Northumberland county

Cycling Master Plan

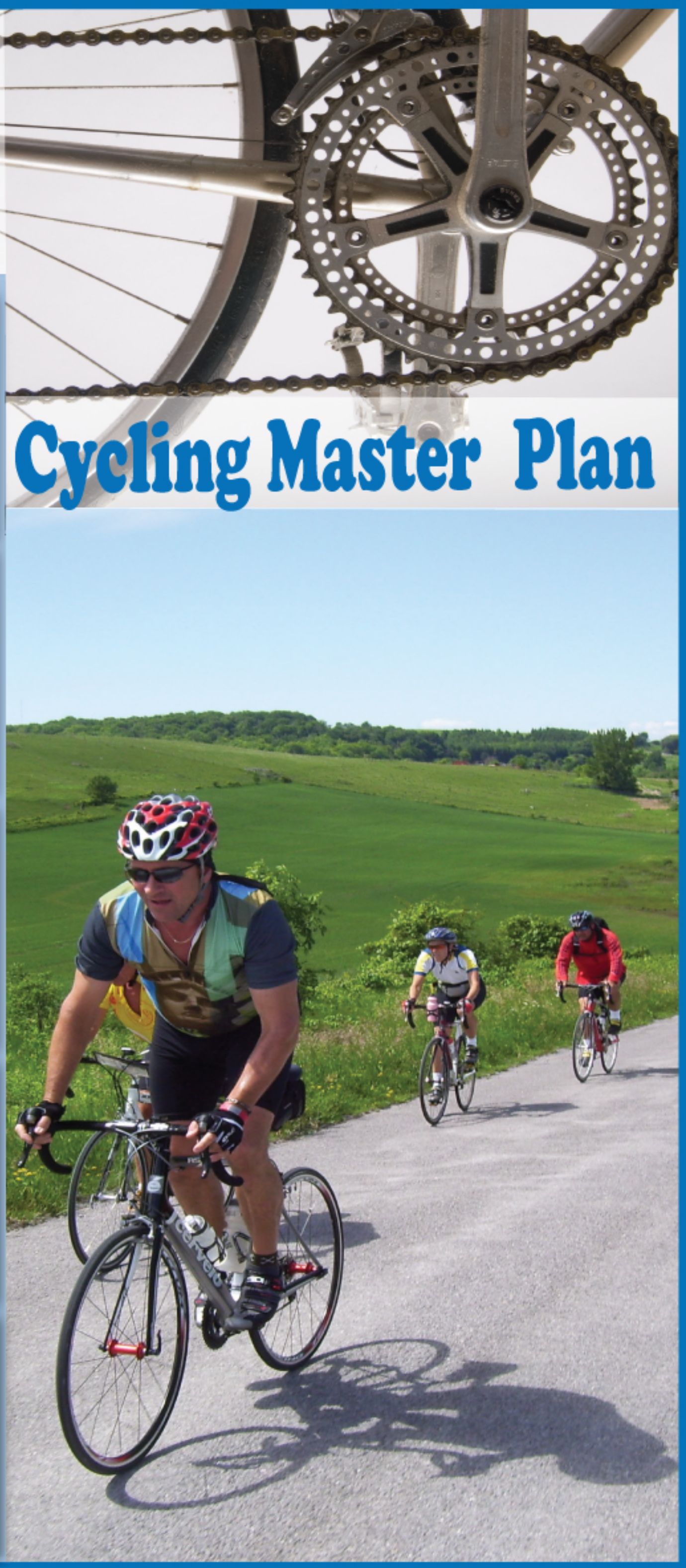
Tourism

Recreation

Awareness

Design

Safety



July 2014

i..... Acknowledgements

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- The Bike Shop
- Canyon Mountain
- Niagara Region
- Ministry of Transportation of Ontario
- Municipality of the Town of Lennox & Addington
- Waterfront Regeneration Trust

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ii)...EXECUTIVE SUMMARY

The County of Northumberland prepared this document to enable the planning, financing and implementation of a Cycling Master Plan. The plan includes several cycling routes, various improvements and upgrades which comprise a 20-year overall plan. Furthermore, the implementation of signage and infrastructure improvements as well as awareness programs which promote education and safety procedures to cyclists and motorists will also be addressed in detail. The County initiated this study in April 2010, with the draft plan being completed in July 2011. County Council adopted the Cycling Master Plan guidelines and implementation strategy on June 20, 2012. This plan was updated most recently in July 2014.

Introduction

The County of Northumberland is recognized as an area with a rich cultural heritage, wide range of urban and rural land features as well as numerous environmental and natural amenities. There are many reasons for supporting the introduction of a cycling master plan in the County of Northumberland; these benefits include economic, environmental, social, public health and transportation among others. The master plan contains core goals and benchmarks as well as a forecasted, phased development for cycling initiatives within the County. This plan recognizes cycling as a feasible form of transportation pursuant to the Ontario Highway Traffic Act, 1990.

Vision

Vision for the Cycling Master Plan includes:
- the basis of policy direction and cycling network facilitation for a series of future cycling master plans,
- identifying short, intermediate and long term benchmarks to be reached within the 20 year plan duration,
- a set of design guidelines based on established industry standards, design publications, other prevailing cycling plans,
- promoting a financially feasible and efficient infrastructure expenditures plan, and
- a concerted effort in terms of marketing Northumberland County as a unique cycling destination.
- Collaboration with the Welcome Cyclists Network who, from 2011-2014, will be working on a province-wide cycle tourism partnership to catalyze destination development and marketing campaigns, Northumberland will market our region as a unique cycling destination.

Photos Credit: Jamie Barnes

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Purpose

The adoption of the Northumberland Cycling Master Plan will provide an overall strategy as well as a standard for consistent design guidelines and implementation of future cycling routes across the County. In the short-term, the County would like to concentrate on increasing cycle tourism and in turn support local businesses and communities through the implementation of initiatives such as the Welcome Cyclists Network.

Consistency: The cycling networks developed in this plan consist of routes which serve the purpose for which they were developed, including commuter, recreational and tourism routes. It is important that these routes are well connected with each other and to the main destinations.

Commuter Routes- intended to provide the most direct options for reaching places of interest within the County; in particular employment areas
Recreational Routes- intended to provide safer, low volume, leisure routes suitable for all age groups and cycling experience
Tourism Routes- intended to provide access to attractions and areas of interest within the County

Safety: A lack of safety is an important factor in which studies have shown to be the most significant deterrent to increased ridership. In short, on-road facilities must always be safe and constructed according to prevailing industry standards.

Convenience: With the proper infrastructure installed, cycling can provide an effective form of transportation which may rival or exceed the convenience of automobiles. Bicycle transportation competes well against the automobile in urban settings where trip distances tend to be short. Overall, shorter trip times are comparable in terms of time and can be even faster by bicycle when the time to park is factored in.

Awareness: In addition to the infrastructure improvements this plan will seek to implement, another important aspect it will provide is ongoing awareness. Initiatives include installing share the road signage as well as releasing information to improve motorist-cyclist rapport and help motorists understand the rules involved in sharing the road with cyclists. Education will be a major focus of many of the "soft" costs involved in the implementation of this plan.




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Main Goals of this Plan:

- **Develop a network of on and off road cycling facilities to be implemented over time**
- **Address specific areas of concern within the County, including barriers to increased ridership**
- **Develop policies, programs and other initiatives to create a more cycling-friendly County**
- **Provide attractive cycling routes which encourage tourism**
- **Provide enhanced recreational, commuter and competitive cycling opportunities**
- **Establish a framework of cycling facilities that can be simply incorporated into regular business functions of the respective public works departments of Local and County level governments**
- **Provide clear and consistent guidelines, standards and specifications for cycling facilities to be incorporated into capital and operational improvements**

Preliminary Steps:

Formulating a Committee and Consulting With Area Municipalities: In the initial days of the process, a great deal of time and effort was afforded to selecting and contacting the appropriate representatives to form the foundation of the advisory committee which would assist in directing the cycling master plan study process. Another preliminary focus centered on building a contact list of area Municipality staff members and representatives as well as various stakeholders throughout the County who would have a vested interest in the outcomes of this plan, such as potential sponsors, recreation and cyclist enthusiasts, special interest groups as well as the Public Health Unit.

Develop Master Plan Vision, Goals and Objectives: Another preliminary stage of the process involved determining exactly what this plan would strive to accomplish within Northumberland County. It was determined that since this was to be a phased development, it would be appropriate to set a timeframe of approximately 20 years, which would be accompanied with a realistic set of goals and objectives from which to benchmark the County's progress over the course of time. It was also important to strike a balance between urban and rural plans due to the number of existing plans which cater to predominantly urban areas, which do not address the rural areas of Northumberland County.

Photos Credit: Jamie Barnes

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Preliminary Steps (continued)

Inventory Analysis, Policies and Existing Infrastructure Conditions: The next step in the Cycling Master Plan study process was to evaluate the current inventory of cycling-related facilities such as bike lanes previously implemented by area Municipalities, as well as ancillary facilities such as bike racks, rest areas and parks. Another critical subsection included in this stage is the analysis of relevant Federal, Provincial and Municipal policy and legislation. Furthermore, extensive hands-on research concerning the suggested County routes was also undertaken at this juncture to assess the feasibility of the routes as well as potential areas in need of improvements.

Committee Facilitation and Decision-Making: Since this Master Plan will presumably guide cycling decisions and networks across the entire County, it was imperative that a Committee with the appropriate representation from all parties involved be formed. The members of this Committee were chosen to oversee important aspects of the plan and make critical decisions by reaching as close to a consensus as possible. Examples of decisions made at this level include development of design guidelines and the network implementation of County routes.

Public Involvement: The public involvement aspect of this plan was achieved through providing an on-line public information centre as well as a Cycling Survey which was posted from September 2010 to March 2011 on the County website in order to provide a medium for the public to voice expectations.

Municipal Coordination: The plan was presented to and endorsed by the Councils of each of the member municipalities of the County by Spring 2012. County Council adopted the guidelines and implementation strategy during its meeting on June 20, 2012.

Working Document: The Cycling Master Plan is intended to be a living document, and will be revisited and revised every three to five years as required. This plan was last updated in July 2014.

Photos Credit: Jamie Barnes

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Provincial and Municipal Policy Documents Pertaining to this Plan Include:

Provincial Policy Statement
Places to Grow: Growth Plan for the Greater Golden Horseshoe
Bill 51
Municipal Act
Ontario Highway Traffic Act
Greenbelt Plan
County of Northumberland Strategic Plan 2008-2011
Municipal Official Plans

This Cycling Master Plan will make use of several different facility types and thoroughly explain the advantages and appropriate use of each respective option.

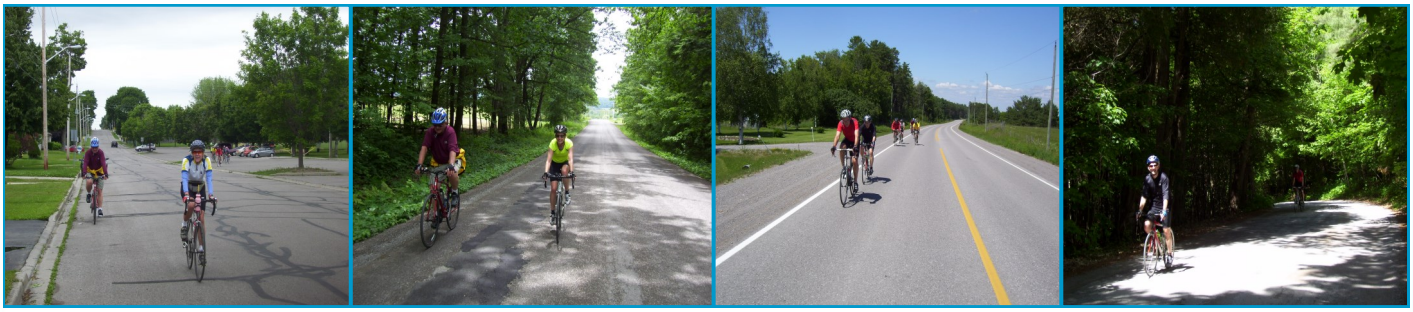
Proposed Facility Types:

Signed routes and Wide Curb Lanes- rural areas, roads with low traffic volumes (generally less than 1,000 vehicles per day) can be shared by adult bicyclists and motorists without the need for extra space or facility construction for bicyclists.

Bike Lanes - Bike lanes represent on-road lanes reserved for cyclists and are located adjacent to automobile traffic lanes. The purpose of designating bike lanes is to improve conditions for both cyclists and drivers by assigning separate areas for bicycles and motor vehicles.

Bike Paths - Bike paths, as opposed to bike lanes, are physically separated from other traffic lanes, making them very comfortable and safe to use for even inexperienced cyclists. Bike paths are located either within a road right of way, generally paralleling the roadway, or within other corridors not served by roads.

Multi-Use Paths - Multi-use paths are designed to accommodate various types of users, either simultaneously or on a seasonal basis, and as such the needs of all potential users must be taken into consideration.



Photos Credit: Jamie Barnes

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Cycling Route Linkages

The following linkages are planned to provide internal connections between the five proposed County routes as well as external connections to neighbouring regions, counties and communities surrounding Northumberland County. The external linkages will connect with Peterborough County, Durham Region and the City of Quinte West.

West Quadrant (Linkages to Port Hope, Peterborough County and Durham Region)
County Rd. 2 (Durham Region Boundary-Morrish Church Rd, Municipality of Port Hope)
County Rd. 10 (Peterborough County-Municipality of Port Hope)
County Rd. 74 (Municipality of Port Hope– Hamilton Township)
County Rd. 28 (Municipality of Port Hope-Peterborough County)
Lakeshore Rd (Durham Region-Municipality of Port Hope)
County Rd. 2 (Municipality of Port Hope-Hamilton Township-Town of Cobourg)

Central Quadrant (Linkages within Alnwick/Haldimand, Cramahe)
Boomerang Rd./Clouston Rd. (Alnwick/Haldimand Township)
County Rd. 29 (Alnwick/Haldimand Township-Municipality of Trent Hills)
Mount Pleasant Rd./Morganston Rd./County Rd. 25 (Township of Cramahe)

Northeast Quadrant (Linkages within Trent Hills)
County Rd. 25/County Rd. 35 (Municipality of Trent Hills-Hastings County)
County Rd. 38 (Municipality of Trent Hills-Hastings County)
County Rd. 8 (Municipality of Trent Hills-Hastings County)
County Rd. 30 (Municipality of Trent Hills-Peterborough County)

Southeast Quadrant (Linkages within Brighton)
County Rd. 64 (Municipality of Brighton-Quinte West)
County Rd. 2 (Municipality of Brighton-Quinte West)

Photos Credit: Jamie Barnes

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Design Guidelines

The following rubric was drafted in conjunction with members of the Cycling Steering Committee to act as a guide for providing specific treatments to County and Municipal roadways based on variables such as road class, posted speed limit and traffic volumes.

On or Off Road Trail	Environment	Class	Posted Speed Limit	AADT	Width of bike lane/ Share the Road Signage (STR)
On Road [Commuter, Tourism or Recreation]	Urban	Arterial	50-70km/hr	>5000	1.5m
		Collector	40-60 km/hr	3000- 5000	1.0-1.2m
		Local	30-50 km/hr	1000-3000 <1000	STR or 1.0m STR
	Rural	Arterial	70-80 km/hr	>5000 3000-5000	1.5-1.75m 1.5m
		Collector	60-80 km/ hr	3000- 5000 1000- 3000	1.5m 1.2-1.5m or STR
		Local	40-80 km/hr	<1000	STR
Off Road [Commuter, Tourism, Recreation]	Within road allowance				1.2-1.5m (one way) 2-3m (two way)*
	In parklands or other areas outside road allowance				2-3m (multi-use trails)*

Signage and Pavement Marking Specifications

Based on the specific requirements of a roadway (the aforementioned variables in the design guidelines), signage or additional painting may be suitable as a substitute for additional shoulder treatment. In this case the use of signage or 'sharrows' will be implemented to provide warning to motorists and cyclists.



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Signage and Pavement Marking Specifications (continued)

Spacing Reference	Distance
Spacing for Destination Signage	1.5-2km (straight stretches)
Mounting location for Directional Signage	10-15m in advance of change in direction

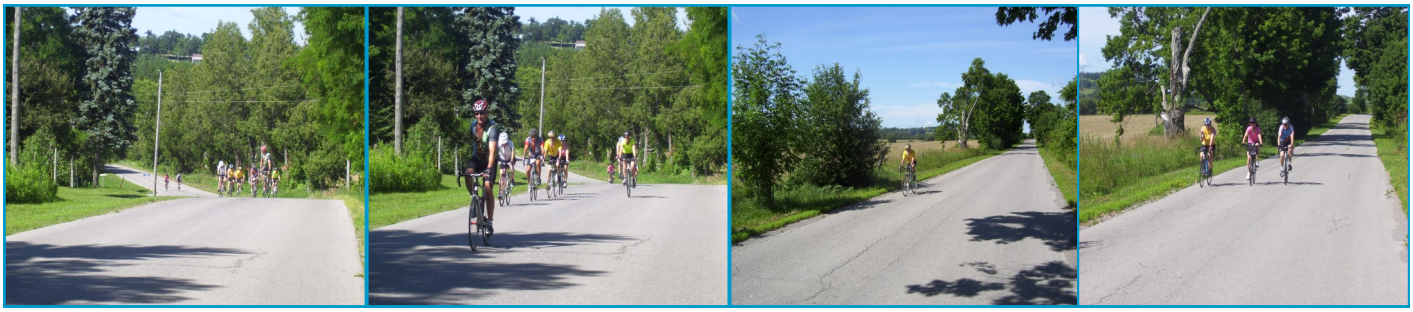
Way finding signage should be located at/ near intersections at a prescribed, uniform distance to avoid confusion and encourage consistency. The mounting of trail signs on existing sign posts, light standards and hydro poles is recommended.

Guideline Source	Spacing of Surface Marking
Northumberland County Cycling Master Plan	-Sharrows to be used primarily in urban areas, placed every 50-200m. Can also be used in rural areas where deemed necessary.

Promotion, Awareness and Education

An excellent way to complement infrastructure improvements in the future would be to provide and promote CAN-Bike courses to cyclists of all ages and abilities within the County. The CAN-Bike program provides a series of courses addressing all aspects of cycling safety and are chiefly oriented towards recreational and utilitarian cycling. Another important aspect of the Cycling Master Plan will be the coordination of efforts with local school boards. School boards among other public agencies can provide important partnerships in order to move forward with various cycling policies and initiatives.

To further promote the importance of providing cycling as a viable transportation option as well as excellent recreational activity and tourist attraction, it is crucial that the County of Northumberland forge partnerships with public and private organizations. These could include corporate partnerships, which can advance community relationships and help offset some costs associated with the construction, operation and promotion of our bicycle route network.



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Overall Promotional Objectives of this section include:

- Increase awareness of the current and proposed cycling network
- Establish a set of educational tools to inform both cyclists and motorists of their respective responsibilities of sharing the road with all users
- Work collaboratively with tourism organizations and cycling networks/organization to foster a tourism campaign which includes cycling segments
- Incorporate additional annual cycling events in the future

Public Consultation and County-Municipal Coordination

In order to gauge public opinion and gather valuable information regarding public expectations of the Cycling Master Plan (CMP), a survey was drafted and posted online for the public to express their thoughts. The results proved to be invaluable when drafting this plan and deciding upon specific issues and mandates to prioritize over the course of the plan's timeframe.

Furthermore, an online public information centre was provided in order to allow an accessible medium for citizens in the County to evaluate the draft version of the CMP. Design guidelines, safety regulations, signage and pavement marking specifications, cycling route and linkage maps, financial projections as well as information regarding our share the road campaign were all included on the Northumberland County website.

Furthermore, the Cycling Steering Committee (CSC) was also formed in 2010 with the goal of obtaining information from a wide variety of stakeholders to provide transparency and accountability throughout the master plan implementation process. This particular committee was formed to act as a discussion board in which members from various disciplines could contribute to the study in a pluralistic manner incorporating a multitude of viewpoints and perspectives. The committee was also responsible for identifying issues of concern, as well as considering and implementing solutions to said problems in an efficient manner.




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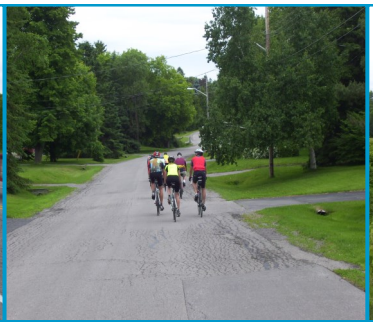
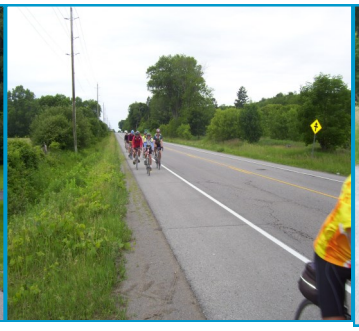
The Cycling Steering Committee has been accountable for, but not limited to the following issues:

- Establishing a project outline and schedule to indicate who is responsible for each task, when it should be accomplished as well as identifying available opportunities for public involvement.
- Developing a framework for evaluating and prioritizing potential improvements.
- Seeking cycling network program funding, including federal, provincial, and regional grants, and funding from local foundations, service clubs, and private individuals.
- Recommending changes to municipal policies to support cycling, including roadway design and maintenance standards, changes to zoning codes, municipal traffic bylaws and law enforcement practices, and other appropriate changes.

Implementation and Financial Strategy

As part of the long-term, overall vision for this plan, an implementation plan mapping our step by step annual expectations will serve as a vital section to this plan. The implementation strategy has been designed in a manner to allow flexibility to both County staff and area Municipality staff members with respect to budgeting for improvements, various Council decisions as well as opportunities and constraints which may arise over time. As stated earlier in this plan, the time frame of this plan and all planning, design and construction elements therein comprise a 20-year outlook. Furthermore, the following broad strategies shall be taken into account during the implementation of Northumberland County's inaugural five proposed cycling routes:

1. Take advantage of and work in tandem with planned Ministry of Transportation, County and area Municipal road, trail and transit construction projects;
2. Construct bikeways and pathways as part of the planning process in new development areas as construction occurs;
3. Consult with and consider the opinions of the Cycling Steering Committee with respect to future major decisions in terms of cycling infrastructure implementation;
4. Where County and Municipal budgets will allow, attempt to rectify identified problem areas in a timely and efficient fashion;
5. Continue to connect our proposed cycling paths both internally within the County and externally to neighbouring communities in order to continually improve the Northumberland County cycling experience.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The plan proposed an implementation plan divided into three timeframe ranges including the following:
1. Short-term implementation (2012-2016): This timeframe includes many of the immediate needs and lower cost improvements related to the plan. Furthermore, we have also aimed to have the majority of both our share the road and way finding signage installed over the course of this timeframe.
2. Intermediate Implementation (2017-2021): This timeframe will remedy larger-scale reconstruction projects in an attempt to plan and budget well in advance with staff and Council members.
3. Long-term Implementation (2022+): This timeframe will also rectify several larger-scale construction projects. It is encouraged that staff and Council members evaluate these projects and prepare as well as budget for their implementation on an annual basis.

Infrastructure to be Installed by Municipality (in 2014 $)	Short term (< 5 years)	Intermediate (5-10 years)	Long Term (10+ years)	Totals
Municipality of Port Hope	$4,160	$82,472	$0	$86,632
Town of Cobourg	$12,130	$0	$0	$12,130
Township of Hamilton	$260	$0	$0	$260
Township of Alnwick/Haldimand	$4,940	$4,290	$0	$9,230
Township of Cramahe	$13,760	$0	$0	$13,760
Municipality of Brighton	$56,234	$115,046	$20,488	$191,768
Municipality of Trent Hills	$50,515	$260	-	$50,775
Northumberland County	$532,249	$843,960	$3,919,110	$5,295,319
Totals	**$674,248**	**$1,046,028**	**$3,939,598**	**$5,659,874**

This plan has made it a priority to strike a balance between ensuring the safety of its patrons, while also providing an outline for a financially feasible long-term funding strategy which will provide staff and Councilors a certain element of flexibility. Whenever possible, units of government should maximize local funding by securing matching funds from federal and state funding programs and private funding sources, such as developers, businesses and non-profit organizations. Opportunities to implement bicycle projects can also be maximized by including them as a routine part of new development and roadway projects.

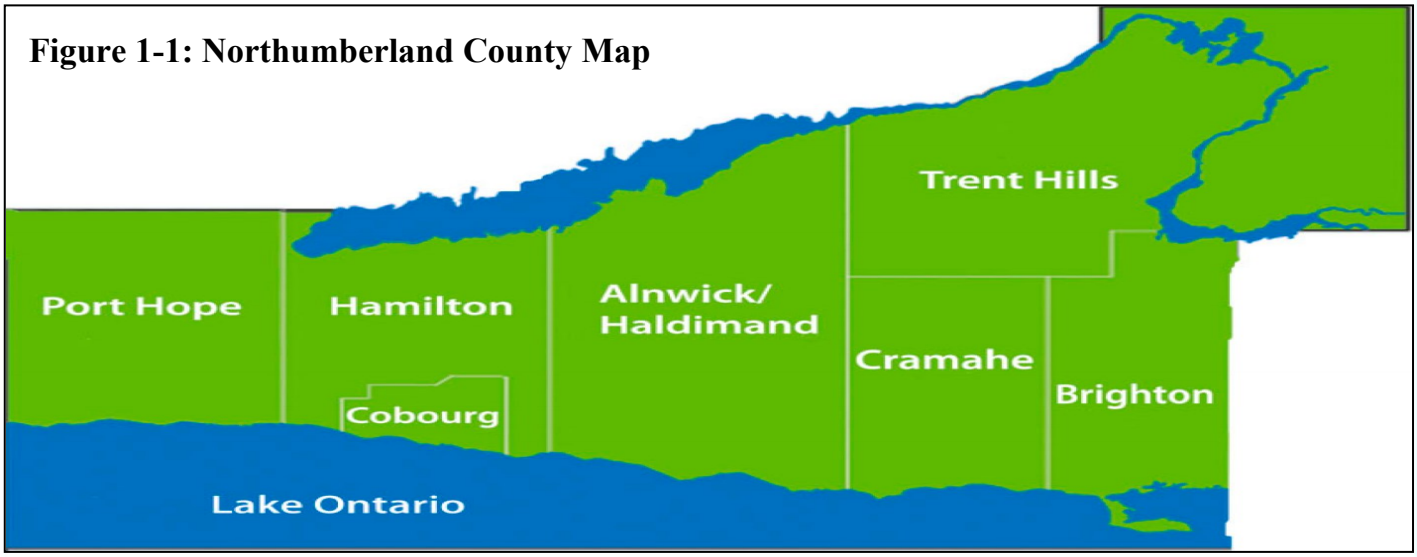



1.0...INTRODUCTION

1.1... County of Northumberland General Context

The County of Northumberland is recognized as an area with a rich cultural heritage, a wide range of urban and rural land features as well as numerous environmental and natural amenities. This range of amenities include, but is not limited to Rice Lake, Lake Ontario, the Oak Ridges Moraine, Trent-Severn Waterway as well as the provincially instituted Greenbelt which provide an ideal backdrop and ample opportunity for the promotion of cycle tourism and recreational cycling opportunities in the county. Cycling Tourism has recently come to the forefront as a vital county-wide initiative of the Northumberland County Tourism and Transportation & Waste Departments, our seven area Municipalities as well as the many cycling clubs and recreational enthusiasts within the County. Municipalities within Northumberland County already have many characteristics which would lend themselves to excellent cycling conditions including extensive road networks which traverse varied landscapes within the County, clean air, lakes, numerous local attractions as well as low traffic volumes on many municipal roads. As well, a 25km portion of the Trans Canada Trail bisects the Municipality of Trent Hills.

Figure 1-1: Northumberland County Map



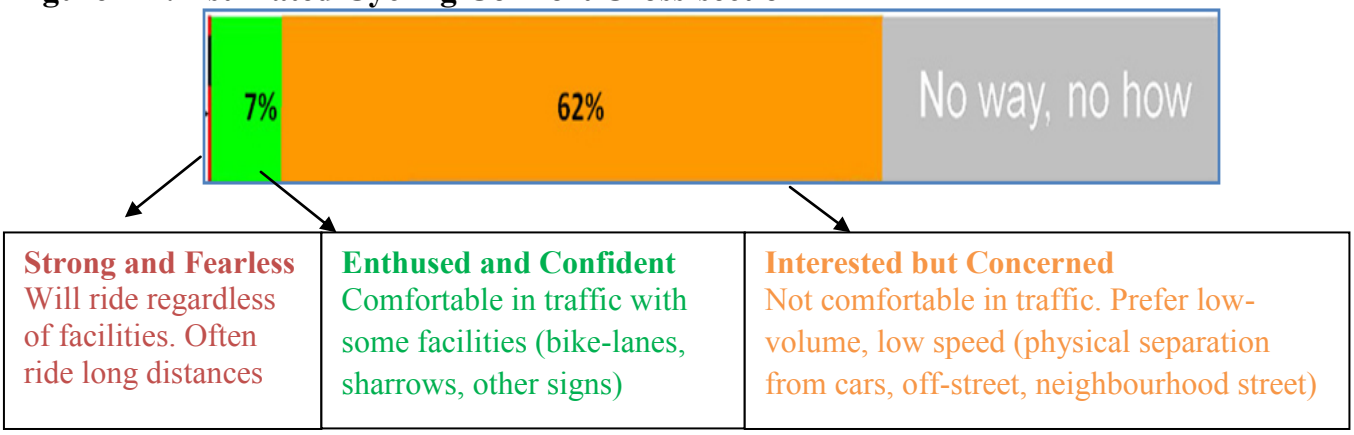
1.2... Why Do We Need a Cycling Master Plan?

The County of Northumberland has developed the Cycling Master Plan in order to guide network facilitation, policy direction as well as financing across the County over the course of the next 20 years. This plan will help to guide the implementation of cycling infrastructure through effective planning and forecasting, design guidelines and best practices which parallel established industry standards. Furthermore, the implementation of signage and infrastructure improvements as well as awareness programs promoting education and safety procedures to cyclists and motorists will also be addressed in detail. This study was initiated as a result of a motion being approved by Northumberland County Council on February 17, 2010. County Council adopted the Cycling Master Plan guidelines and implementation strategy on June 20, 2012.

1.2... Why Do We Need a Cycling Master Plan? (continued)

Currently, some area Municipalities within the County of Northumberland have made adjustments within their respective official plans and Municipal by-laws regarding active transportation, and in particular, cycling. Conversely, other area Municipalities do not currently include such stipulations in their official plans related to active transportation and cycling. This will prove to be an imperative step in the process as it is important to provide policies and guidelines to ensure that cycling initiatives are considered with respect to land use planning and transportation projects at the County and area Municipal level in the years to come.

Figure 1-2: Estimated Cycling Comfort Cross-section



Source: 8-80 Cities, Community Action Plan for Life

There are many reasons for supporting the introduction of a cycling master plan in the County of Northumberland; these benefits include economic, environmental, social, public health and transportation among others. These benefits will be explored in greater detail in subsequent sections of this plan. Another important aspect of the cycling master plan is that it strives to parallel the direction prescribed by several recently published provincial policy documents and publications. This plan was drafted as a result of the aforementioned provincial policies and direction, the forecasted tourism and public health benefits in addition to the environmental advantages. From an economic and tourism perspective, research conducted by our County Tourism department has shown cycle tourism is a growing recreational activity. This is evidenced by annual events coming through Northumberland such as the Great Waterfront Trail Adventure, Tour for Kids with Cancer, and multiple rides organized annually by the Toronto Bike Network among others. As of April 2010, the top 5 websites visited by consumers and tourists seeking information contained cycling routes and cycling loops. This is an exciting opportunity to not only provide excellent recreational opportunities for County residents, but also tap into a Toronto market of over 900,000 cyclists.

This plan contains core goals and foundations as well as a forecasted phased development for cycling initiatives within the County of Northumberland. The plan recognizes cycling as a feasible form of transportation as stated pursuant to the Ontario Highway Traffic Act, 1990. The plan will also attempt to provide viable recreational and commuting opportunities for the residents of the County as well as provide attractive cycling routes that promote cycle tourism and market our County as a premier rural cycling experience and destination.

1.2...Why Do We Need a Cycling Master Plan? (continued)

Moreover, this plan identifies and prioritizes bicycle facility project needs and recommends specific County policies and guidelines as well as educational and promotional priorities to bring attention to this long-term initiative. This information will further enhance the ability of local private and public agencies, the County and local communities, to invest in projects and programs to improve the practicality, safety and feasibility of bicycling for everyday travel, both commuting and recreational.

Courtesy of: Jamie Barnes

1.3...Cycling Master Plan Vision

The Northumberland County Cycling Master Plan will provide the foundation for a cycling network and long-term financial and implementation strategy for the County and its area Municipalities. The inaugural master plan will also provide the basis of policy direction and cycling network facilitation for a series of future cycling master plans and cycling route networks to be formulated and implemented as the requirements of cyclists and commuters progresses over time. Furthermore, it will establish short, intermediate and long term benchmarks to be reached within the master plan's 20 year duration, with which the County and area Municipalities can move forward in a coordinated and cohesive manner. The inaugural Northumberland County Cycling Master Plan will also be consistent with established Canadian best practices, reputable bikeway design publications, as well as the body of work established by previous installments of Cycling Master Plans in other cities, counties, regions and municipalities to ensure the highest standard of safety and functionality of our cycling network. The plan will also effectively manage resources by promoting a financially sustainable and efficient infrastructure expenditures plan.

- the basis of policy direction and cycling network facilitation for a series of future cycling master plans

- identifying short, intermediate and long-term benchmarks to be reached within the 20-year plan duration

- set of design guidelines based on established industry standards, design publications, other prevailing cycling plans

- promoting a financially feasible and efficient infrastructure expenditures plan

- will make a concerted effort in terms of marketing Northumberland County as a unique cycling destination

1.3…Cycling Master Plan Vision (continued)

Additionally, the Cycling Master Plan will also strive to meet the cycling needs of an extensive array of cyclists of all ages and skill sets through a coordinated upper and lower tier government effort, as well as the provision of public participation at key phases and benchmarks in the plan's implementation. Furthermore, from a public health and environmental perspective, this plan will effectively inform the public of the various benefits of cycling and active transportation to build a happier, healthier and more sustainable Northumberland County for current and future generations. Lastly, this plan will make a concerted effort in terms of marketing Northumberland County as a unique and leading rural tourist cycling destination in the province by effectively streamlining our respective tourism, transportation and economic development efforts.

1.4…Purpose of the Cycling Master Plan

The adoption of the Northumberland Cycling Master Plan will provide an overall strategy as well as a standard for consistent design guidelines and implementation of future cycling routes across the County. In the short-term, the County would like to concentrate on increasing cycle tourism and in turn support local businesses and communities through the implementation of initiatives such as the Welcome Cyclists Network. Moreover, it is important to make efficient use of resources, which provide the need for an effective planning strategy. The plan will attempt in the intermediate and long-term stages to provide linkages between on and off-road facilities, County and Municipal trails, as well as improve the multi-modal transportation split in terms of cycling and provide ample recreational opportunities for the citizens of Northumberland County.

This plan will not be limited to merely providing an increased amount of bicycle lanes; on the contrary it is meant to represent a holistic document that provides recommendations regarding supportive policies, practices and programs to encourage more people to cycle, streetscape design examples, as well as coordination with other transportation modes. In the long-term, this process will contribute to a seamless, effective multitude of transportation options. This plan is also meant to be a precursor to a larger scope Transportation Master Plan to be developed subsequent to this plan. A safe, functional and convenient cycling network should encourage people to use the bicycle more often.

- overall strategy and design guidelines

- provide linkages between on and off-road facilities, County and Municipal trails and provide ample recreational opportunities for residents and visitors

- holistic document providing recommendations regarding supportive policies, practices and programs to encourage cycling

- safe, functional and convenient cycling facilities should encourage people to cycle more often for both recreational and utilitarian purposes.

1.4…Purpose of the Cycling Master Plan (continued)

This can be achieved by striving to ensure the following priorities are taken into consideration when planning and implementing our cycling network:

Consistency: The network consists of cycle routes which serve the purpose for which they are designated, including commuter routes, recreational routes as well tourism routes. It is important that these routes are well connected with each other and with main destinations.

Commuter Routes- intended to provide the most direct options for reaching places of interest within the County; in particular employment areas

Recreational Routes- intended to provide safe, low volume, leisure routes suited to all age groups and cycling experience

Tourism Routes- intended to provide access to attractions and areas of interest within the County

Safety: Safety is an important factor which studies have shown to be the most significant deterrent to increased ridership. In short, on-road facilities must always be safe and constructed according to prevailing industry standards.

Convenience: With the proper infrastructure installed, cycling can provide an effective form of transportation which may rival or exceed the convenience of automobiles. Bicycle transportation competes well against the automobile in urban settings where trip distances tend to be short. Overall shorter trip times are comparable in terms of time and can be even faster by bicycle when the time to park is factored in.

Awareness: In addition to infrastructure improvements, this plan will seek to implement ongoing awareness. Awareness initiatives include installing share the road signage and releasing information to improve motorist-cyclist rapport, which includes rules regarding sharing the road with one another. Education will be a major focus of many of the "soft" costs involved in the implementation of this plan.

Working Document

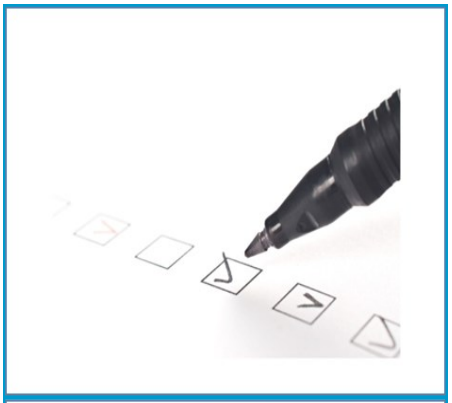
The Cycling Master Plan is intended to be a living document, and will be revisited and revised every three to five years as required.

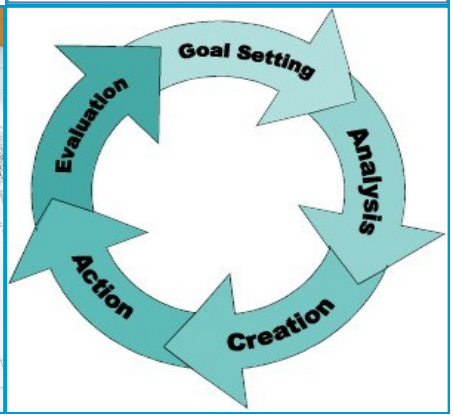
1.5...Major Goals and Objectives

Since this plan is a phased initiative, the contributors to this plan recognize the fact that phased initiatives require gradual goals and improvements, supported by various objectives and recommendations incorporated accordingly over a specific timeframe. This timeframe will outline a 20-year plan for construction, budgeting and implementation of the Cycling Master Plan in Northumberland County. This plan will strive to provide safe, picturesque and functional cycling trails which meet the needs of a wide variety of cycling experience levels, from beginners to avid cyclists and everyone in between. We also intend to implement the use of all existing cycling facilities available as well as provide upgrades and improvements where it is deemed to be necessary.

Main goals of this Cycling Master Plan are to:

- **Develop a network of on and off-road cycling facilities to be implemented over time**
- **Address specific areas of concern within the County, including barriers to increased ridership**
- **Develop policies, programs and other initiatives to create a more cycling-friendly County**
- **Provide attractive cycling routes which encourage tourism**
- **Provide enhanced recreational, commuter and competitive cycling opportunities**
- **Establish a framework of cycling facilities that can be simply incorporated into regular business functions of the respective public works departments of Local and County level governments**
- **Provide clear and consistent guidelines, standards and specifications for cycling facilities to be incorporated into capital and operational improvements**





1.6...SWOT Analysis

The following documents the strengths, weaknesses, opportunities and threats with respect to the County of Northumberland's Cycling Master Plan study and subsequent implementation.

Strengths

-Geographical location relative to the GTA and Greater Golden Horseshoe (estimated 900,000 cyclists in the GTA alone)
-Aligned our efforts with reputable sponsors
-Toronto Bike Network already organizes tours within Northumberland County
-Proposed routes are easily accessible for tourists due to transportation connections i.e. Highway 401, Via Rail
-Looped routes allow cyclists the option to start the route conveniently wherever they please
-There is significant support from the general public and large cycling community
-Significant public health benefits linked to cycling and active transportation in general
-Good variation of landscapes and terrain to offer cycling opportunities to a wide variety of ages

Weaknesses

-Changes will not occur over night and this plan will take the course of several years of commitment to fully implement
-Difficulty in changing public attitude towards commuting via transportation modes other than motorized vehicles (common theme throughout most of North America)
-Vast differences in current roadway infrastructure across the County, some suggested routes will need significant investment to make them more suitable for cycling
-Concerns related to exposure to liability in achieving safe cycling facilities
-Difficulty in establishing buy-in and positive attitude towards cycling as an opportunity to promote the area as a cycling tourism destination

Opportunities

-Great opportunity for area Municipalities and County to cooperate/collaborate
-According to tourism research, Cyclists spend $83/day on average (which is more than the average tourist) and also tend to stay longer
-Other Counties have undertaken similar initiatives; we can learn from their experiences as to what works and what doesn't
-Great opportunity to stimulate economic spinoffs for local businesses including restaurants, stores and accommodations
-Baby boom generation could provide a major target market for many years to come
-Cycle tourism could help market and develop a brand for the County of Northumberland
-Partnership has been forged with the Welcome Cyclists Network which now has begun a province-wide cycle tourism strategy

Threats

-Lagging behind other Counties, Regions and Municipalities within a close proximity that already are creating or operate similar facilities
-Gathering sponsorships will be very important, however there is always the possibility that Provincial infrastructure funding programs disappear or provide only limited funding in the future; infrastructure projects will take longer to implement without grants and financial support
-Must be careful to implement a defendable set of design guidelines in order to ensure safety and liability issues are addressed and accounted for in case of potential litigation
-Ensuring that motorists and cyclists both respect each other when using roadways; this must be overcome by effective education and awareness

1.7...Process of the Cycling Master Plan

The County of Northumberland Cycling Master Plan study commenced in April of 2010. At that time, a Cycling Intern was retained by the County for the purpose of conducting feasibility studies and drafting a Master Plan with the assistance of members of the Transportation & Waste Management department staff. The hiring of the aforementioned position was approved by County Council on February 17, 2010. As a result of this recent opportunity for increased cycling facilities and networks across the County, a study has been undertaken in order to gauge the feasibility of a cycling network in Northumberland County through the implementation of a Cycling Master Plan and the implementation of a "pilot route" to determine the appropriate methodology for instituting prior cycling routes throughout the County of Northumberland. With the assistance of a Cycling Steering Committee (CSC), an integrated, comprehensive set of design guidelines and objectives was determined, and important, pressing issues were brought to the forefront and solved through the coordination of a multi-disciplinary decision-making team comprised of public representatives, area Municipality staff members, local stakeholders, cyclists and recreation enthusiasts. As a result of the formulation of the CSC as well as the Cycling Master Plan study and feasibility analysis, a detailed financial and implementation strategy was devised and adopted to guide the overall direction of this long-term project. Lastly, the selection of enthusiastic committee chairs was integral to the process.

1.7.1 Preliminary Steps Involved in Cycling Master Plan Development

Formulating a Committee and Consulting Area Municipalities: In the initial days of the process, a great deal of time and effort was afforded to selecting and contacting the appropriate representatives to form the foundation of the advisory committee which would assist in directing the cycling master plan study process. Another preliminary focus centered on building a contact list of area Municipality staff members and representatives and various stakeholders throughout the County who have a vested interest in the outcomes of this plan, such as potential sponsors, recreation and cyclist enthusiasts, special interest groups as well as the Public Health Unit.

Develop Master Plan Vision, Goals and Objectives: Another preliminary stage of the process involved determining exactly what this plan would strive to accomplish within Northumberland County. It was determined that since this was to be a phased development, it would be appropriate to set a timeframe of approximately 20 years, which would be accompanied with a realistic set of goals and objectives from which to benchmark the County's progress over the course of time. Another important aspect of this stage was researching existing cycling master plans instituted throughout Ontario and North America, as well as renowned publications by VeloQuebec and the Transportation Association of Canada (TAC). It was also important to strike a balance between urban and rural plans, because a number of existing plans cater to predominantly urban areas, which does not account for the rural areas of Northumberland County.

1.7.1 Preliminary Steps Involved in the CMP Development (continued)

Inventory Analysis, Policies and Existing Infrastructure Conditions: The next step in the Cycling Master Plan study process was to evaluate the current inventory of cycling-related facilities such as bike lanes previously implemented by area Municipalities, as well as ancillary facilities such as bike racks, rest areas and parks. Another critical subsection included in this stage is the analysis of relevant Federal, Provincial and Municipal policy and legislation. Furthermore, extensive hands-on research concerning the suggested County routes was also undertaken at this juncture to assess the feasibility of the routes and identify areas in need of improvements.

Committee Facilitation and Decision-Making: Since this Master Plan would presumably guide cycling decisions and networks across the entire County, it was imperative that a Committee with the appropriate representation from all parties involved be formed. The members of this Committee have been chosen to oversee important aspects of the plan and make critical decisions by reaching as close to a consensus as possible. Examples of decisions made at this level include developing design guidelines and the network implementation of cycling routes.

Public Involvement: The public involvement aspect of this plan was achieved through providing public information centres and facilitating a Cycling Survey which was posted on the County website from September 2010 to March 2011 in order to provide a medium for the public to voice their expectations.

2.0...BACKGROUND STUDIES

On December 9, 2009, Northumberland County Council received the *Growth Management Strategy* for the County and its seven area municipalities. The purpose of this document was to assist each of the seven member municipalities with making decisions regarding how their Official Plans will be updated to conform to the Growth Plan for the Greater Golden Horseshoe. Furthermore, the document also considered population and employment growth expected to occur over the period of 2009 to 2036, and contained specific strategies for where and how this projected growth can be accommodated. Some of the highlights and major issues in the document which pertain specifically to the Cycling Master Plan document include the following:

- Within Port Hope and Cobourg, the age group heading the largest number of low density households is the 45 to 54 age group. Furthermore, Cobourg is increasingly becoming a destination for retirees. Within Alnwick/Haldimand and Trent Hills, the age group heading the largest group of low density households is the 55 to 64 year old category.

- The number of jobs in the tourism sector, which includes arts, entertainment and accommodation, have increased in the Province of Ontario as a whole. However, the number of jobs in Northumberland County in this sector has only really increased between 2001 and 2006 in Cobourg, Brighton and Port Hope. The other municipalities have seen decreases in the number of jobs in this sector.

- There are about 1,525 hectares of land considered to be "Greenfield Land" in the six communities with Built Boundaries (Colborne, Cobourg, Brighton, Port Hope, Campbellford and Hastings). Between 45,759 and 76,235 people could be accommodated on these Greenfield lands based on densities of 30 persons and jobs per hectare and 50 persons and jobs per hectare respectively.

- The population of the County could increase by 73,516 and 113,730 persons if all of the lands that are designated for development are actually developed. About 37% of this growth would be considered intensification as defined by the Growth Plan if the density selected was greater or equal to 30 persons and jobs per hectare.

- Given the County of Northumberland's location, it is well positioned to attract additional tourism provided the appropriate tourism infrastructure is in place and there are actually destinations to visit.

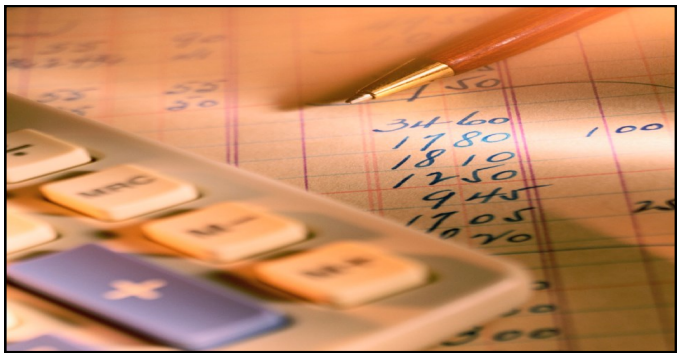
- In the last few years, it has been estimated that over 80% of the new residents migrating to the County have either begun the retirement process or are retired. This means that the new residents are not looking for employment in the County, instead they are looking for a place to live and enjoy recreational pursuits.

2.0...BACKGROUND STUDIES (continued)

The aforementioned findings from the research conducted in the preparation of the Growth Management Plan lend themselves to the fact that there will be a growing future market in the County pursuing recreational activities. Additionally, the new density targets established by the Province of Ontario promote more compact urban form which provide opportunities to promote cycle commuting as a feasible option, among other forms of active transportation. Furthermore, given the fact that the County (particularly Cobourg) is forecast to see an influx of retirees, it is important to provide recreational opportunities to meet the needs of the traditionally active baby boom generation. Lastly, the County of Northumberland Tourism Department has identified many opportunities for local businesses within the County in terms of tourism as a result of the growing cycle tourism industry.

2.1...County of Northumberland Statistical Analysis

In order to understand the precise needs of our County in relation to other similar, primarily rural areas who have already undertaken similar initiatives and adopted their own master plans or cycling infrastructure, it was helpful to undertake a statistical analysis to discover similarities as well as differences with respect to relevant data pertaining to cycling, active transportation and pertinent demographic data. As previously mentioned, this plan will attempt to build on successful aspects and procedures of previously implemented plans, and apply it to the specific needs and requirements of local Municipalities. Through this analysis we hope to distinguish what makes Northumberland County unique from other Counties with similar rural/urban characteristics in Ontario.



To conduct this research, three Counties deemed comparable to the County of Northumberland were selected and compared through five specific factors obtained from the 2006 Statistics Canada Census data. The three Counties chosen to perform a comparative analysis with the County of Northumberland were Lennox and Addington County, the County of Grey and the County of Haliburton. They were also chosen based on the fact that Northumberland County has consulted with staff members from these municipalities throughout the Cycling Master Plan study. The variables studied in order to conduct the comparative analysis included:

- Land Area (measured in km^2)
- Population
- Population Density/km^2
- Median Population Age
- Mode of Transportation (Cycling Modal Share)
- Population of Area Municipalities

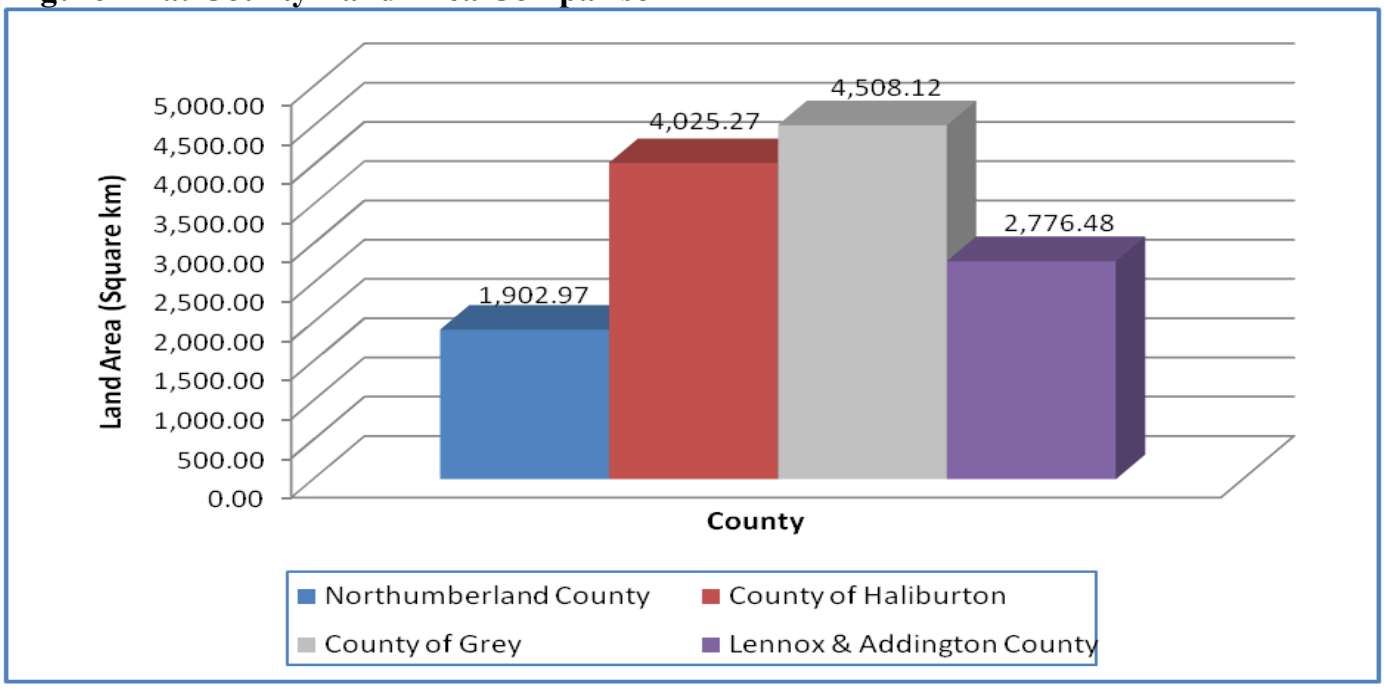
2.1...County of Northumberland Statistical Analysis (continued)

Table 2-1a: Comparative Analysis

Variable Measured	**Figure #**	**Northumberland County**	**Haliburton County**	**Grey County**	**Lennox & Addington County**
Land Area (km²)	2-1	1,902.97	4,025.27	4,508.12	2,776.48
Population	2-2	80,963	16,147	92,411	40,542
Population Density/ km²	2-3	42.5	4.0	20.5	14.6
Median Population Age	2-4	44.8	50.4	44.4	43.3
Mode Share Percentage (Transportation)					
Car, truck, van (driver)	2-5	81%	84.2%	78.6%	85.1%
Car, truck, van (passenger)		9.4%	7.6%	9.2%	7.8%
Public Transit		1.2%	0.6%	1.2%	0.8%
Walked or Cycled		7.6%	6.0%	9.5%	5.3%
All other modes		0.8%	1.6%	1.5%	1.0%
TOTALS		100%	100%	100%	100%

Source: Statistics Canada, 2006

Figure 2-1a: County Land Area Comparison



2.1...County of Northumberland Statistical Analysis (continued)

Figure 2-1a: This figure illustrates the land area in km^2 for the Counties discussed in this comparison. In terms of total land area, Northumberland County with approximately 1,900 km^2 is comparable to Lennox & Addington, however it falls well below the thresholds of Haliburton and Grey Counties. Although this could be seen as a disadvantage, a more compact land area allotment could theoretically lend itself to providing better linkages between area Municipality and County trails as well as allowing for the linkages of our trails with neighbouring County and Regional trails. Furthermore, the reduced land area could provide Northumberland County residents with more opportunities for cycle commuting in the future.

Figure 2-1b: County Population Comparison

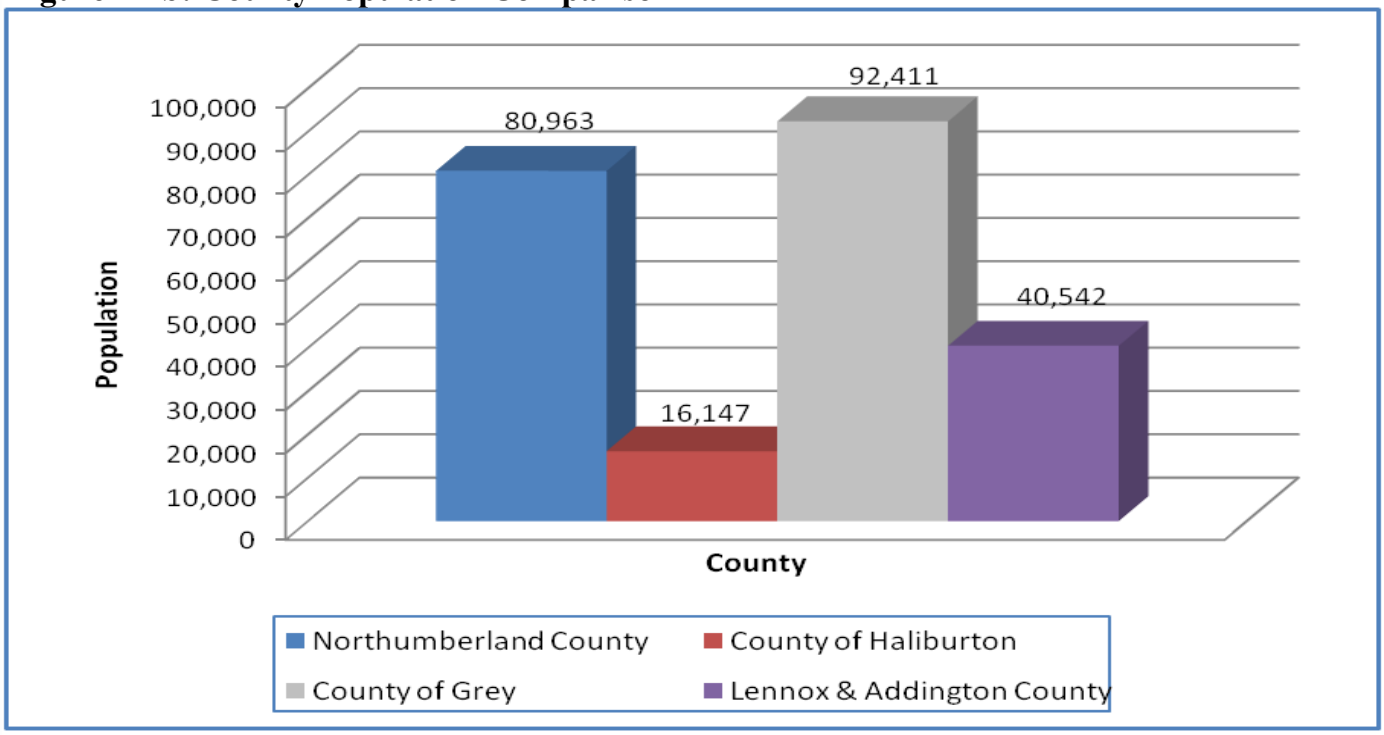


Figure 2-1b: This chart displays the population statistics of the four Counties based on the Statistics Canada Census data, 2006. There is significant variation in population between the four areas with the County of Haliburton representing a particularly low outlier. This could potentially be explained by the fact that Haliburton contains many seasonal residents which would not be included in the figure above, therefore providing a major population variation throughout the year. Northumberland County's population of 80,963 in 2006 was well above the average for the four counties of 57,516. Grey County represents the closest comparable County included in this study with respect to population, with a notable variation between Northumberland County and the Counties of Lennox & Addington and Haliburton.

2.1...County of Northumberland Statistical Analysis (continued)

Figure 2-1c: County Population Density/km^2

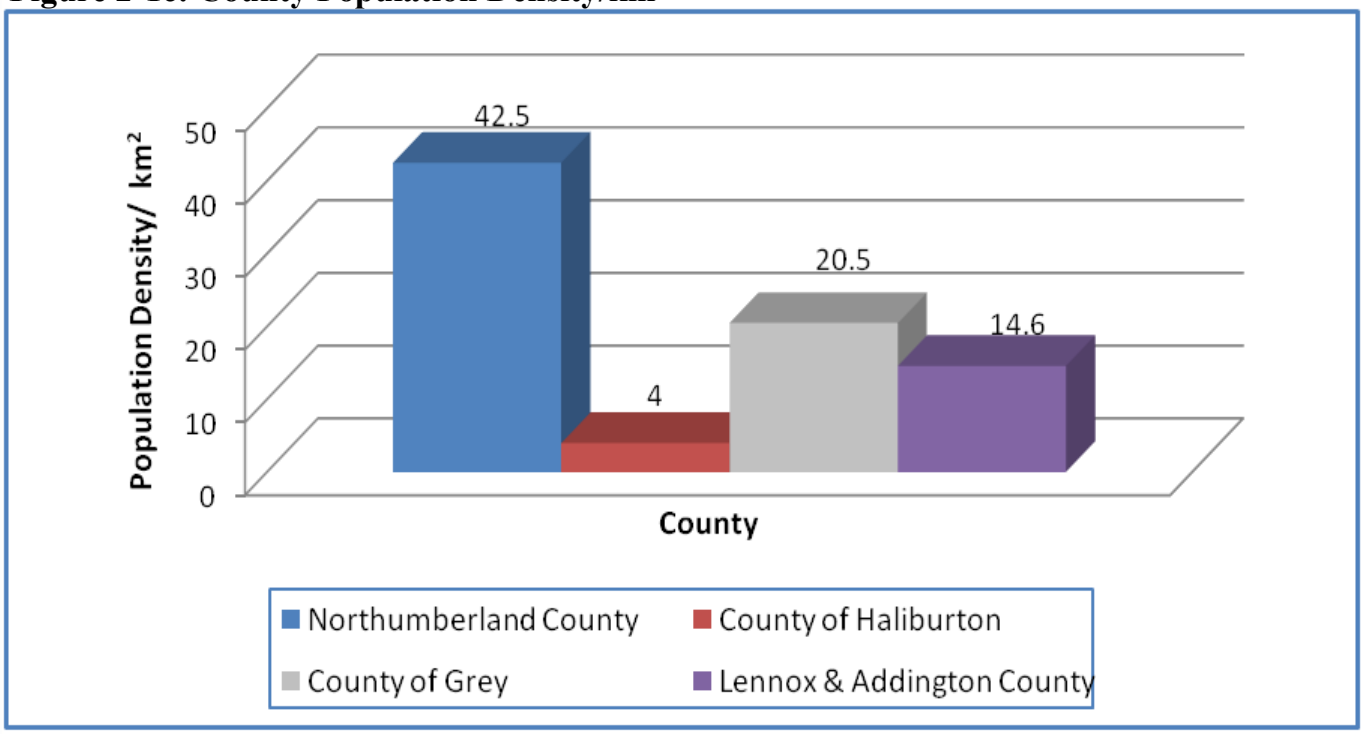


Figure 2-1c: This figure discloses the population densities per km^2 of the Counties which are being statistically analyzed. As displayed in the above chart, Northumberland County contains the highest population density by a considerable amount in comparison to the other subjects. As is the case with the land area statistics, this high density population (by comparison with other rural areas) lends itself to the notion that developing linkages between existing trails and planned future trails would be easier than in primarily rural areas which are more sparsely populated. Essentially, this statistic points to the fact that there is potential to improve cycling commuting ridership within Northumberland County through effective network planning.

2.1...County of Northumberland Statistical Analysis (continued)

Figure 2-1d: County Median Population Age

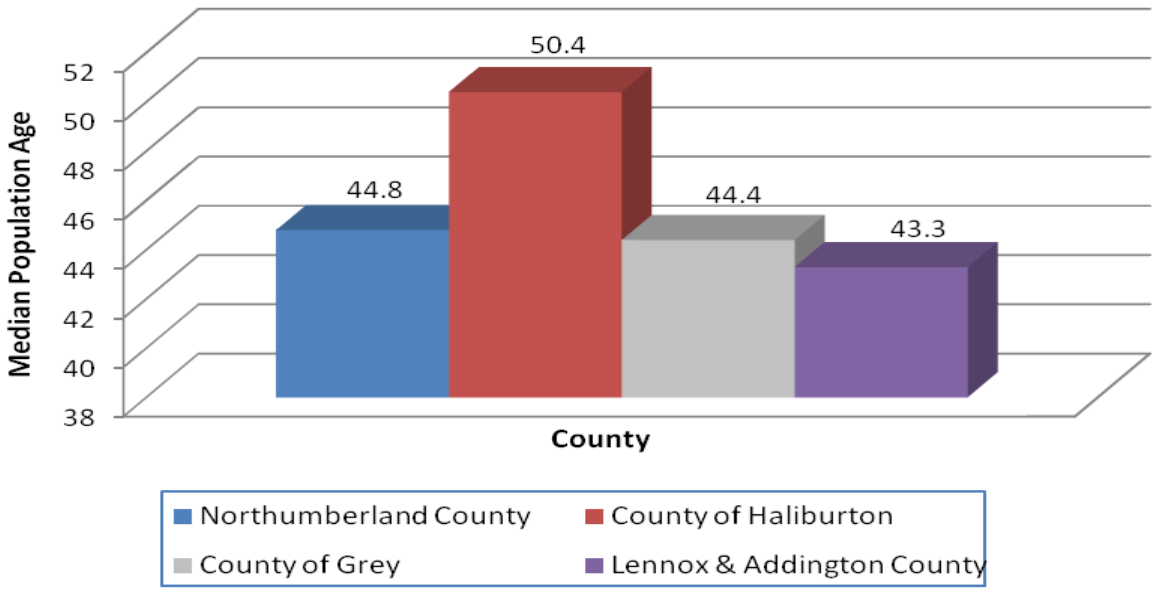


Figure 2-1d: This figure displays the median population age of the four Counties observed in this analysis. In terms of deviation, there is not a considerable amount of spread with respect to this statistic, with the County of Haliburton being the most significant outlier. Aside from Haliburton, the other three observed only contain a difference of 1.5 years, with Northumberland slightly higher than both Grey and Lennox & Addington Counties, but still remaining less than the County of Haliburton. These results are conducive to studies documenting the fact the Cycling Tourism and recreational cycling tends to be most popular with individuals in their 40's and older. As reported in the County's growth management study, this is generally the age cohort that we can expect to migrate to Northumberland County in the future.

2.1...County of Northumberland Statistical Analysis (continued)

Figure 2-1e: County Transportation Modal Splits

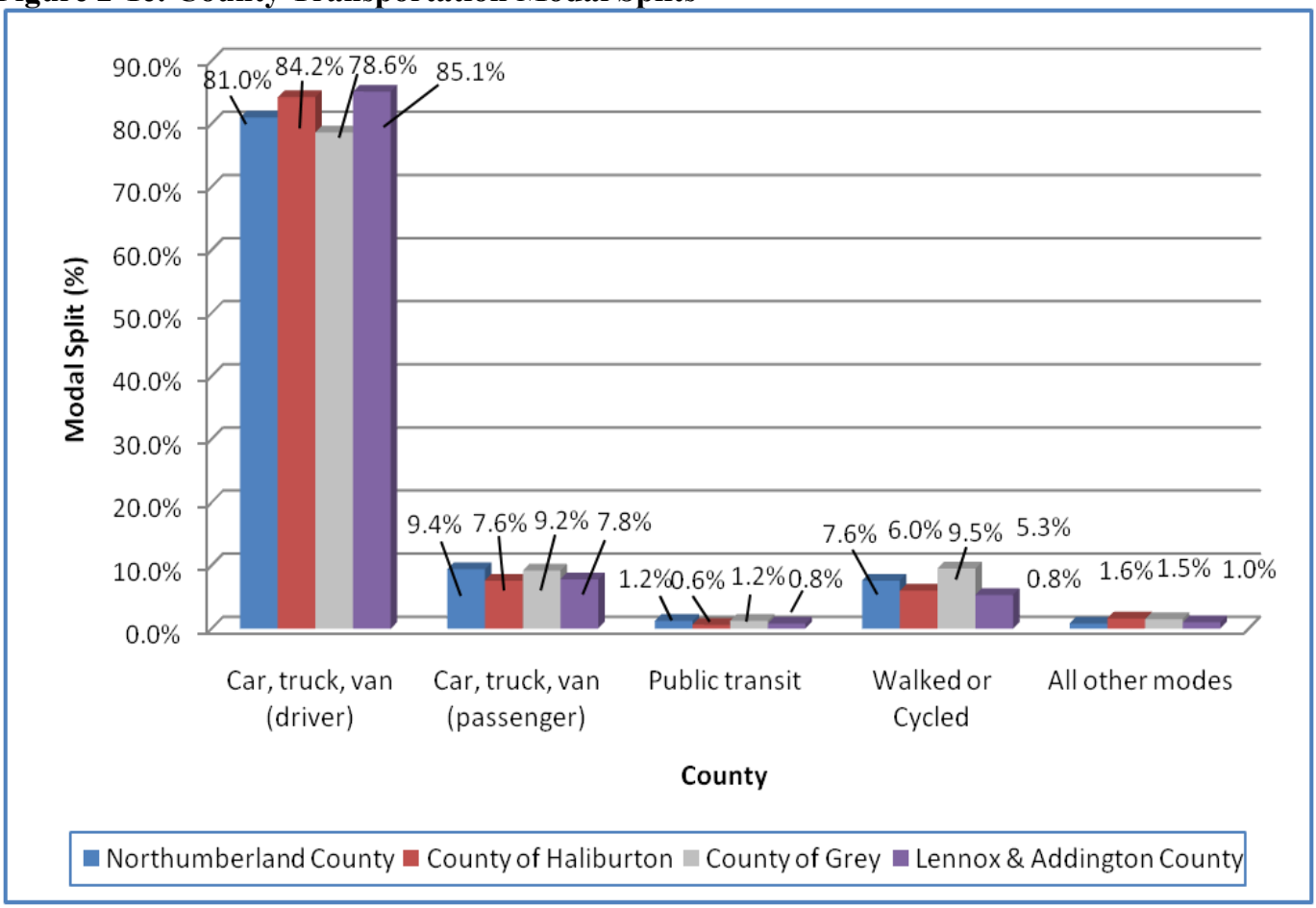


Figure 2-1e: This figure is perhaps the most telling of those discussed in this section of the plan. Not surprisingly, the automobile dominates the modal share of each of the four Counties analyzed in this study. This is a common factor within most rural areas in Canada and across North America. According to the Census data provided by Statistics Canada, Northumberland County's 7.6% walking or cycling modal share was slightly above the average for these Counties, which was 7.1%. Northumberland's 7.6% modal share in 2006 represents a slight decrease from the 2001 Census data results of 7.8%. This indicates that there is room for improvement in this area and some independent research has shown that improving or providing an alternate route between Cobourg and Port Hope would vastly encourage commuter cycling. Improving this statistic is indeed a longer term goal of this plan and would pay numerous dividends in terms of environmental and health benefits in particular.

2.1...County of Northumberland Statistical Analysis (continued)

Figure 2-1f: Population of Area Municipalities

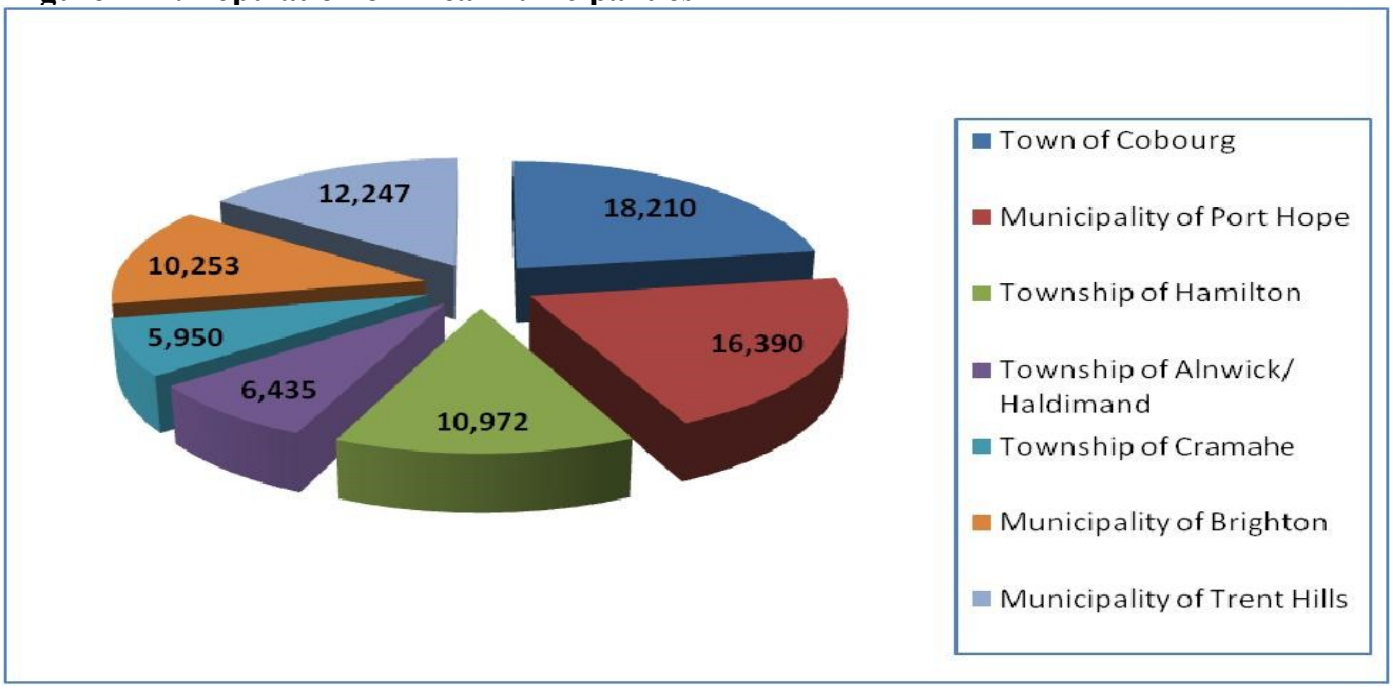


Figure 2-1f: In terms of population distribution within the County, nearly half of the population resides in the urban centres of Cobourg and Port Hope. A somewhat smaller segment of the County population is distributed within the semi-urban areas of Trent Hills and Brighton. Furthermore, the mainly rural areas of Hamilton, Cramahe and Alnwick/Haldimand contain approximately a quarter of the population in Northumberland County.

Table 2-1b: Population Changes 2001-2006

Location	2006 Population	2001 Population	Population Change (%)
Northumberland County	80,963	77,497	4.5%
Town of Cobourg	18,210	17,172	6%
Municipality of Port Hope	16,390	15,605	5%
Municipality of Trent Hills	12,247	12,569	-2.6%
Hamilton Township	10,972	10,785	1.7%
Municipality of Brighton	10,253	9,449	8.5%
Township of Alnwick/Haldimand	6,435	5,846	10.1%
Cramahe Township	5,950	5,713	4.1%

The majority of growth occurred in Alnwick/Haldimand and Brighton during the aforementioned timeframe. Conversely, Trent Hills was the only municipality in which a decline in population occurred while the remaining municipalities comprising Northumberland County enjoyed steady population influx-

2.2...Policies and Legislation Pertaining to the Cycling Master Plan

This section of the plan will identify and consider the various legislative and policy initiatives currently in place which directly influence the direction of the Cycling Master Plan within the County of Northumberland. The following legislation, policy initiatives and publications provide an appropriate foundation and an essential set of policy frameworks for which to base and draft an effective Cycling Master Plan document. Due to the fact that roadway transportation is a provincial interest, there is considerably more literature and policy regulations provided at the provincial level, and significantly less direction provided by the Federal government.

2.2.1 Federal

Strategies for Sustainable Transportation Planning: A Review of Practices and Options

In 2005, Transport Canada funded a research study to provide a foundation on which to build a set of guidelines for incorporating sustainable transportation principles into municipal transportation plans. The specific objectives of the study were:

•To develop a comprehensive understanding of best practices for developing effective and "implementable" transportation plans that promote sustainable transportation.

- To develop initial directions and options for guidelines that could help create such transportation plans in Canada.
-

These two objectives were achieved through the study of both Canadian and international plans as well as significant consultation with experts.

The document concluded by identifying the following principles which were deemed to be important and expected to be adopted by both Transport Canada and the Transportation Association of Canada (TAC)[1]. Since this document refers to Transportation Planning as a whole, only the policies pertaining to cycling have been summarized in the following paragraphs.

[1] Strategies for Sustainable Transportation Planning: A Review of Practices and Options, Transport Canada, 2005.

2.2.1 Federal (continued)

Land Use Planning

- concludes that transportation planning should be done in tandem with land-use planning as transportation planning demand will influence land use demand
- Highlight the importance of supportive land-use policies (i.e. modal shift, trip length reductions)

Environmental Health

- Recognize the links between environmental health and policy initiatives/ directives to alleviate these impacts through the promotion of sustainable transportation options

Economic and Social Objectives

- Demonstrate ways in which shifting transportation uses will positively impact economic or social values
- Recognize the public health impacts of transportation activity arising through road safety, pollution and physical activity levels. Identify effective strategies to strengthen positive impacts and lessen negative ones

Modal Sustainability

- Identify strategies, policies, facilities and services to increase walking, cycling, other active transportation, transit, ridesharing and teleworking

Strategic Approach

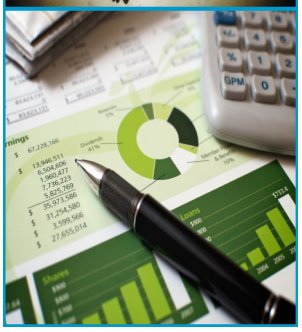
- Consider alternative futures for land use and transportation systems, and evaluate their requirements and implications

Implementation Guidance

- Identify a short-term priority action plan that prescribes important "first steps" to build momentum and lay the foundation for long-term changes
- Describe criteria for ongoing implementation decisions (e.g. setting or revising project priorities and schedules)

Financial Guidance

- Identify an estimate of expected future revenues and capital and operating costs (including costs for facility construction, operation and maintenance, fleets, programs and services) associated with the plan. Identify options for overcoming funding gaps



Performance Measurement

- Highlight the need for a performance measurement strategy to monitor the plan's progress as well as outputs, outcomes and external circumstances

2.2.1 Federal (continued)

Public Involvement

- Integrate an effective public involvement program into the planning process

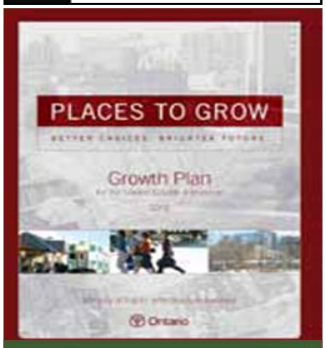
Plan Maintenance

- Identify a minimum frequency for updating the plan, or for reviewing it to identify any need for amendments or updates (both may occur in tandem with parallel community plan processes

2.2.2 Provincial

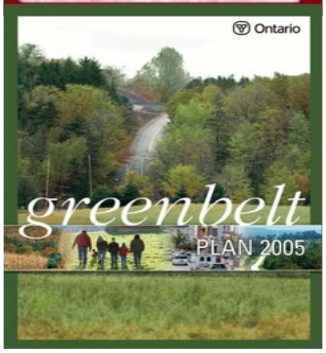
Provincial Policy Statement

The purpose of the Provincial Policy Statement is to establish a policy direction regarding land use and development regulation issues deemed to be of provincial interest. From a legislative perspective, the Provincial Policy Statement was issued under the authority of Section 3 of the *Planning Act* and came into effect on March 1, 2005[2]. It strives to implement efficient and effective land use planning patterns and decisions by considering several interrelated factors including: environmental, social, economic and public health. This document also offers a holistic definition of transportation systems which encompasses various transportation facilities, including the provision of cycling lanes.



Places to Grow: Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe released in June 2006, was prepared under the Places to Grow Act, 2005 and comprises a 25-year plan. The plan guides decisions on a wide range of issues including, transportation, infrastructure planning, land use planning, urban form, housing, natural heritage and resource protection, all of which are in the interest of promoting economic prosperity. With respect to transportation, this plan states that the transportation system in the GGH will be planned and managed to offer a balance of transportation choices that reduces reliance upon any single mode and promotes transit, cycling and walking[3].



[2] Provincial Policy Statement, Ministry of Municipal Affairs and Housing, 2005.
[3] Places to Grow: Growth Plan for the Greater Golden Horseshoe, Ministry of Energy and Infrastructure, 2006.

2.2.2 Provincial (continued)

Bill 51 (Planning and Conservation Land Statute Law Amendment Act)

Bill 51 provides several reforms to the Ontario Planning Act corresponding to other recent provincial policies regarding the promotion of sustainable land use practices within the province of Ontario. In particular the Act provides the following amendments to the planning process in Ontario, providing municipalities with more power and tools and flexibility to address land use planning issues, including[4]:

- Allowing municipalities development control to promote compact form and design standards
- Allowing for more participation and consultation to occur early in the planning process

Municipal Act

The Municipal Act has undergone numerous revisions and amendments since its original inception. The most current revision in 2001 has implemented a new relationship between the municipal sector and the province based on mutual respect, consultation and cooperation. The Act now essentially provides local governments with increased flexibility and jurisdiction to deal with a larger scope of issues. The Municipal Act, 2001 also recognizes municipalities as responsible and accountable levels of government by allowing more flexibility for local councils to determine the appropriate means of municipal service delivery in their respective communities[5].

Ontario Highway Traffic Act

A bicycle is recognized as a vehicle under Ontario Highway Traffic Act legislation. Furthermore, a "vehicle" may include a motor vehicle, trailer, traction engine, farm tractor, road-building machine, bicycle and any vehicle drawn, propelled or driven by any kind of power, including muscular power, but does not include a motorized snow vehicle or a street car[6].
According to the Act, a bicycle is legally permitted on any roadway with the exception of controlled access freeways, for example a 400-series highway or any roadway designated by municipal by-laws.

Greenbelt Plan

The Greenbelt Plan works in conjunction with the Places to Grow for the Greater Golden Horseshoe Plan, and also builds upon existing policies established in the Provincial Policy Statement. The plan also regulates where and how development should typically be accommodated, as well as what we must strive to protect in Ontario in the future. The Greenbelt Plan identifies where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape[7].

[4] Planning and Conservation Land Statute Law Amendment Act, 2006: http://www.mah.gov.on.ca/Asset234.aspx
[5] Ministry of Municipal Affairs and Housing: http://www.mah.gov.on.ca/Page184.aspx
[6] Ontario Highway Traffic Act, R.S.O, 1990. c. H. 8
[7] Ministry of Municipal Affairs and Housing: http://www.mah.gov.on.ca/page189.aspx#intro

2.2.2 Provincial (continued)

The policies set forth in the Culture, Recreation and Tourism section of the Greenbelt Plan which pertain to cycling initiatives include the following:

- Provision of a wide range of publicly accessible built and natural settings for recreation including facilities, parklands, open space areas, trails and water-based/shoreline uses that support hiking, angling and other recreational activities; and
- Enabling continued opportunities for sustainable tourism development.

2.2.3 County

County of Northumberland Strategic Plan 2008-2011

The Cycling Master Plan also satisfies objectives previously established in the County of Northumberland's 2008-2011 Strategic Plan. Five specific items were identified as being addressed by this initiative:

1) **"The relationship between the upper and tier governments, as well as the need to build trust and true collaborations"**
2) **"The apparent confusion/lack of awareness of the County's role. As a result more effort needs to be put into 'campaigning for the common agenda' as is needed to help the public understand why certain decisions are made"**

The Cycling Master Plan strives to consider the above concerns. The Cycling Master Plan represents a coordinated initiative involving representatives from major stakeholders such as municipalities, local cycling clubs, recreational enthusiasts, the public health unit and County staff. The aforementioned comprise a Cycling Steering Committee which provides the overall direction and decision-making for the plan.

3) **"Encompasses discussion of business attraction, retention and expansion, target sectors, collaborative processes and relationships"**

This strategic focus area has been addressed as a short-term objective of the Cycling Master Plan and could be addressed by phasing in the suggested routes. The Transportation and Waste Management Department has coordinated efforts with the Economic Development and Tourism Departments to ensure that the County will reap the economic benefits of this initiative by attracting significant investment in the local economy through visitors attracted by Northumberland County's cycle tourism opportunities.

4) **"Regional identity built (which implies that Northumberland is known as/for some thing and is able to handle it/manage it)"**

Additionally, a cycle tourism market within Northumberland will attempt to provide a marketable brand in the form of cycle tourism and add to the recreational opportunities we currently provide, which will strengthen the County's reputation of having natural landscape with a negligible environmental impact.

2.2.3 County (continued)

5) "Provide detailed Master Plans for all service areas and departments within three years time. Use this as the basis for estimating resource requirements and building up reserves that can be used for initiatives identified as strategically important"

This plan also parallels this point as it provides an estimation of the resource requirements required for this initiatives completion. It also balances the investments required to achieve the goals of this plan over a long-term process in order to make it financially feasible with respect to the County's annual budget.

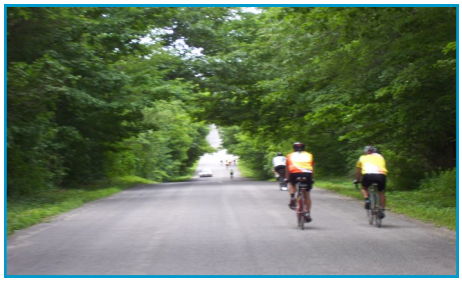
County of Northumberland Strategic Plan 2011-2014

This plan is in line with the mission, implements the vision, reflects the core values and supports the focus areas identified in Northumberland County's 2011-2014 Strategic Plan.

The mission of the 2011-2014 Strategic Plan is "To be a best practices leader of County government and a collaborative partner with our member municipalities and community partners." The creation of this plan involved collaboration of many municipal and community partners. The Cycling Steering Committee Team consisted of municipal representatives from the Town of Cobourg, Cramahe Township, Municipality of Port Hope, Hamilton Township, Municipality of Trent Hills, Municipality of Brighton, the Township of Alnwick/Haldimand and Northumberland County, and community partners that such as the HKPR District Health Unit, Cobourg Cycling Club and Cobourg Bicycle Action Committee.

The 2011-2014 Strategic Plan provides the following vision, "To bring together people, partnerships and possibilities for a strong and vibrant Northumberland County." The Cycling Steering Committee was composed of more than 20 members, each representing a partner that came together to accomplish the main goals of this plan, namely to develop a network of on and off road cycling facilities to be implemented over time in order to make Northumberland County a unique cycling destination. The implementation of this plan will help residents and tourists of the County to become stronger and healthier by making active transportation more accessible. Investing in cycling infrastructure will make the County and those visiting or living in within it stronger and more vibrant.

The County's core values of Mutual Trust and Respect, Honesty and Integrity, Collaboration and Communication, Caring and Supportive, Accountability, Innovation and Excellence are reflected in this plan. Of


Photos Courtesy of: Jamie Barnes

2.2.3 County (continued)

all of the core values, Collaboration and Communication, and Innovation and Excellence are most reflected in this plan, as many partners have come together to create this plan by using many pathways of communication, and this plan is innovative as it is the first of its kind in this County.

The following four focus areas were identified in the 2011-2014 Strategic Plan:

1. Economic Renewal and Prosperity
2. Sustainable Infrastructure and Services
3. Supportive Communities
4. Employer of Choice

Cycling tourism is expected to increase following the implementation of cycling infrastructure as prescribed in this plan. Cycle tourism will provide economic renewal and prosperity to local businesses as tourists and residents begin visiting and exploring businesses close to the routes. The phased implementation of the proposed infrastructure will provide a sustainable plan to increase services to the cycling public. Providing infrastructure that encourages active transportation supports communities within the County as a whole. Municipal partners involved with this plan as well as Northumberland County will be seen as proactive members of the community and possibility employers of choice through the implementation of cycling infrastructure, as it encourages a more environmentally-friendly and healthier form of transportation.

2.2.4 Area Municipalities

The following section outlines examples of policies which, if implemented in municipal level official plans, would ensure the provision of active transportation initiatives and cycling infrastructure. The two main municipal tools implemented to influence land-use policies include official plans and by-laws.

Projected review dates for Municipal Official Plans

The following objectives and actions present potential starting points to establish policy that reflects the cycling community's aspirations and priorities. Please note that these are suggestions only and should be reviewed and modified as circumstances dictate.



Photos courtesy of: Jamie Barnes

2.2.4 Area Municipalities (continued)

Previous Official Plan Review Date

Town of Cobourg 2011
Municipality of Port Hope 2009
Township of Hamilton 2010
Township of Alnwick/ Haldimand 2007
Municipality of Trent Hills 2009
Municipality of Brighton 2010
Township of Cramahe 2010

Suggested Official Plan Objectives (Cycling related):

- Encourage cycling and work towards a safe, cycle friendly environment to enhance the overall quality of life.
- Promote safety among motorists and cyclists through education and enforcement initiatives.
- To recognize and support bicycling as a legitimate and environmentally sustainable form of transportation for utilitarian and recreational purposes.
- To promote bicycling as part of Northumberland County's tourism experience in partnership with the Cycling Steering Committee, Welcome Cyclists Network, private sector and other agencies.
- To develop and support a cycling route network and infrastructure in that is planned, designed, constructed, and maintained according to recognized engineering standards and/or design guidelines.
- Incorporate bicycling in the County/Municipality's land-use planning and construction activities.

Official Plan Projected Review Date

- To encourage and assist local municipalities to adopt and support bicycle-friendly initiatives where appropriate and to develop bicycle facilities which connect with the cycling route network.

Desired actions by the County/Municipalities:

- Assist in establishing the Cycling Steering Committee as an advisory committee with membership consisting of political, public, county and municipal staff representation.
- Support the implementation of the Northumberland County Cycling Master Plan and cycling network where it follows county/municipal roads.
- Pave or widen shoulders on cycling routes recommended in the Cycling Master Plan and as per the list of priorities for construction and upgrades to county/municipal roads.
- Adopt design standards based on provincially and/or nationally recognized engineering guidelines to assist in the planning and design of bicycle facilities in the cycling route network. Prior to the design and construction of a bikeway or facility, safety and operational matters will be considered as well as the cultural, scenic and other environmental attributes through which the designated routes travel.
- Ensure local zoning by-laws contain minimum provisions for safe and secure bicycle parking in high activity areas and at public buildings.

2.2.4.1 Summary of Official Plan Policies

- Specific policies are located in section 12.6 of the appendix of this document.

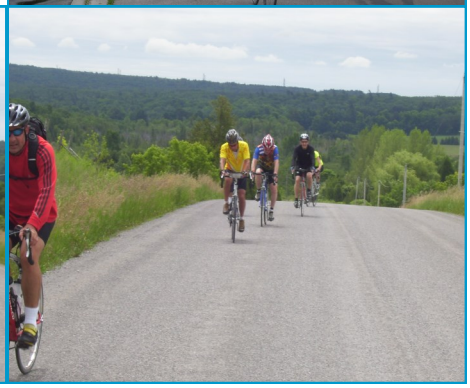
3.0...PROPOSED CYCLING NETWORK

3.1...Proposed Facility Types

3.1.1 Signed Routes and Wide Curb Lanes

Signed Routes (Share the Road)

In many cases in rural areas, bicycle facilities such as bike lanes are not necessarily required and in these cases bicycles may share the roadway with motorized vehicles. A designated shared roadway that is officially recognized as a bikeway and is used by both cyclists and motorists makes appropriate use of existing roadways without the requirement for additional pavement costs. Moreover, there are some general guidelines necessary in order to prioritize a road as a shared roadway. Roadways implemented as signed and/or share the road routes may be accommodated on low volume roadways with limited truck traffic, good sight lines and physically constrained right-of-ways, where existing lanes are used by motorists and cyclists alike[8]. Typically, these routes are best utilized on quiet, residential or local/ collector streets due to the fact that neighbourhood streets have low volumes of traffic and generally low speeds; cyclists can use them without the need for any special treatments. However these streets are usually not continuous due to frequent stops, making them inconvenient for all but the shortest of trips. Furthermore, in rural areas roads with low traffic volumes (generally less than 1,000 vehicles per day) can be shared by adult bicyclists and motorists without the need for extra space or facility construction for bicyclists[9]. An important method of increasing safety and awareness for both cyclists and motorists using this type of roadway is to implement the use of "share the road" signage (pictured right) at strategic locations to indicate the potential for a greater presence of cyclists.



Photos Courtesy of: Jamie Barnes

[8] Waterfront Regeneration Trust, 2007. "Section 1: Design Guidelines"
[9] Madison Urban Area and Dane County. (2000). Bicycle Transportation Plan.

3.1.1 Signed Routes and Wide Curb Lanes (continued)

Wide Curb Lanes

- wide curb lanes should be encouraged for all road classifications to provide cycling friendly designs

Wide curb lanes are lanes which can accommodate a motorized vehicle and a cyclist safely side-by-side. Wide curb lanes are desirable to be implemented in conjunction with shared roadways in order to make it easier for motorists to safely pass cyclists. They are typically featured on moderately trafficked roadways. Signed-only cycling routes should include wide curb lanes where possible. For wide curb lanes, the travel lane used by motorists and cyclists is wider than a standard lane (3.35 to 4.0m). Wide curb lanes should be encouraged for all road classifications to provide cycling friendly streets, whether designed as part of a specific route or not. Rural roadways without paved shoulders are generally suitable for cycling. These routes are typically not frequented by truck traffic and the typically narrow pavement width forces vehicles to wait for a clear passing zone to overtake cyclists, thereby reducing the potential for bicyclists to be forced off the roadway[10].

- the advent of wide curb lanes will provide a greater element of safety for both cyclists and motorists

- research has shown that providing a visual separation, such as a bike lane provides cyclists with more comfort and assurance of a safe cycling environment

According to the Madison Urban Area and Dane County, collector and arterial streets with higher traffic volumes and speeds and not containing outside travel lanes *wider than* the standard 11-12 feet (3.35-3.65m) are a desirable alternative. The advent of wide curb lanes will provide a greater element of safety for both cyclists and motorists. Another source, The Waterfront Regeneration Trust, asserts that a shared road lane encompassing a cycling route is recommended to be 4.0 m, but not in excess of 4.5m, to provide sufficient width to allow motorists to pass[11]. This strategy has both advantages and disadvantages. Providing wider lanes will offer a larger buffer for cyclists within a traffic lane. It also provides the potential for motorists to pass cyclists without requiring them to change lanes. However, research has shown that providing a visual separation in the form of a bike lane provides cyclists with more comfort and assurance of a safe cycling environment alongside motorized vehicles. Lastly, it is recommended that posted signs (share the road or way finding signage), pavement markings or a combination of the two be instituted in order to convey the proper uses of the road.

-it is recommended that posted signs (share the road or way finding signage), pavement markings or both be instituted in order to convey to both motorists and cyclists the proper use of that road

3.1.2 Paved Shoulders

Paved shoulders represent a common form of bike infrastructure constructed to provide a visual delineation between motorist traffic and cyclists, usually by separating the two with a painted solid white line or in some cases, a double painted white line which has been implemented on County Road 2 between Cobourg and Port Hope.

[10] Madison Urban Area and Dane County. (2000). Bicycle Transportation Plan.
[11] Waterfront Regeneration Trust. (2007). "Section 1: Design Guidelines".

3.1.2 Paved Shoulders (continued)

Paved shoulders and bike lanes are on-road bikeways adjacent to other traffic lanes. Paved shoulders can be incorporated in both urban and rural areas. It is advised that paved shoulders be instituted on both sides of the roadway as opposed to one side to prevent cyclists from travelling against the flow of automobile traffic. A paved shoulder will make travel easier for cyclists, however when the shoulder is narrower than recommended, it should not have bikeway signage. Nevertheless, it is advisable to provide line painting to increase the comfort and safety of cyclists if the shoulder is 1.0m wide or wider. In addition to the aforementioned benefits to cyclists, paved shoulders also provide other important factors in addition to increased cyclist's safety. Paved shoulders can help serve as a buffer between motorists and pedestrians and improve motorist's sight distance. Additionally paved shoulders reduce run-off-the-road motor vehicle crashes and provide an emergency breakdown area[12]. Lastly, paved shoulders also help to reduce road maintenance costs through a reduction in edge of pavement breakup, less shoulder grading/gravelling and improved snow removal.

-it is advised that paved shoulders be instituted on both sides of the roadway as opposed to one side

-provide line painting to increase the comfort and safety of cyclists if the shoulder is 1.0m wide or wider

-paved shoulders also help to reduce road maintenance costs through a reduction in edge of pavement breakup

3.1.3 Bike Lanes

Bike lanes represent on-road lanes reserved for cyclists and are located adjacent to automobile traffic lanes. As is the case with paved shoulders, they should never be bidirectional, because separation markings alone do not ensure enough safety for cyclists travelling against the flow of traffic. Bike lanes prove most effective when pavement markings, including a hollow diamond, bicycle pictogram, chevrons and arrows are clear and are repainted as required[13]. In some cases vehicular traffic can also be separated by other delineators such as buttons, tubular posts or bollards. The purpose of designating bike lanes is to improve conditions for both cyclists and drivers by assigning separate areas for bicycles and motor vehicles. In urban areas where parking is permitted, the bike lane is usually between the parking lane and the through traffic lane[14].

-purpose of designating lanes as bike lanes is to improve conditions for both cyclists and drivers by assigning separate areas for bicycles and motor vehicles

The width of bike lanes includes the edge of the bike lane paint to the edge of the pavement and generally does not include the adjacent curb gutter. Signage also plays an important role in providing cyclists and motorists warning of bike lanes. The O*ntario Traffic Manual, Book 5 (Regulatory signs)* specifies that a Reserved Lane sign is used to designate specific lanes exclusively for high occupancy and special use traffic, such as cycling.

-width of bike lanes includes the edge of the bike lane paint to the edge of the pavement or asphalt and does not include the adjacent curb gutter

[12] Madison Urban Area and Dane County. (2000). Bicycle Transportation Plan.
[13] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[14] Transportation Association of Canada. (1999). "Geometric Design Guide for Canadian Roads".

3.1.3 Bike Lanes (continued)

The legal status of the sign is covered by the *Highway Traffic Act* Section 154. (1), however these signs must be supported by municipal by-law to be enforceable by municipalities. The signs to be installed are pictured below.

Reserved Bike Lane
Rb-084A

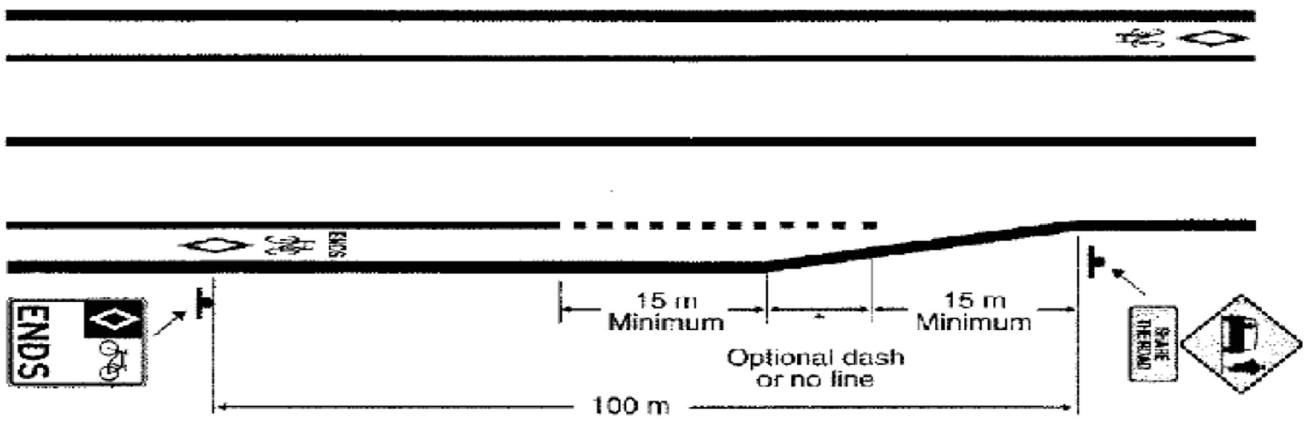
Recommendation:
Bicycle Lane By-law
It is recommended that Northumberland County adopt a bicycle lane by-law that allows for the regulation and enforcement of use of bicycle lanes subject to the Highway Traffic Act. Such a by-law would consider the following elements:

- **A schedule of roadways that have bicycle lanes designated for use by cyclists only.**
- **Designating that the bicycle lane is in effect with the installation of authorized signage.**
- **Permit exceptions to operating a vehicle other than a bicycle in a bicycle lane for some distance (say 50 m) for the purpose of ingress / egress from private driveways, making a turn at a roadway intersecting a bicycle lane, entering or exiting a curb lane used for parking, loading or unloading a person with a mobility impairment, operating a school bus while actively engaging in loading and unloading passengers.**
- **Vehicle exemptions to the by-law could include the following: emergency services vehicles, County and Municipally operated transit or works vehicles, and public utility vehicles.**

Begins Tab
Rb-084t

Ends Tab
Rb-084t

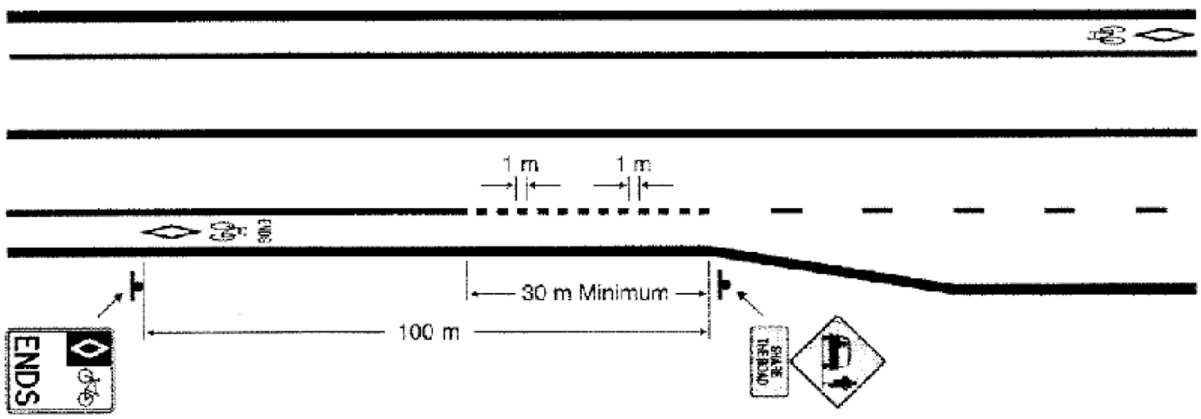
Figure 3-1a: Mid-Block Discontinued Bicycle



Source: TAC, Bikeway Traffic Control Guidelines for Canada, 1998.

3.1.3 Bike Lanes (continued)

Figure 3-1b : Introduced Mid Block Bicycle Lane



Source: TAC, Bikeway Traffic Control Guidelines for Canada, 1998.

The aforementioned examples pertaining to bike lanes may arise over the course of the master plan's duration, although they do not comprise an ideal situation. In the case of both discontinued stretches and through lane transitions, the installation of signage to inform both motorists and cyclists as to the upcoming changes in the roadway is highly recommended in both scenarios.

3.1.4 Bike Paths

Bike paths, as opposed to bike lanes, are physically separated from other traffic lanes, making them very comfortable and safe to use for even inexperienced cyclists. There are several different forms of bike paths including, off-road, on-road or at sidewalk level[15]. Bike paths are facilities which are physically separate from roadways, and where all motor vehicle traffic, except maintenance vehicles, is excluded. Bike paths are located either within a road right of way, generally paralleling the roadway, or within other corridors not served by roads. Typical locations for bike paths include: rivers, creeks and lake fronts, canals, utility rights of way, parks, institutional open spaces, and within the right of way of major subdivision roads.

Photos Courtesy of: Jamie Barnes

[15] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

3.1.4 Bike Paths (continued)

On-Road Bike Paths (within road right-of-way)

On-road bike paths are constructed adjacent to the curb or sidewalk, and therefore are physically separated from automobile traffic and parking lanes. This type of bike path is most effectively implemented when unidirectional and follows the flow of traffic. It is possible to use either permanent or temporary delineators to physically separate these uses as well, with the latter offering more flexibility in terms of seasonal uses. Unlike permanent separators on bike lanes or paths that are always open, delineators can be removed in winter for seasonal maintenance which makes snow removal easier and allows vehicles to park there when it is seasonally closed[16]. In terms of bike path width in urban areas, at least 0.5m should be allotted for opening car doors if this facility is immediately adjacent to parking stalls. Furthermore, when bike paths are situated between sidewalks and parking stalls, parking should be prohibited by a minimum setback of 6m measured from the end of the curb radius[17]. In rural areas it should be recommended that bike paths within the road right-of-way be constructed outside the drainage ditch, where feasible, to ensure an increased level of safety.

Off-Road Bike Paths (Exclusive Cycling Lanes)

Off-road bike paths are provided completely separate from the road right-of-way, and for this reason increase safety and peace of mind which make them ideal for young children and families to use. The basic design criteria of off-road bike paths involve many considerations inherent to road design such as path width, horizontal alignment and vertical alignment as well as construction details like surfacing and drainage[18]. The width of these paths should be consistent with the design guidelines prescribed in the following chapter of this plan. Additional clearance may also be necessary in specific areas with sharp turns or poor sight lines and should be added accordingly. Northumberland County and all of the trails under the umbrella of this plan will not include motorized vehicles as part of this plan nor the trails and paths it will implement from this point forward. It is important to specify the specific purpose of these trails in terms of whether they will be used as exclusive cycling paths or as multi-use trails. Since these paths are separated from traffic, they are typically suited to less experienced cyclists, families and young children.

[16] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[17] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[18] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

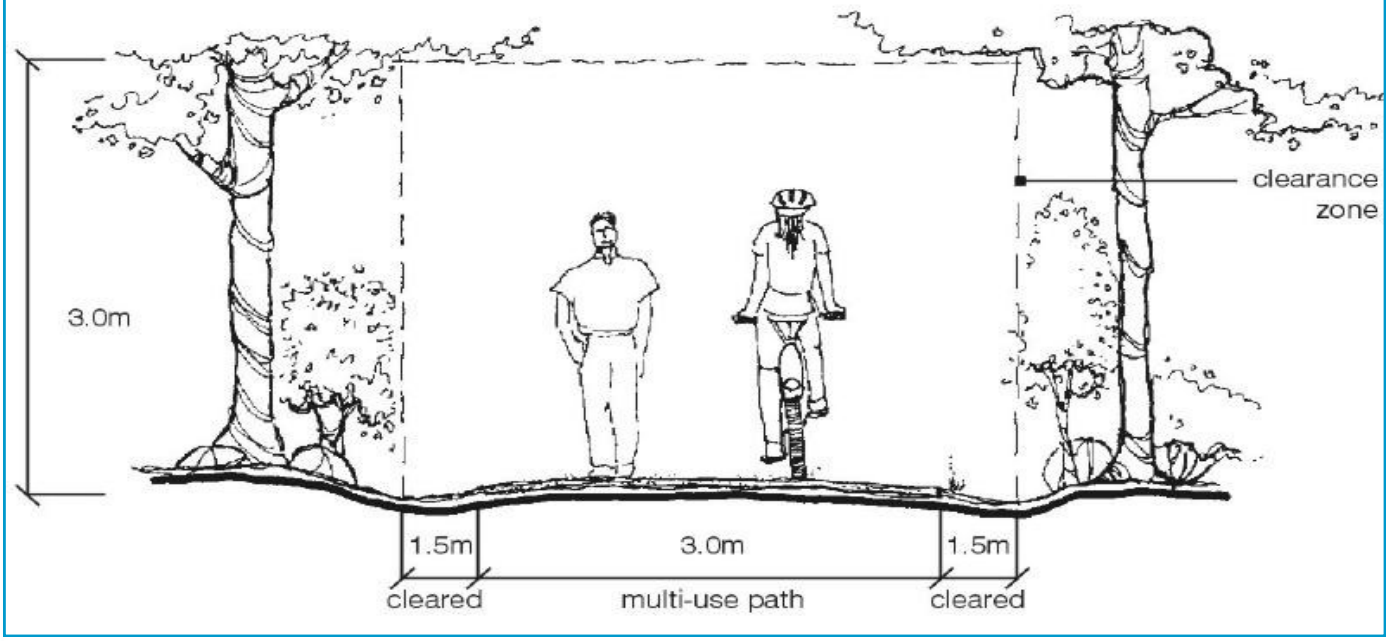
3.1.5 Multi-Use Paths

Source: Velo Quebec, 2010.

Although this master plan is primarily concerned with cycling initiatives, it is understood that there could be a degree of potential overlap in terms of paths permitting various other forms of recreation in the form of multi-use paths. The Municipalities of Brighton and Port Hope have undertaken their own Recreation, Trails and Green Space Plan and Active Transportation and Trails Master Plan, respectively.

Multi-use paths are designed to accommodate various types of users, either simultaneously or on a seasonal basis and as such the needs of all potential users must be taken into consideration during the design phase. Sometimes referred to as greenways, multiuse trails are often located along abandoned corridors, such as old railway lines, towpaths along a canal and abandoned industrial areas[19]. As long as the number of pedestrians and cyclists remains relatively low, they can generally share the same facilities. Multi-use paths, as is the case with off-road exclusive cycling lanes, tend to be popular for recreational purposes among less experienced cyclists and families with young children due to their safety, comfort and complete separation from roadways. In areas with higher volumes or limited sight lines, additional pavement width (in addition to the recommended standard) is recommended.

Figure 3-1c: Multi-use Path Cross-Section

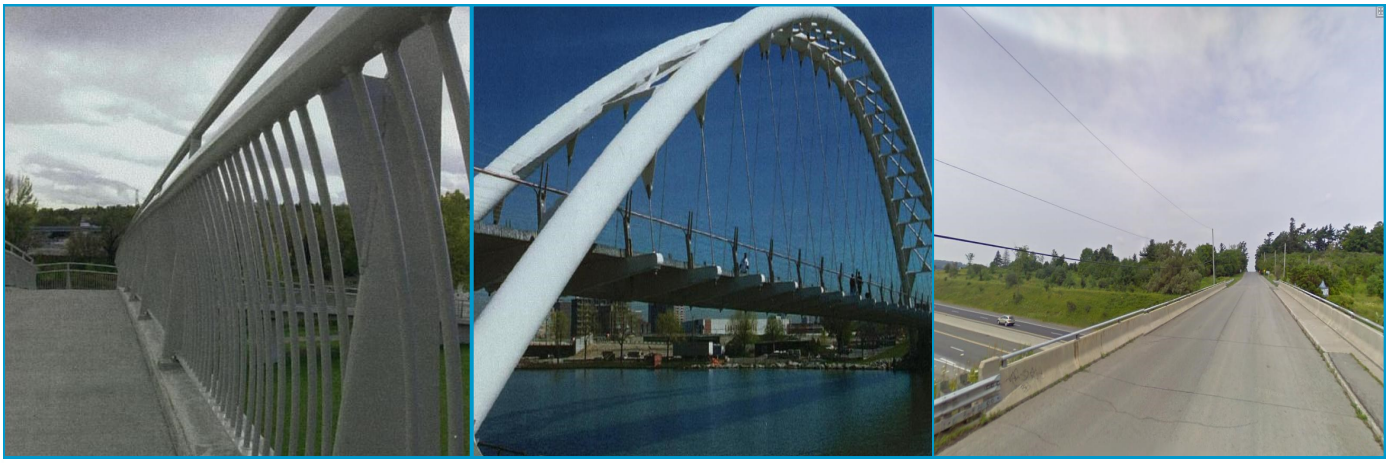


Source: Region of Niagara Bikeways Master Plan, 2003.

[19] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists"

3.2...Existing and Potential Barriers

Despite the fact that Northumberland County's natural landscape provides an environment conducive to cycling, there are also existing and potential barriers which, if not properly addressed, could hinder the implementation of routes documented in this plan. Overpasses, bridges and tunnels make it possible for paths and trails to clear major obstacles including waterways, highways and railways.



Source: VeloQuebec: Planning and Design for Pedestrians and Cyclists, 2010

Freeway Overpasses and Underpasses: Highway 401

The McDonald-Cartier Freeway, better known as the Highway 401 intersects the County of Northumberland from the East to the West. The 401 represents one of the busiest stretches of highway in the Province of Ontario. As such, this will present a challenge in terms of connecting portions of our routes which traverse the County in a North-South direction. Since Highway 401 represents a major transportation route which influences the county's connectivity, an important part of this master plan will be to identify the safest and most feasible options for implementing our trails and routes in a North-South direction to bypass this highway network. Freeway passes pose some of the most significant problems for implementing bicycle routes.

Every over and underpass intersecting with the 401 within Northumberland County was inspected in order to make an informed decision as to which would be best suited to provide north-south access for cyclists. The inspection was completed in order to make informed decisions as to which would be best suited to provide north-south access for cyclists.

The following table provides a categorization of the current over/under passes within Northumberland County as well as their suitability to be included as a potential North/South access over Highway 401. Suitability will be gauged according to the following criteria, in descending order: **Recommended, Acceptable, Conditionally Acceptable, Not recommended.**

3.2...Existing and Potential Barriers (continued)

Table 3-2a: Freeway Overpasses and Underpasses: Highway 401

Municipality of Port Hope

Road	Over/Under Pass	Pavement Width	Suitability	Miscellaneous
East Townline Rd.	Overpass	8.6m	Recommended	
Morrish Church Rd.	Overpass	7.4m lanes 1.6m shoulders 10.6m (total)	Acceptable	-Is a 401 interchange, therefore truck traffic, increased AADT should be considered in design
Deer Park Rd.	Overpass	8.7m	Recommended	
Cranberry Rd.	Overpass	6.7m	Conditionally Acceptable	Pavement would require resurfacing if this overpass was used
County Rd. #28	Overpass	-	Not recommended	Four lane interchange, among the highest volume interchanges
Hamilton Rd.	Overpass	7.5m	Conditionally Acceptable	Pavement would require resurfacing if this overpass was used
County Rd. #2	Overpass	10.4m	Conditionally Acceptable	-Additional lighting should be considered, road is in good condition, AADT volumes are high

Town of Cobourg/ Township of Hamilton

Road	Over/Under Pass	Pavement Width	Suitability	Miscellaneous
Theatre Rd.	Underpass	8.3m	Conditionally Acceptable	-Underpass contains a curb -Additional lighting should be considered
Burnham Rd. (#18)	Overpass	16.4m (3.5m lanes)	Not recommended	-Four lane interchange, among the highest volume roads in the County
Ontario St.	Overpass	8m (+ elevated sidewalks)	Recommended	-Relatively low volume compared to adjacent 401 crossings
County Rd. #45	Overpass	-	Not recommended	-Four lane interchange, high AADT volumes
Nagle Rd.	Overpass	8.5m	Acceptable	- Relatively low volume, rural roadway

Township of Alnwick/ Haldimand

Road	Over/Under Pass	Pavement Width	Suitability	Miscellaneous
Finley Rd.	Overpass	8.6m	Acceptable	-road width decreases to 7.6m South of the 401 crossing
Gully Rd.	Overpass	8.6m	Acceptable	
County Rd. #23	Overpass	8.5m	Not recommended	-Concrete curb and gutter -Highway 401 interchange, moderately high AADT volumes
Shelter Valley Rd.	Underpass	7.2m 1.7m base shoulders 10.6m total	Conditionally Acceptable	-Additional lighting would be recommended, as well as the resurfacing of base shoulders
Vernonville Rd.	Underpass	6.7m 1.7m base shoulder 10.1m total	Conditionally Acceptable	-Additional lighting would be recommended, as well as the resurfacing of base shoulders
Boyce Rd.	Underpass	6.7m	Not recommended	-Narrow underpass, would require significant upgrades

3.2...Existing and Potential Barriers (continued)

Table 3-2a: Freeway Overpasses and Underpasses: Highway 401 (continued)

Township of Cramahe				
Road	**Over/Under Pass**	**Pavement Width**	**Suitability**	**Miscellaneous**
County Rd. #25	Overpass	7.4m	Conditionally Acceptable	-Given its width, it is acceptable -Relatively high AADT volume interchange
Herley Rd./Durham St.	Overpass	8.75m	Recommended	-Relatively low volume road, significant platform width to accommodate cycling
Trent Valley/Lake Rd.	Overpass	8.65m	Recommended	-Relatively low volume road, significant platform width to accommodate cycling

Municipality of Brighton				
Road	**Over/Under Pass**	**Pavement Width**	**Suitability**	**Miscellaneous**
County Rd. #30	Overpass	14m	No recommended	-Four lane interchange, high volume AADT
County Rd. #26	Overpass	8.6m	Conditionally Acceptable	-Despite still be an interchange #26 contains a much lower AADT and is seen as a better overall option than #30 by the Cycling Steering Committee

Figure 3-2a : Overpass Treatment with Restricted

Left: This example from London, Ontario (municipally owned bridge) displays the appropriate treatment of additional signage and line painting for a constrained overpass.

Currently, the MTO is reviewing its provincial policies for bridges under their jurisdiction (i.e. Highway 40 overpasses). As of now, additional line painting is not permitted by the MTO, however signage in advance of the bridge is permitted.

Source: City of Burlington Cycling Master Plan Study, 2009

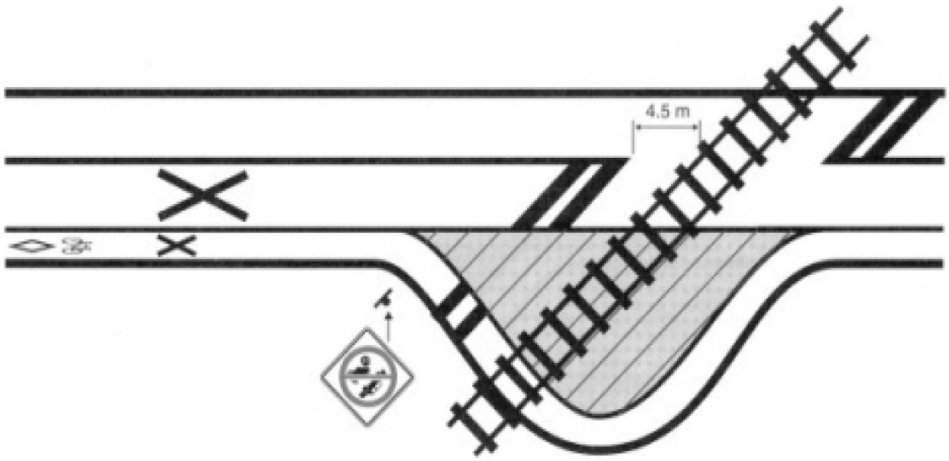
Recommendations:
-Periodically check the MTO's standards for provincially operated bridges and overpasses in order to provide the safest transitions within the policies outlined by the MTO;
-That the County and its area Municipalities incorporate bicycle friendly features in bridge and underpass projects, including bicycle ramps on stairs, as part of the annual capital works and rehabilitation projects where financially feasible.

3.2...Existing and Potential Barriers (continued)

Railway crossings

Although railway crossings do not constitute a large or difficult barrier in comparison to the aforementioned Highway 401 crossings, they remain an issue which should be properly addressed through this plan as they could potentially injure cyclists. It is strongly recommended that appropriate traffic control devices be installed at the intersections of railway tracks and on and off-road trail facilities. These include pavement markings and signage, alongside rubber anti-slip pad inserts[20]. Where possible, it is also advisable that cycling facilities cross railways at a 90° angle. It is recommended that cycling facilities be designed to cross railways at as close to right angles as possible[21]. This may entail that the trail will be required to be widened in advance of the crossing. Where this is not possible, the following can be considered.

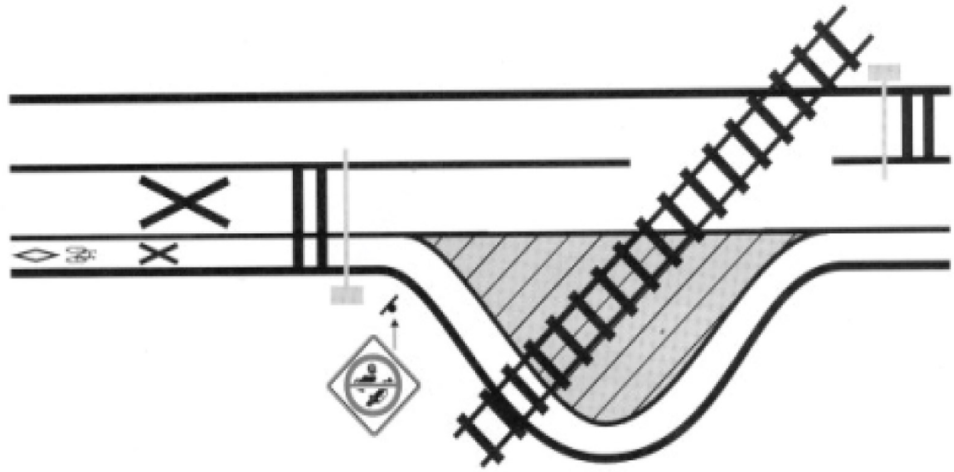
Figure 3-2b: Skewed railway crossing, unrestricted ROW



Left: In this example a double stripped line running parallel to the railroad track is installed on either side. The bicycle path is also extended in order to ensure that it traverses the railroad at a 90° angle. Appropriate signage is also provided.

Source: Waterfront Regeneration Trust, 2007.

Figure 3-2c: Skewed railway crossing, restricted ROW



Left: . In this example a double stripped line is provided, along with the addition of a lift gate which borders both the travelled and cycling lanes. Signage is also provided slightly following the lift gate.

Source: Waterfront Regeration Trust, 2007.

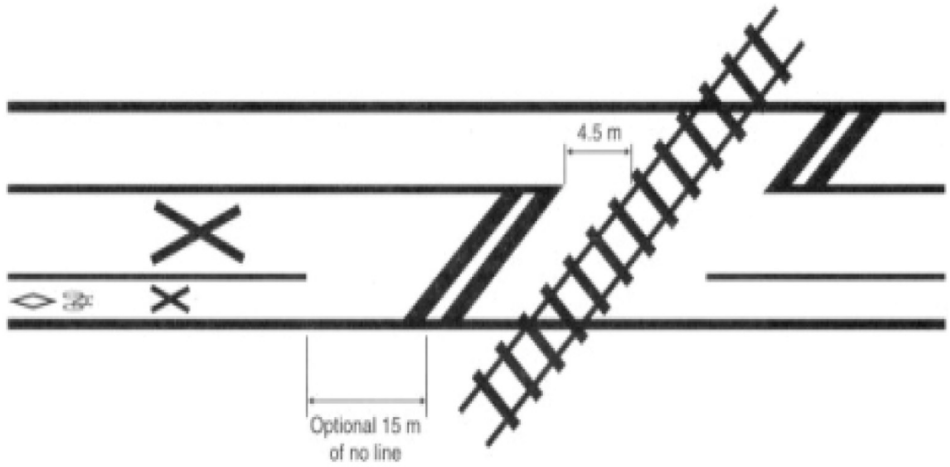
[20] Waterfront Regeneration Trust. (2007). "Chapter 2: Sign Guidelines".
[21] Waterfront Regeneration Trust. (2007). "Chapter 2: Sign Guidelines".

3.2...Existing and Potential Barriers (continued)

Railway Crossings (continued)

It is also important to consult the appropriate authority when contemplating a trail crossing a railroad. Currently, in order to establish a pathway crossing of an active rail line, trail managers/municipalities are to submit their request directly to the railroad company. The submission should identify the crossing location and the basic design for the crossing, which should be consistent with Draft RTD-10, Road/Railway Grade Crossings: Technical Standards and Inspection, Testing and Maintenance Requirements (2002) available from Transport Canada[22].

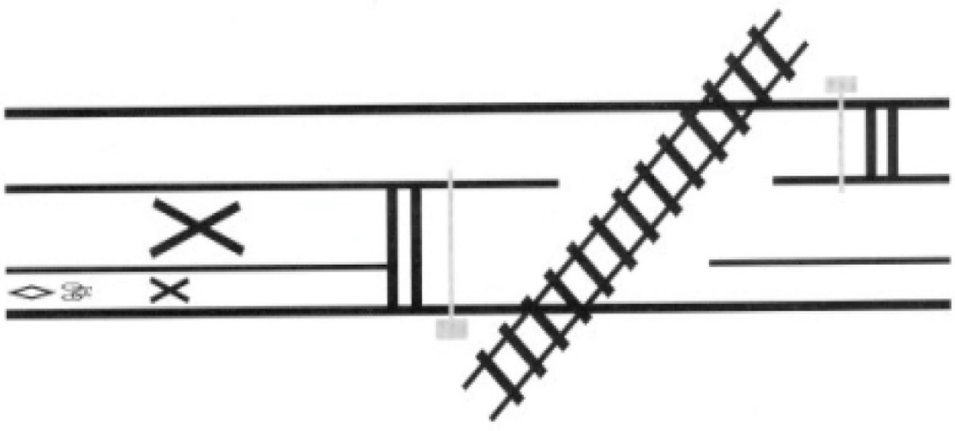
Figure 3-2d: Skewed Railroad Crossing, Restricted ROW Without Gate



Left: This option does not provide an extension, rather a double stripped line without a lift gate in advance of the railroad crossing.

Source: Waterfront Regeneration Trust, 2007.

Figure 3-2e: Skewed Railway Crossing, Restricted ROW with G ate.



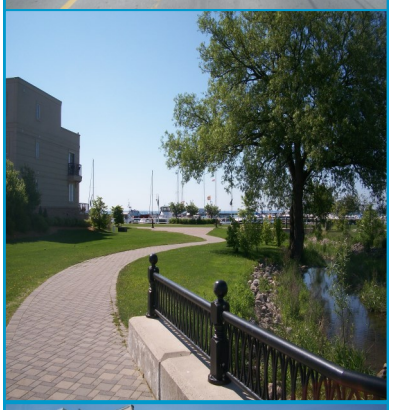
Left: In this example a lift gate along with a double stripped line is provided, however there is no extension below and the cyclist would again be traversing the railway at a 45° angle.

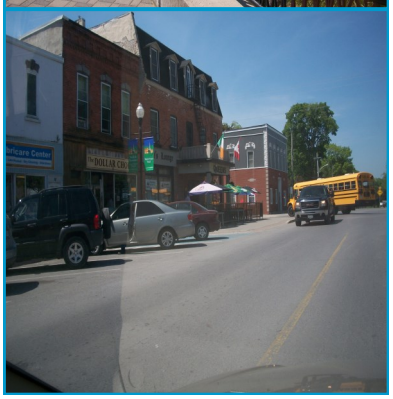
Source: Waterfront Regeneration Trust, 2007.

Recommendation: Any segments of the Northumberland County cycling routes which cross railroad tracks should be submitted to the appropriate railway authority for approval.

[22] Waterfront Regeneration Trust. (2007). "Chapter 1: Design Guidelines".

3.3…County and Area Municipality Routes and Linkages





This plan provides linkages between the five proposed cycling routes contained in section 12.7 of the appendix, as well as between neighbouring Counties and Regions to ensure consistency and connectivity while providing safe and direct routes. Routes were adapted from the Outdoor Adventure Map produced by the Tourism Department of Northumberland County.

The following linkages were brought before the Cycling Steering Committee during two separate committee meetings and are included in this plan as a result of approval via majority vote within that forum. For the purposes of this section, the linkages will be split into four distinct quadrants comprising the entire County including: West Quadrant, Central Quadrant, Northeast quadrant and Southeast quadrant. A financial breakdown chart documenting the projected costs for each proposed linkage can be found in section 12.9 of this document.

West Quadrant (Linkages to Port Hope, Peterborough County and Durham Region)

County Rd. 2 (Durham Region boundary-Morrish Church Rd, Port Hope)
This particular linkage is planned as a proposed future linkage in which reconstruction and the addition of paved shoulders will coincide with the County road reconstruction program. It will connect the Municipality of Port Hope to Durham Region to the west.

County Rd. 10 (Peterborough County-Port Hope)
This proposed linkage has been added in order to provide a North-South corridor for commuting as well as access to Peterborough County. County Rd. #10 is seen as a low traffic alternative to providing bike lanes on County Rd. #28.

County Rd. 74 (Port Hope–Hamilton Township)
This linkage provides an important East-West connection between the Glorious Ganaraska and Rice Lake Ramble routes. Traffic counts on County Rd. 74 are much less than County Rd. 2, therefore providing an alternative close by. County Rd. #74 is also coming up for resurfacing within the next five years, thus providing a great opportunity for the addition of surface treated shoulders and bike lanes.

County Rd. 28 (Port Hope-Peterborough County)
This proposed future linkage connects Port Hope, Bewdley as well as Peterborough County. The idea of providing a 3m off-road trail from Bewdley to Peterborough was also suggested and appeared to be a feasible alternative.

3.3…County and Area Municipality Trail Linkages (continued)

Lakeshore Rd (Durham Region-Port Hope)
Another Port Hope linkage is Lakeshore Rd, which provides a low volume connection as opposed to County Rd. 2. This section already represents a portion of the Waterfront Trail and is well known to both local cyclists and tourists.

County Rd. 2 (Port Hope-Cobourg)
This linkage is currently already widely used as it represents a section of the current Waterfront Trail system. Asphalt shoulders with line painting (1.5m bike lanes) and bicycle logos are already in place for much of this stretch. The Committee was also interested in using this linkage in the future as there is currently an Environmental Assessment underway studying various options for the future of the roadway.

Central Quadrant (Linkages within Alnwick/Haldimand, Cramahe)

Boomerang Rd./Clouston Rd. (Alnwick-Haldimand)
This short stretch of road connects two of Northumberland County's looped routes, Shelter Valley Rd and the Rice Lake Ramble. This linkage was approved by the Public Works Department of Alnwick-Haldimand, with the condition that additional signage be provided to caution users about curves.

County Rd. 29 (Alnwick-Haldimand-Trent Hills)
This linkage was proposed to run East-West, connecting the Rice Lake Ramble (Alnwick-Haldimand) to Trent River Truckin' Route (Trent Hills). It was chosen because it provides a low-volume connection with excellent scenery and rolling hills.

Mount Pleasant/Morganston Rd./County Rd. 25
This linkage is meant to connect the Presqu'ile Promise route to the Trent River Truckin' route. Mount Pleasant Rd. and Morganston Rd. offer a lower volume alternative to a large stretch of County Rd. 25, before eventually connecting back up to County Rd. 25 on the way to Warkworth.

Northeast Quadrant (Linkages within Trent Hills)

County Rd. 25/County Rd. 35 (Campbellford-Hastings)
This proposed future linkage will link the Town of Campbellford to the Town of Hastings. A potential alternative develop a path along the Trans Canada Trail (existing rail bed trail) which also runs from Campbellford to Hastings.

County Rd. 38 (Trent Hills-Hastings County)
County Rd. 38 provides relatively low traffic volumes and good sight lines on the way to Hastings County.

County Rd. 8 (Campbellford-Hastings County)
County Rd. 8 from Campbellford to Hastings County represents another opportunity to provide connectivity of our route system with neighbouring Counties and Regions. This linkage also passes by Ferris Provincial Park on the way to Hastings County.

3.3…County and Area Municipality Trail Linkages (continued)

County Rd. 30 (Trent Hills-Peterborough)
This linkage will provide another North-South connection to Peterborough County. It provides a direct, fairly straight route from the Northern section of the County into Peterborough. This linkage will also require considerable resurfacing as it contains moderately high volumes over a significant stretch of County road.

Southeast Quadrant (Linkages within Brighton)

County Rd. 64 (Brighton-Quinte West)
This linkage already comprises a section of the Waterfront Trail which continues beyond the boundary of Brighton and into Quinte West. As such, motorists will already be familiar with seeing cyclists on this road on a regular basis.

County Rd. 2 (Brighton-Quinte West)
County Rd. 2 represents another potential linkage eastbound from Brighton. This final linkage will provide another option in terms of connectivity to neighbouring municipalities.

Recommendation: That the County continue to work with our area municipalities and neighbouring municipalities to create seamless bikeway connections with and beyond County boundaries.

3.4...Ancillary Facilities

In addition to providing ample opportunities in terms recreational pursuits, commuting options and activities to attract tourists to visit and spend time enjoying all that our County has to offer, it is important to provide the additional facilities which will make the overall experience enjoyable and more convenient.

Bicycle Parking Facilities

These facilities are likely the first facility which comes to mind, and rightfully so. It is important to provide the peace of mind offered by safe storage of your bicycle at convenient locations near your desired destinations. Basic bike parking is typically a bike stand on the sidewalk or property suitable for short-term parking, ideally no more than 10 to 15 metres from the building entrance[23]. It is important to anticipate where these destinations will be in addition to common destinations which tend to include the following: parks, community centres, schools and campuses, commercial centres and office parks.

Northumberland County should provide a bicycle parking supply that meets anticipated demand at major destinations such as town centres, Lake Ontario, Rice Lake, shopping centres and neighbourhood destinations such as a local parks, schools and convenience stores. Supporting active transportation through the development approval process as well as the formulation of master plans can ensure the provision of bicycle parking infrastructure. Bicycle parking demand could also be estimated by the following:

- Referencing surveys of cycling parking demands at comparable sites
- Referencing available industry standards as they are developed
- Best practices from other municipalities
- A percentage of parking spaces allotted in the site plan

Bicycle Parking Options

There are several options in terms of providing bicycle parking. Pictured on the next page are three options of which are common in North America. The "inverted-U" shaped bicycle parking is quite commonly used and each individual unit can accommodate two bicycles. The second example pictured below is known as a "post and ring bicycle rack" which is common in the City of Toronto.

-important to provide the peace of mind offered by safe storage of your bicycle at convenient locations near your desired destinations

- bike parking is typically a bike stand on the sidewalk or property suitable for short-term parking, ideally no more than 10 to 15 m from the building entrance

-should provide a bicycle parking supply that meets anticipated demand at major destinations such as town centres, Lake Ontario, Rice Lake, shopping centres and neighbourhood destinations

-three options typically incorporated in North America include the inverted-U style, post and ring bicycle rack as well as the less common bike box

[23] City of Toronto (2001). "Shifting Gears Bike Plan". Pg. 95.

3.4...Ancillary Facilities (continued)

Bicycle Parking Options (continued)

The stands are provided free of charge in response to requests received by the City from businesses, residents and cyclists. The bicycle lockers (pictured far right) consist of a shed in which a bicycle can be stored and locked. They tend to be viewed as high standard of bike safety since they protect against theft, vandalism as well as potential damage from the elements. However this type of bicycle parking can also bring about a series of problems if they are used for purposes unrelated to cycling. In addition to those options pictured below, another option would be indoor storage which has the capacity to hold a considerable amount of bicycles. However, this option would really only be feasible in a location which a significant amount of cyclist presence.

Recommendation:

Implement a requirement for zoning by-laws to include provisions for bicycle parking.

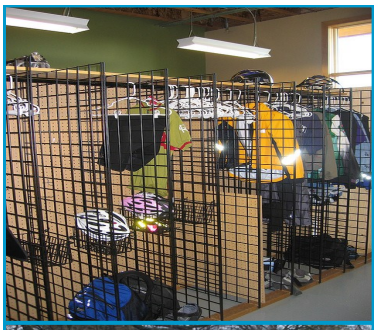
- Could potentially be based on comparable zoning by-law examples from other municipalities, Regions or Counties;
- A percentage of the allotted automobile parking designated as part of the development in the site plan;
- Park and ride locations near the 401 could be implemented, particularly for weekend cycling trips for tourists;
- Bike racks should be implemented into the following locations:
  - town centres
  - schools
  - points of interest for tourists and residents
  - recreational destinations
  - commercial area to encourage cycle commuting
- Consult with the Bicycle Action Committee as well as other cycling groups within the County to determine other areas in need of bicycle parking facilities

End of Trip Facilities

In addition to the aforementioned bicycle parking facilities, other facilities should be considered for to make cycling a viable option in terms of both recreation and commuting purposes. If these facilities are not provided for the cyclist, then another means of transportation are more likely to be substituted in its place.

Above(Descending order): City of Toronto, City of Mississauga, City of Mississauga, Northumberland County Headquarters

3.4...Ancillary Facilities (continued)



For those cyclists needing to dress more formally, travel longer distances, or cycle during wet or hot weather, the ability to shower and change can be as critical as bicycle storage[24]. Additional facilities could include the following considerations:

- Shower facilities and change rooms
- Lockers
- Restrooms (Portable Toilets)

Many people indicate the need for these facilities, either in workplaces or along longer cycling routes (Portable restrooms).

Public Transit and Cycling

- Cobourg and Port Hope Public Transit buses both allow cyclists to bring their bicycles aboard

Recommendation: Obtain a realistic calculation of network development costs plus the cost of other programs including education programs and end-of–trip facilities.

Table 3.4a: Bike Parking Guidelines, Portland Bicycle Master Plan, 1996

Land-use Categories	Parking Spaces
RESIDENTIAL	
Multi-Unit Dwelling	1 per 10 dwellings
Retirement Living Complexes	1 per 4 dwellings
COMMERCIAL	
Retail	2, or 1 per 5,000 ft^2 floor area
Office	2, or 1 per 10,000 ft^2 floor area
Commercial Parking Facilities	10, or 1 per 20 auto spaces
Commercial Auto Facilities	10, or 1 per 20 auto spaces
INDUSTRIAL	
Manufacturing	2, or 1 per 7,500 ft^2 floor area
Warehousing	2, or 1 per 20,000 ft^2 floor area
INSTITUTIONAL	
Community Service	2, or 1 per 5000 ft^2 floor area
Schools (Middle, High)	1 per classroom
Schools (Elementary)	2 per classroom
Colleges	2 per classroom
Medical Centres	2, or 1 per 7,000 ft^2 floor area

[24] City of Portland. 1996. Bicycle Master Plan.

3.4...Ancillary Facilities (continued)

Northumberland Transportation Initiative

This recent initiative is operated through Community Care Northumberland and provides affordable transportation options to and from several rural communities in the County, including: Colborne, Castleton, Dundonald, Morganston, Salem, Grafton, and Cobourg. It has recently expanded and is currently operational four days/week including Monday, Thursday, Friday and Saturday. Currently this service is directed specifically towards families, youth and seniors and can be used to accommodate a wide variety of destination types including: appointments, meetings, work, school, shopping and recreation.

3.5...Existing Cycling Facilities, Routes and Infrastructure

The initial step in developing an interconnected network of county-wide bicycle facilities is to first take stock of the inventory of existing bicycle facilities, and analyze the current system's inherent strengths and weaknesses. This exercise was completed through the Cycling Steering Committee through successive meetings by Project Engineer, Christina Klein to gauge where our current facilities exist and where we should proceed with logical extensions of what is currently in place. At the time of formulation there were no dedicated cycling routes aside from the Waterfront Regeneration Trust's *Waterfront Trail* and intermittent sections of trails, paths and cycling lanes dispersed through the County, with many of which not connecting.

In order to gauge the existing cycling facilities in the County as well as make future budget provisions for ancillary facilities, a preliminary study is important. Such facilities could include on-road facilities, ancillary facilities such as public restrooms, local stores, attractions and businesses who support local cycling, bike racks as well as local attractions (with and without ancillary cycling facilities) which are along or within a close proximity to the proposed cycling routes.

Recommendation: That during road resurfacing projects on arterial roadways, the County and Municipalities provide wide curb lanes or bicycle lanes (e.g. pavement markings), on the cycling network where feasible.

3.5...Existing Cycling Facilities, Routes and Infrastructure (continued)

Table 3-5a: Existing Cycling Infrastructure in Northumberland County

MUNICIPALITY OF PORT HOPE		
Street Name/ Location	***Infrastructure in Place***	***Waterfront Trail Segment?***
Mill St.-Hope St. (Off-road)	Paved off road path	Yes
TOWN OF COBOURG		
Street Name/ Location	***Infrastructure in Place***	***Waterfront Trail Segment?***
De Palma Dr.	Bike lanes	No
Rogers Rd.	Bike lanes	Yes
Ontario St. (Elgin- Railroad)	Bike lanes (separated)	No
Division St. (Elgin- Railroad)	Bike lanes (separated)	No
Elgin St. (Division- ~Ontario)	Bike lanes (separated)	No
TOWNSHIP OF CRAMAHE		
Narrow marked lanes on both sides of Percy Road between Church Street and Hoselton Studio		
TOWNSHIP OF HAMILTON		
Street Name/Location	***Infrastructure in Place***	***Waterfront Trail Segment?***
Ontario St.	Multi-use lanes	No
TOWNSHIP OF ALNWICK-HALDIMAND		
Street Name/Location	***Infrastructure in Place***	***Waterfront Trail Segment?***
None		
MUNICIPALITY OF BRIGHTON		
Street Name/Location	***Infrastructure in Place***	***Waterfront Trail Segment?***
Ontario St.	Multi-use trail (off-road)	No
MUNICIPALITY OF TRENT HILLS		
Street Name/Location	***Infrastructure In Place***	***Waterfront Trail Segment?***
Trans Canada Trail (Hastings-Campbellford)	Multi-use trail (off-road)	No
COUNTY ROADS		
Street Name/Location	***Infrastructure In Place***	***Waterfront Trail Segment?***
County Rd. #23	Bike lanes	No
County Rd. #18	Bike lanes	No
County Rd. #2 (Port Hope-Cobourg)	Bike lanes	Yes
County Rd. #2 (Cobourg-AH)	Bike lanes	Yes
County Rd. #2 (Colborne-Brighton)	Bike lanes	Yes
County Rd. #74 (#18- #45)	Bike lanes	No

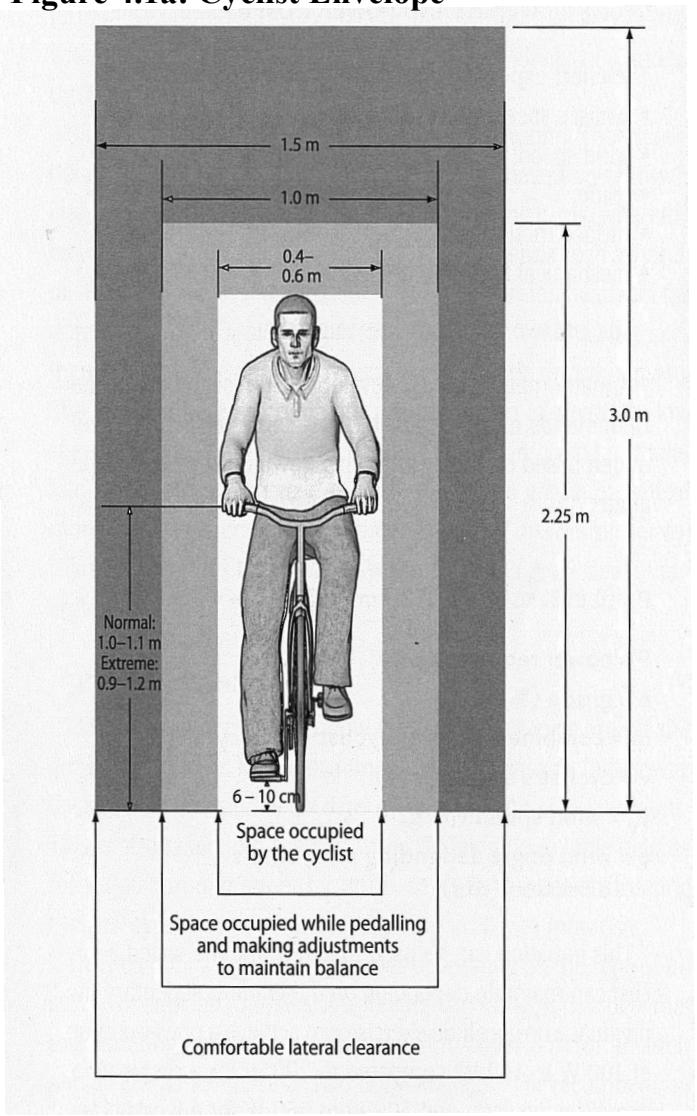
Note: This section only makes reference to infrastructure and does not include additional roadway or way-finding signage such as share the road (STR) signage.

4.0...DESIGN GUIDELINES

4.1...Design Guidelines and Rubric

Prior to beginning to draft the design guidelines which would form the backbone of this plan in terms of infrastructure and roadway improvements, a significant amount of background research was conducted in order to determine the prevailing trends in Southern Ontario and communities across Canada as well as areas in the United States. Publications released by accredited organizations such as the Transportation Association of Canada (TAC) and Velo Quebec were also referenced in the process. For the purposes of the following section, the term "bicycle facility" refers to any facility improvement or provisions made to accommodate or encourage bicycling. This could include off-street paths, signed bicycle routes and/or parking facilities depending on the context in which it is used.

Figure 4.1a: Cyclist Envelope



Source: Velo Quebec, 2010.

Since bicycles and cyclists are not necessarily always uniform in terms of their size with users ranging from young children to grown adults, it is important to approach the implementation of design guidelines by making reference to the "window" of space typically occupied by cyclists. The *Planning and Design for Pedestrians and Cyclists Guide* published by the VeloQuebec Association states that a typical cyclist occupies an area encompassing 0.4-0.6m in width and 2.25m in height. It is important to ensure that this "window" which is occupied by the cyclist remains as the minimum standard, particularly on roads containing bike lanes. The following municipalities, jurisdictions, organizations and publications referenced as being an example of practices referred to in formulating of this plan include:

- City of Mississauga
- Town of Richmond Hill
- City of Burlington
- City of Toronto
- Niagara Region
- Region of Waterloo
- City of Portland
- Waterfront Regeneration Trust
- Transportation Association of Canada
- Ministry of Transportation of Ontario
- VeloQuebec
- Madison Urban Area and Dane County
- Town of Ajax
- City of Ottawa

4.1...Design Guidelines and Rubric (continued)

Before beginning the extensive discussion of design guidelines, it is important to note the status of bicycles with respect to provincial legislation in Ontario. County staff members ultimately believed that due to its importance and impact in terms of the master plan as a whole, the status of bicycles was an issue that should resolved by the Cycling Steering Committee in the early stages of meetings. Design guidelines was one of the first items to be discussed within the Cycling Steering Committee agenda due to it's aforementioned importance. Following discussion which spanned the duration of two meetings, the following design guidelines rubric was established. These guidelines are not meant to be a binding set of rules, but rather a set of guidelines which the County of Northumberland and area municipalities would ideally like to strive towards meeting in the planning and implementation of cycling and multi-use trails in the future. It was established through the Cycling Steering Committee that in some cases due to various constraints, these aforesaid guidelines may not be immediately attainable. In instances such as these, providing any improvement available is indeed a better option than providing no improvement at all.

Table 4-1a: Design Guidelines Rubric

On or Off Road Trail	Environment	Class	Posted Speed Limit	AADT	Width of bike lane/ Share the Road Signage (STR)
On Road [Commuter, Tourism or Recreation]	Urban	Arterial	50-70km/hr	>5000	1.5m
		Collector	40-60 km/hr	3000- 5000	1.0-1.2m
		Local	30-50 km/hr	1000-3000 <1000	STR or 1.0m STR
	Rural	Arterial	70-80 km/hr	>5000 3000-5000	1.5-1.75m 1.5m
		Collector	60-80 km/ hr	3000- 5000 1000- 3000	1.5m 1.2-1.5m or STR
		Local	40-80 km/hr	<1000	STR
Off Road [Commuter, Tourism, Recreation]	Within road allowance				1.2-1.5m (one way) 2-3m (two way)*
	In parklands or other areas outside road allowance				2m-3m (multi-use trails)*

Notes: *Share the Road Signage (STR)* does not necessarily include infrastructure improvements such as wider shoulders, bike lanes or line painting. It is a signed route in which bicycles and motorized vehicles are encouraged to share the roadway. *Truck Volume %:* This variable will be incorporated by the individual responsible for the specific on-road infrastructure on an interim basis. Specific roads for which this could potentially apply will be identified by the Public Works and Roads Departments of the respective Municipal owner.

**Off road paths and trails* can be constructed to a width ranging between 2-3m depending on volume of said path or trail. Widths in excess of 2m can be constructed at locations of higher volumes and poor sight lines at the discretion of the local authority.

4.1...Design Guidelines and Rubric (continued)

Other Potential Barriers Not Addressed in the Design Guidelines

- On street parking
- Sight lines/visual environment
- Roadway widths and surface condition
- Cost of recommended improvements
- Topography
- Intersections and/or driveways (number and complexity)

Municipality and/or County Road Designations

In the event that the governing body of a particular roadway deems it to be substandard with respect to any of the aforementioned barriers or those included within the design guidelines, the governing body has the power to undesignate or restrict said road to be included as part of any cycling route network either at the County or Municipal level. It is recommended that if this right is exercised by either the County of Northumberland or any of its area municipalities, that a draft by-law shall be drafted prohibiting the road designations from the aforementioned actions.

4.2...Route and Way Finding Signage

In addition to physical roadway improvements, safety and route signage play a critical role in terms of designing and maintaining a functional network of cycling facilities. The main objective of signage is to provide an easier and safer travelling experience by directing users, identifying safety concerns and pointing out important destinations. In short, signs are to convey clear, easily recognizable and legible messages in a consistent manner to avoid confusion on the part of path and trail users. All on-road signs and vital travel-related regulatory and warning signs for off-road trails should be made of a retro-reflective background and message surface in accordance to Provincial standards to provide adequate visibility under all conditions. There are essentially four traffic signage types which the user can anticipate seeing on our roadways and trails which include information (guide), regulatory, warning and temporary conditions (construction).

Information (Directional) Signs: This signage type provides general information to the trail or roadway user which could include, but are not limited to route finding signs, directions to attractions/destinations and features. Signs can communicate a single point of information on a standard sign or a number of points in some instances. Signs at trailheads, points of interest and jurisdictional transitions may communicate a range of information which may include maps or provide additional information to encourage trail users to explore local attractions and opportunities, and engage with the surrounding community[25]. The way finding signage to be installed on County routes should be consistent to a prescribed design. An initial design was provided by Justin Lafontaine of Transportation Options, Toronto which may be instituted on a cycling route within the County should this established template be chosen in the future.

[25] Waterfront Regeneration Trust. (2007). "Section 2: Signage Guidelines".

4.2...Route and Way Finding Signage (continued)

Table 4.2a Northumberland County Signage Guidelines

Spacing Reference	Distance
Spacing for Destination Signage	1.5-2km (straight stretches)
Mounting location for Directional Signage	10-15m in advance of change in direction

Way finding signage should be located at or near intersections at a prescribed, uniform distance to avoid confusion and encourage consistency. Donors and sponsors of specific routes can thereby be acknowledged by including the organization's corporate logo as part of the design standard for signage, if permitted by governing body, and/or as part of any marketing initiatives thereafter. It is recommended that said template be presented and ultimately approved through the Cycling Steering Committee. The mounting of trail signs on existing sign posts, light standards and hydro poles is recommended (where permitted by governing body/organization) for economic reasons as well as to minimize excess signage, which could potentially take away from the natural landscape and ultimately prove to be a distraction for cyclists. For the purposes of on-road cycling routes in Northumberland County, signage (both STR and way-finding) will be spaced between 1.5-2km on straight stretches. Way finding signage will also appear in advance of any changes in direction as well.

Warning Signs: These signs are used to caution trail and roadway users of conditions which they need to be aware of such as potential safety and/or convenience concerns. These signs generally have a square, rectangular or diamond shape with a yellow shade. Examples include right turn ahead, narrow structure ahead, winding road to left, and share the road (pictured below).

Figures: 4-2a-4-2d: Warning Signs

Right Turn
Wa-1R

Narrow Structure Ahead
Wa-24

Winding Road to Left
Wa-6L

Share the Road
W-47
WC-47S

Source: County of Northumberland Sign Illustration Database

Recommendation: Develop and implement a comprehensive signage and way-finding system.

4.2...Route and Way Finding Signage (continued)

Regulatory Signs: This type of sign could potentially appear on both on and off-road trails and tend to appear in a multitude of colours. These signs are generally rectangular in shape with the exception of the stop, yield and one-way signs, and often comprise a white background with a black, red or green message, but may also appear white on a black, red or green background[26]. They indicate an enforceable law or regulation to be followed and should be posted alone without any supplemental signs occupying that specific post. Examples of regulatory signs are pictured below.

Figures: 4-2f-4-2i: Regulatory Signs

Stop Sign
Ra-01

Yield
Ra-02

Reserved Bicycle Lane
Rb-084a

Begins Tab Rb-084t
Ends Tab Rb-085t

Source: Northumberland County Sign Illustration Database

Recommendation: Erect Rb-84A "Reserved Bike Lane", Rb-084t "Begins" and Rb-084t "Ends" signs at all segments of the County routes in which bike lanes end and begin.

Temporary Conditions (Construction): Another type of signage which may be encountered along routes from time to time is that of temporary conditions, which could denote the presence of roadwork or construction in the area. They may be square, diamond shaped or in some cases rectangular. These signs should be posted well advance in order to indicate the best way to exit and/or re-enter a route under construction. Pictured below are three examples of temporary conditions signage including: construction ahead, right lane closed as well as detour ahead.

Figures: 4-2j-4-2m: Temporary Condition Signs

Construction Ahead
TC-1

Right Tab Closed Tab
TC-3Rt

Narrow Lanes
TC-11

Detour Ahead
TC-5

Source: Northumberland County Sign Illustration Database

[26] Waterfront Regeneration Trust. (2007). "Section 2: Signage Guidelines".

4.2...Route and Way Finding Signage (continued)

Flashings are small, circular Waterfront Trail signs made of aluminum blank plates with a painted surface. It is recommended that directional flashings with arrows be mounted directly below a designation sign only when needed to indicate a change in direction or when clarification is required.

Recommendation: Explore the feasibility of using 'flashings' on straight stretches of proposed County routes.

Figure 3.3
Designation Sign - Flashing Format

Figure 3.4
Directional Sign - Flashing Format

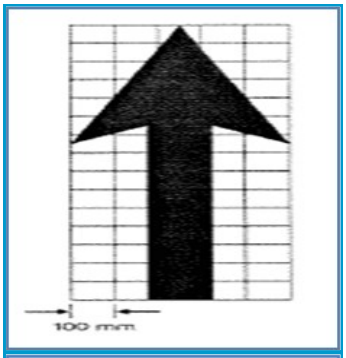
Right: Flashing Example, Waterfront Regeneration Trust, 2007.

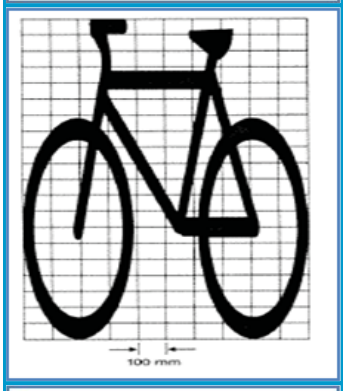
4.3...Pavement Markings

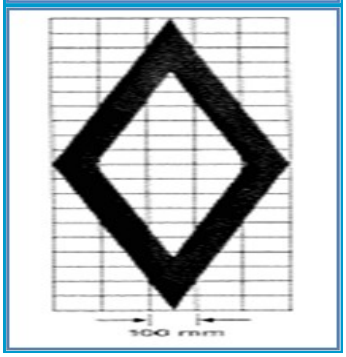
Surface markings refer to the system of painted symbols or coloured pavement stretches applied to the travelling surface of a trail or path. These markings can denote a variety of meanings such as indicating bicycle/pedestrian crossings and bicycle lanes. However off-road trails with a non-pavement surface obviously are not conducive to surface markings and other alternatives must be explored in these instances. This section will address surface markings such as coloured pavement surfacing as well as painted symbols. Although there is a range in costs for the following, it is important to take the entire life cycle of the product into account when deciding upon which is most appropriate for a specific location. Furthermore, a more holistic approach will be utilized to take more than just monetary variables into account, such as increased safety (less accident frequency) and higher comfort levels (increased ridership).

Typical Pavement Markings

There are four commonly implemented imprint markings used in North America. These include an arrow, bicycle symbol, diamond and sharrow. There are three primary references existing for bicycle route pavement markings: the *OTM Book 5 and Book 11* (MTO), *Geometric Design Guide for Canadian Roads* (TAC) and *Bikeway Traffic Control Guidelines for Canada* (TAC). The guidelines all outline surface marking symbols and are more or less uniform aside from one minor difference being that OTM Book 11 does not include the diamond reserve symbol in its recommended bike lane pavement markings. OTM Book 11 recommends the use of the word "ONLY" underneath the bicycle symbol instead. It is recommended that the diamond symbol be incorporated instead of the only symbol since it is more universally integrated into traffic engineering (i.e. HOV lanes) and is also more easily understood for non-English speaking cyclists and motorists. In terms of spacing, a few guidelines may be used as reference.







Arrow, Bicycle, Diamond: Waterfront Trust, 2007.

4.3...Pavement Markings (continued)

The Waterfront Regeneration Trust states that pavement markings should be installed before each major roadway intersection and spaced at 100 to 200m intervals between intersections. Conversely, the *Madison Urban Area and Dane County Bicycle Transportation Plan* states that lane markings should be appropriately spaced, around every 600 feet (~180m) for urban sections and ¼ mile (~0.4km) for rural sections and placed after every major intersection.

Sharrow: Velo Quebec, 2010.

Table 4-3a: Example Guidelines for Surface Markings and Signage

Guideline Source	Spacing of Surface Marking
Waterfront Regeneration Trust	-Before each major roadway intersection and spaced at 100 to 200m intervals between intersection. Research on rural stretches within the County show a range of 200-600m.
Madison Urban Area and Dane County (USA)	-Lane markings to be appropriately spaced, 600 feet (~180m) for urban sections and a ¼ mile (~0.4km) for rural sections - Also placed at every major intersection

Table 4-3b: Northumberland County Guidelines for Surface Markings and Sign-

Guideline Source	Spacing of Surface Marking
Northumberland County Cycling Master Plan	-Sharrows to be used primarily in urban areas, placed every 50-200m. Can also be used in rural areas where deemed necessary

Potential options for surface marking include[27]:

Alkyd paint: Commonly used, low cost. However, also has a relatively short life expectancy of 6-8 months with snow clearing or heavy traffic volumes persist. Alkyd paint also contains environmentally harmful solvents.
Latex paint: Water-based paint is more environmentally friendly than Alkyd and has a slightly longer lifespan than the former as well.
Dual Component Products (i.e. Epoxy): Potential costs are from three to twenty times that of Alkyd paint, with a lifespan of 2-4 years.
Thermoplastic: Costs significantly more than Alkyd paint, but has a great life expectancy. Thermoplastic has also been proven to withstand cold winter temperatures. This material is used to form 5mm thick sheets.
Prefabricated Strips: Similar to thermoplastic in that it consists of a solid component. These strips are applied to new asphalt by embedding into the surface by a roller. Material is also resistant to snow clearing.

[27] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

4.3...Pavement Markings (continued)

The other commonly used pavement marking element is known as a "sharrow" which consist of a bicycle logo with a double arrow above. They denote that a lane can be used by both motorists and cyclists. Walkways and bikeways can be distinguished from the roadway through a contrast in colour. This process is very common in European countries; it has also been used in North American cities such as Portland, Oregon to identify particularly problematic intersections. In a more local example, pictured below, Cobourg has used different colour pavement at crosswalks near downtown. The cost also varies depending on the surface material used. Although this process has yet to be standardized in Canada, it can nonetheless serve as a valuable exercise to increase safety for cyclists crossing intersections, particularly in urban areas.

Potential options for coloured surfacing[28]:

Different Materials: Concrete can be used to contrast with an asphalt roadway. However, this may not be the best option as the contrast will decline over time as asphalt becomes lighter over time.
Pigmentation: Adding pigmentation to surface materials is common practice in Europe. Application is relatively simple, however it does increase costs.
Thin Coloured Surfacing: This option consists of a thin layer of pavement made of special bitumen which can be added to an asphalt surface. This method is capable of achieving a wide range of colour options.
Aggregate-Reinforced Thermoplastic: Can be used for either surface markings or coloured surfacing. This is a durable option which has proven to be resistant to winter conditions when embedded into the pavement. It also retains its rough texture due to its aggregate content.
Coloured Markings: Another option is to apply coloured markings to the entire surface of a walkway through the use of epoxy paint. The life span of this option can be several years, even through Canadian winters. However, the downside is that this material tends to lose traction over time.

Above (descending): Cobourg, ON; Montreal, QC (VeloQuebec, 2010)

Recommendation: That the County and its area municipalities incorporate bicycle friendly features in bridge and underpass projects, including bicycle ramps on stairs, as part of the annual capital works and rehabilitation programs where financially feasible.

4.4...Surface Material Options

Since the intention of this plan is to provide a variety of cycling facilities, including on and off road trails, it is important to address the potential surface material options available. This section will provide information pertaining to the options available for surface materials; however the decision of which to choose will ultimately be left to the discretion of local municipalities or the appropriate jurisdiction over the facility in question, as they will be more inclined to know the recreational needs of the local population.

[28] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

4.4...Surface Material Options (continued)

Stone Dust

Stone dust is essentially what its name suggests, being comprised of fine particles produced when stone is crushed. It is most appropriately used for off-road trails and is not advisable to be used for on-road facilities. From a positive perspective it is easily repaired and not susceptible to cracking, and is a rather environmentally sustainable choice as it integrates well into the environment. Conversely, there is less traction due to the granular texture and it is also not suited to certain activities such as in -line skating; however it is a viable option for pedestrians and cyclist use. Another potential issue could be vegetation growing through this material. Stone dust is also susceptible to erosion as a result of rain or melting snow, therefore proper drainage is essential. This surface material will require more maintenance than asphalt but it is less expensive.

Asphalt

Above: County Rd. 2, Northumberland County

This surface material is most appropriate for use in urban or on-road areas. In contrast with stone dust it offers an even, virtually waterproof surface with good traction and a relatively low rolling resistance. Since asphalt is widely used for roadways already, and is a logical choice for the aforementioned urban and on-road facilities, and can prove to be more cost effective if implemented in conjunction with scheduled roadway improvements. It provides an excellent surface for virtually all users and is quite durable, with a life span of approximately 18-20 years with relatively minimal maintenance requirements[29]. Lastly, it also requires a compacted granular base before application of the pavement.

Wood Chips

Somewhat similar in terms of its strengths and limitations to stone dust, wood chips can also provide a viable material surface in certain situations. This surface is most appropriate in natural areas (off-road) since it integrates very well with the surrounding environment with little environmental impact. However, it requires considerable maintenance and monitoring as it is prone to erosion and thus shouldn't be used on slopes with more than an 8% grade. The chips must also be replenished periodically (every 2-3 years) due to the fact that they disintegrate over time[30].

[29] Waterfront Regeneration Trust. 2007. "Section 3: Maintenance Guidelines".
[30] Waterfront Regeneration Trust, 2007. "Section 3: Maintenance Guidelines".

4.4...Surface Material Options (continued)

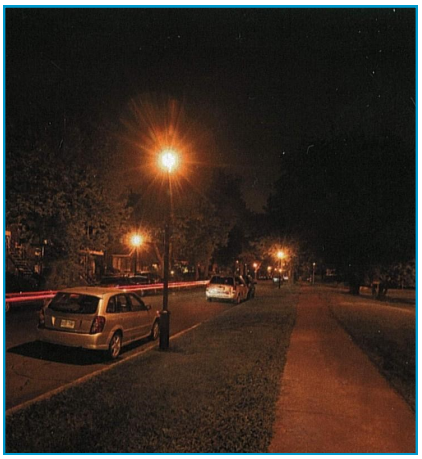
Chip Seal (Surface Treatment)

This material is comprised of a thin waterproof surface made up of bitumen and pea gravel on a compacted granular base and visually appears similar to stone dust; however it offers less rolling resistance[31]. As is the case with stone dust, this surface is suitable for cyclists and pedestrians, but not other types of recreational such as inline skating. It is more resistant to erosion than stone dust and can also be marked as easily as pavement. However, given the fact it is relatively thin; it is prone to cracks and does not have the lifespan of asphalt.

Concrete

Typically the material used in sidewalks, concrete is a mixture of water, cement, sand and aggregate. It provides an exceptionally hard, smooth surface (if joints are sawn) with good traction[32]. Sidewalks (with recessed joints) potentially cause unpleasant vibrations for cyclists and other non-pedestrian recreation activities. In terms of cost, concrete is more expensive to lay than asphalt however it has a markedly longer life span which compensates for excess costs. Pavers must be cross sloped a minimum of two per cent to allow for drainage and are susceptible to frost heaving and settlement. Thus, in terms of maintenance, they may require resetting occasionally.

4.5…Lighting



Source: VeloQuebec, 2010.

The provision of adequate lighting is another major consideration in terms of planning cycling facilities within Northumberland County. According to the Transportation Association of Canada, lighting needs to be considered where a sufficient number of cyclists use bicycle facilities at night. VeloQuebec asserts that if particular routes or segments thereof are to be designated for night-time riding, these should be identified as soon as possible so that additional lighting can be factored into the budget process and implemented in a timely manner. The following factors and recommendations should be taken into consideration when planning on and off-road cycling facility lighting:

- Ensure adequate illumination of tunnels and underpasses on cycling routes to increase safety and visibility for motorists and cyclists

[31] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[32] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

4.5…Lighting (continued)

- Provide additional lighting at intersections, crossings or areas identified as potential conflict areas as required
- Provide field research as to whether additional lighting is required for on-road facilities
- Provide constant (rather than intermittent) illumination along off-road path segments in order to allow the eye to adapt to the conditions along the route for safety and visibility reasons
- Provide additional lighting at intersections, crossings or areas identified as potential conflict areas

4.6...Intersections

Intersections are perhaps the most important area in terms of alleviating potential conflict points between motorists, cyclists and pedestrians. Safe crossings for cyclists of busy roads are required. Intersections (particularly urban) present the highest potential for conflict points between motorists and cyclists. This section will provide guidance related to many types of intersections which cyclists may encounter including urban and rural intersections, driveway crossings, and off-road trail and roadway intersections. Thus it is important to establish easily understandable rights-of-ways to address every one of the aforementioned groups with respect to intersection crossings.

4.6.1 Line Paint

Facilities available to cyclists are best designed according to the type of facility traversing the roadway. For instance, on undesignated shared roadways no special treatments would be required. However, designated bike paths on high volume roads could contain one or more pavement markings (bicycle symbol or sharrow) located[33]:

- The roadway prior to an intersection,
- The roadway following an intersection, to alert motorists coming from a cross street that it is a designated shared roadway, or
- Across the intersection itself to indicate the presence of through bicycle traffic.

4.6.2 Advance Stop Lines and Bike Boxes

Providing advanced stop lines and painted bike boxes are another viable option for urban or busy intersections located on cycling routes. A bike box provides a section of roadway (typically with the application of paint) for cyclists to increase their safety, visibility and also provides motorists with increased awareness of their presence. Bike boxes (pictured on the next page) reduce the number of conflict points between vehicles and cyclists at intersections, provide a space for a large number of cyclists to be accommodated and allows cyclists to take advantage of a priority left-turn phase when available[34]. When cycling in rural areas, cyclists should obey the rules of the road when crossing an intersection or a four way stop, proceeding according to when it is safe to do so and when they have the right-of-way. Additional signage will be provided at locations in which cycling routes cross County Roads and/or high volume locations.

[33] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[34] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

4.6...Intersections (continued)

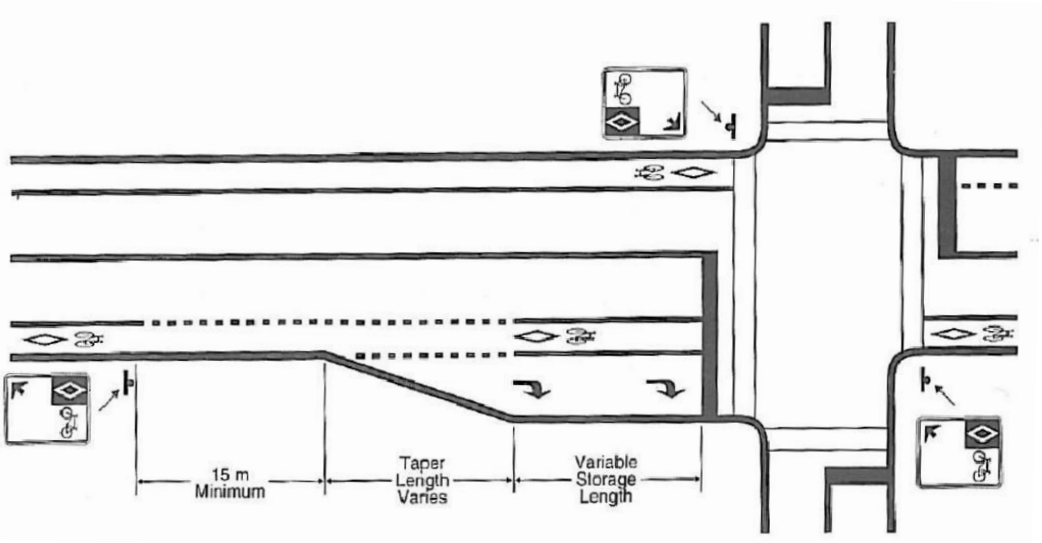
4.6.3 Turning Lanes

In cases where left hand turning lanes already exist at intersections, there is no requirement for any additional measures to be included pertaining to cyclists in terms of left hand turning movements. However, if a bike lane does exist (both North and South bound of the intersection), a bike lane to the left of right-turning lane (pictured below left) makes it much easier for cyclists to proceed straight through the intersection and provides those waiting for a green light to do so out of the way of right-turning vehicles[34a]. Where the vehicles cross over the bike lane (approaching an intersection) to reach the right-hand turning lane, a broken line should be provided to portray the stretch where changing is lanes is acceptable.

Above (left to right): Cycling turning lane, Bike box

4.6.4 Bikeway Auxiliary Lanes at Signalized Intersections

Figure 4-6a: Bicycle Lane Adjacent to Introduced Right-Turn Lane



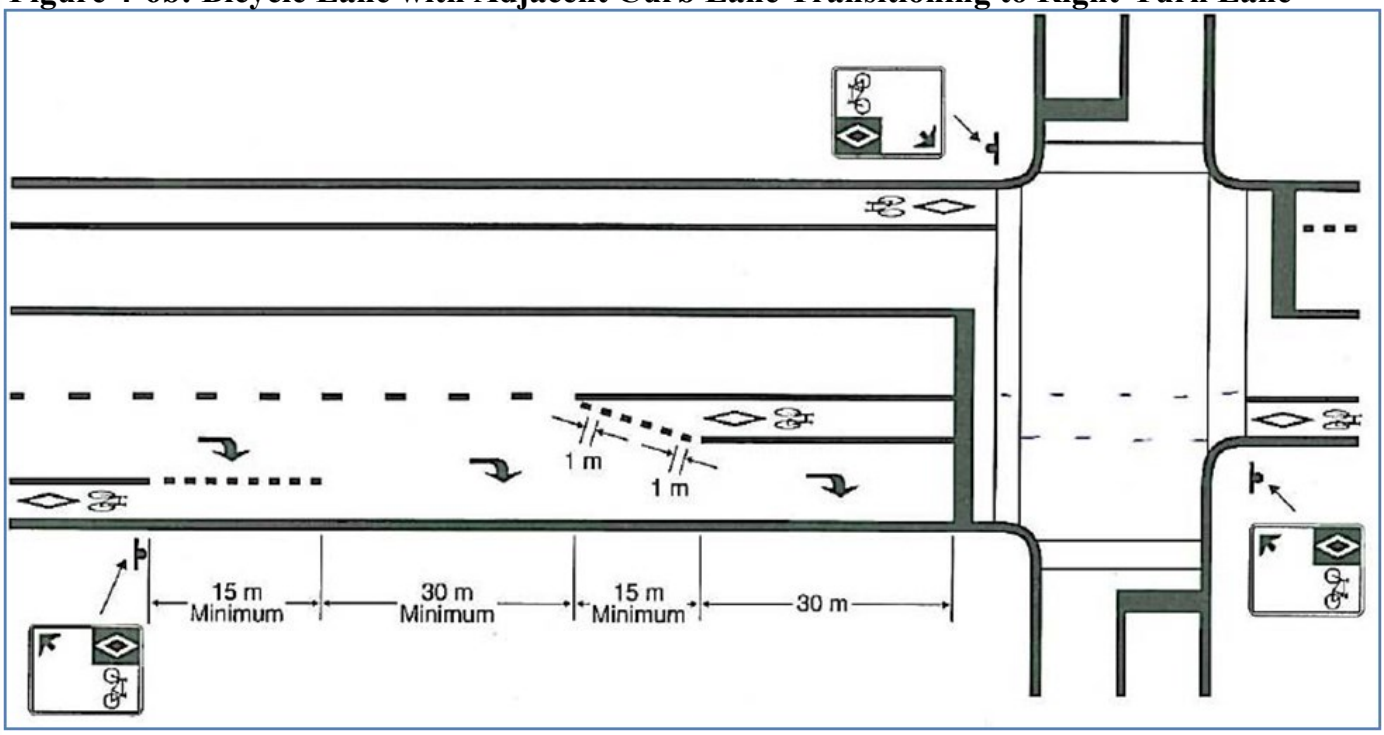
Left: This example is the ideal representation of a well designed intersection in terms of incorporating cycling infrastructure holistically with pedestrians and other vehicles. However, it may not be a financially feasible option due to existing curb and gutter constraints.

[34a] Source: TAC, Bikeway Traffic Control Guideline for Canada,

4.6...Intersections (continued)

4.6.5 Bikeway Auxiliary Lanes at Signalized Intersections (continued)

Figure 4-6b: Bicycle Lane with Adjacent Curb Lane Transitioning to Right-Turn Lane



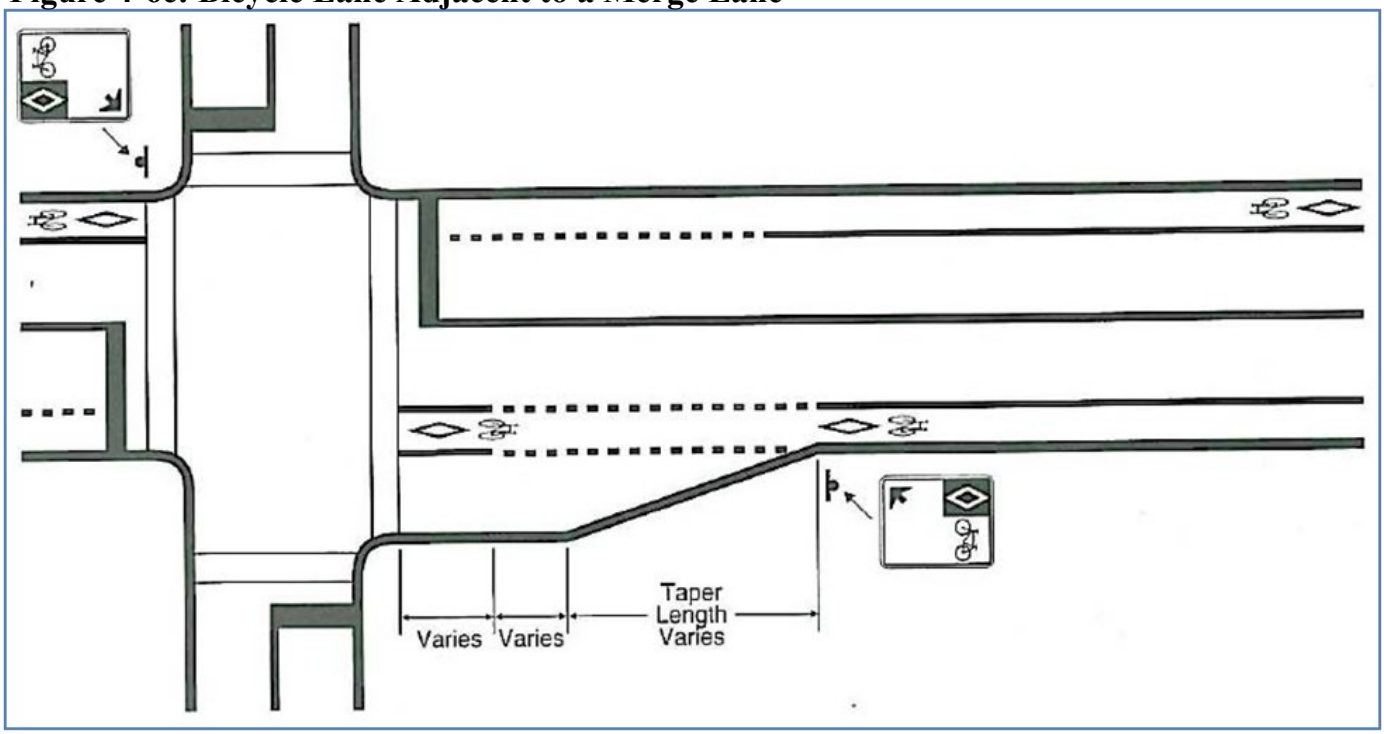
Source: TAC, Bikeway Traffic Control Guideline for Canada, 1998.

The above example is another method of incorporating cycling infrastructure into intersection design by providing a transition area for right turning vehicles to merge into the turning lane and bicycles to continue straight through the intersection with other traffic. This option would be most effective when cyclists use hand signals to alert drivers of their intentions. Motorists should also be aware of cyclists changing lanes and use their signal in advance of a right hand turn.

4.6...Intersections (continued)

4.6.5 Bikeway Auxiliary Lanes at Signalized Intersections (continued)

Figure 4-6c: Bicycle Lane Adjacent to a Merge Lane



Source: TAC, Bikeway Traffic Control Guideline for Canada, 1998.

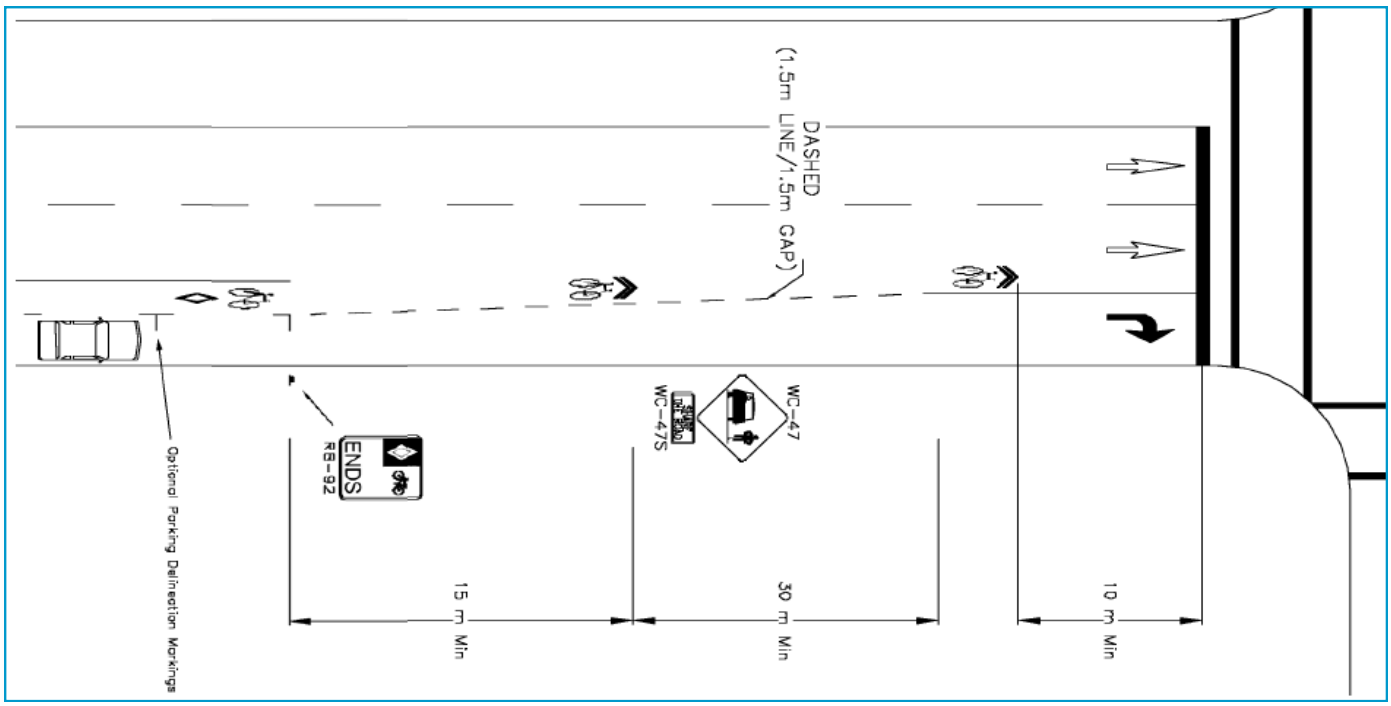
The figure above represents another option in which a merge lane is provided which would cut through the bicycle lane in order to merge with traffic. Providing an element of continuity with respect to cycling lanes crossing intersections will allow for increased safety for cyclists.

Recommendations:

- **That pavement markings be considered at all intersections along cycling routes or area known to be frequented by cyclists to help direct cyclists and to position themselves properly in the lane, where feasible.**
- **That the County and area Municipalities consider cycling safety and access in all new traffic management projects and intersections.**

4.6...Intersections (continued)

Figure 4-6d :Insufficient Width for Bike Lane at Intersection



Above: The position of the marking within the lane at the intersection is dependent upon the width of the turning lane. If wide enough, place with side-by-side alignment, otherwise place in centre of lane. Signage is changed to indicate the transition from a bike lane to share the road stretch approaching the intersection. Source: TAC, 1998.

Above: Intersection of King/William, Cobourg
Below: Intersection of Second/Albert, Cobourg

4.6.7 Raised Trail Priority Crossings

This option could prove to be a feasible option where a multi-use path intersects a roadway. It involves the addition of a grade elevation (speed hump) with the addition of line painting and/or coloured pavement to alert motorists of a traffic calming measure. Providing a stop sign as in the picture on the following page will also be a beneficial addition to ensure safety. These are typically recommended for areas containing low traffic volumes and are appropriate for streets containing bus routes or routes commonly used by emergency vehicles[35]. The grades of elevation typically vary from 4-10% depending on the speeds of the roadway (higher grade % for lower speeds and vice versa)[36].

[35] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[36] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".

4.6...Intersections (continued)

Figure 4-6e : Raised Trail Priority Crossing Example

Source: Burlington Cycling Master Plan Final Report, 2009

4.6.8 Driveway Intersections

Consideration should be given to the amount of driveway entrances appearing along a multi-use path and cycling routes. If a route on an alternate road that meets the criteria and policies established in the design guidelines can be considered as a more practical alternative then that option should be considered.

Above: Roadway with several abutting driveways

4.6.9 The Road Diet

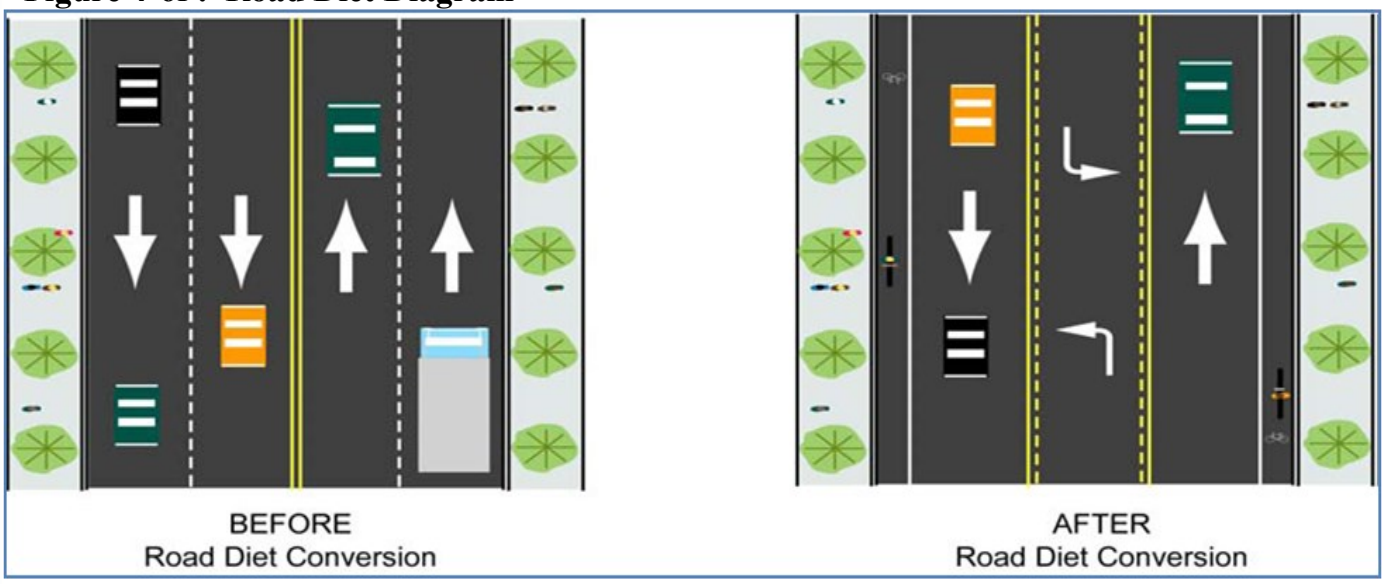
Improvements to the transportation network to accommodate cycling routes do not only benefit cyclists, but can also provide benefits to other users. In an area where it is justifiable and beneficial in terms of the opinions of local Engineers and/or Urban Planners, the provision of a "road diet" can be incorporated to promote the greater efficiency and economical use of roadways. Typical road diets consist of converting four-lane undivided roads into three lanes (two through lanes plus a center turn lane) with the remaining space used for bicycle lanes, sidewalks, and/or on-street parking[37]. The figure on the following page provides an example of a 4-lane street being scaled back to the three lanes with bike lanes on either side.

Road diets can potentially offer benefits including more predictable driver behaviour, fewer collisions and greater ease for pedestrians to cross intersections. However, for traffic AADTs above 20,000 on road diet sections, there is an increased likelihood that traffic congestion will increase to the point of diverting traffic to alternate routes[38]. The "road diet" has been implemented in cities such as Toronto, Hamilton and Seattle, WA.

[37] How Much Do You Lose When Your Road Goes on a Diet? (2003). Huang et al.
[38] How Much Do You Lose When Your Road Goes on a Diet? (2003). Huang et al.

4.6...Intersections (continued)

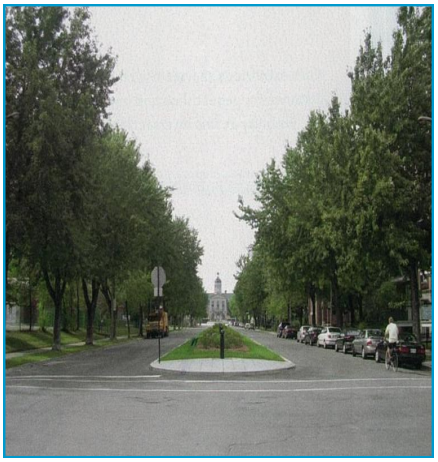
Figure 4-6f : Road Diet Diagram



Source: The Road Diet Handbook-Overview, 2007

Recommendation: It is recommended that the potential and feasibility of incorporating road diets on arterial roads within the County is further explored in the County's upcoming Transportation Master Plan.

4.6.10 Medians and Island Refuges



In many situations, a median in the centre of wide roadway can make the crossing of four-lane roadways manageable, allowing cyclists to cross one direction of traffic at a time. A major advantage of medians is that traffic signals are generally not needed and unnecessary delays for motorists and cyclists can be mitigated. Furthermore, an island in the centre of the roadway between opposing lanes of traffic reduces left-turning radiis and forces vehicles to slow down[39]. If an island is more than 1.5m wide, it can also serve as a refuge for pedestrians, allowing them to cross the intersection in two stages[40]. This allows for both increased safety and traffic calming. Mixing relatively high speed and high volume of motor vehicle traffic making frequent turning movements with bicycle traffic is a challenge. The best practices for a designer are to provide clearly delineated space for cyclists and ample time to choose the appropriate time to cross or merge with existing traf-

[39] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[40] VeloQuebec Association. (2010). "Planning and Design for Pedestrians and Cyclists".
[41] Niagara Region. (2003). Bikeways Master Plan Study: Regional Niagara Planning and Design Guidelines.

4.7...Maintenance Guidelines

A thoroughly planned systematic maintenance schedule, guidelines, and proper due diligence with respect to liability issues are important factors in ensuring the safety of facility users. It is important that regular inspections be implemented. Even though multi-use trails are separated from the roadway, they still legally fall under the definition of a "highway" since bicycles are legally defined as vehicles under the Ontario Highway Traffic Act[42]. As such the multitude of various trails comprising a cycling network are typically governed by Ontario Regulation 239/02 Minimum Maintenance Standards for Municipal Highways (anticipated to be updated in Fall 2012). Furthermore, in order to accommodate cyclists and trail users by maintaining high standards, the level and consistency of maintenance should also parallel public expectations while being financially sustainable.

-the multitude of various trails comprising our cycling network are typically governed by Ontario Regulation 239/ 02 (Minimum Maintenance Standards for Municipal Highways).

Maintenance management involves keeping a variety of items on record: trail inventories, trail condition surveys and analyses, inspection reports, cost estimates for maintenance tasks, implementation schedules, volunteer programs, maintenance contracts and liability claims[43]. The guidelines and amount of time and resources dedicated to different trail and lane types will vary on a site-specific basis. Depending on the location and nature of a particular facility (on-road or off-road), responsibility could fall within the jurisdiction of the Parks and Recreation or Public Works Departments. In some cases duties related to maintenance may be completed by staff members or contracted out to other organization to fulfill these requirements. Cooperation and coordination among the aforesaid departments and various municipalities is necessary to ensure that the facility meets maintenance objectives and is as safe as possible[44].

-management involves keeping a variety of items on record: trail inventories, trail condition surveys and analyses, inspection reports, cost estimates, implementation schedules, volunteer programs, maintenance contracts and liability claims

Another important aspect to keep in mind is that of monitoring. According to the Waterfront Regeneration Trust's Maintenance Guideline Specifications, "trails must receive a thorough inspection and/or maintenance at least twice per year, with preferred actions being taken in the spring and fall" (before and following anticipated peak usage)[45]. These inspections should be coordinated in order to document current conditions as well as the precise location of any required improvements, with records kept in a log book. Another vital method to make certain that cycling facilities are effectively maintained is to organize a forum in which facility users can contact the proper authorities to report any potential hazards, either through a phone line or website section.

-trails must receive a thorough inspection and/or maintenance at least twice per year, with preferred actions being taken in the spring and fall" (before and following anticipated peak usage

- organize a forum in which facility users can contact the proper authorities to report any potential hazards, either through a phone line or website section

[42] Richmond Hill Pedestrian and Cycling Master Plan Study Report, 2010.
[43] Waterfront Regeneration Trust, 2007. "Section 3: Maintenance Guidelines".
[44] Waterfront Regeneration Trust, 2007. "Section 3: Maintenance Guidelines".
[45] Waterfront Regeneration Trust, 2007. "Section 3: Maintenance Guidelines".

4.7...Maintenance Guidelines (continued)

Bikeways and paved shoulders often accumulate debris and are subject to surface deterioration, and as such, will require regular maintenance under the aforementioned legislation. Due to the fact that bicycles are equipped with only two narrow tires they are more susceptible to irregularities on pavement than motorized vehicles. This will make the provision of regular sweeping, edge repair and pothole maintenance all the more important. Furthermore, particular routes and trails should be identified by the County as well as area municipalities as having priority for snow, ice or leaf removal in the winter and autumn months to allow year-round use. Encroaching vegetation and felled trees present another consideration with respect to annual maintenance. Lastly, route and way finding signage and pavement markings should be inspected annually to ensure way-finding is not an issue.

Table 4.7: List of Actions Pertaining to Facility Maintenance

Item	Maintenance Required
Snow, Ice and Leaf Removal	On road/off road facilities Seasonally available facilities Salting
Debris Removal	Glass, leaves, gravel, etc. Debris removal before peak usage season (summer) Trash cans and litter removal
Vegetation Clearing	Shrubs encroaching onto pavement Adjacent grass Fallen trees Pruning trees
Pavement Maintenance	Tar and chip pavement Cracks and ridges in pavement
Signage, Pavement Markings & Line Painting	Repairing signage/check reflectivity Ensuring pavement paint is clearly visible

Recommendations:

- **Organize a medium for the public and cycling facility users to report potential dangers and/or hazards to the proper County or municipal department in the form of a telephone number or webpage to alleviate these issues in a timely and effective manner;**
- **Determine what departments/organizations are responsible for trail and bike way segments, and outline their potential responsibilities. The appropriate organization should then familiarize itself with and determine improvements and/or monitoring with specific reference to Ontario Regulation 239/02;**
- **Establish a regular monitoring system schedule to carry out inspection and assessment of the trail's condition and signage;**
- **An annual review of maintenance log summaries, reports, and schedules as a recommended minimum. If done more frequently, the review enables managers to detect and plan for remedial action more efficiently and effectively;**
- **Ensure that the County and area Municipality's road maintenance and pavement repair reporting system and annual budget specifically include the needs of cyclists.**

5.0...BENEFITS OF CYCLING

The promotion of cycling has numerous advantages in terms of transportation, economic, environmental, and social aspects, as well as various public health benefits. Cycling also represents the most energy-efficient form of transportation and is particularly compatible with shorter trips and destinations. Furthermore, the full extents of the benefits of cycling are often not entirely understood and quantifiable, especially in many parts of North America. That said; this attitude has gradually been changing in recent decades through the implementation of progressive policy initiatives in some areas and the advent of active transportation plans throughout North America.

There is increasing recognition that cycling contributes to reduced obesity, reduces traffic congestion and helps alleviate the impacts of climate change. In terms of positive impacts, cycling tends to improve quality of life through promotion of social cohesion; enhances economic development through tourism and leisure, in addition to offering viable transportation options for commuting. There are also numerous corresponding statistics and studies which support the aforementioned advantages of cycling. It must also be noted that the subsequent subcategories tend to be interrelated and influence each other significantly as a result. Non-motorized travel can help develop a sense of community, encourage the patronage of local business, reduce noise and pollution, and improve the health of its residents[46].



Courtesy of: Jamie Barnes

5.1...Environmental Benefits

- The potential benefits of cycling as an alternative mode are perhaps most staggering, due to the environmental impacts of greenhouse gases (GHG) emitted from vehicles.
- According to Environment Canada, transportation is among the largest sources of GHG emissions, at roughly 26%[47]. What is more alarming is the fact that this trend shows no signs of slowing down, as transportation emissions rose approximately 32.8% between 1990 and 2005[48].
- Short trips (particularly urban) made by motor vehicles tend to be the most inefficient and generate the most pollution per kilometer. These trips have the greatest potential to be replaced with cycling through this master plan[49].

[46] Victoria Transport Institution Policy. (2009). Pedestrian Pedestrian and Bicycle Guide to Best Practices.
[47] Share the Road Coalition (2000). When Ontario Bikes, Ontario Benefits.
[48] Share the Road Coalition (2000). When Ontario Bikes, Ontario Benefits.
[49] City of Ottawa. (2008). Ottawa Cycling Plan.

5.2...Economic and Transportation Benefits

- Another apparent issue which could be partially alleviated by cycling policies is that of economic losses as a result of inefficient transportation methods. The GTA economy alone suffers costs of $3.3 billion per year as a result of congestion[50].

QUICK FACTS

- GTA congestion accounts for $3.3 billion in costs/ annually

- Many Canadian citizens are guilty of overreliance on their vehicles and often use them even to make short trips which could easily be traversed using alternative modes of transportation. Environment Canada states that each Canadian makes an average of 2,000 car trips of less than 3 km annually, yet for distances up to 5 km, cycling is recognized as the fastest door to door mode of transportation.

- each Canadian makes approx. 2,000 trips of less than 3 km annually. These could be more efficiently travelled via bicycle

- Statistics show that there is considerable potential to increase cycling trips which are 5km or less in length. In 2005, approximately 86% of Canadians travelled to work by car as drivers or passengers, and of the aforementioned, 57% of Canadians reside less than 5 km from work.

- 2005 survey shows 57% of Canadians reside less than 5km from their workplace

- Providing safe and functional cycling trails could also stimulate economic spinoffs for local businesses such as restaurants, bed and breakfasts, hotels as well as cycling related businesses. Our towns and municipalities could benefit by offering services and facilities which appeal to the needs of cyclists, such as areas to safely store bicycles. Cyclists also tend to spend more money per mile travelled on food, beverages and other items than other travelers.

- 2009 Great Waterfront Trail: $64,000 spent on hotel accommodations, $70,000 in restaurants and food sales

Example: VeloQuebec reported that between 1978 and 2005, the government of Quebec invested over $104 million in the development of bikeways, including $60 million on *La Route Verte*. They added 1,400km of paved shoulders between 1995 and 2010.

- In 2000 alone, La Route Verte cyclists spent $95.4 million

- In 2000, *La Route Verte* cyclists spent a total of $95.4 million. This corresponds to approximately 2,000 jobs and revenues of $15.1 million for the Government of Quebec and $11.9 million for the Government of Canada[51].

- The 2009 Great Waterfront Trail Adventure economic spinoffs include: $64,000 in hotel overnights; $70,000 restaurants and food sales.

[50] Share the Road Coalition (2000). When Ontario Bikes, Ontario Benefits.
[51] City of Burlington. (2009). Cycling Master Plan.

5.3...Social Benefits

Although at times it is difficult to quantify social aspects, they are often represented by qualitative variables, such as the social advantages of cycling. Active transportation in general can also be categorized as a benefit.

- A Statistics Canada study concluded that 19% of cyclists felt their commutes are the most pleasant activity of the day, whereas only 2% of drivers could make a similar claim[52].

- Cycling provides more opportunity for social interaction, or social capital within the community by getting more people out of their vehicles and back in the streets.

Cycling provides access and transportation to segments of the population who would not otherwise be able to travel independently. These segments include:

- those who cannot or choose not to own a motor vehicle;
- those who do not have access to a motor vehicle for the required period; and/or
- those who cannot or choose not to use public transportation[53].

5.4...Public Health Benefits

From a public health perspective, the benefits to Ontarians as well as the potential decreased burden on our Health Care system caused by inactive lifestyles alone provides a viable case for increased cycling initiatives province wide.

- Cycling provides an effective, moderate workout as well as a form of mobility which can be incorporated into our daily routine.

- In Ontario, an astounding 51.6% of the population is overweight while 50.2% are currently physically inactive[54]. These statistics are of particular concern given the fact that heart disease and stroke are the leading causes of death among Canadians. These factors are preventable or at least mitigated through a more active lifestyle. In fact, a 2000 study by the Archives of Internal Medicine concluded that cycling to work decreased mortality risk by up to 40%[55].

[52] Canadian Fitness and Active Lifestyle Research Institute. (2004). Making the Case for Active Transportation.
[53] City of Toronto. (2001). Shifting Gears Bike Plan.
[54] Share the Road Coalition (2010). When Ontario Bikes, Ontario Benefits.
[55] Share the Road Coalition (2010). When Ontario Bikes, Ontario Benefits.

5.4...Public Health Benefits (continued)

- Cycling and active transportation in general are becoming increasingly vital due to rising health care costs and the fact that Ontario's population is aging, which will make these initiatives all the more important in the future. From a cost standpoint, the economic burden of physical inactivity was estimated at approximately $5.3 billion, with $1.6B attributed to direct costs, whereas $3.7B stemmed from indirect costs, in addition to obesity's costs of $4.3 billion[56].
- Studies have shown increased physical health to be linked to improved mental health and lower levels of depression.

Pictures above: Courtesy of Jamie Barnes

5.5...Types of Cyclists

A successful cycling network provides a safe and suitable environment for a variety of users ranging from beginners and non-cyclists to avid or experienced cyclists. Furthermore, cyclists can also be divided into two general subgroups: recreational cyclists, whom participate as a means of physical activity and enjoyment, and utilitarian cyclists who view cycling as a means of transportation.

Northumberland County's cycling trails will aspire to provide facilities which are traversable by the aforementioned groups and every skill and age level in between. There are considerable differences not only in cycling experience but also in the purposes for which individuals ride their bicycles. Generally, cyclists can be grouped according to three different variables which include age, skill level and trip purpose[57]. Furthermore, this section of the master plan will also consider the needs of tourists visiting Northumberland.

Skill Level

This category will be a major determinant regarding which routes are used and the distance of a cycling trip. Beginners tend to be cautious in terms of what destinations they choose to ride to and from; generally avoiding heavy traffic in favour of off-road trails or low volume streets. This subgroup could potentially become discouraged by unfavourable, uncomfortable or overly challenging conditions[58]. Routes offering relatively flat terrain, low traffic volume roads in primarily rural areas are best of this sub-group.

Above: British School of Cycling

[56] Region of Niagara Bikeways Master Plan, 2003.
[57] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[58] Region of Niagara Bikeways Master Plan, 2003.

5.5...Types of Cyclists (continued)

More experienced cyclists tend to cycle more frequently for both utilitarian and recreational purposes. They are also likely to be more experienced travelling along heavily trafficked roadways and have a better understanding of the principles related to sharing the road with motorized vehicles or adapting to challenging terrain or unfavourable road conditions. In urban areas, this subgroup tends to prefer on-street bike lanes and wide shared curb lanes, or paved shoulders on low volume rural roads[59]. Staff members at the County of Northumberland believe that the suggested routes as emphasized by the Tourism and Economic Development Department and local cycling groups meet the needs of all types of cyclists.

Age

According to researchers in the United States, utilitarian cycling rates tend to fall sharply with increasing age[60]. According to Pucher & Buehler (2005) this trend also tends to be true in Canada as bicycling accounted for an average of only 1.2% of work trips in 2001; however this also tends to vary by province and metropolitan area significantly. Obviously, age is a major indicator of experience as well with experience typically increasing along with the age of the cyclist. Typically, Canadian trends tend to indicate a shift from utilitarian cycling to recreational cycling as age increases. The results of the Northumberland County Cycling Survey indicate similar results to the research findings outlined above. Approximately 78% of the cyclists who participated in the survey were over 40 years old.

Trip Purpose

The reasons for cycling can essentially be categorized into two broad user groups, being *recreational* and *utilitarian* cyclists. Recreational cyclists will ride their bikes for leisure purposes, and tourists can also being categorized into this type of cyclist. Conversely, utilitarian cyclists can also be classified as those who use their bicycle as their primary means of transportation for commuting to work, school, running errands and other activities. Typically this category of cyclist is conscious of the rules of the road, aware of their surroundings and comfortable riding within the roadway allowance along with other vehicles.

[59] Region of Niagara Bikeways Master Plan, 2003.
[60] Share the Road Coalition (2010). When Ontario Bikes, Ontario Benefits.

6.0...PROMOTION, AWARENESS, SAFETY AND EDUCATION

6.1...Education and Safety

Cycling education and safety is an important facet of this plan since there are both cyclists and motorists who need to improve their vehicle operating skills and knowledge. Furthermore, a segment of the general public incorrectly categorizes cycling as an inconvenient, dangerous activity. Approximately 63% of individuals participating in the Northumberland County Cycling Survey identified "better education for cyclists and motorists" as very important, which was only succeeded by the need to provide better on-road facilities such as bike lanes and paved shoulders (85%). In order to maximize the impacts of our long-term investments in terms of cycling infrastructure upgrades, it is important to ensure that effective education and safety initiatives are in place to complement any physical alterations made to our roadways and pathways network. It is imperative that cyclists feel they are safe and confident in any environment including both on-road cycling lanes and off-road trails.

An excellent way to complement infrastructure improvements in the future would be to provide and promote CAN-Bike courses to cyclists of all ages and abilities within the County. The CAN-Bike program provides a series of courses addressing all aspects of cycling safety, and is chiefly oriented towards recreational and utilitarian cycling. CAN-Bike instructors are nationally certified, highly skilled cyclists who provide courses applying to each and every level of cyclist.

The CAN-Bike program offers the following programs[61]:

<u>For kids:</u>
• Kids CAN-BIKE Camp
• Kids CAN-BIKE

<u>For all cyclists and drivers:</u>
• CAN-BIKE Cycling Safety Workshop

<u>For novice cyclists:</u>
• Adult Learn to Ride 1 & 2

<u>For casual/recreational cyclists:</u>
• CAN-BIKE 1
• CAN BIKE Cycling Freedom for Women
• Teen CAN-BIKE

<u>For advanced/commuter cyclists:</u>
• CAN-BIKE Commuter Cycling Skills
• CAN-BIKE 2

[61] CAN-Bike. CAN-Bike Courses. http://www.canbike.net/cca_pages/index.htm.

6.2...School Boards and Public Agencies

Another important aspect of the Cycling Master Plan will be the coordination of efforts with local school boards. School boards among other public agencies, can provide important partnerships in order to move forward with various cycling policies and initiatives. Riding a bicycle to school was a very common activity for many of today's adults; however this trend is now quite rare among today's youth, in which most either take the bus or are driven to school. This contributes to unsafe situations in close proximity to schools as a result of the high rates of vehicles both in the morning and at the end of the school day. Another issue is the potential inadequacy or unavailability of bicycle parking facilities at school which could contribute to higher rates of theft. This issue in particular should be addressed, at least as a starting point. As part of the larger network of cycling options, it is important to incorporate links to points of interest such as schools, community centres, residential subdivisions, commercial and recreational areas.

These issues could be addressed through implementing the following:

- Gathering statistics on schools, surrounding roads, other nearby points of interest;
- Support cycling education for all school children;
- Partnerships with school boards and individual schools to encourage cycling are considered vital to sustaining and increasing cycling ridership in the County;
- Implement bikeways that lead to or at least nearby schools;
- Create a committee which will promote the use of safe routes to school;
- Distribute effective informational materials through various school boards within the County;
- Make the development of end-of-trip facilities – such as bike racks, bike lockers plus shower and change facilities a priority.

Work with school boards and other affiliated agencies in order to implement cycling skills for children and bike to school programs, perhaps through fund-raising for the coordination of CAN-Bike courses. This initiative would:

- Help reduce the trend for parents to drive their children to and from school
- Improve safety issues around schools during peak commute hours
- Provides an opportunity for physical activity
- Attempts to incorporate cycling into the physical education curriculum

Furthermore, a copy of the Cycling Master Plan should be issued to each area municipality within the County (made available in libraries and municipal buildings), the Ministry of Transportation, local school boards, Northumberland County OPP and local police staff.

Recommendation:

- **Promote cycling in schools from both a health and environmental standpoint;**
- **Develop partnerships to implement the education and awareness programs with both private and public stakeholders within the County;**
- **Continue to establish an educational plan for motorists and cyclists, and build from the exposure of cycling safety provided by the "Share the Road brochure".**

6.2...School Boards and Public Agencies (continued)

Enforcement

Enforcement is a key component to ensuring cycling safety, with the objective of reducing incidents causing property damage, injury and death. It is important to note that enforcement should be applied to all road and pathway users, not only pedestrians and cyclists, since all vehicle users should be well versed in terms of the rules of the road. Given that most municipalities in the County contract their policing services to the Ontario Provincial Police, they would be the body responsible for much of the enforcement of cycling policies and related infractions. The following agencies should be informed and responsible for enforcing these policies:

- Northumberland OPP (Hamilton, Alnwick, Haldimand, Brighton, Trent Hills, Cramahe)
- Cobourg Police Services
- Port Hope Police Services

6.3...Partnerships and Stakeholders

To further promote the importance of providing cycling as a viable transportation option as well as excellent recreational activity and tourist attraction, it is crucial that the County of Northumberland forge partnerships with public and private organizations. This plan has been compiled with the assistance and cooperation of all seven area municipalities, the HKPR District Health Unit as well as the Ganaraska Freewheelers, Sustainable Cobourg, Bicycle Action Committee and Cobourg Cycling Club.

Recommendations:

- **Create cycling safety patrols along walking, cycling routes and pathways enforcing safe operating procedures for pedestrians, cyclists and other road and pathway users;**
- **Encourage the collection of accurate cycling collision data in an effort to help identify any potential problem areas and safety and enforcement priorities;**
- **Discuss the possibility of interested parties from the local OPP, Cobourg Police Services and Port Hope Police Services obtaining a CAN-Bike Cycling Certification in order to provide local courses for interested parties**
- **Encourage all police service agencies within the County to analyze proposed County routes as established through the Cycling Steering Committee and public information centres.**
- **That the County and Municipalities work with other groups and agencies to promote cycling facilities, programs and events through a variety of media including: Bike maps, County's website and cycling events throughout the year.**

6.3...Partnerships and Stakeholders (continued)

County and stakeholder partnerships will play an important role for advancing cycling in Northumberland County. These could include corporate partnerships which can advance community relationships and help offset some costs associated with the construction, operation and promotion of our bicycle route network. Partnerships with school boards and individual schools (particularly elementary schools) to encourage cycling are considered critical to sustaining and increasing cycling ridership within the County.

Potential Partnership Opportunities:

- CAN-Bike Courses
- VIA Rail
- Local Bicycle and Outdoor Shops
  -The Bike Shop and Canyon Mountain
- Bike Train
- Province of Ontario
- Active 2010
- Welcome Cyclists Network
- Ontario Trillium Foundation
- HKPR Public Health Unit
- Share the Road Coalition
- Ministry of Ontario Road Safety

Stakeholders

When drafting any public policy or document, it is vital to address the various stakeholders to which the outcomes of the policy or document will apply and impact. The following individuals, groups, establishments and corporations are either direct or indirect stakeholders with respect to the Northumberland County Cycling Master Plan:

- <u>Northumberland County</u>
  Transportation & Waste Management Department
  Tourism Department

- <u>County Council</u>
  Gil Brocanier, Mayor of the Town of Cobourg
  Peter Delanty, Former County Warden & Mayor of the Town of Cobourg

- <u>Local Cycling Clubs/Organizations within the County</u>
  Ganaraska Freewheelers
  Cobourg Cycling Club
  Sustainable Cobourg

6.3... Partnerships and Stakeholders (continued)

- Local School Boards within Northumberland County
  Kawartha Haliburton Pine Ridge Public School Board
  Catholic School Board

- Local Business Benefiting from Tourism within the County
  Welcome Cyclists Network Members such as cycling and repair shops

- Sponsorships
  Ontario Trillium Foundation
  Ministry of Transportation Road Safety Challenge

- The General Public
  -Through the implementation of an online public information centre (PIC) and online survey Cycling Steering Committee meetings open to the public

6.4... Encouragement and Promotion

In addition to the more technical and formative sections such as the design guidelines and the implementation strategy, an effective promotional strategy will also factor into the success of this plan. One of the objectives of this plan is to change the attitudes and behaviours of residents, employees and visitors within the County, resulting in more people of all ages cycling and leading healthier lifestyles.

The overall objectives of this section are to:

- Increase awareness of the current and proposed cycling network
- Establish a set of educational tools to inform both cyclists and motorists of their respective responsibilities of sharing the road with all users
- Work collaboratively with tourism organizations and cycling networks/organization to foster a tourism campaign which includes cycling segments
- Incorporate additional annual cycling events in the future

Methods of increasing cycling awareness:

- Include bicycle parking into the site planning of new developments and incorporate them into prominent locations and appropriate points of interest
- Increasing the visibility of cycling signage, both warning signs such as “share the road” signage as well as route finding signage
- In coordination with the HKPR Health Unit, provide information regarding the health and social benefits of both utilitarian and recreational cycling
- Employers in the County should be motivated to encourage and support cycling among employees

6.4... Encouragement and Promotion (continued)

Marketing Subcategories:

To include as large of a market segment as possible, it is important that these routes be marketed to many different subcategories of cyclists. Some of which could include cycling as:

- An activity for the entire family
- A physical activity (recreational cycling)
- A tourism option
- A viable transportation option (utilitarian cycling)
- A community activity (cycling events)*

*In 2011, Sustainable Cobourg hosted the 3rd annual *Bike for the Planet* ride on May 28th. There were discussions of expanding this event to include events taking place throughout the week of May 28th-June 3rd, and proclaiming it as *Bike Week*. It is assumed that as more awareness and cycling infrastructure is provided within the County, that more events will take place to take advantage of the suitable cycling terrain that Northumberland County has to offer. Bike for the Planet also includes several promotional activities including Bike to Work and School programs.

Other ideas for events within the community could include:

- Ride with the Mayor
- Pedometer Challenge
- Safe Routes to School
- Bike Sundays

Recommendations:

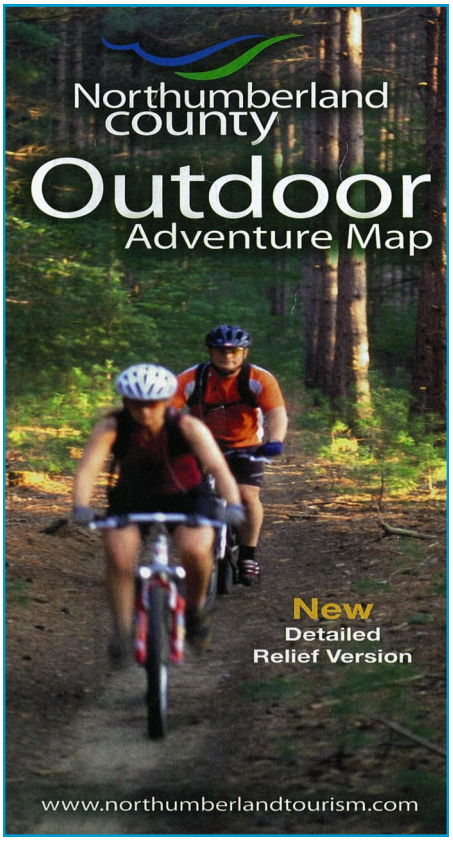
- **Increase awareness of cycling as an active transportation mode;**
- **Foster more community cycling events in future years as cycling improvements continue to be installed;**
- **Connect major natural and cultural destinations with cycling routes in addition to popular tourism destinations already promoted through the Welcome Cyclists Network; and**
- **Work with Northumberland Tourism and local cycling clubs to organize cycling and bicycle tourism within the County and consider hosting competitive cycling events.**

6.4... Encouragement and Promotion (continued)

Several measures were taken in order to promote this plan and the initiatives contained within it. In particular the Outdoor Adventure Map, which preceded the development of this plan, provided a document primarily geared towards cycle tourism. Another form of promotion was the newly developed Cycling Section of the Northumberland County website.

6.4.1 Share the Road Brochure

Following advice provided through extensive consultation with other municipalities it was decided that it would be a great promotional idea to develop a share the road brochure to be circulated throughout Northumberland County. The idea had already been successfully implemented by the HKPR District Health Unit in Haliburton, Ontario. It was decided by the members of County staff that this would be a worthwhile promotion and a logical extension of the plans objective. The timing of the initiative was also fortunate as the Ontario Ministry of Transportation was accepting applications for funding in the form of the Road Safety Challenge 2011 funding campaign. This provided an ideal opportunity for the Cycling Steering Committee (CSC) to apply. The purpose of the brochure was to inform both cyclists and motorists of their respective responsibilities, provide safety tips for both parties and also provide guidelines on how to safely share the road.



6.4.2 Outdoor Adventure Map

In 2008, the County of Northumberland Tourism Department released an Outdoor Adventure Map which provides an overview of the activities which are available within the County for tourists visiting the area. Suggested cycling routes, in addition to several other activities, are referenced within the pamphlet. Furthermore, the pamphlet contains a map documenting the locations of the cycling trails within the County and its area municipalities.

Recommendations:

- **That this map be updated every 1-2 years as the budget will allow to reflect the ongoing alterations and improvements as outlined in the Cycling Master Plan.**
- **That the County continue to develop and improve a bikeway network information system, including digital and paperback maps, information boards, trailhead signage and a section on our website.**

6.4.3 County of Northumberland Website

Northumberlandtourism.com, a great resource for cycling information in the County of Northumberland, is managed through the County's Tourism Department and can be accessed directly or through the County of Northumberland website.

In August, 2010, with the assistance of Northumberland County's IT Department, a section dedicated to the Cycling Master Plan and cycling initiatives was created. The webpage could be accessed under the Public Works category. The purpose of this webpage was to provide accessible information, content and notices regarding the Cycling Master Plan as well as announcements related to the Cycling Steering Committee including committee meeting dates, agendas, presentations and minutes to keep interested members of the public and stakeholders completely up-to-date with recent developments and the future direction of the plan. Updates were made periodically to reflect milestones and upcoming events related to cycling in Northumberland.

Another potential idea would be to provide an interactive map of the County which displays all of the cycling and active transportation facilities, infrastructure and trails that is accessible to residents and can be updated as needed.

Recommendation: Create an online, interactive GIS map which can easily updated periodically to reflect the infrastructure changes and addition of subsequent routes we incorporate over time.

6.4.4 Cycle Tourism Initiative

In April 2011, the Northumberland County Tourism Department, in coordination with other members of the Regional Tourism 8 (City of Peterborough, City of Kawartha Lakes, Northumberland County), Bike on Tours organization and the IBI Group held a series of project initiation meetings. These meetings consisted of discovery sessions which assisted in developing an appropriate and viable cycle tourism strategy for the aforementioned areas. Through a consultative process, an initial assessment was provided and from this, a coordinated strategy to improve cycling experiences and tourism marketing by identifying our relative strength and weaknesses as well as various opportunities. It is anticipated that marketing initiatives and strategies will expand as a result of the findings from these sessions.

Ideas could include the following:

- Newspaper and radio campaigns in coordination with our local cycling clubs to organize more events throughout Northumberland County;
- The compilation of annual cycling newsletter (as proposed by Sustainable Cobourg);
- Northumberland County should make an effort to lead by example through initiatives aimed at County employees such as incentives and programs to encourage cycling/walking to work;
- Build upon the original Northumberland Cycling survey and provide updated editions annually or bi-annually to gauge the improvements made and continue to involve public comments and concerns into our long-term vision;

6.4.5 Children and Cycling

Particular importance must be placed upon the education and awareness of cycling regulations and safety precautions for children. Children should also be encouraged to adopt sustainable methods of transportation from an early age for several reasons including health and to alleviate reliance on their parents for transportation. The Ministry of the Environment has released a document entitled the *Young Cyclist's Guide* which outlines information on bicycle equipment, riding tips, and the rules of the road to keep young cyclists safe. It will also be important to provide trails and paths which are geared towards younger cyclists for the purposes of recreation as well as to get to and from schools, parks and other activities.

Another initiative which should be undertaken to better prepare young cyclists would be to make CAN-Bike courses available to them. The CAN-BIKE cycling skills education program provides classroom and practical on-road instructions for a number of age groups. It teaches that a bicycle is safest when operated as a vehicle on the road and provides defensive riding and collision avoidance skills that provide the user with a greater sense of confidence.

Recommendations:

- **Coordinate with County school boards to arrange to purchase copies of this publication and also provide a link to it on the County website. Furthermore, make a concerted effort to incorporate cycling into the physical education curriculum.**
- **Actively increase the marketing/advertising effort and funding available for CAN-BIKE courses.**
- **Begin to review annual incidents of cycling collisions with local police services boards in order to continually identify problem areas and issues which need to be remedied. Three elements are critical to the success of the process which include: accurate and comprehensive information from police reports, cyclists, hospitals and other sources.**

7.0...PUBLIC CONSULTATION AND MUNICIPAL COORDINATION

7.1... Cycling Steering Committee (CSC)

In the preliminary stages of the Cycling Master Plan study it was decided that it would be in the best interests of the various stakeholders involved in the process, as well as for the overall integrity of the plan to form a committee to guide its overall direction. The Cycling Steering Committee (CSC) was formulated with the goal of obtaining information from a wide variety of stakeholders to provide transparency and accountability throughout the master plan implementation process. This particular committee was formed to act as a discussion board in which members from various disciplines could contribute to the study in a pluralistic manner incorporating a multitude of viewpoints and perspectives. The committee was also responsible for identifying issues of concern, as well as considering and implementing solutions to said problems in an efficient and timely manner. The CSC consisted of key members from the following disciplines and backgrounds: Northumberland County Transportation & Waste Department and Tourism Department, avid cyclists, recreational enthusiasts, the public health unit and Councillors. The chairs of this committee served for the duration of approximately one year, as is the expected duration of the Cycling Master Plan study.

In June, 2010 it was decided that it would be in the best interests of the master plan process to expand this committee to encompass a larger amount of members including representation from all seven area Municipalities within the County of Northumberland. This concept was presented at a Chief Administrative Officer's (CAO) Committee meeting in June, where the structure for the future Cycling Steering Committee was proposed. During this meeting it was established that the aforementioned Steering Committee would require approximately 13 representatives from the seven area Municipalities of the County of Northumberland and comprise of delegates from the following disciplines and departments: Parks & Recreation, Public Works, Planning and Economic Development and Tourism. The initial Cycling Steering Committee meeting was held on October 6, 2010 and subsequently met approximately every 4-6 weeks thereafter.

The Cycling Steering Committee has been accountable for, but not limited to the following issues:

- Establishing a project outline and schedule to indicate who is responsible for each task, when it should be accomplished as well as identifying available opportunities for public involvement.
- Developing a framework for evaluating and prioritizing potential improvements.
- Seek cycling network program funding, including federal, provincial, and regional grants, and funding from local foundations, service clubs, and private individuals.
- Recommend changes to other municipal policies to support cycling, including roadway design and maintenance standards, changes to zoning codes, municipal traffic bylaws and law enforcement practices, and other appropriate changes.
- Develop bicycle education program in coordination with community partners which may include bicycle clubs, police agencies, service clubs, and other groups.

For more information regarding the CSC, please refer to the committee's terms of reference located in the attached appendix.

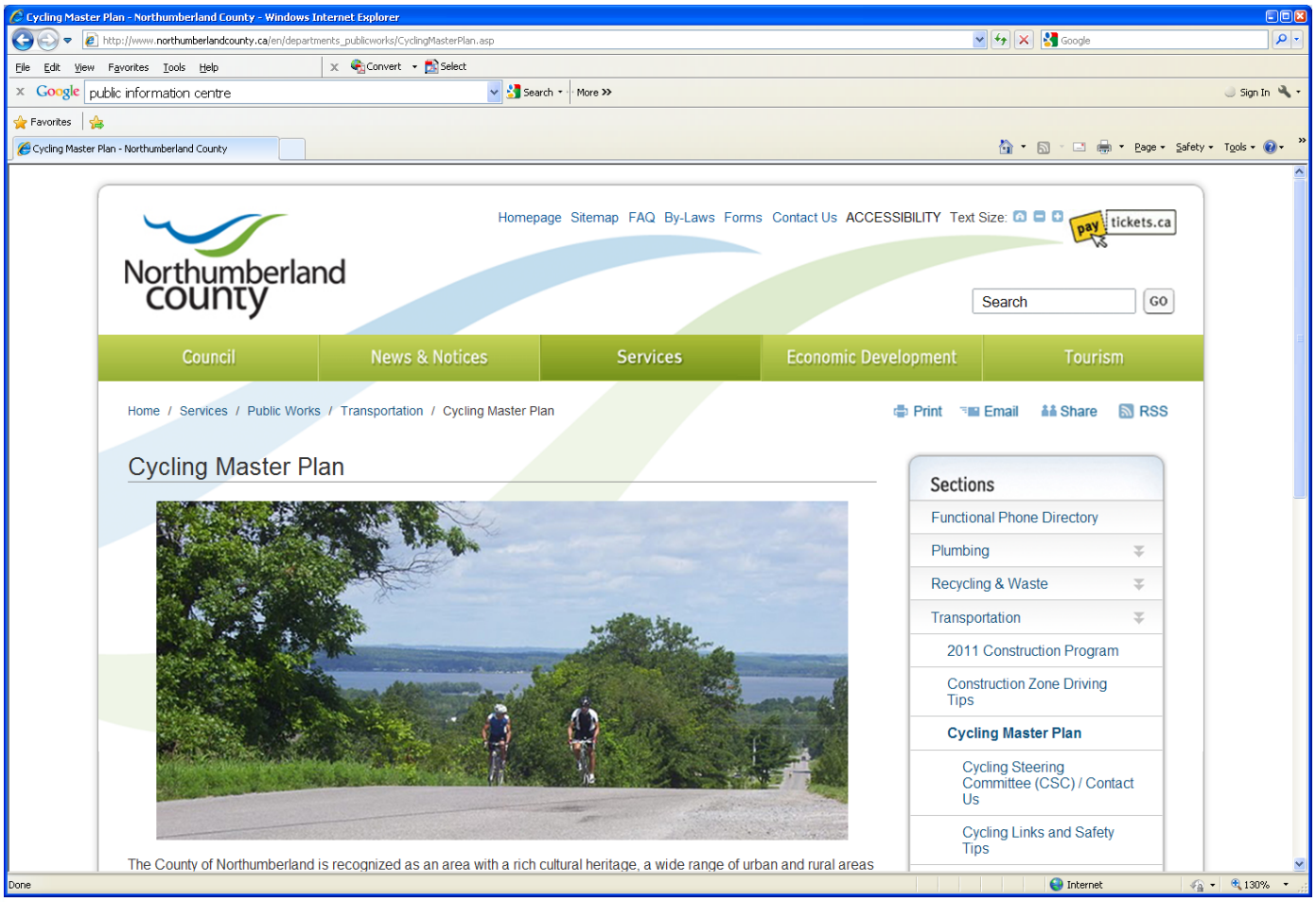
7.2… Public Information Centre

Through discussions with County staff as well as members of the Cycling Steering Committee, it was decided that the best method of gathering public input would be to incorporate an online public information centre. A rough draft of this document was made available for review on the County of Northumberland's website by the public and interested groups in August 2011. Comments received from those who reviewed the draft were incorporated into the final version of the document, which was presented to County Council June 20, 2012.

Final drafts of this document will be made available to the public through the County's website, at public libraries and at Municipal offices. Digital copies will be made available to inquiring persons and groups should they contact staff of the Transportation Department at the County of Northumberland.

7.3… Municipal Coordination

The plan was presented to and endorsed by the Councils of each of the member municipalities of the County by Spring 2012. County Council adopted the guidelines and implementation strategy during its meeting on June 20, 2012.



7.4…Cycling Survey

A survey was designed by the Cycling Intern to gather relevant data from members of the public in terms of their thoughts with what they hope the master plan could accomplish. A series of questions regarding geographic location, skill sets, current and projected cycling trends comprise the survey. The survey was posted on the County of Northumberland website on September 24, 2010. The results and outcomes of this survey were discussed with the Cycling Steering Committee (CSC) and implemented as one form of guidelines to determine the expectations and opinions of the general public with respect to this project. A copy of this survey can be found in section 12.3 of the Appendix of this document.

Major Findings from the Survey:

- Consistency and connectivity are very important aspects for a functional biking network
- Education required for both cyclists and motorists on how to effectively share the road
- Incorporate short, easy, safe routes geared towards the entire family
- Would benefit the county to have good information on biking trails that connect through the county
- In addition to paving shoulders, it is important that the bike lanes are clear of debris on a regular basis
- It would be nice to have bike paths through busy traffic areas like in front of Zellers / Canadian Tire in Cobourg
- For those of us living north of the 401, the crossovers tend to be VERY hazardous for us when commuting into town. There are no real bike lanes and the ramps are hard to cross
- Proper bike racks are important as not to bend the rims as well as something good for locking a bike too.
- I think that all new county road paving should include extra width to accommodate some sort of a bike lane if possible
- The chip shoulder paving program for cycling lanes the County implemented on County Roads in 2010 is not adequate for road bikes. The surface is too rough for the speeds the bikes travel. Hot Mix pavement should be used for a smoother safer ride.

Cycling Survey results can be found in section 12.3 of the appendix to this document.

8.0...IMPLEMENTATION STRATEGY

8.1 Overall Implementation Strategy

As part of the long-term, overall vision for this plan, an implementation plan mapping our step by step annual expectations will serve as a vital section. The implementation strategy has been designed in a manner to allow flexibility for both County and area Municipality staff members with respect to budgeting for improvements, various Council decisions, as well as opportunities and constraints which may arise over time. As stated earlier in this plan, the time frame and all planning, design and construction elements therein comprise a 20-year outlook. A more comprehensive overview of the costs outlined in this section can be found in Section 9: Financial Strategy. Furthermore, a summary of cost assumptions can be found in section 12.2 of the appendix.

The following broad strategies shall be taken into account during the implementation of Northumberland County's inaugural five proposed cycling routes:

1. Take advantage of and work in tandem with planned Ministry of Transportation, County and area Municipal road, trail and transit construction projects;

2. Construct infrastructure as part of new development as construction occurs;

3. Consult with and consider the opinions of the Bicycle Action Committee with respect to future major decisions in terms of cycling infrastructure implementation;

4. Where County and Municipal budgets will allow, attempt to rectify identified problem areas in a timely and efficient fashion;

5. Continue to connect our proposed cycling paths both internally within the County and externally to neighbouring communities in order to continually improve the Northumberland County cycling experience over time.

Within the plan, an implementation strategy divided three timeframe ranges to include the following:

1. Short-term implementation (2012-2016): This timeframe includes many of the immediate needs and lower-cost improvements related to the plan. Furthermore, it is a priority to have the majority of both the share the road and way finding signage installed over the course of this timeframe.

2. Intermediate Implementation (2017-2021): This timeframe will remedy larger scale reconstruction projects in an attempt to plan and budget well in advance with staff and Council members.

3. Long-term Implementation (2022+): This timeframe will also rectify several larger scale construction projects. It is encouraged that staff and Council members evaluate these projects and budget for their implementation on an annual basis.

8.1 Overall Implementation Strategy (continued)

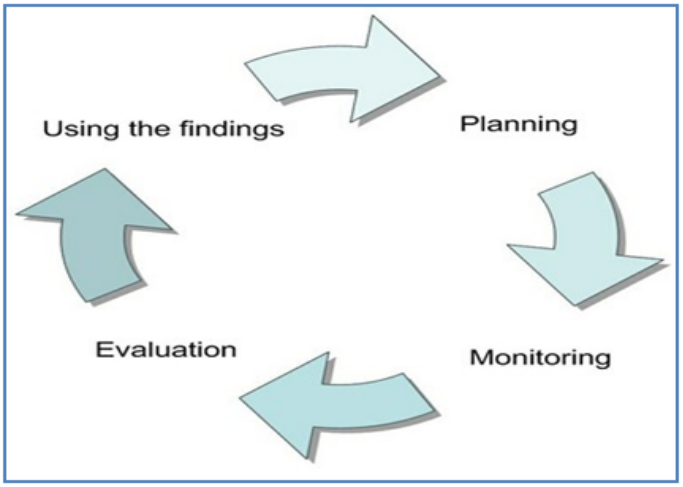
The success of this plan should be evaluated biannually and at the end of each implementation stage in order to evaluate whether the priorities and benchmarks outlined in this plan have been fulfilled within their stated timeframe. An overall review of this plan is recommended to occur every five years at a minimum. In addition to effective planning, it will be important for staff members at both the County and Municipal level, political champions and public advocators to continue in order to ensure that the priorities outlined in this plan come to fruition. To this point, staff members, Cycling Steering Committee members, the Bicycle Action Committee (BAC) as well as Cobourg Mayors Peter Delanty and Gil Brocanier have done excellent work in that respect thus far. For a more detailed outline of the relative costs of each proposed cycling route please refer to section 12.8 of the appendix.

Municipal partners as well as the County of Northumberland have installed a fair amount of cycling infrastructure since the plan was approved several years ago. Infrastructure prescribed by the plan that has been installed include sharrows, line paint, surface treatment of Skinkle Road and various road shoulders, paved bike lanes and all Share the Road signs. The following sections have been updated to reflect the infrastructure installed under this plan, and is current as of 2014.

8.1.1 Short-term Implementation (0-5 years)

Recommendations:

- **Present and request endorsement of the CMP from municipal and County Councils; (2012)**
- **Roads and Parks Maintenance departments to inventory existing cycling infrastructure (bicycle lanes, signs, route markers, sites of interest, off-road sites, etc.) and develop/review maintenance activities intended to support and enhance the CMP guidelines;**
- **Allocate $100,000 annually to the County Transportation Department, Roads Operations to prioritize the implementation of cycling infrastructure;**
- **Order and install "Share the Road" signage at high volume intersections within the first year of this plan in order to familiarize both motorists and cyclists in Northumberland County with the concept. (Completed 2013)**



8.1.1 Short-term Implementation (0-5 Years)

PORT HOPE (GLORIOUS GANARASKA)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Sylvan Glen Rd.	2 km	Signed only	$520	**$260**
Line Rd. 4	1.6 km	Signed only	$520	**$260**
Massey Rd.	0.9 km	Signed only	$520	**$260**
Kellogg Rd.	1.25 km	Signed only	$520	**$260**
Loyalist Rd.	0.79 km	Signed only	$520	**$260**
Anderson Rd.	2 km	Signed only	$520	**$260**
Line Rd. 4	2.6 km	Signed only	$1,040	**$520**
Morrish Church Rd.	3 km	Signed only	$1,040	**$520**
Bests Rd.	0.93 km	Signed only	$520	**$260**
Mail Rd.	0.10 km	Signed only	$260	**$260**
Willow Beach Rd.	1.25 km	Signed only	$520	**$260**
Lakeshore Rd.	5.8 km	Signed only	$1,560	**$780**
			TOTAL	**$4,160**

COBOURG (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Division St.	0.26 km	Sharrows/ $1,000	$260	**$1,260**
King St.	3.5 km	Sharrows/ $2,000	$520	**$2,520**
Ontario St. (1)	0.63 km	Sharrows/ $2,400	$260	**$2,660**
Ontario St. (2)	2.5 km	1.2m bike lanes/ $1,000	$260	**$260**
William St./ Ontario	0.2 km	Sharrows/ $800	$520	**$1,060**
Albert St.	0.8 km	Sharrows/ $3,200	$520	**$3,460**
			TOTAL	**$11,220**

8.1.1 Short-term Implementation (0-5 Years) (continued)

COBOURG (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Division St.	0.26 km	-	$390	**$390**
King St.	3.5 km	-	$520	**$520**
Division St.	0.26 km	-	$0	**$0**
King St.	3.5 km	-	$520	**$520**
			TOTAL	**$1,430**

Note: Overlap occurring between the Rice Lake Ramble and Shelter Valley Road routes are reflected in the above costs as $0 as the cost to install infrastructure has already been accounted for in the above table and on the following pages.

8.1.1 Short-term Implementation (0-5 Years) (continued)

HAMILTON TOWNSHIP (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Ontario St.	1.1 km	Signed only	$260	**$260**
			TOTAL	**$260**

ALNWICK/ HALDIMAND (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Brookside Rd.	2.1 km	Signed only	$520	**$260**
Danforth Rd. E.	1.8 km	Signed only	$520	**$260**
Hoskin Rd.	2.0 km	Signed only	$520	**$260**
The Scots Line	3.9 km	Signed only	$1,040	**$520**
Grills Rd.	1.5 km	Signed only	$520	**$260**
South Burns Rd.	3.1 km	Signed only	$1,040	**$520**
McDonald Rd.	7.1 km	Signed only	$1,560	**$780**
Macklin Rd.	1.9 km	Signed only	$520	**$260**
Fanning/ Macklin Rd.	2.8 km	Signed only	$1,040	**$520**
			TOTAL	**$3,640**

8.1.1 Short-term Implementation (0-5 Years) (continued)

ALNWICK/ HALDIMAND (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Brookside Rd.	2.1 km	Signed only	$260	**$260**
Danforth Rd. E.	1.8 km	Signed only	$260	**$260**
Lakeshore Rd.	3.8 km	Signed only	$1,040	**$520**
Archer's Rd.	1.4 km	Signed only	$520	**$260**
			TOTAL	**$1,300**

CRAMAHE TOWNSHIP (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Lake Rd.	1.9 km	Signed only	$520	**$260**
Telephone Rd.	6.1 km	Signed only	$1,820	**$780**
Pipeline/Shelter Valley Rd.	7 km	Signed only	$3,640	**$1,820**
Ontario St.	1.1 km	Signed only	$520	**$260**
King St. E.	2.4 km	Sharrows / $9,600	$520	**$9,860**
Union St.	1.4 km	Signed only	$520	**$260**
Lakeshore Rd.	3.0 km	Signed only	$1,040	**$520**
			TOTAL	**$13,760**

8.1.1 Short-term Implementation (0-5 Years) (continued)

BRIGHTON (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Main St.	0.8 km	Sharrows/ $3,200	$260	**$3,460**
Young St./George St.	1.05 km	1.5m bike lanes/ $51,474	$520	**$51,994**
Little Lake Rd.	7 km	Signed only	$1,820	**$780**
			TOTAL	**$56,234**

TRENT HILLS (TRENT RIVER TRUCKIN')

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Main St.	< 0.10 km	Sharrows / $400	$260	$660
Old Hastings Rd.	0.20 km	Signed only	$520	$260
Percy/Godolphin Rd	3.6 km	Signed only	$1,040	$520
Conc. Rd. 6 East	3.75 km	Signed only	$1,040	$520
Mahoney Rd.	2.6 km	Signed only	$1,040	$520
5th Line West	0.8 km	Signed only	$520	$260
Bannon Rd	1.3 km	Signed only	$520	$260
6th Line West	1.3 km	Signed only	$520	$260
Victoria St	0.85 km	Signed only	$520	$260
Grand Rd.	0.9 km	Sharrows, Lane / $43,875	$260	$44,135
8 Line East	3.6 km	Signed only	$1,040	$520
Pethericks/Crowe	5.5 km	Signed only	$1,560	$780
12 Line East	2.8 km	Signed only	$1,040	$520
Godolphin Rd	10.2 km	Signed only	$1,560	$1,040
			TOTAL	**$50,515**

8.1.1 Short-term Implementation (0-5 Years) (continued)

NORTHUMBERLAND COUNTY (GLORIOUS GANARASKA)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #74	<0.10 km	1.5m bike lanes/ $4927	$260	**$5,187**
County Rd. #10	0.1 km	1.5m bike lanes/ $4927	$260	**$5,187**
			TOTAL	**$10,374**

NORTHUMBERLAND COUNTY (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #2	4.4 km	1.5m bike lanes	$780	**$780**
County Rd. #22	1.6 km	1.5m bike lanes/ $78,000	$260	**$78,260**
County Rd. #29	0.4 km	Signed only	$520	**$260**
County Rd. #45	0.06 km	1.5m bike lanes/ $504	$520	**$3,445**
County Rd. #18	6.9 km	Signed only	$1,560	**$1,560**
County Rd. #18	10.9 km	1.5m bike lanes	$5,200	**$2,600**
County Rd. #74	0.7 km	1.5m bike lanes	$260	**$260**
			TOTAL	**$87,165**

NORTHUMBERLAND COUNTY (LINKAGES)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #25	6.3 km	Bike Lanes/ $313,976	$520	**$248,976**
County Rd. #64	7.1 km	Bike Lanes/ $51,840	$780	**$0**
County Rd. #29	18.2	Signed only	$3,120	**$0**
			TOTAL	**$248,976**

8.1.1 Short-term Implementation (0-5 Years) (continued)

NORTHUMBERLAND COUNTY (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #23	3.5km	Signed only	$1,040	**$520**
County Rd. #2	1.4km	1.5m bike lanes/ $82,810	$520	**$68,770**
County Rd. #2	5km	1.5m bike lanes	$520	**$520**
County Rd. #2	4.4km	1.5m bike lanes	$780	**$780**
			TOTAL	**$70,590**

NORTHUMBERLAND COUNTY (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #30	1.8 km	1.5m bike lanes $106,470	$260	**$88,010**
County Rd. #2	1.5 km	Signed only	$260	**$260**
County Rd. #31	2 km	Signed only	$520	**$260**
County Rd. #2	6.3 km	1.2m bike lanes	$780	**$780**
			TOTAL	**$89,310**

NORTHUMBERLAND COUNTY (TRENT RIVER TRUCKIN')

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Church St.	0.2 km	Sharrows/ $800	$260	**$1,060**
Bridge St.	0.2 km	1.5m bike lanes/ $9,854	$200	**$10,114**
Front/C.R. #38	3.5 km	Bike Lanes, Sharrows/ $40,140	$780	**$4,520**
Bridge St./ C.R. #30	2.6 km	Sharrows/ $10,400	$520	**$10,920**
			TOTAL	**$26,614**

8.1.2 Intermediate Implementation (5-10 Years)

Recommendations:

- **Secure provincial and corporate sponsorships and promote partnerships with local organizations as well as apply for Provincial grants to assist in funding the Cycling Master Plan study and its associated hard and soft costs. In partnership with interested municipalities, submit grant applications at every opportunity for funding of the implementation of cycling routes (i.e. Rice Lake Ramble - partnership application with Cobourg, Alnwick/Haldimand, Hamilton, County);**

- **Public/Private Partnerships - investigate and promote opportunities for funding of the implementation of cycling routes including special cyclist facilities such as rest stations, information and way-finding signage and other facilities.**

PORT HOPE (GLORIOUS GANARASKA)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Victoria St.	2 km	Bike Lanes, Line Paint/ $66,040	$520	**$66,560**
Cranberry Rd.	1.4 km	Shoulder Treatment, Line Paint/ $82,810	$520	**$15,912**
			TOTAL	**$82,472**

COBOURG (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
$0				
			TOTAL	**$0**

COBOURG (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
$0				
			TOTAL	**$0**

8.1.2 Intermediate Implementation (5-10 Years) (continued)

HAMILTON (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

HAMILTON (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

ALNWICK/HALDIMAND (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

ALNWICK/HALDIMAND (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Massey Rd.	3.6 km	Signed only	$1,040	**$520**
Gully Rd.	1.9 km	Signed only	$520	**$260**
Academy Hill Rd.	1.5 km	Signed only	$520	**$260**
Pipeline Rd.	3 km	Signed only	$1,040	**$520**
Broomfield Rd.	0.9 km	Signed only	$520	**$260**
Shelter Valley Rd.	7 km	Signed only	$1,690	**$780**
Station Rd.	2.2 km	Signed only	$520	**$260**
			TOTAL	**$2,860**

8.1.2 Intermediate Implementation (5-10 Years) (continued)

ALNWICK/HALDIMAND (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Station Rd.	2.2 km	Signed only	$520	**$260**
Orchard Grove Rd.	3.7 km	Signed only	$1,040	**$520**
Wicklow Beach/ Lake-port Rd.	5.75 km	Signed only	$1,690	**$650**
			TOTAL	**$1,430**

CRAMAHE (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
$0				
			TOTAL	**$0**

BRIGHTON (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Ontario St.	2.8 km	Bike Lanes, Line Paint/ $143,776	$390	**$115,046**
			TOTAL	**$115,046**

TRENT HILLS (TRENT RIVER TRUCKIN')

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Skinkle Rd.	1.6 km	Signed only	$520	**$260**
			TOTAL	**$260**

8.1.2 Intermediate Implementation (5-10 Years) (continued)

NORTHUMBERLAND COUNTY (GLORIOUS GANARASKA)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
			TOTAL	**$0**

NORTHUMBERLAND COUNTY (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	**$0**

NORTHUMBERLAND COUNTY (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	**$0**

NORTHUMBERLAND COUNTY (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #25	4.2 km	Bike Lanes/ $248,430	$780	**$205,530**
			TOTAL	**$205,530**

NORTHUMBERLAND COUNTY (TRENT RIVER TRUCKIN')

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. #50	10 km	Bike Lanes/ $494,000	$1,560	**$391,560**
County Rd. #35	5 km	Bike Lanes/ $298,350	$520	**$246,870**
			TOTAL	**$638,430**

8.1.3 Long-term Implementation (10+ Years)

Recommendations:

- **County adopts design guidelines as the construction and installation standard for cycling facilities as presented in the CMP;**
- **For capital road works as approved by County Council, staff to implement cycling lanes, etc. along County roadways as part of regular design component;**
- **Municipalities adopt design guidelines of construction and installation standard for cycling facilities as presented in the CMP;**
- **For capital road works as approved by Municipal Councils, staff to implement cycling lanes, etc. along municipal roadways as part of regular design component.**

PORT HOPE (GLORIOUS GANARASKA)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

COBOURG (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

COBOURG (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

8.1.3 Long-term Implementation (10+ Years) (continued)

HAMILTON (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

HAMILTON (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

ALNWICK/HALDIMAND (RICE LAKE RAMBLE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

ALNWICK/HALDIMAND (SHELTER VALLEY ROAD)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

8.1.3 Long-term Implementation (10+ Years) (continued)

ALNWICK/HALDIMAND (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

CRAMAHE (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

BRIGHTON (PRESQU'ILE PROMISE)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
Presqu'ile Parkway	0.90 km	Treat Shldrs, Paint/$9,828	$520	**$10,088**
Presqu'ile Parkway	1.0 km	Treat Shldrs, Paint/$10,400	-	**$10,400**
			TOTAL	**$20,488**

TRENT HILLS (TRENT RIVER TRUCKIN')

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

NORTHUMBERLAND COUNTY (GLORIOUS GANARASKA)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
		$0		
			TOTAL	$0

8.1.3 Long-term Implementation (10+ Years) (continued)

NORTHUMBERLAND COUNTY (LINKAGES)

ROAD SEGMENT	DISTANCE	RECOMMENDED TREATMENT / ESTIMATED COST	ESTIMATED SIGNAGE COSTS	TOTAL ESTIMATED COST REMAINING AS OF 2014
County Rd. 25	2.9	Bike Lanes, Line Paint/ $142,740	$520	**$113,100**
County Rd. 2	5.5	Bike Lanes , Line Paint/ $271,180	$520	**$214,500**
County Rd. 10	13.6	Bike Lanes , Line Paint/ $534,560	$1,040	**$535,600.00**
County Rd. 28	15.7	Bike Lanes , Line Paint/ $764,075	$1,300	**$765,375.00**
County Rd. 74	10.4	Bike Lanes , Line Paint/ $614,380	$780	**$512,408**
County Rd. 8	14.7	Bike Lanes , Line Paint/ $868,205	$1,300	**$724,269**
County Rd. 25	3	Bike Lanes , Line Paint/ $145,730	$520	**$146,250.00**
County Rd. 25	6.3	Bike Lanes , Line Paint/ $248,976	$0	**$248,976**
County Rd. 30	11.2	Bike Lanes , Line Paint/ $661,440	$1,040	**$546,000**
County Rd. 35	4.15	Bike Lanes , Line Paint/ $206,648	$520	**$164,008**
County Rd. 38	5	Bike Lanes , Line Paint/ $249,080	$520	**$197,600**
			TOTAL	**$4,168,086**

8.2…Liability and Risk Management

Issues related to liability and risk management present potential barriers and major points of consideration. The County of Northumberland as well as the area Municipalities must provide a safe and functional series of bicycle infrastructure networks to provide the greatest degree of legal protection for all involved parties in the event of litigation, as well as to provide ample safety and peace of mind for those who will be using them. Bike lanes, paved shoulder bikeways and signed only routes generally fall into the same pattern of liability as roadways and sidewalks, meaning that the County and/or the area Municipality could be exposed to liability if the facility is deemed to be improperly designed, constructed or maintained[62]. Another means in which the County of Northumberland could significantly reduce potential liability and risk management is to draft a defendable set of design guidelines which would then be implemented as policy through County Council approval.

Though multi-use trails are separated from the roadway, they still legally fall under the definition of a "highway" since bicycles are legally defined as vehicles pursuant to the Ontario Highway Traffic Act[63]. The term highway is also loosely interpreted to include sidewalk, paved shoulders and recreational trails. Thus any trail located within the road right-of-way would certainly also be subject to the legislation and statutory duty established in s. 44(1) of the Municipal Act. This is an important fact since it provides municipalities with some flexibility and immunity from a certain degree of risk, as is the case with other highways under the act. A municipality is not held to a standard of perfection, but one of reasonableness. This statutory duty has been interpreted by the courts as requiring that a particular road should be "kept in such a reasonable state of repair that those requiring to use the road may, using ordinary care, pass to and fro upon it in safety"[64]

The following methods of reducing risk and liability may be implemented by the County of Northumberland and its area Municipalities:

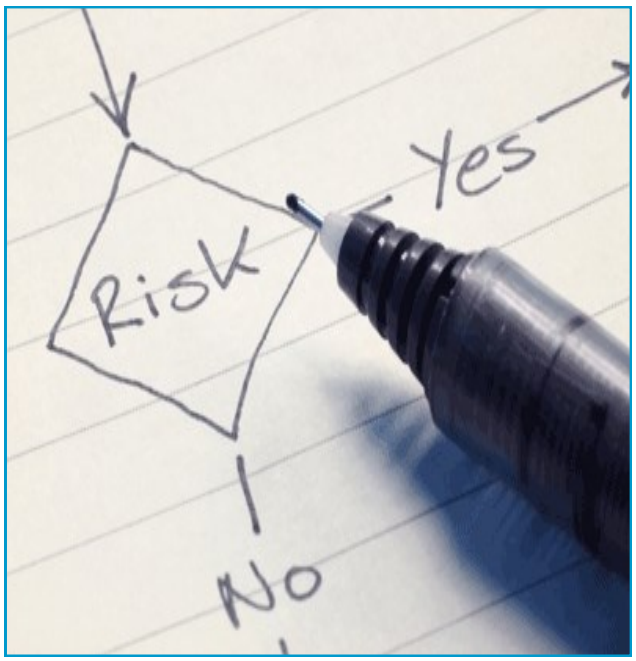
Recommendations

- **Draft a set of design guidelines which are defendable, reasonable and consistent**
- **Increase public awareness of the rights of cyclists through County promotions and education awareness programs**
- **Ensure the presence of appropriate and consistent way finding and cautionary signage on routes located within the County;**
- **Regularly monitor physical conditions and operations of roadways pursuant to the Minimum Maintenance Standards for Municipal Highways;**
- **Document conditions immediately before and after safety measures are instituted as well as at regular intervals thereafter. Already being done through patrolling of roads as required by O. REG. 239/02 Minimum Maintenance Standards;**
- **Maintenance operations should conform to acceptable standards. If a hazard cannot be removed, it must be isolated with barriers or identified by clear warning signage;**
- **Keep records of monitoring and maintenance activities;**
- **Maintain proper insurance coverage and documentation as a safeguard in case of litigation.**

[62] Richmond Hill Pedestrian and Cycling Master Plan Study Report, 2010.
[63] Richmond Hill Pedestrian and Cycling Master Plan Study Report, 2010.
[64] Waterfront Regeneration Trust, Design, Signage and Maintenance Guidelines: Waterfront Trail, 2007.

8.2…Liability and Risk Management (continued)

Recommendations (Continued)



- **Institute the installation of "share the road" signage on major County Roads as a means of informing and familiarizing the general public with the notion of a variety of vehicles sharing Northumberland County road right-of-ways;**

- **Speak to representatives from the County of Northumberland's insurance company about the risk of implementing these strategies in terms of potential litigation in the future;**

- **Conduct research of established design standards having regard to those implemented by other municipalities, Canadian government publications such as the MTO (Ministry of Transportation) and TAC (Transportation Association of Canada) manuals, and renowned publications such as VeloQuebec.**

8.3...Defining the Roles of the County and Area Municipalities

In terms of funding and projected costs, the County Route Information charts outlined in section 12.8 of this document provide an accurate estimate of costs and responsibility thereof. As such, responsibility for implementing these improvements has been provided within three specific timeframes. This will provide an element of flexibility not only for County and Municipal staff, but also their respective Councils in order to plan and budget for said improvements well in advance. It will be vital to continue to have the support of the various Councils, the County CAO's Committee and the political champions and staff members who have already done so much to promote cycling within our communities to this point.

The County of Northumberland proposed to pay all construction and signage costs to implement the infrastructure and treatments proposed in the Cycling Master Plan.

Maintenance and inspection of routes will be the responsibility of the government body whom owns the road upon which the cycling route lies.

Lastly, a coordinated effort between County staff members and Municipal staff members throughout the Cycling Master Plan's timeframe will also be important to ensure it is implemented in an effective, streamlined manner to avoid ad-hoc planning and routes with significant gaps.

8.4...Land-use Planning Guidelines

Land use decisions can significantly impact transportation decisions and vice versa. Thus it is important to incorporate cycling into long-term planning (transportation and land use) at both the County and Municipal levels. There is a growing body of research which shows that community design influences how people travel and how physically active they are in the course of the day[65]. For this reason it is important for the County and area Municipalities to adopt a complete streets approach through effective land-use planning decisions in order to better accommodate non-motorized transportation.

Recommendations:

Where feasible, consider the needs of cyclists in transportation projects, with the following in mind:

- **design new collector and arterial roads as well as bridge reconstruction projects (where applicable) to include bike lanes or paved shoulders;**
- **Traffic calming projects;**
- **Bikeways on roads within new residential subdivisions and commercial areas should be encouraged through the planning process to include bike lanes and/or other bicycle facilities which connect them to the existing network. These should also be encouraged to be built and funded by the developer through cash in lieu contributions or subdivision review (Planning Act s. 51);**
- **Encourage future developments to provide concept plans with grid designs, discouraging the excessive use of cul-de-sacs;**
- **Draft, implement and support land-use planning policies and regulations to require developers and owners to provide bicycle end-of-trips facilities through secondary plans as well as the draft plan of subdivision process;[66]**
- **Design street paths that are well-connected, maintained and able to safely accommodate cyclists[67]**

[65] Ontario Ministry of Municipal Affairs and Housing. (2009). Planning By Design: A Healthy Communities Handbook.
[66] Town of Richmond Hill Pedestrian and Cycling Master Plan , 2010.
[67] Ontario Ministry of Municipal Affairs and Housing: Planning by Design, 2009.

9.0…FINANCIAL STRATEGY

This plan has placed a priority on striking a balance between ensuring the safety of its patrons, while also providing an outline for a financially feasible long-term funding strategy which will provide staff and Councilors a certain element of flexibility. Whenever possible, units of government should maximize local funding by securing matching funds from federal and state funding programs and private funding sources, such as developers, businesses and non-profit organizations. Opportunities to implement bicycle projects can also be maximized by including funding as a routine part of new development and roadway projects[68].

9.1...How Much Will the Plan Cost to Implement and Maintain?

This plan is both an infrastructure and maintenance investment based plan. The initial investments pertain to making the cycling network operational, however over time these facilities must be maintained in accordance with the Ontario Regulation 239/02 "Minimum Maintenance Standards" for both legal purposes and to make the most out of our ongoing investments in the project. For instance, asphalt surfacing will require significantly less maintenance as opposed to surface treatment, gravel, or stone dust on pathways. Furthermore, signage will also need to be replaced from time to time to ensure that way-finding is as easy as possible along routes and trails. In the costs presented below for construction and infrastructure improvements include new facilities only, and have not factored in the cost of improvements which will be required over time. This table has been updated since the plan was published to reflect the recommendation that road shoulders on paved roads previously destined to be surface treated now be paved. The costs are updated to represent real costs in the present day, in 2014 dollars.

Table 9.1: Cycling Master Plan Total Investment Costs as of 2014 (Including Linkages)

Infrastructure to be Installed by Municipality (in 2014 $)	Short term (< 5 years)	Intermediate (5-10 years)	Long Term (10+ years)	Totals
Municipality of Port Hope	$4,160	$82,472	$0	$86,632
Town of Cobourg	$12,130	$0	$0	$12,130
Township of Hamilton	$260	$0	$0	$260
Township of Alnwick/Haldimand	$4,940	$4,290	$0	$9,230
Township of Cramahe	$13,760	$0	$0	$13,760
Municipality of Brighton	$56,234	$115,046	$20,488	$191,768
Municipality of Trent Hills	$50,515	$260	-	$50,775
Northumberland County	$532,249	$843,960	$3,919,110	$5,295,319
Totals	**$674,248**	**$1,046,028**	**$3,939,598**	**$5,659,874**

[68] Madison Urban Area and Dane County Bicycle Transportation Plan, 2000.

9.2..Why Should the County Make the Investment?

As mentioned earlier in this Cycling Master Plan, there are numerous reasons which make this initiative a worthwhile investment. Among them are the obvious environmental, economic, tourism, transportation, recreational and social benefits ensuing from these policy decisions. In summary, it is a policy decision which will prove to provide a more sustainable County with respect to the aforementioned.

Although this does seem to be a significant investment, in relation to the costs involved in road construction of travelled automobile lanes it is quite reasonable. The County will receive monetary benefits in the form of increased amounts of cycle tourists choosing Northumberland County as a destination of choice and the economic benefits which will subsequently ensue.

Furthermore, other communities in Ontario have reported that additional paved shoulder helps to increase the life span of asphalt in travelled lanes which will result in further savings from a transportation and road construction perspective.

Lastly, it is important that we as civil servants provide the means to our citizens to lead happy, healthier lifestyles and ensure that we take steps to be proactive in alleviating the current and future burden on our health care system. The inclusion of active transportation facilities is an excellent way to make this possible.

9.3...Where Will the Funding for the Project Come From?

A force that has assisted the implementation of active transportation plans and facilities within Ontario is the presence of Provincial assistance to Municipalities in terms of funding. Although Provincial grants and sponsorships have started to appear in the last decade, the amount and significance is still much less pronounced than in provinces such as Quebec and British Columbia, and to a further extent several European nations. As such, it will be important for the County and area Municipalities to be aware of annual funding opportunities and local resources which could assist

9.3.1 Sponsorships and Provincial Grants

Although putting this plan into practice will take a certain level of commitment, foresight and planning on the parts of both the County and area Municipalities, there are several potential options at our disposal with regard to alleviating some of these costs. The following represent a number of potential sponsorships, provincial grants, organizations or important contacts with whom the County and area Municipalities can incorporate in order to help implement this plan in a financially feasible manner.

Provincial Grants/Sponsorships

- Healthy Communities Project
- Transportation Demand Management Fund (MTO)
- Road Safety Challenge (MTO)
- Hydro One Powerplay
- Ministry of Health Promotion, Communities in Action Fund
- RED Program (Rural Economic Development)

Organizations

- Ontario Trillium Foundation
- Northumberland United Way
- Community Futures Development Corporation

Miscellaneous

- County and Municipal development charges (DC's)
- Obtaining Letters of Support/Inquiries from Rick Norlock (MP)
- Build Canada Fund (Gas Tax Fund)
- Federation of Canadian Municipalities (Transportation Project Grant)

10.0...ACADEMIC REVIEW

10.1...Overview

In the course of preparation of the County's cycling master plan, a thorough academic review relating to the subjects of cycle tourism and cycling trends would seem to be a beneficial subsection to include. A major objective is to fully comprehend why European countries such as Germany, Switzerland and the Netherlands, all of which boast high standards of living, are considerably ahead of Canada and the United States in terms of cycling infrastructure and policy development. The policies which shaped cycling and other active transportation decisions were initially adopted by democratic political regimes in order to alleviate social and environmental consequences within high-density, urban areas[69]. However, this is not to say that environmental groups, engineers and urban planners, cycling lobbyists and public health officials, among others alike have not attempted to promote the advantages of cycling and other forms of active transportation. On the contrary, cycling for utilitarian and recreational purposes has been the subject of public pressure in North America has since made some notable inroads. Traffic policies and roadway design in some areas of North America are becoming more conducive to bicycling; however more work is required to increase education and awareness of various modes of transportation and sharing the road right-of-way[70]. Although numerous conclusions can be drawn through the comparison of cycling infrastructure, policy and implementation between North America and Europe, we may also draw conclusions by comparing the provinces and territories within Canada. In Canada, urban transportation remains to be the jurisdiction of provincial and municipal government, through the delegation of powers of the province. On the contrary, all levels of government in Europe play an active role in cycling initiatives.

A common misconception regarding cycling in Europe is the assumption that cycling levels have always been high and it a popular form of transportation. However this is not the case. Conversely, cycling levels actually dropped significantly between 1950 and 1975 as car ownership rose before rebounding in the mid 1970's through a reversal in transportation and urban planning policies which provided amenities to promote more livable cities[71].

However cycling in Canada has shown some positive indications in recent years. Despite the fact that cycling accounted for only 1.2% of Canadian work trips in 2001, it nonetheless represented a 10% increase over the 1996 bike share of 1.1%, yet it remains only a small percentage of trips overall[72]. Another interesting fact is that cycling fatalities and injuries in Canada have also decreased over the course of previous decades. Despite increased exposure through more cycling infrastructure, both fatalities and injuries have fallen considerably by 50% from 1984 to 2002, while total cycling injuries fell by 33% during the same period[73].

[69] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[70] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[71] Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, 2008.
[72] Cycling Trends & Policies in Canadian Cities. World Transport Policy & Practice, Volume 11, Number 1, 2005.
[73] Cycling Trends & Policies in Canadian Cities, 2005.

10.2...Lack of Recognition/Knowledge

Bicycle use in America is significantly concentrated among children and young men; whereas the full spectrum of society tends to cycle in many European countries[74]. Furthermore, in North America there is also a lack of recognition for the rights of cyclists as well. Bicycling in Canada and especially the United States tends to be impeded by the lack of a utilitarian cycling tradition and also by the cultural status of cyclists in both countries' due to automobile-based transport systems[75]. Motorists also tend to display a lack of knowledge with respect to bicycles appearing on streets alongside motorized vehicles. Despite the apparent lack of regard or ignorance in terms of sharing the road, the Ontario Highway Traffic Act, 1990 specifically recognizes bicycles as a form of transportation which may be used on roadways.

10.3...Design Guidelines

Another major issue which has evolved over the course of the last few decades is that of cycling infrastructure design standards and guidelines. Whereas bikeways separated from motorized vehicle traffic used to be thought to be desirable, this no longer appears to be the case in some circumstances. For example, German governmental guidelines for bicycle facilities differentiate according to criteria including volume of motor vehicle traffic, average speeds, level of truck and commercial traffic, volume and mix of bike traffic, roadway width, parking turnover and frequency of intersections[76]. Furthermore, it is also reported that some cyclists believe most bikeways are unnecessary for bicycle transportation and instead would prefer that existing roads be improved for cycling through better surface quality and wider lanes. However, this opinion would most likely be posed by an avid or commuter cyclist, and many, particularly recreational or leisure cyclists would counter this argument. There are also other considerations besides user preference, in some cases engineers and planners are constrained by the available infrastructure in place. Additionally, the surface widths of the existing roadway, shoulder and sidewalk as well as the availability of land allotment for widening also effect facility choice, and in some situations there is simply no room for appropriate bike paths or lanes[77].

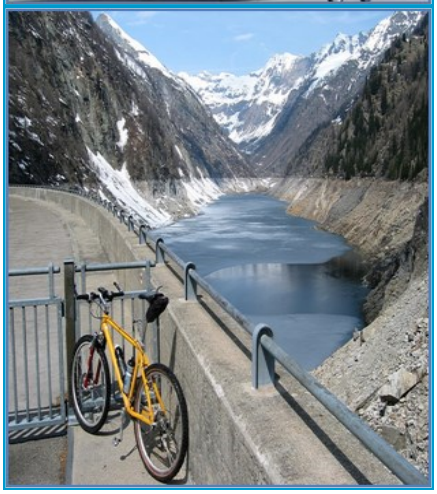
10.4...Politics and Financing in North America and Europe

Politics and policy development can also play an integral role in terms of implementing cycling routes and networks. Through the implementation of a bikeway system, government officials can make a concrete demonstration that cyclists belong and are important, and that motorists must be respectful and mindful of them at all times[78]. Political spending on bicycle facilities also plays an important role and is an essential part of progressive government decision making.

[74] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[75] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[76] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[77] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[78] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.

10.4...Politics and Financing in North America and Europe (continued)

Since 1991, governments at all levels in the U.S. have dramatically increased spending on bicycle-related projects, mainly as a result of the Intermodal Surface Transportation Efficiency Act which compelled states and municipal planning organizations to include cycling and pedestrian provisions into their transportation plans[79]. According to Pucher et al, this funding has been funneled mostly into off road trails, with notable successes regarding the transformation of disused rail lines into bicycle paths. In terms of funding there appears to be a large disparity between provincial funding provided in Ontario and that of Quebec. In general, the Government of Quebec bears the cost of bikeway projects on provincial roadways, while municipalities finance bikeway projects on city streets, thus the Province funds approximately half of all new bikeway construction[80]. In Ontario, there has been virtually no funding and municipalities have been left to coordinate their own cycling plans and initiatives in terms of construction projects and funding, aside from grants offered through various Provincial Ministries. In terms of funding, the Provincial government in British Columbia falls somewhere in between Quebec and Ontario. Provincial governments require at least an equal investment by local municipalities[81].



Evaluating European political and financing influences on cycling also provides some creditable insights. In some respects North American and European cycling initiatives are similar, principally in terms of governance and financing at the local level. Local governments in the Netherlands, Germany and Denmark have been planning, constructing and funding bicycling facilities for many decades, as such municipalities are responsible for making the specific plans that reflect the particular conditions and needs of the local context[82]. This is often the case particularly in Canada as municipalities are responsible for drafting cycling plans and providing funding for capital infrastructure investments over the course of the plan's duration. Another major difference between European and North American cycling mandates is within the actual laws that regulate traffic. For the most part, traffic laws intended to protect cyclists from motor vehicles are far more strictly enforced by the police and courts in European countries than in the USA or Canada, moreover, cyclists disobeying traffic laws are also more likely to be ticketed than in North America[83].

[79] Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling, 1999.
[80] Cycling Trends & Policies in Canadian Cities, 2005.
[81] Cycling Trends & Policies in Canadian Cities, 2005.
[82] Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, 2008.
[83] Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, 2008

10.5...Education and Awareness Programs

A major contributor to Quebec's success in cycle tourism is ongoing commitment to education and awareness programs which are of equal importance to the advent of appropriate infrastructure. Cycling safety is promoted in schools by the Quebec car insurance company SAAQ (La Société de l'Assurance Automobile du Québec) in conjunction with local police forces[84]. The not-for-profit organization, Velo Quebec has also provided ample opportunities for cycling promotion within the province through their promotion of cycling events, sponsorships and technical publications for cycling infrastructure design. Whereas Quebec has been deeply involved in several programs promoting cycling safety among other related initiatives, Ontario provides virtually no funding, planning or program coordination for cycling[85].

In Europe, training and awareness is delivered in a similar manner to what is seen in Quebec. Cycling training, safety and promotional programs are usually carried out at the local level, whereas at the intermediate level states, counties and regional governments provide additional policy guidance, coordination and funding. This level also provides some direct planning and construction of cycling facilities with federal involvement through the provision of National Cycling Master Plans[86] . Furthermore, Dutch, Danish and German children receive extensive training in safe and effective cycling techniques as part of their regular school curriculum by the time they enter the fourth grade[87]. In addition to having both the local and provincial levels of government involved in cycling initiatives in some capacity, the federal government has also been known to provide guidance on a variety of subjects as well.

10.6...Factors Influencing Cycling in North America

While larger cities in North America have enjoyed an increase in cycling, the modal share of cycling currently remains a modest figure. A major contributing factor is the low-density sprawling landscape which is predominantly synonymous across the continent, which makes the advent of cycling initiatives all the more challenging. Regardless of the notion that it is merely a physical aspect as to why cycling initiatives have traditionally been more difficult to implement in North America than Europe, this is clearly not the case; there are other aspects which must be given due consideration as well. One positive step which can be taken at the municipal level is passing policy through land use planning tools. Both Ottawa and Toronto have instituted municipal policy measures through zoning and municipal by-laws to ensure the provision of cycling facilities in the construction of new developments. Specifically, Toronto amended its zoning code in 1993 to require that all large new developments provide both bike parking and shower facilities for cyclists; whereas Ottawa's zoning and building codes require bike parking for certain kinds of commercial land uses and provide incentives for companies to install showers for employees who cycle to work[88].

[84] Cycling Trends & Policies in Canadian Cities, 2005.
[85] Cycling Trends & Policies in Canadian Cities. 2005.
[86] Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, 2008.
[87] Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, 2008.
[88] Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, 2008.

10.6...Factors Influencing Cycling in North America (continued)

Another important factor which could potentially influence cycling is geography and natural amenities. This has proven to be apparent in Western Canada, particularly in Vancouver and Victoria. Victoria is a relatively compact city since development is restricted due to the island being bordered by water as well as a greenbelt and rural and agricultural land uses[89]. Northumberland County also shares similar geographic restraints which could potentially be used to our advantage in the future with regard to increasing commuter cycling through intensified development. In particular, Northumberland County is bordered by Lake Ontario to the South and Rice Lake to the North. Furthermore, the provincially regulated Oak Ridge's Moraine and Greenbelt offer more restrictions in the central portion of the County which can be viewed as advantageous both in terms of attaining compactness as well as unique natural landscapes.

10.7...Conclusions

In conclusion it is apparent that cycling investment and awareness in Canada's major cities is indeed on the rise. Although there are currently slightly different measures and projects underway in various provinces, some have proven to be more successful than others. Although commuter and utilitarian cycling rates remain low relative to other modes of transportation, there are signs of varying improvement, especially in British Columbia. Cycle tourism is also an expanding tourism market, as displayed particularly in Quebec's *La Route Verte*. It can also be stated that there are similarities across all locations that are uniform and implementable across the county. In particular, increasing cyclist and motorist knowledge and understanding appears to be of paramount importance in increasing safety and decreasing accidents and injuries, as seen from the European examples provided. In terms of negative impacts, it must be stated that ongoing low-density developments tend to hinder cycling initiatives due to the long distances which are created and are mainly suitable for motorized vehicle travel. Recent provincial policy documents such as the Places to Grow plan for the Greater Golden Horseshoe and the Planning by Design publication released by the Ministry of Public Renewal and the Ministry of Municipal Affairs and Housing have addressed and set guidelines on how to alleviate these issues. It is fair to make the claim that Canada is definitely moving in the right direction, however more funding and guidance through policy and legislation must be provided at the Provincial level. More funding for education and awareness programs is needed as well to alert motorists and cyclists on how to safely share our roadways.



Credit: Jamie Barnes

[89] Cycling Trends & Policies in Canadian Cities, 2005.

11.0...RECOMMENDATIONS

Recommendations from various sections of the Cycling Master Plan are provided in the list below.

1.5 Major Goals and Objectives

The Main Goals of this Cycling Master Plan are to:

• Develop a network of on and off road cycling facilities to be implemented over time;
• Address specific areas of concern within the County, including barriers to increased ridership;
• Develop policies, programs and other initiatives to create a more cycling friendly County;
• Provide attractive cycling routes which encourage tourism;
• Provide enhanced recreational, commuter and competitive cycling opportunities;
• Establish a framework of cycling facilities that can be simply incorporated into regular business; functions of the respective public works departments of Local and County level governments; and
• Provide clear and consistent guidelines, standards and specifications for cycling facilities to be incorporated into capital and operational improvements.

3.1.3 Bike Lanes

Bicycle Lane By-law
It is recommended that Northumberland County and area Municipalities adopt a bicycle lane by-law that allows for the regulation and enforcement of use of bicycle lanes subject to the Highway Traffic Act. Such a by-law would consider the following elements:

• A schedule of roadways that have bicycle lanes designated for use by cyclists only;
• Designating that the bicycle lane is in effect with the installation of authorized signage;
• Permit exceptions to operating a vehicle other than a bicycle in a bicycle lane for some distance (say 50 m) for the purpose of ingress / egress from private driveways, making a turn at a roadway intersecting a bicycle lane, entering or exiting a curb lane used for parking, loading or unloading a person with a mobility impairment, operating a school bus while actively engaging in loading and unloading passengers; and
• Vehicle exemptions to the by-law could include the following: emergency services vehicles, County and Municipally operated transit or works vehicles, and public utility vehicles.

3.2 Existing and Potential Barriers

• Periodically check the MTO's standards for provincially operated bridges and overpasses in order to provide the safest transitions within the policies outlined by the MTO;
• Incorporate bicycle friendly features in bridge and underpass projects, including bicycle ramps on stairs, as part of the annual capital works and rehabilitation projects where financially feasible; and

11.0...RECOMMENDATIONS (CONTINUED)

3.2 Existing and Potential Barriers (continued)

• Any segments of the Northumberland County cycling routes which cross railroad tracks should be submitted to the appropriate railway authority for approval.

3.3 County and Area Municipality

• Continue to work with our area municipalities and neighbouring municipalities to create seamless bikeway connections within and beyond County boundaries; and
• Implement a requirement for zoning by-laws to include provisions for bicycle parking.

3.4 Ancillary Facilities

• Obtain a realistic calculation of network development costs including the cost of other programs such as education programs and end-of–trip facilities.

3.5 Existing Cycling Facilities, Routes and Infrastructure

•During road resurfacing projects on arterial roadways, the County and Municipalities provide wide curb lanes or bicycle lanes (e.g. pavement markings), on the cycling network where feasible.

4.2 Route and Way Finding Signage

•Erect Rb-84A “Reserved Bike Lane”, Rb-084t “Begins” and Rb-084t “Ends” signs at all segments of the County routes in which bike lanes end and begin; and
•Explore the feasibility of using ‘flashings’ on straight stretches of proposed County routes.

4.3 Pavement Markings

•Ensure hat the County and its area municipalities incorporate bicycle friendly features in bridge and underpass projects, including bicycle ramps on stairs as part of the annual capital works and rehabilitation programs where financially feasible.

11.0...RECOMMENDATIONS (CONTINUED)

4.6 Intersections

- Pavement markings be considered at all intersections along cycling routes or areas known to be frequented by cyclists to help direct cyclists and to position themselves properly in the lane, where feasible;
- Consider cycling safety and access in all new traffic management projects and intersections; and
- It is recommended that the potential feasibility of incorporating road diets on arterial roads within the County is further explored in the County's upcoming Transportation Master Plan.

4.7 Maintenance Guidelines

- Organize a medium for the public and cycling facility users to report potential dangers and/or hazards to the proper County or municipal department in the form of a telephone number or webpage to alleviate these issues in a timely and effective manner;
- Determine what departments/organizations are responsible for trail and bike way segments and outline their potential responsibilities. The appropriate organization should then familiarize itself with and determine improvements with specific reference to Ontario Regulation 239/02;
- Establish a regular monitoring system schedule to carry out inspection and assessment of the condition of signage on each trail;
- Annually review maintenance log summaries, reports, and schedules as a recommended minimum. If done more frequently, the review enables managers to detect and plan for remedial action more efficiently and effectively; and
- Ensure that the road maintenance and pavement repair reporting system and annual budget specifically include the needs of cyclists.

6.2 School Boards and Public Agencies

- Promote cycling in schools from both a health and environmental standpoint;
- Develop partnerships to implement the education and awareness programs with both private and public stakeholders within the County; and
- Continue to establish an educational plan for motorists and cyclists, and build from the exposure of cycling safety provided within the "Share the Road brochure".

11.0...RECOMMENDATIONS (CONTINUED)

6.3 Partnerships and Stakeholders

- Create cycling safety patrols along walking, cycling routes and pathways enforcing safe operating procedures for pedestrians, cyclists and other road and pathway users;
- Encourage the collection of accurate cycling collision data in an effort to help identify potential problem areas and safety and enforcement priorities;
- Discuss the possibility of interested parties from the local OPP, Cobourg Police Services and Port Hope Police Services obtaining a CAN-Bike Cycling Certification in order to local provide courses for interested parties;
- Encourage all police service agencies within the County to analyze proposed County routes as established through the Cycling Steering Committee and public information centres; and
- The County and Municipalities work with other groups and agencies to promote cycling facilities, programs and events through a variety of media, including: Bike maps, County's website and cycling events throughout the year.

6.4 Encouragement and Promotion

- Increase awareness of cycling as an active transportation mode;
- Foster more community cycling events in future years as cycling improvements continue to be installed;
- Connect major natural and cultural destinations with cycling routes in addition to popular tourism destinations; and
- Work with Northumberland Tourism and local cycling clubs to organize cycling and bicycle tourism within the County and consider hosting competitive cycling events.

6.4.2 Outdoor Adventure Map

- Update the Outdoor Adventure Map every 1-2 years as the budget will allow to reflect the ongoing alterations and improvements as outlined in the Cycling Master Plan; and
- Continue to develop and improve a bikeway network information system, including digital and paperback maps, information boards, trailhead signage and a section on the County website.

11.0...RECOMMENDATIONS (CONTINUED)

6.4.3 County of Northumberland Website

- Create an online, interactive GIS map which can easily updated periodically to reflect the infrastructure changes and addition of subsequent routes we incorporate over time.

6.4.5 Children and Cycling

- Arrange to purchase copies of the Young Cyclists Guide. Coordinate with County school boards to retain a copy of this publication and also provide a link to this document on the County website. Furthermore, make a concerted effort to in corporate cycling into the physical education curriculum;
- Actively increase marketing/advertising effort and funding available for CAN-BIKE courses; and
- Begin to review annual incidents of cycling collisions with local police services boards in order to continually identify problem areas and issues to be remedied. Three elements are critical to the success of the process: accurate and comprehensive information from police reports, cyclists, hospitals and other sources is important to establish a meaningful set of base data.

8.1.1 Short-term Implementation (0-5 Years)

- Present and request endorsement of the CMP from municipal and County Councils;
- Roads and Parks Maintenance departments to inventory existing cycling infrastructure (bicycle lanes, signs, route markers, sites of interest, off-road sites, etc.) and develop/review maintenance activities intended to support and enhance the CMP guidelines;
- Allocate $100,000 annually to the County Transportation Department, Roads Operations to prioritize the implementation of cycling infrastructure; and
- Order and install “Share the Road” signage at high volume intersections within the first year of this plan in order to familiarize both motorists and cyclists in Northumberland County with the concept.

11.0...RECOMMENDATIONS (CONTINUED)

8.1.2 Intermediate Implementation (5-10 Years)

- Secure provincial and corporate sponsorships and promote partnerships with local organizations, and apply for Provincial grants to assist in funding the Cycling Master Plan study as well as its associated hard and soft costs. In partnership with interested municipalities, submit grant applications at every opportunity for funding of the implementation of cycling routes (i.e. Rice Lake Ramble - partnership application with Cobourg, Alnwick/Haldimand, Hamilton, County); and
- Public/Private Partnerships - investigate and promote opportunities for funding of the implementation of cycling routes including special cyclist facilities such as rest stations, information and way-finding signage and other facilities.

8.1.3 Long-term Implementation (10+ Years)

- Adopt design guidelines as the construction and installation standard for cycling facilities as presented in the CMP;
- For capital road works as approved by County Council, implement cycling lanes, signage, etc. along County roadways as part of regular design component;
- Adopt design guidelines of construction and installation standard for cycling facilities as presented in the CMP; and
- For capital road works as approved by Municipal Councils, staff to implement cycling lanes, signage, etc. along municipal roadways as part of the regular design component.

8.2 Liability and Risk Management

- Draft a set of design guidelines which are defendable, reasonable and consistent;
- Increase public awareness of the rights of cyclists through County promotions and education awareness programs;
- Ensure the presence of appropriate and consistent way finding and cautionary signage on routes located within the County;
- Regularly monitor physical conditions and operations of roadways pursuant to the Minimum Maintenance Standards for Municipal Highways;
- Document conditions immediately before and after safety measures are instituted as well as at regular intervals thereafter. (Already being done through patrolling of roads as required by O. REG. 239/02 Minimum Maintenance Standards, to be updated in Fall 2012);
- Maintenance operations should conform to acceptable standards. If a hazard cannot be removed, it must be isolated with barriers or notified by clear warning signage;
- Keep records of monitoring and maintenance activities; and
- Maintain proper insurance coverage and documentation as a safeguard in case of litigation.

11.0...RECOMMENDATIONS (CONTINUED)

8.2 Liability and Risk Management (continued)

- Institute the installation of "share the road" signage on major County Roads as a means of informing and familiarizing the general public with the notion of a variety of vehicles sharing Northumberland County road right-of-ways;
- Speak to representatives from the County of Northumberland's insurance company about the risk of implementing these strategies in terms of potential litigation in the future; and
- Conduct thorough research of established design standards having regard to those implemented by other municipalities, Canadian government publications such as the MTO (Ministry of Transportation) and TAC (Transportation Association of Canada), as well as renowned publications by VeloQuebec.

8.4 Land-use Planning Guidelines

Where feasible, consider the needs of cyclists in transportation projects, including the following:

- New collector and arterials roads as well as bridge reconstruction projects (where applicable) to include bike lanes or paved shoulders;
- Traffic calming projects;
- Bikeways on roads within new residential subdivisions and commercial areas should be encouraged through the planning process to include bike lanes and/or other bicycle facilities which connect them to the existing network of facilities. These should also be encouraged to be built and funded by the developer through cash in lieu contributions or subdivision review (Planning Act s. 51);
- Encourage future developments to provide concept plans with grid designs; discouraging the excessive use of cul-de-sacs;
- Draft, implement and support land-use planning policies and regulations to require developers and owners to provide bicycle end-of-trips facilities through secondary plans as well as the draft plan of subdivision process; and
- Design street paths that are well-connected, maintained and able to safely accommodate cyclists.

12.0...APPENDICIES

12.1...Terms of Reference
Cycling Master Plan

Objective
The development of an integrated County-wide master plan of regional and local cycling routes which will serve:

- Tourism;
- Recreation for local residents; and
- Commuters.

A staged implementation plan which includes:

- Policies;
- Guidelines;
- Local and regional cycling route network; and
- Short and long term capital and operating programs.

Role of the Cycling Advisory Committee
To direct all aspects of the preparation of the Cycling Master Plan and make recommendations to County Council as well as the Councils of the seven member municipalities for their approvals.

Original Committee Membership

Elected Officials:	
County Council Appointee, Warden	Peter Delanty / Gil Brocanier
County Staff:	
Director, Transportation & Waste Management	Mo Pannu
Manager, Project Engineering	Peter Nielsen
Tourism Coordinator	Cori Arthur
Project Engineer	Christina Harvey (Klein)
Cycling Master Plan Intern	Jon Rafter
Administrative Assistant	Robin Wight
Township of Alnwick/Haldimand Staff:	Andre Turcotte, Cycling Enthusiast
	Raymond Benns, Councilor
Municipality of Brighton Staff:	
Director, Parks and Recreation	Jim Millar
Development Services Technologist	Kiel Martin
Town of Cobourg Staff:	
Manager, Planning Services	Rob Franklin
Deputy Director, Public Works	Barry Thrasher

12.1...Terms of Reference (continued)

Township of Cramahe:	
Community Development Officer	Rebecca Goddard-Sarria
Township of Hamilton:	
Administrative Assistant	Pam Tinney
Director, Public Works	Doug Murray
Municipality of Port Hope:	
Development Services Technician	Denise Marshall
Municipality of Trent Hills:	
Director, Community Services	Scott Rose
Director, Public Works	Richard Bolduc
Members of the Public:	
Cycling and Recreation Enthusiasts	Randy Albon Stewart Richardson Wayne McRoberts
Public Health Unit:	
HKPR Staff	Heather Grundy Krista Skutovich Doreen Boville

Committee Chair & Support
The Committee will be chaired by County Council Appointee, Peter Delanty. The Committee will be supported by the Project Engineer Christina Klein, and the Cycling Intern, Jon Rafter, both staff with the County of Northumberland.

Meeting Logistics and Procedures
Meetings will be held every 4-8 weeks at the call of the Chair and as needed, to direct and manage the work of the study. Formal agendas will be prepared and circulated one week in advance of each meeting. Committee members will be canvassed for their suggestions regarding agenda items.

Minutes will be taken by the County staff and circulated.

The meetings will be open to the public and the public will be able to listen to the deliberations of the Committee, but will not participate in any of the discussions. At the conclusion of each meeting, the media and members of the public will be permitted to ask questions of clarification. These questions will be addressed through the Chair.

12.1...Terms of Reference (continued)

Committee Replacements or Alternates

In order to provide continuity and to ensure efficient meetings it is recommended that unless there are exceptional circumstances such as an extended illness or a planned vacation or work absence, that alternates not be permitted. We wish to avoid a situation where, due to a change in delegate, the Committee has to go back and retrace steps that have already been considered at length. In the event of a replacement, it is the member's responsibility to brief their alternate and the alternate is expected to support the views and opinions previously expressed by the member.

Decision Making

The goal will be to reach recommendations which all members of the Committee can agree with and support. In recognition that it may not be possible to reach unanimous agreement and support on each and every study issue and recommendation, it is therefore necessary to modify the typical provisions for "consensus". For the purposes of this study, "consensus decision making" will be deemed to be:

- All members have the right and responsibility to make their views known;
- All opinions will be respected and considered; and
- The Chair and Committee members will do everything reasonable to attempt to arrive at recommendations which every Committee member can live with and support, going forward.

If it is not possible to have 100% support for any part of the study, a vote will be taken and the majority will govern. In such a vote, each member will have one vote, excluding County staff in certain circumstances. Further, those dissenting opinions will be recorded in full and they will be forwarded to impacted municipal Councils and the County of Northumberland. The Committee has no formal decision making authorities. Its role will be to provide advice and make recommendations to the impacted municipal Councils, which have the decision-making authority.

It is acknowledged that the above provisions do not reflect the traditional meaning of "consensus decision making".

Public Consultation and Communication

The Steering Committee will be responsible for developing an appropriate public consultation process to ensure that all potential stakeholders are engaged, involved and heard throughout the study process.

Committee Outcomes

The committee will be responsible for making informed decisions regarding the following issues:

- Finalizing the committee's terms of reference document;
- Drafting a defendable set of design guidelines which will apply to roadways throughout the County;

12.1...Terms of Reference (continued)

- Evaluation of current suggested routes as well as proposed future routes (both recreational and commuter);
- Exploring potential sponsorship opportunities both at the provincial and local level;
- Developing a feasible financial budget plan;
- Developing an implementation strategy coinciding with the financial plan; and
- Establish short, intermediate and long term goals for the plan.

12.2...Summary of Unit Cost Assumptions (Costs updated to 2014 dollars)

Cost Assumptions Criteria	Line Painting
Line painting/km	$260/km (per side)
Logo Imprint	$100/per unit

1. Prices in 2014 dollars
2. Does not include any property acquisition costs (where applicable)
3. Current or future EA project costs not included

Hot Mix Cost Assumptions			
	1.0m cycling lane	1.2 cycling lane	1.5m cycling lane
Width (m)	1.0	1.2	1.5
Length (m)	1000	1000	1000
Depth	0.05	0.05	0.05
Density	2.50	2.50	2.50
Cost/ tone	$118.35	$118.35	$118.35
Two sides of road	2	2	2
COST	$29,588/km	$35,505/km	$44,381/km

Wayfinding and Share the Road Signage
$130/sign (including installation)

Surface Treated Shoulder Costs
$10,400 (both sides)

12.3 Cycling Survey Results

The following are the results of the Northumberland Cycling Survey which was posted on the County website for a 5 month period between September 2010 and February 2011.

Questions 1-3 contain personal information including name, address and telephone number. This information was not required in order to complete the survey and the information gathered was used solely for the purpose of rewarding prizes for completion of the survey by Northumberland County residents.

Question 4: What is your gender?

Gender	Count	Percentage
Male	107	55%
Female	86	45%
TOTAL	**193**	**100%**
Miscellaneous	**Answered:** **Skipped Question:**	**193** **0**

Question 5: What is your age?

Age	Percentage	Count
19 and under	1.5%	3
20 and 29	6.3%	12
30 to 39	14%	27
40 to 49	31.8%	61
50-59	27.1%	52
60+	19.3%	37
	Answered: **Skipped Question:**	**192** **1**

Question 6: What is your residency status in Northumberland County?

Resident Type	Percentage	Count
Permanent Resident	90.2%	174
Seasonal Resident	4.1%	8
Tourist/ Visitor	5.7%	11
	Answered: **Skipped Question:**	**193** **0**

Question 7: As either a permanent or seasonal resident, where do you currently reside in the County?

Municipality	Percentage	Count
Township of Alnwick/ Haldimand	14.5%	13
Municipality of Brighton	36.9%	10
Town of Cobourg	19.6%	66
Township of Cramahe	7.3%	10
Township of Hamilton	5.6%	35
Municipality of Port Hope	5.6%	26
Municipality of Trent Hills	10.6%	19
	Answered:	**179**
	Skipped Question:	**14**

Question 8: Please classify your cycling skill level.

Cycling Skill Level	Percentage	Count
Non-cyclist	3.1%	6
Beginner	12.0%	23
Intermediate	38.7%	74
Advanced/Avid Cyclist	46.8%	88
	Answered:	**191**
	Skipped Question:	**2**

12 (7.0%)
12 (7.0%)

Question 9: How many of your cycling trips per month can be attributed to the following?

	Never (5%)	Less than 5 trips (%)	6-10 trips (%)	11-20 trips (%)	20+ trips (%)	TOTAL (%)	Skipped Question
Recreational Cycling	12 (7.0%)	60 (35.1%)	57 (33.3%)	21 (12.3%)	21 (12.3%)	**171 (100%)**	**22**
Commuting to and from Work	72 (57.6%)	26 (20.8%)	9 (7.2%)	6 (4.8%)	12 (9.6%)	**125 (100%)**	**68**
Commuting to and from School	101 (94.4%)	2 (1.9%)	1 (0.9%)	0 (0%)	3 (2.8%)	**107 (100%)**	**86**
Fitness, Exercise and Health	12 (7.1%)	39 (22.9%)	50 (29.4%)	42 (24.7%)	27 (15.9%)	**170 (100%)**	**23**
Running errands, Shopping	43 (31.6%)	52 (38.2%)	24 (17.6%)	8 (5.9%)	9 (6.6%)	**136 (100%)**	**57**

Question 10: Indicate the importance of the following for implementation of the Cycling Master Plan by selecting the most accurate option below for each reason listed.

	Most Important	Somewhat Important (%)	Neutral (%)	Less important (%)	Not important (%)	Total (%)	Skipped Question
Providing increased tourism opportunities in Northumberland County	54 (28.1%)	94 (49%)	24 (12.5%)	12 (6.3%)	8 (4.2%)	**192 (100%)**	**1**
Improving health/ quality of life of County residents	121 (63.7%)	60 (31.7%)	8 (4.2%)	0 (0%)	1 (0.5%)	**190 (100%)**	**3**
Connecting communities within Northumberland County as well as neighbouring Counties/ Regions	85 (44.7%)	74 (38.9%)	23 (12.1%)	5 (2.6%)	3 (1.6%)	**190 (100%)**	**3**
Providing cycling as a viable transportation option (particularly for school/work commuting)	102 (53.1)	68 (35.4%)	12 (6.3%)	8 (4.2%)	2 (1%)	**192 (100%)**	**1**
Providing places to cycle as a form of recreation	146 (76%)	37 (19.3%)	4 (2.1%)	2 (1%)	3 (1.6%)	**192 (100%)**	**1**

Question 11: Indicate the importance of the following potential infrastructure changes by selecting the most accurate option below for each measure.

	Most Important (%)	Somewhat Important (%)	Neutral (%)	Less Important (%)	Not Important (%)	TOTAL (%)	Skipped Question
No improvements are required, I am happy with the current cycling infrastructure now	16 (9.5%)	14 (8.3%)	42 (25%)	21(12.5%)	75 (44.6%)	168 (100%)	25
Better transit-oriented cycling facilities (i.e. bike parking at stops, bike racks on buses)	52 (27.5%)	62 (32.8%)	50 (26.5%)	13 (6.9%)	12 (6.3%)	189 (100%)	4
More bike lanes and paved shoulder for on-road trails (County Roads)	163 (85.3%)	22 (11.5%)	2 (1%)	1 (0.5%)	3 (1.6%)	191 (100%)	2
More off-road trails	57 (30%)	73 (38.4%	42 (22.1%)	11 (5.8%)	7 (3.7%)	190 (100%)	2
Better education for motorists on how to “share the road”	121 (63%)	50 (26%)	11 (5.7%)	7 (3.6%)	3 (1.6%)	192 (100%)	1
Improved way-finding and cautionary signage on routes	70 (36.8%)	79 (41.6%)	28 (14.7%)	9 (4.7%)	4 (2.1%)	190 (100%)	3
Improved maps and route network information on the County website	74 (38.5%)	82 (42.7%)	27 (14.1%)	4 (2.1%)	5 (2.6%)	192 (100%)	1

Question 12: If the above changes are implemented, I will likely cycle more than I presently do.

	Percentage	**Count**
Yes	78.5%	150
No	14.7%	28
Not Sure	6.8%	13
	Answered **Skipped**	**191** **2**

Question 13: In one month, approximately how many of your cycling trips fall within the following distances?

	None (%)	1-2 trips (%)	3-5 trips (%)	6-10 trips (%)	11-15 (%)	15-20 trips (%)	TOTAL (%)	Skipped Question
2km or less	39 (36.1%)	27 (25%)	18 (16.7%)	12 (11.1%)	3 (2.8%)	9 (8.3%)	108 (100%)	85
2-5 km	31 (28.4%)	31 (28.4%)	26 (23.9%)	14 (12.8%)	2 (1.8%)	5 (4.6%)	109 (100%)	84
5-10 km	31 (29.5%)	30 (28.6%)	24 (22.9%)	9 (8.6%)	1 (1%)	10 (9.5%)	105 (100%)	88
10-20 km	32 (26.9%)	30 (25.2%)	17 (14.3%)	21 (17.6%)	10 (8.4%)	9 (7.6%)	119 (100%)	74
20-50 km	46 (31.5%)	13 (8.9%)	17 (11.6%)	35 (24%)	19 (13%)	16 (11%)	146 (100%)	47
50+ km	54 (37%)	26 (17.8%)	21 (14.4%)	16 (11%)	14 (9.6%)	15 (10.3%)	146 (100%)	47

Question 14: What is the approximate distance from your home to your school or workplace?

Distance	Percentage	Count
2 km or less	23.8%	40
2-5 km	12.5%	21
5-10 km	14.2%	24
10-20 km	22%	37
20-50km	9.5%	16
50 km+	17.9%	30
	Answered:	**168**
	Skipped Question:	**25**

Question 15: Please indicate your personal level of comfort with respect to the following infrastructure types:

	Very Comfortable (%)	Comfortable (%)	Do Not Know (%)	Uncomfortable (%)	Very Uncomfortable (%)	TOTAL (%)	Skipped Question
Cycling off-road trails (separate right-of-way)	93 (48.9%)	51 (26.8%)	30 (15.8%)	15 (7.9%)	1 (0.5%)	**190 (100%)**	**3**
Sharing the road with vehicles on residential roads	50 (26.5%)	87 (46%)	3 (1.6%)	42 (22%)	7 (3.7%)	**189 (100%)**	**4**
Sharing the road with vehicles on low volume Township/ Municipal roads	68 (35.8%)	84 (44.2%)	5 (2.6%)	30 (15.8%)	3 (1.6%)	**190 (100%)**	**3**
Cycling on County (mainly rural) roads with bike lane/ paved Shoulder	98 (51.6%)	71 (37.4%)	6 (3.2%)	11 (5.8%)	4 (2.1%)	**190 (100%)**	**3**
Cycling on urban roads (sharing the roads, no bike lanes)	23 (12.2%)	54 (28.6%)	9 (4.8%)	61 (32.3%)	42 (22.2%)	**189 (100%)**	**4**

12.4...List of Figures

12.4…List of Figures (continued)

Note: Unmarked figures were sourced from Google Images

12.5...List of Tables

12.6...Municipal Official Plan Policies

The following outlines the current (2011) official plan policies of Northumberland County's seven municipalities which relate to cycling.

MUNICIPALITY OF PORT HOPE OFFICIAL PLAN		
Section	**Subsection**	**Policy**
B.10 Transportation and Public Service Goals and Objectives	**B.10.2 Objectives Pg. 15**	To provide a transportation system that will accommodate all surface modes of travel including trains, boats, automobiles, truck, buses, bicycles and pedestrians.
C3. Open Space Linkages	**C3.c) Pg. 20**	The Municipality may develop a system of pedestrian and bicycle paths within open space linkages for recreational walking, jogging and cycling, and to provide access to other community facilities;
C.11.3.5 Integration of Built Environment	**b) Built Form**	Council shall ensure that the design of new development: c) Provides links with pedestrian, cycling and road networks;
C13. Transportation	**C13.1 General Co-ordination of Transportation Systems**	Council shall work to achieve the coordinated planning, expansion and maintenance of the transportation system in cooperation with other private and public organizations. Council shall develop a more balanced transportation system by: a. Adopting strategies and programs to increase public transportation use, cycling and walking;
C13.7 Pedestrians and Cycling	**Safe, Accessible and Secure**	In all new development and redevelopment, consideration shall be given to safe, accessible and secure pedestrian and cycling movements.
	Link Activity Centres Pg. 67	A system of safe, accessible and secure pedestrian walkways and/or bicycle routes linking activity centres shall be encouraged, where appropriate, including along waterfront areas, in conjunction with development proposals.

12.6...Municipal Official Plan Policies (continued)

MUNICIPALITY OF PORT HOPE OFFICIAL PLAN		
C13.7 Pedestrians and Cycling	**Bicycle Routes Pg. 67**	Bicycle routes and pedestrian walkways may be provided on parklands and open space areas, where appropriate. Wherever possible, bicycle routes should be separated from the travelled portion of municipal roads. However, existing development patterns may necessitate the use of portions of existing roads to provide connecting links.
	Trail Master Plan Pg. 67	To facilitate an overall pedestrian circulation and cycling, Council may consider the preparation of a comprehensive trails master plan, in the context of provincial legislation existing at the time. Such a master plan should consider pedestrian and cycling trails that both provide recreational opportunities and function to link residential, commercial and employment areas and community facilities where environmentally, socially and fiscally appropriate.

TOWN OF COBOURG OFFICIAL PLAN		
Section	**Subsection**	**Policy**
2.5 Community Development Principle: Healthy and Economically Viable Community	**ix) Pg. 2-3**	To encourage pedestrian, bicycle and wheelchair accessibility throughout the community.
4.4 Connecting Links	**4.4.1 Existing Linkages Pg. 4-11**	The town has also developed a number of pedestrian and bicycle paths which link key areas in the Town (i.e. waterfront trail, ravine trails)
	4.4.2 Link-Node System Pg. 4-11	The intent is to build on the existing natural and human linkages and develop over time, as is financially feasible to do so, a continuous link-node system through; ii) the integrated planning of pedestrian and bicycle paths which focus on major destinations such as parks, the central core and community facilities.

12.6...Municipal Official Plan Policies (continued)

TOWN OF COBOURG OFFICIAL PLAN		
Section	**Subsection**	**Policy**
4.7 Implementation	**4.7.2 Parkland Dedication Pg. 4-15**	Where new development is proposed on a site, part of which has physical or environmental hazards, or which includes environmentally sensitive areas such as wetlands, then such Environmental Constraint Areas shall not necessarily be acceptable as part of the five per cent dedication for park purposes under the Planning Act unless: i. the lands can be used for open/recreational use in conjunction with adjacent active parkland; and, ii. the Town is satisfied that the active parkland requirements for the development have been satisfied. Wherever possible, such areas shall be integrated with other public open space areas by the provision of pedestrian walkways and bicycle paths.
6.4 Pedestrian and Bicycle Circulation	**6.4.1 Sidewalk and Road System Pg. 6-5**	ii. Bicycle movement shall generally be accommodated in road right-of-ways. Consideration shall be given the inclusion of bicycle lanes, in addition to those which form part of the link-node system, in road right-of-ways for new arterial and collector roads, and the addition of facilities for bicycles on existing arterial and collector roads where it is financially feasible to do so.
	6.4.2 Link-Node System Pg. 6-5	i. In addition, to the sidewalk and road system, the Town shall encourage the development of a link-node system which will connect major pedestrian and bicycle destinations such as schools, parks and commercial areas with a system of pedestrian and bicycle paths. iv. The link-node system shall be designed and developed to minimize conflicts between other modes of transportation and pedestrian and bicycle routes.
11 Harbour Front Secondary Plan	**11.2 Goals Pg. 11-1**	ii) To maintain and enhance public access to the waterfront, particularly be pedestrians and bicycles, on a year round basis, as well as boaters on a seasonal basis.
	11.4.3.2 Promenade Pg. 11-3	a. The promenade will form the key link in the pedestrian/bicycle pathway system along the waterfront in the Harbour Area. However, this area will be more than just a pathway system with linkages to adjacent areas, as it will have the potential to incorporate a range of other public uses including community events and harbour viewing areas, as well as appropriate landscaping and street furniture. b. The promenade will provide limited vehicular access and parking, but pedestrians and bicyclists are intended to be the prime users.
	11.5.3 Public Open Space Area/East Pier Pg. 11-7	The permitted uses in the Public Open Space Area/ East Pier in Block 2 shall primarily comprise public open space uses such as a sculpture garden, pedestrian / bicycle pathway, or observation area
	11.5.3.2 Public Uses Pg. 11-8	d. Vehicular traffic in the area will be limited and clearly separated from areas accessible to pedestrians and bicyclists

12.6...Municipal Official Plan Policies (continued)

TOWN OF COBOURG OFFICIAL PLAN		
Section	**Subsection**	**Policy**
	11.5.4.1 Permitted Uses Pg. 11-10	The permitted uses in the Public Use Area/ Victoria Park in Block 2 shall comprise the existing trailer park and any public use such as a cultural centre, library, art gallery, museum or theatre which will serve as an activity centre within the Harbour Area. In addition, secondary public uses such as pedestrian-bicycle pathways, public parking areas or public plazas shall also be permitted.
	11.6.3 Marina Area Permitted Uses	In addition, other public uses and public open space uses, particularly those related to boat and water activities may be permitted including a pedestrian/ bicycle pathway system which links up to the urban promenade, a playground, a public plaza, a visitors bureau and the customs office.
	11.6.3.2 Marina Development Pg. 11-12	b. In particular, the Town will seek to ensure that the marina development is designed in a manner which ensures that all parts of it are accessible to the public, except where there may be security concerns such as the boat storage area. Wherever possible, public uses such as a pedestrian/bicycle pathway, shall be integrated with the marina activities.
	11.6.4 Public Open Space Area/West Pier Pg. 11-13	The permitted uses in the Public Open Space Area in Area 3 shall comprise a range of low density open space uses including playground areas, picnic areas, pedestrian/bicycle paths, and harbour viewing areas to be located on the West Pier and the park facility west of Hibernia Street. Fish habitat and other similar ecological features may also be permitted.
	11.6.4.2 West Pier Pg. 11-13	b. The expanded pier area shall be primarily used for low density open space uses including a lookout facility, picnic areas and a pedestrian/ bicycle path.
	11.6.4.3 Hibernia Park Area Pg. 11-14	a. The lands in the Public Open Space Area west of Hibernia Street shall be developed for a public park which will be primarily used for low density open space uses, including picnic areas and a pedestrian/bicycle pathway.
	11.9.3 Visual Corridors Pg. 11-23	c. Public improvements in the right-of-way shall, through the use of such features as special paving materials, signage, landscaping, lighting and seating, strengthen its role as a visual corridor and a major connection between the Main Central Area and the Harbour Area, as well as a pedestrian promenade and bikeway connection. d. A visual corridor and pedestrian path, which may include provision for bike travel shall also be established along the Midtown Creek, between Albert Street and the waterfront. This corridor, which culminates in the Central Plaza, will form a pedestrian entranceway from the north to that key feature. It will also provide a view of the Clock Tower from the plaza.

12.6...Municipal Official Plan Policies (continued)

TOWN OF COBOURG OFFICIAL PLAN		
Section	**Subsection**	**Policy**
11.10 Transportation Policies	**11.10.3 Pedestrian/ Bicycle Pathway Pg. 11-25**	a. The construction of a pedestrian/ bicycle pathway system along the waterfront, including the East and West Piers shall be a major objective for the Town in the development of the Harbour Area. b. The pedestrian/bicycle pathway system shall be located, wherever possible, so it can be easily extended into the Main Central Area, and to other areas of the waterfront, beyond the Harbour Area, as well as other portions of the Harbour Area itself. In particular, the pathway system should include pedestrian walkways, and where possible provision for bicycles, along the First Street and Second Street right-of-ways and along the Midtown Creek. In addition, Third Street shall be designed as a pedestrian promenade and incorporated into the bikeway system. c. The pedestrian/ bicycle pathway system shall be designed to ensure that it an attractive environment and easily identifiable through the use of special paving material, lighting, landscaping and other features.
	12.15.6 Pedestrian Trail System Pg. 12-26	a. A pedestrian trail system shall be developed in the Environmental Conservation Area and the Special Environmental Conservation Area designations which will serve as part of the overall transportation network of the Plan and be designed to connect with the Town's Pedestrian and Bicycle Path Network as shown on Schedule "E" of the Official Plan. d) The trail system which is located in the Environmental Conservation Area and Special Environmental Conservation Area shall primarily be for pedestrian use, however, at least one pathway within the system shall permit bicycles in order that the Town's proposed bicycle system may connect to the Secondary Plan lands. e) In addition to the pedestrian and bicycle trail system in the Environmental Area, a complete pedestrian and bicycle trail system will also be developed in the rest of the Secondary Plan area.

TOWNSHIP OF HAMILTON OFFICIAL PLAN		
Section	**Subsection**	**Policy**
Section 2: A Vision for the Township of Hamilton	**2.2.7 Tourism Pg. 20**	An increasing number of recreational facilities and opportunities including golf courses, walking, cycling, skiing and hiking trails will help service the leisure needs of the tourists and residents of the Township.
	2.2.9 Linkages Pg. 21	The integrity of the existing Provincial, County and Township road networks shall be maintained and upgraded, and integrated with cycling and walking routes as much as possible.
Section 9: Land Use Policies- ORMCP Plan	**9.4.4 Countryside Areas Pg. 53**	The purpose of the Countryside areas is to encourage agricultural and other rural uses that support the plan's objectives by: j) Accommodating a trail system through the Plan Area and trail connections to it;

12.6...Municipal Official Plan Policies (continued)

TOWNSHIP OF HAMILTON OFFICIAL PLAN		
Section	**Subsection**	**Policy**
Section 11: General Development Policies	**11.13 Parks and Recreation Pg. 78**	It is the intent of this Plan that the concept of recreational trails connecting various parts of the Township be considered as an integral part of the Township's future development. Recreation trail systems are a unique community resource providing opportunities for public waterfront access, outdoor leisure and recreational activities, interpretation of the natural environment and historic context of the community, and diversity or tourism activities. The Township may consider preparing a comprehensive approach or plan for a recreation trail to provide a framework of acquiring lands for such purposes.
	11.18 Site Plan Control Pg. 81	The Township shall use site plan control to obtain road widening where necessary, especially where the proposed use will generate significant volumes of traffic or where the entrance on to the public road would otherwise be deemed insufficient by the Township. This policy applies to all roads under Township jurisdiction.
Section 12: Transportation, Storm water Management, Utilities and Communications		The transportation network includes roads, railways, cycling paths, sidewalks and parking. Therefore, the Township shall work toward the maintenance and improvement of the transportation stormwater management, utility and communication systems within the financing capability of the Township and in co-operation with the private sector, utility companies, County of Northumberland, Conservation Authority and the Ministry of Transportation.
	12.1.5 Design Criterion Pg. 86	v) The Municipality shall ensure that all roads in its jurisdiction are maintained in a safe condition. Priority for road repair shall be given to those roads where such repair reduces the need for major reconstruction of the roads, as determined through the Township Capital Budgeting process. Priority shall also be given to the special road maintenance needs of cycles.
	12.2 Rights-of-way Widening Pg. 87	The County or Municipality may require land to be conveyed to the appropriate road authority at no cost for the purpose of widening the existing road right-of-way as a condition of severance, subdivision or site plan control approval. The required lands for road widening shall be in accordance with the functional classification of the road outlined in Section 12.1.5.
	12.3 Parking Pg. 87	x) Parking facilities shall be designed, located and operated in such a manner which maximizes the security of motor vehicles and cycles from theft and vandalism and their users from assault or personal injury. In the case of cycle parking, the design and operation shall minimize the risk of physical damage to the cycle from the parking facilities or from other cycles sharing the facility.

12.6...Municipal Official Plan Policies (continued)

MUNICIPALITY OF TRENT HILLS OFFICIAL PLAN		
Section	**Subsection**	**Policy**
2.2 Greenlands System	**2.2.2.24 Policies Pg. 10**	The development of a multi-use recreational trail network through the Greenland's System for public use is encouraged. This trail should connect publicly owned lands within the system. The agencies, such as the Eastern Ontario Trails Alliance, which are creating the trail network, shall work with adjacent landowners to address their concerns regarding issues such as access and fencing.
5.2.5 Urban Greenlands System	**5.2.5.1 Objectives Pg. 31**	b) To provide for a continuous trail and integrated park system through each of the three Urban Centres with an emphasis on the waterfronts.
	5.2.5.3 Development Policies Pg. 32	a) The intent of the **Urban Greenlands System** designation is to establish an identifiable and continuous open space network through the Urban Centres. The open space network is intended to integrate, wherever possible, environmental features and stormwater management facilities with parks and trails to provide opportunities for active and passive recreation. b) A system of municipal parks will be developed where possible to connect with the **Urban Greenlands System** and will provide a variety of recreational facilities, civic gathering places, and the preservation of natural heritage features.
	5.2.6.2 Policies Pg. 34	g) Street design and patterns will be encouraged that: provide appropriate access for vehicles, pedestrians and cyclists; create view corridors and vistas where appropriate; and allow adequate space for utilities and services.
6.1 Transportation Network	**6.1.1.1 Policies Pg. 44**	e) The scenic routes should be well signed, and have adjacent picnic areas and parking areas at points of interest. The implementation of a trail system should be encouraged along these scenic routes. The function of the scenic route identification is to provide residents and tourists with an opportunity to leisurely enjoy the exceptional beauty of the area.
	6.1.4 Multi-Use Trail Facilities Pg. 46	a) Multi-Use Trail Facilities will be encouraged both as a means of travel and for recreation. c) To encourage walking, pedestrian friendly facilities such as pedestrian crossing, signalized intersection, curb cuts, pedestrian bridges and lighting will be incorporated into community design practices. d) Recreational trails that can accommodate various users year-round such as pedestrians, cyclists and snowmobilers will be encouraged; particularly those which re-use abandoned railway right of ways. To ensure safety, the development of the trail system will consider the separation of the various users.

12.6...Municipal Official Plan Policies (continued)

TOWNSHIP OF CRAMAHE OFFICIAL PLAN		
Section	**Subsection**	**Policy**
4.8 Recreational Development & Parklands	**4.8.1 Goal** **Pg. 11**	To promote the use of existing parkland and open space areas for both active and passive recreational activities and to encourage the establishment of new parkland and open space areas to adequately serve the residents of the Township.
	4.8.2 Objectives **Pg. 12**	(a) To prepare a Recreational Master Plan for the Township and monitor the recreational needs on a regular basis. (b) To establish new parkland areas in the Township to satisfy local neighbourhood needs, both by direct acquisition and by receipt of land dedication or payment in lieu of land, for residential subdivisions or lots created by consent. (c) To generally establish community recreational and social facilities within the Township's settlement areas.
7.0 Transportation	**7.1 Roads** **Pg. 98**	Improvements to the roads, such as widening, reconstruction, realignments, turning lanes, and intersection improvements, should be made according to a schedule or priorities established by the various public agencies having jurisdiction over roads. In general, priorities should be based on the nature and extent of the safety hazard where one exists and the volume of traffic on the road. The schedules of road works of each jurisdiction, provincial, county and township should be consistent with one another.
9.2.5.1 Natural Core Areas	**9.2.5.1.1 Purpose** **Pg. 134**	The purpose of the Natural Core Area is to maintain and where possible improve and restore the ecological integrity of the Plan Area by: vii) Accommodating a trail system through the Plan Area and trail connections to it; and viii) Providing for limited economic development that is compatible with clause a trail system and the nature of the Natural Core Area.

12.6...Municipal Official Plan Policies (continued)

TOWNSHIP OF ALNWICK/ HALDIMAND OFFICIAL PLAN		
Section	**Subsection**	**Policy**
Section 2: Basis and Objectives of Plan	**2.2.3 Recreational Development Pg. 4**	The Township should continue to provide important regional recreation facilities, primarily for day and short-term use. The demand for private and commercial recreational facilities and residential developments in shoreline areas is expected to increase during the planning period.
	2.3.1 Tourism Pg. 5	It is an objective of this Plan to support and encourage the growth of the tourism industry in the Township of Alnwick/Haldimand. Tourism and related economic opportunities shall be promoted.
	2.3.4 Promotion of Recreational Development Pg. 6	A portion of the Township's economy is directly or indirectly dependent upon recreational development. This Plan intends to encourage further recreational development provided that it is compatible with the natural environment and surrounding land uses.
	3.4.1 General Policy for Public Spaces, Parks and Recreation Pg. 15	The Municipality will promote a healthy, active community by: i) Planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement, including but not limited to walking and cycling; ii) Providing for a full range and equitable distribution of publicly-accessible built and natural settings for recreation, including facilities, parklands, open space areas, trails and, where practical, water-based resources;
5.11 Recreational/ Conservation	**Pg. 91**	Land designated as Recreational/Conservation is intended primarily for recreational or conservation purposes. These lands may have inherent environmental hazards but are presently being used in some form of recreational or conservation activity or have a recreational potential.
Section 6: Community Improvements	**6.3 Community Improvement Area Selection Criteria Pg. 103**	In selecting and designating community improvement areas pursuant to Section 28 of the *Planning Act*, Council shall have regard for deficiencies related to roads, sidewalks, lighting or other municipal services and residential, commercial, industrial, cultural, community facility and recreational buildings, structures or areas. In more specific terms the selection and designation of community improvement areas shall be undertaken where a number of the following deficiencies or opportunities have been identified: i) Roads in need of improvement such as resurfacing and/or reconstruction.
Selection 9: Transportation Policies	**9.1 General Pg. 123**	Bicycling is recognized as an alternative mode of transportation, which can play a positive role in improving mobility and quality of life of a balanced transportation system.
11.1.5.5 Countryside Rural Areas	**11.1.5.5.2 Objectives Pg. 142**	vii) Accommodating a trail system through the Plan Area and trail connections to it; viii) Providing for limited economic development that is compatible with clause a trail system and the nature of the Natural Core Area.

12.6...Municipal Official Plan Policies (continued)

MUNICIPALITY OF BRIGHTON OFFICIAL PLAN		
Section	**Subsection**	**Policy**
2.4 Objectives of the Official Plan	**2.4.3 Promotion of Recreational Development and Tourism** **Pg. 13**	This Plan intends to encourage further tourism and recreational development provided that it is compatible with the natural environment and surrounding land uses. It is an objective of this Plan to support and encourage the growth of the tourism industry in the Municipality of Brighton. Tourism and related economic opportunities shall be promoted.
3. General Development Policies	**3.8 Parks and Recreation** **Pg. 55**	The municipality will promote a healthy, active community by: i) Planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement, including but not limited to walking and cycling. ii) Providing for a full range and equitable distribution of publicly-accessible built and natural settings for recreation including facilities, parklands, open space areas, trails, and where practical, water-based resources.
4. Land Use Policies	**4.2.3.2 Conservation, Forestry and Recreational Uses** **Pg. 100**	Passive outdoor recreational uses, forestry, tree farms, conservation uses are permitted. In addition, active recreational uses such as riding and sport clubs, and municipal recreation facilities are permitted, but exclude such uses as commercial resort uses, tourist camps, tent and trailer parks, marinas, golf courses, provided: i) The uses are compatible with adjoining uses and do not adversely affect adjacent farming operations; ii) The uses have adequate quantity and quality of potable water; and iii) The uses can adequately dispose of sewage to the satisfaction of the Municipality.
4.3 Residential-Low Density Urban	**4.3.1 Policies** **Pg. 105**	The provision of walkways, sidewalks or bicycle paths is encouraged to facilitate access throughout the residential areas and to schools, parks, and other focal points such as places to shop or work, and to facilitate the safe separation of pedestrian and vehicular traffic. A proposal for new development should include, wherever possible, opportunities for co-ordinated design with existing development on adjacent properties, to provide maximum opportunities for linkages, walking and cycling paths and mixed use development consistent with healthy communities design.
4.4 Residential-Medium Density Urban	**4.4.1 Location Factors** **Pg. 108**	Proposals for new medium density development should include, wherever possible, opportunities for co-ordinated design with existing development on adjacent properties, to provide maximum opportunities for linkages, walking and cycling paths and mixed use development consistent with healthy communities design.
	4.5.5 Residential Plans of Subdivision **Pg. 114**	ii) Proposed site design shall promote a compact form which retains the natural features of the site and accommodates principles of healthy communities, including walking and cycling paths, open spaces, opportunities for use of renewable and passive solar energy systems and provides for adequate buffering between adjacent uses and roads;

12.6...Municipal Official Plan Policies (continued)

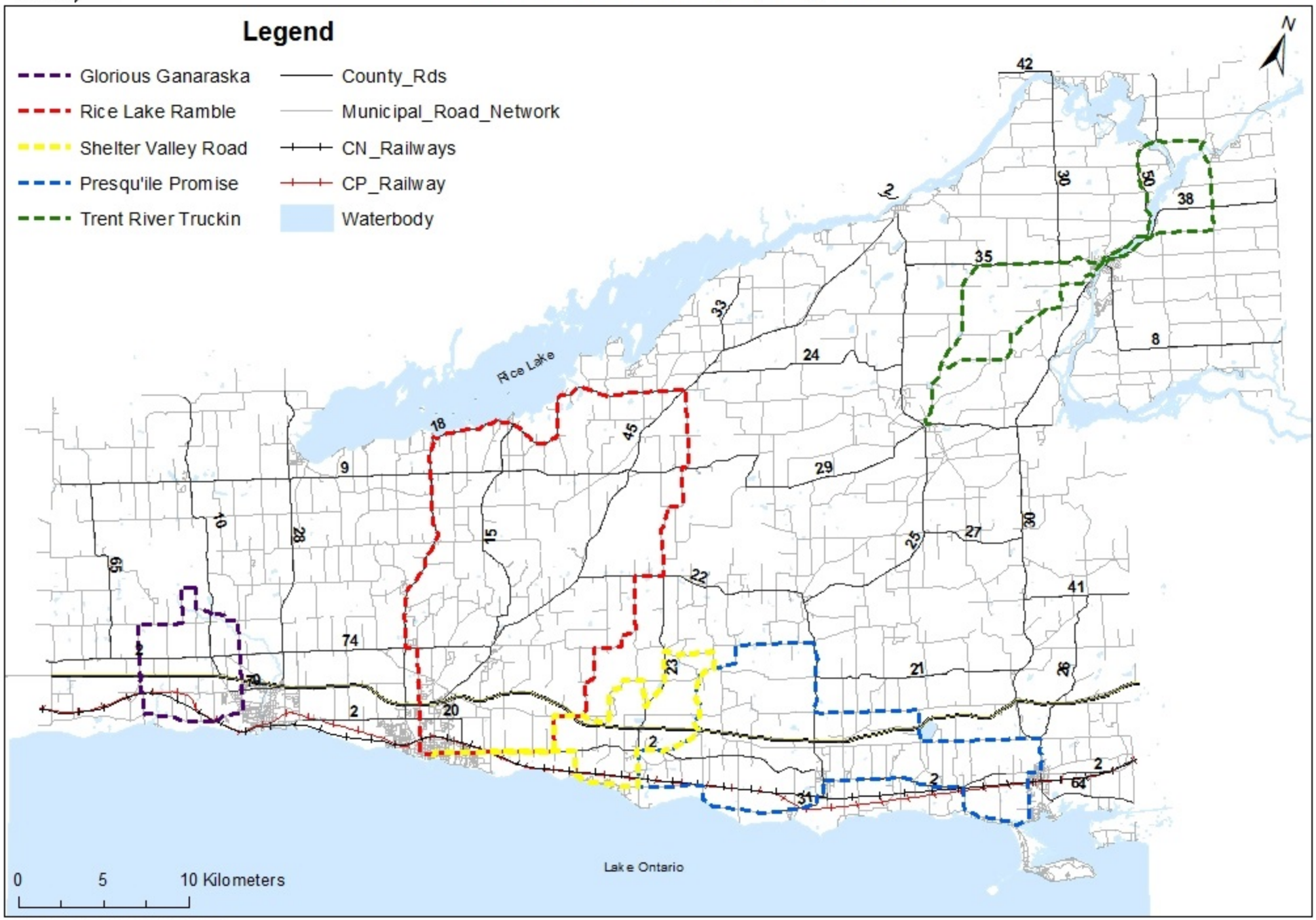
MUNICIPALITY OF BRIGHTON OFFICIAL PLAN		
Section	**Subsection**	**Policy**
4.6 Hamlet	**4.6.2 Criteria for New Development Pg. 118**	iii) Have regard to opportunities for co-ordinated development on adjacent properties, to provide maximum opportunities for linkages, walking and cycling paths and mixed use development consistent with healthy communities design;
4.12 Community Facilities and Open Space	**4.12.3 Outdoor Recreational Facilities, Playing Fields and Trail Corridors Pg. 145**	The Municipality shall create and improve green space and trails to assist in establishing and maintaining a high quality of life. It should be the goal of Council to develop a Parks, Greenspace, and Trails Master Plan by 2011. This should include a system of trails for pedestrian and bicycle traffic along the waterfront that can be linked to a larger integrated system running throughout the Municipality, as well as from Presqu'ile Provincial Park to Quinte West. In order to ensure the development of an extensive trail network, the Council shall: i) Explore all opportunities to convert segments of areas where development is not proposed, or where connecting trails have not been created, into trail corridors and parkland; ii) Require all new development proposals to outline the need, form, location and extent of a trail extension/link, as part of said development, to the overall network; iii) Link corridors and parkland to Community Facilities such as arenas and playing fields, where possible.
4.22 Special Development Area No. 7- Waterfront Area	**4.22.1 Trail Linkages and Connections to Brighton Urban Area Pg. 177**	Trail linkages are proposed to increase the accessibility of the waterfront for pedestrians and cyclists. Where proposals for development or redevelopment of lands between the Gosport Master Plan area and the Brighton Urban Area are brought forward for consideration by Council, opportunities for the development of on and off road cycle paths and walking trails must be identified. Further, opportunities for multiuse pathways which provide recreation and alternative transportation networks for area residents and visitors should be developed. For the purposes of this section multiuse pathways are those facilities which may be shared by cyclists, in-line skaters, joggers and walkers.
7. Transportation Policies	**Pg. 195**	Bicycling is recognized as an alternative mode of transportation, which can play a positive role in improving mobility and quality of life as part of a balanced transportation system.
7.1.5 Alternative Modes of Transportation	**7.1.5.1 General Policies Pg. 199**	It is the intent of this plan to encourage the development of a transportation system for alternative modes of transportation (i.e. pedestrian and bicycle) which links the various activity and open space nodes throughout the community.

12.6...Municipal Official Plan Policies (continued)

MUNICIPALITY OF BRIGHTON OFFICIAL PLAN		
Section	**Subsection**	**Policy**
	7.1.5.2 General Policies Pg. 199	a. Council will encourage the development of a "link-node" system which will link major pedestrian destinations such as schools, parks and commercial areas by a system of pedestrian paths, sidewalks and bicycle routes. b. The Pedestrian and Bicycle Path network shall be designed and developed in such a manner as to provide for safe, and wherever possible, unobstructed pedestrian walkways and bicycle paths. Such facilities will be designed in a manner which minimizes the potential for conflict between other modes of transportation and the bicycle and pedestrian routes. c. Where possible, the pedestrian and bicycle path network will be integrated with natural amenities such as streams and valleys, public parkland and open space areas. d. Council shall, in co-operation with the appropriate agencies, investigate the opportunities for the development of pedestrian and bicycle paths along the road rights-of-way and watercourses. e. It shall further be the policy of this Plan that the pedestrian and bicycle path network is considered to represent part of the transportation system and, wherever appropriate, such lands shall be dedicated as public rights-of-way. Council, in the review and consideration of development and/or redevelopment proposals, shall require the dedication of lands to be developed as part of the pedestrian and bicycle path network.

Northumberland County

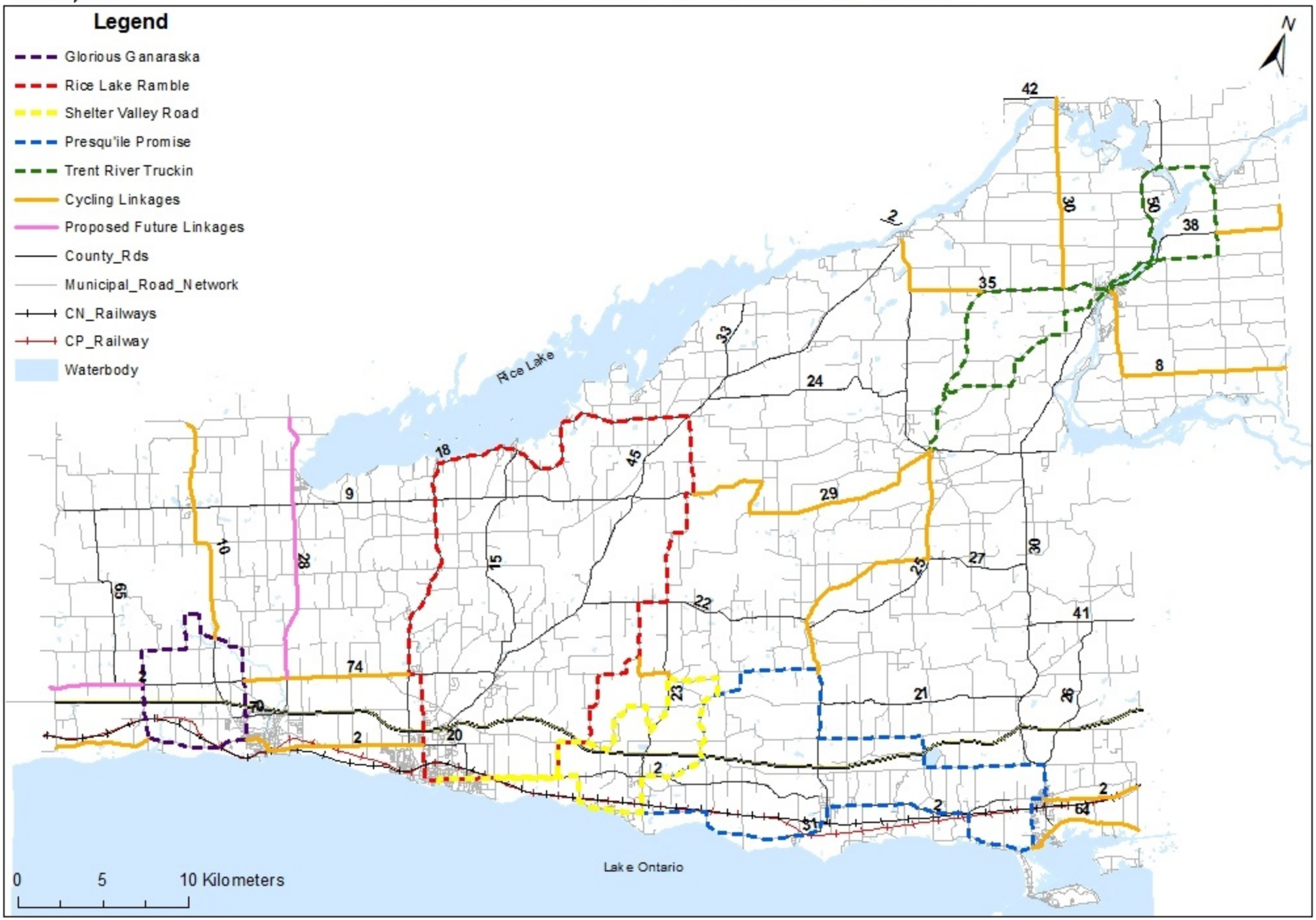
Northumberland County Cycling Routes



Source: Northumberland County, 2014
MNR 2008 & 2013

Northumberland County

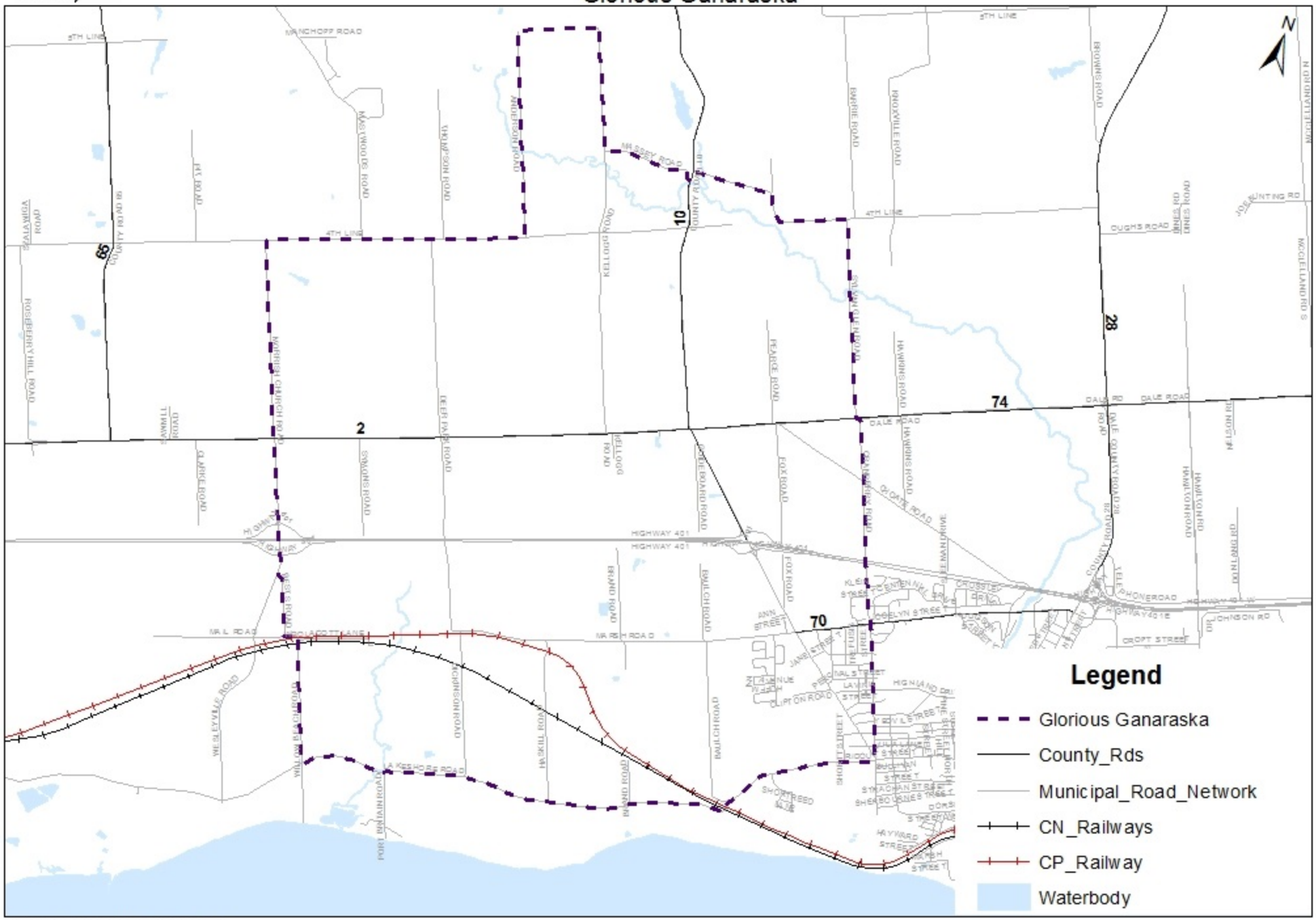
Northumberland County Cycling Routes with Linkages



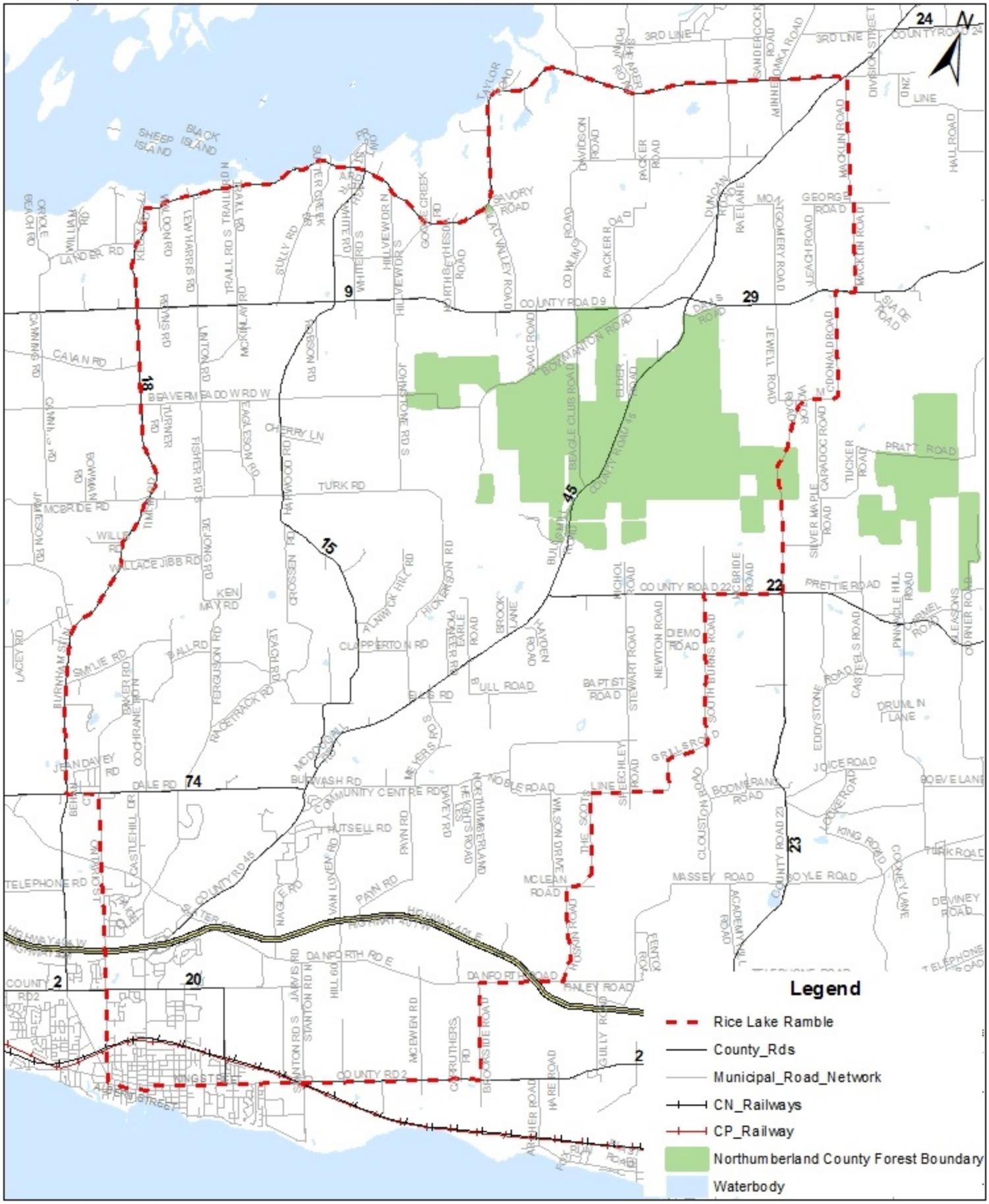
Source: Northumberland County, 2014
MNR 2008 & 2013

Northumberland County

Northumberland County Cycling Route
Glorious Ganaraska

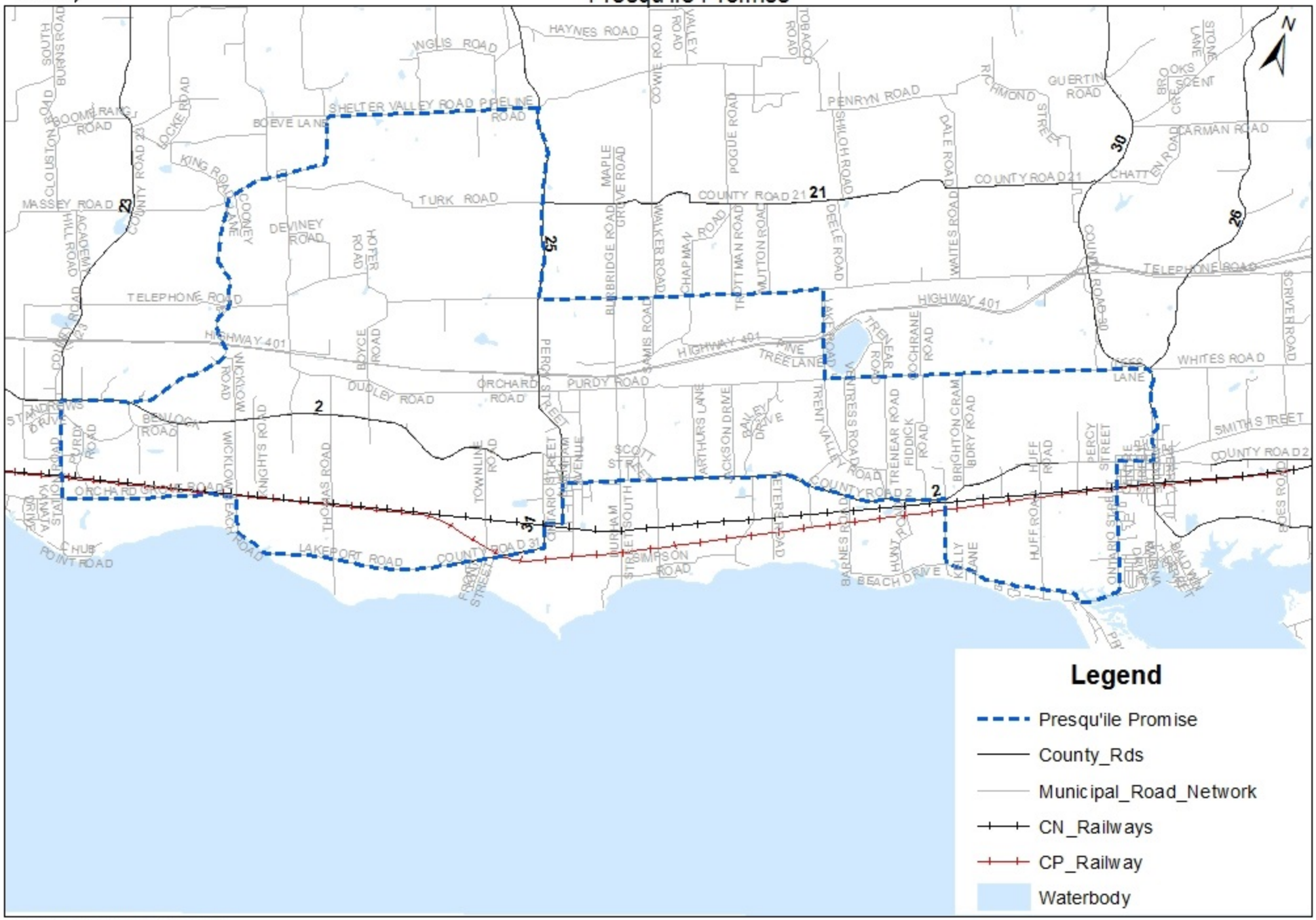


Northumberland County Cycling Route
Rice Lake Ramble



Source: Northumberland County, 2013
MNR 2008 & 2013

Northumberland County Cycling Route
Presqu'ile Promise



Legend

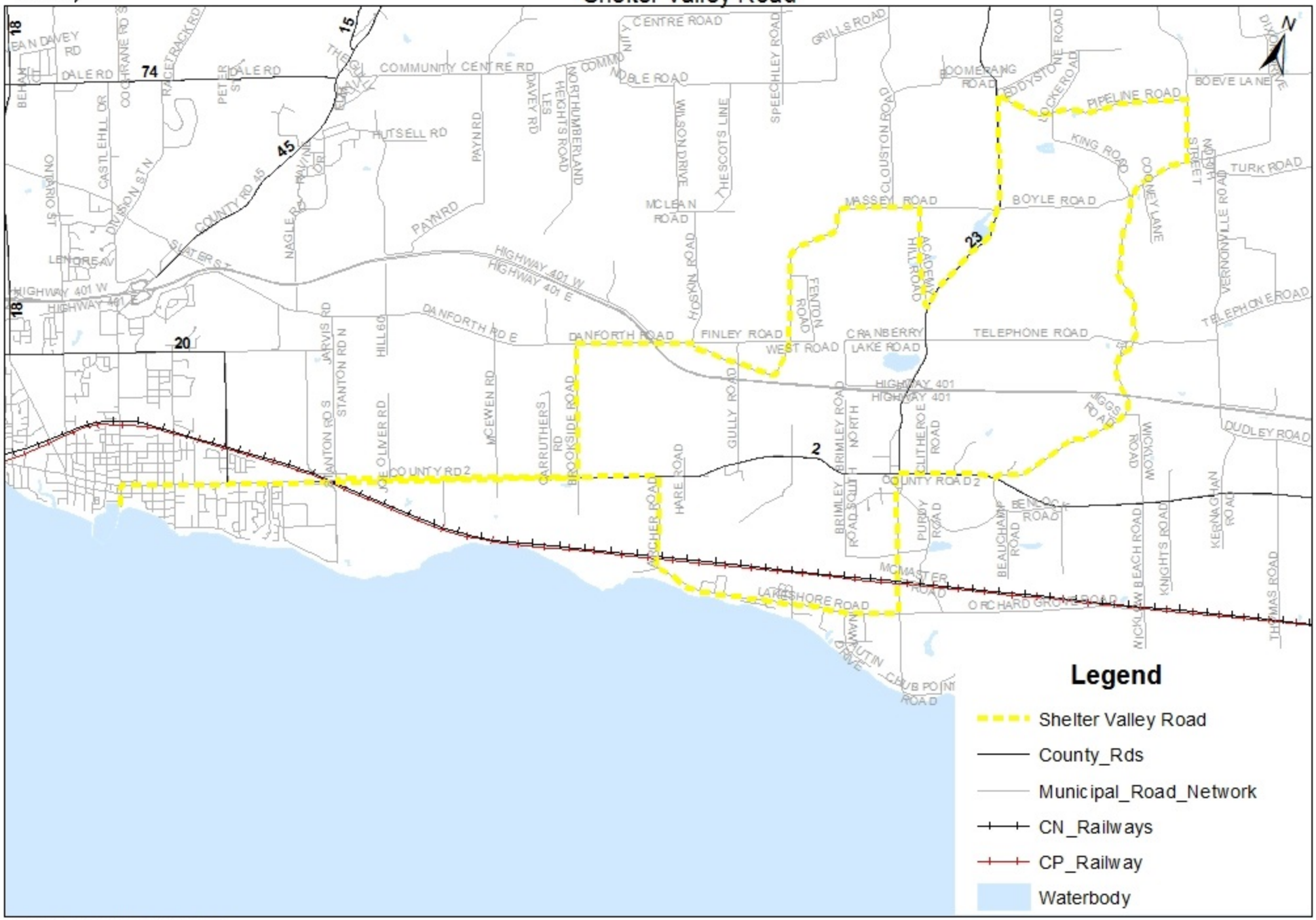
- Presqu'ile Promise
- County_Rds
- Municipal_Road_Network
- CN_Railways
- CP_Railway
- Waterbody

Source: Northumberland County, 2013
MNR 2008 & 2013

Northumberland County Cycling Route
Trent River Truckin'

Source: Northumberland County, 2013
MNR 2008 & 2013

Northumberland County Cycling Route
Shelter Valley Road



Source: Northumberland County, 2013
MNR 2008 & 2013

12.8 County Route Information Charts

GLORIOUS GANARASKA										Estimated Costs				
Road Name	Jurisdiction	Section	Distance	Existing Surface	Traffic Volume	Recommended Treatment	Priority	Line Paint (BL)	Sharrows	Proposed BL/Shoulder Surface HM	Proposed BL/Shoulder Surface Cost	STR Signage	Route Signage	Total
Victoria St.	Port Hope	Lakeshore Rd- Highway 401	2 km	HM	1,000-3,000	1.0m bike lanes	Medium	$1,040	-	HM	$65,000.00	-	$520	$66,560
Cranberry Rd.	Port Hope	Highway 401-County Rd. 74	1.4 km	ST	1,000-3,000	Surface Treated Shoulders	Medium	$1,092	-	ST	$14,560.00	$0	$260	$15,912
County Rd. 74	NH County	Cranberry Rd.-Sylvan Glen Rd.	<0.10 km	HM	2,500	1.5m bike lanes	High	$52	-	HM	$4,875.00	-	$260	$5,187
Sylvan Glen	Port Hope	County Rd. 74-Line Road 4	2 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Line Rd. 4	Port Hope	Sylvan Glen-County Rd. 10	1.6 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
County Rd. 10	NH County	Line Rd. 4- Massey Rd.	0.1 km	HM	2,400	1.5m bike lanes	High	$52	-	HM	$4,875.00	-	$260	$5,187
Massey Rd.	Port Hope	County Rd. 10-Kellogg Rd.	0.9 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Kellogg Rd.	Port Hope	Massey Rd.- Loyalist Rd.	1.25 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Loyalist Rd.	Port Hope	Kellogg Rd.- Anderson Rd.	0.79 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Anderson Rd.	Port Hope	Loyalist Rd.- Line Rd. 4	2 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Line Rd. 4	Port Hope	Anderson Rd.- Morrish Church Rd.	2.6 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$520	$520
Morrish Church Rd.	Port Hope	Line Rd. 4- Highway 401	3 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$520	$520
Bests Rd.	Port Hope	Morrish Church Rd- Mail Rd.	0.93 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Mail Rd.	Port Hope	Bests Rd.- Willow Beach Rd.	0.10 km	ST	<1,000	Signed only	High	-	-	-	$0.00	-	$260	$260
Willow Beach Rd.	Port Hope	Mail Rd.- Lakeshore Rd.	1.25 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$260	$260
Lakeshore Rd.	Port Hope	Willow Beach Rd.- Victoria St.	5.8 km	ST	<1,000	Signed only	High	-	-	-	$0.00	$0	$780	$780
							TOTALS	$2,236	-		$89,310.00	$0.00	$5,460	$97,006

* = estimate
Unit Cost Assumptions can be found in section 12.2
ST= Surface Treatment
HM = Hot Mix Asphalt

Priority	
High	1-5 years
Medium	6-10 years
Low	10+ years

Cost Breakdown	High	Medium	Low	TOTAL
Northumberland County	$10,374	-	-	$10,374
Port Hope	$4,160	$82,472.00	-	$86,632

RICE LAKE RAMBLE											Estimated Costs			
Road Name	Jurisdiction	Section	Distance	Existing Surface	Traffic Volume	Recommended Treatment	Priority	Line Paint (BL)	Sharrows	Proposed Shoulder Surface ST/HM	Cost	STR Signage	Route Signage	Total
Division St.	Cobourg	Marina- King St.	0.26 km	HM	5,100	Signed only	High	-	$1,000	-	$0	-	$260	$1,260
King St.	Cobourg	Division St. - County Rd. #2	3.5 km	HM	8,700	STR/ 1.5m BL	High	$0	$2,000	-	$0	-	$520	$2,520
County Rd. #2	NH County	King St. - Brookside Rd.	4.4 km	HM	5,900	1.5m bike lanes	High	-	-	-	$0	$0	$780	$780
Brookside Rd.	A/H	County Rd. # 2 - Danforth Rd. E.	2.1 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$260	$260
Danforth Rd. E.	A/H	Brookside Rd. E. - Hoskin Rd.	1.8 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$260	$260
Hoskin Rd.	A/H	Danforth Rd. E.-The Scots Line	2.0 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$260	$260
The Scots Line	A/H	Hoskin Rd.- Grills Rd.	3.9 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$520	$520
Grills Rd.	A/H	The Scots Line- South Burns Rd.	1.5 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$260	$260
South Burns Rd.	A/H	Grills Rd.- County Rd. #22	3.1 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$520	$520
County Rd. #22	NH County	South Burns Rd.- McDonald Rd.	1.6 km	HM	2,100	1.5m bike lanes	High	$0	-	HM	$78,000	-	$260	$78,260
McDonald Rd.	A/H	County Rd. #22- County Rd. #29	7.1 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$780	$780
County Rd. #29	NH County	McDonald Rd.- Macklin Rd.	0.4 km	ST	900	Signed only	High	-	-	-	$0	$0	$260	$260
Macklin Rd.	A/H	County Rd. #29- Fanning Rd.	1.9 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$260	$260
Fanning/Macklin Rd.	A/H	Macklin Rd.- County Rd. 45	2.8 km	ST	<1,000	Signed only	High	-	-	-	$0	$0	$520	$520
County Rd. #45	NH County	Macklin Rd.- County Rd. #18	0.06 km	HM	4,000	1.5m bike lanes	High	$0	-	HM	$2,925	-	$520	$3,445
County Rd. #18	NH County	County Rd. #45-County Rd. #9	6.9 km	ST	900	Signed only	High	-	-	-	$0	$0	$1,560	$1,560
County Rd. #18	NH County	County Rd. #9-County Rd. #74	10.9 km	HM	4,000	1.5m bike lanes	High	$0	-	HM	$0	$0	$2,600	$2,600
County Rd. #74	NH County	County Rd. #18-Ontario St.	0.7 km	HM	3,000	1.5m bike lanes	High	$0	-	HM	$0	$0	$260	$260
Ontario St.	Hamilton	Danforth Rd. E.-Oliver's Lane	1.1 km	HM	2,615	1.2m bike lanes	High	-	-	-	$0	-	$260	$260
Ontario St.	Cobourg	Oliver's Lane-Highway 401	0.63 km	HM	1,225	Signed only	High	-	$2,400	-	$0	-	$260	$2,660
Ontario St.	Cobourg	Highway 401-William St.	2.5 km	HM	4,100	1.2m bike lanes	High	$0	-	-	$0	-	$260	$260
William St./Ontario St.	Cobourg	Ontario St..- Albert St.	0.2 km	HM	2,000	Signed only	High	-	$800	-	$0	$0	$260	$1,060
Albert St.	Cobourg	Ontario St.-Division St.	0.8 km	HM	3,500	Signed only	High	-	$3,200	-	$0	$0	$260	$3,460
Division St.	Cobourg	Albert St.- Marina	0.15km	HM	5,100	Signed only	High	-	-	-	$0	-	-	$0
		Cost Breakdown	High	Medium	Low	TOTAL	TOTALS	$0	$9,400	-	$80,925	$0	$11,960	$102,285

Priority		NH County	$87,165	-	-	$87,165
High	1-5 years	Cobourg	$11,220	-	-	$11,220
Medium	6-10 years	A/H	$3,640	-	-	$3,640
Low	10+ years	Hamilton	$260	-	-	$260

ST = surface treatment

HM = hot mix asphalt

* = estimated traffic volume

Unit Cost Assumptions can be found in section 12.2

PRESQU'ILE PROMISE										Estimated Costs				
Road Name	Jurisdiction	Section	Distance	Existing Surface	Traffic Volume	Recommended Treatment	Priority	Line Paint (BL)	Sharrows	Proposed Shoulder Surface ST/HM	Proposed Shoulder Surface Cost	STR Signage	Route Signage	Total
Presqu'ile Parkway	Brighton	Presqu'ile Parkway- Ontario St.	0.90 km	ST	1,000-3,000*	1.0-1.2m bike lanes	Low	$468	-	ST	$9,360	$0	$260	$10,088
Ontario St.	Brighton	Presqu'ile Parkway-County Rd. #2	2.8 km	HM	3,000-5,000*	1.0-1.2m bike lanes	Medium	$1,456	$4,000	HM	$109,200	-	$390	$115,046
Main St.	Brighton	Ontario St.- County Rd. #30	0.80 km	HM	3,000-5,000*	Signed only	High		$3,200	-	$0		$260	$3,460
Young St./George St.	Brighton	Main St.-County Rd. #30	1.05 km	HM	3,000-5,000*	1.5m bike lanes	High	$546	-	HM	$51,188	$0	$260	$51,994
County Rd. #30	NH County	George St.-Little Lake Rd.	1.8 km	HM	5,400	1.5m bike lanes	High		-	HM	$87,750	-	$260	$88,010
Little Lake Rd.	Brighton/ Cramahe	County Rd. #30-Lake Rd.	7 km	ST	<1,000	Signed only	High		-	-	$0	$0	$780	$780
Lake Rd.	Cramahe	Little Lake Rd.- Telephone Rd.	1.9 km	ST	<1,000	Signed only	High		-	-	$0	$0	$260	$260
Telephone Rd.	Cramahe	Lake Rd.- County Rd. #25	6.1 km	ST	<1,000	Signed only	High		-	-	$0	$0	$780	$780
County Rd. #25	NH County	Telephone Rd.- Pipeline Rd.	4.2 km	HM	1,200-2,700	1.5m bike lanes	Medium		-	HM	$204,750	-	$780	$205,530
Pipeline /Shelter Valley	Cramahe-A/H	County Rd. #25- County Rd. #2	14 km	ST	<1,000	Signed only	High		-	-	$0	$0	$1,820	$1,820
County Rd. #2	NH County	Shelter Valley Rd.- Station Rd.	1.5 km	HM	3,900	Signed only	High		-	-	$0	-	$260	$260
Station Rd.	A/H	County Rd. #2- Wicklow Beach Rd.	2.2 km	ST	<1000	Signed only	Medium		-	-	$0	$0	$260	$260
Orchard Grove Rd.	A/H	Station Rd.- Wicklow Beach Rd.	3.7 km	ST	<1000	Signed only	Medium		-	-	$0	$0	$520	$520
Wicklow Beach /Lakeport	A/H	Station Rd.- Ontario St. (Lakeport)	5.75 km	ST	<1000	Signed only	Medium		-	-	$0	$0	$650	$650
County Rd. #31	NH County	Lakeport Rd.- Ontario St.	2 km	ST	400	Signed only	High		-	-	$0	$0	$260	$260
Ontario St.	Cramahe	County Rd. #31-King St. E.	1.1 km	ST	<1,000	Signed only	High		-	-	$0	$0	$260	$260
King St. E.	Cramahe	Ontario St.- County Rd. #2	2.4 km	ST	<1,000	Signed only	High		$9,600	-	$0	$0	$260	$9,860
County Rd. #2	NH County	King St.-Union St.	6.3 km	HM	3,400	1.2m bike lanes	High		-	HM	$0	-	$780	$780
Union St.	Cramahe	County Rd. #2- Lakeshore Rd.	1.4 km	ST	<1,000	Signed only	High		-	-	$0	$0	$260	$260
Lakeshore Rd.	Crahame/ Brighton	Union St.- Presqu'ile Parkway	3.0 km	ST	<1,000	Signed only	High		-	-	$0	$0	$520	$520
Presqu'ile Parkway	Brighton	Lakeshore Rd.- Beach1 Parking	1.0 km	ST	1,000-3,000*	1.0-1.2m bike lanes	Low		-	ST	$10,400	-	-	$10,400
							TOTALS	$2,470	$16,800	-	$472,648	$0	$9,880	$501,798

* = estimate

Unit Cost Assumptions can be found in section 12.2

ST = surface treatment

HM = hot mix asphalt

Priority	
High	1-5 years
Medium	6-10 years
Low	10+ years

Cost Breakdown	High	Medium	Low	TOTAL
Northumberland County	$89,310	$205,530	-	$294,840
Brighton	$56,234	$115,046	$20,488	$191,768
Crahame	$13,760	-	-	$13,760
Alnwick/Haldimand	$0	$1,430	-	$1,430

SHELTER VALLEY ROAD									Estimated Costs				
Road Name	Jurisdiction	Section	Distance	Existing Surface	Traffic Volume	Recommended Treatment	Priority	Line Paint/ Sharrows (S)	Proposed Shoulder Surface		STR Signage	Route Signage	Total
									ST/HM	Cost			
Division St.	Cobourg	Marina- King St.	0.26 km	HM	5,100	Signed only	High	-	-	$0	-	$390	$390
King St.	Cobourg	Division St. - E of Bridge	3.5 km	HM	8,700	STR/1.5m bike lanes	High	-	-	-	-	$520	$520
County Rd. #2	NH County	King St. - Brookside Rd.	4.4 km	HM	5,900	1.5m bike lanes	High	-	-	-	-	$780	$780
Brookside Rd.	Alnwick/Haldimand	County Rd. # 2 - Danforth Rd. E.	2.1 km	ST	<1,000	Signed only	High	-	-	-	-	$260	$260
Danforth Rd. E.	Alnwick/Haldimand	Brookside Rd. E. - Gully Rd.	1.8 km	ST	<1,000	Signed only	High	-	-	-	-	$260	$260
Gully Rd.	Alnwick/Haldimand	Danforth Rd. E.- Massey Rd.	1.9 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$260	$260
Massey Rd.	Alnwick/Haldimand	Gully Rd.- Academy Hill Rd.	3.6 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$520	$520
Academy Hill Rd.	Alnwick/Haldimand	Massey Rd.- County Rd. #23	1.5 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$260	$260
County Rd. #23	NH County	Academy Hill Rd.-Pipeline Rd.	3.5 km	HM	1,000	Signed only	High	-	-	$0	$0	$520	$520
Pipeline Rd.	Alnwick/Haldimand	County Rd. #23- Broomfield Rd.	3.0 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$520	$520
Broomfield Rd.	Alnwick/Haldimand	Pipeline Rd.- Shelter Valley Rd.	0.9 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$260	$260
Shelter Valley Rd.	Alnwick/Haldimand	Broomfield Rd.- County Rd. #2	7.0 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$780	$780
County Rd. #2	NH County	Shelter Valley Rd.- Station Rd.	1.4 km	HM	3,900	1.5m bike lanes	High	-	HM	$68,250	-	$520	$68,770
Station Rd.	Alnwick/Haldimand	County Rd. #2- Lakeshore Rd.	2.2 km	ST	<1,000	Signed only	Medium	-	-	$0	$0	$260	$260
Lakeshore Rd.	Alnwick/Haldimand	Station Rd.- Archer's Rd.	3.8 km	ST	<1,000	Signed only	High	-	-	$0	$0	$520	$520
Archer's Rd.	Alnwick/Haldimand	Lakeshore Rd.- County Rd. #2	1.4 km	ST	<1,000	Signed only	High	-	-	$0	$0	$260	$260
County Rd. #2	NH County	Archer's Rd.-E of Bridge	5 km	HM	5,900	1.5m bike lanes	High	-	-	$0	-	$520	$520
King St.	Cobourg	Archer's Rd.- Division St.	3.5km	HM	8,700	1.5m bike lanes	High	-	-	$0	-	$520	$520
Division St.	Cobourg	King St.- Marina	0.26 km	HM	5,100	Signed only	High	-	-	$0	$0	-	$0
							TOTALS	-	-	$68,250	$0	$7,930	$76,180

* = Estimated AADT

Unit Cost Assumptions can be found in section 12.2

HM= Hot Mix Asphalt

ST= Surface Treatment

* Some overlapping costs addressed in other route cost assumptions (i.e. Rice Lake Ramble)

Priority	
High	1-5 years
Medium	6-10 years
Low	10+ years

Cost Breakdown	High	Medium	Low	TOTAL
Northumberland County	$70,590	-	-	$70,590
Hamilton	$0	-	-	$0
Alnwick/ Haldimand	$1,300	$2,860	-	$4,160
Cobourg	$1,430	-	-	$1,430

TRENT RIVER TRUCKIN'									Estimated Costs				
Road Name	Jurisdiction	Section	Dist. (km)	Traffic Volume	Recomm. Treatment	Priority	Line Paint	Shar. (S)	Prop. Should. Surface ST/ HM	Cost	STR Sign.	Route Sign.	Total
Main St.	Trent Hills	Main St.- Church St.	< 0.10 km	800	Signed only	High	-	$400	-	$0	-	$260	$660
Church Street / Mill St.	NH County	Main St.- Old Hastings Rd.	0.20 km	-	Signed only	High	-	$800	-	$0	-	$260	$1,060
Old Hastings Rd.	Trent Hills	Church St.- Percy St.	0.20 km	210	Signed only	High	-	-	-	$0	$0	$260	$260
Percy/ Godolphin	Trent Hills	Old Hastings Rd.- Godolphin Rd.	3.6 km	590	Signed only	High	-	-	-	$0	$0	$520	$520
Conc. Rd. 6 East	Trent Hills	Goldolphin Rd./ Skinkle Rd.	3.75 km	400	Signed only	High	-	-	-	$0	$0	$520	$520
Skinkle Rd.	Trent Hills	Concession Rd. 6- Mahoney Rd.	1.6 km	590	Signed only	Medium	-	-	ST	$0	$0	$260	$260
Mahoney Rd.	Trent Hills	Skinkle Rd. - Bannon Rd.	2.6 km	599	Signed only	High	-	-	-	$0	$0	$520	$520
5th Line West	Trent Hills	Mahoney Rd.- Bannon Rd.	0.80 km	250	Signed only	High	-	-	-	$0	$0	$260	$260
Bannon Rd.	Trent Hills	Mahoney Rd.- 6th Line West	1.3 km	1000	Signed only	High	-	-	-	$0	$0	$260	$260
6th Line West	Trent Hills	Bannon Rd. - Victoria St.	1.3 km	240	Signed only	High	-	-	-	$0	$0	$260	$260
Victoria St.	Trent Hills	6th Line West- Grand Rd.	0.85 km	240	Signed only	High	-	-	-	$0	$0	$260	$260
Grand Rd.	Trent Hills	Victoria Rd.- Bridge St.	0.90 km	8367	1.5m bike lanes	High	-	-	HM	$43,875	-	$260	$44,135
Bridge St.	NH County	Grand Rd.-Front St.	0.20 km	-	1.5m bike lanes	High	$104	-	HM	$9,750	-	$260	$10,114
Front/C.R. 38	NH County	Bridge St.- 8 Line East	3.5 km	1000	Signed only	High	-	$4,000	-	$0	$0	$520	$4,520
8 Line East	Trent Hills	County Rd. #38-Petherick's	3.6 km	104	Signed only	High	-	-	-	$0	$0	$520	$520
Pethericks/ Crowe	Trent Hills	8 Line East-12 Line East	5.5 km	27	Signed only	High	-	-	-	$0	$0	$780	$780
12 Line East	Trent Hills	Petherick's-County Rd. #50	2.8 km	350	Signed only	High	-	-	-	$0	$0	$520	$520
County Road #50	NH County	12 Line East-County Rd. #30	10 km	1,900	1.2m bike lanes	Medium	-	-	ST	$390,000	-	$1,560	$391,560
Bridge St./ C.R. 30	NH / TH	County Rd. #50-County Road #35	2.6 km	-	Signed only	High	-	$10,400	-	$0	-	$520	$10,920
County Rd. #35	NH County	Bridge St.-Godolphin Rd.	5 km	2,800	1.5m bike lanes	Medium	$2,600	-	HM	$243,750	-	$520	$246,870
Godolphin Rd.	Trent Hills	County Rd. #35-Old Hastings Rd.	10.2 km	453	Signed only	High	-	-	-	$0	$0	$1,040	$1,040
Old Hastings Rd.	Trent Hills	Godolphin Rd.-Church St.	0.20 km	210	Signed only	High	-	-	-	$0	-	-	$0
Church Street / Mill St.	NH County	Old Hastings Rd.-Main St.	0.20 km	-	Signed only	High	-	-	-	$0	-	-	$0
Main St.	Trent Hills	Church St.-Main St.	< 0.10 km	800	Signed only	High	-	-	-	$0	-	-	$0
						Total	$2,704	$15,600	$0	$687,375	$0	$10,140	$715,819

* = estimated

Unit Cost Assumptions can be found in section 12.2

ST = surface treatment

HM = hot mix asphalt

Priority	
High	1-5 years
Medium	6-10 years
Low	10+ years

Cost Breakdown	High	Medium	Low	TOTAL
NH County	$26,614	$638,430	-	$665,044
Trent Hills	$50,515	$260	-	$50,775

12.9 County Route Linkages

NORTHUMBERLAND COUNTY LINKAGES									Estimated Costs			
Road Name	Jurisdiction	Section	Distance	Existing Surface	Traffic Volume	Recommended Treatment	Priority	Line Paint (BL)	Prop. Should. Surface ST/HM	Prop. Should. Surface Cost	STR/Bike Lane Signage	Total
WEST QUADRANT												
County Rd. 2	NH County	Port Hope Boundary-Morrish Church Rd.	5.5 km	HM	1,400	1.2m bike lanes	Low	-	HM	$214,500	$0	$214,500
County Rd. 10	NH County	Massey Rd.-Peterborough Boundary	13.6 km	HM	1,100-2,400	1.2m bike lanes	Low	$5,200	HM	$530,400	$0	$535,600
County Rd. 2/20	NH County	Hamilton Rd.-Ontario St.	7 km	HM	11,600	1.5m bike lanes	Low	-	HM	$0	$0	$0
County Rd. 74	NH County	Sylvan Glen Rd.-Ontario St.	10.4 km	HM	3,500	1.5m bike lanes	Low	$5,408	HM	$507,000	$0	$512,408
Lakeshore Rd.	Port Hope	Port Hope Boundary-Willow Beach Rd.	5.5 km	ST	<1,000	STR (signed)	Low	-	-	$0	$0	$0
County Rd. 28	NH County	Peterborough Boundary-County Rd. 74	15.7 km	HM	8,300-9,200	1.5m BL/ off road path	Low	$0	HM	$765,375	$0	$765,375
CENTRAL QUADRANT												
Clouston/Boomerang	Alnwick/Haldimand	South Burns Rd.-Pipeline Rd.	3.1 km	ST	<1,000	STR (signed)	Low	-	-	$0	$0	$0
County Rd. 29	NH County	Macklin Rd.-County Rd. 25 (Warkworth)	18.2 km	ST	900	STR (signed)	High	-	-	$0	$0	$0
County Rd. 25	NH County	Pipeline Rd.-Mount Pleasant Rd.	2.9 km	HM	1,800	1.2m bike lanes	Low	$0	HM	$113,100	$0	$113,100
Mount Pleasant	Alnwick/Haldimand	County Rd. 25-Morganston	5.5 km	ST	<1,000	STR (signed)	Low	-	-	$0	$0	$0
Morganston Rd.	Alnwick/Haldimand	Mount Pleasant Rd.-County Rd. 25	3 km	ST	<1,000	STR (signed)	Low	-	-	$0	$0	$0
County Rd. 25	NH County	Morganston Rd.- Warkworth	6.3 km	HM	1,300	1.2m bike lanes	High	$3,276	HM	$245,700	$0	$248,976
SOUTHEAST QUADRANT												
County Rd. 2	NH County/ Brighton	George St.-Quinte West Boundary	5.6 km	HM	7,400	STR(1km)/ 1.5m BL(4.6 km)	High	$0	HM	$0	$0	$0
County Rd. 64	NH County/ Brighton	Harbour St.-Quinte West Boundary	7.1 km	HM	2,000	STR(1km)/ 1.5m BL(6.1 km)	High	$0	HM	$0	$0	$0
NORTHEAST QUADRANT												
County Rd. 25	NH County	Hastings-County Rd. 35	3 km	HM	3,500	1.5m bike lanes	Low	$0	HM	$146,250	$0	$146,250
County Rd. 35	NH County	County Rd. 25-Godolphin Rd.	4.15 km	HM	2,800	1.2m bike lanes	Low	$2,158	HM	$161,850	$0	$164,008
County Rd. 30	NH County	County Rd. 35-Peterborough Boundary	11.2 km	HM	3,400	1.5m bike lanes	Low	$0	HM	$546,000	$0	$546,000
County Rd. 38	NH County	Crowe River Rd.-Hastings County Boundary	5 km	ST	1,000	1.2m bike lanes	Low	$2,600	ST	$195,000	$0	$197,600
County Rd. 8	NH County	6th Line East-Hastings County Boundary	14.7 km	HM	3,300	1.5m bike lanes	Low	$7,644	HM	$716,625	$0	$724,269
							TOTALS	$26,286	-	$4,141,800	$0	$4,168,086

* = estimate
Unit Cost Assumptions can be found in section 12.2
ST= Surface Treatment
HM = Hot Mix Asphalt

Priority	
High	< 5 years
Low	> 5 years

Cost Breakdown	High	Low	Total
NH County	$248,976	$3,919,110	$4,168,086
Port Hope	-	$0	$0
Alnwick/ Haldimand	-	$0	$0
Brighton	-	-	$0

NOTHUMBERLAND COUNTY FOREST OFF-ROAD CYCLING TRAILS

Municipal Liability: Bike Routes

Background

Bicycles are vehicles as defined in the *Highway Traffic Act* and are permitted to use highways. There are exceptions to that permission; for example, traveling on 4 lane highways such as the 401 is prohibited. In addition, Municipalities, under authority of section 27 and/or 35 the *Municipal Act, 2001* (the Act) have authority to prohibit bicycle traffic from specified highways.

Municipal Act: The Section 44 Duty to Maintain

Section 44 of the Act provides the framework for considering liability for any traffic on municipal roads.

Section 44 imposes a duty upon municipalities to maintain highways in a "state of repair that is reasonable in the circumstances, including the character and location of the highway or bridge". Failure to do so exposes the municipality to liability for damages occasioned by or as a result of any non-repair.

It also provides for exemptions from liability for damages or injuries occasioned by the state of repair (or "non-repair). Municipalities can avoid or be saved liability in 1 of the 3 manners set out in subsection 44(3):

> Exemption 1: if a municipality meets or satisfies the minimum prescribed standards set out in Ont. Reg 239/02, as amended, it cannot be found liable for damages or injuries;
>
> Exemption 2: if the municipality "did not know and could not reasonably have been expected to have known about the state of repair" (or more accurately about the state of non-repair or the existence of a hazardous condition) it will also be saved from liability;
>
> Exemption 3: if the municipality took reasonable steps to address the state of repair or hazardous situation, it will also be saved from liability.

Exemption 1 is rather straightforward as the regulations provide specific objective criteria against which the Municipality can ascertain compliance. For example depending upon the class of road inspection, standards for acceptable crack and pothole sizes are identified. Thus, if at the time of an accident a crack or pothole did not exceed the specified size the municipality would not be liable. We would caution that the minimum maintenance standards

Exemption 2 and 3 both have a number of facets to consider from an implementation and application point of view. The exemption requires consideration of the general design and construction of the road used as a bike route and also to the ongoing

maintenance of the routes and their susceptibility to intermittent events and/or sometimes exigent circumstances.

The Milton case referenced below provides an example. The overall design of the road was found to be hazardous for cyclists. Ultimately the court concluded that warning signs were required to make the road safer for cyclists. That was something the Municipality knew or ought to have to have known was required to address an ongoing hazardous situation.

The exemptions can also have a temporal aspect. For example, on a road that abuts a steep slope notwithstanding the fact that a municipality has addressed the known hazard of falling rocks through signage, fencing and routine inspection, a municipality may not know that rocks have slid off of the slope onto the road creating a hazard if the rocks have slid down the slope in between the routine weekly inspections. The municipality may be exempt from liability because it could have known the slide had occurred and/or it took reasonable steps to address the situation. (We would note if the rock slides were frequent, the Municipality's weekly inspection program may be found to be inadequate and liability may still exist.

In the context of the designation of bike lanes and bike routes, to come within the exemption the Municipality would have to consider the physical conditions of proposed routes. It would also require a municipality, perhaps, to factor in consideration of hazards that are specific to bicycle travel as part of its routine road inspection program.

The Caselaw

It is frequently stated in cases involving Section 44, that municipalities:

> "are not insurers of travelers using its streets; its duty is to use reasonable care to keep its streets in a reasonably safe condition for ordinary travel by persons exercising ordinary care for their own safety" (*Ryan v. Victoria*, Supreme Court of Canada) .

Thus, regardless of whether the traveler is in a motor vehicle or on a bicycle, the municipality must use reasonable care in maintain its roads for travel.

There are a number of cases concerning liability arising from injuries/damages suffered or incurred by cyclists that provide some guidance:

1. *Danco v. Thunder Bay* (City) (2000) 13 M.P.L.R. (3d) 130 (Ont. S.C.J.)
2. *Johnson v. Milton (Town)* (2006) 25 M.P.L.R. (4th) 17 (Ont. S.C.J.)
3. *Repic v. Hamilton (City)* (2009) 65 M.P.L.R. (4th) 251 (Ont. S.C.J.).
4. *Evans v. Toronto (City)* [2004] O.J. No. 5844 (Ont. Small Claims Court).
5. Lauricella v. Hamilton (City), [2003], Court File No. 10496/95, (Ont. S.C.J.)

Brief Summaries of Case #1-3 are found in appendices to this document. Cases #4

and #5 are discussed within this document.

The first three cases have a common thread with regard to what would constitute "reasonable care". The common thread is that the municipality failed to satisfy its duty of reasonable care because it failed to warn users of the road of a hazardous situation of which it had knowledge or should have had knowledge. They were primarily related to the overall design of the road and the lack of foresight or care in cautioning the users as to the existence of the inherently hazardous design. In those cases although other factors were at play, the non-existence of "warning signs" or "adequate signage" factored significantly in the finding of liability against each municipality.

The fourth case specifically addressed the issue of municipal liability in relation to the designation of an "approved bike route". The case does provide some practical guidance, however due to the fact that is a "Small Claims Court" decision its precedent value is somewhat questionable.

In that case the plaintiff was cycling on what was designated (through signage on the street itself) as a "bike route" when she was injured. In Toronto, the City had a program whereby some bike routes actually included dedicated lanes while others were merely identified as bike routes. The injury occurred when the occupant of a car, parked in the curb lane, opened the door.

The location of the accident was what the Court concluded to be a "signed bike route" notwithstanding that the formal designation had been revoked by the City a long time prior to the time of the accident. Unfortunately for all involved, the signs had not been removed.

The Court found the City partially liable for the damages suffered by the Plaintiff. It concluded that "the designation as a bike route must mean something, some indication that the street is somewhat safer than the unsigned streets". The court went on to conclude that: "*...the road at this location was not bicycle friendly. It leaves very little room for a cyclist to maneuver…Sure, a skilled cyclist can pass in safety, but roads should be safe for the ordinary cyclist.*"

Ultimately the Court found that "*the street in question, perceived as a bike route, was part of the cause of the accident*" and "*it was not in the condition of repair*". *"The City should have done something to make the road safer*". Based on other factors, the City was found to be 25% liable for the damages suffered by the Plaintiff.

Moving Forward

Approaching this issue from a cautious point of view whether or not Municipality's program will include dedicated marked bike lanes or the designation of certain roads as "bike routes" through signage and promotional material, the Municipality should determine whether the qualities and characteristics of the road are sufficient for such purpose. This would include:

a. the actual available width of the lanes for accident/collision avoidance manouevres in consideration of the level and speed of motor vehicle traffic encountered on that road;

b. the surface condition of the road (i.e. gravel v. pavement, pavement conditions, existence of known hazardous to cyclists such as railway crossings, etc.);

c. the overall conditions of the road in terms of volume of traffic, the potential for interaction between various forms of traffic (motor vehicle, cyclists and pedestrians).

Where a specific road includes heavy vehicular traffic combined with physical limitations (platform width, intersection issues) and/or conditions that present continuing maintenance issues (e.g. surface water runoff, routine potholing) serious consideration must be given to "non-designation" of the route or elevated maintenance and monitoring.

Considering both of the Hamilton cases, there may exist certain circumstances where bike traffic should actually be prohibited. Thus, notwithstanding the development of a cycling master plan, from a general liability point of view, a municipality may need to consider whether there exist roads that are inherently dangerous for bicycle travel. (The Glenorchey Bridge situation in the Milton case would be an example of a situation where an actual prohibition (by by-law and implemented through signage) may have been the most appropriate remedy. The case of *Lauricella v. Hamilton (City)* is of some further guidance as it relates to the interplay between the use of roads and sidewalks for bicycle traffic.

In that case the injured cyclist chose not to use a road that descended a steep hill and opted to ride on a sidewalk that was separated from the roadway by a guardrail. Although she was found partially liable, the Court imposed liability upon the City for failing to maintain the sidewalk in state suitable for the various forms of pedestrian and non-pedestrian traffic that would use it (the non repair was a the presence of a fault/pothole combined with a sharp elevation change of a few inches from the cement sidewalk to a iron walkway/bridge). In this regard the City attempted to argue that the injured party was violating a by-law that prohibited bike traffic from sidewalks. The Court found that there was no common knowledge of this by-law and a lack of enforcement. Instead, it focussed on the fact that in the circumstances the City knew or ought to have known that cyclists would choose to use the sidewalk rather than the road in this specific location.

Ultimately the ongoing concern once a route is created and/or designated as bike lane/route, is whether such designation affects whether the municipality can rely on exemption two or three under section 44. In other words salient issue to address when considering whether the County's Cycling Master Plan would create new or increased exposure to liability is whether the specific activities or programs with that Plan would

affect the "duty" imposed in section 44. In particular do the activities/programs affect the "circumstances, including the character and location of the highway" as this may affect 2 of the 3 exemptions from liability set out in section 44(3).

Specific Guidance From the Caselaw

Whether or not a highway is identified as a bike route, the fact that it can be used by bicycles gives rise to a duty to erect warning signs where there are conditions that are known to be or ought to be known to be hazardous to bicycle travel. The precise nature or warning on the sign may be directed to cyclists themselves or to the drivers of motor vehicles as found in one of the Hamilton cases.

Where a highway is specifically designated as a bike route, it would appear that there may be some duty upon the municipality to ascertain whether the roadway is of a physical quality (i.e. width, surfacing) that is appropriate for such designated bike lanes. Clearly heavily traveled roads, that have narrow lane widths may not be suitable candidates for designated bike routes or bike lanes as these may create hazardous situations.

Where roads or intersection have high incidences of bicycle/motor vehicle or pedestrian/motor vehicle accidents, additional consideration must be given to warning signage and/or design modifications.

The Toronto case does raise some interesting questions; had the bike route signs not been present, did the City still have responsibility to address the interaction of bicycles and motor vehicles on a street like Queen Street? Is there some responsibility upon a municipality to prohibit bike traffic from streets that are inherently dangerous for bike travel. Considering that the 400 series highways are "off limits" to cyclists this may not seem to be an unreasonable approach. Conversely, there is no general prohibition on bicycle travel on some Provincial Highways where the speed limit is 80km/h. (Speed may not be the determining factor but it would seem to have some bearing on the issue.)

Notwithstanding the foregoing we would note that whether or not a road is identified as a bike route or not the courts words in the Ryan must be considered: "Users of the road (in this case cyclists) have a duty to act reasonably in using the road and providing for their own well being". Thus whether or not a road is identified as a bike route, the user must also act reasonably.

Appendix 1: *Danco v. Thunder Bay* (City) (2000) 13 M.P.L.R. (3d) 130 (Ont. S.C.J.)

A Plaintiff was injured when crossing railroad tracks on a municipal street. The railroad bisected the road on a diagonal. The plaintiff's front tire slid into to the gap between beside tracks.

The Plaintiff sued the Canadian National Railway and the City of Thunder Bay. Both defendants and the Plaintiff himself were each found partially liable for the damages/injuries suffered. The CNR and the City were at fault for failing to erect proper warning signs.

Although the court found that the road itself was in a proper state of repair (i.e. physical road surface), the City still had a responsibility to warn the public of any hazardous situations on the roadway which it knows of or should have known of. It noted that:

1) the City was aware of a similar accident at the same location one year earlier; and

2) the City had erected warning signs on other railway crossings.

Appendix 2: *Johnson v. Milton (Town) et al.*, (2006) 25 M.P.L.R. (4th) 17 (Ont. S.C.J.)

The Plaintiff and her husband were riding a tandem bicycle on a scenic route within the Town of Oakville in 1992. The road had a steep section that led to bridge which was then followed by a steep right turn with a rock embankment close to the edge of the road. The plaintiff and her husband lost control of their bike and crashed into the rock embankment on the curve, killing the plaintiff's husband and severely injuring the plaintiff.

The Plaintiff sued the Town of Milton, the Town of Oakville and Region of Halton.

The Town of Oakville was found to be 100% liable for the injuries and damages suffered.

In this case the Glenorchey Bridge area was the location of numerous motor vehicle accidents between 1985 and 1992. The road was closed annually between November and April and was ultimately closed permanently in 2000. The Court found that the bridge was constructed rather cheaply in 1965 to replace a collapsed structure and that the Town made conscious and recent decisions to spend as little possible money on the road as there was an intention to close the road.

The Court concluded that it had no hesitation concluding that the condition of the road in the vicinity of the bridge was known to the Town and that it was "wilfully blind" to these conditions. The Town's documentation showed a poor record of evaluation of the conditions.

Ultimately the court concluded that a state of "non-repair" existed and comprised a combination of: 1) excessive slope; 2) speed limit too high for conditions; 3) no warning sign; and 4) routine existence of "washboarding" on the approach to the bridge. Based on the Court's concluding comments it would appear that appropriate signs warning of the sharp turn and conditions combined with reduced speed signs may have been an acceptable response.

A number of comments are of particular note:

1. The Court emphasized that the a "condition of non-repair can involve any aspect of the road and its environs. This includes not only the surface of the road but also the alignment of the road, obstacles on the side of the road and signage (quoting the Ontario Court of Appeal in *Mero v. Waterloo (Regional Municipality)* (1992), 7 O.R. (3d) 102).

2. In this case a police officer from the Halton Region (with extensive experience in cycling) attempted to reconstruct the accident. The court considered the evidence of this reconstruction and noted "it must be remembered that he was

operating a bicycle in first rate mechanical condition and was an expert cyclist. This is to be contrasted with a recreational cyclist like Robert Johnson on a tandem bicycle. The fact that Constable Michalski was able to regain control of his bicycle and negotiate the right hand turn north of the Glenorchey Bridge does not mean that the road was safe for all cyclists on all types of bicylces".

Appendix 3: *Repic v. Hamilton (City)* (2009) 65 M.P.L.R. (4th) 251 (Ont. S.C.J.).

The Plaintiff (a 14 year old boy) was injured when crossing an on ramp that lead to a controlled access highway. The Plaintiff had been riding on a formal bike path which terminated at the on-ramp, however, there was no stop and/or dismount sign erected to warn that the bike path ended at the on ramp and that there was an intersection.

The Plaintiff sued the driver of the car and the City of Hamilton. The driver, the City and the Plaintiff were all found to have partial liability (40%/15%/45% respectively)

The City attempted to utilize what is known as the "policy decision immunity" principle to avoid liability. This principle, which is enshrined in section 331.3 of the *Municipal Act, 2001* allows a municipality to avoid liability on the basis that municipalities are entitled to make policy choices which balance a number of competing factors (including social, economic and political factors) provide such decisions are made in good faith. As stated by the Supreme Court of Canada,

> "in such (policy) decisions, the authority attempts to strike a balance between efficiency and thrift, in the context of planning and predetermining the boundaries and undertakings of their actual performance. True policy decisions will usually be dictated by financial, economic, social and political factors or constraints.
>
> The operational area is concerned with the practical implementation of the formulated policies, it mainly covers the performance or carrying out of a policy. Operational decisions will usually be made on the basis of administrative direction, expert or professional opinion, technical standards or general standards of reasonableness."

Operation decisions are not immune from scrutiny nor do they afford immunity from liability.

The City argued that the interchange was approved at a policy decision level when the highway was constructed. The Court found that although the interchange design for the highway was an accepted standard, the City failed to properly construct the interchange in the context of the specific area within which it was located. This was an operational aspect and no immunity was available.

The Court was very specific in its findings:

> "What is striking to the court is that the rest of this intersection has some type of traffic control or marking. It is only this ramp that is unprotected...the configuration of this ramp did not lend itself to a legal and safe installation of pedestrian crossover. To get across on must cross the exit ramp. This is unsafe to allow pedestrians to cross not to mention encourage pedestrians to cross...The failure of the City to mark the crossing, alert motorists of the crossing, alert cyclists of that the bike path was ending or to consider any of the

> other modifications testified to by the various experts left this intersection in a state of disrepair...the cost of a stop sign or warning to motorists was according to the City employees minimal. If the City wished that there was no interference in the free flow nature of this intersection then the simplest solution may even have been to direct pedestrians to cross...further north...and discourage any pedestrians or cyclists from crossing this ramp at all".

In the decision the Court makes reference to a seminal case on the duty of care imposed upon Municipalities (Ryan v. Victoria (City), [1999] S.C.J. No. 7, Supreme Court of Canada):

> "To avoid liability a person must exercise the standard of care that would be expected of an ordinary, reasonable and prudent person in the same circumstances. The measure of what is reasonable depends upon the facts of each case, including the likelihood of a known or foreseeable harm, the gravity of the harm and burden or costs which would be incurred to prevent the injury. In addition, one may look to external indicators of reasonable conduct, such as custom, industry practice and statutory or regulatory standards".

In Ontario, the regulatory standards would include the minimum maintenance standards enacted under section 44 of the Municipal Act, 2001.