council after the Transportation Master Plan has been approved.

The Transportation Policies will establish a variety of policies, including public transit, road classifications, road widenings, parking, truck traffic, bicycle and recreational paths, trails and sidewalks.

Financial Impacts

Summarizing the costs contained in **Tables E.1** and **E.2** over the twenty-year planning period results in a capital investment by all agencies of approximately \$40,857,381. This cost consists of \$18,083,483 in the immediate term (0-5 years), \$8,115,275 in the short term (6 -10 years) and \$14,658,624 in the long term (11 – 20 years). The totals above do not include the committed improvement costs for the Regional Niagara Bikeways Master Plan or the Town of Niagara-On-The-Lake's Multi-Use Trail along the east side of Niagara Stone Road.

A summary of the implementation plan by jurisdiction and type of improvement is presented in **Table E.3**. A review of the table indicates that of the \$40,857,381 in total improvement, 54% is the Region's, 43% is the Town's, private developer consists of 2% and 1% is the Niagara Parks Commission's. The Ministry is not included in these totals as it is too early to determine the nature and scale of their roadway network improvements.

Roadway Jurisdiction and Classification

The recommended roadway jurisdiction and classification for the Town of Niagara-On-The-Lake that would result from the implementation of the recommended improvement plan is presented in **Figure E.4**. The recommended classifications and jurisdictions reflect the provision of additional links in the roadway network and jurisdiction changes.

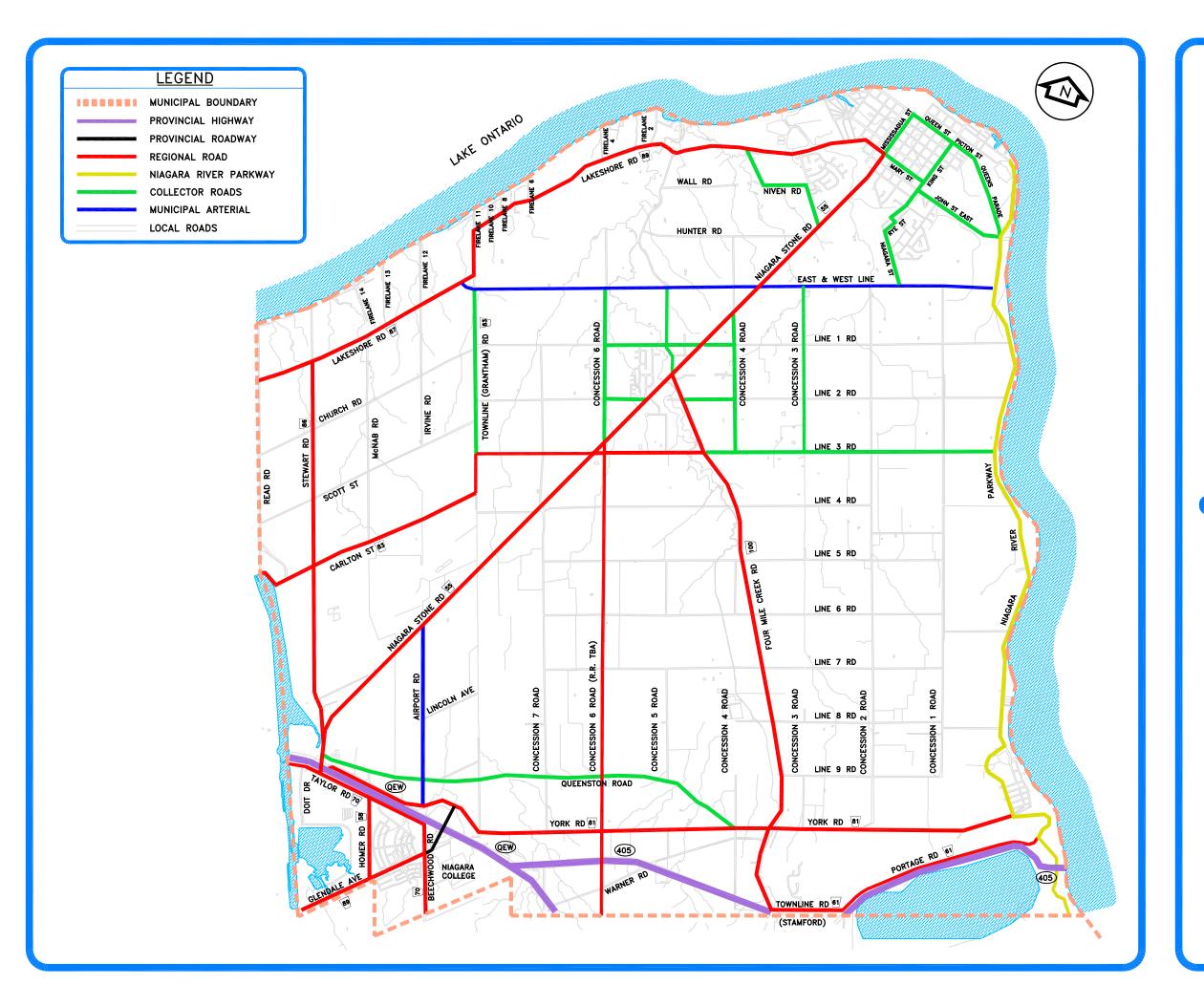


Table E.3 - Jurisdiction Financial Summary

	0 - 5 years		6 - 10 years		11 - 20 years		Total	
	Region	Town	Region	Town	Region	Town	Total	
Road Improvements	\$15,246,563	\$88,750	\$750,000	\$5,000,313	\$1,033,750	\$11,636,250	\$33,755,625	
On-Road Cycling	\$1,839,639	\$0	\$1,990,538	\$130,000	\$941,115	\$0	\$4,901,291	
Multi-Use Trails	\$0	\$380,000	\$0	\$99,000	\$240,309	\$150,000	\$869,309	
Sidewalk Program	\$0	\$216,031	\$0	\$145,425	\$0	\$39,200	\$400,656	
				`				
Total	\$17,086,201	\$684,781	\$2,740,538	\$5,374,738	\$2,215,174	\$11,825,450	\$39,926,881	

^{*} difference in cost summary for Niagara Parks Commission signals in 0-5 years is \$312,500 for signals and configurations or roundabout (East & West Line and Niagara River Parkway)

^{*} difference in cost summary for private development in 11-20 years is \$609,375 for new road construction (Concession 4 Road - Niagara Stone Road to Line 2 Road) and \$8,625 for sidewalk construction (Bordeux Drive)



THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION MASTER PLAN STUDY

PROPOSED ROAD CLASSIFICATION AND JURISDICTION

FIGURE E.4



1.0 Introduction

1.1 Background

The Town of Niagara-On-The-Lake is located at the northeastern extremity of the Regional Municipality of Niagara and is bounded by water on three sides; Lake Ontario to the north, the Niagara River to the east, and the Seaway Ship Canal in the City of St. Catharines to the west. The Town's southern boundary follows the Niagara Escarpment, a United Nations World Biosphere Reserve, which forms a natural boundary with the City of Niagara Falls. The geographical boundaries of the study area are identified in **Figure 1.1**.

As a result of careful preservation and protection of its grape and tender fruit lands and significant heritage features, the Town of Niagara-On-The-Lake has often been referred to as the prettiest town in Canada, with many attractions and historical sites indicating its long and distinguished history. With a base population of 14,500 and over 3.0 million visitors each year there has been significant pressure on the roadway network which has resulted in continuous vehicular streams along major routes and community access points during various times of the day, especially to and from the Old Town community. Increased tourism over the years has also resulted in considerable growth in the Town's employment sector. With the absence of a proper inter-municipality and public transport system, employees within the Town mainly rely on the private automobile as their mode of travel. This results in additional pressure on the roadway network and the community. Apart from passenger car and pedestrian traffic, the Town of Niagara-On-The-Lake also features an unusual mix of vehicle types including bicycles, buses, trucks, vans, tractors, horse and buggy, harvesters and other agricultural vehicles.

This Transportation Master Plan is the Town of Niagara-On-The-Lake's first comprehensive system-wide transportation review, providing a short and long-term transportation strategy for the Town's roadway network. The Transportation Master Plan Study was initiated in June 2003 to address the transportation issues for the Town as a whole and for the communities of the Old Town, Virgil, St. Davids, Queenston and Glendale, covering the various modes of ground transportation on affected area municipal roads, Regional roads and traffic related facilities. The Study focused on providing long-term transportation planning direction in the form of policy statements and interim and ultimate network schemes for all transportation modes as input to the Town's Official Plan document. The Transportation Master Plan is a guiding document which allows for future changes in responsibilities, financial capability, needs, and land use to be incorporated readily, permitting a "reshuffling" of priorities in a manner appropriate for these conditions.

1.2 Study Purpose

The Town of Niagara-On-The-Lake and Regional Municipality of Niagara retained Delcan Corporation in June 2003 to undertake a Transportation Master Plan Study for Niagara-On-The-Lake. The purpose of this Study was to provide the Town of Niagara-On-The-Lake with a comprehensive document which deals with transportation issues for the town as a whole and for the communities of the Old Town, Virgil, St. Davids, Queenston and Glendale, covering all modes of ground transportation on affected area municipal roads, Regional roads and traffic related facilities.



Figure 1.1 Master Plan Study Area

The Study focused on providing long-term transportation planning direction in the form of policy statements and interim and ultimate network schemes for all transportation modes as input to the Town's Official Plan document, which is currently under review.

1.3 Study Phases

The Niagara-On-The-Lake Transportation Master Plan was completed in accordance with the *Municipal Engineers' Association's Municipal Class Environmental Assessment, June 2000* document and was undertaken in two phases:

<u>Phase 1 – Needs Identification</u>

The first phase of the Study involved data collection, community vision development through consultation with stakeholders, agencies, interest groups and the public-at-large, defining the problem statement, preparation of traffic models for existing and future "do-nothing" scenarios, forecasting the future travel demand and identification of deficiencies in the transportation system.

Phase 2 – Development of Transportation Plan

The second phase of the Study focused on the identification and development of short, intermediate and long term improvements to the transportation infrastructure and services, presenting alternatives to stakeholders and public, refining the transportation plan and policies, and presenting the findings to Town Council.

2.0 Existing Conditions

Within this section, the key components of the transportation system are presented in terms of their current status/function from an operational perspective. In addition to the transportation system, elements of the surrounding environment (e.g. land use, socio-economic, etc.) are also discussed.

Data Collection

During the initial study phase, all relevant background information was assembled, reviewed and assessed for current validity. Wherever possible, existing data from the Town of Niagara-On-The-Lake and Region of Niagara was used. Applicable recommendations contained in these studies were documented for evaluation in the context of the Transportation Master Plan Study. Information that was assembled included the following:

Traffic/Transportation

- Past traffic, land use studies and any other investigations pertinent to this project;
- Traffic volume information (AADT and peak-hour counts link counts, screenline counts and turning movement counts);
- Collision data for Regional and Municipal Roads within Niagara-On-The-Lake;
- Transit data, including ridership, routing and schedule:
- Traffic forecasts from the Regional TransCAD Model for 2011 and 2021;
- Public transportation services;
- School bus services and pedestrian and cyclist routes/policies; and
- MTO and Region of Niagara initiatives, including listing of committed projects.

Engineering

- Base plans and mapping that included existing road, property, drainage, utility, and driveway information;
- Schedule of committed engineering work for roadways within the study area;
- Geometric criteria for municipal roads;
- Existing and future municipal services; and
- Intersection and roadway geometry.

Planning/Environmental

- Existing and proposed land uses;
- Official Plan, Secondary Plans, Amendments and Zoning By Laws for the Town:
- Future development plans;



- Population/employment data;
- · Regional planning data;
- Past studies and relevant environmental information for the study area;
- Socio-economic or cultural factors; and
- Tourism forecast and historical data.

Supplementary Data Collection

In developing existing traffic volumes (representing base conditions), supplementary traffic data was collected in the form of turning movement counts at 20 intersections. Field reviews of existing traffic control devices such as signs, traffic signals, lane configurations and other control devices were also undertaken.

2.1 Population, Employment and Land Use

In 2003, the Town of Niagara-On-The-Lake was home to approximately 14,500 people (C.N. Watson & Assoc. Ltd.)¹ with almost 70% of its inhabitants living within the five urban service areas (i.e. Old Town, Virgil, Glendale, St. Davids, and Queenston). Of the 5,212 residential dwelling units in the Town, over 93% were single detached units with an overall population density of 2.78 persons per dwelling unit (Watson, mid 2003)².

The 2001 Census indicates that 25% of the Town's population is at least 65 years of age, with a median age of 46.3 years - the oldest in the "golden horseshoe" area (north to Barrie, east to Durham Region and west to Kitchener). In comparison, the median age of all residents of the golden horseshoe is 36.4 years, suggesting a relatively high number of retirees living in Niagara-On-The-Lake. At present, about 87% of the Town's population is eligible to vote, further indicating a 'grey' population.

The 2001 Census also identifies 9,600 people as being employed in Niagara-On-The-Lake. Of the Town's population of 14,500, 8,500 are employed, with 5,650 traveling to work. However, it is unknown how many of those work trips are to destinations outside Niagara-On-The-Lake.

Within Niagara-On-The-Lake, there are numerous industrial wineries, nurseries and commercial greenhouse operations, as well as several large chicken producers. With 281 fruit farms (2001), Niagara-On-The-Lake has an average farm size of 60 acres, as compared to an average Ontario farm size of 245 acres and an average Niagara Region farm size of 115 acres. The main type of farming in Niagara-On-The-Lake is intensive, employing large numbers of seasonal workers from Mexico and the Caribbean Islands. Further, agricultural



¹ C.N. Watson & Associates Ltd., Economists, In Association With Earth Tech (Canada) Inc., *Town of Niagara On-The-Lake, Development Charge Background Study*, July 25, 2003. ² Ihid

taxes in the Town exceed 10% of the total tax levy - an amount surpassed only by the large residential component of the assessment base (Planscape 2003)³.

Although estimates vary, the Town of Niagara-On-The-Lake receives approximately 3 million tourists annually, with the majority traveling to the Old Town area for shopping, scenery, and theatre. During peak tourist season, there are almost 100 daily tour buses in operation. Tourism is the largest component of all international bridge traffic over the Niagara River; approximately 70% of all vehicles (URS Cole Sherman Survey)⁴.

2.2 Transportation Policies

In 2000, Niagara Regional Council passed Amendment 149, replacing an outdated policy on bicycling with a number of policies related to bicycling and the 1995 Niagara Regional Bicycling Network (Bicycle Policies 9F1 to 9F8). Several of the policies are relevant to Niagara-On-The-Lake and are included in the Transportation Master Plan.

The 2003 Regional Niagara Bicycle Master Plan reviewed the Niagara Region Official Plan and other documents. Several policies were adopted or modified and several others added. Several of the policies are also relevant to Niagara-On-The-Lake and are included in the proposed Niagara-On-The-Lake policies.

Appendix A contains the relevant policies from the Niagara Region's Bicycle policy and the Niagara Region Official Plan.

In March 1994, Niagara-On-The-Lake Town Council adopted a new Official Plan, which was subsequently approved by the Ontario Municipal Board in 1998. The Official Plan provides a general policy to guide present and future Councils, the public and private agencies regarding development in the Town. The document enables Town Council and staff to strategically plan, finance, and install municipal facilities and works in a fiscally responsible manner. The Plan also provides a blueprint or vision within which Council can evaluate private and public development proposals and the impact of such proposals on the community. The policies of the Official Plan must conform to the Regional Policy Plan and the Niagara Escarpment Plan and be consistent with the Provincial Policy Statement. All Zoning By-laws enacted in the Town and all infrastructure improvements proposed by the Town must conform to the intent of the Official Plan.

The draft transportation policies developed as part of the Master Plan Study provide a hierarchy of roads, proposed widenings, satellite parking options for Old Town tourism traffic and options related to relieving traffic pressures on St. Davids and the arterial roads leading towards Old Town. Transportation design policies have been included that seek to preserve historic, natural and other



³ Planscape 2003

⁴ URS Cole Sherman Survey

community values on an equal basis with mobility and safety. The draft transportation policies provide transportation design guidelines that respect local land uses and conform to Provincial planning policy and relevant policies established in the Regional Niagara Policy Plan.

Town Official Plan

Section 20 of the Official Plan contains Transportation policies and Map Schedule 'G' of the Official Plan is the "Transportation Plan" for the Town. The road system on Schedule 'G' "Transportation Plan" is classified according to function as follows:

- Provincial Highways, QEW and 405
- Arterial Roads
- Collector Roads
- Local Roads
- Niagara Parkway

Arterial roads such as Niagara Stone Road, Four Mile Creek Road, York Road, and Lakeshore Road move large volumes of vehicles and provide connection between Provincial Highways, the Niagara Parkway, Regional roads and the collector roads.

Collector roads such as Niven Road, Queenston Road and Line 3 Road carry lower volumes but provide organization and connecting points to the arterial roads.

Local roads are intended to provide access to individual properties and carry lower volumes of vehicles at much lower speeds than the collector and arterial roads.

Bicycle / Pedestrian / Trail Policies

This section of the Niagara-On-The-Lake Official Plan sets out some preliminary policies that are in harmony with policies from the Niagara Region Official Plan Amendment 149 and policies recommended in the Trails and Bikeways Master Plan. Currently, the Official Plan deals with walking and bicycling in Part 4, Resource and Management Policies, specifically in two sections: Transportation and Community Improvement Policies. While the general intent of the identified clauses is evident, a better distinction between goals, objectives, and policies should be made and more precise wording is recommended. Even more important is the need to implement the policies, as the lack of pedestrian and bicycling linkages in the Virgil Master Servicing Study illustrates. It is recognized that the Virgil Master Servicing Study was not intended to identify pedestrian and cyclist links. The current policies are as follows:



 Section 20: Transportation Background (in part)

The Municipality also recognizes the importance of other modes of transportation such as bicycles and walking which can play a positive role in improving mobility and quality of life as part of a balanced transportation system. Council Policy will detail in community plans the location of bicycle routes and walkway networks. A main goal in promoting multiple forms of transportation is that each form of transit provides for safety, efficiency, and convenience.

Goals and Objectives # 6:

To provide for alternative modes of transportation to the private automobile such as walking and bicycling in support of a healthier environment and a balanced system that provides maximum choice.

Selected Community Improvement Project Areas, Clause (5)

Community Plans shall provide for a transportation network of roads. sidewalks and pathways to provide for the efficient movement of people and vehicles and to reduce potential conflicts. The roadway system shall identify the function of the road and address how to reduce conflicts with pedestrians. The pedestrian/bicycle system shall consist of sidewalks and pathways in appropriate locations to reduce the need for the private automobile. A bicycle network shall wherever possible be separate from the pedestrian system. When development or re-development occurs along a road, the proponent will be required to implement, to the satisfaction of the municipality, such pedestrian/bicycle system as appropriate as it applied to the frontage of the property. This will include the provision of a pathway or sidewalk, as well as associated landscaping, street furniture, lighting, etc. Where road construction or reconstruction occurs, the municipality will attempt to protect the streetscapes in the area through the protection of vegetation and the appropriate selection of materials and landscaping.

Existing Official Plan Goals and Objectives

Although the Official Plan policies will be updated to reflect the contents of this Transportation Master Plan, the Transportation Goals & Objectives in the current document are well worth illuminating.

- To meet the immediate and long-term requirements of all sectors of the community related to the safe and efficient movement of people and goods.
- 2. To provide for appropriate linkages among local, Regional and Provincial transportation systems.



- To investigate the provision of a public transit system that would offer an
 effective alternative to travel by automobile and assist in alleviating
 parking concerns.
- 4. To minimize any adverse effects of the transportation system on the natural and man-made environments, especially on established residential areas and areas surrounding features of historic and agricultural significance.
- To provide appropriately located vehicular parking facilities of sufficient size to satisfy the parking demand and ensure that they are compatible with adjacent land uses.
- 6. To provide for alternative modes of transportation to the private automobile such as walking and bicycling in support of a healthier environment and a balanced system that provides maximum choice.

Regional Niagara Policy Plan

The following Objectives for Transportation are established in the Regional Niagara Policy Plan:

Objective 9.1	To promote and support safe, convenient, efficient, aesthetic
	and economical transportation for the movement of people
	and goods.

- Objective 9.2 To provide an arterial road system which, in conjunction with the Provincial and local road systems, will give convenient access throughout all parts of the Region and to adjacent areas.
- Objective 9.3 To encourage the development of convenient and efficient public transit services throughout the Region.
- Objective 9.4 To actively support the continuation and improvement of the railway system for the movement of both passengers and goods.
- Objective 9.5 To actively support the provision of air services for both passengers and goods while minimizing the conflicts between airport and adjacent activities and land uses.

The following relevant policies for the Regional road system set out in the Regional Niagara Policy Plan are directly applicable to the Niagara-On-The-Lake Transportation Master Plan:



Policy 9.A.3

Where it is anticipated that a local street will ultimately be assumed as a Regional road or where it is planned to extend Regional roads, the rights-of-way shall be protected from In cases where such rights-of-way are development. required in growth areas, the development or subdivision plans shall make provision for these future roadways and all Regional requirements shall be adhered to. proposals are not finalized or alternatives are still under study, the protection must be maintained at least in and near urban areas until definite decisions are made. reserves identifiable at this time are shown on the accompanying map, "Interim Road Proposals". Provision shall also be made in local Official Plans to illustrate the location of these rights-of-way reserves and to protect them from any additional development. In addition, within the Niagara Escarpment plan area, the policies of the Niagara Escarpment Plan in Section 7.H shall be adhered to in considering right-of-way reserves.

Policy 9.A.7

Each municipality must, in their Official Plan and their Zoning By-laws, include the necessary regulations to ensure that the Region's minimum setback requirements are met. In special circumstances such as at major intersections, increased setbacks may be required to accommodate increased right-of-way requirements.

Policy 9.A.9

Being arterial in nature, the primary function of Regional roads is the movement of traffic. In order to maximize the capacity and safety of the Regional road system, it shall be the policy to prohibit where necessary on-street parking, to impose appropriate access controls, and generally to adopt such regulatory or operational measures as are required to promote the flow of traffic.

Policy 9.A.15

In order to reduce the impact of the removal of on-street parking on Regional roads and to ensure that an adequate supply of parking is available where needed, area municipalities will be encouraged to make suitable provisions in their Zoning By-laws and to develop and implement comprehensive off-street parking programs.

Policy 9.A.17

Specific roads, which provide a tourist attraction in themselves, such as the Niagara Parkway, shall be encouraged by the Region. Where practical, any portions of these routes under Regional jurisdiction may be restricted from use by commercial traffic and the development of adjacent lands may be subject to special controls to preserve the scenic and natural amenities of the area.

Policy 9.A.18 The Region will encourage and promote the provision of

adequate pedestrian facilities in order to promote pedestrian safety and reduce pedestrian vehicular conflicts. However, the provision of sidewalks along Regional roads is the responsibility of the local municipality. A provision of sidewalks should be considered in allocating sufficient right-of-way width.

Policy 9.B.5

Local Official Plan studies and Regional and local transportation studies shall include consideration of short and long-term public transit aspects.

Draft transportation policies will be prepared as part of the Transportation Master Plan to be included in the new "Transportation Plan" Schedule for the Official Plan five-year review, which has just commenced. The policies and map schedule will be suitable for direct inclusion in the anticipated updating and consolidation of the Official Plan.

<u>Future Planning Direction</u>

The updated Official Plan will be built within certain new planning parameters created by the Province and the Region. Changes to the Ontario land use planning system affecting Niagara-On-The-Lake Transportation Planning Policies include:

- BILL 26 Amendment To The Planning Act (in process 2004)
- BILL 27 Greenbelt Protection Act (Royal Assent June 2004)

The Ministry of Public Infrastructure Renewal has released discussion paper "A Growth Plan for the Greater Golden Horseshoe" - a planning area that includes the entire Town of Niagara-On-The-Lake. The strategy proposes to regenerate Greater Golden Horseshoe communities by addressing three issues:

- 1. Where and how we should grow;
- 2. Critical infrastructure needed to support that growth; and
- 3. The most valuable things we need to protect.

The Strategy proposes to accommodate growth by maximizing opportunities in existing growth areas by meeting the following objectives:

 Intensification and Compact Development: to promote the efficient use of land and infrastructure resources within existing designated urban areas throughout the Greater Golden Horseshoe by supporting compact form and intensification.



- 2. **Priority Urban Centres**: to support priority urban centres and emerging urban centres, located within existing and approved urban areas, as residential and employment anchors throughout the Greater Golden Horseshoe.
- 3. **Future Growth Areas**: to manage the amount of lands required to accommodate future growth through the development of a more strategic approach to expansions of urban boundaries.
- 4. **Economic Strength**: to promote the economic vitality and competitiveness of our communities through innovative partnerships, supportive tools, and maintaining strategic employment lands.
- 5. **Small Towns and Rural Communities**: to reflect the diverse and local needs of small towns and rural communities by providing tools to assist them in addressing their own unique growth pressures.

2.3 Road Classification and Jurisdiction

Currently, the Town of Niagara-On-The-Lake has a schedule within their Official Plan which outlines the existing roadway classification and jurisdiction. The Region of Niagara is currently reviewing their Regional road system in order to rationalize its roadways. Within Niagara-On-The-Lake, there are Provincial, Regional, Niagara Parks, and Municipal roadways. An explanation of the different roadway jurisdictions is provided below.

Provincial System

Any overpass originating from a Regional or Town road that crosses a Provincial series highway is under the jurisdiction of the Province. In the Town of Niagara-On-The-Lake, there are two overpasses within the study area. Concession 6 Road has an overpass on Highway 405 that connects to Mewburn Road in the City of Niagara Falls. The other is the Glendale Avenue overpass originating from York Road (Regional Road 81) with an overpass on the QEW into the City of St. Catharines.

Regional System

The Region of Niagara has jurisdiction over a number of roads within the Town of Niagara-On-The-Lake, as follows:

- Airport Road (Regional Road 90)
- Beechwood Road (Regional Road 70)
- Taylor Road (Regional Road 70)
- Four Mile Creek Road (Regional Road 100)
- Glendale Avenue (Regional Road 89)
- Lakeshore Road (Regional Road 87)



- Niagara Stone Road (Regional Road 55)
- Stewart Road (Regional Road 86)
- York Road (Regional Road 81)
- Townline (Stamford) Road (Regional Road 61)
- Carlton Street (Regional Road 83)
- Homer Road (Regional Road 58)

The Regional roads provide a connecting link through the Town's road infrastructure network for carrying traffic to and from adjacent municipalities. As mentioned, Regional roads are generally highly designed roadways that can carry large volumes of traffic, including commercial vehicles.

Niagara Parks Commission

The Niagara River Parkway runs from the City of Niagara Falls municipal boundary to the Old Town within Niagara-On-The-Lake along the Niagara River. Tourists and commuters traveling between the City and Town use this procession route to enjoy its ambiance and natural scenery. However, the historical nature of Niagara River Parkway and proximity to the picturesque Niagara River has led to frequent traffic congestion along this route. Although this connecting road link is important to the Town, the reduction in level of service (e.g. congestion, lower operating speeds) is not considered unfavorable by the Niagara Parks Commission, as the roadway is designated a processional route and not a commuter link within the Town's roadway network. No changes are planned for this link in the near future.

Municipal Roads

The Town of Niagara-On-The-Lake has a number of private roadways such as fire lanes, rear laneways, and roads in condominiums. These roadways are privately owned and maintained by the property owners. All other roads within the Town not classified as Provincial, Regional, private or Niagara Park Commission are under jurisdiction of the Town of Niagara-On-The-Lake. The classifications of these roadways currently range from collector to local and vary within and between each of the five urban nodes:

- Old Town
- Virgil
- St. Davids
- Queenston
- Glendale

Figure 2.1 illustrates the existing roadway classification and jurisdiction as per the Town's current Official Plan.

Insert Figure 2.1

2.4 Pedestrians and Cyclists

The Town of Niagara-On-The-Lake with its historic character, scenery, and a mostly flat topography is a prime location for walking and bicycling. Many streets in Old Town have sidewalks on at least one side of the street. Residents and tourists enjoy walking along Queen/Picton Street and on the trails. Outside Old Town, there are some sidewalks in the Virgil, St. Davids, Queenston, and Glendale communities. The Town has several plans for the construction of sidewalks and multi-use trails in different stages of development. They include:

- The construction of sidewalks in the various communities of Niagara-On-The-Lake as part of an annual sidewalk program; and
- The construction of a two-way multi-use path on the east side of Regional Road 55 between Anderson Lane in the Old Town and the Niagara District High School at East & West Line. This project is in the Town's 2004 Capital Budget.

There are essentially three groups of cyclists in Niagara-On-The-Lake:

- Migrant workers who use their bicycles to go to work and the commercial center in Virgil. They reside mostly in the area to the northwest quadrant of Virgil;
- Recreational and tourist cyclists who are mostly interested in scenery, wineries and attractions in the Old Town;
- Local residents who use their bicycles for transportation and/or recreation.

Surveys indicate that cycling commuters to destinations outside Niagara-On-The-Lake are mostly heading for St Catharines. Migrant workers are not only cycling to work but also to the commercial area in Virgil. These different types of cyclists require safe and well-maintained on-road bikeways and multi-use trails. These different groups of cyclists, as well as pedestrians, require adequate and well-maintained on-road bikeways, multi-use trails, and sidewalks.

A bikeway can be a shared lane, wide curb lane, paved shoulder, bicycle lane, or multi-use path/trail. The selection of the type of bikeway is related to motor vehicle traffic volumes and operating speeds, percentage of truck traffic and the presence of on-street parking. The last factor is generally not prevalent in rural areas. According to the Ontario Bikeways Planning and Design Guidelines, (Ministry of Transportation, 1996)⁵ no provisions are required for cyclists on rural roads with less than 400 vehicles per day. Many of the rural roads in Niagara-On-The-Lake fall in this category.

As part of their infrastructure programs, the Town, Region and Niagara Parks Commission have constructed sidewalks, on-road bikeways (bicycle lanes and paved shoulders) and multi-use trails in the Town. Some of these facilities have



⁵ Ministry of Transportation, *Ontario Bikeways Planning and Design Guidelines*, 1996

become quite popular with residents and tourists alike. **Figure 2.2** illustrates existing on-road bikeways and multi-use pathways (trails). The exhibit does not indicate an on-road bikeway on Lakeshore Road between East & West Line and Shakespeare Avenue in Old Town since this road section is narrow without or with inadequate shoulders.

Over the last 10 years, several bicycle studies have been undertaken in the Niagara Region that have implications for the Town of Niagara-On-The-Lake. To date, no pedestrian studies have been conducted. These bicycle studies include:

- Route Options for the Lake Ontario Waterfront Trail- Niagara Section, August 1996, IMC Consulting Group Inc., August 1995 for the Waterfront Regeneration Trust;
- Regional Niagara Bicycling Study, January 1995 for the Regional Municipality of Niagara;
- Regional Bikeways Master Plan, Master Plan, Marshall, Macklin and Monaghan, August 2003 for the Regional Municipality of Niagara.

The 2003 Regional Bikeways Master Plan was carried out as part of a comprehensive transportation review of the Niagara Region. The study reviewed and updated the information in previous reports and developed a plan aimed at "an integrated system of bikeways across Niagara which provides the necessary links for residents to travel by bicycle for leisure, fitness, and utilitarian (commuting) purposes, while providing the same opportunities to tourists visiting the Niagara Region." Specific findings of the Regional Bikeways Master Plan that could influence Niagara-On-The-Lake include:

- The Regional bicycle network is intended to be enjoyed by cyclists of all ages and experience levels;
- In 2000, two million cycling tourists visited the Niagara Region, this is 15% of all tourism visitors;
- In 2002, approximately \$164 million was spent by cycling tourists in the Region, this is 12% of the total tourism expenditures;
- Various travel marketing reports predict that cycling tourism, including cycling vacations, will become an increasing important segment of the tourism industry in Niagara;
- Niagara-On-The-Lake is one of the top 5 cycling destinations in the Region; the others being Niagara Falls, the Niagara Parkway, Port Dalhousie and the Welland Canal;
- Important features in planning a cycling tour are safe routes, attractions/points of interest, good overnight accommodation, food and scenery:
- Policies for the provision and maintenance of adequate cycling facilities need to be established.



Figure 2.2 – Existing On-Road Bikeways and Multi-Use Pathways

These findings seem to be equally valid to walking in Niagara-On-The-Lake as they are to cycling. Within the Town, there a total of 36 kilometers of sidewalk on the urban municipal streets, most of which are on one side only. Residents and tourists enjoy walking along Queen/Picton Street and on the trails. The Old Town street layout is also quite conducive to cycling with generally low traffic speeds. Outside the Old Town, there are some existing paved shoulders and trails:

Paved shoulders

- Airport Road: Niagara Stone Road (Regional Road 55) to Queenston Road
- Regional Road 55: Airport Road to Line 2 Road
- Lakeshore Road: Read Road to 600 metres north of East & West Line
- 4 Mile Creek Road (Regional Road 100): Regional Road 55 to Line 6 Road

Trails

- Upper Canada Heritage Multi-Use Trail
- Niagara Parkway Trail: 700 metres north of John Street southerly to Niagara Falls
- John Street Trail: Niagara Parkway Trail to King Street
- Otter Trail: Niagara Parkway at Fort George to Charlotte/John Street

The Regional Bikeways Master Plan has recommended staged construction and/or improvements to bikeways for the following sections in Niagara-On-The-Lake:

Paved shoulders

- Glendale Avenue: Taylor Road to York Road
- York Road: Glendale Avenue to Airport Road
- Airport Road: Queenston to York Road
- Regional Road 55: Line 2 Road to Mary Street
- Mississagua Street: Mary Street to Queen Street
- Lakeshore Road: 600 metres north of East & West Line to Regional Road 55
- 4 Mile Creek Road (Regional Road 100): Line 6 Road to Niagara Falls boundary
- Queenston Road: Regional Road 55 to Niagara Parkway
- Portage Road: Niagara Parkway to Niagara Falls boundary
- East & West Line
- Carlton Street: St. Catharines boundary to Regional Road 55



Bicycle lanes

 Glendale Avenue/York Road/Airport Road: Welland Canal Trail to Queenston Road

Signed routes

- 4 Mile Creek Road (Regional Road 100): Lakeshore Road to Regional Road 55
- Taylor Road: Regional Road 55 to Glendale Avenue

Trails

 Welland Canal Trail East (Government Road): Read Road to Glendale Avenue

Issues and Concerns

Based on observation and feedback from Technical Committee members, stakeholders and the general public, there are some deficiencies in the overall pedestrian and bicycling system, including:

- Lack of pedestrian and bikeway linkages between adjacent subdivisions in Virgil and other communities resulting from auto-oriented subdivision layout plans;
- Incomplete sidewalk networks within the Old Town and other communities;
- Overcrowding of sidewalks along Queen/Picton Street;
- Lack of sidewalk and pedestrian crossing along Queens Parade between Fort George and the Shaw Festival Theatre resulting in a confluence of motor vehicles and pedestrians near the ambulance garage access;
- Lack of pedestrian and bicycling connections between the various developments in the QEW/ Glendale interchange area;
- Lack of a safe cycling route between the Old Town, the Niagara District High School and Virgil;
- Insufficient road widths for cycling routes such as Lakeshore Road and York Road;
- Inadequate signage;
- · Migrant workers cycling after sunset without lights;
- Access between the Niagara District High School and Virgil; and
- Development of the Upper Canada Heritage Trail in the abandoned railway line along Concession 1 Road and its extension to John Street.

2.5 Transit Service

The Town's public transit system provides conventional and specialized bus service for residents through a private transit service provider (Laidlaw), which, at present, serves only a minor role in the Town's overall transportation system.

Due to the Town of Niagara-On-The-Lake's yearly tourist population, a well defined transit service, in terms of shuttle buses from various attractions within the Town, is required to help lower the volume of cars travelling on Town roads and reduce the need for on-street parking within the tourist areas. Another element of transit requiring improvement involves services for employees working in the Town. Over the years, as tourism has increased, so has tourism-related employment. This seasonal employment generates a travel demand, both internal and external to the Town, which could be partially accommodated by improving both the inter- and intra-municipal transit service.

The need for public transportation links between communities with the Niagara Region has been assessed as part of the Regional Niagara Transportation Strategy and documented in the "Niagara Region Inter-Municipal Transit Strategy" study report. The Transportation Master Plan considered the implications of this study on the Town of Niagara-On-The-Lake and reviewed the need for the provision of transit services connecting urban areas with activity centres/transit nodes within the communities. Opportunities to provide shuttle service for tourists were reviewed.

Based on consultation with a representative of Laidlaw, the following transit related issues were brought forward:

- Laidlaw has been providing year round transit service to Niagara-On-The-Lake including a "Line Run" from Niagara-On-The-Lake to St. Catharines on Tuesdays, Thursdays and Saturdays between 10:15 a.m. and 4:10 p.m. Within the last year, Laidlaw significantly increased their advertisements for the "Line Run" in attempts to increase ridership. To date this has not been successful (i.e. no increase in passenger use). This route currently carries approximately 10 people per day (mainly seniors).
- The current arrangement for the provision of transit is that the Town pays for a level of transit services within the Town and riders do not pay. For those traveling outside of Niagara-On-The-Lake a box fare system is in place where individuals pay for their ride.
- Laidlaw expressed concerns over the by-law restrictions placed on buses during the core tourist season. Specifically, the prohibition of loading and unloading on the roadways. Two areas of concern were:
 - Buses carrying school children to events within the Town (e.g. church masses, museum trips, etc.) face bylaw restrictions.



- During the core tourist season, the Niagara-On-The-Lake transit buses are also restricted within the Old Town.
- Friday and Saturday youth/student shuttle services were offered for students beginning in September 2003. Service received much support from local community and significant advertising was undertaken. The service picked up and dropped off riders at the Virgil Arena Parking Lot. This shuttle service was discontinued due to lack of riders.
- The success of the seniors' shuttle services provided by Commisso's Food Store in St. Catharines was discussed and comments were made that the convenience of the door-to-door service attributed to the high usage of this service.
- Laidlaw transit works closely with local growers to provide bus transportation for migrant workers (shopping, banking, etc.).

On the public side, the following transit operators provide connections to the Niagara College Glendale Campus, from September to April:

- St. Catharines Transit: 11 buses (between 7:45 am and 5:30pm)
- Thorold Transit: 2 buses (at 8:00 am and 4:40 pm)
- Welland Transit: 2 buses (at 8:00 am and 4:40 pm)
- Niagara Transit: 9 buses (between 8:00 am and 5:30pm)

In general, the Town's transit services need to be improved for traveling from one urban area to the other (within Niagara-On-The-Lake) as well as to / from other Towns and Cities. Possibilities can be explored in terms of providing connections with other transit properties currently servicing the Niagara College Glendale Campus.

2.6 Commercial Vehicles

Regional Commercial Vehicle Routing Plan

The Region of Niagara is currently reviewing their Draft Arterial Road Study, which identified future Regional roads and a commercial vehicle network. Currently, commercial vehicles are permitted on all Regional roads except where a vehicle does not meet the posted weight restrictions. As part of this study, the concept of introducing a truck route was investigated and a network was developed. Within the municipal boundaries of Niagara-On-The-Lake, eight (8) Regional roads were identified to support commercial truck traffic. The selected routes allow truck traffic to travel between the Old Town, Virgil, Queenston, St. Davids, and Glendale. **Figure 2.3** identifies the commercial vehicle routing plan through Niagara-On-The-Lake.



St. Davids Community

Volume of truck traffic is a perceived problem within the St. Davids community for local residents living in and around York Road (Regional Road 81). However, St. Davids has a significant processing (e.g. Kraft) and agricultural base, which

LEGEND

Figure 2.3
Commercial Vehicle Routing Plan

Source: Regional Municipality of Niagara; Arterial Roads System Plan – Draft Final Report

requires commercial trucking to distribute products from farms to processing plants and distributors. The Regional roads within the area provide commercial trucks access to their various destinations, thereby reducing the use of local roads throughout St. Davids.

Along York Road (Regional Road 81), between Townline Road and Concession 7 Road, there is a Husky truck fuel centre and rest area, which attracts a high volume of truck traffic from the QEW and Highway 405 via York Road (Regional Road 81).

Commercial vehicles use York Road (Regional Road 81) to access either the QEW or Highway 405. Trucks heading to Highway 405 travel through St. Davids to Four Mile Creek Road (Regional Road 100) and turn right to access the Highway 405, Stanley Avenue interchange on Niagara Townline Road. Several reasons exist for the use of the Highway 405 interchange by York Road truck traffic. The first relates to the level of congestion and delay experienced at the Glendale Avenue interchange and York Road intersection. The second reason relates to the difficulty that trucks bound for the Queenston Lewiston International Bridge have in weaving from the Glendale Avenue on ramp to Highway 405. This vehicle maneuver is difficult during the summer months given the high traffic volumes.

A review of the volume of commercial vehicles on York Road (Regional Road 81) from Townline (Grantham) Road to Four Mile Creek Road (Regional Road 100) was undertaken. The review considered the amount of truck traffic that used this section of roadway to access the Stanley Avenue interchange. The following summarizes the key findings:

During the AM peak hour on a typical weekday, the following trends were identified:

- On average, 25 trucks per direction were recorded between Townline (Grantham) Road and Four Mile Creek Road.
- Of these trucks, an average of 5 eastbound trucks turned south onto Four Mile Creek Road from York Road and 2 westbound trucks originated from Four Mile Creek Road.
- An additional 10 westbound trucks originated from southbound Four Mile Creek Road.

Although, on average, the number of trucks accessing and egressing from St. Davids via the York Road and Four Mile Creek intersection seems moderate, it is significant when considering the number of trucks in relation to the arriving and departing times. 50 trucks traveling through St. Davids within a one-hour period equates to one truck every 1.2 minutes.

In the AM off peak hour:

 On average, 10 trucks traveled easterly from Townline (Grantham) Road to Four Mile Creek Road and 22 trucks traveled westerly from Four Mile Creek Road to Townline Road.



- On average, 5 eastbound trucks turned south onto Four Mile Creek Road from York Road and 11 southbound trucks turned west from Four Mile Creek Road onto York Road.
- On average, 3 northbound trucks turned west from Four Mile Creek Road to York Road.

After obtaining a representative sample of the truck traffic volumes during the morning, the AM off peak hour reflected fewer, but still relatively high truck volumes (1 truck every 1.9 minutes).

During the PM peak hour:

- On average, 29 trucks traveled easterly from Townline (Grantham) Road to Four Mile Creek Road and 19 trucks traveled westerly from Four Mile Creek Road to Townline Road.
- On average, 7 eastbound trucks turned south onto Four Mile Creek Road from York Road and 6 southbound trucks turned west from Four Mile Creek Road onto York Road.
- On average, 2 northbound trucks turned west from Four Mile Creek Road onto York Road.

After obtaining a representative sample of the truck traffic volumes during the morning, the AM off peak hour reflected fewer, but still relatively high truck volumes (1 truck every 1.2 minutes).

As identified above, a significant number of trucks are currently traveling through the St. Davids community. Given that York Road and Four Mile Creek Road are Regional roads and approved as commercial routes, the community currently experiences problems due to commercial truck traffic. Other turning movements to/from York Road have trucks using Four Mile Creek Road as a shortcut to the Stanley Avenue interchange via Townline (Stamford) Road to access Highway 405.

In the PM off peak hour:

- On average, 12 trucks traveled easterly from Townline (Grantham) Road to Four Mile Creek Road and 5 trucks traveled westerly from Four Mile Creek Road to Townline (Stanford) Road.
- On average, 3 eastbound trucks turned south onto Four Mile Creek Road from York Road and 5 southbound trucks turned west from Four Mile Creek Road onto York Road.
- On average, 1 truck turned west from Four Mile Creek Road onto York Road.

The PM off peak hour shows a reduced flow of trucks filtering through St. Davids with approximately 1 truck traveling along York Road every 3.5 minutes. Though



this is not as severe as the PM peak time, the frequency is still relatively high for a small community.

Virgil, Old Town, and Queenston

There are no major trucking issues identified within the communities of Virgil, the Old Town or Queenston.

2.7 Road Network

This section presents the level of service of the existing transportation system under existing travel demands.

2.7.1 Transportation Model Development Approach

The Region of Niagara developed a Region wide travel demand model using TransCAD software. This model is divided into 520 traffic zones which cover all Towns and Municipalities within the Region. Within Niagara-On-The-Lake, the model includes 11 traffic zones, all Provincial and Regional roads and the major municipal roadways. The model is calibrated on 1996 (base year) and generates travel demand forecasts for the years 2011 and 2021. These forecasts are based upon projections of population and employment by traffic zone both internal and external to the Region. This information was reviewed and approved for use in the Niagara-On-The-lake transportation Master Plan Study by the Technical Committee.

Necessary refinements to traffic forecasts generated from the TransCAD model were completed separately using spreadsheet models. This process involved extracting traffic volumes from the TransCAD model and adjusting using best judgment and knowledge of the area. Where required, bi-proportional balancing, or Fratar technique, was used to balance volumes at the intersection level.

In order to understand travel patterns within and external to the Town, numerous select link analyses were completed. These analyses provided a better understanding of trip origin and destination relationships between the traffic zones. In addition, the trip matrices in the TransCAD model were aggregated from 520 zones to 14 zones. This aggregated zone system included traffic zones representing Niagara-On-The-Lake, adjacent municipalities and border crossings.

2.7.2 Intersection Analysis

In order to address specific traffic operational issues (i.e. level of service, intersection capacity utilization, delays, queuing, etc.) at the intersection level, localized sub area models were developed for the Virgil and Glendale areas. These areas were identified as having significant transportation capacity issues and traffic operational difficulties.



These sub-area models were prepared using the Synchro Version 5 (macroscopic model) and SimTraffic 5 (microscopic model) software. The Synchro sub-area models detailed the intersection control type, geometry, and lane configuration, signal timing, phasing for signalized intersections, intersection coordination, etc. These models facilitated intersection analysis and sub-area performance of the roadway network. The SimTraffic micro simulation model was built and calibrated to the site conditions for the 2003 traffic scenario and used to analyse the existing operational performance. Future development scenarios were also analyzed in regards to intersection and overall sub-area operational performance, including complex situations, queuing and delay analysis.

Two measures of effectiveness/performance were used in the analysis. The first is Level of Service (LOS) which is based on the level of delay experienced by traffic movement and the second is volume to capacity ratio (v/c). This represents a ratio of the demand volume over the roadway capacity. This measurement can also be equated to LOS.

Virgil Area

Intersection performance for both signalized and unsignalized intersections was analyzed using Synchro and SimTraffic Version 5 software. Based on the analysis, there are no current areas of concern for traffic movements and circulation. All intersections operate at a LOS B or higher.

Glendale Area

A review of the York Road (Regional Road 81) area traffic study suggests that 2 intersections operate at a critical LOS with critical turning movements. Airport Road and York Road is an unsignalized intersection, which currently operates at a LOS F with an overall delay of more than 100 seconds. The southbound left is a critical movement with a LOS F. The critical movement delay is 122 seconds with a v/c of 1.06. The other intersection is signalized at Glendale Avenue and Taylor Road. The overall LOS is an acceptable C but operates with two critical turning movements that are approaching critical LOS. The westbound left is servicing at LOS D with an overall delay of 43 seconds and a v/c of 0.90. The other critical turning movement is the southbound left, which is servicing a LOS C with an overall delay of 34.3 seconds and a v/c of 0.92. Although the latter intersection's LOS is not severe, the v/c ratios are approaching 1.00.

2.7.3 Link Analysis

Volume to Capacity Spreadsheet Development

A network evaluation of the Town of Niagara-On-The-Lake was undertaken to identify the road capacity for each roadway. This consisted of site visits, traveling the entire road network within the identified boundaries and documenting posted speeds, speed transition zones, cross-sections and



intersection and roadway geometrics. This information was utilized to develop appropriate roadway capacities throughout the transportation network. Capacities were also assigned by road standard designation. For example, a Regional road would have a higher capacity rating due to the design standards it must maintain (resulting from higher volumes of traffic and commercial trucks servicing the area). Local municipality design standards are to accommodate vehicles in the order of 5000 vehicles/day or less on most roads. There are exceptions however, in which the local municipality may have a high volume roadway (i.e. collector). In this case, the road capacity may be increased to handle high volumes of traffic. The assumed roadway capacities used were extracted from the Regional TransCAD model and approved for use by the Project Technical Committee.

Identified in **Table 2.1** are the capacity values for the various roadways, depending on its posted speed, road classification and jurisdiction. The Regional roads have the highest capacity due to the higher posted speeds, higher traffic demands, and the mix of traffic that the Regional roads can carry. The higher lane capacity represents an 80km/hr posted speed or higher, while speeds lower than 80km/hr represents the lower capacities. One exception to this rule is the Old Town where, due to congestion and high pedestrian traffic, the capacity has been reduced to reflect the overall Old Town road operations.

Table 2.1 – Roadway Capacity Values

Regional Roads	Capacity (vehicle/hour/lane)
Airport Road	850
Niagara Stone Road	850/600
York Road	850/600
Four Mile Creek Road	850/600
Lakeshore Road	850/600
Stewart Road	850
Niagara Parks Commission Roads	
Niagara River Parkway	600
Municipal Roads	
Town Roads	800/600
Old Town	450

A roadway link spreadsheet model was created to assess each roadway section within the transportation network. A capacity value from **Table 2.1** was introduced to each roadway section.

To determine the demand on the various roadways, several sources of information were referenced (i.e. Regional turning movements, link data from Regional historical counts and Town of Niagara-On-The-Lake, and a corridor count study done in the summer of 2003). All of the traffic data used was for the summer weekday PM peak hour.

The summer weekday PM peak hour was selected as the period for analysis for the Town of Niagara-On-The-Lake Transportation Master Plan Study. This time period does not reflect the absolute worst-case traffic demand scenario, but it does reflect the elevated summer travel demand volumes. It would not be prudent to design the roadway plan around a traffic condition that is only experienced on summer weekends. Also, the PM peak hour coincides with the forecast period from the Region of Niagara's TransCAD planning model. This model was used to determine the roadway growth rates in different areas of the Town of Niagara-On-The-Lake.

The traffic volumes were direction specific or split into direction specific by the percentages depending on the road link data. Any traffic data that was taken prior to January 2000 had a growth factor applied to it to bring the volumes up to year 2003. A growth factor of 1 percent per annum was used for all Town Roads and 3 percent per annum for all Regional roads. The only exception was where Regional road links were located in mature (built-out) areas. These roadway links were factored at a growth rate of 1 percent per annum.

After a complete set of 2003 traffic volume data was developed, the data was entered into the spreadsheet model and volume to capacity ratios were calculated for each road section by direction. **Figure 2.4** presents the 2003 summer weekday PM peak hour traffic demands by direction and **Figure 2.5** illustrates a section of the roadway link spreadsheet model.

Volume to Capacity Ratio and Level of Service Definition

The definition of a critical link is a section of roadway that exhibits a v/c ratio of 0.8 or higher. Links with v/c ratios less than 0.80 are operating at acceptable levels of service ranging from the letter grade A to C.

If a roadway exhibits a v/c ratio between 0.81 to 0.90, then it is operating at a LOS of D and should be monitored as tourist peaking could cause severe delays and congestion to occur. Also, given the time involved in planning, designing, and constructing infrastructure, this LOS still allows for continued traffic growth over the implementation period. As roadways move into the LOS E or v/c ratio 0.91 to 1.00 range traffic delays and peak hour congestion is a regular occurrence and travel time reliability degrades. Finally, if the v/c ratio surpasses 1.00 (LOS F), the roadway section fails and is at a state of grid lock during the peak traffic flow times.

Figure 2.4 – Existing Summer PM Peak Hour Traffic Volumes

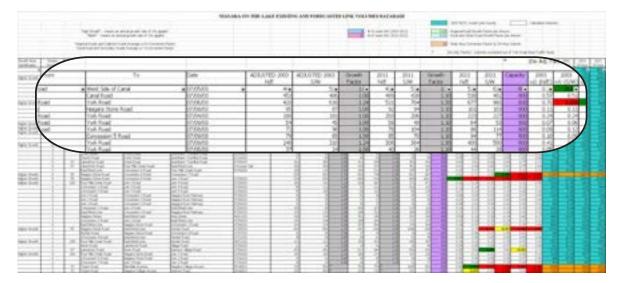


Figure 2.5 – Link Spreadsheet Model

Volume to Capacity Critical Links

Figure 2.6 presents the critical links within the Town of Niagara-On-The-Lake roadway network under the existing 2003 traffic demands. A review of the figure reveals that during the summer PM peak hour, a section Niagara Stone Road (Regional Road 55) operates at a poor LOS which ranges from D to F. The problematic section is within the Community of Virgil, from Line 3 Road to Niven Road, with the southbound lanes being most affected.

Within the Old Town, some areas experience congestion (critical links) during peak hour, but these links do not affect the overall road system. Critical links to monitor include Lakeshore Road from Garrison Village Drive to Nassau Street as well as certain sections along Mississagua Street and Queen Street.

The section of the Niagara River Parkway between John Street East and York Road (Regional Road 81) operates at a LOS of D to E. This LOS represents slower travel speeds and higher delays to side street or private driveway traffic. However, since this roadway is a processional route and tourists traveling this route do so to admire the scenery and ambiance of the vineyards, Niagara River and the historical houses, this is not seen as an issue to be resolved. It is anticipated that commuter traffic on the parkway will choose alternate routes when they reach their delay threshold.

Figure 2.6 – Existing Critical Link Analysis

In the St. Davids area, Four Mile Creek Road (Regional Road 100) is operating at a LOS D from York Road (Regional Road 81) to Warner Road. This can be attributed to the amount of commuter traffic traveling between Niagara-On-The-Lake and Niagara Falls and the roadway connectivity to Stanley Avenue interchange with Highway 405 via Townline (Stamford) Road.

The Glendale area experiences severe traffic congestion and crossing delays over the QEW as a result of the volume of entering/exiting commuter, tourist, commercial and College traffic. Other adjacent roads affected include Taylor Road and Beechwood Road (Regional Road 70). Delays in this area result from the capacity constraints of the Provincial highway interchange and bridges. This area currently experiences a LOS of D to F on a daily basis and has periods in which the traffic spills back onto the QEW.

2.7.4 Collision Analysis

Regional and municipal intersection and mid-block collision data for the last five years (1999 – 2003) were analysed to identify locations with a high frequency of collisions or a high collision rate. Mid block and intersection diagrams are included in **Appendix B**. **Table 2.2** identifies the intersections having a high frequency of collisions.

Collision Average Rate Total **Collisions Per** Intersection (Million Collisions Year Vehicles (1999 - 2003)Entering) Four Mile Creek Road and Niagara Stone Road 27 5 0.67 Niagara Stone Road and Queenston Road 10 2 0.25 Niagara Stone and York Road/Taylor Road 19 4 0.59 Glendale Avenue and Taylor Road 20 4 0.63 2 0.26 Glendale Avenue and York Road 10 Concession 6 and York Road 14 3 0.24 Four Mile Creek Road and York Road 2 12 0.37 Church Road and Stewart Road 3 16 1.88 Airport Road and Queenston Road 20 4 1.26 2 Concession 2 Road and Line 1 Road 10 0.73

Table 2.2 – Intersection Collision Summary (1999 – 2003)

The following inferences can be drawn from the intersection collision summary:

- Intersections of Church Road and Stewart Road, and Airport Road and Queenston Road show higher than normal collision rates and collision frequencies.
- All way stop control (AWSC) was introduced at the intersection of Airport Road and Queenston Road in 2002. Before which the average annual



number of collisions were 4. Following the installation of AWSC one collision occurred, in 2003. At this time it is difficult to determine if this corrective measure has solved the safety concerns at this intersection.

- The intersections with the highest collision frequencies include Four Mile Creek and Niagara Stone Road, Niagara Stone Road and York Road/Taylor Road, Glendale Avenue and Taylor Road, and Airport Road and Queenston Road. However, the collision rates at these locations do not indicate a notable concern.
- Town collision data was reviewed for 2002 through 2004. The data indicates an increase in collisions at select intersections along East & West Line. Intersections to monitor include Concession 2 Road, Four Mile Creek Road (Regional Road 100) and Townline (Grantham) Road.

Table 2.3 shows the mid block collision summary for sections that have a high frequency or higher than normal collision rates.

Table 2.3 - Mid Block Collision Summary for High Frequency / Collision Rate Sections

Roadway Section	Length of Roadway Section (In Km)	Total Collisions	Average Collisions Per Year (1999-2003)	Collision Rate (Million Vehicles Kilometres)
Niagara Stone between Field Road and Four Mile Creek Road	0.42	17	3	1.08
York Road between Niagara Stone Road & Homer Road	0.81	13	3	0.49
York Road between Homer Road and Airport Road	0.96	14	3	0.49
Glendale Avenue between QEW and York Road	0.35	11	2	0.63
York Road between Townline & Concession 7	1.06	12	2	0.72
Four Mile Creek Road between Line 9 & York Road	0.88	11	2	0.59
Lakeshore Road between Read /Firelane & Stewart Road	0.87	11	2	0.44

The following inferences can be drawn from the mid block collision summary:

- Niagara Stone Road between Field Road & 4 Mile Creek Road exhibits a higher than normal collision rate. Review of the collision rates indicate that the majority of the collisions were attributed to driveway maneuvers.
- Based on the intersection summary information received from the Region of Niagara, collisions on York Road between Niagara Stone Road and Homer Road, and Homer Road and Airport Road are generally attributed to environmental (e.g. icy, wet, dry), lighting (e.g. light, dusk, dark, etc.) and road surface conditions.



3.0 Future Conditions

This section provides an assessment of the expected future transportation demands and the resulting deficiencies under a scenario in which only previously committed improvements to the transportation network are undertaken (i.e. donothing scenario). For the purposes of this study, horizon years of 2011 and 2021 were chosen, with 2021 representing a long-term forecast and 2011 representing an intermediate-term forecast. These horizon years were also selected partially due to the Region's availability of population and employment projections and traffic forecasting for these years.

In projecting the traffic volumes for the horizon years of 2011 and 2021, the projections from the Regional transportation model were used as a starting point to obtain a general growth trend within the study area. As the Regional transportation model only includes Regional and major municipal roadways, traffic projections from this model are for these roadways only.

Based on traffic projections obtained from the Regional transportation model and historical traffic data, growth factor rates for Regional and municipal roadways were estimated. To be conservative, a linear growth rate of 3 percent per annum was applied to major roadways, including Regional Road 55, Four Mile Creek Road, Airport Road, and York Road. All other roadways within the study area have been forecasted to grow at a rate of 1 percent per annum linearly.

3.1 Population, Employment and Land Use

Employment in the Town of Niagara-On-The-Lake is expected to increase by 2,653 to approximately 12,272 total employees over the next 20 years (Watson)⁶. Over the same period, estimates of job growth in the Town include 133 new jobs annually (60 in the tourism sector, 25 in agriculture and wine, 21 working at home, 15 in industry and 12 institutional).

By 2023, the Town is expected to grow by an additional 2,500 dwelling units to 7,712 (Watson)⁷. The Town currently issues about 450 building permits per year, of which 150 are residential. Based on the rate of housing development over the past eleven years and current planning estimates, the rate of housing development in the Town will be approximately 123 new dwelling units per year. Annual growth of dwelling units is broken down as follows:

Glendale 45 new dwellings units per year
Virgil 30 new dwellings units per year
St. Davids 20 new dwellings units per year
Old Town 20 new dwellings units per year

⁶ C.N. Watson & Associates Ltd., Economists, In Association With Earth Tech (Canada) Inc., Town of Niagara on the Lake, Development Charge Background Study, July 25, 2003.

⁷ Ibid



Rural 8 new dwellings units per year

Records from December 31, 2002 to present indicate that Niagara-On-The-Lake has a 14-year supply of dwelling units, with 671 vacant housing sites in approved plans and 1581 vacant sites in draft-approved plans. As of that date there was a 9 year supply of vacant detached dwelling sites in approved plans (360 units) with a further 534 potential detached sites in draft approved plans. C. N. Watson & Associates Ltd. recorded the future dwelling unit counts as part of the Town's Development Charge Background Study in July 2003 (**Table 3.1**). As of February 2004, the Niagara-On-The-Lake Planning Department reported an additional 315 new applications for dwelling units (**Table 3.2**).

Table 3.1 – July 2003 Future Dwelling Unit Counts (C.N. Watson & Associates)

Dwelling Units in Process	Final Approved Plans	Draft Plan Approved	Detached Units
Glendale	128	1,123	42%
Virgil	356	48	71%
Old Town	352	-	68%
St. Davids	92	-	59%

Table 3.2 – February 2004 Future Dwelling Unit Counts (Niagara-On-The-Lake Planning Department)

Dwelling Units in Process	New Applications
Glendale	-
Virgil	117 Units
Old Town	21 Units
St. Davids	177 Units

3.2 Roadway Network Analysis

For the purposes of this study, transportation projects, which are either under construction or have been committed to be constructed in the near future, have been included in the base scenario (do-nothing) for the future transportation infrastructure. Committed transportation projects include the following:

 Closure of the Interchange Ramps at Highway 405 at Niagara River Parkway

- Widening of York Road
- Intersection Improvements along York Road
- A multi-use trail on the south side of Regional Road 55 between Anderson Lane and East & West Line

An evaluation of the transportation infrastructure for a future do-nothing base scenario was prepared using the spreadsheet model. The existing 2003 traffic volumes were forecast the year 2011 using two growth rates, one for Regional roads and one of Town roads. Since the Regional roads are more susceptible to development and traffic growth it was anticipated that they would growth a higher rate than the Town roads. A review of historical volumes and the Regional TransCAD model forecast reveal average annual growth rates of 3 percent per annum for Regional roads and 1 percent per annum for Town roads. The forecasting of traffic volumes and growth rates did not include freeway links but did include the roadways with the interchange. **Figure 3.1** presents the future 2011 traffic demand volumes. After applying the traffic growth rates to the spreadsheet model, an analysis of the critical links for the future 2011 traffic scenario was prepared. The results of this analysis are presented in **Figure 3.2**.

Future 2011 Do-nothing Critical Links Analysis

A review of the critical links indicates that Niagara Stone Road (Regional Road 55) experiences capacity deficiencies with a LOS F in both directions in and beyond Virgil. The problematic section from Line 3 Road to Niven Road in the 2003 scenario expands south to Line 4 Road and north into the Old Town to John Street West.

The Old Town experiences congestion (critical links) during summer peak times but it does not affect the overall road system within the Old Town. Lakeshore Road from Garrison Village Drive to Nassau Street will operate at a LOS D in both directions. The section of Lakeshore Road from Garrison Village Drive to Four Mile Creek Road (Regional Road 100) will operate at LOS D in the eastbound direction and various sections along Mississagua Street and Queen Street will operate at LOS D or worse. Queens Parade in the area of the Shaw Festival and Fort George will operate at a LOS D in the southbound direction.

The Niagara Parkway contains similar critical links with poor LOS of D to F within the Niagara-On-The-Lake municipal boundaries. This road is a processional route and tourists traveling this route do so at low speeds due to the scenery and ambiance of the vineyards and the historical houses. At the south end of the Niagara Parkway, Portage Road shows signs of delay in the southbound direction.

Figure 3.1 – 2011 Traffic Volumes

Figure 3.2 – 2011 Critical Links Future Do-Nothing 2011



In the St. Davids area, northbound Four Mile Creek Road (Regional Road 100) from York Road (Regional Road 81) to Warner Road will operate at a LOS E. This is attributed to the increasing level of travel demand from Niagara-On-The-Lake to Niagara Falls and Highway 405 connection on Townline (Stamford) Road. York Road (Regional Road 81) begins to exhibit problems in the westbound direction. When development begins in this area, Four Mile Creek Road (Regional Road 100) and York Road (Regional Road 81) should be monitored.

The Glendale area experiences crossing delays over the QEW due to the volume of entering/exiting commuter and tourist traffic. Other adjacent roads affected include Taylor Road, Glendale Avenue, and Beechwood Road (Regional Road 90). Delays in this area are caused by the Provincial highway interchange configuration and capacity constraints. This area experiences a LOS of D to F, with the Glendale Avenue crossing being the most severe. The increasing development proposed in the Niagara-On-The-Green subdivision should be monitored for additional stress on the adjacent transportation infrastructure. This statement reflects the changing commercial proposals occurring along Taylor Road for the Niagara-On-The-Green community.

Future 2021 Do-Nothing Critical Links Analysis

An evaluation of the transportation infrastructure for a future 2021 do-nothing scenario was undertaken. Growth rates were dirived from the TransCad model for both the Regional and Town Roadways. **Figure 3.3** illustrates the future 2021 traffic demand with the Town of Niagara-On-The-Lake. After applying the traffic growth rates, a graphical representation of the spreadsheet model showing the LOS was generated to illustrate network capacity deficiencies (see **Figure 3.4**).

A review of the 2021 critical links indicates that capacity deficiencies along Niagara Stone Road (Regional Road 55) increase in both directions beyond Virgil, from John Street on the north to Airport Road (Regional Road 90) on the south. This roadway has exceeded its operating capacity and is deficient by one traffic lane in each direction.

The Old Town will experience increasing delays on Lakeshore Road (Regional Road 87) from Garrison Village Drive to Nassau Street with a degraded LOS of E. Mississagua Street and Queen Street are degrading in LOS and Queens Parade, near the Shaw Festival and Fort George, shows more severe capacity constraints in the southbound and northbound directions.

Figure 3.3 – 2021 Traffic Volumes

Figure 3.4 – 2021 Critical Links

The Niagara Parkway has similar critical links with poor LOS of E to F from John Street West to York Road (Regional Road 81). The majority of this link will degrade to a poor LOS. Given the nature of the roadway (processional route) the Niagara Parks Commission will not add capacity and as such non parkway traffic will begin to divert to other routes which offer a more reliable travel time. The south section of the Niagara River Parkway from York Road to Portage Road is forecast to operate at a LOS D.

In the St. Davids area, the northbound direction of Four Mile Creek Road (Regional Road 100) from York Road (Regional Road 81) to Warner Road is operating at a LOS F as a result of the growth in the area and the increasing commuting to/from Niagara Falls. At York Road (Regional Road 81), there are problems in the eastbound and westbound directions. When development begins in this area, Four Mile Creek Road (Regional Road 100) and York Road (Regional Road 81) should be monitored for traffic control improvements.

The Glendale area experiences crossing delays over the QEW due to the volume of entering/exiting commuter, tourist, College and commercial traffic. Adjacent roads affected by these delays include Taylor Road, Glendale Avenue, and Beechwood Road. This area reaches a state of gridlock with area roadways operating at a LOS F. The extent of the critical links covers an area which spans from the Niagara-On-The-Green development, south to Warner Road, north along Taylor Road and west to Glendale Avenue. Development proposed in the Niagara-On-The-Green subdivision should be monitored for additional stress on the adjacent transportation infrastructure. Consideration for an updated traffic impact study should be given if the proposed land uses have changed significantly from the original plan.

3.3 Roadway Deficiencies

In summary, under a do-nothing scenario, the following represents the major transportation deficiencies (see **Figure 3.5**):

- 1. Niagara Stone Road (Regional Road 55) corridor will experience a deficiency of two travel lanes;
- 2. The number and severity of collisions along Niagara Stone Road (Regional Road 55) within Virgil will continue to increase;
- Queens Parade will experience greater periods of gridlock and Hospital access will be adversely impacted;
- 4. The intersection operation and safety of the Niagara Parkway and East & West Line intersection will continue to degrade, forcing use of other roadways such as Niagara Street;
- 5. The Niagara Parkway will continue to experience peak period congestion;
- 6. The roadway network around St. Davids will experience serious operational problems/delays;
- 7. Welland ship canal bridge crossing capacity/reliability will continue to be a route choice uncertainty;



Insert Fig. 3.5

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- 8. Agricultural vehicles will have increased difficulty in crossing major roadways;
- 9. Commuter traffic will continue to disperse onto rural roadway network;
- 10. Traffic infiltration into the neighbourhoods will continue to increase as major roadway congestion/delay increases;
- 11. Mobility of residents in Virgil and Old Town will be severely impacted by congestion and periods of gridlock;
- 12. The Glendale area will experience gridlock and delay on a frequent basis;
- 13. Connections to the Provincial highway network will degrade as more emphasis will be placed on the Stanley Avenue interchange with Highway 405 (includes commercial vehicles and commuters); and
- 14. Overall, safety on Town and Regional roadways will decrease.

4.0 Public Consultation

In accordance with the *Municipal Class Environmental Assessment (June 2000)* document, an open and proactive approach to public and agency consultation was undertaken throughout the study. The consultation program provided for valuable information exchange, early identification of key issues and meaningful input to the development and evaluation of alternative solutions. As a result of the consultation efforts undertaken with members of the local public, special interest groups and other key stakeholders, the provision of local knowledge and insight was added to the project and project team, thereby assisting in the early resolution of issues and the development of optimal solutions.

The consultation program developed for the Niagara-On-The-Lake Transportation Master Plan Study included the following and is further discussed below:

- Project notifications, mailings and web site postings
- Technical and Steering Committee meetings
- Stakeholder Group meetings
- Public information centres (PIC) s
- Additional agency, group, individual consultation activities where required (i.e. Laidlaw Education Services, Virgil Businessman's Association, Chamber of Commerce, Emergency Services, Region of Niagara, Niagara-On-The-Lake, Town Council)

4.1 Project Notifications, Mailings and Web Site Postings

Throughout the study, members of the public, local business community, key stakeholders, external agencies and special interest groups were contacted via The Review and Niagara Advance newspapers, handouts/brochures posted at various highly visible locations (e.g. Post Office), mail delivery, fax, phone calls, email and handout notices. Notifications were "sent" out at the commencement of the study, prior to various meetings (e.g. Stakeholder Group Meetings, PICs, etc.) and at the completion of the study. Stakeholders and technical and reviewing agencies that were likely to have an interest in the project were identified at the outset of the project and placed on a mailing list to receive all project notifications. Other interested parties were added to the mailing list as required. All individuals with questions or issues regarding the Study were encouraged to contact the project manager by telephone, fax and/or e-mail. In addition to the identified project notifications, additional materials were placed on the Town of Niagara-On-The-Lake's project web site including relevant display boards and materials (e.g., drawings, comment sheets, Study outline, etc.). Copies of all project notifications, mailings and material posted on the Town's web site are provided in **Appendix C-1**.

4.2 Technical and Steering Committees

A Technical Committee was established at the outset of the Study and consisted of representatives from the Town of Niagara-On-The-Lake (Planning & Development and Public Works Department), Region of Niagara (Planning & Development and Transportation), Ministry of Transportation and Niagara Parks Commission. In general, the Technical Committee provided support for the study process, ensured that resources were made available for the consultant project team and was responsible for overseeing study progress.

Throughout the course of the Study, the consultant project team met with the Technical Committee on six occasions as follows:

- 1. Project Initiation Meeting
- 2. Existing Conditions Meeting
- 3. Public Information Centre No.1 Summary Meeting
- 4. Identification and Evaluation of Potential Improvements Meeting
- 5. Recommended Improvements Meeting
- 6. Draft Master Plan Study Report Meeting

A Steering Committee was also developed at the beginning of the Study in order to provide direction to the Technical Committee (and study recommendations as a whole), taking into consideration the requirements and recommendations of the consultant project team, Technical Committee, Stakeholder Group, local council, general public and members of the local business community, etc. The Steering Committee was comprised of local members of Council and select Town of Niagara-On-The-Lake and Regional Niagara staff. The Technical Committee met with the Steering Committee throughout various stages of the Study to ensure that the Steering Committee was kept updated on the status of the Study. A sample presentation to the Steering Committee is provided in **Appendix C-2**.

4.3 Stakeholder Group

Since the various needs of individuals and affected parties can often be successfully addressed through smaller group meetings, a Stakeholder Group was established at the outset of the study to obtain a sense of local community values and sensitivities to be incorporated into the study. The group comprised of 18 individuals representing a cross section of the community interests as illustrated in **Table 4.1**.



Table 4.1 – Stakeholder Group Representation

AREA OF INTEREST		
Heritage	Winery (Agro-Tourism)	
Commercial Trucking	Conservation	
Transit	Agriculture and Natural Environment	
Cycling, Walking and Trails	Residential Interest	
Business Interest	Tourism	

The project team (consultant, subconsultants, and Technical Committee) met with the Stakeholder Group twice during the study. The first meeting occurred during Phase 1 of the study and was structured to generate dialogue about:

- local community values and sensitivities;
- relevant evaluation criteria measures and their relative importance; and
- perceived problems and potential solutions.

During the second meeting (Phase 2), the stakeholder group was utilized as a "sounding board" for the draft transportation recommendations before they were presented to the public. All input received from the Stakeholder Group was incorporated into the identification and evaluation of the alternative scenarios. Presentation materials and minutes describing the stakeholder meeting discussions (as available) are provided in **Appendix C-3**.

4.4 Public Information Centre No. 1

The first Public Information Centre (PIC) was held on September 29, 2003 at the Centennial Arena Meeting Room. Two sessions were conducted, from 3:00 p.m. to 5:00 p.m. and 6:00 p.m. to 8:00 p.m. to provide residents, businesses, property owners and interest groups an opportunity to meet the project team and to present and obtain comments on the identified transportation network issues.

Notification of the PIC was provided via a newspaper Notice of Public Information Centre published in the *The Review, Niagara Advance* and *St. Catharines Standard* newspapers, as well as the Town's website prior to the PIC. Displays presented at the PIC included aerial reference maps, photos, graphics panels and textual materials.

Those attending the PIC were requested to sign an attendance booklet and were encouraged to provide their written comments to the material presented, either by completing the comment sheets provided during the PIC, or by mailing their comments after the meeting to the consultant, Mr. Nick Palomba, P. Eng., Project

Manager, or Mr. Ewald Kuczera, P.Eng., Director of Public Works, Town of Niagara-On-The-Lake.

Overall, the PIC was generally well received by those attending. All submitted comments and concerns were reviewed for consideration in the identification and evaluation of the planning alternatives. Copies of all PIC notification materials, text and graphics panels presented (excluding large-scale drawings and air photos), attendance booklet and submitted comment sheets are provided in *Appendix C-4*. A summary of the concerns raised is provided below under Section 4.7.

4.5 Public Information Centre No. 2

The second Public Information Centre was held on June 17, 2004 from 3:30 p.m. to 5:30 p.m. and 6:30 p.m. to 8:30 p.m. at the Anderson Lane Fire Hall meeting room. Local residents, businesses, property owners, external agencies, and interest groups were provided an opportunity to identify transportation issues and concerns to be addressed in the study and obtain information on the progress of the project. At the PIC, a number of transportation network deficiencies were presented, as well as potential improvements to non-vehicular modes of transportation (i.e. transit, pedestrian and cyclist facilities) and alternative east/west and north/south route scenarios.

Notification of the second PIC was provided via a newspaper Notice of Public Information Centre No. 2 published in the *The Review, Niagara Advance* and *St. Catharines Standard* newspapers and the Town's website, letters to various government agencies and interest groups, brochures posted at "high traffic" locations and a Mayor's Column published in the *Niagara Advance* prior to the PIC. Displays presented at the PIC included aerial reference maps, photos, graphics panels, and textual materials. A presentation using Microsoft PowerPoint was also given at the PIC.

All submitted comments and concerns were reviewed for consideration in the evaluation of the planning alternatives. Copies of all PIC notification materials, text and graphics panels (excluding large-scale drawings and air photos) presented, attendance booklet and submitted questionnaires are provided in **Appendix C-5**. A summary of the concerns raised is provided below under Section 4.7.

4.6 Individual Agency and Group Meetings

In addition to the Stakeholder Group meetings and PICs, additional meetings were held, as required, throughout the course of the study with individuals/groups identified as having an interest in the study (i.e. Laidlaw Education Services, Niagara-On-The-Lake Chamber of Commerce, Virgil Businessman's Association and Emergency Services). All issues/concerns identified at the meetings were documented and reviewed for consideration in the identification and evaluation of



the planning alternatives. Presentation materials and minutes describing the meeting discussions (as available) are provided in **Appendix C-6**.

4.7 Summary of Comments/Issues Raised

Throughout the study, the Technical and Steering Committees, Stakeholder Group, interest groups, members of the local business community and local residents, raised a number of transportation-related issues. These issues were received through submitted comment sheets, letters to the Town of Niagara-On-The-Lake and Project Team, and through discussions/meetings held with various committees and interest groups. Comments were documented throughout the course of the Study as they were raised and compiled in tabular form (see **Appendix C-7**). The following represents a summary of the key issues brought forth during the study.

Traffic Infiltration

Since many people have their place of employment outside Niagara-On-The-Lake, existing arterial roads (e.g. Regional Road 55, Creek Road, East/West Line, Lakeshore Road and the Parkway) often do not adequately handle high traffic volumes. Tourists compound this problem. Because of the identified congestion and inadequate signage, rural roadways sometimes serve as bypasses to arterial routes and neighbourhoods are being infiltrated by through traffic (e.g. St. Davids and Chautauqua). This is causing a concern over potential pedestrian and vehicle conflicts.

Truck and Tour Bus Movement

There is a need to control truck traffic coming off the QEW or Highway 405 into St. Davids and Glendale. However, there is also a need within Queen Street and Old Town, for example, for trucks to deliver goods. Perhaps a "truck route only" is required. As for buses, controlling parking and routing is key. Given the fact that Niagara-On-The-Lake is a high-end tourist destination, the Town is currently doing a good job.

Insufficient Linkages

Niagara-On-The-Lake residents are generally limited to one main link to the QEW at Glendale Avenue, with the exception of Highway 405 for Queenston Residents. The Canal to St. Catharines is a problem since one is always facing the likelihood of being stopped for the raised bridge, waiting for the crossing ship to pass. Better ways over the canal would create a positive change in the flow of traffic.

Transit

There is currently no public transit for residents travelling within the community and to adjoining communities. This is a major need that needs to be addressed



through either public/private or private/private partnerships. In addition, at present there is not a good understanding of transit ridership needs, both for internal and external trips from/to Niagara-On-The-Lake. A ridership survey should therefore be undertaken.

Pedestrian Facilities

There are pedestrian and vehicle conflicts within Niagara-On-The-Lake (e.g. Queen Street and King Street). Truck traffic in the Glendale area is also a major issue for pedestrians. Where possible, sidewalks should be incorporated into the residential street designs. As Niagara-On-The-Lake is surrounded by water on three sides, public access to water has not been adequately addressed in the past. Tourism and pedestrian movement, possibly near the Queenston dock area, should be investigated.

Bicycling Facilities

Most cyclists are recreational tourists; others use bicycles as the main mode of transportation. Better cycling facilities would promote more bicycle use, thereby facilitating better sustainable development. Where possible, off-street bike paths and multi-purpose paths should be incorporated into the residential street designs.

Aesthetics

The visual / aesthetics quality of the transportation network requires improvement to positively impact the overall image of the community of Niagara-On-The-Lake. More trees and gateways are needed for an attractive way of getting into Niagara-On-The-Lake is required. Other improvements required include better interchange landscaping, eliminating the smell from Walker Quarry, better visual signage and eliminating the visual clutter at the Glendale interchange.

Heritage

The preservation of Niagara-On-The-Lake's heritage resources is essential. The heritage conservation districts must be protected / enhanced in order to maintain Niagara-On-The-Lake's distinctive historical atmosphere.

Land Use

In regards to transportation, the largest land use issue facing Niagara-on-the-Lake is the protection of tender fruit lands, greening of Niagara, and overall quality of life. Over next 5-20 years urban boundaries as set out in Official Plan should remain as such and we should concentrate on sensitive infill within those boundaries, be it residential or commercial development.

The preferred location for residential growth in Niagara-On-The-Lake is within the urban area boundaries. Possible new growth scenarios include the Glendale



area and potential redesignation of industrial lands to residential. Sensitive infill and smart growth policies should be adopted to accommodate growth.

Industry/Employment

Industry/Employment opportunities that should be encouraged to locate in Niagara-On-The-Lake include (1) agriculture (2) tourism and (3) commercial and Industrial. Protection of the agricultural base should be encouraged due to the unique climate and fertile lands etc. There should also be a focus on increasing the number of small farm related wineries. Clean, light industrial warehousing uses, such as Purolator Courier, should be encouraged near major transportation corridors.

Parking

Satellite, or perimeter, parking would be an appropriate solution for the growing tourist parking demand in the Old Town. East & West Line between Regional Road 55 and the Niagara River Parkway would be a good location, with aesthetics incorporated into the design. Employees could use this lot so as to free up prime parking spaces for tourists in the old town. Any cost associated to tourists who use the parking lot could deter patrons from using it.

Local Business Impacts

Concern expressed over the potential impact of a perimeter parking lot, citing a decrease in local business when buses were moved to Fort George, and traffic bypassing local business (i.e. creation of alternate routes/lane widening must keep local businesses in mind).

Emergency Services

Potential new fire stations servicing Niagara-On-The-Lake include Line 3/Line 6/Regional Road 55 intersection and Town Line Road /York Road area.

Alternative Route to Regional Road 55

Future traffic volumes/demands along Regional Road 55 would be best served via a designated alternative route(s), rather than widening Regional Road 55. Line 3 Road could serve as an east/west route from the Carlton Street Bridge to the Niagara River Parkway as this road has the best connectivity. Concession 6 Road could serve as a north-south route to divert traffic from Airport Road (Regional Road 90). Highway traffic entering Niagara-On-The-Lake should be directed to use Concession 6 Road.



5.0 Evaluation Criteria Development

In accordance with the Municipal Class Environmental Assessment planning and design process, the impact assessment and evaluation of alternatives (as described in Section 6 below) was based upon a defined set of criteria developed in consultation with the Technical and Steering Committees, Stakeholder Group, interest groups, members of the local business community and local residents through the public consultation process. The criteria developed served to represent the broad definition of the environment as described in the Environmental Assessment Act.

5.1 Evaluation Criteria

The assessment of the alternative planning solutions was undertaken based on the following criteria:

- Operational Effectiveness of Transportation Services Having regard for overall network efficiency (for all modes of travel), level of service, roadway geometrics, transit, and heavy vehicle support.
- 2. Cost Comparison Having regard for capital and maintenance costs.
- 3. Heritage/Culture/Tourism Impact Having regard for the historical, archaeological and tourism features within the community and their interrelationship with respect to community identity.
- *4.* Socio-Economic Impact Having regard for residents, neighbourhoods, businesses, social cohesion, and community features.
- 5. Safety Having regard for vehicular, pedestrian and cyclist safety.
- 6. Natural/Physical Impact Having regard for protecting the natural and physical components of the environment (i.e., air, land, water and biota) including natural and/or environmentally sensitive areas.

Note: Although Compatibility with Community Vision was originally identified as an evaluation criterion, it was later removed from the list of evaluation criteria and used as a primary screening tool. In general, potential scenarios which did not have a regard for community vision/character were not regarded as viable alternatives and therefore were not considered in the evaluation. Early in the study process, when Stakeholder Group and Technical Committee members were asked to assign Compatibility with Community Vision with a criteria-weighting percentage (see below for description), the weightings assigned to this preliminary criterion were equally redistributed to the other criteria presented.

5.2 Criteria Weighting

Once the evaluation criteria were established based on the study issues presented by all of the stakeholders and the Municipal Class Environmental Assessment document, a criteria weighting factor, reflecting the overall relative importance of each criterion for this project, was applied to each of the identified evaluation criterion. In determining each criterion's relative importance (i.e. percentage weighting factor), each Stakeholder Group, Technical and Steering Committee representative was requested to provide their individual criteria weightings as they deemed fit. In addition, input received from members of the local business community, local residents and agencies, as well as the consultant and subconsultant, were incorporated into the criteria weighting. The evaluation criteria and their associated weighting are identified in **Table 5.1**.

Table 5.1 – Evaluation Criteria and Weighting

EVALUATION CRITERIA	WEIGHTING (%)
User Safety	17
Operational Effectiveness of Transportation Services	22
Natural/Physical Impact	17
Heritage/Culture/Tourism Impact	17
Socio-Economic Impact	17
Cost Comparison	10
TOTAL	100

6.0 Identification & Evaluation of Alternative Planning or Strategic Solutions

This section outlines the assessment and evaluation of the planning alternatives or strategic options that were considered to address the transportation demands. The identification and assessment of planning alternatives or strategic options was a key element of the Master Plan as it guides the process for the development of specific components on the future transportation network. The strategic options basically address the transportation issues identified both through the technical assessment and the public process.

<u>Overview</u>

The goal of the Master Plan Study was to follow the Environmental Assessment process and in so doing address both phases 1 and 2 for any of the recommended transportation improvements. Within Phase 2 of the EA process, the evaluation of alternatives was carried out in the following steps:

- Step 1 Identification and evaluation of strategic transportation alternatives/options to address overall transportation issues.
- Step 2 Review of problem areas based on the results of Step 1 and identification of roadway improvement alternatives where needed for each problem area.
- Step 3 Evaluation of the roadway improvement alternatives to determine a ranking of the preferred roadway improvements.
- Step 4 Development of network options by combining preferred roadway improvements.

Strategic or Planning Alternative Evaluation

In developing a strategic transportation vision for the Town of Niagara-On-The-Lake, several strategic options were considered. The options involved different strategies to address the future transportation demands within the Town. This step in the process identifies the alternative or combination of strategic options best suited to mitigate the identified transportation problems in the Town:

- Insufficient roadway capacity;
- Welland ship canal crossing;
- Vehicle mix (e.g. autos, buses, trucks, agricultural, etc.);
- Mix of roadways users (e.g. tourist, commuter, local);
- Provincial highway connections;
- Roadway safety;
- Discontinuous bicycle/pedestrian facilities;



- Variety of cyclist skill levels;
- · Commercial traffic impacts; and
- Inadequate transit connectivity.

Development of Strategic Options

In accordance with the Municipal Class Environmental Assessment, June 2000, the following alternative strategic/planning alternatives were considered:

- Do-Nothing
- Transportation System Management/Demand Management Measures (TSM/TDM)
- Improvements to Transit Service
- Blended or Balanced Transportation System

Strategic Option 1 – The Do-Nothing Alternative

This alternative was included to provide a benchmark condition to which all other planning alternatives would be compared. This condition assumes that no improvements outside of committed and programmed transportation projects will be made to increase the vehicular and/or person carrying capacity of the transportation network to the year 2021.

Strategic Option 2 – Transportation System Management/Demand Management Measures

Transportation Demand Management (TDM) techniques and affiliated changes in societal values have the potential to affect travel demand. Programs such as improved pedestrian and bicycle facilities, high occupancy vehicle lanes, and staggered or flexible work hours can reduce travel demand. Trends in auto occupancy, vehicle ownership and work at home can both increase and decrease travel demand. TDM techniques have the potential to change the level of demand or at least adjust the peak demand times. This may help to reduce some of the transportation problems. Although the Town and the Region can promote TDM measures, many are beyond their control.

Transportation System Management (TSM) techniques include numerous methods of maximizing the existing transportation system efficiency by eliminating localized deficiencies with cost effective minor improvements. This strategy assumes that over the next 10-20 years, there would be a concerted effort to market, implement and manage "practical" TDM strategies with a Townwide objective to reduce the relative percentage of trips made by private automobile. Some TSM measures considered for the Niagara-On-The-Lake Transportation Master Plan Study included:

- Minor improvements to intersection geometrics including auxiliary lanes;
- Modification or upgrading in intersection traffic control;



- Optimizing signal timings;
- · Guide signing;
- · Changes in roadway network circulation; and
- Improved sidewalks, trails, and bicycle facilities.

Strategic Option 3 – Improvements to Transit Service (Plus Strategic Option 2)

This alternative solution includes an increase in carrying capacity and the integration of both local transit and visitor transit services within Niagara-On-The-Lake in order to encourage increased transit use. This mobility option requires a significant change in public opinion towards their mode choice. If achieved, a growth in the use of all non-automobile modes would be realized. This option includes the measures/enhancements included in Strategic Option 2.

Strategic Option 4 – Blended Transportation Services

This alternative combines the measures/improvements associated with Strategic Option 2 and increased transit service (Strategic Option 3) as well as the addition of new roadway capacity through the construction of new roadways, widening of existing facilities or upgrading of existing rural roads.

Criteria for the Evaluation of Strategic Alternatives

The assessment of the strategic alternative solutions was undertaken on the basis of the following evaluation criteria groups:

- Operational Effectiveness of Transportation Services
- Cost Comparison
- Heritage/Culture/Tourism Impact
- Socio-Economic Impact
- Safety
- Natural/Physical Environment

The following summarizes the evaluation and discusses the ability of each option to meet the Town's transportation needs.

Strategic Option 1 – The Do-Nothing Alternative

The Do-Nothing alternative will not eliminate the existing and forecast travel demand deficiencies within the Town of Niagara-On-The-Lake or at its gateways with the Provincial highway system. This alternative will also not address the traffic related problems associated with tourist and agricultural activity in the Town and will have a negative impact on tourist travel and the economic health of the community. The option will not provide adequate transportation infrastructure to accommodate future increases in population, employment, and tourism within the Town of Niagara-On-The-Lake.



While the option has no direct physical impacts on the natural environment there will be undesirable local air quality effects within the community as congestion increases. The social impacts of the alternative relate to the effects of increased traffic volumes in the community resulting in a reduced quality of life as a result of the undesirable noise, dust and mobility concerns for the residents.

Although the do-nothing alternative has the lowest implementation costs, it does not alleviate the transportation deficiencies and would significantly impair the future growth and development of the Town. The Do-Nothing alternative is not a realistic solution to the transportation challenges of Niagara-On-The-Lake. This type of approach will not address any safety issues.

Strategic Option 2 – Transportation System/Demand Management (TSM/TDM) Measures

The implementation of both TSM and TDM measures has the potential to address some of the Town's transportation challenges, but on its own cannot address all the needs. Minor localized hot spots on roadways and intersections within the community would benefit from the implementation of TSM measures.

TDM strategies are generally considered as companion strategies to land use planning and TSM improvements by addressing mobility requirements in an environmentally friendly and socially acceptable manner. Although some strategies are not applicable to the Niagara-On-The-Lake community, others such as parking management and strategic signage programs have the potential to divert visitors out of their vehicles, thereby reducing auto demands within the Old Town. Opportunities to reduce visitor automobile travel to the Town may be more difficult to achieve but opportunities exist in the area of the Niagara River Parkway and the Niagara Parks People Mover.

While the option has limited physical impacts on the natural environment, there will be undesirable local air quality effects within the community as congestion increases. The social impacts of the alternative relate to the effects of increased traffic volumes in the community, resulting in a reduced quality of life as a result of the undesirable noise, dust and mobility concerns for the residents.

The option of TSM/TDM measures on their own does not adequately address existing or future deficiencies in the transportation system and therefore does not represent a practical solution to the transportation needs of the Town of Niagara-On-The-Lake.

Strategic Option 3 – Improvements to Transit Service

With the addition of an enhanced transit service, some community needs can be addressed such as movement between urban nodes. However, with a majority of residents working outside the community and a large proportion of the workforce residing outside the community, notable reductions in daily travel by automobile would only be realized through the implementation of a convenient



and reliable inter-municipal transit service. A societal shift in the way commuting is viewed will also be required given the high rate of vehicle ownership in the Town.

Opportunities in the area of a visitor transit (shuttle) system will provide significant local benefits, but will not on its own represent a practical solution to the Town-wide transportation challenges being considered in the context of this Transportation Master Plan. To the extent that greater use of transit can be achieved, some air quality improvements can be expected. However, given the current geography of Niagara-On-The-Lake and the future development patterns within the Town, the provision of a cost-effective service is very difficult to attain because of the amount of non-revenue bus hours that are created by the separation of the urban nodes.

In summary, this alternative on its own is not likely to reduce the trend of increased congestion in areas of the community, resulting in increased deterioration of local air quality. Roadway traffic demands will still increase, resulting in similar social and economic impacts as those described in the Do-Nothing alternative.

Strategic Option 4 – Blended Transportation Services

This alternative includes measures/improvements associated with Strategic Option 2 and Strategic Option 3 as well as the addition of roadway capacity through the construction of new roadways, widening of existing facilities or upgrading of existing rural roads. This alternative is the only one which can solve many of the existing and anticipated mobility challenges in the community. A blended transportation system plan which includes a proper mix of roads, transit and TDM/TSM strategies is seen as the most responsible solution to mobility challenges in Niagara-On-The-Lake.

Although the blended transportation option has socio/cultural, natural environment, and economic impacts associated with it, many of the impacts can be mitigated. In addition, the option is the only alternative which can completely address existing and future travel demands and includes items such as signage, parking management, bicycle and trails facilities, roadway improvements and transit improvements. Since Strategic Option 4 can solve the problem and minimizes impacts through proper planning and design, it was rated as preferred over Options 1, 2 and 3.

Conclusions

Strategic Option 4, a blended transportation system which includes roadway capacity improvements, TDM/TSM measures and improved transit service was carried forward in the study. Specific roadway improvement options were developed and evaluated that could be considered to address the remaining transportation deficiencies, after the implementation of the appropriate set of TSM/TDM and transit improvements.



7.0 Identification and Evaluation of the Transportation Planning Alternatives

This section outlines the development of alternatives to address the transportation requirements in the areas of:

- Transit;
- Bicycling and pedestrian systems;
- Operational improvements;
- Parking/shuttle;
- Signage and visitor information; and
- Roadway network improvements.

Transit

Currently, there are several transit operators providing service within the community of Niagara-On-The-Lake, consisting of both private and public transit systems. Through the public consultation process, numerous comments were made about the reliability, routing, marketing and convenience of the existing transit services. Upon review of the comments, it became clear that the operators of the private transit services did not have a true understanding of the needs of their potential riders and, as such, were not offering the services required. Currently, the existing services are focused on shopping destinations and do not take advantage of the transit hub at Niagara College. Based on public feedback, it was clear that the aging population within Niagara-On-The-Lake and the need for access to medical buildings, hospitals, laboratories, etc. was important and more in demand than shopping. Other examples of the trip purpose misconceptions were also discovered in the areas of internal trips and seasonal employees.

A review of the current transit service and the rider needs yielded the following recommendations:

- 1. Undertake a transit needs survey;
- 2. Modify destinations to include medical buildings, hospitals, laboratories, business districts, etc.:
- 3. Introduce one additional bus to the Town's transit service (both morning and evening) within Niagara-On-The-Lake and connect to Niagara College;
- 4. Consider weekday service during summer months for seasonal employees; and
- 5. For convenience purposes, allow transit buses to board/alight within the Old Town.

The primary recommendation of the cursory transit review is that the Town undertakes a transit needs survey. This survey can be conducted in cooperation with large employers in Town and Town residents. These two groups would allow for the surveying of both the seasonal employee market and the



commuter/personal trip market. It is recommended that the survey be designed by a transit system specialist to develop questions that will help identify and target the future transit service requirements/needs for the Town of Niagara-On-The-Lake.

Bicycling and Pedestrian Systems

Pedestrian and Bikeway Improvements

Pedestrians and cyclists need safe and well-maintained sidewalks, on-road bikeways and multi-use trails. While the number of collisions involving pedestrians and cyclists has been small to date, pedestrian and cycling safety remains a major issue in municipalities.

Cycling Safety Considerations

The proposed network of on-road bikeways and multi-use trails should accommodate cyclists of different skill levels, recognizing that cyclists require some basic cycling skills and knowledge of their responsibilities to operate their bicycles. The Town should work with the Region of Niagara and Regional Police to consider ways to provide cycling skills courses to adults and youth.

In 2001, there were approximately 280 fruit farms in Niagara-On-The-Lake with a large number of seasonal labourers. Bicycles are often the only form of transportation for these labourers. Many migrant workers are using Lakeshore Road and other roads to go to or come from their specific places of work, often after dark. They should be educated about cycling in Ontario, specifically with regard to having adequate bicycle lights and wearing light coloured clothing when cycling in the dark.

A critical safety issue is the design of multi-use paths at intersecting roadways. Crashes may also occur on multi-use paths between cyclists, pedestrians and other users such as joggers and in-line skaters, although in general they do not lead to major injuries. Designers must therefore ensure that the path will not encourage or require motorists and cyclists to operate their vehicles in a manner that is inconsistent with the rules of the road.

The following sections set out some design guidelines, followed by a description of possible improvements to address identified pedestrian and bicycling deficiencies.

Design Guidelines

A bikeway can be a shared lane, wide curb lane, paved shoulder, bicycle lane and multi-use path/trail. The selection of the type of bikeway is related to motor vehicle traffic volumes and operating speeds, percentage of truck traffic and presence of on-street parking. The last factor is generally not prevalent in rural areas. According to the Ontario Bikeways Planning and Design Guidelines



(Ministry of Transportation, 1996) no provisions are required for cyclists on rural roads with less than 400 vehicles per day. Many of the rural roads in Niagara-On-The-Lake fall in this category.

The Regional Niagara Bikeway Master Plan Study contains planning and design bikeway guidelines consistent with the guidelines published by the Ontario Ministry of Transportation (MTO) and the Transportation Association of Canada (TAC). Typical lane dimensions are:

- Paved shoulders: 1.5 metres from the edge of the gutter; desirable 1.8 to 2.0 metres, absolute minimum 1.2 metres preferably with an adjacent granular shoulder of at least 0.5 metres
- Bike lanes: 1.5 metres from the edge of the gutter; desirable: 1.8 metres, absolute minimum: 1.2 metres
- Bike lane with on-street parking: 1.8 metre lane and 2.2 metre parking stall
- Trails: 3.0 metres; desirable 3.5 to 4.0 metres dependent on usage, absolute minimum: 2.4 metres
- Threshold distances for mid-block crossings: 2-lane roadway: 60 metres from the nearest protected crossing; 4-lane roadway: 120 metres

Typical sidewalks are 1.5 metres wide with a boulevard. However, in areas of higher pedestrian flows sidewalk widths should be increased. There are several standards and methodologies that can be used to determine the required sidewalk widths and levels of service. Two such standards include: Transportation Association of Canada "Geometric Design Guide for Canadian Roads (1999 Edition)" and the "Highway Capacity Manual 2000". The relevant information from these two sources has been included in **Appendix D** for reference.

Pedestrian Improvements

Frequent overcrowding of sidewalks and conflicts between motorists and pedestrians are being experienced on Queen/Picton Street during the summer months. A typical section of Queen Street, east of Simcoe Street has sidewalks of 1.8 metres, boulevards (for planters, benches, etc.) of 3.2 metres and a gutter width of 0.6 metres. Parking stalls are 2.6 metres wide and traffic lanes are 5.3 metres wide. West of Simcoe Street the parking stalls are 3.2 metres wide. **Figure 7.1** illustrates this typical section.

Within the context of the streetscape, it does not seem appropriate or even feasible to widen the sidewalks. Motor vehicle speeds are low so that cyclists can share the road; sidewalk widths are adequate most of the time.

While pedestrians stroll across the street randomly, there are several locations where more formal street crossings could be established by constructing midblock refuges with curb extensions, interlocking paving stone crosswalks, zebra crossing markings, and signs. **Figure 7.2** shows a typical enhanced treatment of a pedestrian crossing.



(Insert Exhibit 7.1 – Typical Section of Queen Street, Old Town Heritage District) (you could even delete the description in the text)

(Insert Exhibit 7.2 - Typical Enhanced Pedestrian Crossing (i.e. curb extensions, paving stones, signs etc. from another Delcan study or literature)

Sidewalks should be provided particularly in the vicinity of major destinations such as schools, bus stops, public buildings and amenities. Two such cases include the provision for a continuous sidewalk and road crossing between the Fort George parking lot and the Shaw Festival Theater, and further west to the stores along Picton/Queen Street. **Figure 7.3** shows the proposed re-striping south of the delivery access and the extension of the sidewalk in the vicinity of the Shaw Festival Theatre. Queens Parade also shows a similar formalized crossing at the Otter Trail crossing. The Town should continue the construction of sidewalks and multi-use trails, specifically, the extension of a sidewalk from Virgil to the Niagara District High School. Pedestrians will also benefit from further trail development.

Trail Connections and Tourist Promotion

There are many attractions in Niagara-On-The-Lake including the Old Town Heritage District, historic sites such as Fort George, Mac Farland House, Fort Mississagua, Laura Secord Homestead, parks including the Niagara Shores Park, Virgil Conservation Area and Queenston Heights Park, etc. Many of these attractions are along trails and low volume streets and could easily be explored by foot or by bicycle. Improved signage and specific information geared to walking/cycling tourists would be beneficial. Visitors may park their cars along the Niagara River Parkway trail and the lot at the intersection of East & West Line.

To enhance the local trail system, the Upper Canada Heritage Trail could be enhanced between East & West Line and John Street. Enhancement of this trail in the abandoned railway right-of-way along Concession 1 Road from East & West Line to York Road should have a low priority since this road, on account of its low traffic volumes, is an excellent cycling route.

On-road Bikeway and Multi-use Pathway Improvements

The strategy for a bikeway network (on-road and trails) is to build upon the existing network of the many country roads with low traffic volumes and provide connections between the various communities within the Town. Since many direct routes are Regional roads, the Town's bike network should complement the Regional network. The following paragraphs describe potential improvements to identified deficiencies along existing and possible connections between the various communities of Niagara-On-The-Lake.

Access to Old Town

A route alternative to Niagara Stone Road (Regional Road 55) from Old Town through Virgil would be along East & West Line, Concession 3 Road and Line 3 Road. This would reduce traffic volumes on Regional Road 55 through Virgil and into Old Town. The route would connect south of Virgil to Regional Road 55 and Concession 6 Road and its new interchange at Highway 405, providing access to the adjacent municipalities.



(Insert Exhibit 7.3 - Proposed Sidewalk and Pedestrian Crossing at Shaw Festival Theater)

Constructing this alternative route and providing parking lots along East & West Line could intercept motorists before entering the Old Town. The distance from there to Queen/Picton Street is approximately 2 to 3 km, depending on the location of the parking lots. Such distance would require a 30 to 40 minute walk or 10 to 15 minute bike ride.

Such a long walk would be a deterrent to many. Therefore, an extension of the current shuttle bus service should be considered to make the parking option viable for park & walk. As to park & bike, paved shoulders would be required along East & West Line since the daily summer traffic volumes are in the order of 4,000 vehicles. The 'satellite' parking lots could be located in the vicinity of Niagara Street or Concession 1 Road.

To enhance accessibility for cyclists and pedestrians from the 'satellite parking' to the amenities in Old Town, the following linkages should be considered:

- The section of the Upper Canada Heritage Trail between East & West Line and King Street; and
- Connecting Niagara Street and Simcoe Street with a new 3.0 metre wide path for pedestrians and cyclists only (Rye Street to Victoria Street).

These two linkages would complement the overall bicycle network in Old Town with its existing bicycle lanes along Mary Street, local streets with low traffic volumes and multi-use trails. Additional bicycle signs and markings should be placed at the intersection of Mary Street with Regional Road 55 to indicate a continuous east-west bikeway.

Since Concession 1 Road is an excellent cycling route with low traffic volumes, and the population growth in Old Town is flow, construction of this trail in the abandoned railway right-of-way along Concession 1 Road should have a low priority and no funds should be committed to this project.

Niagara Stone Road (Regional Road 55), Old Town to Virgil

The section of Regional Road 55 south of Virgil has paved shoulders for short sections between the Old Town and Virgil and for the section south of Virgil to Airport Road. The Regional Niagara Bikeway Master Plan Study recommends, "at the time Niagara Stone Road is improved, whether through resurfacing or reconstruction, the Region of Niagara provide paved shoulders on both sides of the road". This shoulder paving would be essential for commuter and other cyclists who require a direct and continuous route between Old Town and Glendale, and beyond. Paved shoulders would also accommodate slow moving farm vehicles.

The Regional Niagara Bikeway Master Plan Study also recognized the Town's desire to construct a trail on the east side of Regional Road 55 between Virgil and the Old Town. Thus, the report also recommends that "the Region of Niagara support in principle the development of a sidewalk or off-road multi-use



trail within or adjacent to the Niagara Stone Road right-of-way between the communities of Virgil and the Old Town to accommodate pedestrians and other local trail users". This issue stems from the Town's commitment to construct a 2.4 metre wide trail between the Old Town and the Niagara District High School at the intersection with East & West Line; a southerly extension to Virgil is also being considered. The proposed Regional Road 55 trail would link the library and other amenities in the Old Town with the school, a McDonalds fast food outlet and Virgil. The trail is intended to be an alternative for casual cyclists to the paved shoulders. While most students are being bused to the school, it is envisaged that the trail would promote walking and cycling between the two communities.

The proposed trail between the Old Town and the Niagara District High School is located on the east side of the highway between Anderson Lane and East & West Line. The trail is approximately 2.4 km long or a 6 to 10 minute bicycle ride. The trail does not intersect with any other roads and there are only a few driveways. However, one of the driveways (Jackson Triggs) is signalized. Hence, the major concerns are with the intersections at Anderson Lane and East & West Line.

The following paragraphs describe some suggestions for re-alignment based on a cursory review of the draft contract drawings plans prepared by Quartek Group Inc. entitled "Multi-Purpose Trails, Regional Road 55". This review was not intended as a comprehensive assessment of the trail design but to suggest possible measures to reduce the potential for future conflicts involving motorists, cyclists and pedestrians, specifically at the two main intersections, Anderson Lane and East & West Line.

- The Anderson Lane intersection gives access to a large site with an existing library and fire hall, and indirect connection to an adjacent residential subdivision. Motor vehicle traffic volumes at this intersection will likely increase as a result of the construction of a planned community centre and the development of commercial properties.
- Since the trail is intended to serve primarily casual cyclists on their way to the public amenities and the adjacent subdivision, it is recommended that the trail be realigned, starting at a point approximately 100 metres west of the Anderson Lane intersection, to Simcoe Street along the library. While this re-alignment may require a change to the overall site plan, it would link up the trail with low volume local streets and the proposed pedestrian/ bicycle only-connection between Simcoe Street and Niagara Street,
- The intersection of Regional Road 55 and East & West Line is at a 35degree angle and accommodates significant motor vehicle traffic volumes. This acutely skewed intersection poses a high potential of conflicts between motorists and cyclists.

Since the trail is intended to serve primarily casual cyclists between the Niagara District High School and public amenities in the Old Town, one option (Option N-1) is to realign the trail, starting at a point approximately 100 to 300 metres east of the East & West Line intersection, through or along the east boundary of the school property. The existing 1.5 metre sidewalk between the school and the intersection should be retained for pedestrians.

Alternatively (Option N-2), the trail could be constructed as currently designed but with additional measures to reduce the potential of conflicts at the East & West Line intersection. These measures could include reducing curb radii to shorten the potential conflict zone and to reduce traffic turning speeds, traffic signal management (right on red prohibition, extra green time for cyclists and pedestrians), coloured pavement crossings, advance warning and other signs.

 At both ends of the trail, positive guidance should be given to cyclists where to go from there. Signs should be used that conform to the "Bikeway Traffic Control Guidelines of Canada" (Transportation Association of Canada)⁸.

A possible southerly trail extension to Four Mile Creek Road (Virgil) is approximately 2.3 km long. The trail would intersect with several cross-streets and existing and future driveways. This may create traffic operational problems and motor vehicle/bicycle conflicts. Several options could be considered:

- The first option (S-1) is to construct paved shoulders on both sides and a 1.5 metre concrete sidewalk on the east side of Regional Road 55 between East & West Line and Line 1 Road. This would provide pedestrians with a sidewalk from East & West Line to Virgil. Option S-1 would complement Option N-1 above.
- The second option (S-2) is to extend the trail to Concession 4 Road. Cyclists would then continue along Concession 4 Road into Virgil. A 1.5 metre concrete sidewalk should be completed between Concession 4 Road and Line 1 Road. Another way would be to continue the path southerly along the east side of Concession 4 Road and then intersecting it with a "jug handle" at some distance from the Regional Road 55 intersection with an appropriate 'bicycle crossing sign'. Option S-2 would complement Option N-2. The current planning of Virgil East seems to preclude any internal pedestrian and bikeway linkages. In Option S-2, Concession 4 Road and Line 2 Road would become the bicycle routes in Virgil East. While traffic volumes are currently low on Concession 4 Road, future developments may result in an increase of traffic. Any future reconstruction of this road should therefore allow for sufficient space for cyclists (wide curb lanes or bicycle lanes), similar to Line 2 Road.

⁸ Transportation Association of Canada, 1999 Edition





• The third option (S-3) is to extend the trail to Four Mile Creek Road. A trail in the section between Concession 4 Road and Four Mile Creek Road is, however, undesirable because of the restricted right-of-way and potential conflicts at the intersections with Concession 4 Road and Line 1 Road, and existing and future driveways.

Installing bicycle lanes along Regional Road 55 through Virgil is not feasible unless either the existing left-turn traffic lanes are removed or the road is widened. Removal of the left-turn lanes is not desirable from a traffic operational viewpoint and road widening would require extensive property taking. Therefore, cyclists will have to travel in mixed traffic through Virgil. It is recommended that traffic-calming measures such as raised medians and pedestrian crosswalks be installed at the north end (i.e. between East & West Line and Line 1 Road), and at the south end of Regional Road 55 (i.e. between Line 2 Road and Line 3 Road). The purpose of such traffic calming measures is to reduce driver comfort and speeds through Virgil, making the village safer for pedestrians and cyclists.

In summary, Option S-1 (construct paved shoulders on both sides and a 1.5 metre concrete sidewalk on the east side of Regional Road 55 between East & West Line and Line 1 Road) or Option S-2 (extend multi purpose trail to Concession 4 Road and construct a 1.5 metre concrete sidewalk between Concession 4 Road and Line 1 Road on east side) should be further explored at a design level to determine the most acceptable solution given the constraints in the corridor.

Lakeshore Road

Scenic Lakeshore Road is a favourite cycling route connecting the Old Town (and the Niagara Parkway trail) to the Welland Canal trail. Lakeshore Road also serves migrant workers in the area. Daily summer traffic volumes are in the order of 4000 vehicles. Only the section between Read Road and East & West Line has paved shoulders. While the entire road should preferably have paved shoulders, the section easterly to 4 Mile Creek Road could benefit most by accommodating migrant worker cyclists and slow moving farm vehicles.

In 2001, there were approximately 280 fruit farms in Niagara-On-The-Lake with a large number of seasonal labourers. As bicycles are often the only form of transportation for these workers, they may require education about cycling in Ontario. This would include having adequate bicycle lights and reflectors and wearing light coloured clothing when cycling in the dark.

Lakeshore Road between East & West Line and Shakespeare Avenue in Old Town has some narrow shoulders (paved or graveled) and narrow road sections that can only be widened by filling in the ditches and installing sewers. To avoid such major reconstruction, a series of speed reducing devices such as chokers could be installed.



QEW/Glendale Avenue Interchange

The Niagara College Campus, major residential and commercial developments in the vicinity of the QEW/Glendale interchange, and other planned developments for this area will generate significant traffic that will need accommodations for left and right turning movements, which in turn requires storage space for queuing vehicles at the intersections. This will result in major impediments for cyclists and pedestrians, in particular, the need to move between the two sides of the QEW. Consequently, trips between the various land uses have to be made by motor vehicle since the distance between them is so great. The Regional Niagara Bikeways Master Plan Study recommends the construction of bike lanes and paved shoulders along Glendale Avenue and York Road.

A recently completed Value Engineering Study (2003) of the Glendale interchange area identified several potential improvements. The Ministry of Transportation will be undertaking a new preliminary design and environmental assessment study which will build on the already approved EA, but reflecting the new area development information. Some of the alternatives to be examined include the construction of new flyovers and partial interchanges. In general terms, a flyover with bicycle lanes and sidewalks is preferred to an interchange because of the potential conflicts at the ramp crossings. Also, good urban design practices need to be applied to any future developments in terms of providing adequate walkways and bikeways.

Improvements at the QEW/Glendale interchange area would also benefit the bicycle routes to St. Davids and Queenston. The Regional Niagara Bikeway Master Plan proposes paved shoulders on York Road and minor improvements to Queenston Road between Glendale and St. Davids. While improving both roads would certainly enhance cycling, priority should be given to improving Queenston Road with its low traffic volumes and paving the shoulders (including removing the old curbs) along York Road between Queenston Road and the entrance to St. Davids. Similar to Virgil, some traffic calming measures are required at the village limits. These measures could be carried out in conjunction with the proposed sidewalk construction on the south side of York Road between Tanbark Road and Four Mile Creek Road.

Operational Improvements

A series of operational deficiencies were identified in Section 4 of the report. The following is a list of remedial measures that should be introduced to address those deficiencies:

 Upgrading of traffic control at the intersection of East & West Line and the Niagara River Parkway. Two forms of intersection control should be considered; a modern roundabout and a signalized intersection.

- 2. Introduce a centre turn lane on Niagara Stone Road (Regional Road 55) through Virgil to address the high driver-related collision frequency. The third lane should be broken up with strategically placed raised medians to provide a traffic calming effect and serve as pedestrian refuges.
- 3. Improve sightlines at the intersection of Church Road and Stewart Road (Regional Road 89), specifically, the daylighting triangle on the northeast quadrant.
- 4. Introduce left turn lanes at the intersections of:
 - a. Four Mile Creek Road (Regional Road 100) at Warner Road; and
 - b. York Road at Tanbark Road.
- Reconfigure the intersection of Niagara Stone Road (Regional Road 55) at York Road/Taylor Road to accommodate future travel demands (e.g. turn lanes).
- 6. Reconfigure the intersection of Niagara Stone Road (Regional Road 55) and Concession 7 Road to reduce the size of the intersection and better define the lanes and traffic movements.
- 7. Reconnect Line 3 Road to Niagara Stone Road (Regional Road 55) and signalize the intersection with left turn lanes on all approaches.
- 8. Reconfigure the intersection of Lake Shore Road (Regional Road 87) and East & West Line to correct the restricted sightlines and vertical profile.
- 9. Add a northbound left turn storage lane at the intersection of Niagara Stone Road (Regional Road 55) and Line 1 Road/Penner Street.
- 10. Monitor the requirement for upgraded traffic control at the intersection of Four Mile Creek Road (Regional Road 100) and Line 3 Road.
- 11. Monitor the requirement for upgraded traffic control at the intersection of Line 3 Road and Concession 3 Road once the roadway is in operation.
- 12. Monitor the requirement for upgraded traffic control at the intersection of East & West Line and Concession 3 Road once the roadway is in operation.
- 13. Improve traffic operations and pedestrian safety along Queens Parade (see **Figure 7.3** above):
 - a. Extend the existing left turn lane along Queens Parade from Wellington Street to a point south of the Fort George Parking lot entrances.
 - b. Introduce a northbound right turn lane into both the Fort George bus and auto driveways.
 - c. Introduce a raised median island, painted pedestrian crosswalk, and pedestrian crossing signs at the Otter Trail crossing of Queens Parade. This will increase the crossing's visibility to approaching motorists.
 - d. Introduce a raised median island with a painted pedestrian crosswalk, pedestrian crossing signs and a new sidewalk along the west side of Queens Parade to address Shaw Festival pedestrian crossing traffic.



Parking/Shuttle

In reviewing the existing and future travel and visitation demands for the Old Town, several strategies were developed to manage the demand. These strategies include:

- 1. Increasing the capacity of the roadways into the Old Town and providing additional parking as required. This includes:
 - a. Increasing traffic capacity on Mississagua Road;
 - b. Increasing traffic capacity on Queens Parade and Niagara River Parkway;
 - c. Developing a new connection using the rail right-of-way from East & West Line to John Street; and
 - d. Extending Niagara Street, King Street and/or Victoria Street and sign as access into the Old Town.
- 2. Developing perimeter parking lots and shuttle users into the Old Town. This concept considered several elements:
 - Promoting the use of the perimeter lots by employees to free up parking spaces and roadway capacity in the Old Town;
 - Promoting the lots for visiting cyclists touring the Town; and
 - Promoting the lots to all visitors as a convenient way of getting to the Old Town.

Following the review of the two options against the long-term goals of the community, it was apparent that Option 1 was not compatible with the community vision, as it would be disruptive to local residents and not fit the heritage atmosphere of the Old Town. Therefore, Option 2 was selected and further refined.

Specifically, convenience of the lot(s) was considered paramount to their success. Convenience was related to three main factors:

- How far away will someone want to be from their vehicle?
- Does the lot support visitation to destinations other than the Old Town?
- What is the method of transporting the visitors to the Old Town?

In responding to the first two questions, consideration was given to utilizing the existing Gateway Site in the Glendale area as a location for a satellite/perimeter parking lot. This was identified as an opportunity to capture visitors stopping for information or conveniences at the food courts. In addition, with the numerous proposed hotels in the Glendale area it would allow those visitors to leave their vehicles at the hotel and travel into Town by shuttle. Review of this option highlighted the following points:



- As there are numerous destinations and sites within Niagara-On-The-Lake, it would not be very efficient, from a visitor or transportation system perspective, to have a visitor shuttled back to their vehicle in the Glendale area and then have them drive back into Town so as to visit the other destinations. This option has the potential to reduce the amount of time that is spent by visitors within Niagara-On-The-Lake.
- Since visitors to Niagara-On-The-Lake are driving long distances, and since the sights within the Town are geographically dispersed (i.e. Old Town, wineries, Parkway, etc.), visitors will want to be relatively close to their vehicles so that they can easily travel to other destinations.
- Experiencing Niagara-On-The-Lake is as much about the trip along the Niagara River Parkway and other area roadways. That experience is eliminated if visitors leave their vehicles in the Glendale area.
- Numerous visitors arrive in Niagara-On-The-Lake via the Niagara River Parkway from Niagara Falls and then return. Therefore, this location would not service them well.
- The shuttle service would be quite expensive, as it would require a large fleet given the round trip time.

Overall, it was determined that the location for the perimeter lot(s) should be within the Town and strategically located relative to the Old Town and other destinations. Therefore, the area selected was in the vicinity of the intersection of East & West Line and Niagara Stone Road. More specifically, the area extending from Anderson Lane to East & West Line along Niagara Stone Road and from Niagara Stone Road to the Niagara River Parkway along East & West Line. This location was selected for a variety of reasons:

- Given the proximity to Fort George, the existing shuttle service could be extended to this area;
- Excellent connection to area trails for cycling and walking;
- Visitors would be approximately a 10-15 minute shuttle ride from their vehicles:
- Convenient for visitors entering Niagara-On-The-Lake along the Niagara River Parkway, Niagara Stone Road and Lakeshore Road;
- Visitors are still within Niagara-On-The-Lake and can easily visit the various other tourist related businesses; and
- There are several properties and businesses within the proposed area for potential partnering.

A demonstration project should be undertaken in cooperation with the Niagara District High School, utilizing their parking lot during the summer months. The parking lot has an existing capacity of approximately 150 spaces. The Town should incorporate in their plans the protection/purchase of property at this location for the purpose of developing satellite parking.

Signage and Visitor Information

A comprehensive approach must be taken with respect to road signing and integrating it with all of the TDM initiatives within the Town of Niagara-On-The-Lake. The signage should be developed to guide:

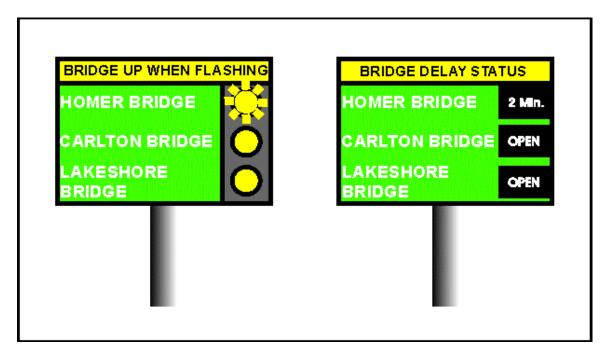
- Visitor/tourists to:
 - Old Town
 - Wineries
 - Other amenities and attractions
 - Parking facilities
 - Information locations
- Commercial vehicles
- International or border traffic
- Vehicular traffic utilizing the Welland Ship Canal Bridge crossings

The Town has recently completed and is currently implementing their road signage and visitor information plan, which was developed in concert with the Provincial signage strategy on both the QEW and Highway 405. Based on the preferred roadway network the appropriate modifications to the signage plan should be incorporated.

Through the use of Intelligent Traffic Systems (ITS), canal lift bridge status information could be provided to drivers via centrally controlled signs. This information would allow drivers to make appropriate route choices to avoid delay and improve reliability of the roadway network. This type of system would mesh well with the Region of Niagara's road closure action plan strategy as the canal crossing points are all critical links with the Regional road system. This technology would receive information from the St. Lawrence Seaway Traffic Control Centre and display it on roadside signs. The ITS signs could indicate information such as the bridge status if one or more of the three bridges spanning the canal were in use by the St. Lawrence Seaway or an indication as to the length of the time (delay in minutes) remaining before the bridge could be crossed by queued traffic. **Figure 7.4** illustrates two possible ITS signing configurations. A strategy for Niagara-On-The-Lake would see four signs erected at key decision points along the roadway system:

- Stewart Road (Regional Road 86) and Lakeshore Road (Regional Road 87);
- Church Road (Line 1 Road), and Stewart Road (Regional Road 86);
- Carlton Street (Regional Road 83) and Stewart Road (Regional Road 86);
 and
- Niagara Stone Road (Regional Road 55) between Line 3 Road and Concession 7 Road.

Figure 7.4
Sample ITS Signs



Roadway Network Improvements

Provincial Highway Access

Currently, there are two Provincial highway interchanges within the Town of Niagara-On-The-Lake. The first is the Glendale Avenue interchange along the QEW and the second is the Niagara River Parkway interchange along Highway 405. This interchange is currently slated for permanent closure as part of recent Highway 405 reconstruction plans. The current proposal is to redirect traffic from the closed interchange to the Stanley Avenue interchange and then along Portage Road back to the Niagara River Parkway.

Given the existing and forecasted state of the Niagara River Parkway, there will be insufficient capacity to carry the interchange traffic. Moreover, traffic will travel west on Niagara Townline Road (Regional Road 61) to Four Mile Creek Road (Regional Road 100) and through the St. Davids area. This route is not desirable, as it will also be used by commercial vehicles.

The Glendale Avenue interchange and area roadways currently experience periods of congestion and gridlock, which results in traffic spilling back onto the highway. In addition, the N/S to E ramp, which allows Glendale Avenue traffic to access Highway 405 via the QEW, is often avoided by commercial vehicles, as it is difficult to make that maneuver. In 2003, the Ministry of Transportation completed a Value Engineering study, which examined the Glendale Avenue

interchange area and recommended four alternatives to be carried forward. These alternatives consist of the following and are included in **Appendix E**:

- 1. A new fly over of Taylor Road to Airport Road with a modified interchange;
- 2. A new fly over of the Glendale Avenue east extension to Townline Road with a modified interchange;
- 3. Modified interchange with direct highway connection to Airport Road; and
- 4. Modified interchange with direct highway connection to Trivieri and Niagara College properties.

Also considered in these roadway networks was an interchange at Concession 6 Road and Highway 405. For the purpose of the Master Plan Study (long term vision), a revised interchange configuration at Glendale Avenue will not meet the long-term needs of the community. The intensity of development proposed within the Village of Glendale along both sides of the QEW cannot be accommodated with the existing roadway infrastructure. Therefore, alternatives including either a partial or full interchange with Highway 405 at Concession 6 Road should be protected and investigated with the Ministry of Transportation and the Region of Niagara.

As the Glendale area continues to develop along York Road (Regional Road 81) from Airport Road (Regional Road 90) to Concession 6 Road, access management and driveway alignment reviews should be undertaken. A protection plan should be created to ensure that new developments follow a roadway entrance guideline so that the number of access points does not create a safety concern between arriving/departing traffic and the main flow travelling along the roadway.

Regional and Town Network

A range of roadway network improvements was developed to mitigate the 2021 traffic deficiencies identified in the report. The main requirement is the need for two additional lanes of capacity connecting the south end of Niagara-On-The-Lake to Virgil and the Old Town. Three network improvement strategies were developed to accommodate the forecast travel demands:

- 1. Accommodate growth through widening of existing primary roadways;
- 2. Accommodate growth through the upgrading of secondary roadways and introduction of new roadways; and
- 3. A combination of strategy 1 and strategy 2.

Under the first strategy, Niagara Stone Road (Regional Road 55) would remain as the main access point from both the Provincial and Regional roadway system. This option would require Niagara Stone Road to be widened to four traffic lanes from Airport Road (Regional Road 90) to Mary Street. However, this option was discounted immediately since it was not feasible to construct more than three traffic lanes through Virgil due to the property and business impacts. In addition,



this alternative did not meet the basic screening criteria of "compatibility with community vision".

The second strategy is based on the premise of using existing secondary roadways and upgrading their role within the Town roadway network or introducing new roadways. Under this approach, the following options for connecting York Road to East & West Line were developed:

- 1. Develop a new north-south collector/arterial from York Road (Regional Road 81) to East & West Line. Roadways considered include:
 - Concession 6 Road to an east-west roadway with connection to either Concession 2 or 3;
 - Four Mile Creek Road (Regional Road 100) to an east-west roadway with connection to either Concession 2 or 3;
 - Concession 2 Road (reconfigure intersection at York Road); and
 - Concession 1 Road (new roadway from Line 9 road to York Road).
- 2. Develop a new east-west collector/arterial from Niagara Stone Road (Regional Road 55) to either Concession 2 or 3 Road. Roadways considered include the following and are presented in **Figures 7.5**, **7.6** and **7.7**:
 - Line 5 Road (new roadway from Concession 7 Road to Niagara Stone Road);
 - Line 4 Road (new road from Concession 6 Road to Concession 5 Road; and
 - Line 3 Road (new intersection with Niagara Stone Road).

The evaluation of these options was performed in two steps. The first step involved the selection of a preferred east-west roadway with a connecting link to East & West Line (presented in **Table 7.1**). The second step was to combine this preferred east-west alternative with north-south options and evaluate them against the direct north-south alternatives (presented in **Table 7.2**).

Figure 7.5

Figure 7.6

Figure 7.7

Table 7.1
East – West Alternatives Evaluation

EVALUATION CRITERIA		NETWORK ALTERNATIVES			
		Alternative 8a	Alternative 8b	Alternative 8c	
	NUMERICAL WEIGHTING	Line 3 Road from Niagara Stone Road (Regional Road 55) to Niagara River Parkway	Line 4 Road from Niagara Stone Road (Regional Road 55) to Concession 2 Road	Line 5 Road from Niagara Stone Road (Regional Road 55) to Concession 3 Road	
USER SAFETY					
Through Traffic	17%	•	•	O	
Turning Traffic		•	0	O	
TRAFFIC OPERATIONS					
Network Efficiency Local Traffic Operation / Roadway	22%	•		•	
Geometrics		•	•	•	
Intersection Operation		4			
NATURAL/PHYSICAL	470/				
Existing Trees/Flora/Air Quality/Noise Quality	17%	•	•	•	
HERITAGE/CULTURAL/TOURISM IMPACT	17%				
Archaeological/Heritage Resources		•	•	•	
SOCIO-ECONOMIC IMPACT	17%				
Neighbourhood/Businesses	1770	•	•	•	
COST COMPARISON (CAPITAL/MAINTENANCE)	10%				
Construction/Re-Construction		•	•	•	
Weighted Total	100%	0.75	0.59	0.59	
Overall Rank		1	2	3	

Legend

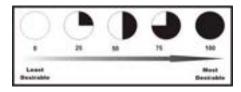


Table 7.2

North – South Alternatives Evaluation

EVALUATION CRITERIA		NETWORK ALTERNATIVES			
	<u>១</u>	Alternative 9a	Alternative 9b	Alternative 9c	Alternative 9d
	NUMERICAL WEIGHTING	Concession 6 from Highway 405 to Niagara Stone Road (Regional Road 55) then along Line 3 Road and up Concession 3 Road to East & West Line	Four Mile Creek Road (Regional Road 100) from York Road (Regional Road 81) to Line 3 Road then along Line 3 Road and up Cconcesion 3 Road to East & West Line	Concession 2 from York Road (Regional Road 81) to East & West Line	Concession 1 from York Road (Regional Road 81) to East & West Line
USER SAFETY					
Through Traffic	17%	•	•	•	•
Turning Traffic	11 70	•	•	•	•
TRAFFIC OPERATIONS					
Network Efficiency	220/	•	•	•	•
Local Traffic Operation / Roadway Geometrics	22%	•	•	•	•
Intersection Operation		•	•	•	•
NATURAL/PHYSICAL					
Existing Trees/Flora/Air Quality/Noise Quality	17%	•	•	•	O
HERITAGE/CULTURAL/TOURISM IMPACT	17%				
Archaeological/Heritage Resources		•	•	•	•
SOCIO-ECONOMIC IMPACT					
Neighbourhood/Businesses	17%	•	•	•	O
COST COMPARISON (CAPITAL/MAINTENANCE)	10%				
Construction/Re-Construction		•	•	•	•
Weighted Total	100%	0.74	0.68	0.42	0.37
Overall Rank		1	2	3	4

<u>Legend</u>



During the evaluation, Line 3 was selected as the preferred east—west roadway as it provides better network connectivity and efficiency with connections to both Niagara Stone Road and the Niagara River Parkway. It is currently designated as a collector roadway in the Town's Official Plan and services the south end of the Village of Virgil directly.

Concession 3 Road was selected as the preferred connecting link from Line 3 Road to East & West Line. The selection was based on several factors:

- The alignment of Concession 3 Road allows for the best connectivity to the proposed perimeter parking lot location at the Niagara District High School;
- There would be little conflict between tourist/commuter traffic and agricultural vehicles currently using Concession 2 Road;
- The level of agricultural traffic on Concession 2 Road is high and it is not desirable to mix with tourists/commuters. This point was a strong recommendation received both through the Stakeholder Group and the attendees at the second Public Information Centre. Although sections of Concession 3 Road are unopened, the impact of opening them is not seen as significant in comparison to the expansions that would be required to improve Concession 2 Road.

During the evaluation, Concession 6 Road to Line 3 Road to Concession 3 Road was selected as the preferred alternative. This routing provides a balance of network efficiency and connectivity and allows traffic destined for the Virgil Business District to travel either Concession 6 Road or Niagara Stone Road. In addition, this routing provides the shortest distance to and from the Old Town. The impacts to heritage and tourism are low as all roadways remain as two lane rural cross-sections, thereby keeping with the prescribed community vision. There will be some impacts to the natural environment through the completion of the Concession 3 Road unopened road allowance. However, these impacts can be mitigated. There will be an impact on the bus loading operation and parental pick-up and drop off for St. Michael's school, but with the introduction of a signalized intersection at Niagara Stone Road and Line 3 Road, the level of safety will be increased for buses and automobiles visiting the school.

The third strategy considers options which consist of upgrading of the above noted roadways in conjunction with some capacity improvements along Niagara Stone Road (Regional Road 55). Options originally considered include the following and are presented in **Figure 7.8**:

 Widen Niagara Stone Road (Regional Road 55) to four lanes from Airport Road (Regional Road 70) to Concession 6 Road and 3- lane the crosssection from Concession 6 Road to Mary Street; Insert Figure 7.8

- 2. Widen Niagara Stone Road (Regional Road 55) to four lanes from Airport Road (Regional Road 70) to the extension of Line 5 Road and 3- lane the cross-section from Line 5 Road to East & West Line. Line 5 Road (new roadway from Concession 7 Road to Niagara Stone Road) and connection of Concession 3 Road from East & West Line to Line 5 Road;
- 3. Widen Niagara Stone Road (Regional Road 55) to four lanes from Airport Road (Regional Road 70) to Concession 7 Road and 3- lane the crosssection from Concession 7 Road to East & West Line. Line 4 Road (new road from Concession 6 Road to Concession 5 Road and connection of Concession 3 Road from East & West Line to Line 4 Road; and
- 4. Widen Niagara Stone Road (Regional Road 55) to four lanes from Airport Road (Regional Road 70) to Concession 6 Road and 3- lane the crosssection from Concession 6 Road to East & West Line. Line 3 Road (new intersection with Niagara Stone Road) and connection of Concession 3 Road from East & West Line to Line 3 Road.

The evaluation of these options, as presented in **Table 7.3**, indicates that the use of Line 3 Road with Concession 3 Road is the preferred alternative. This is consistent with the evaluation completed in **Table 7.1**. The options in **Table 7.2** still have a major reliance on Airport Road and Niagara Stone as the main points of access from the south and still require the need for four lane cross-sections along sections of Niagara Stone Road. In order to assess the best overall transportation system plan, all of the preferred elements have been combined into two network scenarios. These scenarios differ mainly in the issue of long-term access and widening of roadways to four lanes. Common to both scenarios are the following components:

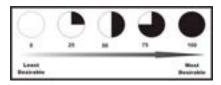
- Concession 6 Road is improved to collector or arterial status.
- Line 3 Road is connected to a signalized intersection at Niagara Stone Road and improved from Niagara River Parkway to Townline (Grantham) Road.
- Townline (Grantham) Road is improved from Line 3 Road to Carleton Street (Regional Road 83).
- Concession 3 Road is improved to collector status from Line 3 Road to East & West Line.
- A partial or full interchange is introduced at Highway 405 and Concession 6
 Road
- A new crossing of QEW at Glendale Avenue is introduced.
- Concession 4 Road is extended south to Line 3 Road.
- Construction of Concession 5 Road from Walker Road to Line 3 Road.
- Reconstruction of Niagara Stone Road from Four Mile Creek Road to East & West Line to a 3-lane cross-section to mitigate pedestrian and vehicle safety issues.
- Perimeter parking in the area of Niagara Stone Road and East & West Line.
- Introduction of operational improvements to area intersections and Queens Parade.



Table 7.3
Niagara Stone Road (Regional Road 55) Widening

EVALUATION CRITERIA		NETWORK ALTERNATIVES			
	NUMERICAL WEIGHTING	Alternative 2a Alternative 2b		Alternative 2c	Alternative 2d
		Niagara Stone Road (Regional Road 55) to 4-lane cross-section from Airport Road to Line 3 Concession 6 Road, then 3-lane cross-section up to Mary Street	Niagara Stone Road (Regional Road 55) to 4-lane cross-section from Airport Road (Regional Road 90) to south of Concession 7 Road, include extention of Line 5 to Niagara Stone Road (Regional Road 55) and upgrade link and Concession 2 or 3 Road	Niagara Stone Road (Regional Road 55) to 4-lane cross-section from Airport Road to Concession 7 Road with improvements to Line 4 Road and Concession 2 or 3 Road	Niagara Stone Road (Regional Road 55) to 4-lane cross-section from Airport Road to Concession 6 Road, upgrade Line 3 Road and connect to Niagara Stone Road (Regional Road 55), then upgrade Concession 2 or 3 Road
USER SAFETY					
Through Traffic	17%	•	•	•	•
Turning Traffic		•	0	0	0
TRAFFIC OPERATIONS					
Network Efficiency	22%	•	•	•	•
Local Traffic Operation / Roadway Geometrics		•	•	•	•
Intersection Operation		•	•	•	•
NATURAL/PHYSICAL	17%				
Existing Trees/Flora/Air Quality/Noise Quality		•	•	•	•
HERITAGE/CULTURAL / TOURISM IMPACT	17%				
Archaeological/Heritage Resources		•	•	•	•
SOCIO-ECONOMIC IMPACT	470/				
Neighbourhood/Businesses	17%	•	•	•	•
COST COMPARISON (CAPITAL/MAINTENANCE)	10%				
Construction/Re-Construction		•	•	•	•
Weighted Total	100%	0.40	0.51	0.58	0.75
Overall Rank		4	3	2	1

<u>Legend</u>



Scenario1

This scenario (presented in **Figure 7.9**) includes the following components:

- York Road to Airport Road continues to be signed and designated as the main route into Niagara-On-The-Lake from the Provincial and Regional road system.
- Niagara Stone Road from Airport Road to Concession 6 Road is widened to four lanes.
- Concession 6 is designated as an alternate route to Niagara-On-The-Lake.

Scenario 2

This scenario (presented in **Figure 7.10**) includes the following components:

- York Road to Concession 6 Road is designated as the primary route to Niagara-On-The-Lake.
- Visitor and tourist signage directs traffic to Concession 6 Road.
- No improvements are required to the Niagara Stone Road cross-section between Airport Road and Concession 6 Road.

Table 7.4 summarizes the evaluation of network Scenario 1 and 2.

A review of the evaluation indicates that Scenario 2 is the preferred approach to the Niagara-On-The-Lake transportation network demands. This scenario presents a balanced use of the existing roadways and utilizes a distribution of the travel demand to/from the south end of the Town. The introduction of a new interchange will relieve pressure on St. Davids as the community grows and provides an alternate route for internationally destined commercial vehicles. Scenario 2 can best meet the objectives of the Town to protect its heritage and culture and to avoid four-lane roadways. The environmental impacts of the upgrading of Concession 6 Road cross-section is in the same order of magnitude as widening along Niagara Stone Road.

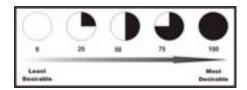
Figure 7.9

Figure 7.10

Table 7.4 Scenario Evaluation

EVALUATION CRITERIA		NETWORK AI	TERNATIVES
	5 N	Scenario 1	Scenario 2
	NUMERICAL WEIGHTING	Niagara Stone Road (Regional Road 55) to 4-lane cross-section from Airport Road to Concession 6 Road, upgrade Line 3 Road and connect to Niagara Stone Road (Regional Road 55), then upgrade Concession 2 or 3 Road	Concession 6 from Highway 405 to Niagara Stone Road (Regional Road 55) then along Line 3 Road and up Concession 3 Road to East & West Line
USER SAFETY			
Through Traffic	17%	•	a
Turning Traffic		•	•
TRAFFIC OPERATIONS			
Network Efficiency Local Traffic Operation / Roadway	22%		
Geometrics		•	•
Intersection Operation		0	•
NATURAL/PHYSICAL	17%		
Existing Trees/Flora/Air Quality/Noise Quality	17 /0	•	•
HERITAGE/CULTURAL/TOURISM			
IMPACT	17%		
Archaeological/Heritage Resources		•	•
SOCIO-ECONOMIC IMPACT	17%		
Neighbourhood/Businesses		•	•
COST COMPARISON (CAPITAL/MAINTENANCE)	10%		
Construction/Re-Construction		•	•
Weighted Total	100%	0.48	0.70
Overall Rank		2	1

Legend



8.0 Preferred Improvement Plan

This section presents the preferred implementation and policy options required to implement the transportation plan for the Town of Niagara-On-The-Lake. The plan provides a framework for necessary improvements, policies, and studies over the next 20 years. The policy and program improvements address the transportation requirements in the areas of:

- Transit;
- Bicycle and Pedestrian Systems;
- Policy;
- Signage and Visitor Information;
- Operational Improvements;
- Roadway Network Improvements;
- Travel Demand Management; and
- Commercial Vehicles.

The Transportation Master Plan has been constructed based on a "vision" that resulted from consultation with the stakeholder group, members of the public and political representatives. This vision is a desire for the Town to provide the necessary transportation infrastructure while protecting and enhancing its heritage and culture.

8.1 The Preferred Improvement Plan

Transit

The primary recommendation of the cursory transit review is that the Town undertakes a transit needs survey. This survey can be conducted in cooperation with large employers in Town and Town residents. These two groups would allow for the surveying of both the seasonal employee market and the commuter/personal trip market. It is recommended that the survey be designed by a transit system specialist so as to develop questions that will help identify and target the future transit service requirements/needs for the Town of Niagara-On-The-Lake.

The Town should continue to work with the Region on their inter-municipal transit initiatives and should explore the opportunity to integrate the local service with the other transit properties that are operating services into the Niagara College Glendale Campus.

Bicycle and Pedestrian Systems

Pedestrians and different groups of cyclists require adequate and well-maintained sidewalks, multi-use trails, and on-road bikeways. For Niagara-On-



The-Lake, the requirements by pedestrians and cyclists translate in the following infrastructure priorities:

- Measures promoting walking and cycling in the Old Town and on nearby trails
- Construction of sidewalks in the other communities where warranted
- Connecting bikeways between the various communities of Niagara-On-The-Lake
- Upgrading Lakeshore Road as part of the Greater Niagara Circle Route

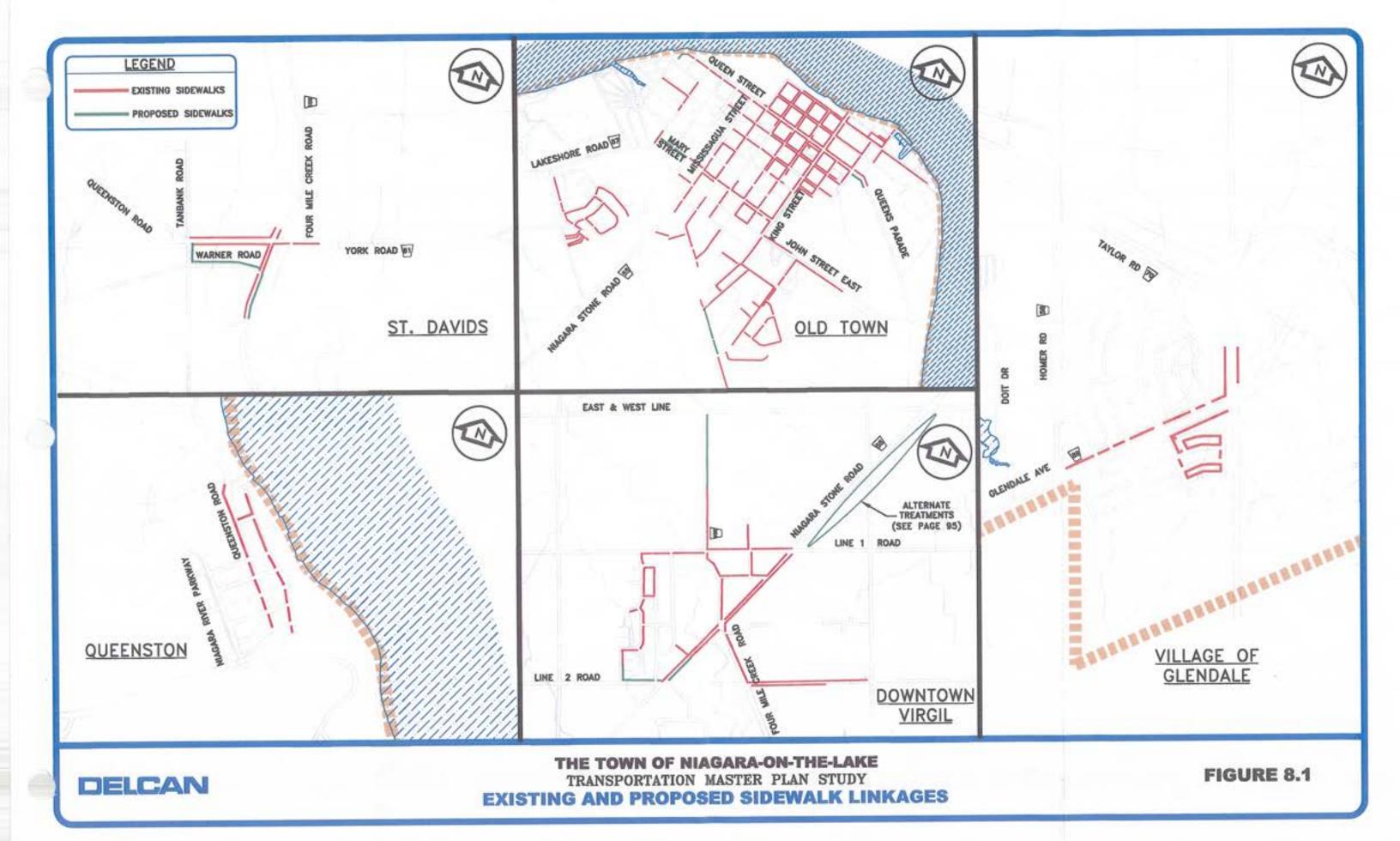
Figure 8.1 illustrates the proposed sidewalks within the existing network that will enhance connectivity for pedestrians within the various communities and for the visiting tourist population. The proposals include a number of sidewalks to be constructed in various communities, new pedestrian crossings on Queen Street and Queens Parade and upgraded trails in the Old Town and Virgil. **Figure 8.2** illustrates the existing, committed and proposed on-road paved shoulder cycling links and off-road multi-use trails within Niagara-On-The-Lake. New linkages were developed to increase the connectivity for local/tourist hikers and cyclists.

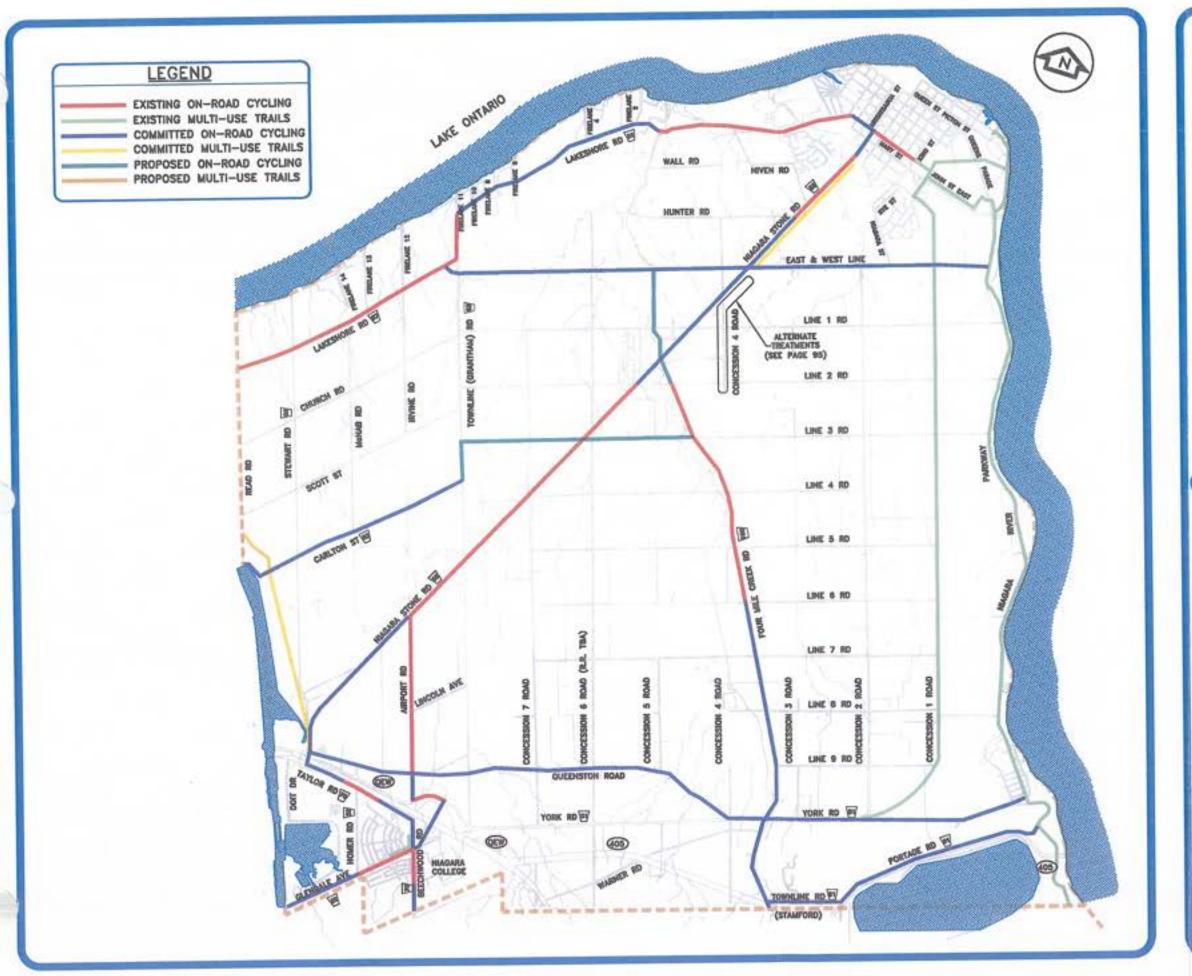
0-5 Year Timeframe

Town Jurisdiction

- Vicinity of Shaw Festival Theatre –1.5 metre sidewalk and pedestrian crossing
- Sidewalk program:
 - Old Town:
 - Niagara Street (east side)
 - Queens Parade (south side)
 - Niagara Street (north side)
 - Mary Street (north side)
 - St. Davids:
 - Warner Road (north side)
 - Tanbark Road (east side)
 - Virgil:
 - Four Mile Creek Road (east side)
 - Line 2 Road (north side)
 - Bordeaux Drive (east side)
 - o Palatine Road (south side)
 - Niagara Stone Road (east Side)
- Queens/Picton Street pedestrian crossing and refuge islands
- Queens Parade: Otter Trail crossing signs and pavement markings
- Niagara Street to Simcoe Street: trail between Rye Street and Victoria Street
- Regional Road 55 east side: Anderson Lane to East & West Line Multiuse trail and special traffic safety measures







THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION
MASTER PLAN STUDY

RECOMMENDED
ON-ROAD CYCLING AND
MULTI-USE TRAILS

FIGURE 8.2

DELCAN

- Mary Street: Butler Street to Simcoe Street signs and pavement markings
- Garrison Village Drive linkage between both ends of street (Developer responsibility)
- East & West Line: Four Mile Creek Road to Niagara Parkway –shoulder paving
- Four Mile Creek Road: East & West Line to Niagara Stone Road minor improvements (pavement surface condition improvements)

Regional Jurisdiction

- Lakeshore Road: East & West Line to Shakespeare Avenue traffic calming measures
- Regional Road 55: Anderson Lane to Mary Street traffic calming measures
- Regional Road 55: Line 1 Road to Anderson Lane shoulder paving
- Four Mile Creek Road: Niagara Stone Road to Line 2 Road minor improvements (improve pavement surface condition)
- York Road: Queenston Road to Four Mile Creek Road paved shoulders and traffic calming measures
- York Road: Glendale Avenue to Airport Road wide curb lanes
- Airport Road: York Road to Queenston Road paved shoulders
- Glendale Avenue: Beechwood Road to York Road wide curb lanes (interim)

6-10 Year Timeframe

Town Jurisdiction

- Concession 4 Road: Regional Road 55 to Line 2 Road bicycle lanes, if warranted by traffic volumes
- Line 2 Road: Four Mile Creek Road to Concession 4 Road extension of wide curb lanes to Concession 4 Road
- A pedestrian and bicycle linkage along the Regional Road 55 corridor from East & West Line to Line 1 Road is required. The form of this linkage will be based on the future reconstruction of Regional Road 55 and the development demands in the corridor. One of two alternatives listed below should be considered for the corridor (contingent on the Region 's commitment to construct on street bicycle lanes in the corridor):
 - Niagara Stone Road (Regional Road 55): East & West Line to Line
 1 Road 1.5 metre sidewalk (no multi-use trail constructed).
 - Niagara Stone Road (Regional Road 55): East & West Line to Concession 4 Road – extension of multi use trail and special traffic safety measures along with 1.5 metre sidewalk from Concession 4 Road to Line 1 Road.



Regional Jurisdiction

- Lakeshore Road: East & West Line to Shakespeare Avenue –shoulder paving where feasible without major reconstruction
- Four Mile Creek Road: Line 4 Road to Niagara Falls boundary paved shoulders in rural sections
- Queenston Road: Regional Road 55 to York Road minor improvements and signage
- QEW /Glendale Interchange incorporation of bikeways and sidewalks in selected design

10 + Year Timeframe

Town Jurisdiction

- Concession 1 Road Extension: East & West Line to Charlotte Street trail enhancements
- East & West Line: Lakeshore Road to Four Mile Creek Road paved shoulders
- Four Mile Creek Road: Lakeshore Road to East & West Line minor improvements

Regional Jurisdiction

- Queenston Road: Regional Road 55 to York Road paved shoulders
- York Road: Four Mile Creek to Niagara River Parkway traffic calming and paved shoulders
- York Road: Regional Road 55 to Glendale Road paved shoulders
- Beechwood Road: Niagara Falls boundary to Glendale Avenue paved shoulders
- Carleton Street: St. Catharines boundary to Townline (Grantham) Road introduce paved shoulders when road reconstructed
- Townline (Grantham) Road: Carlton Street to Line 3 Road paved shoulders
- Line 3 Road: Townline (Grantham) Road to Four Mile Creek Road (Regional Road 100) paved shoulders
- Regional Road 55: York Road to Airport Road paved shoulders
- Portage Road: Niagara Falls boundary to Niagara Parkway paved shoulders

As indicated above, most of the proposed bikeway improvements are on Regional roads and identified in the Regional Niagara Bikeways Master Plan. The improvements, which have been put forward as part of the Niagara-On-The-Lake Transportation Master Plan, are presented in **Table 8.1.** The table identifies the limits of the improvements, the roadway jurisdiction along with the associated costs. These costs are based on the following unit costs:



Recommended Pedestrian and Bicycle Strategy

Table 8.1

Road	From	To	Jurisdiction	Recommended Improvements	Construction	Contingency	Total Cost (§)
					Cost (5)	25%	-
5 Years	A DECEMBER OF THE PARTY OF THE	The second secon	100	CAN TAKE THE PROPERTY OF PROPERTY OF	-	1000000	200
Queen's Parade	Wellington Street	Otter Trail Crossing	Town	1.5 m Sidewalk and 2 Pedestrian Crossings	\$9,500	\$2,375	\$11,875
Queen Picton Street at Post Office and War Memorial	I am management		Town	2 Pedestrian Crossings and Refuge Islands	\$1,900	\$475	\$2,375
East & West Line	Lakeshore Road	Niagara River Parkway	* Region	Shoulder Paving	\$461,192	\$115,298	\$576,490
Townline (Grantham) Road	Carlton Street	Line 3 Road	Region	Paved Shoulders	\$48,000	\$12,000	\$60,000
Carlton Street	St. Catharine's Boundary	Townline (Grantham) Road	* Region	Paved Shoulders	\$185,000	\$46,250	\$231,250
Mary Street	Nassau Street	Dorchester Street	Town	Sidewalk (north side)	\$6,800	\$1,700	\$8,500
Mary Street	Dorchester Street	Butler Street	Town	Sidewalk (north side)	\$7,500	\$1,875	\$9,375
Niagara Stone Road	Henegan Road	North of Henegan Road	Town	Sidewalk (east side)	\$8,000	\$2,000	\$10,000
Niagara Stone Road	York Road	Airport Road	* Region	Paved Shoulders	\$150,371	\$37,593	\$187,964
Niagara Stone Road	Anderson Lane	East & West Line	** Town	Multi-Use Trail and Special Traffic Safety Measures (Bollards, Gates)	\$304,000	\$76,000	\$380,000
Mary Street	Butler Street	Simcoe Street	Town	Signs and Pavement Markings	\$2,000	\$500	\$2,500
Niagara Stone Road	Four Mile Creek Road	Line 1 Road	Town	Pedestrian Crossing and Refuge Island	\$1,125	\$281	\$1,406
Niagara Stone Road	Hunter Road	Line 2 Road	* Region	Shoulder Paving	\$167,088	\$41,772	\$208,860
Four Mile Creek Road	East & West Line	Line 2 Road	Region	Shoulder Paving	\$108,000	\$27,000	\$135,000
Mountain Road/Portage Road	Niagara River Parkway	Stanley Avenue	Region	Paved Shoulders	\$195,410	\$48,853	\$244,263
Airport Road	York Road	Queenston Road	* Region	Paved Shoulders	\$18,650	\$4,663	\$23,313
Glendale Avenue	Beechwood Road	York Road	* Region	Incorporate Bikeways and Sidewalks in Selected Design	\$276,000	\$69,000	\$345,000
Glendare Avenue	Deechwood Road	101K Product	Trogion.	0.5 Year Subtotal	\$1,950,536	\$487.634	\$2,438,170
ACMANDIOCA CONTRACTOR				tra real subtrain	13/10/11/10/11		THE RESIDENCE OF THE PARTY OF T
DELEGICATION OF THE PARTY OF TH	Name Chara David	Line 2 Road	Town	Bicycle Lanes if Warranted by Traffic Volumes	\$104,000	\$26,000	\$130,000
Concession 4 Road	Niagara Stone Road	Niagara Stone Road	Town	Sidewalk (north side)	\$840	\$210	\$1,050
Line 2 Road	Andres Street	Andres Street	Town	Sidewalk (north side)	\$11,800	\$2,950	\$14,750
Line 2 Road	Bordeaux Drive	Four Mile Creek Road	* Region	Shoulder Paving Where Feasible Without Major Reconstruction	\$193,878	\$48,470	\$242,348
Lakeshore Road	Townline (Grantham) Road		*** Town	Multi-Use Trail and Special Traffic Safety Measures (Bollards, Gates)	\$79,200	\$19,800	\$99,000
Niagara Stone Road	East & West Line	Concession 4 Road	*** Town	Sidewalk (east side)	\$34,500	\$8,625	\$43,125
Niagara Stone Road	East & West Line	Concession 4 Road			\$38,100	\$9,525	\$47,625
Niagara Stone Road	Concession 4 Road	Line 1 Road	Town	Sidewalk (east side)	\$24,000	\$6,000	\$30,000
Niagara Street	Charlotte Street	Rye Street	Town	Sidewalk (east side)	\$280,000	\$70,000	\$350,000
Line 3 Road	Townline (Grantham) Road	Four Mile Creek Road	Region	Paved Shoulders		\$1,775	\$8,875
Palatine Place	Niagara Boulevard	Queen Street	Town	Sidewalk (southeast side)	\$7,100		\$853,125
Glendale Avenue	St. Catharine's Boundary	Beechwood Road	* Region	Paved Shoulders	\$682,500	\$170,625	\$98,190
Taylor Road	York Road	North of Glendale Avenue	* Region	Paved Shoulders	\$78,552	\$19,638	
Four Mile Creek Road	Line 6 Road	Niagara Falls Limit	* Region	Paved Shoulders	\$357,500	\$89,375	\$446,875
				6-10 Year Subtotal	\$1,891,970	\$472,993	\$2,364,963
11-201 Vearu							8450 000
Concession 1 Road Extension	East & West Line	John Street East/King Street	Town	Multi-Use Trail	\$120,000	\$30,000	\$150,000
Niagara Townline Road	Four Mile Creek Road	Stanley Avenue	* Region	Paved Shoulders	\$72,852	\$18,213	\$91,065
York Road	Seaway Haulage Road	Niagara Stone Road	* Region	Paved Shoulders	\$11,281	\$2,820	\$14,101
Queenston Road	Niagara Stone Road	York Road	* Region	Paved Shoulders	\$367,207	\$91,802	\$459,009
Warner Road	Tanbark Road	Four Mile Creek Road	Town	Sidewalk (north side)	\$25,800	\$6,450	\$32,250
Tanbark Road	Warner Road	York Road	Town	Sidewalk (east side)	\$660	\$165	\$825
Four Mile Creek Road	Warner Road	Johanna Drive	Town	Sidewalk (east side)	\$4,900	\$1,225	\$6,125
Bordeux Drive	Line 2 Road	Frontier Drive	Private	Sidewalk (east side)	\$6,900	\$1,725	\$8,625
Welland Canal East Trail	Port Weller Split	Glendale Avenue	- Region	Multi-Use Trail	\$192,247	\$48,062	\$240,309
York Road	Queenston Road	Niagara River Parkway	* Region	Paved Shoulders	\$244,071	\$61,018	\$305,089
Beechwood Road	Mountain Road	Glendale Avenue	* Region	Paved Shoulders	\$57,481	\$14,370	\$71,851
				11 20 Year Subtotal	51,103,399	\$275,850	\$1,379,249
				Total	\$4,945,905	\$1,236,476	\$6,182,381

represents cost estimates illustrated in the Regional Niagara Bikeways Master Plan (publised by Marshall Macklin Monaghan)
 represents cost estimates held by Town of Niagara-On-The-Lake Public Works Department

- one or the other option to be conidered for construction

- Shoulder paving: \$80,000/km if part of road contract; \$150,000/km if under a separate contract
- Multi-use trail construction: varies from \$80,000/km to \$200,000/km dependent on scope of work

The proposed implementation schedule builds upon the existing network of sidewalks, multi-use trails, and on-road and paved shoulder bikeways.

<u>Transportation Policies</u>

The Ontario Planning Act requires that all public works must conform to the Official Plan. As a result, the Official Plan of the Town of Niagara-of-the-Lake must be amended to reflect the Transportation Master Plan approved by Council. The Official Plan is one tool available to Council to implement the recommendations of the Transportation Master Plan. Another tool would be the 5-year capital budget.

Appendix F contains an initial draft of an Official Plan Amendment that outlines the proposed Transportation Polices consistent with the Transportation Master Plan. An Official Plan Amendment will be formally processed through Council after the Transportation Master Plan has been approved. In addition to the Town of Niagara-of-the-Lake Official Plan Amendment, an amendment to the Regional Official Plan should also be requested (as it pertains to a change in policies affecting Regional roads in urban areas).

The Transportation Policies will establish a variety of policies, including public transit, road classifications, road widenings, parking, truck traffic, bicycle and recreational paths, trails and sidewalks.

Signage and Visitor Information

A comprehensive approach must be taken with respect to road signing and integrating it with all of the TDM initiatives within the Town of Niagara-On-The-Lake. The signage should be developed to guide:

- Visitors/tourists to
 - o Old Town
 - Wineries
 - Other amenities and attractions
 - Parking facilities
 - Information locations
- Commercial vehicles
- International or border traffic
- Vehicular traffic utilizing the Welland Ship Canal Bridge crossings

The Town, in conjunction with the Ministry of Transportation, the Region of Niagara, and the Niagara Parks Commission should develop a comprehensive



signing strategy that reflects the routing modifications contained in the Town of Niagara-On-The-Lake Transportation Master Plan.

The Region should consider, as part of their road closure action plan strategy, the use of Intelligent Traffic Systems to provide canal lift bridge status information to drivers via centrally controlled signs. This information would allow drivers to make appropriate route choices to avoid delay and improve reliability of the roadway network. A sign location strategy for Niagara-On-The-Lake would include four signs erected at key decision points along the roadway system:

- Stewart Road (Regional Road 86) and Lakeshore Road (Regional Road 87);
- Church Road (Line 1 Road), and Stewart Road (Regional Road 86);
- Carlton Street (Regional Road 83) and Stewart Road (Regional Road 86);
 and
- Niagara Stone Road (Regional Road 55) between Line 3 Road and Concession 7 Road.

Operational and Roadway Network Improvements

The roadway operation and network improvements are detailed in **Figure 8.3** and the associated costs and timing are presented in **Table 8.2**.

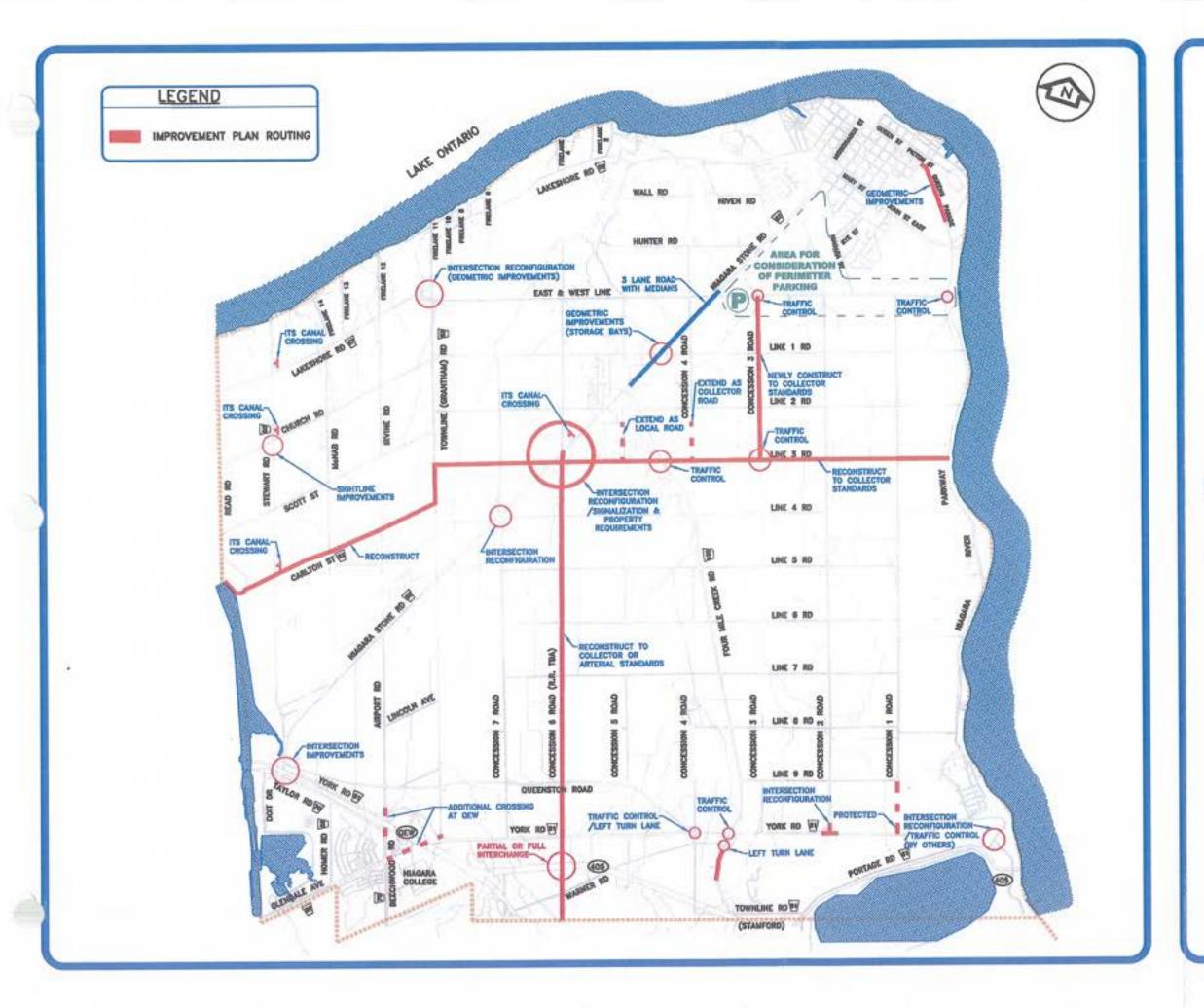
Travel Demand Management

Since road widenings into the Old Town were not seen as conducive to the overall vision of the Town (i.e. protection of the local heritage features, etc.), the increase in traffic demand must be accommodated through other means. The concept recommended for Niagara-On-The-Lake is to implement strategically located perimeter parking relative to the Old Town and other destinations.

The concept of managing the traffic demand through the introduction of strategically located perimeter parking will eliminate the need for widened roadways and the creation of additional parking supply in the future. The area identified for consideration is in the vicinity of the intersection of East & West Line and Niagara Stone Road. More specifically, the area would extend from Anderson Lane to East & West Line along Niagara Stone Road and from Niagara Stone Road to the Niagara River Parkway along East & West Line. This location is recommended for numerous reasons:

- ⇒ Can be serviced by an extension of the existing shuttle service operating from Fort George;
- ⇒ The area has good connection to area trails for cycling and walking;
- ⇒ Strategically located to attract visitors entering from the Niagara River Parkway, Niagara Stone Road and Lakeshore Road;
- ⇒ Visitors can continue their experience of Niagara-On-The-Lake after they return to their vehicle;
- ⇒ There are several partnering opportunities with area businesses; and
- ⇒ Employee day shift parking





THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION
MASTER PLAN STUDY

ROADWAY IMPROVEMENTS AND OPERATIONAL RECOMMENDATIONS

FIGURE 8.3

DELCAN

Recommended Roadway Implementation Strategy

Table 8.2

Road	From	To	Jurisdiction	Improvement Types	Construction	Contingency (9)	Total	Recommended Study to Undertake
					Cost (5)	751	Cost (5)	The second secon
55 Vinital and a second	10.004.000	WHAT RE THE STATE OF	THE WAY	A STATE OF THE STA			-	
Concession 6 Road	Highway 405	Niagara Stone Road	Region	Upgrade to 2 lane Arterial	\$4,900,000	\$1,225,000	\$6,125,000	Schedule 'C' EA
Ragara Stone Road	Four Mile Creek Road	East & West Line	Region	Reconstruct to 3 lanes with raised Centre Median Islands	\$683,000	\$170,750	\$853,750	Schedule B'EA
Viagara Stone Road and York Road/Taylor Road			Region	Intersection Geometric Improvement	\$250,000	\$62,500	\$312,500	Schedule 'A' EA
liagara Stone Road and Concession 7 Road			Region	Intersection Geometric Improvement	\$50,000	\$12,500	\$62,500	Schedule 'A' EA
ine 3 Road	Townline Road	Four Mile Creek Road	Region	Upgrade to 2 lane Arterial	\$2,650,000	\$662,500	\$3,312,500	Schedule B/C'EA
ine 3 Road and Niagara Stone Road	- Control of the Cont		Region	Signalization/Geometrics/Configuration	\$400,000	\$100,000	\$500,000	Feasibility Study
Queen's Parade	Wellington Street	Otter Trail Crossing	Town	Operational and Geometric Improvement	\$69,000	\$17.250	\$86,250	Schedule 'A' EA
Stewart Road and Church Road	The state of the s		Region	Geometric Improvement and Daylight Triangles	\$250,000	\$62.500	\$312,500	Schedule 'A' EA
ast & West Line and Niagara River Parkway	2.02		NPC	Signalization or Roundabout - Monitor for Need	\$250,000	\$62,500	\$312,500	Schedule 'A' EA
Carlton Street	St. Catharines Municipal Boundary	Townline (Grantham) Road	Region	Road Reconstruction	\$2,577,000	\$644,250	\$3,221,250	Schedule 'A' EA
ownline (Grantham) Road	Carlton Street	Line 3 Road	Region	Upgrade to 2 lane Arterial	\$437,250	\$109,313	\$546,563	Schedule 'A' EA
		M 12	THE RESIDENCE	0.5 Year Subtotal	\$12,516.250	\$3,129,063	\$15,645,313	Scredule A EA
10 Years	Automobile Commission	A CONTRACTOR OF THE PARTY OF TH	AT STREET	Participation of the second of	712,3102,30	ESTED HILL	313,043,313	
ine 3 Road	Four Mile Creek Road	Concession 3 Road	Town	Upgrade to 2 lane Collector	\$1,170,000	\$292,500	\$1,462,500	Schedule B/C*EA
our Mile Creek Road and Line 3 Road		33113331311311342	Region	Signalization	\$250,000	\$62,500	\$312,500	Operational Study
oncession 3 Road	Line 3 Road	East & West Line	Town	Open Road Allowance - Construct to 2 lane Collector	\$1,275,000	\$318,750	\$1,593,750	Schedule 'C' EA
Concession 3 Road and Line 3 Road	111111111111111111111111111111111111111	CHANGE THESE COINS	Town	Signalization	\$250,000	\$82,500	\$312,500	THE RESIDENCE OF THE PROPERTY
Concession 3 Road and East & West Line			Town	Signalization	\$250,000	\$62,500		Operational Study
Ging Street	Paffard Street	Cottage Street	Town	Upgrade to 2 lane Collector			\$312,500	Operational Study
ottage Street	King Street	Rye Street	Town	Upgrade to 2 lane Collector	\$212,250	\$53,063	\$265,313	Schedule B EA
tye Street	Niagara Street	Cottage Street			\$48,000	\$12,000	\$60,000	Schedule B EA
akeshore Road and East and West Line	reladera Otreet	Cottage Street	Town	Upgrade to a 2 lane Collector	\$195,000	\$48,750	\$243,750	Schedule B'EA
Concession 4 Road	Line 2 Road	Line 3 Road	Region	Intersection Geometric Improvement and Vertical Alignment	\$350,000	\$87,500	\$437,500	Schedule 'A' EA
GILCESSION 4 HOME	Line 2 Hose	Line 3 Road	Town	Road Extension	\$600,000	\$150,000	\$750,000	Schedule B'EA or Planning Act Component
1597 VOID				6-10 Year Subtotal	\$4,600,250	\$1,150,063	95,750,313	A SHIP COMPANY OF THE PARK AND THE
ine 3 Road	Concession 3 Road	Niapara River Parkway	and the second	American Company of the Company of t		100 maga-17	The second second	A CONTRACTOR
our Mile Creek Road and York Road	Concession 3 Road	Nagara Hiver Parkway	Town	Upgrade to 2 lane Collector	\$2,200,000	\$550,000	\$2,750,000	Schedule 'C' EA
our Mile Creek Road and Warner Road			Region	Signalization/Geometric Improvement	\$400,000	\$100,000	\$500,000	Schedule 'A' EA
our Mile Creek Road	Misses Steel Book	E	Region	NB Left Turn Storage Lane	\$27,000	\$8,750	\$33,750	Schedule 'B' EA
oncession 5 Road	Niagara Stone Road	East & West Line	Town	Upgrade to a 2 lane Collector	\$1,010,260	\$252,563	\$1,262,813	Schedule 'B' EA
The state of the s	Walker Road	Line 3 Road	Town	Road Extension	\$428,000	\$107,000	\$535,000	Schedule 'B' EA or Planning Act Component
oncession 6 Road	Nisgara Stone Road	East & West Line	Town	Upgrade to 2 lane Collector	\$1,770,750	\$442,688	\$2,213,438	Schedule 'A' EA or Planning Act Component
oncession 4 Road	Niagara Stone Road	Line 2 Road	Town/Private	Upgrade to 2 lane Collector	\$975,000	\$243,750	\$1,218,750	Schedule 'A' EA
ine 1 Road	Concession 6 Road	Concession 4 Road	Town	Upgrade to 2 lane Collector	\$1,500,000	\$375,000	\$1,875,000	Schedule 'A' EA
ownline (Grantham) Road	Line 3 Road	East & West Line	Town	Upgrade to a 2 lane Collector	\$1,912,500	\$478,125	\$2,390,625	Schedule 'A' EA
anbark Road and York Road	20.75.40001	10.10.10.10.10.10.10.10.10.10.10.10.10.1	Region	Signalization/Geometric Improvement	\$400,000	\$100,000	\$500,000	Schedule 'A' EA
				11-20 Year Subtotal	\$10,623,500	\$2,655,875	\$13,779,375	
				YGGAY	\$27.740,000	\$6,505,000	\$34.675.000	

Note:

- the costs in the above table do not include property acquisitions or utility relocations

A demonstration project should be undertaken for several seasons in cooperation with the Niagara District Secondary School, utilizing their parking lot during the summer months. The parking lot has an existing capacity of approximately 150 spaces.

Lot information should be distributed through tourist information publications, signage along the Niagara River Parkway, Niagara Stone Road and Lakeshore Road and other media. The Town should incorporate into their long-term plans the protection/purchase of property at this location for the purpose of developing satellite parking.

As the Glendale area continues to develop along York Road (Regional Road 81) from Airport Road (Regional Road 90) to Concession 6 Road, access management and driveway alignment reviews should be undertaken. A protection plan should be created to ensure that new developments follow a roadway entrance guideline so that the number of access points does not create a safety concern between arriving/departing traffic and the main flow travelling along the roadway.

Commercial Vehicles

As part of the Regional Niagara Arterial Roads Review, a commercial vehicle network has been identified. If the recommendation from the study is to implement such a network then the following revisions should be considered.

A revised commercial vehicle network consisting of Provincial, Regional and Town roadways should be implemented to provide adequate connectivity to allow for the movement of commercial vehicles within the Town, to adjacent municipalities and to the Provincial highway system. The recommended network consists of three Provincial roads, nine (9) Regional Roads, and one Town road as outlined in **Table 8.3**. This plan includes the following three new roadways not identified in the Region of Niagara Arterial Roads System Plan:

- East & West Line from Lakeshore Road (Regional Road 87) to Niagara Stone Road (Regional Road 55);
- Concession 6 Road from Highway 405 to Niagara Stone Road (Regional Road 55); and
- Glendale Avenue (Regional Road 89) from Beechwood Road (Regional Road 70) to York Road (Regional Road 81).

Figure 8.4 illustrates the coverage of the recommended commercial vehicle network. Of note, Townline (Stamford) Road (Regional Road 61) has not been included, and would therefore restrict the amount of commercial vehicles impacting St. Davids, which are originally destined for Highway 405.

Table 8.3 Recommended Commercial Vehicle Network

Street	Jurisdiction	From	То
Glendale Avenue (Regional Road 89)	МТО	North of Taylor Road (Regional Road 70)	South of York Road (Regional Road 81)
QEW	МТО	St Catharines Municipal Boundary	Niagara Falls Municipal Boundary
Highway 405	МТО	QEW	Canada / US Border
Lakeshore Road / Mary Street (Regional Road 87)	Region	City of St. Catharines Municipal Boundary	Mississagua Street
Niagara Stone Road / Mississagua Street (Regional Road 55)	Region	York Road (Regional Road 81)	Mary Street
Stewart Road (Regional Road 86)	Region	Lakeshore Road (Regional Road 87)	Niagara Stone Road (Regional Road 55)
Four Mile Creek Road (Regional Road 100)	Region	City of Niagara Falls Municipal Boundary	Niagara Stone Road (Regional Road 55)
York Road (Regional Road 81)	Region	Taylor Road / Niagara Stone Road (Regional Road 55)	Niagara River Parkway
Glendale Avenue (Regional Road 89)	Region	City of St. Catharines Municipal Boundary	York Road (Regional Road 81)
Beechwood Road (Regional Road 70)	Region	City of Niagara Falls Municipal Boundary	Glendale Avenue (Regional Road 89)
Taylor Road (Regional Road 70)	Region	Glendale Avenue (Regional Road 89)	York Road (Regional Road 81)
Concession 6 Road	Future Region	Niagara Falls Municipal Boundary	Niagara Stone Road (Regional Road 55)
East & West Line	Town	Lakeshore Road (Regional Road 87)	Niagara Stone Road (Regional Road 55)



Figure 8.4
Recommended Commercial Vehicle Network

8.2 Financial Impacts

Summarizing the costs contained in **Tables 8.1** and **8.2** over the twenty-year planning period results in a capital investment by all agencies of approximately \$40,857,381. This cost consists of \$18,083,483 in the immediate term (0-5 years), \$8,115,275 in the short term (6 -10 years) and \$14,658,624 in the long term (11 - 20 years). The totals above do not include the committed improvement costs for the Regional Niagara Bikeways Master Plan or the Town of Niagara-On-The-Lake's Multi-Use Trail along the east side of Niagara Stone Road.

A summary of the implementation plan by jurisdiction and type of improvement is presented in **Table 8.4**. A review of the table indicates that of the \$40,857,381 in total improvement, 54% is the Region's, 43% is the Town's, private developer consists of 2% and 1% is the Niagara Parks Commission's. The Ministry is not included in these totals as it is too early to determine the nature and scale of their roadway network improvements.

Table 8.4
Jurisdiction Financial Summary

	0 - 5 ye		isdiction Finan 6 - 10 ye		11 - 20 y	voare.	
	Region	Town	Region	Town	Region	Town	Total
Road Improvements	\$15,246,563	\$88,750	\$750,000	\$5,000,313	\$1,033,750	\$11,636,250	\$33,755,62
On-Road Cycling	\$1,839,639	\$0	\$1,990,538	\$130,000	\$941,115	\$0	\$4,901,29°
Multi-Use Trails	\$0	\$380,000	\$0	\$99,000	\$240,309	\$150,000	\$869,30
Sidewalk Program	\$0	\$216,031	\$0	\$145,425	\$0	\$39,200	\$400,656
Total	\$17,086,201	\$684,781	\$2,740,538	\$5,374,738	\$2,215,174	\$11,825,450	\$39,926,88°

Note

Difference in cost summary for Niagara Parks Commission signals in 0-5 years is \$312,500 for signals and configurations or roundabout (East & West Line and Niagara River Parkway)

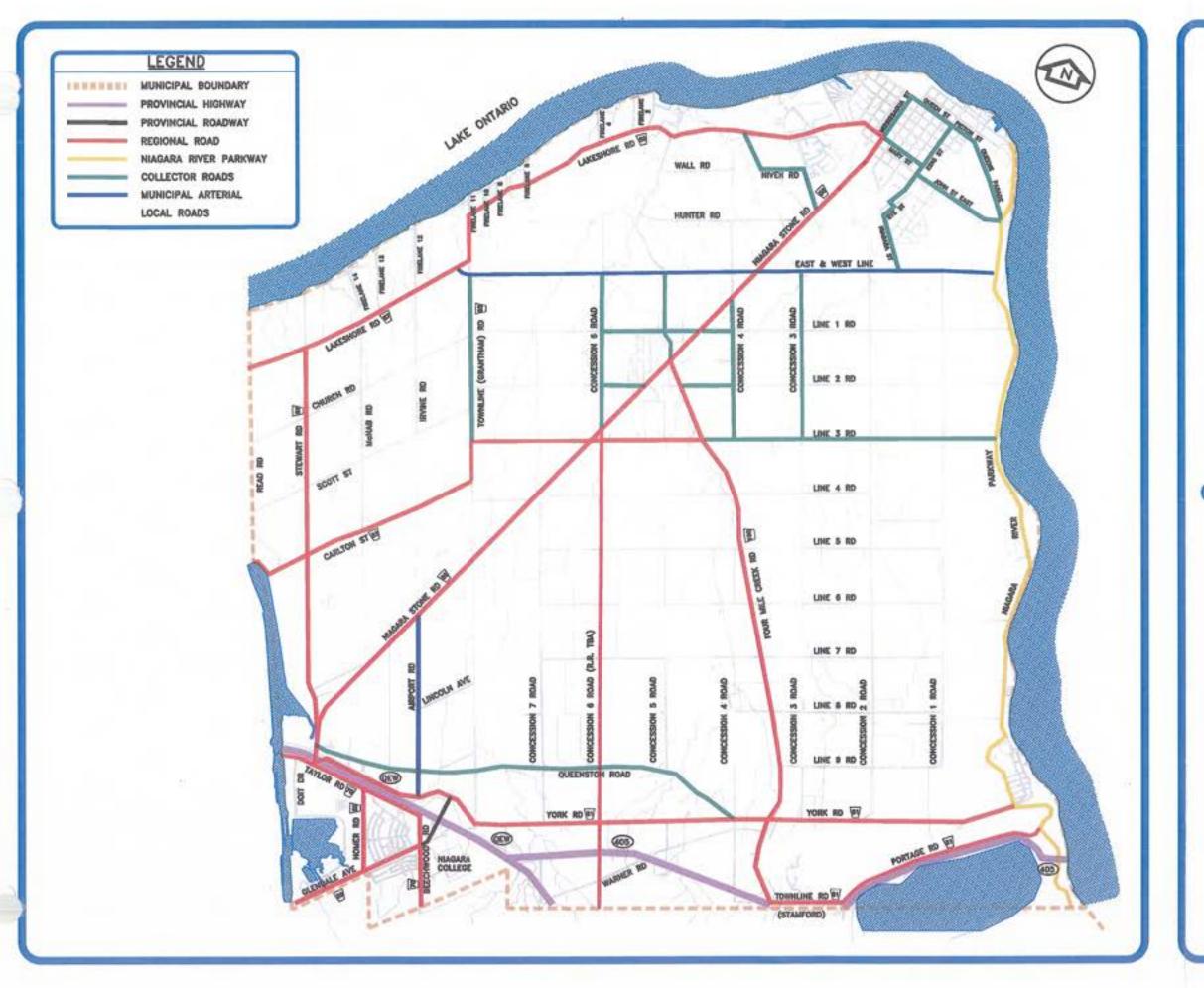
Difference in cost summary for private development in 11-20 years is \$609,375 for new road construction (Concession 4 Road - Niagara Stone Road to Line 2 Road) and \$8,625 for sidewalk construction (Bordeux Drive)

8.3 Proposed Roadway Jurisdiction and Classification

The proposed roadway jurisdiction and classification for the Town of Niagara-On-The-Lake that would result from the implementation of the recommended roadway improvement plan is presented in **Figure 8.5** and detailed below. The recommended classifications and jurisdictions reflect the provision of additional links in the roadway network and latest roadway downloading. **Table 8.5** lists the roadways located within the Town of Niagara-On-The-Lake which should be classified as expressways and are under the jurisdiction of the Ministry of Transportation.

Table 8.5 Recommended Expressway Jurisdiction

Street	Limits
Queen Elizabeth Way	St. Catharines Boundary to City of Niagara Falls
-	Boundary
Highway 405	QEW to the City of Niagara Falls
Highway 405	Stanley Avenue to the Queenston-Lewiston Bridge



THE TOWN OF NIAGARA-ON-THE-LAKE

TRANSPORTATION
MASTER PLAN STUDY

PROPOSED ROAD
CLASSIFICATION AND
JURISDICTION

FIGURE 8.5

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The roadways presented in **Table 8.6** are under the jurisdiction of the Region of Niagara and should be classified as arterial roads.

Table 8.6 Recommended Region of Niagara Arterials

Street	Limits
Lakeshore/Mary Road	City of St. Catharines Boundary to Mississagua
(Regional Road 87)	Street
Stewart Road	Lakashara Bood to Niagara Stana Bood
(Regional Road 86)	Lakeshore Road to Niagara Stone Road
Carlton Street	City of St. Catharines Boundary to Townline
(Regional Road 83)	(Grantham) Road
Townline (Grantham) Road	Carlton Street to Line 3 Road
(Regional Road 83)	Canton Street to Line 3 Road
Line 3 Road	Townline (Grantham) Road to Four Mile Creek
(Regional Road 83)	Road
Niagara Stone	
Road/Mississagua Street	York Road to Mary Street
(Regional Road 55)	
Four Mile Creek Road	City of Niagara Falls Boundary to Niagara Stone
(Regional Road 100)	Road
York Road	Taylor Road/Niagara Stone Road to Niagara
(Regional Road 81)	River Parkway
Homer Road	Glendale Avenue to Taylor Road
(Regional Road 58)	•
Glendale Avenue	City of St. Catharines Boundary to North of York
(Regional Road 89)	Road
Townline (Stamford) Road	City of Niagara Falls Boundary to Four Mile
(Regional Road 61)	Creek Road
Beechwood Road	City of Niagara Falls Boundary to Glendale
(Regional Road 70)	Avenue
Taylor Road	Glendale Avenue to York Road
(Regional Road 70)	
Concession 6 Road	Niagara Falls Municipal Boundary to Niagara
(Regional Road TBA)	Stone Road
Portage Road	Townline (Stamford) Road to Niagara River
(Regional Road 61)	Parkway

Table 8.7 presents the roads that are under the jurisdiction of the Town of Niagara-On-The-Lake and should be classified as Arterials.

Table 8.7
Recommended Town of Niagara-On-The-Lake Arterials

Street	Limits
East & West Line	Lakeshore Road to Niagara River Parkway
Airport Road	York Road to Niagara Stone Road

Table 8.8 presents the roads that are under the jurisdiction of the Town of Niagara-On-The-Lake and should be classified as Collectors.

Table 8.8 Recommended Town of Niagara-On-The-Lake Collectors

Street	Limits
Niagara Street	East & West Line to King Street
Townline (Grantham)	East & West Line to Line 3 Road
Road	
Niven Road	Lakeshore Road to Niagara Stone Road to King Street
Mary Street	Niagara Stone Road to King Street
King Street	Queen Street to Cottage Street
Cottage Street	King Street to Rye Street
Rye Street	Cottage Street to Niagara Street
Niagara Street	Rye Street to East & West Line
Picton/Queens Parade	King Street to John Street East
John Street East	King Street to Niagara River Parkway
Queen Street	King Street to Mississagua Street
Mississagua Street	Mary Street to Queen Street
Four Mile Creek Road	East & West Line to Niagara Stone Road
Concession 4 Road	Line 3 Road to Niagara Stone Road
Concession 3 Road	East & West Line to Line 3 Road
Penner Street	Concession 6 Road to Niagara Stone Road
Line 1 Road	Niagara Stone Road to Concession 4 Road
Line 2 Road	Concession 6 Road to Niagara Stone Road
Line 2 Road	Four Mile Creek Road to Concession 4 Road
Line 3 Road	Four Mile Creek Road to Niagara River Parkway
Queenston Road	Niagara Stone Road to York Road
Concession 6 Road	Niagara Stone Road to East & West Line

Table 8.9 presents the roads that are under the jurisdiction of the Niagara Parks Commission and are classified as Processional Routes.

Table 8.9
Recommended Niagara Parks Commission Processional Routes

Street	Limits
Niagara River	City of Niagara Falls Municipal Boundary to John Street
Parkway	East
Ricardo Street	Queens Parade to the Navy Hall

The Town of Niagara-On-The-Lake has a number of fire lanes designated off Lakeshore Road (Regional Road 87) that run north/south to Lake Ontario. These fire lanes are privately owned roadways that are maintained by the property owners. All other roads under the jurisdiction of the Town of Niagara-On-The-Lake should be classified as local roads.