OxfordCounty
growing stronger...together

OXFORD COUNTY TRAILS MASTER PLAN

Final Report | December 2014

Authored by MMM Group Limited

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DIRECTION OF THE MASTER PLAN

1.1 WHY DEVELOP A COUNTY-WIDE TRAILS MASTER PLAN?

The demand for active transportation and recreation opportunities for a range of uses – walking, cycling, hiking, jogging, cross-country skiing, equestrian - throughout Ontario is growing. Responding to this demand, policies, plans and, initiatives are being undertaken to support the development of facilities and programs which support these activities.

A lack of physical activity generates negative effects on individual and community health and safety, the environment and economy. This is further compounded by our reliance on motor vehicles for day to day and recreational trips. As people become more aware of the impacts of inactive lifestyles, they look to municipal staff to help develop solutions including the development and implementation of sustainable land use and transportation strategies with a focus on active transportation and recreation.

Oxford County and its partners (e.g. Municipal Representatives, Oxford County Trails Council, Oxford Cycling Advisory Committee, Oxford County Health Unit, Oxford Tourism, and local Conservation Authorities) have historically made a conscious effort to encourage active transportation and recreation. In July 2013, they demonstrated their continued commitment to active recreation County-wide by initiating the development of the Oxford County Trails Master Plan.

The plan is intended to respond to emerging community trends and the increasing demand for a continuous and connected system of off-road trails linked by on-road cycling routes within rural areas and urban centres. Between July 2013 and March 2014 the County, a Trails Steering Committee and a consulting team from MMM Group developed the first County-wide Trails Master Plan.

The plan builds on existing trails and on-road cycling facilities, bridges gaps in the existing system, highlights potential opportunities for destination trails, as well as establishes roles, responsibilities and priorities for future consideration and implementation.

The following sections set out the "building blocks" which informed the development of the master plan.

1.1.1 SUPPORT FOR THE DEVELOPMENT OF TRAILS

A commitment to trails is not solely supported by local demand and initiatives. There is growing support for and commitment to increasing levels of active transportation and recreation through policies, plans and initiatives at all levels of government.

To better understand these supportive documents, the study team undertook a detailed analysis of Federal, Provincial, County and Local policies and plans. The following is a summary of the findings from this exercise. It can be concluded that the development of trails and active transportation facilities is not an isolated trend. Throughout Canada and Ontario, municipalities and their partners are demonstrating their commitment to active transportation and recreation.

A full summary of the policies and plans which were reviewed as part of the development of the Trails Master Plan can be found in **Appendix A** of the master plan report.

FEDERAL

Canada

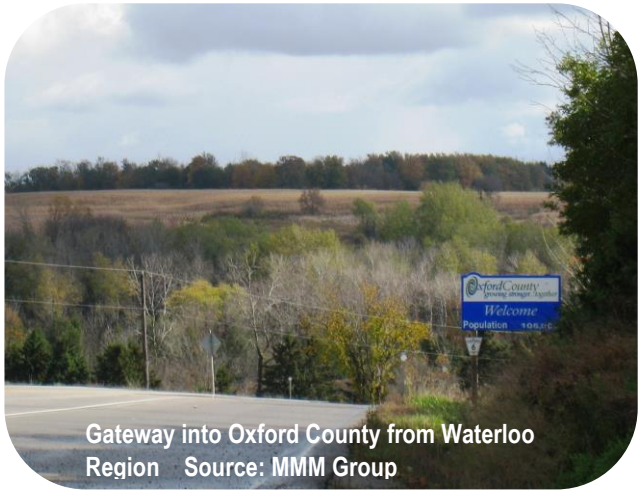
"The promotion of active transportation has led to special emphasis on on-road / off-road facilities for non-motorized movements within cities." (Transport Canada, 2011)

Applicable Policies and Plans:

- Strategies for Sustainable Transportation Planning: A Review of Practices and Options, 2005

Supportive Organizations:

- **Trans Canada Trails Foundation** - a not-for-profit organization that promotes and assists provinces and territories with the development and use of the Trans Canada Trail.
- **Federation of Canadian Municipalities (FCM)** - developed "Communities in Motion: Bringing Active Transportation to Life Initiative" which sets out goals for promoting the development of active transportation infrastructure and programming, eliminating barriers to different travel mode choices and promoting active transportation modes such as walking and cycling as part of everyday life.



Gateway into Oxford County from Waterloo Region Source: MMM Group

PROVINCIAL

Ontario

The vision of the Ontario Trails Strategy is "A world-class system of diversified trails, planned and used in an environmentally responsible manner that enhances health and prosperity of all Ontarians". (The Ontario Trails Strategy, 2005)

Applicable Polices and Plans:

- Transit Supportive Guidelines, 2013
- Ontario Cycling Strategy, 2012
- Bill 51 – Plan Reform, 2006
- Provincial Policy Statement, 2005
- Accessibility for Ontarians with Disabilities Act, 2005
- The Ontario Trails Strategy, 2005
- Municipal Act, 2001
- Highway Traffic Act, 1990

Supportive Organizations:

- **The Ontario Trails Council (OTC)** – a not-for-profit organization that promotes the development of trails in Ontario. In some cases representatives from the Council can help to mobilize trail representatives and efforts.
- **Share the Road Coalition** – a cycling advocacy organization created to unite cycling organizations from across Ontario and work with and on behalf of municipalities to make communities more bicycle-friendly.

- **Ministry of Health Promotion and Sport** – serves as one of the lead Ministries for trail development in Ontario. A number of years ago, the Ministry of Health Promotion and Sport drafted a vision for trails province-wide which states that the province should explore the development of "a world class system of trails that captures the uniqueness and beauty of Ontario's vast open spaces and natural and built cultural/heritage resources..."
- **Ministry of Health and Long-Term Care –** strives to enable Ontarians to lead healthy, active lives and make the province a healthy, prosperous place to live, work, play, learn and visit. Part of the ministry's mission is to champion health promotion in Ontario and make Ontario a leader in health promotion within Canada and internationally. The Ministry has developed the Healthy Communities Fund (HCF) Program provides non-capital funding to organizations for the delivery of integrated health promotion initiatives across Ontario.
- **Health Promotion Division of the Ministry of Health and Long-Term Care –** serves as one of the lead Ministries for trail development in Ontario. A number of years ago, the former Ministry of Health Promotion drafted a vision for trails province-wide which states that the province should explore the development of "a world class system of trails that captures the uniqueness and beauty of Ontario's vast open spaces and natural and built cultural/heritage resources..."
- **Ministry of Tourism, Culture and Sport –** supports three important sectors of Ontario's economy to directly promote economic growth and job creation and enhance the quality of life for Ontarians. These include the tourism sector, the cultural sector, and the sport and recreation Sector. The Recreation and Community Programs Division promotes participation in sport and recreation activities across the province including the use of Ontario trails. One of the division's main initiatives includes the Trails Open Ontario program which celebrates Ontario's trail systems by providing an opportunity for the public to experience trails through organized free local events.
- **Ministry of Transportation of Ontario (MTO)** – recently completed a survey of road users which suggested that about 1.2 million adults in Ontario ride a bicycle daily during spring, summer and fall and 2.8 million ride at least once a week. However, there are many communities in Ontario where few people cycle. In 2012, the MTO completed the Cycling Data Inventory Study that inventoried regional cycling routes and major regional trails across the province. Then in 2013, the MTO released #CycleON: Ontario's Cycling Strategy. #CycleON "looks ahead 20 years and asks what needs to be done to help more people and communities in Ontario reap the benefits of cycling." One of the main goals of #CycleON is the development of an integrated, province-wide network of cycling routes. In addition, in 2013 MTO along with 13 municipalities and regions and the Ontario Traffic Council (OTC) completed the final draft of Ontario Traffic Manual (OTM) Book 18: Cycling Facilities.

Trail Signage at Chesney Wilderness Area
Source: MMM Group

COUNTY

"The policies of this plan provide opportunities for the use of transportation modes other than the private automobile, including cycling and pedestrian facilities and public transit." (Oxford County Official Plan, 2005, Section 2.1.6)

Applicable Polices and Plans:

- Healthy Communities Oxford Community Picture Report, 2011
- County of Oxford Transportation Master Plan, 2009 & Section 5 Cycling Policies
- Oxford County Trails Guide, 2008
- Oxford County Economic Strategy, 2006
- Oxford Natural Heritage Study, 2006
- Commercial Policy Review
- Draft Urban Design Strategy
- Economic Base Analysis & Rural Development Strategy for Oxford County, 2006
- Oxford County Official Plan, 2005

Supportive Organizations:

- **Oxford County Trails Council** - The Trails Council is a community-based, non-profit organization working for the development, coordination, linking, preservation and use of trails in Oxford County.

LOCAL MUNICIPAL

The County is made up of eight municipalities with different and unique characteristics. They include:

- Township of Blandford-Blenheim
- Township of East Zorra-Travistock
- Township of Zorra
- Town of Ingersoll
- City of Woodstock
- Township of South-West Oxford
- Town of Tillsonburg
- Township of Norwich

The majority of the County is rural in nature with villages, hamlets and settlement areas dispersed within its boundaries. There are also three major urban areas – City of Woodstock, Town of Ingersoll and Town of Tillsonburg which contain the majority of the local employment and community destinations. Though the municipalities can be very different in their land-use structures they have all, in some way, demonstrated their commitment to active transportation and recreation.

Ultimately, the County's upper and lower tier municipalities are guided by the County's Official Plan (OP) including general policy chapters (e.g. natural heritage) and chapters which pertain to the rural (6) and urban (7-9) areas. There are also a number of municipalities which have developed trail or active transportation specific policies (e.g. Trails/ Recreation and Cycling Master Plans for the City of Woodstock and Towns of Tillsonburg and Ingersoll) and plans or incorporated trail or active transportation related policies into other planning documents e.g. accessibility plans, development charges, transportation initiatives, secondary plans, design guidelines etc. By establishing the policy support for the development of trails and trail related infrastructure at all levels, the County is well positioned to continue support of more active forms of transportation and recreation.

1.1.2 A HISTORY OF TRAILS IN OXFORD COUNTY

Until now, much of the trail design, development and maintenance has been initiated and completed by the Oxford County Trails Council, local municipalities and local conservation authorities.

The Trails Council was formed in 2008 and is a membership-based interest group made up of County staff, municipal and conservation authority representatives and local residents.

Though a substantial amount of work has been done by the Trails Council, there was growing demand for a County-wide strategy for trail development and design. In order to move forward with the development of a trails network strategy for the County, a full understanding of the existing trail routes and facilities is needed.

Key Consideration(s):

The trails found within Oxford County are owned, operated and maintained by a number of different groups / organizations. The County is currently not responsible for the design, development and maintenance of any trails found within its boundaries. The majority of the trails are maintained by representatives from the Oxford County Trails Council, local Conservation Authorities, or local municipalities.

Table 1.1 is a summary of the major existing trails found within the County.

Table 1.1 – Summary of Existing Trails within Oxford County

Avon Trail
Description: The Avon Trail is 19km long and runs between Perth-Oxford Road and Road 96. It begins where the Thames Valley Trail finishes in St. Mary's and ends in the village of Conestogo where it meets the Grand River Trail. **Users:** walkers, cyclists, snowshoers and cross-country skiers.    Source: www.oxfordcounty.ca
Chesney Wilderness Area
Description: The trail is located north of Oxford Road 29 west of Oxford Road 22. It is less than 2 km and is a loop which runs through wetlands, meadows and mature hardwood bush. **Users:** Walkers and cross-country skiers.    Source: MMM Group Limited

Embro Pond Conservation Trail

Description: The trail is 2.4km and is made up of a series of loops. It is well-maintained and is primarily constructed of packed earth or wood chips. The trail is considered family friendly with a low difficulty level.

Users: Walkers and cross-country skiers.

Source: MMM Group Limited

Hickson Trail

Description: The trail was once a piece of a rail line running from Stratford to Port Dover. The Ministry of Natural Resources purchased the corridor of which 5.5km is now the Hickson Trail. The trail spans from Pittock Park Road north to Braemar Side Road.

Users: Walkers, bird watchers and cyclists.

Source: MMM Group Limited

Husky Trail Pittock Conservation Area

Description: The trail is approximately 5 km long and is found on the north side of Pittock Lake in Pittock Conservation Area. The trail runs through a pine plantation near the CPR railway tracks south of Oxford Road 17 between 14th Line and 15th Line.

Users: Walkers and cyclists.

Source: http://www.ontariotrails.on.ca/trails-a-z/husky-trail

John Lawson Park and Trail

Description: The trail is 2.75km long and is made up of several loops along the Thames River. The park is naturalized, which provides trail users with the opportunity to bird watch and see a variety of vegetation.

Users: Walkers, cyclists, snowshoers and cross-country skiers.

Source: http://chasemarch.com

Lawson Tract

Description: The tract is just over 2 km and runs through mostly wooded areas. Hikers are able to bird watch and see a variety of vegetation.

Users: Walkers, snowshoers and cross-country skiers.

http://www.woodstocksentinelreview.com

Millennium Trail System Rotary Lion & Youth Start

Description: The system is made up of over 10km of trails developed and maintained by the City of Woodstock, Woodstock Rotary Club, Woodstock Lions Club and Youth Start. The trail is found within mixed hardwood and softwood forests, marshland and some retired agricultural areas. The system is currently not fully linked.

Users: Walkers, cyclists, snowshoers, cross-country skiers and mountain bikers.

Source: http://chasemarch.com

Oxford Thames River Trail Beachville

Description: 2 km of the Oxford Thames River Trail were developed and opened for public use in 2011 with the goal of developing a trail system linking Woodstock to Ingersoll and beyond. The link is currently found between two active railway lines on preserved natural lands.

Users: Hiking, cross-country skiing, and bird watching.

http://oxfordthamestrails.50webs.com/open/grandopen.htm

Roth Park Trail (Woodstock)

Description: The trail is located on the south side of Pittock Lake and is approximately 6.75 km long. The main trail is hard packed earth and granular surfaced (generally 2 to 3 m wide) with a paved section from Roth Park to Lansdowne (approximately 2.5 m wide). Side trails link back to the main trail at Lansdowne Ave. Trail users can access the system by following the trail under the railway bridge and Highway #59 to Tecumseh Street.

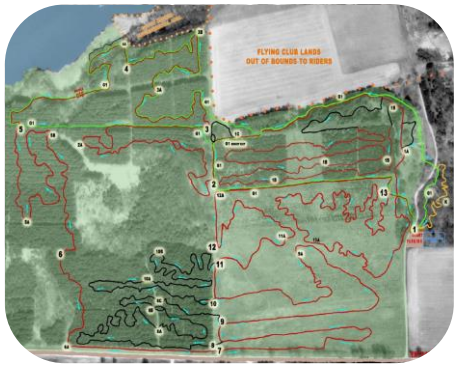
Users: Walkers, cyclists, snowshoers and cross-country skiers.

http://www.informationoxford.ca

The Pines Woodstock Cycling Club

Description: The trail is approximately 23 km long and is primarily maintained for off-road cyclists with a variety of skill levels. The property is owned by the Upper Thames River Conservation Authority and leased by the Woodstock Cycling Club (W.C.C.) who construct and maintain the trails.

Users: Cyclists – primarily mountain bikers.



Source: www.woodstockcyclingclub.ca

Thomas Ingersoll Scenic Trail

Description: The trail extends 2.5 km from the Cheese Museum on Plan Line to the Gazebo in downtown Ingersoll.

Users: Walkers, cyclists, snowshoers and cross-country skiers.

Source: http://chasemarch.com

Tillsonburg Conservation Area (Camden Park)

Description: The park contains a 1 km trail loop which highlights the natural features of the conservation area.

Users: Walkers, cyclists, snowshoers and cross-country skiers.

Source: MMM Group Limited

Tillsonburg Trans Canada Trail McLaughlin Way Trail

Description: The Tillsonburg portion of the Trans Canada Trail is 10.5 km long and runs from the north end of Tillsonburg to the Trans Canada Trail into the municipality of Bayham. McLaughlin Way, a 0.5 kilometre branch connects Hawkins Bridge at Lake Lisgar and Lisgar Avenue.

Users: Walkers, cyclists, snowshoers and cross-country skiers.

Source: MMM Group Limited

Trans Canada Trail Borden Crescent Trail and Carroll Trail

Description: The 1 km Borden Crescent Trail and the 5 km Carroll Trail loop are both are part of the Trans Canada Trail linkage. Trail users have the opportunity to see fish, birds, otters, deer and smaller wildlife as well as some significant Carolinian trees.

Users: Walkers, cyclists and snowshoers.

Source: MMM Group Limited

Trans Canada Trail Kinsmen Participark and Veterans Memorial Walkway

Description: The Kinsmen Participark portion of the Trans Canada Trail is a 1.2 km linear limestone trail that extends along Stony Creek. The Veterans' Memorial Walkway is a 1.5 km paved trail with lights. The trail intersects Participark over the Kinsmen Bridge to Bridge Street and is a well-used access for downtown services.

Users: Walkers, cyclists, snowshoers and cross-country skiers.

Source: MMM Group Limited

Trillium Woods Trail

Description: The trail is a wide, well maintained 1 km single loop that runs through a mature maple sugar bush west of Trillium Line.

Users: Walkers and cross-country skiers.

Source: www.oxfordcounty.ca

Vansittart Woods Trail

Description: The trail is constructed of hard packed earth and loops through hardwood and pine forests. It is found within an outdoor education centre for the students of the Thames Valley District School Board. Permits for trail use are required.

Users: Walkers, snowshoers and cross-country skiers.

Additional information can be found on the County and Trails Council webpages. These webpages are currently considered the primary "hub" for all trail related information and resources:
http://www.oxfordcounty.ca/ThingstoDo/Trailsparks/OxfordCountyTrails.aspx

http://www.oxfordcountytrailscouncil.ca/

For information related to the Trans Canada Trail system the following link can be used:

http://tctrail.ca/

Though noteworthy work has been completed, there is still great potential for future trail development within the County. By establishing a network of proposed off-road connections and desire lines linked by on-road cycling and walking facilities (e.g. paved shoulders or signed routes) and setting out strategic next steps and tools to facilitate future implementation, the County and its partners now have the opportunity to move forward with the coordination of a long-range and flexible County-wide trails network linking urban and rural communities.

The master plan is intended to be used as a blueprint for future development and to allow those responsible for the design, development and implementation of trails to use a consistent guideline / resource to enhanced trail infrastructure, bridge existing gaps in the system, improve overall route connectivity, mitigate barriers and facilitate further route continuity while highlighting and preserving areas of natural and cultural significance.

Scenic Rural Road Source: MMM Group

1.2 HOW WAS THE MASTER PLAN DEVELOPED?

The Oxford County Trails Master Plan was initiated in July 2013 and was developed using a three phased approach illustrated in **Figure 1.1**.

Key Consideration(s):

A key element of the development of the master plan was public and stakeholder consultation. Over the course of the study a number of engagement and consultation initiatives were undertaken including an online questionnaire, social media postings / blasts, meetings with the study steering committee and public open houses. The information gathered informed the development of master plan findings and is generally consistent with the consultation requirements as set out in the Municipal Class Environmental Assessment (EA) process. Details regarding the consultation initiatives undertaken over the course of the study can be found in **Appendix B**.

Project Initiation
July 2013

↓

Phase 1: Understanding the Resources
July 2013 August 2013

↓

Public Awareness Campaign
Initiated July 2013

↓

Phase 2: Developing the Plan
August 2013 November 2013

Phase 3: Finalizing the Plan
November 2013 March 2014

↓

Public Information Centre:
November 28, 2013 & December 4, 2013

Presentation to Council
March 2014

Project Completion
April 2014

Figure 1.1 - Oxford County Trails Master Plan Development Process

Phase 1: Understanding the Resources

- Prepared consultation strategy and materials
- Reviewed background information & mapped existing conditions
- Developed study vision, objectives & route selection criteria
- Identified successful implementation strategies
- Identified network opportunities and barriers and prepared draft candidate route network

Phase 2: Developing the Plan

- Completed field investigation and confirmed draft candidate route network
- Developed, submitted and refined the recommended draft trails network
- Hosted the Public Information Centre
- Prepared the network implementation and funding strategy

Phase 3: Finalizing the Plan

- Prepared draft report
- Summarized input and incorporated it into the Master Plan
- Submitted Final Trails Master Plan
- Prepared for presented findings to Oxford County Council

The focus of the master plan was the development of a County-wide trails network made up of off-road connections linked by on-road routes. The network development approach paralleled the study process and involved nine steps. For a full description of the network development approach and findings please refer to **Section 3.1 Figure 3.1.**

1.3 LEARNING FROM OXFORD COUNTY CITIZENS AND STAKEHOLDERS

Developing a trails network that is tailored to Oxford County residents and visitors required input from those who will be using the network. Consultation activities undertaken as part of the study process focused on engaging with and gathering input from local stakeholders and interest groups currently involved in trail development, design and implementation, those who could be involved in the plan's coordination and implementation in the future and potential trail users.

The initiatives identified were based on the following principles:

- Generating interest over the course of the study process;
- Building momentum for the implementation of the proposed trail network;
- Achieving community involvement from the public including people of all ages and abilities;
- Increasing awareness of the benefits of implementing trail infrastructure and programs;
- Providing input on realistic trail opportunities and mitigation measures for trail barriers; and
- Enhancing overall route continuity and connectivity to key destinations and attractions.

Consultation and engagement alternatives were summarized and presented in a formal Consultation / Engagement Strategy. This strategy was reviewed and confirmed by County staff and the project steering committee and was used over the course of the study to guide / track consultation initiatives. By providing a range of consultation and engagement choices, members of the public are more likely to select a consultation venue / method that best suits their needs.

Project Initiation (July 2013)

- Prepared Notice of Study Commencement
- Prepared for and Held Steering Committee Meetings #1 and #2
- Developed Public Awareness Campaign
- Initiated Online Questionnaire
- Promoted Study on County and Municipal websites
- Developed and Distributed Study Promotional Business Card

Phase 1 (July 2013 / August 2013)

- Continued to Promote Study Online
- Promoted Online Questionnaire
- Distributed Mobile Display Boards

Phase 2 (August 2013 – December 2013)

- Continued to Promote Study Online
- Promoted and Held Public Information Centre at two locations

Phase 3 (January 2014)

- Continued to Promote Study Online

Project Completion (March / April 2014)

- Presented to Council
- Issued Notice of Study Completion

The input gathered indicated significant support for the development flexible County-wide Trails System. However, some responses also indicated the need for change to address some of the County-wide and local challenges. All input received was documented and carefully considered when developing the master plan.

For a more detailed description of the consultation activities as well as the input which was received please refer to **Appendix B**.

1.4 SETTING A DIRECTION

The development of a master plan is typically based on three key components the study objectives - which set out a strategic direction when developing the master plan, a long-range vision for trails and a set of goals which are intended to support the vision and guide the implementation and coordination of the master plan. Each of these components is described in the following sections.

1.4.1 STUDY OBJECTIVES

At the outset of the study, the County and steering committee established a set of study objectives. The objectives were based on the needs of those who will be responsible for coordinating the plan's implementation and were used by the study team to guide the development of the master plan. They included:

- Document and map existing trails, unique features, opportunities and barriers throughout the County, related to trail development;
- Review local policies and plans influencing trail development;
- Consult with the public, local stakeholders, interest groups and public agencies;
- Recommend a County-wide trails network including on and off-road routes;
- Review successful implementation and funding models;
- Develop an implementation strategy; and
- Identify potential branding, promotion, marketing and partnership strategies to support the network.

1.4.2 MASTER PLAN VISION & GOALS

A master plan vision and supportive goals are intended to form the blueprint for the future trail network. They are intended to illustrate long-term objectives with clear actions on how to achieve them. The long-term vision for trails in Oxford County is:

"Oxford County understands the quality of life and tourism benefits associated with trail development, and supports connecting key community destinations found in the County's rural areas and urban centres through a continuous and connected system of off-road trails and on-road cycling linkages."

This vision is supported by six (6) goals:

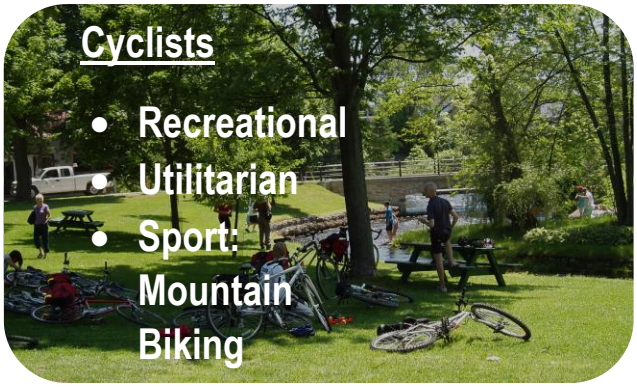
- Build upon the work that has previously been completed by the Oxford County Trails Council, local municipalities, Conservation Authorities and other trail related interest groups and stakeholders;
- Improve connectivity between population centres;
- Improve and provide on and off-road connections between existing trail systems;
- Accommodate a range of on and off-road trail users (i.e. pedestrians, hikers, cyclists, etc.) of all ages and abilities;
- Identify roles and responsibilities for trail design, implementation and maintenance; and
- Identify funding and partnership opportunities to facilitate the implementation and operations of the trails network.

1.5 TRAILS MASTER PLAN ASSUMPTIONS

Trail development and design is not a "one-size-fits-all" approach. A network should be developed which is made up of a range of trail types based on the experience that is desired while ensuring connectivity and continuity where possible between the routes. When developing the master plan, some assumptions were made regarding trail users, trip types, accessibility, connectivity and personal security and safety. A summary of these assumptions is presented below. For more information on the assumptions and other design considerations please refer to **Appendix C – Trails Designers' Toolbox**.

1.5.1 TRAIL USERS

Trail users vary in age, level of physical ability and type of activity they are engaging in. They have their own sense of what the trail experience should be, which typically depends on the use they are interested in or what user group they consider themselves to be a part of. For the purposes of the Oxford County Trails Master Plan, the focus was on non-motorized, self-propelled uses with a focus on pedestrians and cyclists.



In addition to the primary user groups, there are other groups such as cross county skiers, snowshoers and equestrians that are expected to be seasonal users of the system. In select locations along the proposed trail network these users have also been considered.

Cross-Country Skiing

Snowshoeing

Equestrian

ATVs

Snowmobiles

More specifically, significant interest was expressed for the design of trail facilities to accommodate other user groups that would have seasonal use of the system such as equestrians, ATVs and / or snowmobiles.

There are a growing number of equestrian trail users throughout the County but there is still limited information / clear direction regarding where they can or cannot use the trails. In the future, additional investigations and discussions should be undertaken between the County, its partners and representatives from the equestrian community to explore how equestrian trail users can be accommodated on existing or future planned trail linkages.

It is also acknowledged that motorized trail users such as All-Terrain Vehicle (ATV) operators and snowmobilers currently own and/or operate and use some of the trails found throughout the County. However, motorized trail uses have not been specifically considered within the Oxford County Trails Master Plan. Snowmobile and ATV routes are typically developed, managed, signed and maintained by their respective clubs and designated by the Ontario Federation of Snowmobile Clubs / Ontario Federation of ATV Clubs and not the County or local municipalities.

However, there may be some locations where trails intended for non-motorized users overlap with those intended for motorized users. In those locations, adequate and proper signage related to safe interactions should be implemented.

1.5.2 TRIP PURPOSE

Trail users can also be defined by their trip purpose and intent. Trip purpose can generally be divided into three categories:

- Recreational;
- Touring; and
- Utilitarian.

For the purposes of the Oxford County Trails Master Plan, the focus was placed on developing recreational and touring routes, though utilitarian use in urban areas was also a consideration. A more detailed description of trip types is presented in **Table 1.2.**

Table 1.2 – Overview of Potential Trip Purposes

Recreational Trips
Recreational trips are those for which the primary objective is to enjoy the experience.
• Pedestrians and cyclists will typically use the network for fitness or leisure purposes. • Routes to and from destinations of cultural or natural significance including off-road recreational trails make up a large number of recreational trips. • They will typically use the off-road or secondary connections as part of the overall network.
Touring Trips
Touring trips are often undertaken over a longer distance and period of time than utilitarian and recreational trips.
• Pedestrians and cyclists use hiking and cycling as a means of exploring areas of significance over long-distances. • Trips can vary from full day to multi-day excursions. Users may plan their trips in advance and often spend money for accommodation and food at their destination point. In some cases they travel in groups.

Utilitarian Trips
Utilitarian trips are trips which are taken to reach a particular destination for day to day activities.
• Utilitarian users are those who use cycling or walking as their day to day mode of transportation to get to and from work, school, errands, etc. • Utilitarian trail users often use the on and off-road linkages that make up the trails network year-round in all weather conditions as opposed to those roads which do not make up part of the designated network. In some cases they may choose to use public transit or other modes of transportation during the winter season. • Typically utilitarian users have good mobility skills and are cognisant of the "rules of the road".

1.5.3 ACCESSIBILITY

In 2005, the Ontario Government committed to building a more accessible province when it passed the Accessibility for Ontarians with Disabilities Act (AODA).

As part of the Act a set of Accessibility Standards for the Built Environment were developed to inform pathway and trail design. The intent is that these standards will help remove barriers in buildings and outdoor spaces for people with disabilities. The standards are to be applied for new construction and / or extensive renovation. The guidelines and criteria set out in these documents apply to the development of recreational trail and sidewalk facilities.

Sections 80.8 and 80.10 of the Accessibility Standards for the Built Environment (Ontario Regulation 191/11 Part IV.I) provide the technical requirements for recreational trails and should be the primary reference for those responsible for the design and implementation of trail facilities in the County. Additional considerations regarding accessibility and trail design are provided in **Appendix C**.

Source: MyNewWaterfrontHome.com May 2012

1.5.4 COORDINATION & CONNECTIVITY

Connectivity is considered a key principle for the development of a County-wide network. This was reinforced through input provided by the study Steering Committee and members of the public and is further supported by the study's vision and objectives. A continuous and connected trail system should strive to achieve the following goals:

- Link significant destinations and attractions including existing trail segments and systems;
- Connect significant population centres;
- Access services and accommodations; and
- Offer a range of on and off-road facility types and route options.

Until now, the development of trails has been led by a number of different stakeholders and interest groups, most predominantly the Oxford County Trails Council, local Conservation Authorities, local municipalities with assistance from the Trans Canada Trail Foundation.

Though the work completed is an example of trail success, the Oxford County Trails Master Plan is intended to be the blueprint to guide future trail development. In order to ensure that a system is connected County-wide, all of those involved and responsible for trail design, development and implementation should have a unified approach to move forward with.

The network and master plan recommendations are intended to be used as a guide that responds to emerging community trends and an increasing demand for a continuous and connected system of trail facilities which are developed as a collaborative effort between the County, local municipalities and key stakeholders.

1.5.5 PERSONAL SECURITY & SAFETY

Trail routes should be designed to allow users to feel comfortable, safe, and secure. This may include providing good visibility by having routes pass through well-used public spaces or maintaining sight lines and sight distances. Also, minimizing routes close to features that create hiding places such as breaks in building facades, stairwells, dense shrubs and fences is also important in maintaining a safe environment. The Royal Canadian Mounted Police (RCMP) developed principles of Crime Prevention through Environmental Design (CPTED) for professionals who work in urban design development and related areas. These should be considered and applied to help address security issues concerning trail use, particularly in locations where trails are infrequently used, isolated or in areas where security problems have occurred in the past. CPTED can help to reduce crime and fear through territoriality, surveillance, activity support, hierarchy of space, access control, environment and intended user groups, as well as maintenance. For more information about the guiding principles of CPTED for Trail Design refer to **Appendix C** or visit: http://www.rcmp-grc.gc.ca/pubs/ccaps-spcca/safecomm-seccollect-eng.htm.

2.0

TRAILS IN OXFORD COUNTY: THE BENEFITS & POTENTIAL OPPORTUNITIES

Dereham Wetlands Long Point Region Conservation Authority Source: MMM Group

2.1 ESTABLISHING THE BUSINESS CASE

Across Ontario, trail use is recognized as one of the top three recreational pursuits with a participation rate of 20% and an estimated growth rate of 2.3% (Ministry of Tourism, Culture and Sport). There is a growing demand for active transportation and recreation. This is what provincial, national and international research and evidence shows. In response, trail organizations, municipalities, counties and conservation authorities are undertaking strategic planning studies to develop networks which encourage increased activity levels.

As documented in **Chapter 1.0** there is significant support for the development of trails at the federal and provincial level from the Trans Canada Trails Association, the Ministry of Tourism, Culture and Sport, the Ministry of Health and Long Term Care, the Ontario Trails Council and the Waterfront Regeneration Trust. Trail use has been embraced as a convenient, affordable and health-enhancing activity which can be integrated into recreational and day to day activities. The commitment to trail development provides numerous opportunities for partnership and funding to develop inter-connected trail linkages which help to establish province and nation-wide trail systems.

Our nation and province's demographics are changing and people are becoming more aware of the potential health benefits that can result from trail use or increased levels of activity. Our population is aging, however, trail use and more active forms of transportation (walking, cycling, jogging, hiking, etc.) is increasing as popular recreational and in some cases viable commuter options. Trail activities have experienced a substantial growth in participation rates with health and tourism professionals placing a renewed focus on the pursuit of trail activities for their health, safety, economic and environmental benefits.

This section describes some of the benefits of developing and implementing an integrated, well-designed trail system.

2.1.1 A ROLE FOR TRAILS IN ACTIVE AND HEALTHY LIVING

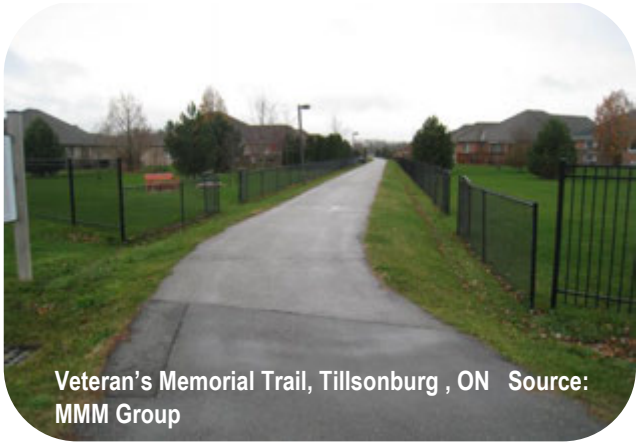
In 2001, approximately $2.8 billion was spent on health care due to physical inactivity in Canada, which could be reduced by $280 million if physical activity was increased by 10%[i]. Sedentary lifestyles have serious consequences for public health, the most visible of which is the sharp rise in obesity across Canada in recent years. Almost half of Canadians, ages 12 and over, report being physically inactive and 26% of youth between the age of 2 and 17 years old are overweight or obese (Statistics Canada 2005). About two thirds of Canadians are inactive, resulting in approximately $2.1 billion of direct health care costs in Canada (Canadian Medical Association Journal, Nov. 2000).

i The Business Case for Active transportation, The Economic Benefits of Walking and Cycling; Section 4.7.2; GO for Green, March 2004

Maintaining physical activity in rural areas can be challenging. Although people living in rural areas are generally considered to have a higher quality of life than urban dwellers, rural residents have an increased risk of death from circulatory and respiratory disease, as well as diabetes (Haldimand-Norfolk Health Unit, 2007). Rural Canadians are also more likely to be overweight or obese.

Increased physical activity is known to reduce the risk of coronary heart disease, cancer, and bone loss from osteoporosis, decrease the cost of medical care, decrease workplace absenteeism, and maintain the independence of older adults (Canadian Medical Association Journal, Nov. 2000). The Ontario Ministry of Health and Long Term Care states that only 30 minutes of brisk walking per day are required in order to maintain one's health, and the most effective fitness routines are moderate in intensity, individualized and incorporated into our daily activities.

Providing better access to trails by increasing the number and their distribution in the urban centres of Oxford County, and establishing rural trail connections between communities, may help to encourage higher levels of activity. Furthermore, a more connected network that is easy to follow may help to encourage more local commuting on trails, allowing users to get some of their regular exercise traveling to and from work, or taking children to school and back.



Veteran's Memorial Trail, Tillsonburg , ON Source: MMM Group

In addition to physical health benefits, there are other good reasons to use trails. Recreational trail use can enhance one's mental outlook and well-being, improving self-image, social relationships and increasing self-reliance by increasing a sense of independence and freedom. Trail projects can help to foster partnerships among individuals, government, local business and interest groups. Trails are meeting places, and provide for informal interaction between people from a variety of backgrounds. There is currently a shift in our public health care system away from protecting people from hazards in the environment to developing healthy environments in which people live. Round table discussions conducted during the development of Active 2010, Ontario's Sport and Physical Activity Strategy highlighted a lack of bike paths and sidewalks in many communities, as well as the car-centric urban planning and land use policies that have shaped the development of new neighbourhoods in Ontario (Ministry of Health Promotion, 2005). Urban sprawl has been directly linked to obesity and physical activity in numerous studies (Williams et al., 2007), prompting health promoters to become more actively involved in the planning and design of Ontario's neighbourhoods. The ability to walk or cycle safely in neighborhoods is integral to being physically active, maintaining a healthy body weight, and increasing social interaction (Heart and Stroke Foundation of Canada, 2006).

The Canadian Medical Association recently adopted a resolution to urge all levels of government to promote active transportation by incorporating active transportation principles in community planning and infrastructure renewal (CMA, 2008). The following are some other interesting statistics relating health and community design:

- Exercise and health is seen by Canadians as the number one benefit to walking and cycling. Practicality and convenience, and pleasure are also frequently cited benefits (Go for Green National Active Transportation Survey, 2005).

- A 5% increase in the walkability of a residential neighbourhood was associated with 32 more minutes of physically active travel per day and a 0.23% reduction in Body Mass Index (BMI). (Frank, 2006).
- Individuals who have access to trails increase their recreational activity on average by 44% (Irish Trail Strategy, 2006).
- A study by the Nova Scotia Heart and Stroke Foundation in 2004 concluded that 40% of chronic illness could be prevented by regular physical activity and suggested that urban planning could offer opportunities for increased physical activity by creating walking and cycling alternatives, such as trails, to motorized transportation.

In 2002 the Wellington-Dufferin Health Unit conducted the "The Heart Health Knowledge Attitude and Beliefs Survey" which provided a comparison of attitudes related to heart health between 1998 and 2002. Some of the findings point to the potential health benefit that trails can provide. Specifically, when asked about awareness of strategies to reduce blood pressure, there was an 11% increase between 1998 and 2002 in the number of respondents who indicated that regular exercise is a good strategy to reduce blood pressure. Regular exercise was also the number one response which indicates an awareness of the benefits. It could be assumed that providing better access to trails by increasing the number of kilometres of local trails may help to encourage higher levels of activity.

Trans Canada Trail Connection in Tillsonburg, ON
Source: MMM Group

2.1.2 ENHANCING COMMUNITY SAFETY WITH TRAILS

A report was completed by Buehler & Pucher (2011) which states that "cycling safety is an important determinant of cycling levels". The causation probably goes in both directions. Several studies confirm that increased cycling safety encourages more people to cycle. Conversely, the concept of 'safety in numbers' proposes that, as more people cycle, it becomes safer because more cyclists are more visible to motorists and an increasing number of motorists are also cyclists, which probably makes them more considerate of cyclists when driving"[ii]. In another study completed by the Thunderhead Alliance, collision data was compared to the presence of bicycle and pedestrian fatalities and active transportation mode share. Results indicated a positive correlation between the levels of cycling and walking and increased safety of users. Cities with the highest raw numbers of walking and cycling also had the lowest per capita fatality rates for pedestrians and cyclists[iii].

ii Buehler, R. and Pucher, J. "Cycling to Work in 90 Large American Cities: New Evidence on the Role of Bike Paths and Lanes". Sprinter Science+Business Media, LLC. (2011)
iii Thunderhead Alliance. "Bicycling and Walking in the US; Benchmarking Report, 2007". Prescott, AZ: Thunderhead Alliance. 2007.

Public opinion research indicates that with the development and / or enhancement of hard infrastructure many pedestrians and cyclists report that they feel safer and thus participate more frequently in active transportation activities and trail use.

A research paper developed by the Toronto Coalition for Active Transportation / Clean Air Partnership in 2010 defines the two principal safety concerns for pedestrians and cyclists as concerns related to personal safety that could be jeopardized by crime as well as concerns which arise as a result of traffic safety, due to the fact that non-motorized and motorized modes typically share the same infrastructure[iv]. Research has found that in the United States, pedestrians and cyclists suffer 2-3 times more accidents than a car driver (per 100 million trips) (Pucher and Dijkstra, 2003)[v].

Trails are often located out-side the roadway right-of-way, providing pedestrians and cyclists with a dedicated facility away from vehicular traffic therefore increasing user comfort and safety.

Substandard infrastructure can also increase the safety concerns of pedestrians and cyclists. Inadequate hard infrastructure sidewalks and bicycle paths, dangerous intersections and crosswalks and poor lighting were found to be significant contributors to increased fatality and injury rates among pedestrians and cyclists[vi].

The implementation of well-designed trails infrastructure and on-going maintenance can significantly decrease the safety risk of users.

Quilt Trail Connection through Tillsonburg, ON
Source: MMM Group

2.1.3 TRAILS, TOURISM AND ECONOMIC DEVELOPMENT

Trails across North America have created numerous economic benefits and opportunities for the communities that they pass through. Communities benefit from trail development through increases in business activity, and by providing services to an increasing number of trail users. Trails provide benefits to the local economy first during construction through the design, supply and installation of materials, and then following construction, benefits emerge in the form of expenditures by trail users. A few examples include:

- Trails in New Brunswick employ around 1500 people for an average of 6 months per year.
- 70% of all Bruce Trail users report that the trail is their main reason for visiting the area, and they spend an average of $20.00 per visit, per user, within a 10km corridor on either side of the trail.
- Annual expenditures linked to Quebec's trail system known as La Route Verte rose to $95.4 million in 2000, representing 2,000 jobs and $15.1 million in provincial and $11.9 million in federal tax revenues.

iv Behan, K & Smith Lea, N. "Benchmarking Active Transportation in Canadian Cities". Toronto Community Foundation. Clean Air Partnership (2010).

v Pucher, J. and Dijkstra, L. "Making Walking and Cycling Safer: Lessons from Europe". Transportation Quarterly 54 (2000): 25-50.

vi Zeeger, C.V. "Designing for Pedestrians". In the Traffic Safety Toolbox: A primer of Traffic Safety. Washington D.C.: Institute for Transportation Engineers. (1993)

- In 2005, Quebec hosted 410,000 bicycle tourists who spent an average of $83 per day and an average of 6.8 nights compared to $66 per day and an average of 3.1 nights spent by other tourists.

- A 1997 survey of Canadian tourists active in the outdoors showed that 30% of Ontario tourists cycled on at least one occasion while on vacation. The Ontario Ministry of Transportation reported that touring cyclists spend an average of $130 per day in Ontario, and bicycle retail and tourist industry contributes to a minimum of $150 million a year to the Ontario economy.

  Bed and breakfast operators between Ottawa and Kingston report that the majority of their business is from touring cyclists.

- An economic impact study completed for the Eastern Ontario Trails Alliance estimated that after the ten year build-out period of the 520km system, approximately 1600 jobs will be created or sustained, and $45 million in annual economic and tourism benefits will be generated in the communities through which it passes (EOTA, 2006).

- Economic Development Departments have recognized the value of trail systems integrated into commercial and industrial developments. For example, the Hanlon West Business Park in Guelph, Ontario includes a trail system surrounding a central natural heritage feature. This feature is being used to attract new industry to Guelph whose employees will benefit by being able to travel to and from work, and take exercise breaks using local trails.

- In Surrey British Columbia a study compared the impact to single-family property values over 20 years for properties that bordered a greenway or trail versus properties that did not.

  The study found that introducing a greenway in four Surrey neighbourhoods increased property values bordering the trail by 1% to 10%, and did not result in any measurable increase in crime[vii].

A 2004 comprehensive study investigated the economic benefits of developing trail systems as part of a study to project the economic benefits of developing the Trans Canada Trail. Some of the information collected regarding economic benefits to other jurisdictions includes:

- A study of the "T" Railway in Newfoundland (2002) found that the total annual economic impacts associated with this trail are estimated to be as high as $17.4 million in new income generated, upwards of 850 new jobs and millions of dollars in additional taxation revenue for both the provincial and federal governments.

- A survey of users of the Georgian Trail in Collingwood, Ontario estimated that the direct expenditure associated with the trail users was $5.2 million in 1999.

- The Economic Impact Study for the Allegheny Trail Alliance (1999) found that trail business accounts for more than 10% of annual receipts for a third of business respondents in the region, and that approximately half of all businesses in the area have plans to expand their business as a result.

Tourism related to trails and trail use is burgeoning locally as well. The Bike Train is an initiative that promotes cycle tourism in Ontario and encourages low impact tourism and healthy lifestyles. This innovative sustainable transportation initiative introduced bike racks onboard select VIA Rail departures between Toronto and Niagara Falls in 2007, and was expanded with great success in 2008 and continues as a seasonal service.

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vii City of Surrey, Greenway Proximity Study, 1980 - 2001

Partnership between Trans Canada Trail & Tillsonburg Trails Source: MMM Group

The Region of Niagara is one of the leading municipalities that recognizes the potential value of tourism and specifically trail tourism. For over a decade the Region has been pursuing its Master Plan to build trails in partnership with the provincial and federal government, the Niagara Parks Commission, the Municipalities of Niagara-on-the-Lake, St. Catharines, Thorold, Welland, Port Colborne, and Fort Erie. When linked together, the trails form the Greater Niagara Circle Route, a large trail loop approximately 150km in length that follows the Welland Canal, Lake Erie shoreline between Port Colborne and Fort Erie, the Niagara River and the Lake Ontario shoreline between Niagara-on-the-Lake and Port Weller. The completed parkway and trail system is expected to welcome as many as 2.6 million visitors per year who are estimated to add as much as $218M annually to local economies[viii]. Niagara's tourism, hospitality, gaming and wine industries are already reaping the benefits resulting from extended visitor stays related to trail based activities.

Research also indicates the impact that equestrian trail use can have on a local economy or tourism base for a community. 2006 Census information indicates a growth of 16.7% in the number of horses found within Ontario. Research also indicates an annual economic impact of $676M with a significant portion of these expenditures in Southern Ontario $146M. More specifically, within Oxford County expenditures on equine activities was estimated at approximately $16M along with strong support from its surrounding communities[ix]. Like long-distance cycling trips equestrian trail riders are typically more likely to use on and off-road trail systems for long-distance rides or large scale organized group rides. These may in turn lead to increased investment in local economies (food, accommodation, entertainment, etc.).

2.1.4 ENVIRONMENTAL AND TRANSPORTATION BENEFITS

Walking, cycling and other non-motorized trail uses are energy-efficient, non-polluting modes of travel, whereas motorized transportation is one of the largest contributors of harmful emissions. The transportation benefits of walking and cycling include reduced road congestion and maintenance costs, less costly infrastructure, increased road safety and decreased user costs. For distances up to 10km in dense, congested urban areas, cycling is often the fastest of all modes of travel.

In Canada, the number of automobiles continues to increase steadily and people are driving greater distances more often. The average car travels 16,000 km/year or about 300 km/week. Limiting the number of kilometres driven by choosing another mode of transportation is by far the best way to reduce air pollution (Public Health Agency of Canada).

viii https://biketrain.ca/

ix Economic Impact of the Horse Industry. Dr. Bob Wright. February 2008

Furthermore, Canadians view environmental quality as an important factor influencing their personal health and the transportation sector is a major source of air pollution in Canada. Transport Canada (2006) identified that urban passenger travel created almost half of the greenhouse gas emissions of Canada's transportation sector, which in turn accounts for almost one quarter of Canada's total.

Providing infrastructure that supports alternative modes of transportation, such as an integrated trail network for walking and cycling, can reduce vehicle traffic volumes and emissions. According to the Harvard University School of Public Health, air pollution contributes to the deaths of 60,000 people annually across the United States, and in urban areas with poor air quality, asthma is becoming a more significant health concern.

Reducing short distance trips by automobile has the greatest potential for reducing air pollution and energy consumption as evidenced by the following statistics:

- The Worldwatch Institute states that a six kilometre round trip by bicycle keeps about 6 kilograms of pollutants out of the air.
- If half the workers in Canada who lived within walking distance of work left their cars at home, their efforts would save 22 million litres of gasoline a year.
- If 5 million Canadians walked or cycled instead of using their automobiles for short trips (averaging 3 kilometres per week), polluting car emissions would be reduced by 30 metric tonnes over a six-month period. (Go for Green, 1994).
- Canadians make an average of 2,000 car trips per year over distances less than 3 km. Surveys show that 66% of Canadians would like to cycle more than they presently do. Seven in ten Canadians say they would cycle to work if there "were a dedicated lane which would take them to their workplace in less than 30 minutes at a comfortable pace"[x].
- When compared to roads, trails are less expensive to construct and maintain, making them an attractive and cost effective component of a balanced transportation system.
- The ecological footprint is a measure of human demands on natural resources such as land, water and air, and is reduced when people choose to travel by walking and cycling. "The greatest contributing factor to a large ecological footprint is carbon intensive fuel supplies for transportation, electricity and heating" (Ontario College of Family Physicians, 2005, p. 20). Cycling and walking have negligible effects on the size of the ecological footprint.
- The average greenhouse gas intensity for light duty vehicles was 295 grams CO_2 per km in 2005. Promoting trail use, especially walking and cycling, can result in significant greenhouse gas emission reductions, approximately 1KT of CO_2 for each 3,500 km of trail use, and compact communities with mixed land use serviced by trails will increase active transportation choices, decrease the need to drive to daily destinations and will decrease the vehicle emissions that contribute to air pollution (CMHC, 2006).

x Ontario Trails Strategy, Ministry of Health Promotion. 2005, Province of Ontario

- On-road routes, which can be used to connect off-road trails, can reduce road congestion and maintenance costs. These connections also allow for an increase in trails use for recreational as well as utilitarian purposes.
- On-road paved shoulders in rural areas routes may contribute to increased safety for pedestrians and cyclists, and have also been shown to reduce the number of run-off-the road single vehicle accidents. In addition, paved shoulders can increase a road's lifespan by encouraging vehicles to travel further away from the asphalt edge.
- As demonstrated by studies in Davis, California and Boulder Colorado, there is strong evidence to suggest that if provided with complete networks of high-quality cycling routes, a significant number of people will cycle. With 20% of trips by bicycle, these communities have the highest levels of bicycle usage in North America. This high level of cycling is facilitated by mature networks which include bike lanes on almost all arterial roads and extensive off-road commuter bicycle trails.

  Residents can simply get on their bicycles with confidence knowing there will always be a safe route to their destination (British Columbia Cycling Coalition Budget, 2007).
- It has been estimated that due to rising gasoline prices, more than 10 million cars – mostly belonging to low income families – will disappear from families in the US and a similar trend is expected in Canada (CIBC World Markets, 2008). Providing safe options for bicycle and pedestrian travel is going to become increasingly important.

Initiatives to promote and encourage active transportation are a viable option to reducing discretionary motor vehicle usage and promoting environmental benefits. Some of the key environmental benefits include[xi]:

- Resource conservation (less dependency on natural resources such as petroleum and coal);
- Pollution reduction;
- Integration of compact mixed development due to reduced transport land requirements;
- Reduced traffic and road congestion;
- Reduced delays from collisions;
- Reduced unreliability of travel time;
- Reduced fuel and transport costs; and
- Improved ability to access facilities and services.[xii].

Planning and constructing communities to be less vehicle dependent by providing infrastructure for alternative transportation modes, such as walking, cycling and public transit can reduce the amount of land required to construct new communities, thus creating more compact subdivisions that make more efficient use of available land. This will also mitigate the fact that motor vehicles, roads and parking facilities are major sources of water pollution and hydrologic disruptions due to such factors as road de-icing, air pollution settlement, roadside herbicides, road construction along shorelines and increased impervious surfaces.

xi Litman, T. "Evaluating Non-Motorized Transportation Benefits and Costs". Victoria Transport Policy Institute. www.vtpi.org. 2005.

xii Toronto Public Health. Road to Health: Improving Walking and Cycling in Toronto. 2012

2.2 WHAT ARE THE OPPORTUNITIES & CHALLENGES?

Understanding the opportunities and challenges associated with trail development in Oxford County was a key component of the network development process. Input regarding potential opportunities and challenges was gathered from those who have been responsible for trail implementation and development in the past, local residents and trail users and those who will be responsible for the plan's implementation.

The proposed trails network for Oxford County presented in **Chapter 3** and the proposed next steps / tools for facilitating implementation outlined in **Chapter 4** strive to highlight these route opportunities and mitigate or provide solutions to the challenges. The goal is to develop a "barrier-free" approach to trail development for the County and its partners. **Table 2.1** highlights the potential trail opportunities and **Table 2.2** is a summary of the challenges.

Table 2.1 – Summary of Network Opportunities

Opportunity #1: Routes Endorsed by Oxford Cycling Committee
Description: The Cycling Advisory Committee had previously endorsed routes which were then investigated by the study team. Some of these endorsed routes were confirmed to form part of the Proposed Route Network Concept for the Oxford County Trails Master Plan.
Example:  County Road 28 / Maplewood Sideroad Source: MMM Group

Table 2.1 – Summary of Network Opportunities

Opportunity #2: Existing Trail Connections
Description: The Oxford County Trails Council has been responsible for the implementation of a number of key off-road trails including the Hickson Trail and an off-road connection north of the Thames River between the City of Woodstock and the Town of Ingersoll.
Example:  Current North Terminus of the Hickson Trail Source: MMM Group
Opportunity #3: Key Community Destinations
Description: One of the primary objectives of the master plan was to develop linkages which provide connections to key community destinations such as community centres, arenas, schools, etc. There are a number of urban and rural community centres within Oxford County which make excellent starting and ending points for trail outings.
Example:  Community Centre in the Village of Embro Source: MMM Group

Table 2.1 – Summary of Network Opportunities

Opportunity #4: Abandoned Railway Corridors

Description: Proposed connections have been identified along abandoned railways to provide a direct linkage to local municipalities and surrounding communities. These connections would require additional investigation regarding status, ownership and public demand.

Example:

Abandoned Railway through Tillsonburg, ON
Source: MMM Group

Opportunity #5: On Road Facilities in Urban Areas

Description: Some of the local municipalities within Oxford County have developed policies, plans and initiatives to design and implement on-road cycling facilities on municipal roadways. Some of these facilities provide significant opportunity to increase connectivity and demonstrates the local support for trail and AT development.

Example:

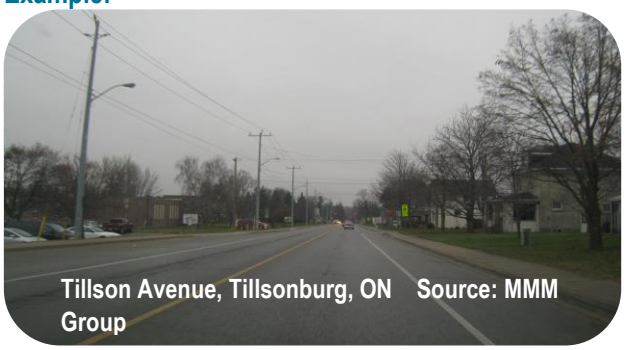
Bike Lane on Clark Road in Ingersoll, ON
Source: MMM Group

Table 2.1 – Summary of Network Opportunities

Opportunity #6: Sufficient Space for Cycling

Description: In built up areas within the County some municipalities have selected to design wide roadways to accommodate on-street parking. In these locations, where demand for parking is low the County and local municipality may consider reallocating the space to implement cycling facilities.

Example:

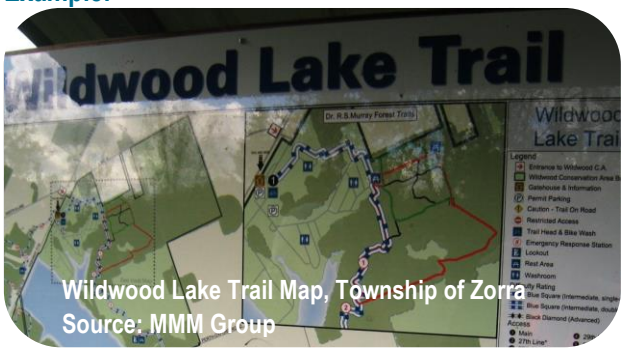


Tillson Avenue, Tillsonburg, ON Source: MMM Group

Opportunity #7: Destination Trails

Description: There are numerous destination trails found within Oxford County which are owned and operated by agencies such as conservation authorities, provincial parks etc. These trails are destinations for both residents and tourists and through additional connectivity could be considered a tourism draw for the County.

Example:



Wildwood Lake Trail Map, Township of Zorra
Source: MMM Group

Table 2.1 – Summary of Network Opportunities

Opportunity #8: Existing Trail Signage & Wayfinding

Description: Many of the existing trails found within the County have signage and wayfinding to guide trail users. Though developed and implemented by various organizations, the County and partners should consider building upon existing signage to develop a County-wide branding strategy for trails.

Example:

Trail Signage, Wildwood Lake Source MMM Group

Embro Pond Trail Signage

Table 2.1 – Summary of Network Opportunities

Opportunity #9: Amenities to Support Trail Use

Description: Like signage, trail amenities can influence how often and if people engage in active forms of transportation and recreation. Benches, washrooms, water fountains, resting areas are all key elements of the network, some of which have been integrated into existing trails facilities.

Example:

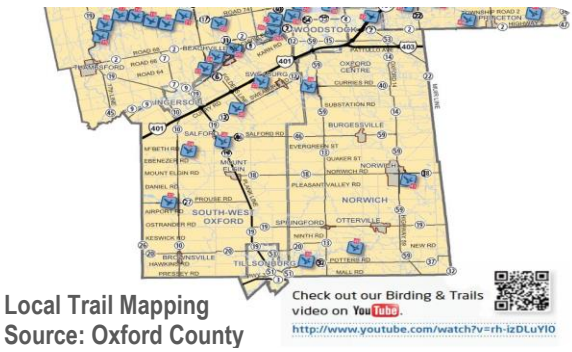
Bike Wash Station at Wildwood Lake Source: MMM Group

Table 2.2 – Summary of Network Challenges

Challenge #1: Network Maintenance
Description: Routes within the existing trails network are owned and operated by a number of different entities including but not limited to conservation authorities, provincial parks, Oxford County Trails Council, local interest groups etc. Each of these groups has a different standard of trail maintenance which can lead to inconsistent trail conditions.
Example:

Water Ponding on the Avon Trail Source: MMM Group

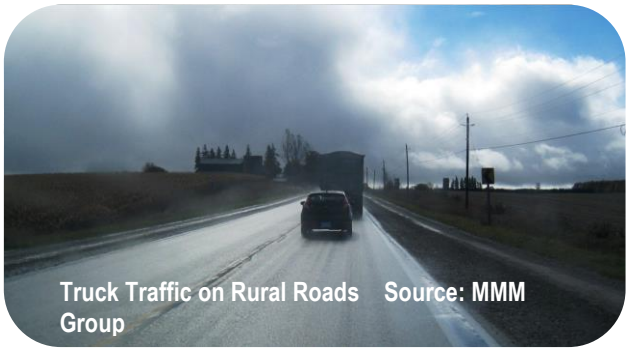
Challenge #2: Lack of Coordination
Description: Similar to route maintenance, there are a number of individuals and entities who are responsible for providing, developing and promoting trails. This can result in inconsistencies with trail design and development as well as inconsistencies with trail mapping, promotion and outreach.
Example:



Local Trail Mapping
Source: Oxford County

Table 2.2 – Summary of Network Challenges

Challenge #3: Rural Roadway Design
Description: Some of the roadways found within the County have high volumes of traffic, traveling at high speeds and large numbers of trucks. Some of these roadways are considered ideal connections for on-road cycling routes, however, the current conditions are not conducive to a sense of comfort and safety.
Example:



Truck Traffic on Rural Roads Source: MMM Group

Challenge #4: Missed Opportunities
Description: There are a number of former rail corridors found within Oxford County. Sections of many of these corridors have been sold to private landowners and are no longer considered a feasible option for trail development.
Example:

Previously Abandoned Rail Corridor in Bright
Source: MMM Group

Table 2.2 – Summary of Network Challenges

Challenge #5: Barriers to Connectivity
Description: In some locations throughout the County trails have been developed that have start or end points which provide limited opportunities for connectivity. Typically these barriers are physical in nature – topography, proximity to other destinations, etc.
Example:  Barrier to Trail Connectivity in Tillsonburg Source: MMM Group
Challenge #6: Other Road Users
Description: Those who cycle on road or require a major road crossing to access a trail connection need to be aware of large agricultural vehicles on the roads during certain times of the year.
Example:  Agricultural Vehicle on Local Road, Salford, ON Source: MMM Group

2.3 LEARNING FROM OTHERS: SUMMARY OF SELECT BEST PRACTICES

To inform the development of master plan and recommendations, the study team undertook a review of current best practices from Ontario based municipalities. The best practices included key topics / issues which were highlighted or discussed between the study team and Steering Committee members or members of the public. These included:

- Trail committee development and user groups;
- Updating Trail Master Plans;
- Trail design and implementation;
- Trail signage & branding;
- Trail promotion & marketing; and
- Trail maintenance.

By understanding existing best practices, the County of Oxford and partners will be more informed when exploring potential trail infrastructure, programming and marketing opportunities. Municipal staff and local partners are encouraged to stay up to date with current best practices in trail facility design and development to help facilitate the implementation of the master plan and growth of the county-wide trail network.

The following sections provide examples and resources that the County and local trail partners can use as the plan moves forward into implementation.

2.3.1 COMMITTEE DEVELOPMENT AND USER GROUPS

Active Transportation Committee

County of Essex County-wide Active Transportation Master Plan

The County-wide Active Transportation (CWAT) Master Plan included a recommendation that the County of Essex establish and chair an Inter-Municipal Active Transportation Committee. Following the adoption of the master plan in 2012, an Active Transportation Committee was developed with the mandate of providing input and guidance to the implementation of CWAT network components under municipal ownership.

The committee is made up of local municipal staff representatives as well as representation from the Essex Region Conservation Authority (ERCA), Go for Health Windsor-Essex / Windsor Essex County District Health Unit, Municipality of Chatham-Kent, City of Windsor, Ministry of Transportation (MTO).

A Terms of Reference (TOR) was developed and adopted by the Committee with the goal of coordinating, sharing technical information, and providing technical guidance between partners with regard to the plan's implementation. The TOR outlines the roles and responsibilities of all Committee members and provides a decision making process to coordinate and implement the proposed CWAT network.

County of Essex County-wide Active Transportation Study Logo Group

Key Resource(s):

http://www.countyofessex.on.ca/wps/wcm/connect/coe/coe/essex+county+services/transportation+services/studies++reports/county+of+essex+studies+and+reports/county+wide+active+transportation+system+cwats

Halton Hills Trails & Cycling Advisory Committee

Town of Halton Hills Cycling Master Plan

Following the adoption of the Halton Hills Cycling Master Plan, a Trails & Cycling Advisory Committee was established. The Committee's mandate is to "provide advice and input to the Town of Halton Hills on matters relating to the design, construction and funding of a trails system and provide advice on implementation of the Cycling Master Plan."

The committee has been responsible for a number of cycling related programs and initiatives associated with its 2013 Cycling Program. Initiatives included but were not limited to – the development of cycling facilities and amenities Town-wide, the Bike it to the Leathertown Festival, Bike it to the Market, A Grade 4 Risk Watch program which included elements of bike safety and a bike to work day.

There are now two sub-groups associated with the Trails and Cycling Advisory Committee for Halton Hills – the Bicycle Friendly Community Sub-Committee and the Town's Trails and Cycling Citizen's Advisory Committee. Together they recently submitted an application to the Share the Road Coalition to obtain bicycle friendly community status. In 2012 they received an honourable mention for its efforts.

Key Resource(s):

http://www.haltonhills.ca/committees/trails.php

http://www.haltonhills.ca/CyclingEvents/index.php#cyclemap

Halton Hills Cycle to the Market Initiative
Source: www.haltoncycles.ca

Trails Sub-Committee & Trails & Active Transportation Committee

Town of Aurora Trails Master Plan

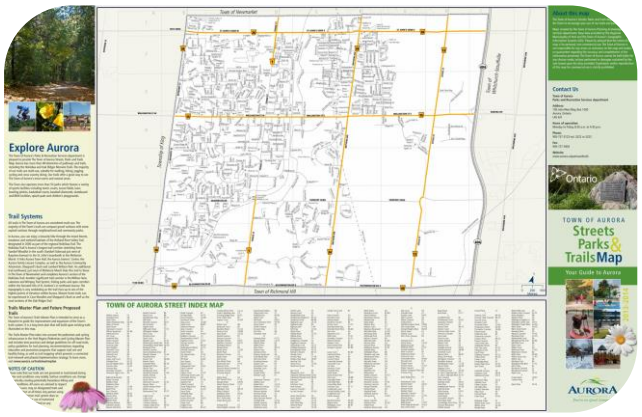
The Town of Aurora Trails Sub-Committee is an advisory committee of Council and is a sub-committee of the Leisure Services Advisory Committee. Established in 2007, the Committee was responsible for addressing all matters relating to the future planning and implementation of a system of linked recreational trails within the Town of Aurora.

Since the adoption of the Town of Aurora Trails Master Plan in 2011, the Trails Sub-Committee mandate has been completed and the Town has selected to establish a Trails and Active Transportation Committee. A Terms of Reference was developed for the committee outlining a purpose / mandate of "an Advisory Committee to Council on all matters relating to the future planning and implementation of the Trails Master Plan recommendations and to provide guidance in all aspects of Active Transportation modes associated with self-propelled, non-motorized traffic, both recreational and utilitarian". The Committee is supported by the Nokiidaa Trail Committee for trail related issues specific to the Nokiidaa Trail connection.

Key Resource(s):

http://www.town.aurora.on.ca/app/wa/mediaEntry?mediaEntryId=59110

http://www.town.aurora.on.ca/aurora/parks



Town of Aurora Streets, Parks and Trails Map – 2013 / 2014

2.3.2 DESIGNING FOR OTHER USER GROUPS

Ontario Federation of Snowmobile Clubs

The Ontario Federation of Snowmobile Clubs is a volunteer led not-for-profit association, which provides a wide range of programs and services to and on behalf of, its member organizations. The association aims to provide a Provincial network of organized snowmobile trails that connects Ontario communities and responsible riding experiences that are safe, enjoyable and environmentally suitable.

Key Resource(s):
http://www.ofsc.on.ca/

Ontario Federation of ATV Clubs

The Ontario Federation of ATV Clubs is a not-for-profit volunteer driven association in Ontario with the goal of providing a safe, enjoyable and connected trail system in the province for All-Terrain Vehicle (ATV) riders. The association aims to create a positive public perception of ATV clubs which strive to provide responsible, safe, legal and environmentally friendly trails in Ontario.

The federation aims to "have one trail model available, from one sustainable organization that represents the interests of recreational ATVers in Ontario". They provide a coordinated venue for ATV riders to plan and coordinate routes and have a set of bylaws and policies that they adhere to.

Key Resource(s):
http://www.ofatv.org/home

Eastern Ontario Trails Alliance

The Eastern Ontario Trails Alliance (EOTA), formally known as the Hastings/Quinte/Land O'Lakes Recreational Steering Committee, was formed as a vehicle to facilitate communication between a range of trail user groups with the goal of developing a regional trails network. Their goals include the preservation of continuous corridors for tourism and other economic uses, the management of the corridors as multi-use facilities, coordination with adjoining landowners and interest groups, and the preservation and enhancement of natural and human heritage along the trail corridors. The EOTA's mission is to develop, manage, maintain and market a comprehensive network of year round shared use recreational trails in the Eastern Ontario area.

Key Resource(s):
http://thetrail.ca/

Equestrian Trail Riders Associations

Norfolk County

Due to a growing demand by equestrians to use County-wide trails, local interest groups were assisted by the Ontario Trails Council to establish a formal equestrian committee. The Norfolk Equestrian Trail Riders Association has been established to encourage more equestrian friendly trails throughout the County.

Key Resource(s):
http://www.portrowangoodnews.com/norfolk-equestrian-trail-riders-norfolk-county-work-to-create-new-trails/ http://www.norfolkcounty.ca/media-releases/do-you-own-a-horse/ http://www.portrowangoodnews.com/norfolk-equestrian-trailriders-association-is-launched/

Equestrian Trail Rider in Norfolk County
Source: simcoereformer.ca

Equestrian Management Strategy

Dundas Valley, Hamilton, ON

The Dundas Valley Conservation Area and Hamilton Conservation Authority have partnered with local equestrian groups to accommodate equestrians on their internal trail system. Equestrians are obligated to pay a fee to ride in the conservation area, which compensates for maintenance costs associated with horse use on trails. Directives are provided regarding safe trail use for equestrians including a trail etiquette guide and organized rides for equestrians.

Key Resource(s):

http://ontarioconservationareas.ca/component/mtree/conservation-authorities-of-ontario/hamilton/dundas-valley-conservation-area

Elora Cataract Trailway, Elora, Wellington County, ON

The Elora Cataract Trail is owned and operated by the Grand River and Credit Valley Conservation Authorities and managed by the Elora Trail Cataract Association. With guidance and directive from the Ontario Trails Council, the Association is able to plan a strategic and balanced approach for trail use between motorized and non-motorized users. Horseback riding is permitted on some sections of the trail, with seasonal restrictions in spring to reduce trail rutting and maintenance costs.

Key Resource(s):

http://www.grandriver.ca/index/document.cfm?Sec=21&Sub1=83

The Ontario Trails Riders Association

The Ontario Trails Riders Association is a non-profit organization which promotes recreational trail riding and the creation, development, preservation and safe use of trails. Several of Ontario's trails are available for equestrian use as a direct result of the efforts of the OTRA including Algonquin Park.

Key Resource(s):

http://www.otra.ca/trails.htm

http://www.otra.ca/trail%20standards.htm

Additional Resources for Consideration:

Hullet Provincial Wildlife Area (Huron County)

http://www.hullettmarsh.com/trail.html

Sandaraska Park in the Garanaska Forest

https://sandaraskapark.ca/equestrian-camping

Dufferin County Forest

http://www.thehillsofheadwaters.com/dufferin-county-forest-main-tract

2.3.3 KEEING THE MASTER PLAN RELEVANT: FREQENT UPDATES

Town of Milton Trails and Cycling Master Plan & Implementation Plan

Town of Milton, ON

Since the adoption of its first master plan in 2003 / 2004, the Town of Milton has undertaken a review of its Trails Master Plan every five years. In 2007 the Town of Milton completed its most recent Master Plan Update which included guidelines for trails design, a recommended network of off-road and on-road routes, a phasing plan for implementation of the network, and potential sources for funding.

In 2013, the Town of Milton initiated their second 5-year update to reflect community changes. This update, once completed, will be used as a strategic implementation document to help guide Town roles and responsibilities and strategic priorities and actions.

Key Resource(s):

http://www.milton.ca/en/play/trailsmasterplan.asp

City of Ottawa Pedestrian and Cycling Master Plan Updates

City of Ottawa, ON

Both the 2013 Ottawa Pedestrian Plan (OPP 2013) and the 2013 Ottawa Cycling Plan (OCP 2013) are part of Building a Liveable Ottawa, which is a comprehensive review of City policy with respect to land use, transportation and infrastructure as embodied in the Official Plan, Transportation Master Plan, and Infrastructure Master Plan.

The 2013 OCP is an update to the 2008 Cycling Plan, incorporating new information and reflecting changes in the City's approach to cycling in the past five years. The plan sets out strategic priorities to further enhance cycling in the County's capital City.

Key Resource(s):

http://ottawa.ca/en/city-hall/public-consultations/planning-and-infrastructure/draft-ottawa-cycling-plan-overview

http://ottawa.ca/en/city-hall/public-consultations/planning-and-infrastructure/draft-ottawa-pedestrian-plan-overview

2.3.4 IMPLEMENTATION & DESIGN

County Road 20 Feasibility Design Study

Leamington, ON - County of Essex, ON

The County of Essex's County-Wide Active Transportation Study (CWATS) was adopted in 2012 and identifies a proposed network of on-road and off-road trails, bike lanes, paved shoulders and signed routes on County roads and within the County's local municipalities. The Municipality of Leamington, in partnership with the County of Essex, selected to proceed with the implementation of an active transportation facility a key active transportation corridor between Leamington and Kingsville, Ontario.

CWATS proposes a Context Sensitive Solution for this corridor which means that given the location, constrained corridor and other roadway characteristics that a location-specific Active Transportation design solution needed to be developed to implement this section of the CWATS network. The study is a direct result of the adoption of CWATS and ongoing discussions between the County and its municipal partners through an Active Transportation Advisory Committee.

Key Resource(s):

http://www.countyofessex.on.ca/wps/wcm/connect/coe/coe/essex+county+services/transportation+services/studies++reports/county+of+essex+studies+and+reports/county+wide+active+transportation+system+cwats

Lake to Lake Cycling Route and Walking Trail

York Region Pedestrian and Cycling Master Plan, York Region, ON

In 2008, the Region developed its first Pedestrian and Cycling Master Plan (PCMP). One of the key strategic recommendations in the PCMP was to develop a Lake Simcoe to Lake Ontario cycling route and walking trail using a system of off and on-road connections . The route is intended to provide residents and visitors with a continuous cycling and walking connection as a major recreational destination for both residents and visitors to York Region and the City of Toronto. In 2012, York Region with input from its local municipalities, the City of Toronto, Conservation Authorities, initiated the Lake to Lake Cycling Route and Walking Trail Feasibility and Design. This comprehensive design study resulted in the selection of a preferred route alignment as well as a preliminary design and details about how the Lake to Lake Route could be implemented within the Region.

York Region staff is continuing to work with local municipalities, stakeholders, and the City of Toronto to implement the remaining segments of the Route. This includes signage and a design that presents a cohesive and continuous identity throughout its entire length.

Key Resource(s):

http://www.york.ca/wps/portal/yorkhome/newsroom/news/york%20cycling/!ut/p/a0/04_Sj9CPykssy0xPLMnMz0vMAfGjzOKNjEzMPAydDbzc3SzNDTzDgj38TN1NDQ3cjPQLsh0VATqIFPQ!/

Retrofitting Local Roads to Include Cycling Facilities, Halton Hills, ON

Halton Hills Cycling Master Plan

The Town of Halton Hills completed a comprehensive Cycling Master Plan in 2010. The plan was developed to guide the Town in implementing a Town-wide cycling network and cycling supportive programs over the next 10 + years. The cycling network establishes a system of primary and secondary routes including on-road and off-road facilities Following the adoption of the Cycling Master Plan, the Town of Halton Hills has made several improvements to cycling infrastructure including:

- Bike Lanes on Delrex Boulevard;
- Bike Lanes on Danby Road;
- Multi-Use Path on Wallace Street;
- Bike Lanes on 17th Sideroad;
- Edge Line on Queen Street Acton;
- Bike Lockers at the Civic Centre; and
- Covered bike racks at the GO station.

Key Resource(s):

http://www.haltonhills.ca/initiatives/cyclingMP.php

Land Acquisition for Trail Development –

Avon Trail, ON

The Avon Trail is a 110 kilometre linear hiking trail running from St. Mary's to Conestoga, Ontario established and maintained by volunteers. Its development required land acquisition from local landowners to provide public access to the banks of the Avon River using a system of footpaths. In 2013, a 5 year strategic plan was developed for the Avon Trail by the Avon Trail Association. One of the main objectives of the Association is to address concerns of landowners, community partners and members in a timely manner. This objective is particularly important in maintaining good relationships with local landowners, and meet the Association's objective to secure permission for more trail access across private land for future trail expansion.

Key Resource(s):

http://www.avontrail.ca/index.html

http://www.avontrail.ca/pdf/StrategicPlan_2013March.pdf

Members of the Avon Trail Club
Source: www.avontails.ca

2.3.5 SIGNAGE & BRANDING

Trail Signage and Branding

Municipality of Chatham-Kent, ON

The Municipality of Chatham-Kent completed their Trails Master Plan in 2009 which included information on network signage as part of their marketing objectives. In addition to incorporating typical signage types in the design and construction of the network, the Master Plan recommended that the municipality develop a trail signage plan to assist with branding the trail system.

Key Resource(s):

http://www.chatham-kent.ca/CommunityParks/Trails/Pages/Trails%20Master%20Plan.aspx

Opening the Rotary EcoTrail in Chatham Kent
Source: MMM Group

Hub Trail Signage and Branding

City of Sault Ste. Marie, ON

In 2011, the City of Sault Ste. Marie completed a signage plan for the John Roswell Hub Trail. The plan was created to indicate the location of signs throughout the trail system, a redesign of the official trail logo, the creation of custom trail signs, the development of interpretive signage and the design of a trail head sign.

Signage has since been implemented along the trail and has been well received by residents and visitors of the City.

Centre Wellington Trails Signage

Township of Centre Wellington, ON

The Township of Centre Wellington undertook a study to develop a township-wide Trails Master Plan. The plan built upon the previous success of the Elora Cataract Trailway which was developed and is maintained by volunteers. The Trails Master Plan recommended that the design and construction of the network should incorporate a hierarchy of signs each with a different purpose and message. The hierarchy was organized into a "family" of signs with unifying design and graphic elements, materials and construction techniques. The family of signs included:

- Orientation and Trailhead Signs;
- Gateway Signs;
- "Rules of the Trail" Signs;
- Regulatory Signs;
- Interpretive Signs; and
- Route Marker and Trail-Directional Signs.

Since the adoption of the plan the Township has undertaken additional work to establish a signage concept for their trail system.

Key Resource(s):

http://www.centrewellington.ca/departments/parksandrecreation/transoandtrailsvr/Pages/default.aspx


Samples of Signage developed for the John Roswell Hub Trail Sault Ste. Marie, ON: MMM Group

2.3.6 PROMOTION, MARKETING & EDUCATION

Promotional & Trail Brochures – Niagara Region

Given that Niagara Region is home to many walking and hiking trails, the Region has developed several strategies for promoting and marketing their system.

A webpage has been developed which provides a wide array of information regarding on and off-road cycling route and trails within the Region.

The webpage provides visitors with hyperlinks to e-brochures for over 30 trails / conservation areas within the Region, a copy of the Bicycling Map in PDF for download or print (map identifies 15 bike shops and tourist information centres in the area which have copies of the bike map available), and information regarding their Scenic Routes Web Application which allows users to select from over 200 routes and trails to visit in Niagara Region.

Key Resource(s):

http://www.niagararegion.ca/living/health_wellness/physicalactivity/trails.aspx

http://www.niagararegion.ca/exploring/cycle/bikemap.aspx

http://www.niagararegion.ca/exploring/cycle/Bicycle-Niagara.aspx

Region of Niagara Cycling Map / Promotional Brochure
Source: Tourism Niagara

Share the Road Safety Campaign – Halton Region

Following the Region's implementation of Share the Road signage on key regional roads in 2002, the Region, collaboratively with Halton Region Police and the Share the Road Coalition initiated their Halton Region Share the Road Program.

Safely Sharing Halton's Roadways was a Region-wide initiative geared towards making roadways safer and more efficient for all users including motorists, pedestrians and cyclists. The program aims to educate motorists, pedestrians and cyclists on safely using roadways and their responsibilities under the Highway Traffic Act, and to raise motorist awareness of popular cycling routes particularly in rural areas.

Key Resource(s):

https://www.halton.ca/cms/one.aspx?portalId=8310&pageId=12599#Share_the_Road

http://www.sharetheroad.ca/

Pedestrian and Active Transportation Charters

Since the International Charter was first introduced in 1999, many municipalities are adopting Pedestrian and Active Transportation Charters to support their own initiatives and policies as well as support basic principles to encourage active transportation, walking and cycling within their communities. In May 2002, the City of Toronto adopted the first Pedestrian Charter in North America. In it "pedestrian" was defined as "A person moving from place to place, either by foot or by using an assistive mobility devices". This definition was also adopted for the Region of Waterloo's Pedestrian Charter signed in 2004.

Key Resource(s):

City of Toronto Pedestrian Charter

https://www1.toronto.ca/staticfiles/city_of_toronto/transportation_services/walking/files/pdf/charter.pdf

City of Waterloo Pedestrian Charter

http://www.cambridge.ca/relatedDocs/scan.pedcharter0001.pdf

Waterloo Region District School Board Active Transportation Charter

http://www.wrdsb.ca/planning/files/2012/04/Active-Transportation-Charter_WRDSB-only.pdf

Town of Halton Hills Pedestrian Charter

http://www.haltonhills.ca/initiatives/pdf/masterplans/pedestrianCharter/PedestrianCharter.pdf

City of Kitchener Pedestrian Charter

http://www.kitchener.ca/en/livinginkitchener/resources/Pedestrian_charter_.Pdf

City of Kingston Active Living Charter

http://www.cityofkingston.ca/documents/10180/15058/Active+Living+Charter/084fe4a0-60bb-456f-bb29-b589ada7b020

Active Transportation and Trail Online Hub

Online resources and hubs are becoming one of the primary methods of promoting and educating people about active transportation and trails for recreation. Providing residents and visitors with a central place for all trail, cycling and recreational information can help to encourage more people to engage in active forms of transportation by decreasing the number of steps they have to take to find relevant information. Information which is developed and posted can be made available in a number of different formats making the resources accessible to people of all ages and abilities.

Online information hubs can take a number of forms from the most basic to more advanced. Most typically, mapping and educational information is provided which can help to increase level of comfort and sense of safety and provide users with the information needed to identify a preferred route. At the most basic level an online hub could also include links to key resources and online forums including but not limited to:

- Ontario Trails Council
- Ministry of Transportation Youth Educational Information
- Ministry of Tourism
- Conservation Authorities
- Share the Road Coalition
- Welcome Cyclists
- Tourism Organizations

- Public Health Units

Recently some of the more advanced online hubs have started to establish trip planning tools based on existing mapping databases such as Google Maps. Though very effective tools, it is not necessary to incorporate a trip planning mechanism onto an online hub. A well organized and branded webpage can be an as effective method of promotion.

Examples of some of the different types of online hubs which promote trail use and cycling are listed on the following page.

Key Resource(s):

Walk + Roll Peel – Peel Region
http://walkandrollpeel.ca/

Bike St. John's
http://www.bikestjohns.ca/

Cycling in Halton Region
http://www.halton.ca/cms/one.aspx?pageId=12599

Cycling in Waterloo Region
http://www.regionofwaterloo.ca/en/gettingaround/cycling.asp

Active Elgin – Elgin-St. Thomas Active Transportation
http://activeelgin.ca/

Cycle Track Maintenance in winter, Ottawa, ON Source: Ottawa Sun (online)

2.3.7 MAINTAINING ON AND OFF-ROAD FACILITIES

Cycling Infrastructure Winter Maintenance – Pilot Project

Hamilton, ON

The maintenance of cycling facilities has been a focus for improved cycling conditions in the City of Hamilton. Existing practice stipulates that on-road cycling facilities are maintained by road operations as part of their street network maintenance practice. Multi-use trails and off-road connections owned by the City are maintained by parks maintenance. Off-road facilities found within conservation areas are maintained by the Hamilton Conservation Authority.

As part of the City's 2009 Cycling Master Plan a set of maintenance related "actions" were developed for the on and off-road component of the cycling network. Included in this list of "actions" was the review of existing best practices with regard to winter maintenance of cycling facilities to establish a set of routes / priorities and criteria for improved level of service.

Between 2011 and 2013 winter seasons the City undertook a winter maintenance pilot project to assess winter maintenance of bike lanes. The project was continued through the 2013 – 2014 winter season for additional findings and included bike lanes along Sterling Street, Longwood Road, Dundurn Street and Sanders Boulevard. On these linkages maintenance of cycling facilities was improved on multi-use trails and bike lanes. The enhanced activities included additional, ploughing, de-icing and street sweeping when warranted and feasible. Input was gathered using online resources and an online survey. Findings from the survey as well as input from the public will inform future decision making and prioritization.

Key Resource(s):

http://www.google.ca/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=3&ved=0CDcQFjAC&url=http%3A%2F%2Fwww.ibikeoulu.com%2Fpresentations%2Fdaryl_bender_canada_winter_mtn.pdf&ei=9qbdUp_8N4m6oQSmj4LgAQ&usg=AFQjCNH9vb_j6ZrphtI8Ook-3-MCWZiGRQ&sig2=mMOW0KgW_wpHsQg63biv1Q

Cycle Track Winter Maintenance

Ottawa, ON

Since implementing their first cycle tracks in 2011, the City of Ottawa has had to adapt their maintenance practices, most drastically in the winter. The segregated bike lanes and Laurier Avenue are maintained year-round. In the winter months, the pre-cast curbs, plastic poles and planter boxes remain in place. The bike lanes are ploughed to the same bare pavement standard as roadways.

In order to accommodate this level of service / maintenance, the City of Ottawa invested in specialized equipment using a mechanical broom, plow and snow blower which are used to clear the snow.

Once this is done a liquid anti-icing spray is applied to the bike lanes thus minimizing the need for roadway rock salt and grit. The bike lanes are only officially closed when there are dangerous winter conditions such as a storm or black ice.

The 2013 draft Cycling Plan also sets out strategic priorities and costing associated with the maintenance of cycling infrastructure and asset management. There is a section of the master plan which is dedicated to maintenance considerations year-round. There are two key recommendations which help to guide maintenance practices / considerations:

- Recommendation 5.6 – That the proposed winter-maintained cycling network, along with estimated incremental maintenance costs, be considered as a term of Council priority for implementation starting winter 2015/2016.
- Recommendation 5.7 - The General Manager of Public Works shall be given delegated authority to clarify the Maintenance Quality Standards such that the order of Spring Sweeping be defined that Bikeways are given priority followed by cycling spine routes as defined on the Ottawa Cycling Network. These roadways shall be given priority over roadways and pathways not identified as part of the Ottawa Cycling Network. The Spring Cleanup on the Bikeways and Spine Routes shall be initiated at the earliest opportunity each spring.

Key Resource(s):

http://ottawa.ca/en/city-hall/public-consultations/planning-and-infrastructure/draft-ottawa-cycling-plan-overview

3.0

DEVELOPING & DESIGNING THE TRAILS NETWORK

3.1 THE NETWORK DEVELOPMENT PROCESS

Chapter 3 is an overview of the steps used to develop the County of Oxford's Trail Network. The network development process includes eight-steps which are built on a set of route selection criteria. A description of the approach and the information gathered and used to inform the development of the network is provided in this section.

3.1.1 DEVELOPING THE NETWORK: AN EIGHT-STEP PROCESS

The steps included in this process are identified in **Table 3.1**. It is important to note that public and stakeholder consultation was a key element in the development of the proposed trails network. The consultation tools and the information that was gathered are documented in **Appendix B**.

Table 3.1 – Eight-Step Trails Network Development Process

1. Collect & Assemble Background Information

Consolidate and digitally map previously planned trail facilities, secondary plans and new development areas in Oxford County. Available base information was provided by Oxford County and its partners including local municipalities, conservation authorities and key stakeholders such as the Oxford County Trails Council.

2. Develop Route Selection Principles

A set of qualitative principles were developed to guide the selection of off and on-road routes. The principles were reviewed with the study team, steering committee as well as members of the public at a study open house.

Table 3.1 – Eight-Step Trails Network Development Process

3. Select Candidate Routes / Route Alignment

Candidate routes were identified and mapped for consideration by the study team. Once presented and reviewed the routes were refined based on the following information:

- Consolidated base mapping;
- Route Selection Principles;
- Consultation with the steering committee;
- Expertise of the study team;
- Consultation with the public; and
- Desktop analysis using the County's GIS database and aerial imagery.

4. Undertake Field Investigation

The study team examined each of the candidate routes in the field and collected additional information including photographs and measurements that helped to inform the development of the trails network concept. Due to the size of the County field investigation also occurred once the routes had been confirmed to inform the selection of potential facility types.

5. Prepare Draft Routing (select alignments and differentiate between on and off road facilities)

The route network concept was further refined using the Route Selection Principles and information collected in the field. The mapping was also refined based on the technical expertise of the study team as well as input from the public, stakeholders and public agencies as well as members of the steering committee.

Table 3.1 – Eight-Step Trails Network Development Process

6. Confirm and Determine Facility Types

For each route, an appropriate facility type was suggested by considering a number of factors such as:

- Geographic location (urban vs. rural);
- Facility types recommended in other previously completed plans and studies conducted within the County, and local Municipalities; and
- Roadway characteristics (for on-road routes) such as cross section, traffic volume and speed, commercial vehicle volumes (where data was provided), sight lines etc.

Observations made by the study team were then balanced by comments received from the steering committee and the public.

7. Determine Network Priorities (Implementation Plan)

The Implementation Plan was developed to respond to priorities identified by the steering committee and the public.

Note that as part of the implementation of individual routes in the future, a more detailed assessment should be undertaken to confirm the route alignment and facility type (refer to the 5-step implementation process outlined in **Chapter 4**).

8. Apply Unit Costing

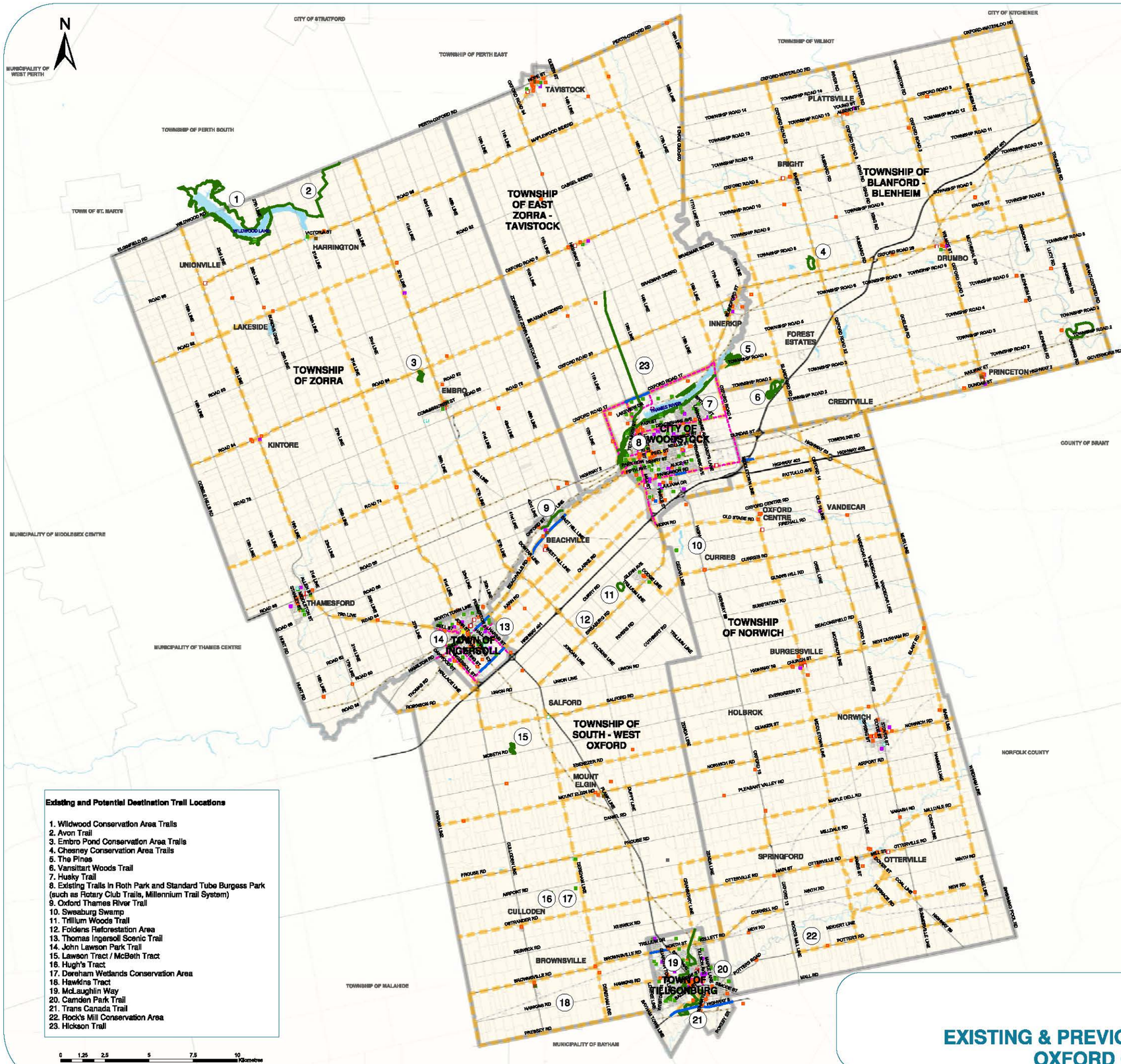
The recommended network and facility types were used at the master plan level to develop an order to magnitude cost estimate for the implementation of the network. Costing was prepared for full build-out of the network, and has also been organized based on short, medium and long-term phased investments consistent with the implementation schedule.

3.2 BUILDING ON WHAT HAS BEEN DONE: A SUMMARY OF EXISTING CONDITIONS

Existing trails and active transportation facilities formed the basis of the proposed trails network for the County. It is important to understand the infrastructure which is currently 'on the ground' to ensure that the master plan builds on what has been done and highlights the previous successes of the County, its local municipalities, Conservation Authorities, the Oxford County Trails Council other local organizations and interest groups.

As noted in the network development process, documentation of existing conditions was the first step in establishing the County-wide trails network. Using the County's GIS database and information gathered from local municipalities and stakeholders the study team undertook a review of existing and previously planned routes. **Map 3.1** illustrates the existing and previously planned conditions documented as part of the network development process.

The following sections provide an overview of the existing on and off-road connections found within Oxford County. As is the case with many County or Regional plans there are a number of jurisdictions who are involved in the design, approval, development and implementation of trails. It is important to gather a base understanding of these groups and their jurisdictions in order to move forward with strategic planning and implementation initiatives and recommendations. As such, existing conditions have been organized based on the jurisdiction under which they fall.



Existing and Potential Destination Trail Locations

1. Wildwood Conservation Area Trails
2. Avon Trail
3. Embro Pond Conservation Area Trails
4. Chesney Conservation Area Trails
5. The Pines
6. Vansittart Woods Trail
7. Husky Trail
8. Existing Trails in Roth Park and Standard Tube Burgess Park (such as Rotary Club Trails, Millennium Trail System)
9. Oxford Thames River Trail
10. Sweaburg Swamp
11. Trillium Woods Trail
12. Foldens Reforestation Area
13. Thomas Ingersoll Scenic Trail
14. John Lawson Park Trail
15. Lawson Tract / McBeth Tract
16. Hugh's Tract
17. Dereham Wetlands Conservation Area
18. Hawkins Tract
19. McLaughlin Way
20. Camden Park Trail
21. Trans Canada Trail
22. Rock's Mill Conservation Area
23. Hickson Trail

0 1.25 2.5 5 7.5 10 Kilometres

Legend

Existing Routes
- Existing Off-Road Route
- Existing On-Road Route

Previously Proposed Routes
- Endorsed by the Oxford Cycling Committee
- Endorsed by Local Municipalities

Key Community Destinations
- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways
- Active Railway
- Abandoned Railway
- Current Status Unknown

Other
- Highway
- County Road
- Local Road
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

OxfordCounty growing stronger...together

MMM GROUP

FINAL DECEMBER 2014

Base GIS Data provided by Oxford County.

MAP 3.1 - OXFORD COUNTY
EXISTING & PREVIOUSLY PROPOSED CONDITIONS
OXFORD COUNTY TRAILS MASTER PLAN

3.2.1 OXFORD COUNTY

Existing on and off-road trail and cycling routes that fall under the County's jurisdiction include:

- Existing off-road trails on County owned forest tracts and former railway corridors owned by the County;
- County roads with existing paved shoulders;
- County roads which have been identified as part of the County's "Share the Road" campaign where Share the Roads warning signs are to be installed to inform motorists and cyclists (please see additional details regarding the application of Share the Road signs in section 3.3); and
- Cycling routes endorsed by the County's Cycling Advisory Committee as preferred on-road recreational cycling and touring linkages.

3.2.2 EXTERNAL ORGANIZATIONS

Within the County there are a number of existing regionally / nationally significant and recognized routes. For some of these routes planned extensions have been identified but have not been included in the existing conditions mapping. These trails include:

- The Avon Trail;
- Trans Canada Trail;
- Hickson Trail;
- Oxford Thames River Trail;
- Trans Canada Trail; and
- Carroll Trail.

Some of the external organizations / agencies that have a role in facilitating, and in many cases designing and implementing these trails include the Trans Canada Trail Association, Local Municipalities (also see section 3.2.4), the Avon Trail Association, Local Service Clubs, and the Oxford County Trails Council, among others.

3.2.3 CONSERVATION AUTHORITIES

Map 3.1 also illustrates off-road routes found within the conservation areas managed by:

- Upper Thames River Conservation Authority;
- Long Point Region Conservation Authority;
- Grand River Conservation Authority; and
- Catfish Creek Conservation Authority.

Many of the conservation authorities are responsible for the design, development and maintenance of off-road trails on lands under their jurisdiction. A few of these include:

- Pittock Conservation Area;
- Embro Pond Conservation Area;
- Wildwood Conservation Area; and
- Tillsonburg Conservation Area.

3.2.4 LOCAL MUNICIPALITIES

Each local municipality is responsible for the design, approval, development and implementation of trails on lands within their jurisdiction including local municipal parks and open spaces. In some cases a municipality may also engage in an agreement with the County or conservation authority to help manage or maintain trails in County or conservation area owned parks and open spaces (e.g. City of Woodstock and Pittock Lake Conservation Area). Trails illustrated on the maps which are under the jurisdiction of the local municipalities include:

- Existing multi-use trails including those in parks and open spaces;
- Existing on-road cycling facilities (e.g. bike lanes, signed-routes and paved shoulders) on local municipal roadways; and
- Previously proposed on and off-road routes identified in local municipal plans and policies adopted by local municipal Councils (e.g. City of Woodstock Cycling Master Plan, Draft Innerkip Trail Map etc.).

3.2.5 SURROUNDING MUNICIPALITIES

The existing conditions mapping developed for the master plan also illustrate potential connections to surrounding municipalities. One of the key objectives of the Trails Master Plan was to provide connections for residents and visitors within the County and to bordering areas. This study objective was addressed by reviewing trail and active transportation related policies and plans from the County's bordering municipalities to identify key linkages and connection points which would provide direct access to existing or previously planned routes. The following is a list of the policies and plans which were reviewed from these municipalities:

- **Regional Municipality of Waterloo:**
  - Region of Waterloo Official Plan; and
  - Region of Waterloo Active Transportation Master Plan.
- **Perth County:**
  - Creating Walkable and Bikeable Community – MovingON Community Planning Guide.
- **Brant County:**
  - County of Brant Transportation Master Plan.
- **Middlesex County:**
  - County of Middlesex Official Plan, Dorchester Trails Master Plan and Thames Centre Official Plan.
- **Elgin County**:
  - Elgin County Active Transportation Initiative;
  - Town of Bayham Official Plan; and
  - Township of Malahide Official Plan.
- **Norfolk County:**
  - Norfolk County Trails Master Plan; and
  - Norfolk County Official Plan.

3.3 ESTABLISHING A SET OF CANDIDATE ROUTES

Following the documentation of existing on and off-road trail and active transportation conditions, the study team undertook an exercise to identify potential routes which could form part of the trails network. Candidate routes were developed based on a number of project objectives, assumptions and principles including:

- Off-road linkages which highlight areas of natural and cultural significance;
- Missing links in the existing off-road and on-road system;
- Direct north-south and east-west connections through the County to bordering municipalities;
- Direct connections through the County to connect local municipalities and key community destinations;
- Routes which are endorsed by the County's Cycling Advisory Committee and are consistent with the County's "Share the Road" program;
- On-road connections which provide linkages to existing destination trails; and
- "Desired" connections that were identified as conceptual routes at the time the Master Plan was prepared, and require further investigation to determine their potential as a future long term connection.

Key Consideration:

Candidate routes / desired connections on privately owned lands were not investigated in the field as part of the master plan's development. Should the opportunity arise in the future, a desired connection should be investigated further through discussions between the County / local municipality and the land owner, with the goal to engage in an access agreement with the landowner.

Recommendation(s):

3-1 As part of the plan's implementation, proposed and desired connections on privately owned lands should be more thoroughly investigated through discussions between the County / local municipalities and the landowner.

3.4 SELECTING THE PREFERRED ROUTES

As noted in the eight-step network development process, one of the key inputs into the development of the recommended trails network was the Route Selection Principles. The principles were developed by the study team and reviewed with County staff, members of the Steering Committee, and members of the public.

Table 3.2 outlines the Route Selection Principles established to inform the development of Oxford County's network.

Table 3.2 – Oxford County Trail Route Selection Criteria

Criteria	Description
Connected	Trails should be connected to form a continuous, linked network throughout the County. Connections will be provided between population centres, public lands, important destinations and neighbouring municipalities. Where possible the off-road network will be connected through existing public open space (e.g. parks, utility corridors, unopened road allowances, County forest tracts etc.).
Linked	The off-road trail network will be seamlessly connected to a complementary network of on-road cycling routes. Where it is not possible to provide off-road connections in the trail network, on-road links will serve as the main connectors. Trails may be located on public lands, but may also include private lands where a mutually acceptable agreement can be reached between the owner and the County / Municipality / Trail Partner.
Visible	Trails should be a visible component of the County's recreation and transportation system and clearly identified through signage.
Convenient	Trails should be easy to access from all areas throughout the County. They should be supported by trail amenities (e.g. parking, bike racks, signage, etc.).

Table 3.2 – Oxford County Trail Route Selection Criteria

Criteria	Description
Accessible	To the extent that is possible and practical, trails will be designed to be accessible for residents of Oxford County, and for users of varying physical ability. Where possible, trail facilities should be designed to be consistent with the Accessibility for Ontarians with Disabilities Act. Trailhead signs should communicate the level of accessibility so users can make informed decisions about using various trails.
Sustainable and Well Designed	Sustainability will be a key consideration in the alignment, design and selection of materials for the trail system. Supportive facilities such as benches, garbage receptacles, information signs and bicycle parking should be located at trail nodes and key destinations where they can be easily serviced.
Context-Sensitive	Trails should provide opportunities for users to experience and learn more about Oxford County's natural and cultural heritage assets. Trails should be appropriately located when associated with natural heritage features. Each site's characteristics will be carefully considered when the alignment is refined and design details are being developed.
Diverse	The trail system should appeal to a range of user abilities and interests. As such, the network should consist of a hierarchy of route types in a variety of locations throughout the County to accommodate a variety of trail experiences.

Table 3.2 – Oxford County Trail Route Selection Criteria

Criteria	Description
Responsive to Safety Concerns	Reducing risks to users and providing comfortable facilities creates user confidence, and acceptance of the network can be instilled in users by reducing real and perceived risk. Public safety will not be compromised in the interest of minimizing the cost to create or maintain trails.
Cost-Effective	The cost to implement and maintain the trail network facilities and supporting programs will be affordable and appropriately scaled for Oxford County. To assist in offsetting costs, opportunities for funding programs and partnerships with other agencies and organizations will be considered.
Expandable	The network will be strategically planned to allow for future opportunities and to provide linkages to surrounding municipalities, regional, provincial and national trails. In areas of new development, planning for on and off-road trail facilities will be incorporated into the land use planning and site plan development process.

The County and its partners are encouraged to use the Route Selection Principles when undertaking detailed route feasibility assessments for trail linkages identified as part of the trails network or when network routing changes are being considered.

3.5 DEFINING THE TRAILS NETWORK IN OXFORD COUNTY

The proposed trail network is a system of on and off-road routes which are intended to connect local residents and visitors with community destinations and major existing and planned trail systems. As the candidate network was refined, a network concept was created and a hierarchy of routes was identified.

Maps 3.2 and **3.3** illustrates the Route Network Concept which was created for the County's trails network. The hierarchy which was developed establishes a better understanding of route objectives and was used by the study team when identifying potential facility types for future consideration. The hierarchy consists of

- Off-Road Connections;
- On-Road Connections; and
- Desire Lines.

A description of each is presented in the tables below.

OFF-ROAD CONNECTIONS

Definition

Off-road connections are the primary focus of the Trails Master Plan. They typically consist of routes found within local parks and open spaces, conservation areas, abandoned rail corridors or other publicly owned lands.

Objectives

The routes highlight areas of natural and cultural significance. They are considered the primary focus of the network and are intended to provide residents and visitors with community destinations with a recreational focus. In some cases, within the urban areas, these off-road links may provide local connections to community destinations.

Users

Intended to be used primarily by recreational and touring trail and Active Transportation users such as hikers and pedestrians and cyclists. In some locations, portions of off-road trails may be used by equestrians and other seasonal trail users. There may also be some instances where portions of off-road trails overlap with existing snowmobile or ATV routes. For these linkages appropriate signage and messaging will need to be included to inform users of the presence of other user groups.

Application & Facility Types

Abandoned railway lines, lands in public ownership such as conservation areas or County forests. Facility types could include:

- Off-road Multi-use and Single-track trails
- Rails with Trails
- Multi-use trails on abandoned railway lines and unopened road allowances

Example of Potential Application

Tillsonburg Trails Source: MMM Group

ON-ROAD CONNECTIONS

Definition

On-road connections have been identified to complement the off-road network and may be used as a more direct route alternative. In locations where off road links are not currently available, on-road routes are used for network connectivity.

Objectives

The routes are intended to be used as direct north-south and east-west linkages to key destinations within and outside of the County. In some cases they may form utilitarian routes within the urban areas or be part of cycle touring routes in rural areas.

Users

The routes are intended to be used primarily by utilitarian and touring cyclists and pedestrians. On County roads pedestrians and cyclists will be encouraged to use the same space (e.g. paved shoulders). On local roads cyclists will use the on-road facilities with the pedestrians using the sidewalk (where available) or shoulder.

Application & Facility Types

County owned or municipally owned roadways. Facility types could include:

- Paved Shoulders;
- Bike Lanes;
- Signed-only Cycling Routes;
- Sharrows; and
- Multi-use Trails in place of a sidewalk.

Example of Potential Application

Clark Road Bike Lane with Adjacent Sidewalk, Ingersoll, ON Source: MMM Group

DESIRE LINES

Definition

Desire lines indicate routes which are proposed to be explored in the future as trail development occurs throughout the County. These routes would typically include extensions to the off-road connections or new off-road connections linking urban areas.

Objectives

The routes would provide an extension to the on and off-road connections in the future to facilitate movement into and out of new development areas, conservation areas, between urban centres or access to local parks and public open spaces.

Users

Intended for use by utilitarian as well as recreational cyclists and pedestrians. The users will be based on the confirmed route alignment and proposed facility type as it is developed.

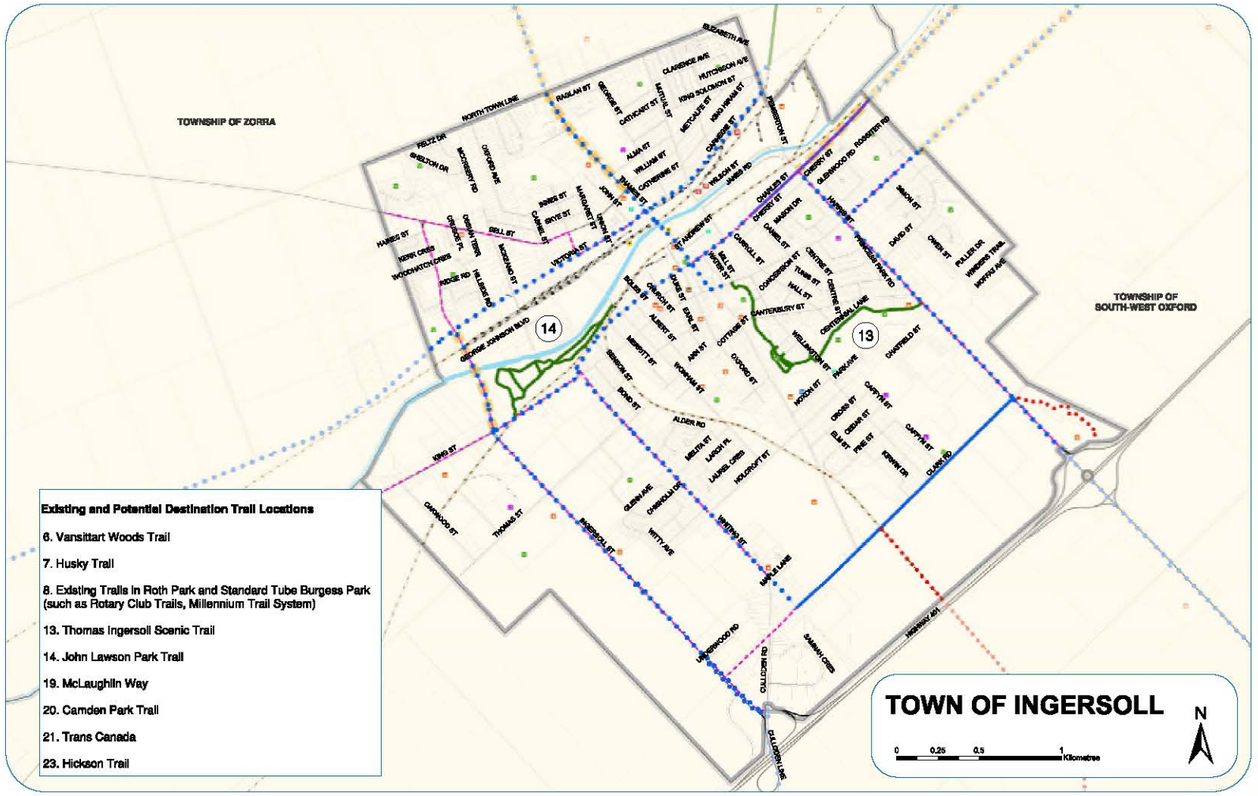
Application & Facility Types

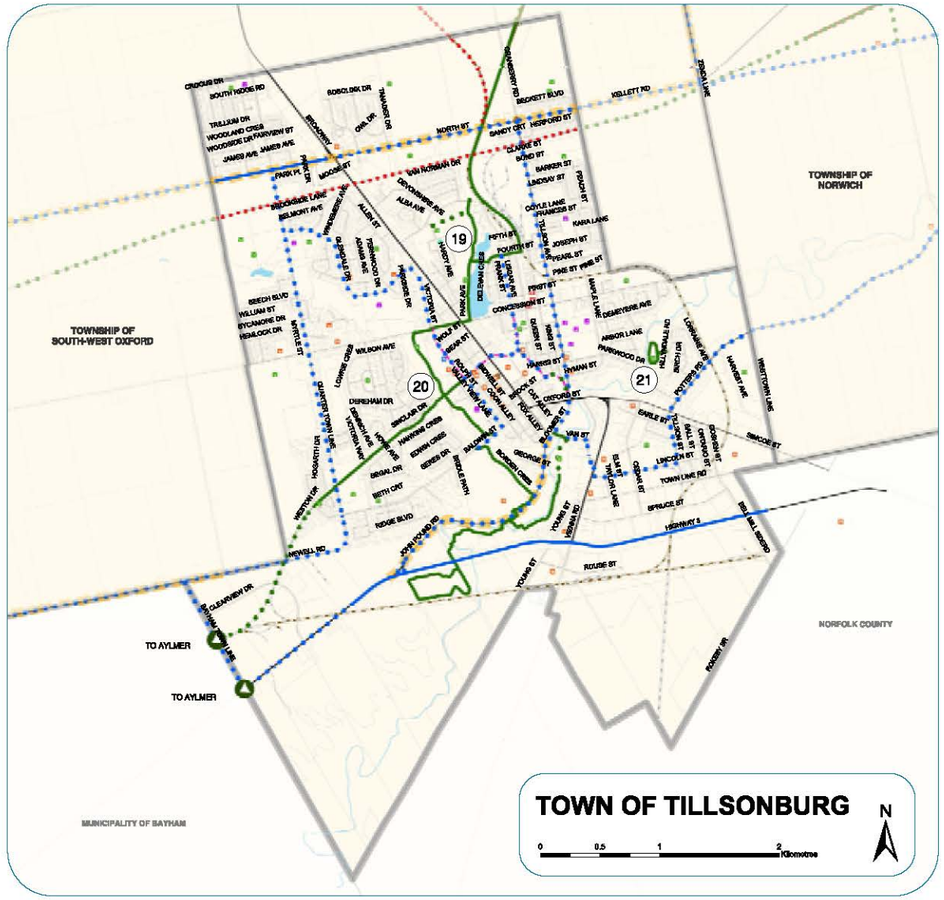
Abandoned or existing railway rights-of-way, conservation areas, private lands, urban public open spaces, rural public open spaces. Facility types would be determined through future investigation.

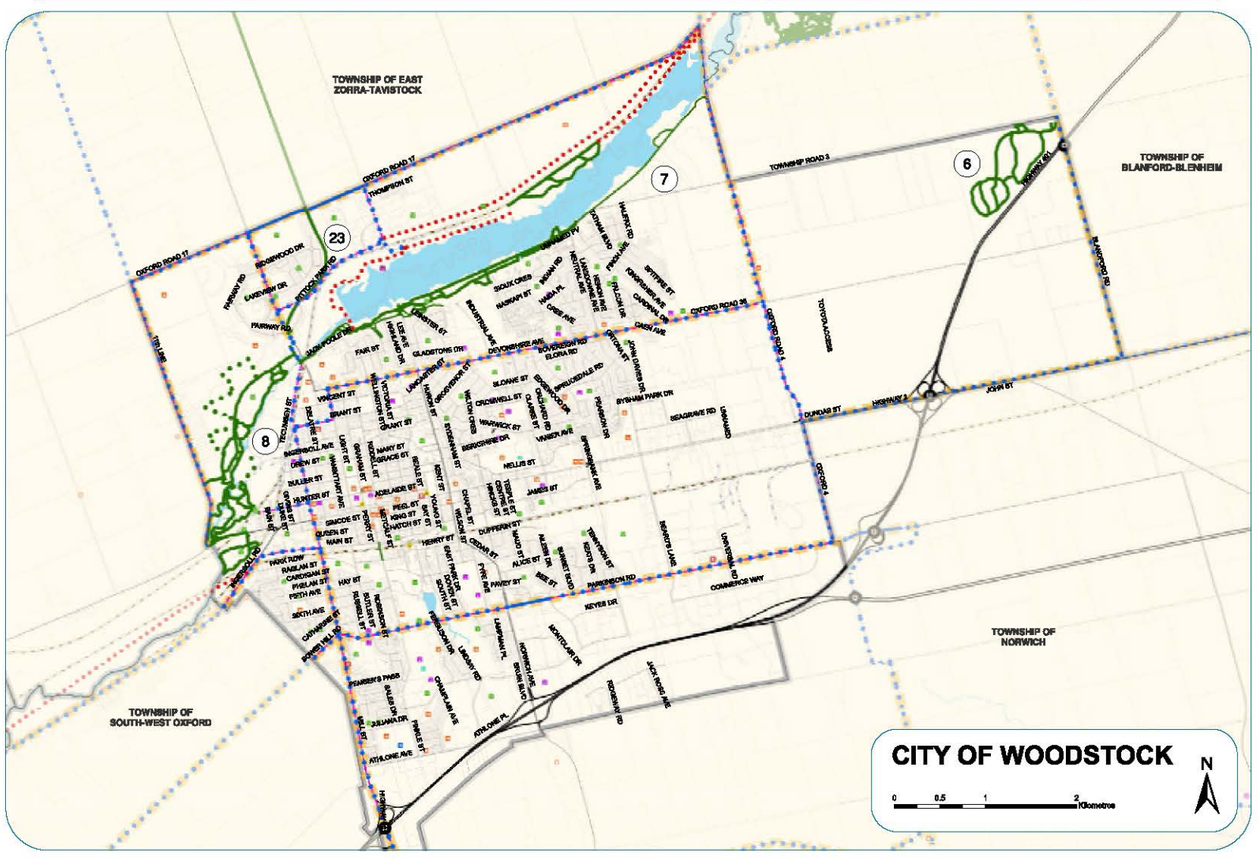
Example of Potential Application

Potential Off road Linkage in Burgessville, ON Source: MMM Group


N
TAVISTOCK
PLATTSVILLE
BRIGHT
TOWNSHIP OF BLANFORD - BLENHEIM
TOWNSHIP OF EAST ZORRA - TAVISTOCK
HARRINGTON
UNIONVILLE
LAKESIDE
TOWNSHIP OF ZORRA
EMBRO
KINTORE
INNERKIP
FOREST ESTATES
DRUMBO
PRINCETON
CREDITVILLE
CITY OF WOODSTOCK
OXFORD CENTRE
VANDECAR
BEACHVILLE
CURRIES
THAMESFORD
TOWN OF INGERSOLL
TOWNSHIP OF NORWICH
BURGESSVILLE
SALFORD
HOLBROK
NORWICH
TOWNSHIP OF SOUTH - WEST OXFORD
MOUNT ELGIN
OTTERVILLE
SPRINGFORD
CULLODEN
BROWNSVILLE
TOWN OF TILLSONBURG
Refer to local municipal trail / cycling master plans for additional existing and proposed local route connections.
Existing and Potential Destination Trail Locations
1. Wildwood Conservation Area Trails
2. Avon Trail
3. Embro Pond Conservation Area Trails
4. Chesney Conservation Area Trails
5. The Pines
6. Vansittart Woods Trail
7. Husky Trail
8. Existing Trails in Roth Park and Standard Tube Burgess Park (such as Rotary Club Trails, Millennium Trail System)
9. Oxford Thames River Trail
10. Sweaburg Swamp
11. Trillium Woods Trail
12. Foldens Reforestation Area
13. Thomas Ingersoll Scenic Trail
14. John Lawson Park Trail
15. Lawson Tract / McBeth Tract
16. Hugh's Tract
17. Dereham Wetlands Conservation Area
18. Hawkins Tract
19. McLaughlin Way
20. Camden Park Trail
21. Trans Canada Trail
22. Rock's Mill Conservation Area
23. Hickson Trail
0 1.25 2.5 5 7.5 10 Kilometres
Legend
Existing Routes
Existing Off-Road Route
Existing On-Road Route
Trails Route Network Concept
Proposed Off-Road Route
Proposed On-Road Route[1]
Desired Connection[2]
Proposed Off-Road Route with Potential Snowmobile Use[3]
Oxford Cycling Committee Endorsed Route[4]
Endorsed by Local Municipalities
Connection to Surrounding Municipality
Railways
Active Railway
Abandoned Railway
Current Status Unknown
Other
Overpass Crossing of Highway 401 / 403
Underpass of Crossing Highway 401 / 403
Highway
County Road
Local Road
Parcel Property
Watercourse
Municipal Boundary
1. Some of the proposed on-road routes have previously been confirmed as routes which will, in the near future, have "Share the Road" signage implemented along them. The proposed routes can be found in Document 1 for PW 2013-46, Proposed Routes for Share the Road Signage Installation (July 10, 2013).
2. Potential off-road routes that require additional investigation regarding status, ownership, public access and timing for implementation.
3. This map illustrates only those segments of the snowmobile routes sanctioned by the Ontario Federation of Snowmobile Clubs (OFSC) which overlap with proposed off-road trail connections in the Oxford County Proposed Route Network Concept. For the complete snowmobile network in Oxford County see (http://ofsc.mapbase.ca/viewer/).
4. Oxford Cycling Committee endorsed routes which were investigated in the field and confirmed to form part of the Proposed Route Network Concept.
Current consideration for future Trans Canada Trail connection. Connection to Norfolk County to the east.
Refer to local municipal trail / cycling master plans for additional existing and proposed local route connections.
Oxford County Growing Stronger Together
MMM GROUP
FINAL DECEMBER 2014
Base GIS Data provided by Oxford County.
MAP 3.2 - OXFORD COUNTY
PROPOSED ROUTE NETWORK CONCEPT
OXFORD COUNTY TRAILS MASTER PLAN







Legend

Existing Routes
- Existing Off-Road Route
- Existing On-Road Route

Trails Route Network Concept
- Proposed Off-Road Route
- Proposed On-Road Route[1]
- Desired Connection[2]
- Proposed Off-Road Route with Potential Snowmobile Use[3]
- Oxford Cycling Committee Endorsed Route[4]
- Endorsed by Local Municipalities
- Connection to Surrounding Municipality

Key Community Destinations
- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways
- Active Railway
- Abandoned Railway
- Current Status Unknown

Other
- Overpass Crossing of Highway 401 / 403
- Underpass of Crossing Highway 401 / 403
- Highway
- County Road
- Local Road
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the proposed on-road routes have previously been confirmed as routes which will, in the near future, have "Share the Road" signage implemented along them. The proposed routes can be found in Document 1 for PW 2013-46, Proposed Routes for Share the Road Signage Installation (July 10, 2013).
2. Potential off-road routes that require additional investigation regarding status, ownership, public access and timing for implementation.
3. This map illustrates only those segments of the snowmobile routes sanctioned by the Ontario Federation of Snowmobile Clubs (OFSC) which overlap with proposed off-road trail connections in the Oxford County Proposed Route Network Concept. For the complete snowmobile network in Oxford County see (http://atac.mapbase.ca/oview/)
4. Oxford Cycling Committee endorsed routes which were investigated in the field and confirmed to form part of the Proposed Route Network Concept.
5. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

FINAL DECEMBER 2014

Base GIS Data provided by Oxford County.

MAP 3.3 - URBAN ENLARGEMENT AREAS PROPOSED ROUTE NETWORK CONCEPT OXFORD COUNTY TRAILS MASTER PLAN

3.6 THE COUNTY-WIDE TRAILS NETWORK

The proposed trails network for Oxford County is illustrated on **Maps 3.4** to **3.12**. The network includes proposed route alignments as well as facility types. **Table 3.3** provides a summary of existing and proposed network routes.

Table 3.3 – Trails Network Summary

Facility Type	Existing (km)	Proposed (km)	Total (km)
Off-road Trail Connections	136.2	63.7	199.9
On-Road Cycling Links	18.5	685.9	704.4
Desired Connections	0.0	80.7	80.7
Total	**154.7**	**830.3**	**985**

The on-road facilities identified as part of the trails master plan are intended to form direct connections to the off-road trails where the land is currently not available to establish the off-road connection. Primarily used by cyclists, these facilities could include:

- Signed-only Cycling Routes
- Signed Routes with Paved Shoulders
- Sharrows
- Bicycle Lanes
- Edgelines

The proposed system of on-road facilities was informed by the Cycling component of the County's Transportation Master Plan, the County's existing Share the Road Cycling Program as well as discussions with the County's Cycling Advisory Committee.

The proposed linkages are intended to be used as a flexible tool to guide future decision making and next steps by the County's Cycling Advisory Committee as well as future municipal initiatives pertaining to the development of on-road cycling facilities. Proposed on-road connections should complement the off-road system of trails and should be a collaborative effort between the County and local municipalities.

Though a County-wide network has been identified, it is important to note that it is not intended to be prescriptive. With time, the network will grow and evolve. Additional opportunities may be identified, connections to surrounding communities may be highlighted, revised route alignments may be proposed or connections on private lands may arise. When this occurs, the network is intended to be adapted and should continue to be used as a blueprint for future trail development.

3.6.1 WHAT WILL THE NETWORK LOOK LIKE?

When designing the off-road trails and on-road linkages proposed as part of the Trails Network, the County and its partners should use a consistent set of design guidelines and concepts as a reference.

A set of design guidelines has been prepared for the County's Trails Master Plan. The guidelines have been summarized and included as an appendix to the master plan report – **Appendix C**. The facilities presented are consistent with the proposed cycling design treatments identified in the County's Transportation Master Plan as well as best practices for off-road trail design and on-road facilities.

3.6.2 INTERPRETING & UNDERSTANDING THE MAPPING

The network mapping prepared for the Trails Master Plan is intended to be used as a tool when moving forward with master plan implementation. The facility types mapping can also be used as a communication tool for future trail promotion, education and outreach (please see additional details regarding potential promotion and outreach initiatives in **Chapter 4.0**). When interpreting the network maps the following points should be kept in mind.

Key Considerations:

1. **Context:** The County's Transportation Master Plan identified the installation of "Share the Road" warning signage along County Roads in appropriate locations as a key priority. As a result the County has developed and initiated a program for the installation of "Share the Road" signage along a number of County roads. In 2013, the County budgeted and planned for the implementation of "Share the Road" warning signs on Oxford Road 33, Oxford Road 9 (Beachville Road), Oxford Road 4 and Oxford Road 20.

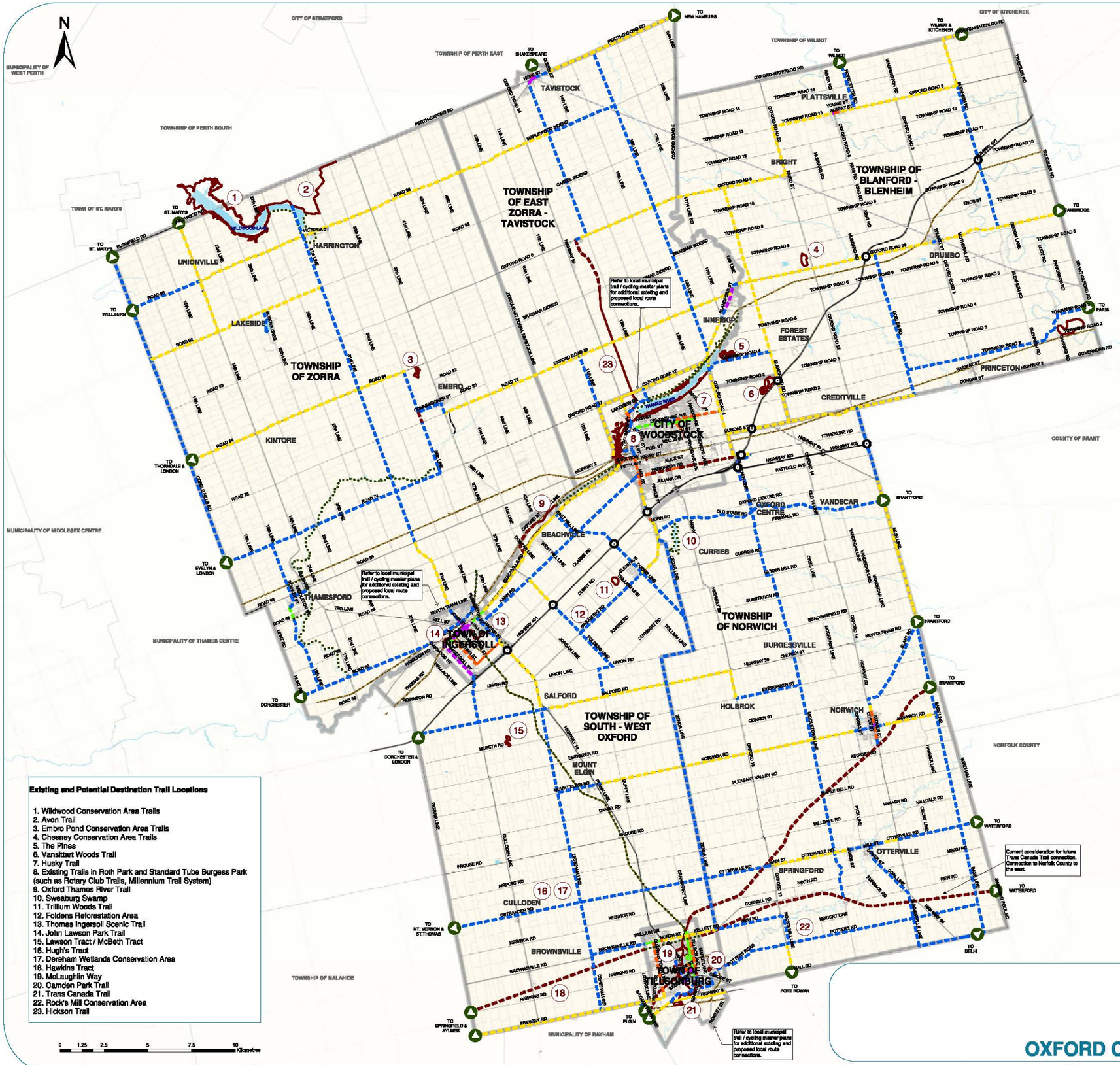
   Mapping Interpretation: The facility types map reflects the routes identified as part of the County's "Share the Road" program. However, consistent with typical design guidelines (e.g. Ontario Traffic Manual Book 18-Cycling Facilities) and typical standards, Share the Road signage should not be used as the route marker for a formal cycling route. Instead, routes identified as "signed bicycle routes" should have the green bike route marker applied at appropriate intervals – in rural at least every 2km and in urban areas every 400 – 800m. Share the Road signage is intended to be used as a warning sign at locations along signed bike routes which indicate potential sightline issues, higher than normal traffic volumes, narrow areas such as bridges and underpasses or a change in cycling conditions. As such, for future signed routes, the County should consistently apply the green bike route markers and supplement them in appropriate locations, with Share the Road signage where warning signs are necessary. For those routes where Share the Road signs have already been implemented the County is encouraged to replace them with green bike route signs if they are not currently being used to mark a hazard and maintain the Share the Road signs at hazard locations.

Key Considerations:

2. **Context:** In many of the built up areas of the County such as the Towns of Ingersoll and Tillsonburg and the City of Woodstock off-road connections are limited. In these areas on-road linkages may be the most realistic to implement. Some proposed on-road linkages within these urban areas are identified on roads where there is existing on-street parking, and the level of parking demand / use varies.

   Mapping Interpretation: Where a route is identified on a road with an urban cross section which includes on-street parking, a signed bike route has been identified for short-term implementation. In these locations, if there are few to no cars parked on the road the lane may function similar to a bike lane. Over time, the municipality may consider converting the signed route into a formal bike lane should demand for parking decrease and demand for cycling increase.

   In core retail areas where on-street parking is critical for retail business, parking should be retained and the signed cycling route can be supplemented with sharrows to provide guidance to cyclists and motorists.



Existing and Potential Destination Trail Locations

1. Wildwood Conservation Area Trails
2. Avon Trail
3. Embro Pond Conservation Area Trails
4. Chesney Conservation Area Trails
5. The Pines
6. Vansittart Woods Trail
7. Husky Trail
8. Existing Trails in Roth Park and Standard Tube Burgess Park (such as Rotary Club Trails, Millennium Trail System)
9. Oxford Thames River Trail
10. Sweaburg Swamp
11. Trillium Woods Trail
12. Foldens Reforestation Area
13. Thomas Ingersoll Scenic Trail
14. John Lawson Park Trail
15. Lawson Tract / McBeth Tract
16. Hugh's Tract
17. Dereham Wetlands Conservation Area
18. Hawkins Tract
19. McLaughlin Way
20. Camden Park Trail
21. Trans Canada Trail
22. Rock's Mill Conservation Area
23. Hickson Trail

0 1.25 2.5 5 7.5 10 Kilometres

Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Adaptive Edgeline: Proposed Bike Lane
- Adaptive Edgeline: Proposed Signed Route
- Proposed Combined Bike Lane and Multi-Use Trail
- Desired Connection
- Connection to Surrounding Municipality

Railways

- Active Railway
- Abandoned Railway
- Current Status Unknown

Other

- Overpass Crossing of Highway 401 / 403
- Underpass of Crossing Highway 401 / 403
- Highway
- County Road
- Local Road
- Parcel Property
- Watercourse
- Municipal Boundary

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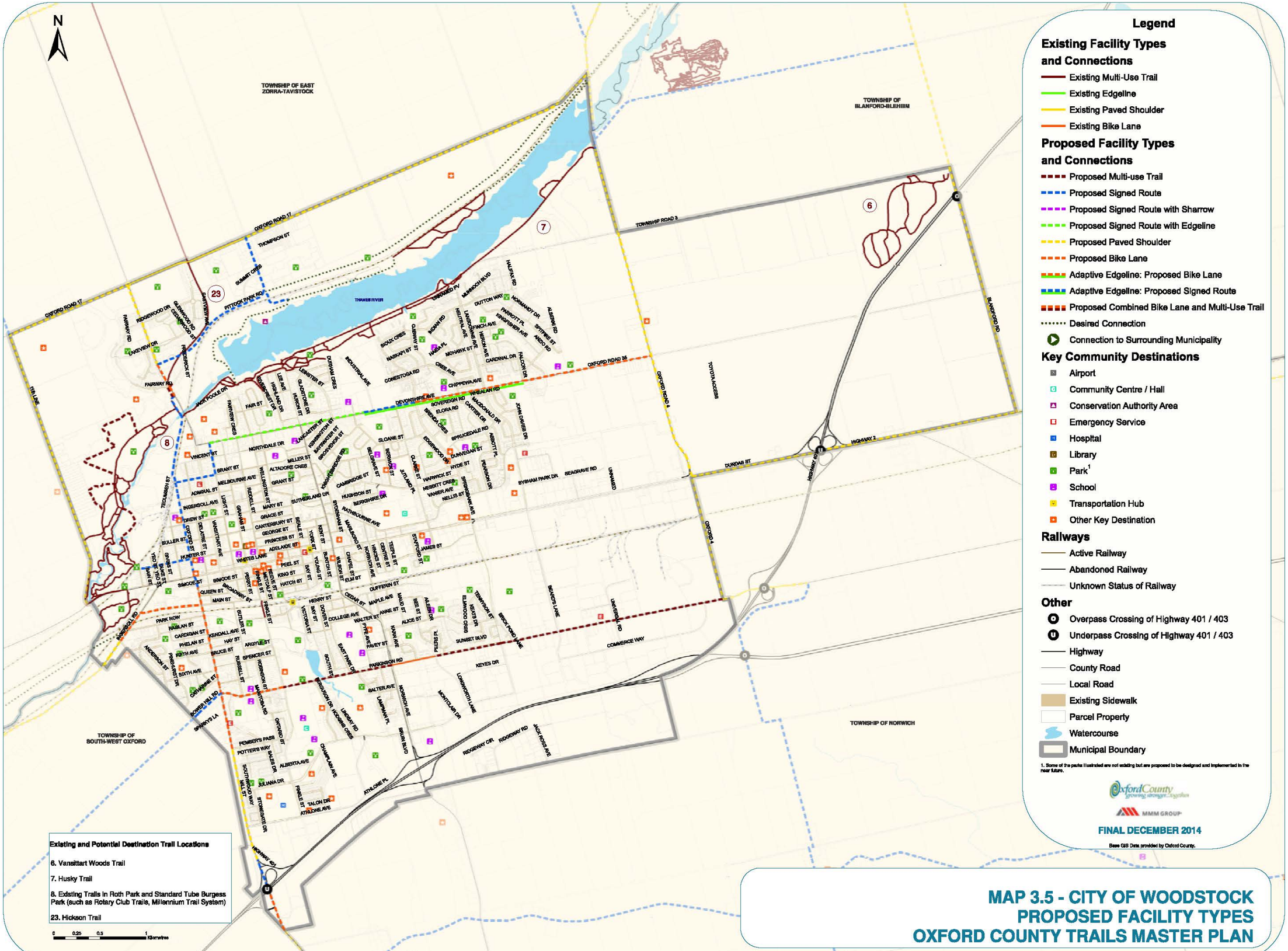
MMM GROUP

FIANL DECEMBER 2014

Base GIS Data provided by Oxford County.

MAP 3.4 - OXFORD COUNTY PROPOSED FACILITY TYPES OXFORD COUNTY TRAILS MASTER PLAN


N
TOWNSHIP OF EAST ZORRA-TAVISTOCK
TOWNSHIP OF BLANDFORD-BLENHEIM
TOWNSHIP OF SOUTH-WEST OXFORD
TOWNSHIP OF NORWICH
THAMES RIVER
OXFORD ROAD 17
OXFORD ROAD 35
OXFORD ROAD 4
TOWNSHIP ROAD 3
TOYOTA ACCESS
DUNDAS ST
HIGHWAY 2
HIGHWAY 401
BLANDFORD RD
OXFORD
BEARDS LANE
UNIVERSITY RD
COMMERCE WAY
RIDGEWAY DR
RIDGEWAY RD
JACK ROSS AVE
18th LINE
THOMPSON ST
SUMMIT CRES
PITTOCK PARK RD
RIDGEWOOD DR
GLENWOOD RD
CEDARWOOD ST
FREDERICK ST
LAKEVIEW DR
FAIRWAY RD
FAIRWAY PL
HOLT POOLE DR
FAIRVIEW CRES
FAIR ST
HIGHLAND DR
LEE AVE
GLADSTONE DR
HURON ST
DURHAM CRES
WORCESTER ST
INDUSTRIAL AVE
SIOUX CRES
NASKAPI ST
CONESTOGA RD
CUSHMAN ST
IROQUOIS RD
HIAWATHA PL
CREE AVE
MOHAWK AVE
HERON AVE
CARDINAL DR
FALCON DR
CHIPPEWA AVE
DEVONSHIRE AVE
WHELAN RD
SOVEREIGN RD
ELORA RD
SHEDDEN CRES
CARTER DR
MACDONALD DR
JOHN DWISS DR
SPRUCEDALE RD
ABBOTT PL
DUNWEGAN ST
HYDE ST
PEARSON DR
EDGEWOOD CRT
HAWKINS ST
MERRITT CRES
VANNER AVE
NELLIS ST
BERRYMAN AVE
BYBROOK PARK DR
SEAGRAVE RD
UNNAMED
SLOANE ST
NORTHDALE DR
VINCENT ST
GRANT ST
MILLER ST
ALTADORE CRES
MELBOURNE AVE
ADMIRAL ST
WELLINGTON ST
INGERSOLL AVE
LIGHT ST
RODELL ST
GRACE ST
MARY ST
SUTHERLAND DR
TECUMSEH ST
GRAHAM ST
VANSITTART AVE
DECATUR ST
OXFORD ST
DREW ST
BULLER ST
HUNTER ST
WHITES LANE
ADELAIDE ST
PRINCESS ST
GEORGE ST
CANTERBURY ST
BEALE ST
YORK ST
HERT ST
BLETCH ST
CHAPEL ST
ELM ST
WILSON ST
STEVENHAM ST
MARGARON ST
NINCIS ST
NORWICH AVE
CENTRE ST
TEMPLE ST
STAFFORD ST
HAMER ST
CAMBRIDGE ST
HUGHSON ST
BERKSHIRE DR
RATHBOURNE AVE
DUFFERIN ST
HIGHGATE DR
GROSVENOR ST
KENSINGTON ST
LANCASTER ST
HYDEPARK ST
BELGRAVE ST
BERNARD ST
CLARKE ST
SUTTLAND PL
CHAMBERLAIN AVE
ATHLONE PL
TALON DR
ATHLONE AVE
PEMBER'S PASS
POTTER'S WAY
SALES DR
ALBERTA AVE
JULIANA DR
SOUTHWOOD WAY
MILL ST
STONEGATE DR
PINKLE ST
OXFORD ST
MANITOBA ST
ROBINSON ST
RUSSELL ST
SPENCER ST
BRUCE ST
ARGYLE ST
HAY ST
KENDALL AVE
CARDIGAN ST
PHELAN ST
HAMLAN ST
PARK ROW
BUTLER ST
FINKLE ST
HENRY ST
DOVER ST
COLLEGE AVE
VICTORIA ST
BAY ST
CEDAR ST
MAPLE AVE
WALTER ST
ANNE ST
MAUD ST
ALICE ST
BEE ST
ALLEN DR
PYPER ST
PAVEY ST
KARN AVE
PIPERS PL
EAST PARK CR
PARKINSON RD
SOUTH ST
FERGUSON DR
HODGINS CRES
LINDSAY RD
BALTER AVE
LAMPMAN PL
NORWICH AVE
BRIAN BLVD
MONTCLAIR DR
LONGWORTH LANE
KEYES DR
SUNSET BLVD
BROOKROAD AVE
TEMPERON ST
ELMWOOD CRES
KEYES DR
DUTTON WAY
NORMANDY DR
PARROTT PL
KINGFISHER AVE
FINCH AVE
LANSDOWNE AVE
HESTIA LANE
HALIFAX RD
MUNROCH BLVD
DIAMOND PV
ALDEN RD
SPITFIRE ST
ARDO RD
ALDEN RD
PARK ROW
MAIN ST
QUEEN ST
BROADWAY ST
SIMCOE ST
HATCH ST
KING ST
PEEL ST
BAY ST
DEVERE DR
MELVILLE ST
PERRY ST
BANK ST
THAMES ST
TED BOYD WAY
ROSSELL RD
ANDERSON ST
PRIMROSE DR
FIRST AVE
SECOND AVE
CATHERINE ST
BOWER HILL RD
SPARROW LA
HIGHWAY 401
TOWNSHIP OF SOUTH-WEST OXFORD
TOWNSHIP OF NORWICH
6
7
8
23
Existing and Potential Destination Trail Locations
6. Vansittart Woods Trail
7. Husky Trail
8. Existing Trails in Roth Park and Standard Tube Burgess Park (such as Rotary Club Trails, Millennium Trail System)
23. Hickson Trail
0 0.25 0.5 1 Kilometres
Legend
Existing Facility Types and Connections
Existing Multi-Use Trail
Existing Edgeline
Existing Paved Shoulder
Existing Bike Lane
Proposed Facility Types and Connections
Proposed Multi-use Trail
Proposed Signed Route
Proposed Signed Route with Sharrow
Proposed Signed Route with Edgeline
Proposed Paved Shoulder
Proposed Bike Lane
Adaptive Edgeline: Proposed Bike Lane
Adaptive Edgeline: Proposed Signed Route
Proposed Combined Bike Lane and Multi-Use Trail
Desired Connection
Connection to Surrounding Municipality
Key Community Destinations
Airport
Community Centre / Hall
Conservation Authority Area
Emergency Service
Hospital
Library
Park[1]
School
Transportation Hub
Other Key Destination
Railways
Active Railway
Abandoned Railway
Unknown Status of Railway
Other
Overpass Crossing of Highway 401 / 403
Underpass Crossing of Highway 401 / 403
Highway
County Road
Local Road
Existing Sidewalk
Parcel Property
Watercourse
Municipal Boundary
1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.
FINAL DECEMBER 2014
Base GIS Data provided by Oxford County.
MAP 3.5 - CITY OF WOODSTOCK
PROPOSED FACILITY TYPES
OXFORD COUNTY TRAILS MASTER PLAN

Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Adaptive Edgeline: Proposed Bike Lake
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations

- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways

- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other

- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

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Base GIS Data provided by Oxford County.

Existing and Potential Destination Trail Locations

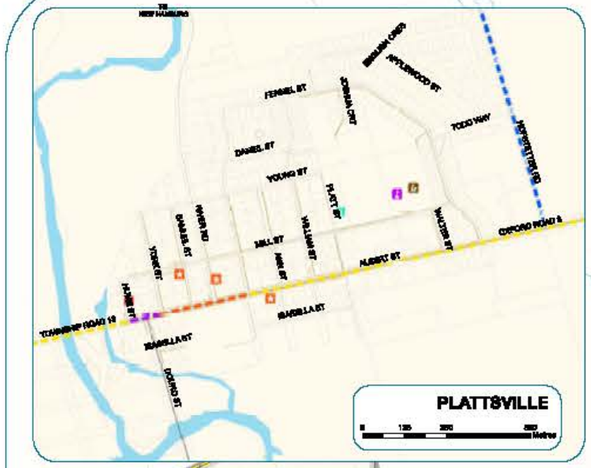
19. McLaughlin Way

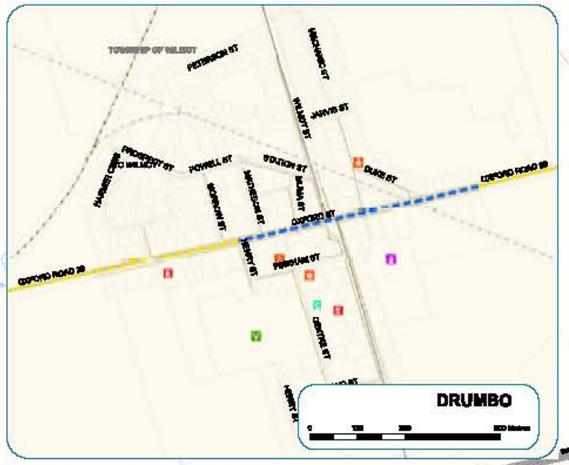
20. Trans Canada Trail

21. Cadmen Park Trail

0 0.5 1 2 Kilometres

MAP 3.6 - TOWN OF TILLSONBURG PROPOSED FACILITY TYPES OXFORD COUNTY TRAILS MASTER PLAN

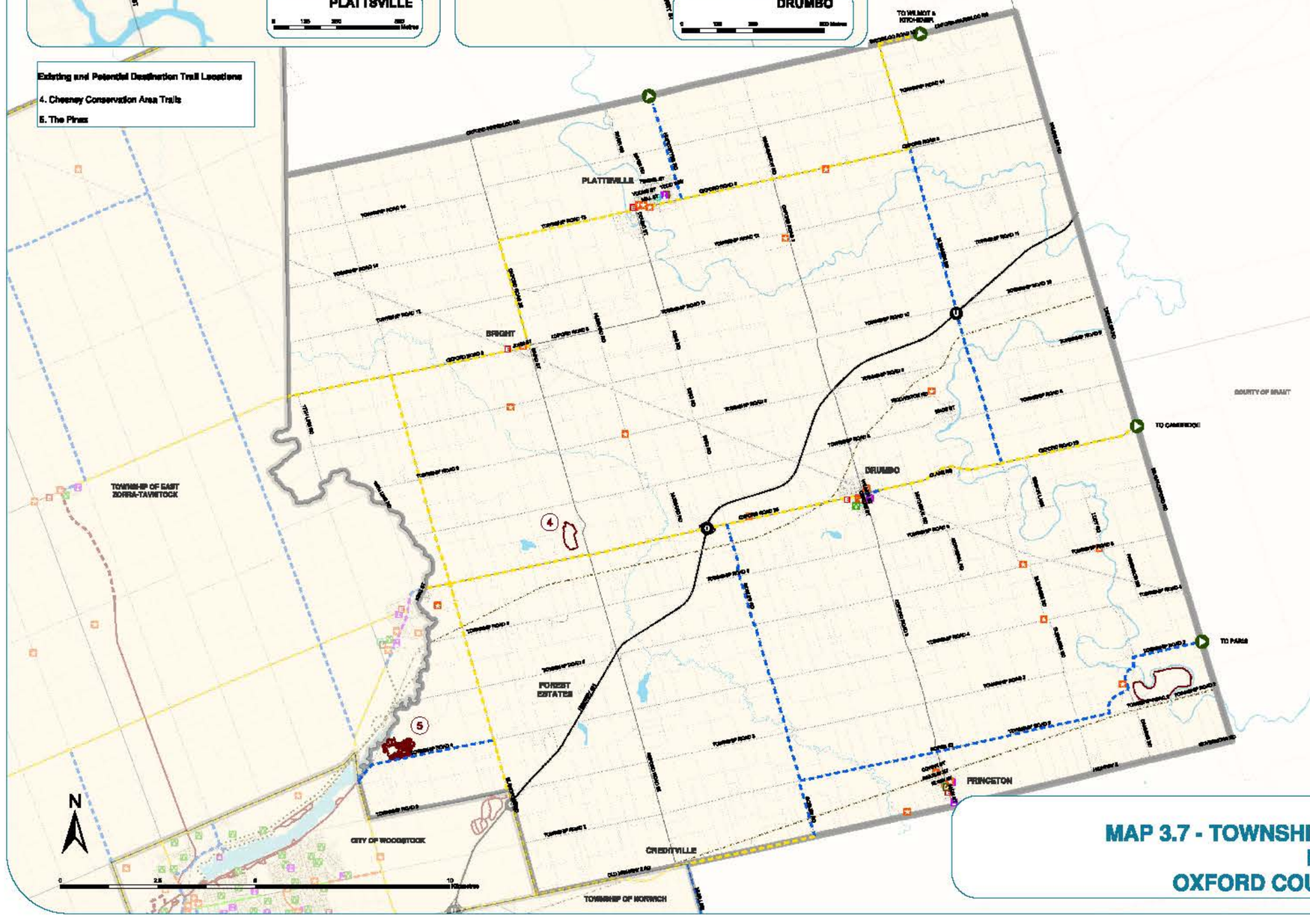




Existing and Potential Destination Trail Locations

4. Cheeney Conservation Area Trails

5. The Pines



Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations

- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways

- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other

- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be developed and implemented in the near future.

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Base GIS Data provided by Oxford County.

MAP 3.7 - TOWNSHIP OF BLANFORD-BLENHEIM PROPOSED FACILITY TYPES OXFORD COUNTY TRAILS MASTER PLAN

N

TOWNSHIP OF ZORRA

TOWNSHIP OF SOUTH-WEST OXFORD

NORTH TOWN LINE
RAGLAN ST
GEORGE ST
CAMBRIDGE ST
CATHCART ST
KINGSMAN ST
ALMA ST
WILLIAM ST
CATHERINE ST
KING HIRAM ST
KING SOLOMON ST
METCALFE ST
BRUCE ST
CHARLES ST
WILSON ST
JAMES RD
MUTUAL ST
ANDERSON ST
OXFORD ST
DUKE ST
CHURCH ST
FRANCES ST
EARL ST
ALBERT ST
ANN ST
MERRITT ST
WORKMAN ST
OXFORD ST
DUFFERIN ST
QUEEN ST
BISHOP ST
FREDERICK ST
BOND ST
ANN ST
HEMLOCK RD
ALDER RD
MELITA ST
LAUREL CRES
LINDEN PL
HOLCROFT ST
GLENN AVE
CHISHOLM DR
DEAN CRES
WADSWORTH DR
WITTY AVE
WHITING ST
MAPLE LANE
THAMES ST
NOXON ST
CROSS ST
CEDAR ST
PINE ST
ELM ST
ROLAND CRES
CAPTYN ST
NORMAN DR
PARK AVE
CHATFIELD ST
CHAMBERLAIN AVE
CENTENNIAL LANE
CANTERBURY ST
ETNA ST
CENTRE ST
HALL ST
TUPPER ST
CONCESSION ST
MILL ST
WATER ST
CAROLL ST
DANIEL ST
MARSHALL CRT
MASON DR
MORRISON AVE
PRINCESS PARK RD
FERGUSSON AVE
CHERRY ST
TAYLOR ST
GLENWOOD RD
GREENWOOD RD
ROSSMERE RD
CORNISH CRES
GAYFER PL
WOODVIEW CRT
SIMON ST
DAVID ST
MCMILLAN CRT
OWEN ST
FULLER DR
WANDERS TRAIL
WALKER RD
MOFFAT AVE
ELIZABETH AVE
BECKETT RD
CLARENCE AVE
EVELYN AVE
HUTCHISON AVE
ROBERTSON ST
CLARK RD
HARRIS ST
KING ST
OAKWOOD ST
THOMAS ST
INGERSOLL ST
UNDERWOOD RD
CULLODEN RD
SAMNAH CRES
THOMPSON RD
GEORGE JOHNSON BLVD
VICTORIA ST
MORENO ST
RIDGE RD
HILLSIDE RD
RIVERVIEW RD
DUNN COURT RD
DEAN TERR
CRESCENT PL
HAINES ST
BELL ST
SKYE ST
JURA LANE
INNES ST
CABRIEL ST
WORKMAN ST
MARGARET ST
UNION ST
JOHN ST
KERR CRES
WOODWORTH CRES
FELTZ DR
SHELTON DR
MCCREERY RD
OXFORD AVE
MOULTON CRT
ROBERTSON CRT
GARLAND CRT

13
14

Existing and Potential Destination Trail Locations

13. Thomas Ingersoll Scenic Trail
14. John Lawson Park Trail

0 0.25 0.5 1 Kilometres

Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations

- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways

- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other

- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

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Base GIS Data provided by Oxford County.

MAP 3.8 - TOWN OF INGERSOLL
PROPOSED FACILITY TYPES
OXFORD COUNTY TRAILS MASTER PLAN

N

Existing and Potential Destination Trail Locations
1. Wildwood Conservation Area Trails
2. Avon Trail
3. Embro Pond Conservation Area Trails

THAMESFORD

EMBRO

Legend

Existing Facility Types and Connections
- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections
- Proposed Multi-Use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations
- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways
- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other
- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks identified are not existing but are proposed to be developed and implemented in the near future.

FINAL DECEMBER 2014

MAP 3.9 - TOWNSHIP OF ZORRA
PROPOSED FACILITY TYPES
OXFORD COUNTY TRAILS MASTER PLAN

N

CITY OF WOODSTOCK

TOWN OF ZORRA

BEACHVILLE

TOWN OF INGERSOLL

SALFORD

TOWNSHIP OF SOUTH-WEST OXFORD

MUNICIPALITY OF THAMES CENTRE

CULLODEN

BROWNSVILLE

MOUNT ELGIN

TOWN OF TILLSONBURG

TO DORCHESTER

TO DORCHESTER & LONDON

TO MT. VERNON & ST. THOMAS

TO SPRINGFIELD & AYLMER

TO ELGIN

TO PORT ROWAN

EAST HILL LINE
INNES LINE
OLD STAGE RD
SPRUCE RD
DOMTAR LINE
WEST HILL LINE
CLARKE RD
HIGHWAY 401
BEACHVILLE RD
GLENN AVE
LISAR DR
DOAN LINE
CEDAR LINE
TRILLIUM LINE
KIRK RD
CHURCH LINE
CURRY RD
BUDD LINE
RIVERS RD
OUTHBERT RD
FOLDENS LINE
SWEABURG RD
JORDAN LINE
UNION RD
UNION LINE
THOMAS RD
WALLACE LINE
HARRIS LINE
FIVE POINTS LINE
ROBINSON RD
WILSON RD
BARNEY ST
SALFORD RD
DUFFY LINE
MCBETH RD
EBENEZER RD
MOUNT ELGIN RD
FORT LINE
DANIEL RD
FROUSE RD
FAIRMAN LINE
CULLODEN LINE
DEREHAM LINE
ZENDA LINE
CRANBERRY LINE
AIRPORT RD
OSTRANDER RD
KESWICK RD
BROWNSVILLE RD
HAWKINS RD
LOWRIE LINE
PRESSEY RD

9
11
12
15
16
17
18

Existing and Potential Destination Trail Locations

9. Oxford Thames River Trail
11. Trillium Woods Trail
12. Foldens Reforestation Area
15. Lawson Tract / McBeth Tract
16. Hugh's Tract
17. Dereham Wetlands Conservation Area
18. Hawkins Tract

0 1.5 3 6 Kilometres

Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations

- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways

- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other

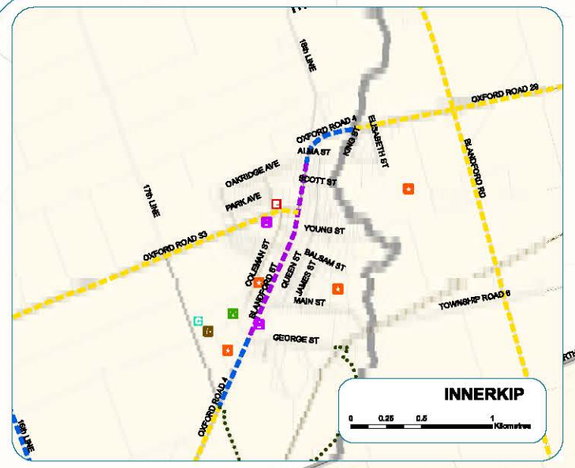
- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

FINAL DECEMBER 2014

Base GIS Data provided by Oxford County.

MAP 3.10 - TOWNSHIP OF SOUTH-WEST OXFORD PROPOSED FACILITY TYPES OXFORD COUNTY TRAILS MASTER PLAN



Existing and Potential Destination Trail Locations

23. Hickson Trail

Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations

- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways

- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other

- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

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Base GIS Data provided by Oxford County.

N

0 1.25 2.5 5 Kilometres

MAP 3.11 - TOWNSHIP OF EAST ZORRA-TAVISTOCK PROPOSED FACILITY TYPES OXFORD COUNTY TRAILS MASTER PLAN

N

0 1.25 2.5 5 Kilometres

CITY OF WOODSTOCK

TOWNSHIP OF ZORRA

TOWNSHIP OF SOUTH-WEST OXFORD

COUNTY OF BRANT

MINNESOTA COUNTY

Existing and Potential Destination Trail Locations

10. Sweaburg Swamp

22. Rock's Mill Conservation Area

10

22

OXFORD CENTRE

CURRIES

VANDERCAR

BURGESSVILLE

NORWICH

OTTERVILLE

TOWN OF TILLSONBURG

TO BRANTFORD

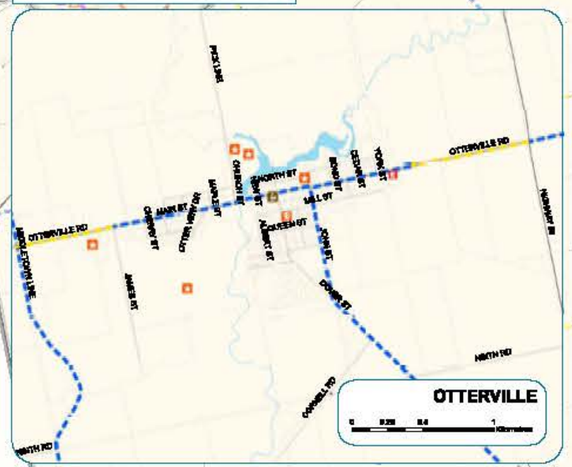
TO PORT ROWAN

TO DELHI

TO WATERFORD

TO NORTHFIELD

TO SPRINGFORD



Legend

Existing Facility Types and Connections

- Existing Multi-Use Trail
- Existing Edgeline
- Existing Paved Shoulder
- Existing Bike Lane

Proposed Facility Types and Connections

- Proposed Multi-use Trail
- Proposed Signed Route
- Proposed Signed Route with Sharrow
- Proposed Signed Route with Edgeline
- Proposed Paved Shoulder
- Proposed Bike Lane
- Desired Connection
- Connection to Surrounding Municipality

Key Community Destinations

- Airport
- Community Centre / Hall
- Conservation Authority Area
- Emergency Service
- Hospital
- Library
- Park[1]
- School
- Transportation Hub
- Other Key Destination

Railways

- Active Railway
- Abandoned Railway
- Unknown Status of Railway

Other

- Overpass Crossing of Highway 401 / 403
- Underpass Crossing of Highway 401 / 403
- Highway
- County Road
- Local Road
- Existing Sidewalk
- Parcel Property
- Watercourse
- Municipal Boundary

1. Some of the parks illustrated are not existing but are proposed to be designed and implemented in the near future.

FINAL DECEMBER 2014

Base GIS Data provided by Oxford County.

MAP 3.12 - TOWNSHIP OF NORWICH PROPOSED FACILITY TYPES OXFORD COUNTY TRAILS MASTER PLAN

Key Considerations:

3. **Context:** Many roads in the rural area are gravel surfaced, and some on-road linkages within the County-wide trails network have been identified on these roads in order to achieve network connectivity and continuity.

   Mapping Interpretation: For routes on gravel surfaced roads the County and local municipalities should (a) consider upgrading to a hard surface e.g. chip-seal when a route is being implemented or (b) clearly indicate that these roads are gravel surfaced on mapping and promotional materials so users can plan their route and equipment (e.g. select type of bicycle/tires). Master Plan costing for these linkages includes the cost to upgrade from gravel to hard surface.

4. **Context:** Through the cycling component of the Transportation Master Plan the County adopted an updated approach to the implementation of paved shoulders on County roads. County policy states that a paved shoulder is to be implemented along a road which is scheduled for reconstruction where the existing platform accommodates the additional asphalt.

   Mapping Interpretation: The trails network identifies a number of on-road connections on County roads within the rural area. Many of these roads are identified for future paved shoulders. In most cases, the existing platform width accommodates implementation; however, there are sections of the network where the cross section does not have the platform width available. For these linkages the County is encouraged to consider widening the roadway to facilitate route connectivity and continuity. The costing proposed in the master plan reflects a paved shoulder with a minimum width of 1.2 m.

Key Considerations:

5. **Context:** Several of the urban municipalities in the County have developed their own plans and policy directives to guide the development of future on and off-road linkages. These plans were used to inform the development of linkages to the County-wide network.

   Mapping Interpretation: It is assumed that linkages and proposed facility types found in local municipal plans and policies will be the primary reference for the proposed facility types and phasing for implementation. Local plans and policies (where they exist) should be consulted in concert with the Oxford County Trails Master Plan.

Recommendation(s):

3-2 When developing and printing trail mapping for public use, map developers should consider including the interpretation details to assist users in understanding the map(s).

3.7 IDENTIFYING FUTURE PRIORITIES

The development of the County-wide network will be achieved through a collaborative effort between the County and other trail and cycling stakeholders. Once the master plan has been approved, the County and its partners should review the priorities identified or adapt these as part of moving forward to implementation.

Although an ultimate build-out scenario for the network was prepared during the development of the study, a decision was made to have the master plan focus on priorities that might be accomplished during the short term. These are illustrated on **Map 3.13**.

The approach used to identify key linkages and route priorities was based on 7 main strategies:

1. Where applicable, implementation of routes should be scheduled to be part of major infrastructure development or improvement projects at the County and local municipal level (e.g. road widening and resurfacing, installation of utilities, including pedestrian / cycling facilities with bridge reconstruction etc.).
2. Consider project team, steering committee and public opinions regarding priorities and route selection.
3. Construct routes in areas of new development as planning, design and construction of these areas progresses. Typically new development areas are located within existing urban areas or on the urban fringe - e.g. Woodstock).
4. Close gaps in the existing network.
5. Provide spine connections between major urban centres and destination trails.
6. Build where user demand is anticipated to be highest.
7. Build where local interest is strong, where funding is available and /or where partnerships have already been established.
8. Consider an equitable distribution of routes / facilities among the County's urban areas and rural centres and create loops within each of the centres that improve access to key destinations such as recreation complexes, arenas, schools, parks, natural areas where public access is permitted etc..

The first strategy is fundamental to implementation and is based on known and / or documented forecasts. These forecasts are expected to change and will require ongoing discussions and prioritization from Council at the County and local municipal level. Therefore, it is important that those responsible for monitoring and scheduling the network implementation monitor and communicate with each other about capital forecasts on a regular basis so that opportunities are not overlooked.

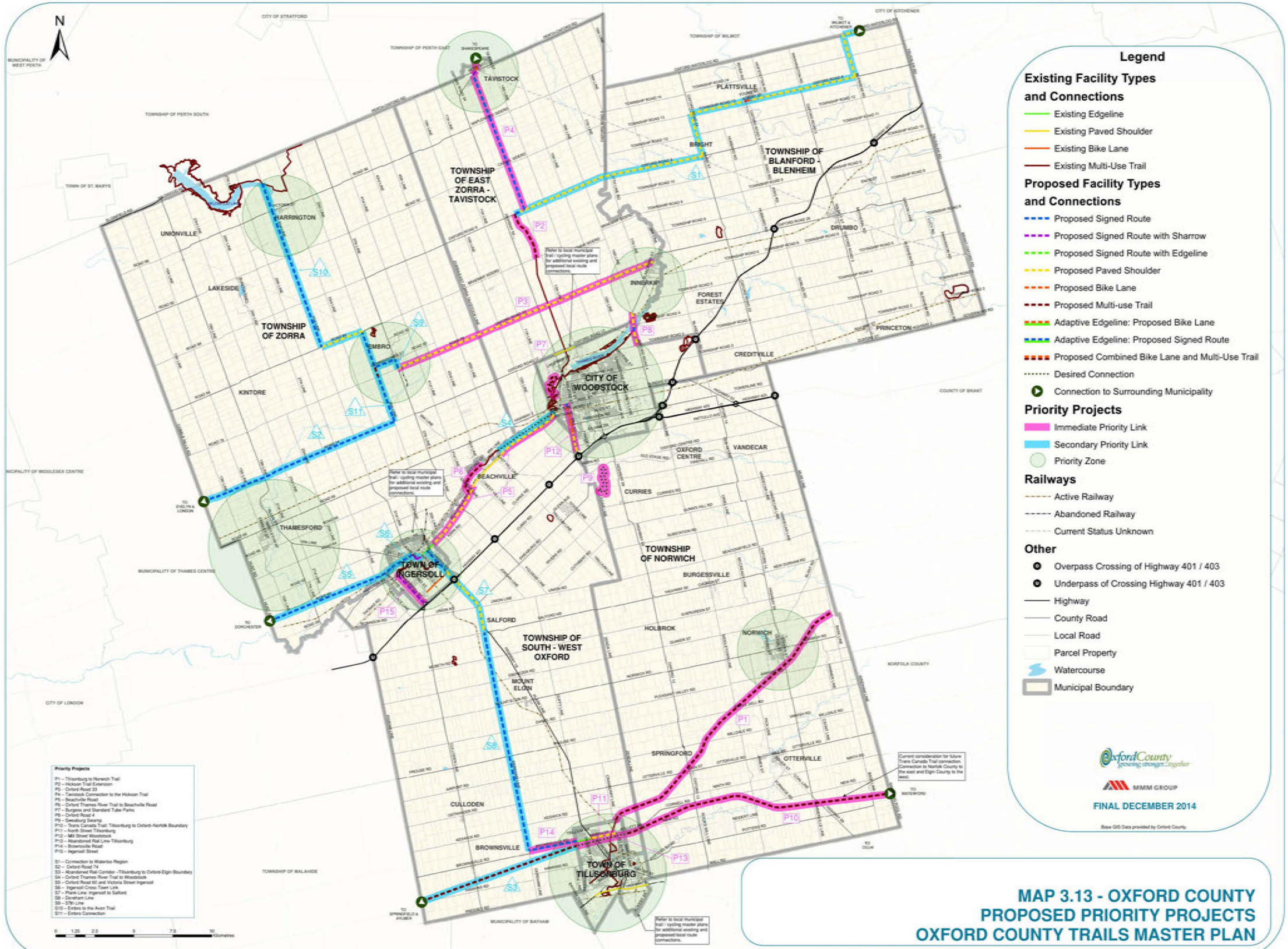
For example, the most cost effective way to implement new on-road infrastructure which requires physical road modifications is to implement these changes at the time the road is being resurfaced or reconstructed. Typically the incremental cost to add trail / cycling facilities to a major capital project is much less than the cost to implement the facility as a stand-alone project.

3.7.1 IMMEDIATE PRIORITY PROJECTS

Immediate priority projects are proposed linkages that have been identified by the County's Cycling Advisory Committee as part of the County's Share the Road Program, as part of County or local municipal capital works budgets, are currently underway by local groups such as the Oxford County Trails Council, are underway as part of local municipal or conservation authority initiatives, or are studies / initiatives where the County has already engaged in discussions with external partners to achieve.

Priority Project #1 - Tillsonburg-Norwich Multi-use Trail

Proposed multi-use trail on the abandoned rail corridor that connects Tillsonburg to Norwich. The County has recently installed a water main along this corridor and the service access road is being considered for a multi-use trail.


N
TAVISTOCK
PLATTSVILLE
BRIGHT
TOWNSHIP OF EAST ZORRA - TAVISTOCK
TOWNSHIP OF BLANFORD - BLENHEIM
HARRINGTON
UNIONVILLE
LAKESIDE
TOWNSHIP OF ZORRA
EMBRO
INNERKIP
FOREST ESTATES
DRUMBO
PRINCETON
CREDITVILLE
CITY OF WOODSTOCK
KINTORE
OXFORD CENTRE
VANDECAR
BEACHVILLE
CURRIES
THAMESFORD
TOWN OF INGERSOLL
TOWNSHIP OF NORWICH
BURGESSVILLE
SALFORD
TOWNSHIP OF SOUTH - WEST OXFORD
HOLBROK
NORWICH
MOUNT ELGIN
SPRINGFORD
OTTERVILLE
CULLODEN
BROWNSVILLE
TOWN OF TILLSONBURG
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
Refer to local municipal trail / cycling master plans for additional existing and proposed local route connections.
Current consideration for future Trans Canada Trail connection. Connection to Norfolk County to the east and Elgin County to the west.
Priority Projects
P1 – Tillsonburg to Norwich Trail
P2 – Hickson Trail Extension
P3 – Oxford Road 33
P4 – Tavistock Connection to the Hickson Trail
P5 – Beachville Road
P6 – Oxford Thames River Trail to Beachville Road
P7 – Burgess and Standard Tube Parks
P8 – Oxford Road 4
P9 – Sweaburg Swamp
P10 – Trans Canada Trail: Tillsonburg to Oxford–Norfolk Boundary
P11 – North Street Tillsonburg
P12 – Mill Street Woodstock
P13 – Abandoned Rail Line-Tillsonburg
P14 – Brownsville Road
P15 – Ingersoll Street
S1 – Connection to Waterloo Region
S2 – Oxford Road 74
S3 – Abandoned Rail Corridor –Tillsonburg to Oxford-Elgin Boundary
S4 – Oxford Thames River Trail to Woodstock
S5 – Oxford Road 60 and Victoria Street Ingersoll
S6 – Ingersoll Cross Town Link
S7 – Plank Line: Ingersoll to Salford
S8 – Dereham Line
S9 – 37th Line
S10 – Embro to the Avon Trail
S11 – Embro Connection
0 1.25 2.5 5 7.5 10 Kilometres
Legend
Existing Facility Types and Connections
Existing Edgeline
Existing Paved Shoulder
Existing Bike Lane
Existing Multi-Use Trail
Proposed Facility Types and Connections
Proposed Signed Route
Proposed Signed Route with Sharrow
Proposed Signed Route with Edgeline
Proposed Paved Shoulder
Proposed Bike Lane
Proposed Multi-use Trail
Adaptive Edgeline: Proposed Bike Lane
Adaptive Edgeline: Proposed Signed Route
Proposed Combined Bike Lane and Multi-Use Trail
Desired Connection
Connection to Surrounding Municipality
Priority Projects
Immediate Priority Link
Secondary Priority Link
Priority Zone
Railways
Active Railway
Abandoned Railway
Current Status Unknown
Other
Overpass Crossing of Highway 401 / 403
Underpass of Crossing Highway 401 / 403
Highway
County Road
Local Road
Parcel Property
Watercourse
Municipal Boundary
FINAL DECEMBER 2014
Base GIS Data provided by Oxford County.
MAP 3.13 - OXFORD COUNTY
PROPOSED PRIORITY PROJECTS
OXFORD COUNTY TRAILS MASTER PLAN

Priority Project #2- Hickson Trail Extension

From the current terminus of Hickson Trail at Braemar Sideroad to Oxford Road 8. The Oxford County Trails Council is leading the initiative to develop this trail extension.

Proposed Facility Type:

- Multi-Use Trail

Priority Project #3 - Oxford Road 33

From 37th Line to Blanford Street. This project is part of Oxford County's capital road improvement program and is scheduled in the short term.

Proposed Facility Type:

- Paved Shoulder

Priority Project #4 - Tavistock Connection to the Hickson Trail

13th Line / William Street from Oxford Road 8 to the Tavistock urban area.

Proposed Facility Type:

- Signed Route – 13th Line
- Note – 13th Line from Maplewood Sideroad to Oxford Road 8 is currently gravel surfaced. Mapping and promotional materials should communicate this surface type. Consideration should be given by the Township in the mid-term to adding a hard surface (e.g. chip seal) to the granular surface section.

Priority Project #5 - Beachville Road

From the Woodstock urban boundary to the Ingersoll urban boundary. This project is part of Oxford County's capital road improvement program and is scheduled in the short term.

Proposed Facility Type:

- Paved Shoulder – Woodstock Boundary to existing paved shoulder and Ingersoll Boundary to existing paved shoulder

Priority Project #6 - Oxford Thames River Trail to Beachville Road

Planning, design and implementation for the proposed off-road connection along the abandoned rail corridor / Domtar Line. This initiative is being led by the Oxford County Trails Council.

Proposed Facility Type:

- Off-road Trail

Priority Project #7 - Burgess and Standard Tube Parks

Proposed off-road connections and upgrades throughout the park being led by the Upper Thames Valley Conservation Authority (UTRCA) in partnership with the City of Woodstock.

Proposed Facility Type:

- Multi-Use Trail

Priority Project #8 - Oxford Road 4

Township Road 3 to Oxford Road 17.

This project is part of Oxford County's capital road improvement program and is scheduled in the short term.

Proposed Facility Type:

- Paved Shoulder – Oxford Road 4 to bridge over Thames River and Township Road 3 to bridge over Thames River
- Signed Route with Share the road signs– Bridge over Thames River

Priority Project #9 - Sweaburg Swamp

Study and planning related to establishing / formalizing a trail loop(s) within the Sweaburg Swamp property. This project is being led by the UTRCA.

Priority Project #10- Trans Canada Trail

Tillsonburg to Oxford-Norfolk Boundary

Planning and feasibility study related to the use of the abandoned rail corridor from Tillsonburg to Waterford as the official Trans Canada Trail route. Partners include the County of Oxford, Township of Norwich, Town of Tillsonburg and Norfolk County.

Proposed Facility Type:

- Multi-use Trail

Priority Project #11 - North Street Tillsonburg

From Tillson Avenue to Broadway Street / Plank Line. This project is part of Oxford County's capital road improvement program and is scheduled in the short term.

Proposed Facility Type:

- Bike Lane – Broadway Street to existing edgelines
- Paved Shoulder – Broadway Street to Tillson Avenue.

Priority Project #12 - Mill Street Woodstock

From Dundas Street to Hwy. 401. This Environmental Assessment is currently being conducted by the County of Oxford, in partnership with the City of Woodstock.

Proposed Facility Type:

- Signed Route, Bike Lane and Paved Shoulder segments, consistent with the Woodstock Cycling Master Plan recommendations.
- The Environmental Assessment will make final recommendations regarding facility type, implementation costs and timing for detailed design and construction.

Priority Project #13 - Abandoned Rail Line -Tillsonburg

Study currently underway to determine the feasibility of acquiring the abandoned rail line parallel to North Street in Tillsonburg. Partners include Oxford County and the Town of Tillsonburg. This segment is the entire section of the abandoned line within the Town of Tillsonburg boundary, and would be the continuation of the same line east and west of Tillsonburg, both of which are already owned by Oxford County.

Priority Project #14 - Brownsville Road

From Dereham Line to Woodland Crescent in Tillsonburg. This link has been identified for the installation of Share the Road signage under the Oxford County Share the Road initiative.

Proposed Facility Type:

- Signed Route.

Priority Project #15 - Ingersoll Street

From King Street to Culloden Road

Proposed Facility Type:

- Signed Route with Sharrow markings and Share the Road Signs

This project is part of Oxford County's Share the Road program and is scheduled in the short term.

3.7.2 SECONDARY PRIORITY LINKS

Secondary Priority Links are proposed for future consideration by the County and its partners as the Trails Master Plan is implemented. The majority of these links enhance connections between communities, extend existing off-road trails and provide links to surrounding communities surrounding Oxford County.

When complete and added to the accomplishments from the Immediate Priority Project phase, north - south and east - west spines will be created and most of the urban areas within the County will be linked by the network.

Secondary Priority Link #1 - Connection to Waterloo Region

Oxford Road 8, Oxford Road 22 and Blenheim Road

Proposed Facility Type:

- Signed Route – from the north terminus of the Hickson Trail to the east urban limit in Hickson
- Paved Shoulder – Oxford Road 8 from the east urban limit in Hickson to Oxford Road 22); Oxford Road 22 (Oxford Road 8 to Township Road 13); Oxford Road 8 (Oxford Road 22 to Hume Street); Oxford Road 8 (Fennel Street to Blenheim Road); Blenheim Road (Oxford Road 8 to Waterloo Road 13)
- Signed Route with Sharrow – Oxford Road 8 (Hume Street to York Street in Plattsville)
- Bike Lane – Oxford Road 8 (York Street to Fennel Street in Plattsville)

Secondary Priority Link #2 - Road 74

From 35th Line to County Boundary

Proposed Facility Type:

- Signed Route

Secondary Priority Link #3 - Abandoned Rail Corridor – Tillsonburg to Oxford – Elgin Boundary

Proposed Facility Type:

- Multi-use Trail

Secondary Priority Link #4 - Oxford Thames River Trail to Woodstock

Proposed Facility Type:

Off-road Trail

Planning, negotiations for a trail connection from the east end of the current Thames River Trail into Woodstock. This project is one of the Oxford County Trails Council's initiatives that and may include hiking-only trail in some or all locations, may include multi-use in some locations.

Secondary Priority Link #5 - Oxford Road 60 and Victoria Street Ingersoll

Proposed Facility Type:

- Signed Route from Thames Street in Ingersoll to Hunt Road (Oxford – Thames Centre Boundary)

Secondary Priority Link #6 - Ingersoll Cross Town Link

Proposed Facility Types:

- Signed Route with Sharrow – Thames Street (Victoria Street to Charles Street) and Charles Street (Thames Street to existing bike lane)
- Signed Route – Harris Street (Charles Street to Plank Line)

Secondary Priority Link #7 - Plank Line - Ingersoll to Salford

Proposed Facility Type:

- Paved Shoulder on Plank Line from south Ingersoll Limit to Salford Road Dereham Road. This project also involves a crossing of Highway 401 and will require consultation / negotiation with MTO.

Secondary Priority Link #8 - Dereham Line

From Salford to Brownsville Road

Proposed Facility Type:

- Signed Route

Secondary Priority Link #9 - Commissioner Street to South Embro Trail

Proposed Facility Type:

- Paved Shoulder – Oxford Road 6 / 37th Line (Rail corridor to south urban limit in Embro)
- Signed Route – from south urban limit in Embro to Commissioner Street

Secondary Priority Link #10 – Embro to the Avon Trail

Proposed Facility Type:

- Signed Route – 35th Line (Commisioner Street to Road 84) and 31st Line (Road 84 to the Avon Trail)
- Paved Shoulder – Road 84 (31st Line to 35th Line)

Secondary Priority Link #11 - Embro Link

Proposed Facility Type:

- Signed Route on 35th Line from Oxford Road 74 to Oxford Road 16 / Road 84, and on road link along Commissioner Street from Oxford Road 6 / 37th Line to 35th Line. When complete these will link the urban area of Embro with the Embro West Zorra Community Centre and the Embro Pond Conservation Area. Consideration should also be given to a multi-use trail on the east side of 35th Line from Commissioner Street to the Community Centre to encourage more pedestrian use.

3.7.3 PRIORITY ZONES

Priority Zones are considered key areas for the development of off-road trails and on-road linkages in the future. One of the primary objectives of the Trails Master Plan was to establish a set of inter-municipal connections to facilitate recreational as well as utilitarian travel by non-motorized users. The Priority Zones generally coincide with urban nodes in the County. For these areas, the majority of trail and cycling facility development will be the responsibility of the Local Municipality(ies), several of whom are actively engaged today in implementing local trail and active transportation plans.

Local Municipalities are encouraged to use the Oxford County Trails Master Plan as well as their own trails or active transportation related master plans as a guide for future development.

Additional future Priority Zones for trail development in the County should also include consideration of County Forest tracts, woodlots or other natural areas that are publicly owned (e.g. by Oxford County, local municipalities, conservation authorities etc.). Many of these locations are identified on Map 3.2. Through consultation with their respective land owner(s) further investigation should be conducted at each of these locations to clarify existing permitted uses, examine potential uses and develop a management plan to address existing or enhanced trail use. The Oxford County Trails Council could be a partner in the development of management plans by assisting with tasks such as trail inventory, user profile and user needs etc..

Recommendation(s):

3-3: The implementation of the trails network should be coordinated with capital works plans at the County and local municipal levels so that opportunities to include network links are not overlooked, and cost efficiencies can be realized.

3.8 USING & ADAPTING THE MASTER PLAN

The master plan is not intended to be a static document. Though the strategy has been developed as a blueprint / guide for future planning and development, it must be recognized that priorities change over time and additional or alternate opportunities may arise. The master plan is intended to be flexible. The timing and details related to the network's implementation should evolve through ongoing community consultation, discussions with private landowners, County and local municipal Council's decisions on priorities and detailed design studies.

As network changes or additions arise the overall intent and direction of the plan should be respected. To help facilitate this, the following should be considered when additional opportunities or changes arise:

- The validity of each route should be confirmed when it is being considered for implementation. Where it is determined that a particular route is no longer valid, or is impossible to achieve, a parallel route performing the same network function should be selected.
- Where applicable, trail routes, trail crossings and in particular on-road cycling connections are considered as part of the Environmental Assessment process for municipal infrastructure studies.
- Input should be gathered from various County departments and partners e.g. local municipalities, conservation authorities, Oxford County Trails Council and Oxford Cycling Advisory Committee etc. through a coordinated communication process to ensure that all needs are being considered and balanced.
- Performance of the facilities should be regularly monitored so that improvement in trail routing, design and maintenance can evolve as new information and new opportunities arise.
- The Oxford County Trails Master Plan is updated on a regular basis, at least every five years.

Recommendation(s):

3-4: The Oxford County Trails Master Plan should be formally updated through a public process at least every five years.

4.0

FACILITATING & COORDINATING IMPLEMENTATION

4.1 NEXT STEPS: TOOLS TO FACILITATE IMPLEMENTATION

Implementing the Trails Network for Oxford County will require structural and non-structural initiatives. A network which is designed, implemented and maintained by a number of partners requires a set of tools and strategies which can be consistently applied to ensure a unified approach to implementation is used. Each of the tools has been summarized in **Table 4.1.** The County and its partners are encouraged to review these tools and refine them as necessary and considered as the preferred approach for implementation.

Table 4.1 – Summary of Master Plan Implementation Tools

Implementation Tool	Description	Page #
Network Management	The use of the GIS database and mapping information to track and document the network development and implementation process.	4-3
Land Securement & Acquisition	A set of potential land securement and acquisition strategies for reference and use by the County and its partners.	4-16 App.D
Staging Area Design	A hierarchy of amenities and design types for consideration by the County when designing end-of-trip facilities and staging areas.	4-22
Maintenance	A set of proposed maintenance practices for year round on and off-road route maintenance.	4-24
Public Outreach & Promotion	An overview of potential target audiences, suggested programs and initiatives for consideration by the County and its partners.	4-28
Network Costing	A set of unit cost assumptions used to establish the estimated cost to implement the network, and benchmark costs for promotion and outreach initiatives.	4-22 App.F
Partnership Framework	A list of potential partners to be engaged throughout the implementation process on a project by project basis.	4-4
Network Funding	Potential funding sources which could be explored by the County and its partners when implementing the plan.	4-34
Performance Measurements	A set of potential performance measures which can be selected from and adapted to monitor the progress of the plan's implementation.	4-35 App.G

Table 4.1 – Summary of Master Plan Implementation Tools

Recommendation(s):

4-1: The County should revise as necessary and adopt the tools identified in the implementation plan. The tools should be used by those responsible for the plan's implementation as a guide for future decision making.

4.1.1 A COORDINATED APPROACH

The planning, design, construction and management of a County-wide trails network require on-going coordination and communication between the County and its partners.

Champions and partnerships are cornerstones of the Master Plan's implementation. The challenges and opportunities associated with participation have been reviewed as part of the master plan process in order to develop a realistic and feasible approach to reporting. Specific roles and responsibilities for those who will be directly involved in trail implementation will help to ensure that the decision-making process is both efficient and well managed.

Figure 4.1 illustrates the coordinated approach between key partners throughout the county which is intended to be the basis for the plan's implementation. The approach is to be reviewed by the County and its partners and confirmed, once confirmed, it should be adopted by the County and its partners as the guide for decision making. Collaboration and coordination between these groups / individuals will help to ensure that opportunities, challenges and issues related to the trails network are considered. It is important to note that the implementation of the master plan revolves around the efforts of the County as a coordinator of the Trail.

Trail Partnership: The Trail Partnership will be responsible for guiding the plan's implementation and the selection / prioritization of trail projects. The Partnership will build on those individuals who were involved as part of the Master Plan Steering Committee. To ensure ongoing communication

Figure 4.1 – Trails Master Plan Coordination Approach

between key community stakeholder and partners the Partnership should ensure membership from each local municipality, local conservation authorities, and representation from all potential trail user groups, the Oxford Trails Council, the Oxford Cycling Advisory Committee, local stakeholders and interest groups. The group would meet on a regular basis (e.g. quarterly or semi-annually) to review and discuss trail projects and opportunities as they become available. The partnership would be coordinated / facilitated by a staff member from the County who would also provide updates to Council (e.g. on a project by project basis, semi-annual or annual basis –to be determined).

Recommendation(s):

4-2: The proposed organization structure including the roles and responsibilities should be adopted as a guide for the implementation of the master plan and select priority projects as they arise.

4-3: Identify an existing County staff member who will oversee the transition between the finalization of the master plan and coordination of the Trail Partnership. This individual will provide updates to Council, where appropriate.

4-4: Once the master plan has been approved a Trail Partnership should be established, which includes representatives from the Study's Trails Steering Committee as well as other representatives from key interest groups.

4-5: One of the first roles of the Trail Partnership should be to develop a Terms of Reference which includes details regarding composition of the Group, members' roles and a reporting structure.

Edgeline with On Street Parking in Drumbo, ON Source: MMM Group

4.1.2 A NETWORK MANAGEMENT TOOL

The GIS database provided by the County has been updated to reflect the proposed Trails network. The updated GIS database can be used to track the implementation of the plan and to document municipal assets. It can also be overlaid on Google Earth (digital aerial photography) in a KML format so all staff and the public can view network routing.

The Trail Partnership and local stakeholders and interest groups are encouraged to use the tool to help confirm routing, facility type and phasing. Keeping the database up to date may significantly reduce the cost of future Master Plan updates.

In addition to being a network management and tracking tool the GIS database, with some supplementary formatting, could be used to develop a County-wide active transportation and recreation map or to update existing Tourism mapping that has already been developed by Oxford Tourism. The information and mapping developed as part of the Trails Master Plan should also be used when the County next updates the cycling map.

Accessible formats should be explored for future updates– both hard copy and electronic – to facilitate the distribution of information County-wide to people of all ages and abilities.

Recommendation(s):

4-6: The GIS database developed during the preparation of the Master Plan should be integrated with the County and local municipalities' existing GIS databases and regularly updated as part of the network tracking, management and budgeting process. This will reduce the cost of future updates to the Master Plan.

4-7: The updated GIS database should be used to develop an active transportation and recreation map geared towards tourism / community branding for the County and local municipalities.

4-8: The updated GIS database should be provided to local municipalities for any local tourism and marketing / promotional mapping and information which are developed in support of the network.

Cycling in Urban Area of Oxford County
Source: MMM Group

4.2 PLANNING, BUILDING AND MAINTAINING THE NETWORK

4.2.1 PLANNING FOR TRAILS IN OXFORD COUNTY

4.2.1.1 Creating New Trails in Established Neighbourhoods

Developing trails in established neighbourhoods can be challenging when it comes to implementation, even if the intent to implement a trail has been clearly documented in strategic planning documents. Public opinion related to specific trail segments can be hard to attain at the master planning stage. Sometimes it is not until a project reaches the implementation stage that residents who perceive themselves as being directly affected become more involved and vocal. Real and perceived concerns over increased traffic / access to their rear yards, invasion of privacy, the increased potential for vandalism and theft are often cited as key concerns.

To overcome this challenge, the County and its partners are encouraged to engage residents in an open consultation process in the earliest possible stages of the project. In some cases, the most vocal opponent can become the greatest supporter if the process provides an effective avenue to address concerns. Some keys to success include:

- Notifying adjacent landowners early in the process and taking the time to understand and respond to their concerns. This should include an invitation to provide their input into the process (i.e. participation in design workshops, site tours and "kitchen table" meetings to understand options for alignment, understand specific concerns, to design materials and privacy features).
- Emphasizing the benefits of trails for their neighbourhood and community, including themselves and their children.

- Emphasizing successful examples and effective solutions where similar problems were overcome.

As part of the detailed design process, it is recommended that the County and those responsible for the plan's implementation consider further consultation with key stakeholders, agencies and adjacent landowners when major trail routes identified in the master plan network are being considered for implementation.

4.2.1.2 Trails in New Development Areas

Planning the trail system is seen as a critical component of the land development process. Trails are an integral part of the urban and rural fabric and are a key component of the recreation asset base and transportation system. New developments must be planned for the efficient movement of people for recreation and utilitarian purposes. Developers should be expected to work through an iterative process with County and local municipal staff, beginning early in the planning stages to create a trails network within their development area that reflects the intent of the Oxford County Trails Master Plan.

The County and its local municipalities should provide developers with information about the network, desired connections and design expectations as part of building a positive working relationship. Ideally, trails in new development areas should be constructed prior to or concurrently with the construction of other infrastructure and buildings. Where trail construction is not implemented until a later date, there can often be conflict as residents may claim that they were not aware of plans for trail construction even if this intention has been clearly indicated in municipal planning documents. Developers and builders should be required to be proactive about notifying prospective buyers where trails are to be located at the time they are selling lots.

Providing information at sales offices, including information in sales packages and erecting signs in locations where trails are to be constructed may help to alleviate difficulties at a later date. A mandatory requirement for developers and builders to be forthcoming with information regarding future trails could be included as a condition of approval in subdivision and/or site plan agreements.

It is expected that proposals for new development areas will contain routes that reflect the density, hierarchy and character that is consistent with rest of the network proposed in this master plan. Specifically this implies the planning, design and implementation of off-road trails and on-road links that:

- Overcome physical barriers;
- Make appropriate connections to important destinations;
- Enhance connections to the existing or planned system of trails surrounding the subject development area; and
- Are sensitive to, and/or highlight inherent qualities of the natural and cultural landscape features within the development area.

A careful examination of a variety of factors including topography and drainage, slopes, soil conditions, plant and animal communities, microclimate and human comfort, historic/cultural resources, public education opportunities, significant views and vistas should be part of the process to integrate trails in new areas of development throughout the County.

Cycling in Rural Oxford County Source: MMM Group

4.2.1.3 Trails in Utility Corridors and Abandoned Railways Rights of Way and Unopened Road Allowances

Pipeline and hydro corridors, municipal water, storm and sanitary sewer lines are examples of linear corridors that provide excellent opportunities for trail development and should be considered for the development of trails in Oxford County. Utility lines often have a substantial easement, and in many cases are informally used for trail access as they tend to provide direct, uninterrupted connections to a variety of destinations over a long distance. In rural areas the ability to provide trails in utility corridors is usually more limited as the easement may be much narrower.

For example the City of London now provides emergency service access to sanitary sewer lines running through their valley lands, and these routes are also used as main or trunk trails throughout the city. Bridges over waterways are designed to accommodate pedestrian traffic and in some cases lightweight service vehicles.

In the case of hydro corridors, the easement may be limited to an area around the base of the towers.

Abandoned railways and unopened road allowances are potentially valuable municipal assets and present an opportunity for trail development. Within Oxford County there are a number of significant abandoned railway opportunities. Abandoned railway corridors and unopened road allowances also provide opportunities for future transportation links (roads, future rail, light rail and transit). Furthermore, easements can be leased to utility companies for underground transmission lines thus helping to offset the cost of owning, operating and maintaining a multi-use trail on the abandoned rail bed.

4.2.1.4 Trails in the Official Plan

The development of a balanced trails network which can be used for recreational and utilitarian purposes should not only include roads and sidewalks, but also trails that make connections between neighbourhood destinations and the broader County-wide trail network. To achieve this objective, appropriate policies should be considered for County Official Plan.

County Planning staff should review the Official Plan with a view towards developing appropriate policy/wording that can be included in a future Official Plan Amendment. Once adopted, the Trails Master Plan should be the guide for future trails development in the County. As such, when the Official Plan is next updated, the County should consider incorporating appropriate references to the policies and recommendations found within the master plan report and the need to include any related trails mapping.

Local municipal development is also guided by the County's Official Plan as the blueprint for future growth and development. Therefore, trail development in local municipalities should be guided by the County's Official Plan, the County's Trails Master Plan and local municipal cycling and trail plans.

Recommendation(s):

4-9: As part of the next Official Plan update, the County should consider including any policies and/or schedules necessary to assist in the effective implementation of the County Trails Master Plan.

4.2.1.5 Trails and the Development Charges By-Law

By-law 5077-2009 pertains to Development Charges in Oxford County. The Development Charges By-law enables the County to collect fees from a development proponent, based on a set amount per new development unit. The County and some of its local municipalities have established Development Charges By-laws to facilitate financial support for community development.

The fees that are collected are used to offset the cost of providing public infrastructure to meet the needs of the County and its communities as they grow. The County has a County wide Development Charges By-law and a number of Area Specific Development Charges By-laws. The area specific by-laws currently apply to development in most of the fully serviced settlement areas in the County (e.g. the large urban centres and serviced villages). Development Charge funds can be applied to projects in areas of the County provided that it can be clearly demonstrates that the project(s) are for new public infrastructure that is required for community growth.

Currently, the wording of the County and local municipal Development Charges by-laws does not speak specifically to the development of trails or recreation related infrastructure despite the fact that many are now engaging in planning, design and development of active transportation and recreation facilities.

Both entities are encouraged to update the Development Charges Bylaws to establish a new service category which speaks to the allocating monies to the development of off-road trail facilities.

Recommendation(s):

4-10: The County should consider updating their Development Charges by-law include a new services section which speaks to the allocation of monies to the development of off-road trails.

4.2.1.6 Risk Management & Liability

Liability concerns are becoming a key consideration due to the potential for lawsuits. Adhering to widely accepted design, construction and maintenance are one of a number of strategies to manage risk. Aside from proper design, signage and operation of on and off-road active transportation and recreation facilities, the Trails Partnership should take steps to address potential hazards including accidents, theft, vandalism, and other problems. For those on-road routes identified as part of the County-wide Trails Network, the County and its partners should consider them to be included in the same liability category as roadways and sidewalks, meaning that the County may be held partially liable if the facility is improperly designed and is not adequately maintained. **Table 4.2** summarizes some general strategies which could be used to reduce risk and to help minimize the liability associated with providing designated trail facilities.

Table 4.2 – Summary of Potential Risk Management Strategies

Proposed strategies to reduce risk and minimize liability:
• Improve the physical environment, increase public awareness of the right and obligations of users and improve access to educational programs.
• Select, design, sign and designate facilities in compliance with prevailing standards. Regulatory signage included in MTO Manual for Uniform Traffic Control Devices should be used.
• Design concept(s) should comply with all applicable laws and regulations (e.g. Ontario highway Traffic Act, current local municipal and County by-laws, etc.).
• Maintenance operations should conform to accepted standards.
• If hazards cannot be immediately removed, they should be isolated with a barrier or identified with warning signs.
• Monitor on and off-road facilities on a regular basis to document the physical conditions and operations of the route. All reports of hazardous conditions received should be promptly and thoroughly investigated.
• Written records of all monitoring and maintenance activities should be documented and maintained.
• Avoid using descriptions such as “safe” or “safer” when describing trails or cycling routes when promoting their use. Identify practices that enable users to assess their own capabilities or level of comfort and make their choices accordingly.
• Maintain proper insurance coverage as a safeguard against having to draw payments for damages from the public treasury.

When considering on-road network segments for implementation or when proposing modifications to the network, the assessment undertaken to select the preferred route should be properly documented using the Facility Selection tool identified in OTM Book 18. By documenting the process as well as the findings, the likelihood of issues as they relate to legal challenges may decrease.

Following the approval of the Master Plan the County should undertake an assessment of their risk management, liability and insurance practices / processes as they related to trail use and active transportation (walking, cycling, etc.) on County roads.

Recommendation(s):

4-11: The proposed risk management and liability prevention strategies should be reviewed and incorporated into day-to-day decision making processes when implementing the Trails Master Plan at the County and local municipal level where applicable.

Entrance to Chesney Conservation Area & Trails Source: MMM Group

4.2.1.7 Land Acquisition & Securement Strategies

Although the majority of the recommended trail linkages are identified on road and lands that are currently in public ownership, there are some areas of the County where an important trail connection is desired across land not currently in public ownership. Some of these connections are located along natural areas and corridors on lands that are within the County's rural areas. Some of these tracts may become part of the urban fabric and at that time these corridors would be set aside along with a suitable buffer for the development of trails and the preservation of natural features. However, the majority of these lands will remain in predominantly rural areas. To realize the full build-out of the network and complete the connections across these lands the County may require permission for access or in some cases a strategy to secure ownership.

A range of strategies are available to accomplish this, from "handshake" access agreements, to purchase of these lands by the County or those responsible for the plan's implementation. **Appendix D** is a summary of some of the land securement techniques that could be considered by Oxford County to acquire lands to facilitate route connectivity for the County-wide Trails Network.

Following the adoption of the Trails Master Plan, the County and the Trail Partnership, in collaboration with the Oxford County Trails Council should review these potential strategies and use them as a starting point for developing an access/acquisition policy for key trail links.

Recommendation(s):

4-12: The County and the Trail Partnership should develop a securement strategy for future trail routes on lands not in public ownership.

4.2.2 END OF TRIP FACILITIES

Network continuity, connectivity and feasibility are further enhanced through the implementation of network amenities. In some cases, amenities can be a determining factor for trail users. Network amenities can reinforce the commitment to promoting active transportation and recreation and may include lighting, seating / rest areas, parking areas, signage, bicycle parking, loading / unloading areas, garbage receptacles, washroom and amenity buildings and gates / access barriers.

Network amenities can be implemented individually or as a grouping of amenities commonly referred to as a staging area. Network amenities, staging areas and end-of-trip facilities meet a critical need for trail users and are also significant opportunities for trail developers and coordinators to engage in partnerships with local organizations, services and businesses.

In the urban areas of Oxford County, staging areas could be integrated into many of the existing park spaces and tourist destinations. In the rural areas, staging areas play a key role in the marketing package for trail use and cycling tourism. Once the master plan has been approved, the Trail Partnership should make the implementation of network amenities a priority. As a first step, they should undertake an inventory of existing staging areas and network amenities and come up with a set of strategic priorities for future additions or improvements.

Should the partnership select to move forward with the selection of future staging areas, a common approach should be used. A four level hierarchy has been developed as a guide. **Figure 4.2** illustrates the hierarchy and **Table 4.3** provides additional details regarding the amenities which could be included at each of the levels in the hierarchy.

Figure 4.2 – Hierarchy of Staging Areas

When reviewing the end of trip / staging areas selection tool, the County and its partners should determine the intensity of design treatment based on area and surrounding characteristics based on the features outlined in **Table 4.3**.

Table 4.3 – Program Elements in the Staging Area Hierarchy

Staging Area Amenities	Level 1		Level 2		Level 3		Level 4		Additional Considerations
	Y	N	Y	N	Y	N	Y	N	
Parking	✓		✓		✓		✓		
Rest Area		✓	✓		✓		✓		
Lighting		✓		✓	✓		✓		
Signage	✓		✓		✓		✓		
Drop Off Area		✓		✓		✓	✓		
Garbage	✓		✓		✓		✓		
Washrooms		✓	✓		✓		✓		Portable seasonal washrooms for Level 3, in place from May to October
Gates / Barriers		✓		✓	✓		✓		
Loading Zones		✓		✓		✓	✓		
Shelter		✓		✓		✓	✓		
Potable Water		✓					✓		

Recommendation(s):

4-13: The Trail Partnership should review and refine the staging area hierarchy as a first step in selecting locations and developing staging areas throughout the trail network.

4.2.3 TRAIL MAINTENANCE

4.2.3.1 A Maintenance Plan for Oxford Trails

Many jurisdictions have formalized programs to plan and construct trail systems, however the number that have programs for trail maintenance is much lower. In 2004, telephone interviews were conducted with approximately a dozen southern Ontario municipalities to determine the overall scope of their trail maintenance, to learn about significant issues and priorities and to gain an understanding of basic costs for trail maintenance[i]. Although these findings are approximately 10 years old, some of the practices and issues have evolved based on new maintenance practices and emerging trends. The following are some highlights:

- Very few maintain their trails in winter. Of those that do, none reported maintaining all of their trails in winter. Generally winter maintained trails included only asphalt trails and those that are heavily used, or are main connections serving utilitarian purposes such as connections to schools and main bicycle/pedestrian commuter routes.
- Several reported having defined maintenance standards for trails, based on trail type. Many of those that did not currently have standards reported that they were working towards them.
- In most cases, respondents felt that they could do a better job at trail maintenance, but were limited by resources (staff resources/budget and time).
- Most reported conducting an annual safety audit, in most cases this was included as part of their annual safety and security audit for parks, playgrounds and recreation facilities.
- Many noted that proactive or preventative maintenance, especially with regard to trail surface condition, signing, trash and vandalism was a key success factor.
- Most use trail patrols or supervisors conducted a regular (i.e. as often as weekly) review to assess conditions, prioritize maintenance tasks and monitor known problem areas.
- Some use maintenance logbooks to set out a schedule of tasks, priorities, standards to be achieved and method of tracking that the work has been completed. This method of tracking was also noted as useful for being able to predict which locations would require the highest level of maintenance.
- In most cases, parks crews performed trail maintenance as part of their regular park maintenance role. Where extensive maintenance programs were reported, additional seasonal labour was added to the workforce (often summer students). For some cases volunteer "adopt-a-trail" programs were identified as useful for basic trail cleanup and monitoring.
- Trail maintenance in urban areas is handled under Parks Operations budgets, sometimes tracked as a separate trail maintenance budget, but most often grouped in with other parks maintenance budgets.

[i] Municipal Trail Maintenance Survey. Telephone interviews conducted by Stantec, 2004

- Trail maintenance costs range depending on the type of trail and location. They could include:
    - Maintenance costs for on-road facilities – estimated at $1,000.00 - $5,000.00 per km, per year depending on the facility types (paved shoulder with edgelines / signs, bike lanes, painted lines, etc.)
    - Annual maintenance including line and stencil reapplication, replacement of bike lanes and bike route signs, minor asphalt repair (pothole patching and crack sealing), sweeping, snow plowing and replacement of older style catch basin grates with bicycle friendly grates).
    - Maintenance of off-road multi-use trails in rural areas – estimated at $300.00 - $800.00 per km per year.
    - Maintenance of off-road multi-use trails in urban areas – estimated at $4,000.00 to $6,000.00 per km per year of trail (3.0m width) depending on level of service standard set out by the County and the municipality.
    - Annual maintenance of off-road multi-use trail facilities in urban areas include drainage and storm channel maintenance, sweeping, clearing of debris, trash removal, weed control and vegetation management, moving of grass along shoulders, minor surface repairs, repairs to trail fixtures and staging areas and other general repairs.

Specific maintenance considerations and timing that should be considered by the County and its partners include:

- Asphalt surfaces on trails have a life span of approximately 15-20 years.
- Trails that were installed in the 1980's and earlier are now having to be reconstructed and in the process are generally being widened to meet higher levels of demand today. Wider trails are also better for preventing damage to trail edges by municipal service vehicles, as vehicle wheels are less likely to roll over and break trail edges and less likely to create ruts in the soil beside the trail.
- Trails that were properly constructed at initial installation had the fewest maintenance issues. Proper subgrade excavation, adequate base and proper drainage were noted as keys to trail longevity.
- Many reported that erosion is a big challenge and that "trail hardening" with asphalt on sloped trails is the best way to prevent further erosion. Some reported trying other soil bonding compounds for trails on slopes and reported only moderate success with these alternative materials.
- Mowing grass along edges of trails is performed on a regular basis. Depending on trail location this may be weekly, biweekly, monthly or infrequently throughout the growing season. The width of the mown swath generally varies from 0.5m to 2.0m depending on the municipality and location. Mowing helps to keep clear zone open and can also help with the invasion of weeds into granular trail surfaces.
- Several have trained their operators to be more observant while mowing and to take note of problem areas along the trails.

- Garbage pickup is performed on a regular basis (i.e. 10 day cycle), with receptacles located at the ends of trail segments where they can be easily accessed for service vehicles.
- Tasks performed on a seasonal basis include culvert cleanout and trail side pruning.
- Grading/grooming the surface of granular trails is generally performed once per year or as required after heavy storm events in areas prone to erosion.
- Tasks performed every 3 to 5 year cycle include refurbishment of signs, cleaning and refurbishment of site furnishings.
- Tasks performed on an as-required basis include moving or marking obvious hazards within 24 hours of their identification, inspection/monitoring of trail areas prone to damage following heavy storms, repairs to vandalized items, and minor repairs to structural elements such as bridges, trail surfaces, railings, benches, gates and signs.
- Major renovation or replacement of large items such as bridges, kiosks, gates, parking lots, and asphalt trail surfaces was generally described as a 10-20 year replacement item.

Maintaining Off road Cycling Trails
Source: cmbcyukon.ca

4.4.3.2 Maintenance Plan Template

The general objectives of a trail monitoring and maintenance plan are to:

- Provide users with safe, dependable and affordable levels of service;
- Preserve infrastructure assets;
- Protect the natural environment;
- Enhance the appearance and health of the community;
- Provide a reference framework against which to measure performance;
- Provide the basis of a peer review that is comparable with other municipalities; and
- Provide citizens and Councils with a reference for expectations.

The first step in implementing a maintenance and management program is to determine its scope. Trail plans, maps, inventories, trail logs, traffic count information and condition surveys are all valuable sources of information for developing maintenance management systems. Typical trail and on-road facility maintenance activities that should be considered by the Trail Partnership have been outlined in **Appendix E**.

The maintenance program template was established based on current best practices and tasks have been grouped according to the frequency with which they would typically be performed:

- Immediately (within 24 to 48 hours);
- Regularly (weekly/biweekly/monthly);
- Seasonally;
- Annually;

- Every 3 to 5 years; and
- Every 10 to 20 years.

Although it may represent some additional time or cost, it has often been demonstrated that simply reorganizing existing maintenance priorities can contribute significantly to an effective maintenance program, particularly for an on-road cycling network.

4.2.3.3 Winter Maintenance Approach

Very few municipalities maintain their off-road trails during winter months. For those municipalities that do offer winter maintenance services on trails, generally only certain routes are maintained, and these tend to be primary routes that serve a commuter function to key destinations such as routes to schools or are highly used by tourists and visitors. The following are some criteria that are being used in other jurisdictions and could be useful in determining the need for winter maintenance of portions of the off-road trail network.

Trail Function & Location:

- The trail's role in the overall transportation network and community connectivity (primary vs. secondary function). For example the trail does not provide an alternate route to an existing winter maintained sidewalk/trail.
- The trail provides direct pedestrian access to residential/commercial/recreation areas.
- Determine if the trail is integral to the overall network in that it provides a primary link for the community to schools, public facilities such as recreational centres and to other pedestrian generators such as senior's homes, shopping and commercial establishments.
- The trail does not provide an alternative to parallel or comparable facility(ies) already receiving winter maintenance such as a sidewalk network.
- The trail is not solely a convenient short cut. Consideration needs to be given to the length of the detour required if the trail is not available for use. Although each case should be considered on an individual basis, 500m can be considered as a threshold guideline.
- The trail connects dead end streets or cul-de-sacs where alternative routes do not exist.
- Consideration for neighbouring land use(s) and how this relates to pedestrian origins, destinations and pedestrian generators.
- Consideration given to sidewalks/trails that have historically received winter maintenance, but which have not yet been formalized.

Trail Design & Considerations:

- Adequate surface drainage to prevent ponding of water on the trail surface.
- Minimum width (e.g. no less than 3.0m for multi-use trails).
- The trail has an asphalt surface (this factor may not apply if a snowblower is used instead of a plow).
- Adequate access for maintenance equipment (snowplow and sweeper).
- There should be no danger adjacent to the trail, such as a steep drop off.

Recommendation(s):

4-14: Using the Maintenance Plan Template as a starting point an appropriate trail maintenance plan should be developed that is based on an appropriate budget and building on the existing successful maintenance practices already being undertaken.

4-15: Regular (annual) reviews of physical infrastructure conditions should be conducted with input from facility users. The findings should be reported to the Trail Partnership as part of the process for establishing priorities for on-going route maintenance.

4-16: Annual maintenance budgets should be refined to accommodate the maintenance of trail and cycling facilities. This budget should increase over time to correspond with the increase in the number / length of facilities that have been implemented.

4.3 INCREASING TRAIL AWARNESS: COUNTY-WIDE PROMOTION & OUTREACH

A "complete" system of trails and the culture to support of trail use will not only require the implementation of new facility types, it will also require communication, promotion, outreach and marketing initiatives to educate the public including County residents and visitors of all ages and abilities.

4.3.1 USING A "FIVE-E" APPROACH

Developing promotion, outreach and marketing materials that educate and inform trail users should be guided by the "five-e's" – Engineering, Education, Encouragement, Evaluation and Enforcement.

- **Engineering:** The way trails and amenities are planned, designed and constructed. For the purposes of the Master Plan the County and Trail Partnership should refer to the guidelines / standards included in Appendix A of the Master Plan report and the County's Transportation Master Plan. These references should be complemented by existing provincial bikeway design standards – OTM Book 18 - where necessary and could be used by those involved in the development of promotion and outreach materials to educate and inform existing and potential users of the different design alternatives and standards.
- **Education:** Providing different user groups with the information they need on where to safely and comfortably use off-road trails and on-road linkages. It can also include information for how to safely and confidently interact with other users.
- **Encouragement:** Means of promoting the use of the trails and on-road linkages identified as part of the network for recreational and day to day activities.
- **Enforcement:** Monitoring the success of a trail or on-road linkages and programs which have been developed to complement the infrastructure. The concept of enforcement also takes into consideration the necessary adjustment and improvement which may need to be made to increase facility use.
- **Evaluation:** A means of assessing whether the users of the network understand and adhere to the rules and regulations as set out by the Province, the County and its local municipalities.

The County and Trail Partnership should strive to prepare and implement initiatives related to trail development and use for each of these five areas of communication. A robust promotion and outreach program will rely on engagement with local stakeholders, interest groups and the public to support these five areas. As an initial outcome of the master plan, the Trail Partnership should consider identifying pilot projects or initiatives from the "Five E Approach". **Table 4.4** provides a list of potential initiatives related to common communication and outreach goals related to trail and active transportation / recreation use. These are to be considered by the Trail Partnership and should be the basis from which some initial trail related outreach and promotion initiatives are developed.

Cycling Education & Bike Repair Program
University of British Columbia.
Source: freindsoftheubcfarm.wordpress.com

Table 4.4 - Proposed Communication & Outreach Initiatives for Oxford County

Goal	Initiative(s)
Education	
Making on and off-road cycling information easily available	• Engage with representatives from Oxford Tourism, Oxford Public Health and local school boards and create a strategy to provide active transportation and recreation information seasonally. • Engage local trail, snowmobile, active transportation and recreation and equestrian clubs and interest groups to distribute information about the network. Should aim to distribute information quarterly throughout the year. • Distribute educational information (brochures, pamphlets, etc.) in a number of different accessible formats that are consistent with the County's accessibility requirements. Enhance the existing Oxford County Trails Council webpage to include additional information regarding trail and trail use for all user groups and adapt information to be consistent with the trails master plan report. • Ensure that hard-copy information (pamphlets, brochures, newsletters, etc.) are made available (consistently) at community destinations and areas of high-traffic including community centres, arenas, libraries, museums etc.). • Consider including trail and active transportation related information in County-wide mail-outs (e.g. newsletters, resident information, mailings, etc.) and distribute at County or local municipal events.

Table 4.4 - Proposed Communication & Outreach Initiatives for Oxford County

Goal	Initiative(s)
Prevent Disconnect between the Creators and Users of Materials	• Ensure that all promotional and outreach materials are developed with wording that is appropriate and engaging for the audience that it is being developed for. • Select topics related to active transportation and recreation that typically are not known by the general public e.g. maintenance, and develop promotional materials which aim to make this information easy to understand and more accessible.
Ensure Mobility Needs of Harder to Reach Populations are accommodated	• Trail promotion and outreach messaging should be tailored for differing target audiences e.g. youth, seniors, pedestrians, cyclists, off-season trail users, etc. when developing future educational materials. • Initiate education programs and safe trail use programs for different age groups. For example with CANBike or local clubs to develop locally based initiatives e.g. Take to the Trails, Learn to: Bike Tune Up, Learn to: Hike Safe etc.
Enhance opportunities to Promote Active Transportation and Recreation	• Engage with the Trail Partnership to establish forums and educational opportunities for the public to learn about active transportation and recreation. • Provide a forum where local active transportation and recreation clubs can gather and educate the public about opportunities available. • Engage with local school boards to provide educational information and forums at local schools or have youth engage in trail walks.
Encouragement	
Overcoming Barriers	• Engage County residents using an online forum to provide their issues / barriers to trail use, request specific information regarding trails, etc. • Provide safety specific information to those residents who may be more hesitant about trail use or cycling e.g. safety information to parents and children. • Engage in community based social marketing initiatives to better understand the barriers to creating a cultural shift towards more active forms of transportation and recreation in the County and establish initiatives based on the findings. Consider updating existing mapping to ensure that the most up to date information is included. The mapping should be designed to include key trails, active recreation and active transportation related information and messaging. • Explore the development of a wayfinding strategy for on and off-road routes throughout the County. The strategy would help users navigate the network and inform them about key destinations County-wide.

Table 4.4 - Proposed Communication & Outreach Initiatives for Oxford County

Goal	Initiative(s)
Personalize Communication	• Develop simple but effective promotion and encouragement tools like lawn signs - "I support trails in my community" or "I like to cycle in my community" - where people are able to encourage their neighbours, friends and family to get involved. • Work with local employers, schools, businesses to engage in developing their own personalized trail or cycling related amenities such as a "design a bike rack" competition or a "design a trail sign" competition to encourage personalized branding and outreach.
Enforcement	
Partnerships with Enforcement Officials	• Create patrols and safety blitzes along routes and trails enforcing safe operating procedures for pedestrians, cyclists and other on-road facilities and trail user groups. • Use the information gathered regarding collision rates etc. to target areas throughout the County and in local municipalities where additional enforcement and / or design modifications are required.
Communicate and Promote Safety and Comfort	• Provide an online method or accessible method to document and report collisions on trails and provide clear information about the process of how to address conflicts when they occur.
Evaluation	
Gather Baseline Information	• Engage a local student or members of the Trail Partnership to gather existing information regarding trail use including seasonal trail counts of cyclists, pedestrians, hikers, equestrians, etc. • Develop a specific method of gathering information regarding trail and recreational opportunities for harder to reach populations e.g. a youth friendly survey or senior friendly survey. • Collect accurate trail and cycling collision data to help identify any potential program areas as well as problem areas.
Assess Existing Trail and Cycling Conditions	• Examine routes being used by children to ensure that they are safe and useable. • Undertake a review of existing maintenance programs to ensure that they are up to date and make the necessary adaptations. • Establish "pop-up" consultation initiatives on trails where volunteers gather input from trail users annually or bi-annually.

Table 4.4 - Proposed Communication & Outreach Initiatives for Oxford County

Goal	Initiative(s)
Assess Master Plan Implementation	• Work with County, local municipal staff and those responsible for the plan's implementation to provide bi-annual updates to Council regarding implementation progress. • Gather input and feedback in an accessible manner and provide the results as an update about local and County successes (e.g. post the information online, using local media, posters).

Recommendation(s):

4-17: The Trail Partnership should review the proposed education and outreach initiatives proposed and select those that could be implemented as potential pilot initiatives.

School Group Trail Hikes
Source:
www.southshorenaturalsciencecentre.org

4.4 ESTABLISHING A PARTNERSHIP FRAMEWORK

The successful implementation of the Master Plan will require significant coordination and collaboration between those responsible for the plan's implementation and members of the public. Potential partners who could be involved in the implementation of the plan have been identified.

These groups are to be consulted on an on-going basis, where necessary, to provide input on the selection of future priorities, initiatives, projects and strategies. Different partners are consulted / engaged based on the project that is being implemented.

Table 4.5 provides guidance regarding the range of partners that may be involved depending on the project being discussed. Some groups may be directly involved through their members as part of the Trail Partnership whereas others may be engaged on a project by project basis.

Table 4.5 – Oxford County Partnership Framework

Primary Partners
• Oxford County
• Local Municipalities
• Conservation Authorities
• Province of Ontario
• Oxford Tourism
• Local and County Police Service
• Oxford County Trails Council
• Oxford Public Health & Board of Health
• Local Municipal Cycling and Trail Committees & Interest Groups
• Local Businesses
• Service Clubs
• Public Representatives
• School Boards
• Neighbouring Municipalities

Partnerships with agencies, including some of those that are identified in Table 4.5, can help to inform and jointly produce promotional or educational literature in magazines, materials distributed through offices, materials on or links to corporate/agency websites. They can also include co-participation in annual events related to trail use. Events such as the Terry Fox Run and other fundraisers, and events such as Ride to Work Week, the Clean Air Campaign and Earth Day are natural matches.

Allowing time for key staff to contribute to the organization of these events that use the trails is a simple, cost effective way to spread the word about using the trail system. The Manulife Ride for Heart in Waterloo and the Tour de Grande in Cambridge for example, attract thousands of cyclists to one-day fundraisers that use trails extensively, providing visibility through extensive media coverage at essentially no cost to the owners of the trail.

4.4.1 ESTABLISHING PARTNERSHIPS WITH LOCAL BUSINESSES & INTEREST GROUPS

It is very important to recognize the efforts of private businesses that could partner with the County on initiatives related to the development and use of the trail system. Recognition through the media for efforts that encourage more trail use is a very positive way of showing partners that their contribution is greatly appreciated. Furthermore, media recognition is a simple and cost-effective way to raise awareness and encourage use.

Where contributions are made that improve conditions of the trail, such as the provision of trail amenities and creation of links across private properties, the Partnership should consider recognition of the effort. This can be done with donor signs and plaques that are tastefully designed and carefully located.

Private and public partnerships have already been explored through the extensive work completed by the Oxford County Trails Council and the work that they have done to promote and develop trails throughout the County. Future initiatives should build upon these existing relationships and explore additional opportunities.

In addition to recognizing those individuals and businesses that make a contribution to the development of actual trail routes, some municipalities have developed incentive programs to recognize businesses that, through their actions indirectly encourage more user participation on trails.

Recommendation(s):

4-18: Partnerships should be explored by the Trail Partnership (e.g. Police Service, School Boards, and local clubs and interest groups etc.) and businesses to develop and implement a communication, promotion and outreach strategy including elements of education, encouragement, evaluation and enforcement.

4.5 PUTTING DOLLARS TO THE NETWORK

The benefits of investing in trails as outlined in Chapter 2 justify why the County should continue to make active transportation and recreation a priority. They are clearly a means of increasing the quality of life of residents while increasing the longevity of municipal infrastructure, sustainability of natural and cultural areas of significance and enhancing tourism opportunities. Investing in the County is investing in the future of residents.

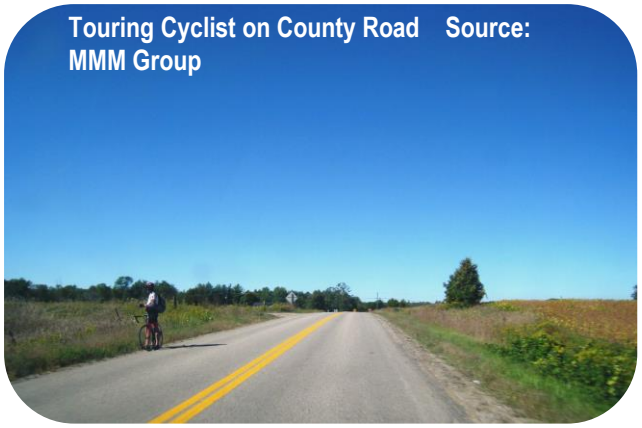
Costs associated with trail implementation, maintenance and promotion can be justified by developing connections, continuous and sustainable system of recreational and utilitarian transportation opportunities and benefits which can be realized at an individual and community-level.

The cost of implementing the trail network should be assessed on a project by project basis as opportunities arise and as the County and its partners select to proceed with key linkages as identified in the master plan.

Appendix F lists unit costs for the construction of various elements which have been identified as part of the network (in 2014 dollars).

These have been developed based on the following assumptions:

- The unit costs assume typical or normal / average conditions for construction;
- Estimates do not include the cost of property acquisition, utility relocation, driveway / entrance restorations, permits or approvals for construction;
- Annual inflation, which includes increased cost of labour, materials, fuel, etc., is not included;
- Professional services and / or staff time for detailed design have not been included; and
- Applicable taxes are not included.



Touring Cyclist on County Road Source: MMM Group

4.5.1 WHERE WILL THE MONEY COME FROM?

When establishing costing for network priorities the County and its partners are encouraged to explore potential savings and reductions through:

- Infrastructure funding programs such as future federal and provincial infrastructure programming;

- Routes that are developed with funding or partial funding available through various subsidies and grant programs;
- Partnership with outside organizations and agencies;
- Partnerships with local municipalities, Oxford County Public Health, Oxford Tourism, Oxford County Trails Council, Conservation Authorities and the Trans Canada Trails Association;
- Routes developed by others that could be used for trail facilities (e.g. service access roads along utility corridors, etc.;
- Facilities designed and constructed by developers and / or through the use of Development Charge funds; and
- Routes that are built by developers through the land development approvals process.

External funding opportunities could include a number of potential avenues for financial support and commitment for network implementation. Some of these include:

- Federal / Provincial Gas Tax;
- Transport Canada's MOST (Moving of Sustainable Transportation) and Eco Mobility (TDM) grant programs;
- Federation of Canadian Municipalities Green Municipal Fund;
- Ontario Ministry of Health grant programs and partnership streams such as the Healthy Communities Fund and promotional initiatives related to health / active living / active transportation;
- Ontario Ministry of Environment Community GO Green Fund (CGGF);
- Ontario Ministry of Transportation Demand Management Municipal Grant Program;
- Trans Canada Trail funding and the recent Federal Government announcement to match funds;
- Various Federal and Provincial Infrastructure / stimulus programs that are offered;
- The Ontario Trillium Foundation;
- Human Resources Development Canada program that enables personnel positions to be made available to various groups and organizations;
- Corporate Environmental Funds such as Shell and Mountain Equipment Co-op that tend to fund small, labour intensive projects where materials or logistical support is required;
- Corporate donations which may consist of money or services in-kind, and have been contributed by a number of large and small corporations over the years;
- Potential future funding that might emerge from the Province in rolling out the Ontario Trails Strategy as well as the recently released Ontario Cycling Strategy;
- Service clubs such as the Lions, Rotary, and Optimists who often assist with high visibility projects at the community level; and
- Private citizen donations / bequeaths - this can also include tax receipt(s) for the donor where appropriate.

Recommendation(s):

4-19: In addition to capital funding, the County and the Trail Partnership should consider and explore other outside funding sources and cost-sharing opportunities to support the implementation of the trails network, outreach and promotion opportunities.

4.6 MONITORING & EVALUATING THE PLAN

Implementation of the master plan is intended to commence in 2014 / 2015. Collecting data to evaluate the different and changing aspects of user behaviour will assist in evaluating the effectiveness and overall contribution of various activities to achieve the vision, goals and objectives of this plan. Over time, performance monitoring should examine user preference for facilities, levels of use and other key factors. This data will inform staff when making adjustments to infrastructure prioritization and programming and to adjust them to meet local needs. Results from on-going data collection may be used to determine the success of implementing various types of facilities. However, caution must be used when relying on an immediate response to a given improvement. An extended timeframe should be established to ensure that awareness and communication initiatives are in place to assist in changing travel patterns and habits. This information should be collected every two to three years (maximum every 5 years) and at the same time / season each time.

Data collection through evaluation / monitoring programs and on-going public consultation (e.g. user surveys and public attitudes surveys conducted every 5-years), will inform and assist in preparing a list of annual priorities while measuring the success of the plan. A component of measuring implementation successes and objectives is to establish a set of performance measures and targets.

Appendix G has been prepared as a set of preliminary performance measures which could be reviewed and confirmed based on input from the Trail Partnership. The collection and analysis of data, development of relevant recommendations and adjustments to performance targets could be part of a scope of work for members of the Trail Partnership of seasonal staff and / or students from post-secondary institutions who are studying community design, public health, transportation planning or engineering.

Results of any such work should be reported to Council as part of an annual information report so they can remain informed about the progress being made on the Master Plan, including new links developed, the status of education and encouragement campaigns, challenges or barriers, priority projects for the coming year.

Recommendation(s):

4-20: Using the list of potential performance measures described in Appendix G, the Trail Partnership should develop a set of measures to evaluate the success of the Plan and to monitor trends in usage.

4.7 PLAN SUMMARY

The Oxford County Trails Master Plan has been developed as a flexible and adaptable strategy for long-term trail development. The plan is intended to be used to facilitate and coordinate existing efforts and provide the County and the Trail Partnership with a blueprint for future design, development and implementation.

The recommendations and action items identified in the master plan have been designed to provide direction on how to move forward with the facilitation / coordination of the development of the trails network and some immediate trail priorities. .The contents of the master plan were strategically developed to reflect the goals and ambitions of Oxford County, local municipalities and the many trail development partners who have contributed to the development of this Master Plan.

A.

SUMMARY OF BACKGROUND POLICIES AND PLANS

TABLE OF CONTENTS

A successful trail master plan needs to be founded on policy at all levels of government in order to provide the tools and mechanisms necessary to implement it. The summary found in this appendix provides the existing policy framework for trails and active transportation at the federal, provincial, regional and municipal level that will form the basis for developing the Oxford County Trails Master Plan Study.

A.1 FEDERAL POLICIES & PLANS

A.1.1 TRANSPORT CANADA

In 2005, Transport Canada developed a report titled "Strategies for Sustainable Transportation Planning: a review of practices and options". The report identifies a set of guidelines which document how sustainable transportation principles can be incorporated into municipal transportation plans. A simple principle includes the creation of policies related to walking and cycling that can be used to develop effective, implementable plans which promote sustainable transportation at the federal level. Strategies and policies within the report which specifically address sustainable transportation include:

Table A.1 Sustainable Transportation Policies & Strategies from Transport Canada

Sustainable Transportation Policies	Relevance to Trails and Active Transportation
Land Use Planning Integration	• Encourage desirable land use form and design (e.g. compact, mixed-use, pedestrian/bike-friendly) through transportation plan policies.
Environment & Health	• Identify strategies to mitigate the air quality impacts of transportation activities. • Identify strategies to mitigate noise impacts of transportation activities. • Identify ways that transportation systems influence the achievement of the community's economic or social objectives. Provide support in the plan's strategic directions.

Table A.1 Sustainable Transportation Policies & Strategies from Transport Canada

Sustainable Transportation Policies	Relevance to Trails and Active Transportation
	• Recognize the importance of ensuring access to opportunities for disabled and low-income persons, recent immigrants, youth and the elderly. Set goals and objectives for reducing the need to travel, improving transit mobility, and preserving minimum levels of service on roadways. Identify related strategies. • Address the transportation needs of persons with disabilities, notably with regard to public transit service and barrier-free design in public rights-of-way. • 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. • Recognize the impact of transportation-related death and injury on quality of life and the economy. Set goals and objectives for multimodal road safety. Identify effective road safety strategies.
Modal Sustainability	• Identify strategies, policies, facilities and services to increase walking, cycling, other active transportation, transit, ridesharing and teleworking. • Recognize synergies and tensions among different modes (e.g. potential for multimodal cycling-transit trips, potential for modal shift from transit to ridesharing). Address possible implications for transportation objectives. • Include objectives, strategies, policies, facilities and services to make transit operations more sustainable.

The publishing of this document and the recommended policies and strategies identified within it illustrates the federal government's commitment to developing national standards and practices which can be used to help improve conditions for walking and cycling in a consistent and coordinated manner.

A.1.2 FEDERATION OF CANADIAN MUNICIPALITIES

The Federation of Canadian Municipalities (FCM) has considered itself the national voice for municipal governments since 1901. The organization represents 1,775 municipal members which fall within the federal jurisdiction. Members include Canada's largest cities, small urban and rural communities, and 18 provincial and territorial municipal associations. The organization fosters the development of sustainable communities enjoying a high quality of life by promoting strong, effective and accountable municipal government.

FCM developed the "Communities in Motion: Bringing Active Transportation to Life Initiative". This document is a key resource for all Canadian municipalities. It sets out goals for promoting the development of active transportation infrastructure and programming, eliminating barriers to different travel mode choices and promoting active transportation modes such as walking and cycling as part of everyday life.

The document addresses the provision of on and off-road walking and cycling facilities specifically by noting that:

"Some pedestrians and cyclists stick to city streets to reduce travel time and distance. Others, however, prefer less stressful off-road routes that let them connect with nature. Lighting on trails improves safety and security, wayfinding systems help people get where they're going, bike ramps let cyclists get up and down staircases with ease, and dedicated bridges help everyone cross waterways, ravines and railway lines. Off-road routes are also important for recreation, and many communities are expanding their trails systems to boost tourism."

The promotion of the design and development of walking and cycling facilities including both on and off-road alternatives is reinforced through this policy at a federal level. Local municipalities are encouraged to use these findings to help guide the development of individual routes, systems and linkages which highlight natural areas, promote community connectivity and help to realize economic benefits community-wide.

A.2 PROVINCIAL POLICIES & PLANS

A.2.1 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS), currently under review, sets the foundation for regulating land use and development within the Province of Ontario while supporting provincial goals and objectives. The PPS sets out guidelines for sustainable development and the protection of resources of provincial interest. The vision for land use planning outlined in the PPS states that "long-term prosperity and social well-being of Ontarians depends on maintaining strong communities, a clean healthy environment and a strong economy".

The PPS promotes transportation choices that facilitate pedestrian and cycling mobility and other modes of travel. "Transportation systems" as defined in the PPS are systems that consist of corridors and rights-of-way used for the movement of people and goods as well as associated transportation facilities, including cycling lanes and park'n'ride lots. Policies pertaining to alternative modes of transportation such as cycling, walking and transit are dispersed throughout the PPS. The draft PPS update was released in September 2012 for public comment. Within this document references are made to the provision of active transportation (pedestrian and cycling) facilities as a means of encouraging the growth of the province and its local communities.

Some of the references include:

- Supporting active transportation to increase connectivity within and among transportation modes to build strong, healthy communities (Page 5).
- As part of the Vision for Ontario's Land Use Planning System, the province is committed to developing land patterns which promote and increase the use of active transportation modes (Page 11). This concept is repeated frequently throughout the document as different land uses are discussed.
- In section 1.4, "Housing", it is encouraged that new housing areas be developed to promote densities which support the use of active transportation (Page 18).
- Section 1.6, "Infrastructure", notes that active transportation be included as part of public service facilities which are to be located within community hubs to promote cost-effectiveness (Page 19).
- Section 1.8, "Energy Conservation, Air Quality and Climate Change", identifies the importance of the promotion of active transportation between residential, employment and other land uses to support energy conservation and efficiency.
- Section 1.5 speaks to "Public spaces, recreation, parks, trails and open space" which is based around the promotion and facilitation of active transportation development to ensure that communities are successfully connected for recreation as well as utilitarian purposes.
- Section 6.0 provides definitions for key terms used throughout the document. As identified by the Province of Ontario, Active Transportation means:

"Human-powered travel, including but not limited to, walking, cycling, inline skating and travel with the use of mobility aids, including motorized wheelchairs and other power-assisted devices moving at a comparable speed."

It is important to note that this definition is reflected in other provincial and local planning documents and should be used as the standard definition of active transportation for the County of Oxford Trails Master Plan Study.

A.2.2 BILL 51 – PLAN REFORM

Bill 51 was approved in January of 2007 and reforms the Planning Act. The Planning Act provides the legislative framework and is the guiding document for land use planning in Ontario. The document outlines changes to the planning process that are intended to support intensification, sustainable development and the protection of green space. This is facilitated by increasing municipalities' power and flexibility and providing them with the tools to efficiently use land, resources and infrastructure.

Bill 51 is consistent with Ontario's recent policy shift towards sustainable land use development and planning. For instance, Bill 51 allows municipalities to require environmentally sustainable design for individual buildings as well as entire neighbourhoods. It has also identified sustainable development as a provincial goal and objective as part of the Provincial Policy Statement.

A.2.3 MUNICIPAL ACT (2001)

The Municipal Act (2001) gives municipalities flexibility when dealing with issues that may arise which influence municipal development. It also requires local municipalities to react quickly to local, economic, environmental or social changes. It recognizes that municipal governments are responsible and accountable when addressing matters within their jurisdictions. The Municipal Act sets out policies pertaining to municipal jurisdiction over municipal highways and the maintenance of those highways. This, in turn, has significant impact on the design and development of cycling facilities which are identified within the road right-of-way.

A.2.4 HIGHWAY TRAFFIC ACT

Bicycles are recognized as a vehicle, as defined in the Ontario Highway Traffic Act (HTA). As such, they can operate on public roadways with the same rights and responsibilities as a motor vehicle. However, bicycles are not permitted on controlled access freeways such as the 400 series highways and / or any roadway designated for "no cycling" by a municipal by-law. The Highway Traffic Act contains a number of policies relating to bicycles, including bicycle lanes on municipal roadways, vehicles interacting with bicycles, bicycles being overtaken, and regulating or prohibiting bicycles on highways.

The Ministry of Transportation is currently addressing many of the policies which pertain to cycling in the Highway Traffic Act. Though the policy document as not been formally updated, possible changes and recommended amendments have been proposed for consideration by the Ministry. As the Act is updated, the County should be aware of how the changes will impact the implementation of enforcement of safe cycling county-wide.

A.2.5 MINISTRY OF HEALTH PROMOTION

The former Ministry of Health Promotion was integrated into the Ministry of Health and Long-Term Care in 2011 and serves as one of the lead Ministries for trail development in Ontario. It is the Ministry of Tourism, Culture and Sports which has the responsibility of coordinating and mitigating recreational trail issues, policy development and planning at a provincial level. The Ministry of Health and Long-Term Care's mission is to:

- Champion health promotion in Ontario, and inspire individuals, organizations, communities and governments to create a culture of health and wellbeing.
- Provide programs, services, tools and incentives that will enhance health and wellbeing.
- Make healthy choices easier.
- Harness the energy and commitment of other ministries, other levels of government, community partners, the private sector, the media and the public to promote health and well-being for all Ontarians.
- To make Ontario a leader in health promotion within Canada and internationally.
- A number of years ago, the Ministry of Health Promotion drafted a vision for Ontario's trails which states that the province should explore the development of:

"A world class system of trails that capture the uniqueness and beauty of Ontario's vast open spaces and natural and built cultural/heritage resources. People and places are connected through quality, diverse, safe, accessible and environmentally sensitive urban, rural and wilderness experience trails for recreational enjoyment, active living and tourism development."

A.2.6 ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT (2005)

The Accessibility for Ontarians with Disabilities Act was passed on June 13, 2005 and is a provincially legislated policy which calls on the business community, public and not-for-profit sector and people with disabilities or their representatives to develop, implement and enforce mandatory standards.

The policy makes Ontario the first jurisdiction in Canada to develop, implement and enforce accessibility standards which are applied to both private and public sectors. These standards are the guidelines that businesses in Ontario are required to follow to identify, remove and prevent barriers to accessibility. The Built Environment is the most relevant standard that can be applied to trail planning, design and construction. The final draft of the standard was submitted to the Minister of Community and Social Services in 2010 and underwent a public review period with revisions to many of the draft policies. The final Built Environment Standard was released in early 2013.

A.2.7 DRAFT AODA AMENDMENT – PART IV.1 "DESIGN OF PUBLIC SPACES STANDARDS ACCESSIBILITY STANDARDS FOR THE BUILT ENVIRONMENT"

"The goal of the Accessibility Standards for the Built Environment is to remove barriers in public spaces and buildings. This will make it easier for all Ontarians — including people with disabilities, seniors and families — to access the places where they work, travel, shop and play."

The standard for public spaces applies to new construction and redevelopment of existing facilities. Enhancements to accessibility for buildings are also governed through Ontario's Building Code, which governs new construction and renovations in buildings. The standards for public spaces cover: Recreational Trails and Beach Access Routes, Outdoor Public Use Eating Areas, Outdoor Play Spaces, Exterior Paths of Travel, Accessible Parking and Obtaining Services. Some highlights of the technical requirements for recreational trails under the new regulation 80.8(1) include:

- A recreational trail must have a minimum clear width of 1,000 mm;
- A recreational trail must have a clear height that provides a minimum head room clearance of 2,100 mm above the trail.
- The surface of the recreational trail must be firm and stable.
- Where a recreational trail is constructed adjacent to water or a drop-off, the trail must have edge protection that meets the following requirements: the edge protection must constitute an elevated barrier that runs along the edge of the recreational trail in order to prevent users of the trail from slipping over the edge; the top of the edge protection must be at least 50 mm above the trail surface; the edge protection must be designed so as not to impede the drainage of the trail surface.
- The entrance to the recreational trail must provide a clear opening of between 850 mm and 1,000 mm, whether the entrance includes a gate, bollard or other entrance design.
- A recreational trail must have at each trail head signage that provides the following information: the length of trail; the type of surface of which the trail is constructed; the average and the minimum trail width; the average and maximum running slope and cross slope and the location of amenities, where provided.

The development of active transportation facilities (on and off-road walking and cycling) is not a one size fits all approach. Trail facilities are to be developed to accommodate all users including those with a variety of needs and levels of ability. The Technical Requirements for Recreational Trails in the AODA outlines criteria which are to be used for the development and design of trails which accommodate such user groups. When designing and implementing on and off-road cycling facilities for the County of Oxford, the technical requirements should be utilized to ensure that the needs of all user groups are accommodated. They should also be used to ensure that the requirements of the AODA are satisfied to the greatest extent possible, given the context of each trail's location, the surrounding environment and type of trail experience that is desired.

A.2.8 ONTARIO TRAILS STRATEGY

The Provincial government developed the Ontario Trails Strategy in response to the increasing popularity of trail activities and infrastructure. With the growing demand for trail infrastructure came the need for government leadership, protection of provincial investment in trails and the mitigation of significant provincial trail issues or challenges. The Ontario Trails Strategy is a long-term plan that establishes a strategic direction for the province and stakeholders to develop a healthier and more prosperous province through the planning, management, promotion and use of trails. Developed in collaboration with other ministries and stakeholders, the strategy supports continued cooperation among governments and the not-for-profit and private sectors.

There are five strategic directions that are outlined in the Ontario Trails Strategy:

- Improving collaboration among stakeholders;
- Enhancing the sustainability of Ontario's trails;
- Enhancing the trail experience;
- Educating Ontarians about trails; and
- Fostering better health and a strong economy through trails.

A number of goals and strategies have also been identified to support each of the five strategic directions. The Ontario Trails Strategy recommends that trail organizations develop common standards to guide the development and use of trails. This would help the trail system evolve to meet the particular needs of new users in a more consistent way. Trail organizations also need more effective tools and better ways of distributing information to Ontarians. As these challenges require coordination at all levels, the provincial government and the public, not-for-profit and private sectors will continue to collaborate on priorities, roles and responsibilities, timeframes, and methods to strengthen and enhance existing and future trails in Ontario. The strategic directions identified as part of the Trails Strategy will help to inform the development of key trail and active transportation recommendations for the County of Oxford.

A.2.9 MINISTRY OF TRANSPORTATION - TRANSIT SUPPORTIVE GUIDELINES

In 1992, the Ontario Ministries of Transportation and Municipal Affairs and Housing published the Transit-Supportive Land Use Planning Guidelines. The focus of the report was developed to provide guidance on the development of transit-friendly land use and urban design. More recently, the MTO undertook a major update to the guidelines to reflect continued progress in the development of more compact, transit-supportive communities. The updated 2012 report documents the most current thinking on transit-supportive urban planning and design in addition to current best practices in transit planning and the delivery of custom-oriented transit service throughout the Province of Ontario.

The documents builds upon the policies, plans and initiatives developed by the Ministry over the past 10 + years including the Growth Plan for the Greater Golden Horseshoe (2006) and the updated Provincial Policy Statement (2005).

The guidelines consist of over 50 guidelines and approximately 450 specific strategies to guide urban planners, transit planners, developers etc. in creating communities that support transit and transit ridership. The document also supports the development of pedestrian and cycling connections throughout urban and rural communities to help enhance transit infrastructure and usage. Specific guidelines and strategies are presented throughout the document which reference the application of a complete street approach when designing transportation facilities.

The approach includes the provision of safe and accessible pedestrian and cycling connections to and from transit stops and stations. Recommendations set out on the transit-supportive guidelines will help to inform the development of proposed network linkages and recommendations which facilitate connectivity to transit and other modes of transportation.

A.2.10 ONTARIO CYCLING STRATEGY

In November 2012 the Ministry of Transportation Ontario (MTO) published the Draft Cycling Strategy. The strategy acknowledges the importance of developing cycling facilities to help reduce GHG emissions, ease gridlock, enhance the economy, increase tourism and increase the quality of life of the residents of Ontario. The strategy was developed based on increasing demand from local municipalities for direction from the province on the design and development of cycling facilities. The document also addresses a number of recommendations found in the Coroner's report published in 2012.

The province's vision is to ultimately "develop a safe cycling network that connects the province, for collision rates and injuries to continue to drop, and for everyone from the occasional user to the daily commuter to feel safe when they get a bicycle in Ontario." The strategy is intended as a guide to ensure that this vision is achieved.

The Cycling Strategy outlines a provincial plan include recommended cycling infrastructure, education and legislation changes and enhancements including a set of proposed changes to The Highway Traffic Act. In August 2013 the final version of the Ontario Cycling Strategy was released by the Ontario Ministry of Transportation. The strategy will become part of a number of provincial documents which are used to help promote and strategically develop sustainable transportation infrastructure province-wide.

A.3 FEDERAL & PROVINCIAL ORGANIZATIONS

- **Federal Organizations:**
  - **Trans Canada Trails Association:** The Trans Canada Trail Association is a not-for-profit, registered charity. Its mission is to promote and assist in the development and use of Trails in every province and territory. They also provide funding to local trail builders to support the development of trails. Today, more than 16,500 kilometres of trail have been developed. When completed, the Trail will stretch 22,000 kilometres from the Atlantic to the Pacific to the Arctic Oceans, linking 1,000 communities and all Canadians.
- **Provincial Organizations:**
  - **Ontario Trails Council:** The Ontario Trails Council (OTC), a not-for-profit organization which promotes the development of trails in Ontario. The Trillium Trail Network (TTN) is an initiative of the OTC and represents an opportunity for trails to link together between regions and communities in Ontario. The TTN consists of OTC members who register their trail as part of the network.

    Trillium Trail Network (TTN) is designed to be a province-wide network of trails which works to:

    - Make Ontario a more attractive place to live and visit;
    - Promote trail travel and tourism;
    - Increase the number of trails available for use;
    - Improve trail management as TTN trails will work to implement accepted trail standards;
    - Promote ecological conservation;
    - Provide access to local history and community culture; and
    - Promote accessibility and use to disabled persons.
  - **Share the Road Coalition:** With cycling a burgeoning mode of transportation across the globe, and communities looking to enhance the health and wellbeing of their citizens, Share the Road Coalition is developing partnerships with like-minded stakeholders across Ontario and has focused on developing partnerships geared to building a Bicycle Friendly Ontario. Share the Road Cycling Coalition is a provincial cycling advocacy organization created to unite cycling organizations from across Ontario. They work with and on behalf of municipalities to enhance their ability to make their communities more bicycle-friendly.

    Since its inception, the Coalition has focused on outreach work with a view to building partnerships with active transportation stakeholders such as: cycling advocates, local cycling clubs, organizations and municipal advisory groups, municipal leaders and officials, law enforcement, planners, provincial politicians and officials, public health professionals, and funders.

By uniting Ontarians who share a common set of objectives Share the Road Coalition is committed to leveraging the resources of those who have those common interests, with the objective of making Ontario the most bicycle friendly jurisdiction in the world.

In addition to the Federal and Provincial organizations listed above, it is also important to note the commitment of other Ontario ministries including the Ministry of Transportation, the Ministry of Municipal Affairs and Housing, the Ministry of Health Promotion, Tourism and Sport etc. who may become key partners or funding providers as the trails master plan is implemented.

A.4 OXFORD COUNTY POLICIES & PLANS

A.4.1 OXFORD COUNTY OFFICIAL PLAN

Oxford County's Official Plan is a set of policies which are used to promote effective land use management and growth County-wide. The plan is the guiding document for the County and plays an integral role in the operation and planning of its seven local municipalities.

The Official Plan places a large focus on recreational activities and prioritizes the development of recreational opportunities for residents. This is reflected through one of the Official Plan's key objectives: "the creation of additional leisure facilities and to achieve an increase in community, district and neighbourhood participation by providing a wide range of recreational opportunities". The Plan recommends the use of public spaces, trails and parklands for the development of active and passive recreation opportunities.

The Plan also makes reference to the development of a balanced transportation system centering on the principle of connectivity between key community destinations and areas of interest. It is recommended that this be achieved through the development of pedestrian routes, cycling facilities and trails.

The Plan acknowledges that the development of a balanced transportation system requires coordination County-wide including the provision of municipal services, infrastructure and connections. As such, this Plan provides high-level active transportation related priorities which will be reflected in the County's trail master plan.

Through the development of cycling and trail supportive policies, Oxford County collaborative with Tourism Oxford have developed a number of promotion and outreach initiatives such as the "Bicycle Safety" online database. This database is a hub of information and resources which provides users with information on cyclist safety, sharing the road, CAA campaign information and the Young Cyclist's Guide (MTO). Recommendations relating to promotion and marketing of existing and future trails should build upon the existing efforts already initiated by the County and its partners.

A.4.2 OXFORD COUNTY TRAILS GUIDE

The Oxford County Trails Guide outlines designated trail options for users of different ages and abilities. The intent of the trail guide is to identify and promote recreational trail opportunities County-wide and for residents to discover the unique natural and cultural heritage found within the local municipalities and distinct communities. The guide was established as an incentive to connect existing trail networks within and between the local municipalities.

One of the other reasons the guide was developed was to help promote public engagement in passive recreation, community education, the development of healthy communities and an overall appreciation of the local nature among residents. The guide will be a helpful tool in identifying gaps in the existing system, areas of need and potential connections which will be identified as part of the network development component of the Trails Master Plan.

A.4.3 OXFORD COUNTY TRANSPORTATION MASTER PLAN

In 2009, the County completed the Transportation Master Plan (TMP). The master plan identifies strategies which are intended to be used to manage the County's transportation network over a 20 year horizon. The master plan highlights the importance of sustainable mobility and the provision of a range of transportation alternatives. More specifically, the document sets out policies and recommendations which speak to travel demand management ("development of policies to help manage and possibly reduce demand on County Roads"), Cycling ("a review of how cycling needs can be accommodated") and pedestrians ("a review of how pedestrian facilities should be accommodated along County roads").

The TMP specifically sets out policies which provide direction on the development of a County-wide cycling network as well as way to encourage and promote cycling for the County and the local municipalities. Section E4.4 "Cycling Policies" outlines each of these policies and recommendations in detail. Included in this section is a recommendation which states "that the County recognizes the important role cycling plays as an alternative transportation mode and will provide for the development of a safe and efficient hierarchical cycling network on its roadways to serve sporting, recreational and utilitarian needs".

More specifically, the TMP recommends the development of a "skeletal network" of cycling facilities to increase cycling connectivity to existing facilities and future potential expansion County-wide. The cycling component of the TMP is now used as the County's "Cycle Plan" and identifies suggested cycling facility design guidelines, implementation of cycling facilities on County roadways, the recommendation to develop a cycling advisory committee and promotional materials, an assessment of existing policies and plans as they pertain to cycling and a set potential opportunities and constraints for cycling throughout the County.

Since the adoption of the TMP and the revision of the cycling component of the Plan a Cycling Advisory Committee has been established and have held a number of meetings. The meetings have yielded a couple of follow-up initiatives including a policy requiring the application of a 1.5m paved shoulder on all new or repaved County roadways as well as a share the road cycling campaign to implement on-road signage. The committee has also identified a number of priority cycling projects that the County is encouraged to focus on in the coming years. The Cycling Committee will be consulted and represented throughout the development of the Trails Master Plan. In addition, all materials that they have developed to date will be provided for the study team's review and consideration.

A.4.4 OXFORD COUNTY NATURAL HERITAGE STUDY

The Oxford County Natural Heritage Study was developed in 2006 and is used to assess the existing conditions of terrestrial and aquatic resources in Oxford County. Based on the findings and analysis of natural resources, the study provides a set of recommendations to conserve and enhance terrestrial and aquatic conditions County-wide.

Protection of Oxford County's forests, wetlands, streams and rivers is important as they provide recreational opportunities to residents and visitors to the County. The Natural Heritage Study provides recommendations for the County to adopt a policy to preserve the natural heritage and promote sustainable activities such as trails. Where possible, the study will explore the development of off-road trail systems through or abutting some these forest and wetland features. The trails will be used to highlight these significant natural heritage destinations in a sustainable and minimally invasive manner.

A.4.5 OXFORD COUNTY RURAL DEVELOPMENT STRATEGY

In 2006, Oxford County adopted the Economic Base Analysis and Rural Development Strategy. This document guides the development of the County in its more rural areas. The strategy outlines recommendations and policies pertaining to economic growth which are intended to be used by the County's local municipalities.

The Rural Development Strategy identifies key opportunities to promote community growth and improve the quality of life including the acquisition of available land for recreational purposes such as sports arenas and community parks. Included in this could be the development of trails in public lands and park spaces to help promote the County's strategic goals and objectives. Trail development can in some cases be used to enhance economic vitality within communities through enhanced tourism and financial investment in trail supportive infrastructure such as restaurants and hotels.

A.5 LOCAL MUNICIPAL POLICIES AND PLANS

As this is a County-wide plan which is intended to build upon the policies, plans and infrastructure previously developed, it is important to understand the work which has previously been completed at the local municipal level. One of the key objectives of the master plan will be the establishment of clear roles and responsibilities for trail design and development for key stakeholders county-wide. The local municipalities will be an important part of this. Their current policies, plans and initiatives will be a starting point from which the County can build new and innovative strategies.

It is important to note that the local municipalities found within Oxford County have not developed Official Plan documents. It is the County's Official Plan which is used County-wide by each municipality to guide future strategic planning and development. The following is a summary of applicable policies and plans by municipality.

Table A.2 Township of Blandford-Blenheim Policies & Plans

Policy Name	Policy Description
Parks and Recreation Master Plan	In 2013, the Township of Blandford-Blenheim developed their Parks and Recreation Master Plan. The plan's goal is to establish "ongoing creation and preservation of a healthy, enthusiastic and engaged community". The Plan provides an inventory of existing and recommended recreational facilities within the Township. Phasing for each of the recommendations is established for the short term (1-2 years) and medium term (up to 5 years) to support the development of recreation activities and park facilities.
Accessibility Plan	The Township of Blandford-Blenheim Accessibility Plan was adopted on February 2, 2011. The plan is used to promote the development of an accessible and connected Township for all residents and visitors. The Plan highlights Provincial legislation such as the Ontarians with Disabilities Act (2001), Accessibility for Ontarians with Disabilities Act (2005) and AODA, Ontario Regulation 429/07 – Provincial Customer Service Standards. These policies provide guidelines to remove barriers and promote accessibility which can be applied to trail planning, design and construction. An implementation plan is also established to promote accessibility and improve access to transportation facilities throughout the Township.
Strategic Plan Document	In 2012, the Township of Blandford-Blenheim developed a Strategic Plan. The plan's primary objective is to "excel in providing a safe, healthy and vibrant place to live with inclusive and sustainable services". Goals and strategies as well as key priorities for the short, medium and long term are highlighted and used to guide future strategic development throughout the Township. Community growth is supported through a number of strategic goals which are to be used to promote recreation and tourism opportunities in the Township.

Table A.2 Township of Blandford-Blenheim Policies & Plans

Policy Name	Policy Description
Development Charges By-law	In April 2013, Township of Blandford-Blenheim adopted a Development Charges By-law to recover growth-related capital costs from new development. The development charges imposed by this by-law apply to parks and lands of recreational purpose. As has been done by many other communities, the Township may be able to strategically recoup some of these monies to facilitate the development of trail facilities.

Table A.3 Township of East Zorra-Tavistock Policies & Plans

Policy Name	Policy Description
Level of Service Objectives By-law	The Township of East-Zorra Tavistock adopted the by-law on January 5, 2011. The document outlines the level of service that Township's Roads and Public Work Department is required to provide for activities, facilities and road surfaces. The Level of Service Objectives By-law includes objectives for hard top maintenance roadways, street cleaning, sign maintenance, snow removal and sidewalks. The services that are provided may help to support safer cycling surfaces, increased pedestrian safety and accessibility to active transportation facilities. The services identified in this by-law meet and in some cases exceed the Minimum Maintenance Standards adopted by Ontario in the Municipal Act (2001).
Cash-in-Lieu of Parkland By-law	In 2009, the Township adopted the Cash-in-Lieu of Parkland By-law. The by-law states that at the time of development, land must either be secured by the Township for park or recreational purposes. In the event that the land cannot be secured of the value of said land must be paid to the Township. The Cash-in-Lieu of Parkland By-law ensures the Township is provided with adequate land or budget for parks and recreation purposes.

Table A.3 Township of East Zorra-Tavistock Policies & Plans

Policy Name	Policy Description
Development Charges By-law	The Development Charges By-law was developed in April 2009 to identify select charges applied for all types of development occurring in the Township of East-Zorra Tavistock. In addition to parkland development costs, the Study identifies that development charges will be used to support the development of municipal parking, park furniture, signage, landscaping and walkways, and multi-use trails.
Municipal Servicing Standards – Urban and Rural Developments	In December 2007, the Municipal Servicing Standard – Urban and Rural Development was adopted by the Township. The document establishes service standards applicable to urban and rural developments. The standards manual also provides a set of development standards which can be used to appropriately design and landscape park and recreation facilities.
Traffic and Parking Regulation By-law	Adopted in 2009, the Township of East-Zorra Tavistock's traffic and parking regulation by-law prohibits motorists from stopping or parking any vehicle within a pedestrian crosswalk. The by-law also states that motorists are required to yield the right of way to pedestrians in locations where traffic control signals are not installed or operating and on highway crossings.
Ice and Snow Removal By-law	The Ice and Snow Removal By-law was developed in 2009 setting out clear requirements for the Township to remove snow and ice from sidewalks. The removal of snow and ice provides pedestrians with barrier-free access to community services and facilities and helps to generate a continuous and connected pedestrian network.

Table A.4 Town of Ingersoll Policies & Plans

Policy Name	Policy Description
Engineering Standards and Specifications	The Engineering Standards and Specifications were approved by Council on May 14, 2002. The plan establishes specific requirements and standards for the management of all municipal right-of-ways in the Town of Ingersoll applicable to any business or person wishing to construct within this area. Municipal consent must be obtained from the Engineering Services Department before any work may proceed within a right-of-way such as trail construction and installing trail signage.
Downtown Revitalization Strategy	In February 2004, the Town of Ingersoll developed a Downtown Revitalization Strategy which identified implementation strategies to build a connected and prosperous downtown area. The strategy establishes vision and future potential roles for the Downtown area as well as potential opportunities for growth. Implementation strategies to promote growth include a streetscape program and the development of features to promote high levels of pedestrian traffic. The Downtown Revitalization Strategy also recommends the development of integrated pedestrian walkways which are intended to be used to link the downtown area to surrounding open spaces.
Community Strategic Plan	The Town of Ingersoll developed a Community Strategic Plan in 2004 to promote economic growth and improve the Town's overall quality of life. Among others, one of the key objectives is the development of an interconnected multi-use trail system that promotes active living and physical activity for the Town of Ingersoll and the County of Oxford. Tourism Oxford and the Oxford County Trails Council were both involved in the development of the Town's Strategic Plan.

Table A.4 Town of Ingersoll Policies & Plans

Policy Name	Policy Description
Cultural Strategy	In October 2006, the Town of Ingersoll Cultural Strategy was developed. The Plan was used to highlight strategic priorities which are to be used to promote the social and economic benefits of Ingersoll's cultural organizations. The plan identifies key priorities, recommendations and an implementation plan to develop a prosperous cultural sector. Opportunities to enhance cultural growth in the community include a network of walking trails, streetscapes and natural landscapes. The plan also establishes a strategic recommendation to develop an interconnected trail system which is intended to promote safe and accessible trails and paths within the Town of Ingersoll.

Table A.5 Township of Norwich Policies & Plans

Policy Name	Policy Description
Municipal Accessibility Plan	The Municipal Accessibility Plan (2012-2013) was developed to promote an accessible and barrier-free Township for all residents and visitors. The Plan highlights Provincial legislation such as Ontario with Disabilities Act (2001), Accessibility for Ontarians with Disabilities Act (2005). These documents provide the Township with guidelines to remove barriers and promote accessibility which can be applied to trail planning, design and construction. The Municipal Accessibility Plan also identifies trail specific recommendations including but not limited to upgrades of existing trail surfaces, installation of curb cuts to provide pedestrian access to streets and accessible park facilities.
By-law Restricting Cycling, Skateboarding, Roller Skating, Scooters or Conveyances on Sidewalks	In 1998, the Township of Norwich adopted this by-law to prohibit the use of bicycles, skateboards, roller skates, scooters and other conveyances on any sidewalk, pathway or other place intended for pedestrian use. This by-law also requires any person who uses a bicycle, skateboard, roller skates, scooters or other conveyance to yield to pedestrians using sidewalls and walkways.

Table A.5 Township of Norwich Policies & Plans

Policy Name	Policy Description
Public Parks and Facilities By-law	The Public Parks and Facilities By-law was adopted in 2008 to regulate, protect and govern the use of public parks and facilities. This by-law prohibits cyclists from riding in a park except where authorized. In addition, motorists are prohibited from stopping or parking any vehicle within a park except where permitted. This by-law is important to acknowledge as the development of trails through public spaces or parks may be a significant opportunity for the County. Through Norwich, alternative design concepts or appropriate signage permitting the use of the space by cyclists may be required.

Table A.6 Township of South-West Oxford Policies & Plans

Policy Name	Policy Description
Accessibility Plan	The Accessibility Plan was adopted in January 2010. The Plan establishes strategic recommendations and goals which are intended to help generate a barrier-free Township for all residents and visitors. The Plan identifies initiatives to remove barriers including sidewalk construction to increase wheelchair accessibility and pedestrian access to community services.

Table A.7 Town of Tillsonburg Policies & Plans

Policy Name	Policy Description
Central Areas Design Study	In 2012, the Central Areas Design Study was adopted. The plan outlines policies which are intended to be used to promote the importance of the Tillsonburg's Central Area in the context of the Town as a whole. The study findings are intended to be incorporated into the County's Official Plan as part of the five year review and aid in the future development of the Central Area. The process to develop the Central Areas Design Study included a review of key documents such as Tillsonburg Recreation Master Plan (on-going), Tillsonburg Trail Master Plan (2008) and Tillsonburg Downtown Streetscape Master Plan (1996). In addition, the study provides guidelines for pedestrian and cycling facilities in the Central Area such as dedicated bicycle lanes, bicycle racks, boulevards, sidewalks and multi-use trails.
Tillsonburg Trails Master Plan	In October 2008, the Town of Tillsonburg adopted the Tillsonburg Trails Master Plan (5th Draft). The Trails Master Plan is a guide for the planning and development of trail facilities as demand increases. The plan provides direction regarding future recommendations to town Council and highlights potential community partnerships to fund future trail development. The Master Plan also highlights an implementation strategy for the development of trail facilities and implementation of signs and trailheads and outlines marketing and promotion initiatives to encourage the public involvement in AT and trail use.
Tillsonburg Parks, Recreation and Culture Strategic Master Plan	Adopted in June 2011, the Community Parks, Recreation and Cultural Strategic Master Plan is intended to guide the planning and implementation of recreation programs, facilities, parks, sports fields, trails and open space. The Master Plan outlines guiding principles including the need to design and manage an integrated trail system to link to residential and employment areas and to provide residents with active recreation opportunities. The Parks, Recreation and Culture Strategic Master Plan is meant to be read in conjunction with the Town of Tillsonburg Trails Master Plan.

Table A.7 Town of Tillsonburg Policies & Plans

Policy Name	Policy Description
Tillsonburg Gateway Community Improvement Plan (By-law #3251)	Adopted in April 2007, The Gateway Community Improvement Plan was developed to establish a Town-wide strategy to improve the entrances and gateways into to the Town of Tillsonburg along John Pound Road. The Plan is intended to provide the Town with potential revitalization projects and influence future municipal decision making. Input gathered from public consultation indicates that the area along John Pound Road is a desirable recreational area. In addition, the Plan highlights strategic visions and objection to increase and utilize trail use as a means of improving access to the community.
Accessibility Policy	In January 2012, the Town of Tillsonburg adopted an Accessibility Policy to establish accessibility standards for all persons including those with disabilities. The Accessibility Policy is drafted in accordance with the Accessibility for Ontarians with Disabilities Act (2005) and the AODA, Ontario Regulation 429/07 entitled Accessibility Standards for Customer Service to remove barriers and promote accessibility for all persons with disabilities in the Town of Tillsonburg.
Downtown Community Improvement Plan (By-law #3191) (2006)	Adopted in September 2006, the Downtown Community Improvement Plan builds upon previous community initiatives to promote and enhance opportunities in the downtown core. Initiatives and recommended improvements pertaining to more active modes of transportation and trails include an improved pedestrian environment, initiating a streetscape study and developing a schedule of works for parks, open spaces and streetscaping.
Subdivision & Development Guidelines – Design Criteria	In 2005, the Town of Tillsonburg adopted the Subdivision & Development Guidelines – Design Criteria as a guiding document for the design and development of subdivisions and new developments Town-wide. The guidelines outline standards and design criteria for parklands including grading, maintenance and walkways which could influence the design and development of trail facilities within these areas

Table A.7 Town of Tillsonburg Policies & Plans

Policy Name	Policy Description
Five-Year Strategic Plan (Draft)	The Five-Year Strategic Plan was developed in 2012 as is intended to be used as a guide for the promotion of community and economic growth. The document identifies several trail related goals including but not limited to enhanced recreation facilities for residents and visitors in the Town of Tillsonburg. Recommendations to promote community growth include working with Oxford County to complete a trails system as well as assessing the gaps in the existing trails network.

Table A.8 City of Woodstock Policies & Plans

Policy Name	Policy Description
City of Woodstock Cycling Master Plan (2014)	The Cycling Master Plan is a reflection of the City's commitment to improving cycling opportunities throughout the City. The plan sets out a network of on and off-road cycling routes that will provide residents as well as visitors with: • Utilitarian connections to get to and from work and school; • Connections to key destinations within the community such as libraries, shopping facilities, municipal offices, leisure facilities etc.; and • Connections to surrounding municipalities including key cycling destinations. The City of Woodstock Cycling Master Plan and cycling network responds to the wants and needs of current cyclists and non-cyclists. The master plan will also include a set of promotion and marketing initiatives which will be used to promote cycling as a viable transportation mode which can be integrated into day to day activities for recreational and utilitarian purposes.

Table A.8 City of Woodstock Policies & Plans

Policy Name	Policy Description
City of Woodstock Accessibility Plan	The master plan is intended to increase accessibility options for persons with disabilities. The plan was developed in response to transportation barriers and accessibility issues identified throughout the City and builds on existing and current measures to identify, prevent and remove barriers for persons with disabilities. The plan is aligned with municipal and provincial policies and practices and is to be used to reduce accessibility incidents. In recent years, the City has achieved considerable success mitigating accessibility barriers. From 2006 – 2008 the City: • Retrofitted ~70 curbs to prevent visually impaired persons from recurring accidents; • Approved a handicap parking by-law to ensure consistency with the provincial policy; and make all curb cuts, ramp, handrails and grab bars located along staircases safer to visually impaired persons. As the City begins to develop cycling facilities, consideration must be given to new amendments which have been made to the Provincial accessibility plan which address pedestrian accessibility routes, crosswalks and bridges for persons with disabilities.
City of Woodstock Transportation Master Plan (2011)	The Transportation Master Plan (2011) was developed to help guide and improve transportation within the City of Woodstock. The purpose of the study was to develop a strategic framework and long-term vision for sustainable transportation. The master plan is also intended to be implemented to promote an integrated multi-modal transportation system that accommodates active transport networks such as public transit, cycling and walking along with the vehicular traffic. A key piece of the study is a road classification system that recognizes the need for additional Major Arterial, Minor Arterial, Major Collector roads in Woodstock. The document sets out a number of recommendations which specifically address active transportation.

Table A.8 City of Woodstock Policies & Plans

Policy Name	Policy Description
	These include: • Modifying and widening roads in order to increase cycling opportunities in a sustainable manner. • Creative design strategies and maintenance standards of roadway elements such as catch basins and bicycle parking facilities, public education and training, to enhance overall experience of cycling for the City's residents. • Adopting a pedestrian charter as well as increasing minimum sidewalk widths and boulevards as incentives to improve pedestrian opportunities. • Providing a range of facilities and signage that increases the number of protected pedestrian crossings of main roads routes throughout the City. The plan also recommends the development of a formal cycling network through the development of a cycling master plan.
City of Woodstock Trails Master Plan	The Woodstock Trails Master Plan is a guide for the planning and development of trail facilities as the City continues to grow and expand. The plan builds on the existing Millennium Trail system within the City of Woodstock. The plan also identifies a trail implementation strategy and a trail network for both off-road and on-road routes connections. The development of a hierarchical trail system is expected to support the future development of a City-wide trail network. The document outlines specific guidelines and strategies that can be applied when designing transportation facilities including designations, specifications and design principles for regional trail infrastructure. The document is meant to be read in conjunction with City of Woodstock Land Use policies including the County Official Plan which promotes the need to accommodate increased bicycle pathways as well as walkability convenience for active communities. The City of Woodstock Council is supportive of the plan and has provided Council endorsement for the trails master plan.

Table A.8 City of Woodstock Policies & Plans

Policy Name	Policy Description
Woodstock Central Area Design Study	The purpose of the Woodstock Central Area Design Study (2011) is to develop comprehensive design recommendations for the downtown area. This document highlights the existing conditions and future opportunities of streetscapes, open spaces and pedestrian areas. The process to develop this study included a review of key Municipal document s such as the Trails Master Plan (2007) and the Transportation Master Plan (2011). The Woodstock Central Area Design Study recommends improvement to cycling routes, end-trip facilities, parks and open spaces.
Accessibility Guidelines	The Accessibility Guidelines (2006) provides design standards for several facilities and amenities in the City of Woodstock. This document identifies guidelines for pedestrian routes, crosswalks, bicycle racks, parks and trails.
Community Strategic Plan and Integrated Community Sustainability Plan	In 2013, the Community Strategic Plan and Integrated Community Sustainability Plan were developed to enhance the quality of life and identify opportunities in the City of Woodstock. This plan highlights goals and strategies as well as key priorities for the short, medium and long term. Priorities to enhance community growth are supported through objectives of improving transportation and mobility. It is recommended that the City of Woodstock support pedestrian and cyclist safety through measures of traffic calming, sidewalk continuity, cycling facilities and signage. In addition, the document recommends that the City of Woodstock increase active recreation opportunities for all residents and visitors.

Table A.9 Township of Zorra Policies & Plans

Policy Name	Policy Description
Design Guidelines	In 2013, the Township of Zorra developed Design Guidelines which are intended to be used to provide guidance on design considerations of new development areas and the redevelopment of existing land uses. These guidelines provide recommendations which address key elements such as barrier-free design, pedestrian connections, trails and sidewalks, bicycle parking facilities, parks, trail amenities, trail width and cycling connection.

A.6 CONSERVATION AUTHORITIES

Table A.10 Conservation Authority Policies & Plans

Conservation Authority	Policy Description
Upper Thames Conservation Authority	The Upper Thames River Conservation Authority (UTRCA) was formed in 1947 and covers the upper watershed of the Thames Rivers, rural areas and urban areas of Oxford County. In Oxford County, the UTRCA is responsible for lands and trails in Pittock Conservation Area.
Grand River Conservation Authority	The Grand River Conservation Authority (GRCA) was formed in 1932 and covers the eastern portion of Oxford County. The GRCA aims to develop and implement programs to improve and preserve water quality, facilitate watershed planning, protect natural areas and biodiversity, and provide environmental education to the communities living within Oxford County.
Catfish Creek Conservation Authority	The Catfish Creek Conservation Authority was formed in 1946 and covers the western portion of Oxford County. The Catfish Creek Conservation Authority protects Ontario's rivers, lakes, streams, woodlands, wetlands and natural habitat. In addition, the conservation authority provides opportunities for the public to engage with the natural environment through several programs and education courses.

Table A.10 Conservation Authority Policies & Plans

Conservation Authority	Policy Description
Long Point Region Conservation Authority	The Long Point Region Conservation Authority works with local municipalities and partner to achieve conservation, restoration and management of Ontario's water, land and natural habitats. The Long Point Region Conservation Authority owns and manages approximately 11,625 acres of which 9,500 acres is forestland.

A.7 COUNTY & LOCAL MUNICIPAL COMMITTEES, ORGANIZATIONS & STAKEHOLDERS

There are a number of local groups which have an interest in trail design, development and maintenance throughout Oxford County. These groups have been actively involved in work leading up to the development of the Oxford County Trails Master Plan. In addition, there are also a number of County and local municipal committees which provide input on related municipal matters, such as local accessibility advisory committees.

There is great potential for political leadership and citizen involvement with members of these groups as the master plan is implemented. Below are some County as well as local municipal organizations, stakeholders and committees that could potentially be involved in the implementation of the trails master plan.

Table A.11 Trail Related Committees, Organizations & Stakeholders

Jurisdiction	Committee, Organization or Stakeholder Name
Oxford County	• Oxford County Trails Council • Oxford Cycling Advisory Committee • Oxford County Board of Health • Tourism Oxford • Ride Oxford • Oxford County Staff (Public Works, Community and Strategic Planning)
	• MovingON • Oxford County Federation of Agriculture • Oxford Community Foundation
Township of Blandford-Blenheim	N/A
Town of East-Zorra Tavistock	• Hickson District Lions Club • Hickson Recreation Committee • Innerkip & District Lions Club • Innerkip Recreation Committee • Tavistock Optimist Club • Tavistock Rotary Club • East Zorra-Tavistock Police Services Board
Town of Ingersoll	• Town of Ingersoll Accessibility Advisory Committee • Ingersoll Lions Club • Ingersoll Optimist Club
Township of Norwich	• Township of Norwich Accessibility Advisory Committee • Township of Norwich Police Services Board
Town of South-west Oxford	N/A
City of Woodstock	• Woodstock Cycling Club • Woodstock Accessibility Advisory Committee • Woodstock Police Service • Woodstock Environment Advisory Committee • Woodstock Recreation Advisory Committee
Township of Zorra	• Township of Zorra Recreation Advisory Committee • Harrington & Area Community Association • Thamesford Business Association & Embro Business Association

Table A.11 Trail Related Committees, Organizations & Stakeholders

Jurisdiction	Committee, Organization or Stakeholder Name
Other	• Thames Valley District School Board • Avon Trails Association

A.8 SURROUNDING MUNICIPAL POLICIES & PLANS

Table A.12 Regional Municipality of Waterloo

Policy & Plan Overview
Overview Description: Waterloo Region has been a long standing supporter of the development of trails as well as active transportation infrastructure.
Applicable Policies & Plans: • Kitchener Cycling Master Plan • Kitchener Parks Master Plan • Kitchener Trails Master Plan • Region of Waterloo Official Plan • Region of Waterloo Regional Transportation Master Plan

Table A.13 Perth County

Policy & Plan Overview
Overview Description: Perth County and its local municipalities have recently adopted policies and plans to support the development of active transportation facilities.
Applicable Policies & Plans: • City of Stratford Bike and Pedestrian Master Plan • Creating Walkable and Bikeable Community – A Perth County MovingON Community Planning Guide

Table A.14 Brant County

Policy & Plan Overview
Overview Description: The County of Brant has highlighted active transportation opportunities in County documents but does not currently have any which specifically address trail development or active transportation.
Applicable Policies & Plans: • County of Brant Transportation Master Plan

Table A.15 Middlesex County

Policy & Plan Overview
Overview Description: Middlesex County has supported the development of active transportation facilities.
Applicable Policies & Plans: • County of Middlesex Official Plan • Thames Centre Official Plan

Table A.16 Elgin County

Policy & Plan Overview
Overview Description: Elgin County and its local municipalities have recently adopted policies to support the development of active transportation and trail facilities.
Applicable Policies & Plans: • Elgin County Active Transportation Initiative • Town of Bayham Official Plan • Township of Malahide Official Plan

Table A.17 Norfolk County

Policy & Plan Overview
Overview Description: Support for trail development is noted in County documents.
Applicable Policies & Plans: • Norfolk County Trails Master Plan • Norfolk County Official Plan

B.

SUMMARY OF CONSULTATION ACTIVITIES

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B.1 THE APPROACH

Between July 2013 and February 2014, County staff, in collaboration with a Steering Committee of stakeholders and interest groups and a consulting team from MMM Group undertook a three phased study to complete a County-wide Trails Master Plan.

One of the key objectives of the study was to develop a master plan based on the wants and needs of those who have been involved in the design and development of trails, those responsible for the plan's implementation and those who will be using the network in the future. As part of the study process, there was a strong focus on engaging and gathering input from local stakeholders and interest groups.

In advance of the study's initiation, the study team explored the use of different consultation techniques to facilitate public engagement for people of all ages, abilities and interests. The engagement activities that were confirmed formed a formal consultation strategy which was based on the primary goal of achieving community involvement and where possible consensus.

The consultation strategy was used by the study team and the Steering Committee to track consultation initiatives over the course of the study process. Each phase of the study was guided by a consultation goal / objective which helped the study team strategically select a range of public and stakeholder engagement activities. A summary of the consultation goals and objectives as well as the activities which were undertaken are presented in **Table B.1**. They have been organized based on study phase.

Table B.1 – Summary of Consultation / Engagement Activities by Phase

Phase 1 Understanding the Resources Consultation Activities	
Consultation Goal:	To provide members of the public and stakeholders with key background information and study findings from Phase 1 and to gather input regarding network opportunities and barriers to inform the development of the trails network.
Activities Undertaken:	• Public Awareness Campaign • Online Questionnaire • Study Team / Steering Committee Meetings / Roundtable Discussions
Phase 2 Developing the Plan Consultation Activities	
Consultation Goal:	To give the Steering Committee the opportunity to "work" collaboratively with the study team to inform key study deliverables including the trails network concept and proposed facility types and to continue to gather public input to inform the development of study findings.
Activities Undertaken:	• Ongoing Public Awareness (though Public Awareness Campaign) • Ongoing Online Questionnaire • Study Team / Steering Committee Meetings / Roundtable Discussions • Public Information Centres / Open Houses

Table B.1 – Summary of Consultation / Engagement Activities by Phase

Phase 3 Finalizing the Plan Consultation Activities	
Consultation Goal:	To provide public representatives with the opportunity to comment on the proposed trails network and study findings and to work collaboratively with the Steering Committee and County staff to develop and finalize the Trails Master Plan Report.
Activities Undertaken:	• Ongoing Public Awareness Campaign • Ongoing Online Questionnaire • Study Team / Steering Committee Meetings / Roundtable Discussions • Presentation to Council

B.2 WHAT WE HEARD: A SUMMARY OF INPUT RECEIVED

At each point of public or stakeholder contact, the study team developed ways in which input /commentary could be gathered. Through these interactive engagement venues residents and stakeholders were able to provide valuable input which was documented and incorporated as master plan deliverables were developed and refined.

The following sections provide an overview of the comments that were received from each of the public / stakeholder activities undertaken.

B.2.1 PUBLIC OUTREACH CAMPAIGN

The intent of the public outreach campaign was to increase public and stakeholder awareness regarding the study. The campaign consisted of a number of different outreach and promotion techniques including but not limited to:

- The development of a study webpage, which was updated periodically by County staff with relevant study information. More specifically, as key study deliverables were developed they were uploaded onto the study webpage for the public to review and provide input.
- The development of study notices including a notice of study commencement, notice of a public information centre and a notice of study completion. Once finalized, the notices were published in local newsletters and online to help promote in-person public and stakeholder engagement activities. On each notice the study team also outlined and suggested additional ways the public could provide input / get involved (e.g. the online questionnaire or providing comments directly to study representatives).
- Existing County social media outlets such as Twitter, Facebook and "Speak up Oxford" were used to help promote the online questionnaire as well as the public information centre.
- A study promotional card which was used as another means of distributing key study information. This small business card sized hand-out was distributed at County events and community locations / destinations (e.g. arenas, community centres, libraries, tourism offices, health unit offices, County offices, local municipal offices, farmers markets, shops and conservation areas). The promotional card also included key study information to encourage additional engagement (e.g. study contact information and a link to the online questionnaire and study webpage).

- The study promotional card was printed on a local newspaper with a monthly circulation of 26,500.
- A mobile display board was developed based on the study brand and was used to promote the study and to facilitate involvement. The board was placed at a number of different County destinations along with copies of the study promotional card.
- The mobile display board was brought to meetings with the Oxford Trails Riders and the Norfolk Trail Riders Association, by a public representative. The public representative gave a presentation and distributed the study promotional cards.

  Included on the mobile display was background information on the study, a QR code which allowed residents to access the online questionnaire using a smart-phone, contact information for study representatives and information on other means of staying engaged such as a Public Information Centre and the online questionnaire.

Though no input was gathered directly from these methods of study promotion and engagement they helped to increase study awareness and helped to ensure that the master plan and / or trail related issues were in the minds of local residents and visitors. The promotional materials were also used to promote increased attendance at the public information centre and responses to the online questionnaire.

B.2.2 STEERING COMMITTEE MEETINGS

The master plan was a collaborative initiative undertaken by the County and the Trails Steering Committee. The Committee was made up of over 20 representatives including but not limited to County staff from different departments, local municipal staff and Councillors, representatives from the local conservation authorities, the Oxford Cycling Advisory Committee, Oxford County Trails Council, Tourism Oxford, Oxford County Health Unit and local residents.

Meetings with the study's steering committee were used to provide study updates, submit key study deliverables and to engage in ongoing discussion with County staff regarding trail planning and development. In total there were four Steering Committee Meetings held over the course of the study. The steering committee meeting dates and objectives are identified in **Table B.2.**

Table B.2 – Steering Committee / Study Team Meetings Overview

Date	Objectives
Study Team Meeting #1 / Kick-off Meeting	
July 12th, 2013	A kick-off meeting was used to introduce the members of the consultant team to member of the study team from the County. The group discussed initial study objectives, opportunities and challenges and was considered the formal kick-off to the study. A draft consultation strategy was prepared and presented as well as a refined project schedule.
Steering Committee Meeting #2	
July 25th, 2013	A second kick-off meeting was held between the consultant team, County staff and the Trails Steering Committee. The meeting was used to introduce to the team and to discuss opportunities, challenges and key considerations when developing the master plan. The consultation strategy and some draft promotional materials e.g. the mobile display board and business card were presented for the Committee's review and consideration. The study team also presented the draft study vision, goals and route selection criteria which meeting attendees were asked to provide comments on. The committee provided comments at the meeting and following the meeting. The comments were reviewed and used to refine the draft materials.

Table B.2 – Steering Committee / Study Team Meetings Overview

Date	Objectives
Steering Committee Meeting #3	
October 30th, 2013	The meeting was used to review and discuss a number of materials which had been developed including the draft candidate route network, master plan table of contents and a set of draft design guidelines including both on and off-road facility design considerations. The Steering Committee engaged in a roundtable discussion which focused on the draft candidate routes, however, comments and additional considerations for the design guidelines were also provided. Lastly, the committee and study team members discussed ways the study could be further promoted and additional public engagement could be explored.
Steering Committee Meeting #4	
January 31st, 2014	The meeting was used to present and review the Draft Trails Master Plan Report with the Steering Committee members. An overview of the master plan report was presented, followed by discussion and input on various elements of the report and recommendations.

B.2.3 PUBLIC INFORMATION CENTRE / PUBLIC OPEN HOUSE

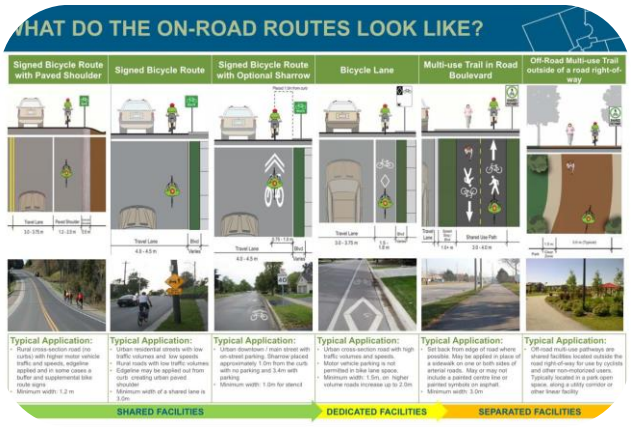
The Public Information Centre (PIC) / Public Open House was held at the Oxford County Administration Building on Thursday, November 23rd, 2013 from 6:00 p.m. to 8:00 p.m. and at the Tillsonburg Community Centre on Wednesday, December 4th, 2013 from 6:00 p.m. to 8:00 p.m. Two open house locations were selected in order to facilitate public input from across the County.

The goal for each session was to gather public and stakeholder input on the draft trail route network concept (on and off-road routes), some proposed master plan recommendations and next steps.

A public notice was developed to promote public attendance for the PIC. The notice was posted on the County's study webpage and emailed to all of those who completed the online questionnaire. It was also published in local media. In order to increase participation members of the Steering Committee were asked to engage local contacts and interest groups to encourage them to attend. The public notice provided details regarding the study context along with the dates, times, and locations of the public engagement events. In total, 52 people attended the sessions (22 in Woodstock, 30 in Tillsonburg).

Documenting the Comments Received

A set of informational and interactive display boards were developed for the open house. The displays illustrated the mapping which had been prepared for the master plan to date including a map of existing on and off-road routes as well as the proposed route network concept. Other displays presented included a summary of the online questionnaire results, route selection criteria, potential facility types and potential promotion / outreach initiatives.



A number of interactive display boards were prepared to gather input from participants. The interactive displays included:

- The Route Network Concept & Existing conditions maps where attendees were asked to provide their suggestions, changes, additions or comments to the routes identified.
- An assessment of the proposed route selection criteria including a matrix where attendees were able to select the top three route selection criteria that they felt are key considerations for developing the trails network.
- A ranking table which asked attendees to provide their input on suggested trail and cycling promotion and outreach initiatives and how much influence they would have on encouraging people to use trails or cycle throughout the County.

A number of comments were provided on the map boards to both the existing conditions as well as the proposed route network concept. The following graphics illustrate some of the comments that were provided.

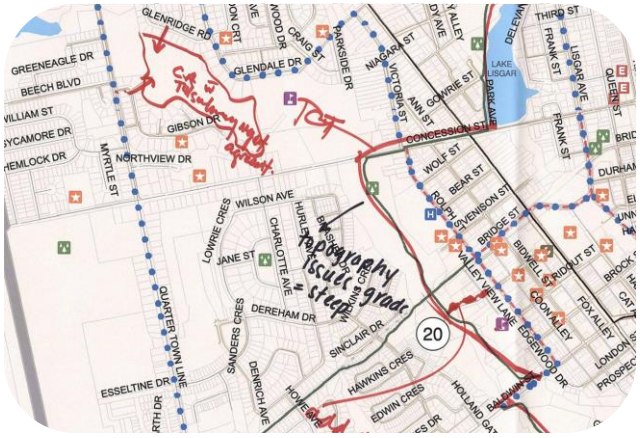


Table B.3 is a summary of each of the comments that were received / directly marked on the maps.

Table B.3 – Summary of Input / Comments Document of Map Display Boards

Input Received from Network Mapping Interactive Display Boards
• Develop maps with colour coding to show various uses in different locations and loops.
• See Tillsonburg Downtown Study and Tillsonburg website for routes in the downtown area.
• Difficult crossing on Bayham – Tillsonburg Townline and Highway 3.
• Steep grade (topography issues) on Trans Canada Trail south of Concession St. in Tillsonburg.

Table B.3 – Summary of Input / Comments Document of Map Display Boards

Input Received from Network Mapping Interactive Display Boards
• Potential trailhead location near Broadway St. and abandoned rail corridor.
• Potential trailhead location near Quarter Line and abandoned rail corridor.
• Tillsonburg should implement and maintain a rail trail in partnership with the County.
• A desired connection was added on Washington Grande Ave. from the Trans Canada Trail to Rolph St.
• A formalized trail currently exists through Harris Woods.
• Can a trail connection be made to the new subdivision west of Harris St.?
• Can a trail connection be made from the current terminus of Lawson Trail to Thames St. S.?
• Signage on trails to educate users (e.g. cyclists are fast / quiet and horses are unaware of approaching cyclists).
• Desire to implement trails on side roads, abandon rail corridors and have connections to parking and gate access from municipal offices.
• The South West Ontario Draft Horse Club currently has 107 members.
• Please refer to Ganaraska Trail, Dundas Valley and Dufferin Forest for equestrian trails.
• Potential staging areas were noted along the Thames River in Woodstock.
• Add existing trail loop system south of Thames River and north of Lansdowne Ave. in Woodstock.
• Existing parking on Township Rd. 4 east of The Pines.

Table B.3 – Summary of Input / Comments Document of Map Display Boards

Input Received from Network Mapping Interactive Display Boards
• A desired connection was added from the current terminus of the Upper Thames River Conservation Authority trail to Innerkip.
• A desired connection / loop trail was added along Wildwood Lake.
• Standard Tube Burgess Park should remain unconnected but needs improvement.
• Revise desired connection along Nith River to display an existing off-road multi-use trail.
• Bird watching station south of Road 96 in Zorra.
• Reforestation area south of Wildwood Lake in Zorra.

For the interactive display board regarding the assessment of Route Selection Criteria, attendees were invited and encouraged to place a check mark beside the criteria that they support.

The input received indicates that the respondents value:

- Visibility;
- Connectivity; and
- Context Sensitivity, as the most important criteria for route selection and design.

Figure B.1 illustrates the final findings from this exercise. In addition to those criteria listed, an attendee also added the need for additional features to accommodate equestrians along trail linkages. At both public events there were a number of public representatives who attended to express their support for equestrian trail use; however, it was at the Tillsonburg location where the majority of discussions regarding this topic occurred.

The final interactive board asked attendees to rank the level of importance they placed on suggested promotion and outreach initiatives. The initiatives which were identified are intended to be used to help promote the use of trail facilities, educate users on the safest ways to do so and to increase a users' level of comfort**. Figure B.2** illustrates the board marked with the publics' input.

Input received indicates that attendees feel that the following promotion / outreach initiatives would have the greatest influence on the number of trail users or cyclists throughout the County:

- Enhanced route mapping and information provided in a variety of formats (e.g. print, signage, interactive online mapping, etc.)
- Additional opportunities to provide input throughout the implementation of the master plan.
- Regular communication with the County regarding the implementation of the network, the status of specific projects and other master plan achievements.

Consistent with input received from the steering committee and through discussions with County staff, these responses establish a clear support and request for increased communication between the County and existing trail users, developers and designers (e.g. the Oxford County Trails Council). There is a strong need for specific roles and responsibilities as it relates to the implementation of the master plan and a strategic approach for future communication.

In addition to the interactive display boards, attendees were encouraged to complete a comment form and answer questions regarding trail enhancement and development throughout Oxford County. **Table B.4** summarizes the input which was received on the comment forms.

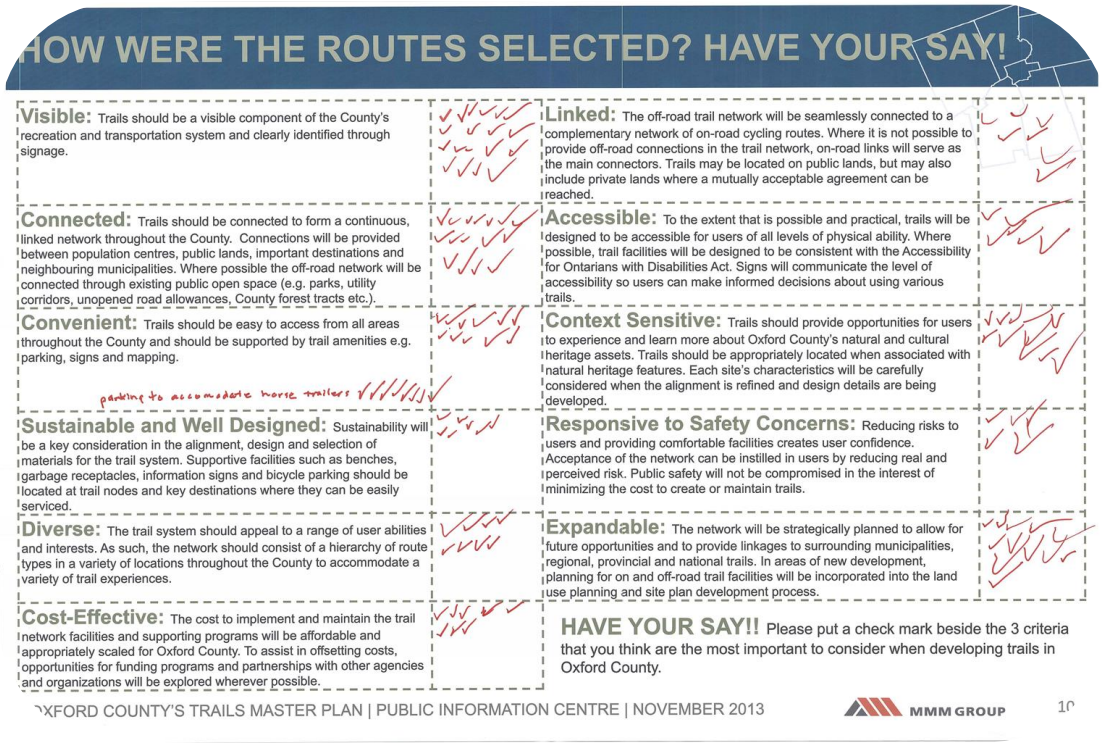


Figure B.1 – Interactive Display Board of Route Selection Criteria

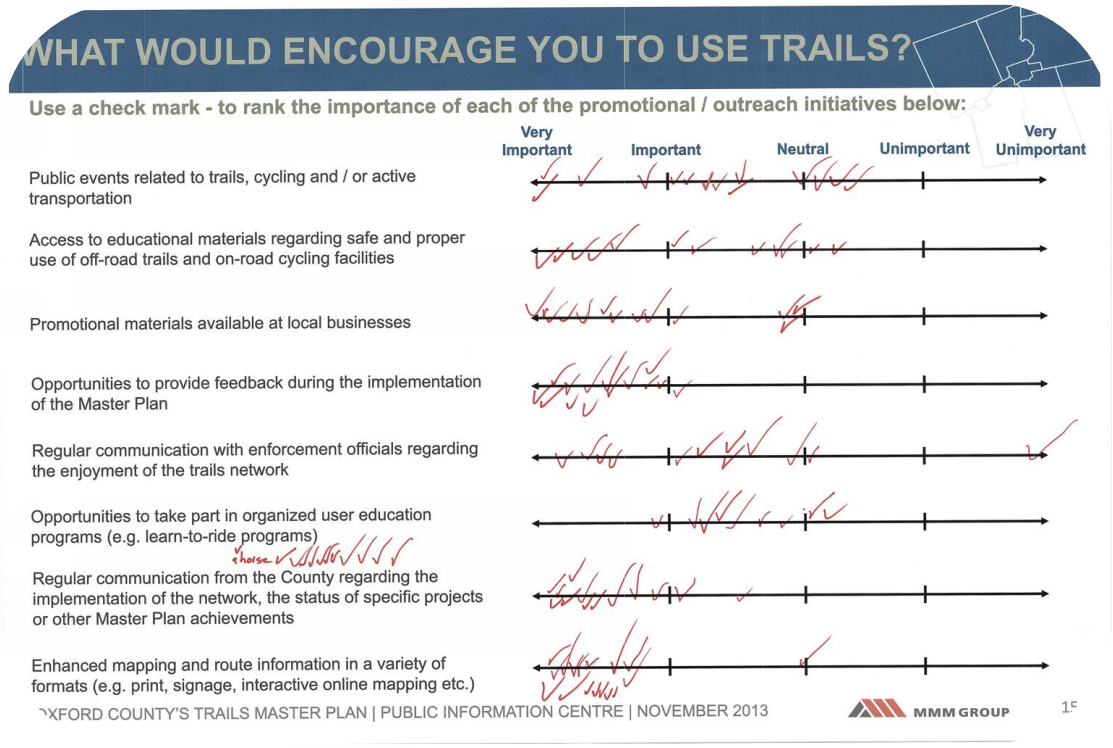


Figure B.2 – Interactive Display Board of Potential Outreach and Promotional Initiatives

Table B.4 – Summary of Comments from PIC Comment Forms

Key Highlights from Comment Forms Received
• The expansion of a variety of trails is an excellent idea. • Multi-use trails need to work together (e.g. summer walking or horseback trails can make good winter cross-country skiing trails. Snowmobile and ATV trails on old rail corridors also make sense). • Trails need to connect to other Counties to promote eco-tourism. • Trails that should be considered a high priority to implement including the Sweaburg Swamp Trail, Trillium Woods Trail, Foldens Reforestation Area trails, Oxford Thames River Trail and the Beachville Trail. • Trails should be promoted on the County's website, Tourism Oxford's website, public libraries, municipal websites and through various associations. • Coordination with UTRCA is essential. • Public education is needed through a variety of clubs, associations, and schools using staff and volunteers. • Accommodate horse riders with dedicated and mixed use trails. • Trails should be brought back to a more natural state. • Horses should be allowed on Standard Tube Trail. • Connection of trails is an excellent source for creating tourism but there should be a concern with trail running from Woodstock to Ingersoll with the proposed dump. • Dogs should be on leashes on all trails. • Cyclists should not be allowed on trails that are winding or have low visibility.

The comments received at the PIC were used to refine the Proposed Trails Network Concept. The input was also used to identify and / or refine the master plan recommendations and promotion and outreach initiatives.

It can be concluded that all those that attended the PIC were very supportive of improving trail facilities throughout the County and in local municipalities. There was significant enthusiasm from a number of different trail user groups and a commitment to helping the County with the plan's implementation where possible.

B.3 UNDERSTANDING THE TRENDS: A SUMMARY OF ONLINE QUESTIONNAIRE RESULTS

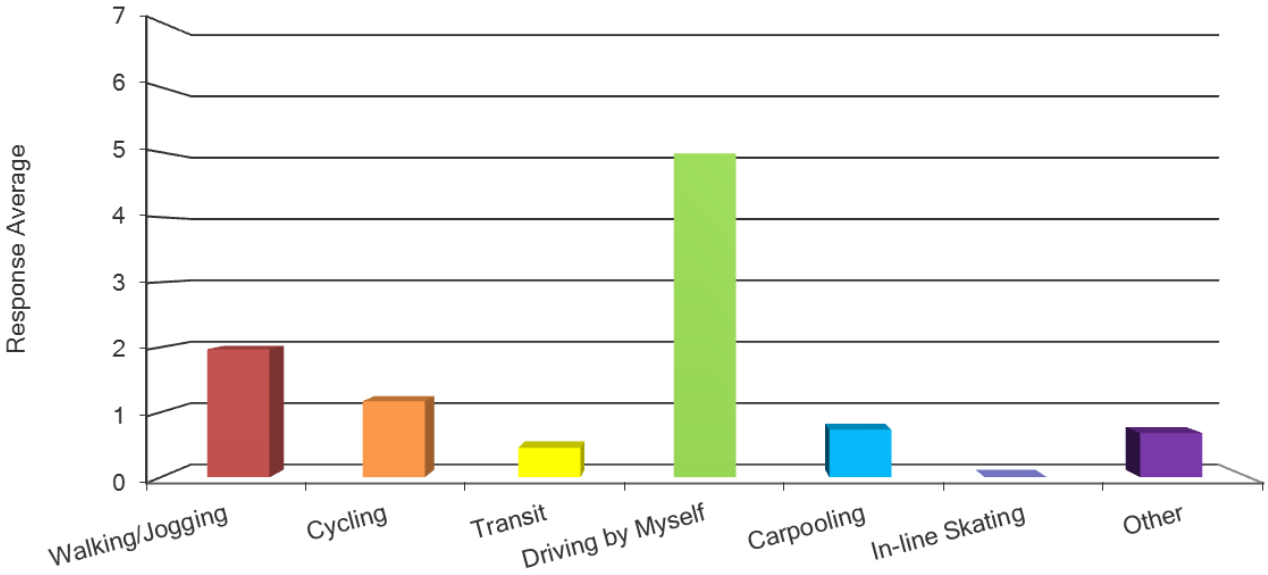
A questionnaire was developed using the online service SurveyMonkey (www.surveymonkey.com) and was hosted between August 2013 and January 2014. The questionnaire provided the study team with valuable data on existing trail trends which helped to inform the development of the network and key master plan recommendations / initiatives.

The Trails Master Plan online questionnaire was comprised of 24 questions and was intended to be a short data gathering exercise. The questionnaire received a total of 274 responses.

The following figures and tables provide a summary of key questionnaire results and have been organized based on their order in the questionnaire.

Question 1:

Thinking about your typical weekly routine, please identify the number of days a week (between 0 and 7) you travel to and from your place of work, school or other most frequent destinations, using the following types of transportation.



Response Findings: Respondents tend to drive by themselves 5 days a week to and from their place of work, school or other destinations. Walking, jogging and cycling are predominantly used as a preferred mode of transportation for 2 or fewer days a week.

Potential Conclusions: The results identify the potential for increased levels of trail use should additional infrastructure be developed. Though, it is not realistic to expect people to walk or cycle year-round or for every trip given the climate and the geography of Oxford County, there is still a considerable opportunity to increase the frequency of trail use and active forms of transportation by generating a more connected and continuous system in both the urban and rural areas of the County.

Question 2:

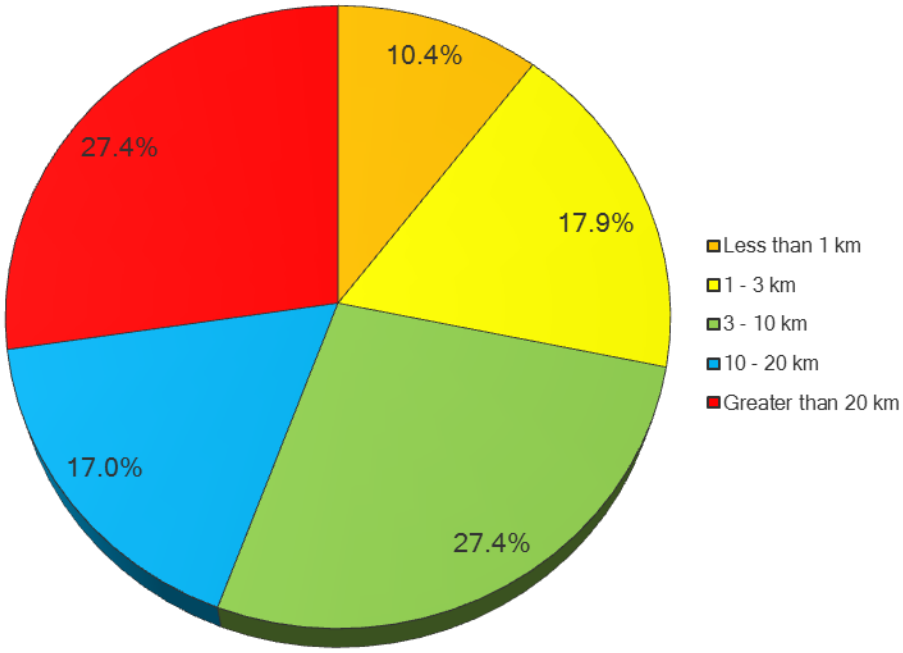
Question 2 asked those who responded "other" to Question #1 to provide additional details on the mode of transportation that they use for their day to day activities.

Response Findings: There were a number of responses provided; however, the most frequent indicated a high frequency of retired individuals did not feel that the question suited their daily activities as well as horseback riding.

Potential Conclusions: Responses to Question 2 indicate a need to provide routes and facilities to accommodate equestrian use. In addition, with a large number of respondents who indicated that they were retired, the trend for trail use was more focused on recreation than active commuting / utilitarian travel.

Question 3:

What is the approximate distance from your home to your workplace / school / other most frequent destination?

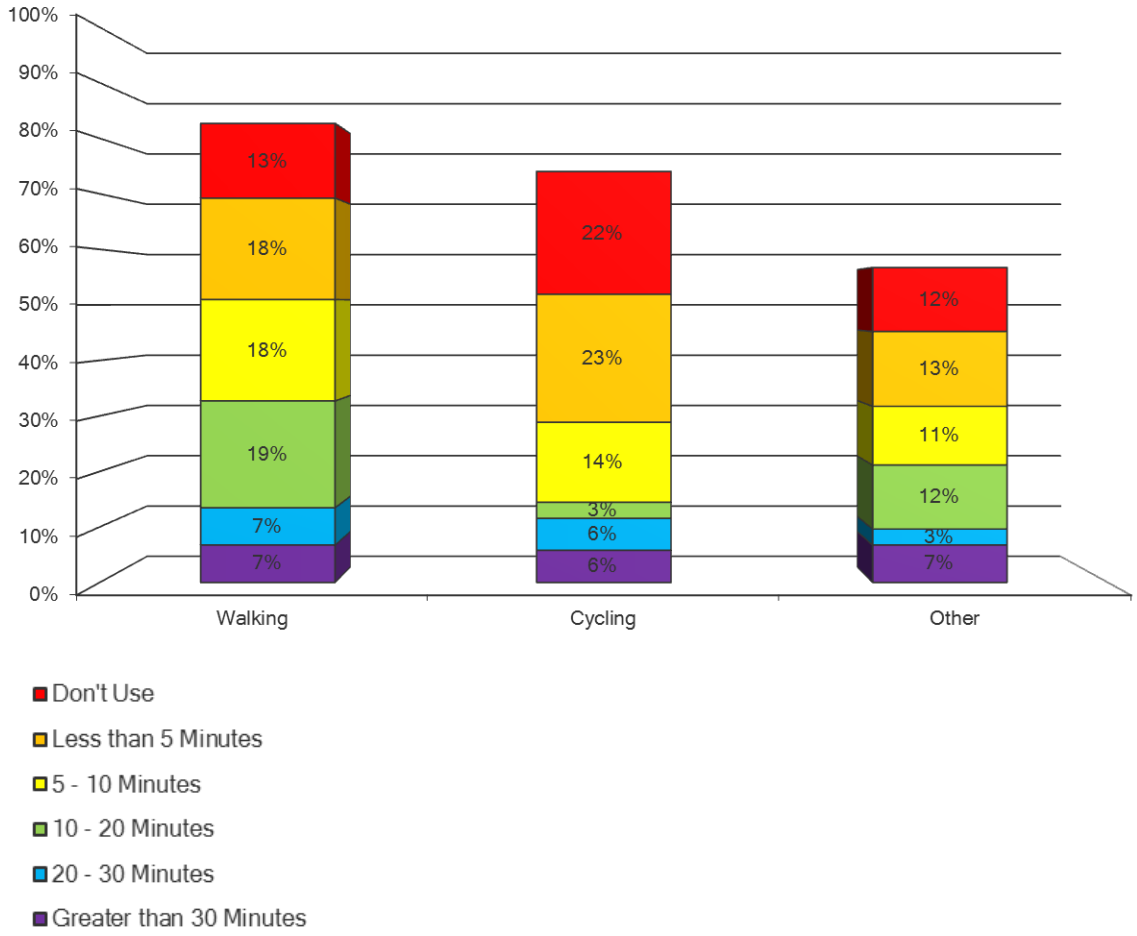


Response Findings: Based on the responses, 55.7% of respondents live within 10 km or less of their workplace or school and 44% have a commute of 10 km or greater.

Potential Conclusions: Research shows that individuals who have a commute of 10 km or less are more likely to explore active transportation as an alternate mode to the single occupant automobile. Responses indicate that there is almost an event split between those who have a 10km or less commute and those who have a greater than 10km commute. As such, there is the potential to identify some areas within the County where people may explore active or alternative modes of transportation for daily activities, however, the focus for trail use is more likely to be recreation based.

Question 4:

How long does it typically take you to access the nearest trail that you use most frequently?



Response Findings: Responses indicated that the majority of respondents experience a walking travel time of 10 minutes or less (36%) to access the nearest trail. When cycling to a trail, 37% of respondents indicated that it took them 10 minutes or less. A number of respondents indicated other forms of transportation which are used to access trail facilities including, car, equestrians and ATVs.

Potential Conclusions: As 36% of respondents are within a 10 minute or less walking trip and 37% are within a 10 minute or less cycling trip, there is a great potential to increase the number of users on these existing facilities. This could also indicate a high demand for new / additional facilities. Results also indicate a total of 35% of respondents who do not walk or cycle to access trails in the County. These findings could demonstrate the need for additional promotion and outreach initiatives to encourage residents to engage in active transportation and recreation within their own community. The responses which identified "other" modes of transportation (e.g. car, equestrian, ATV, etc.) to access trails demonstrated the need for additional consideration as it relates to "other" trail users when designing and developing trail facilities.

Question 5:

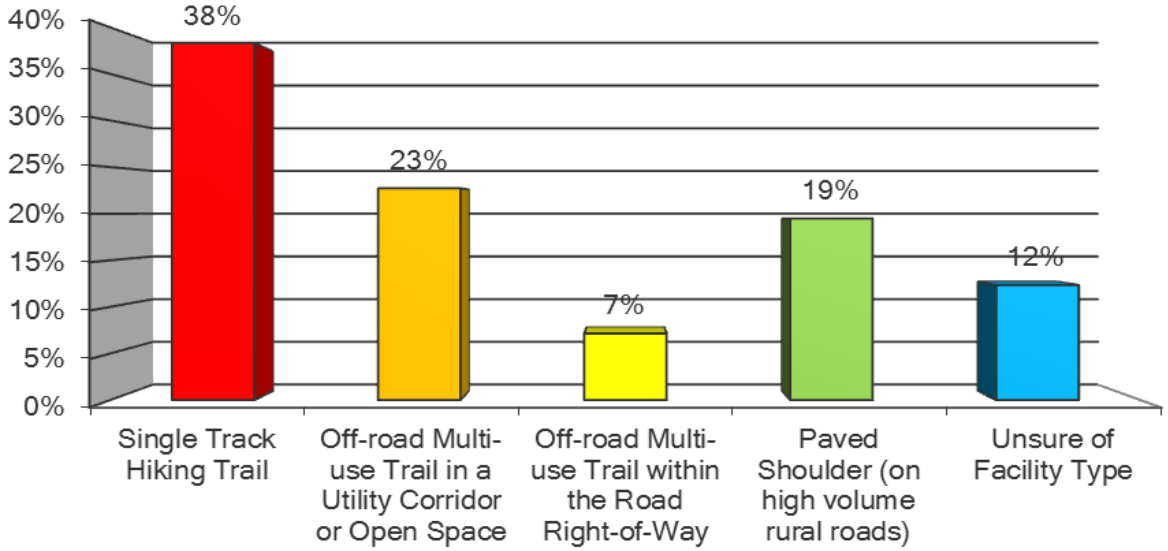
Question 5 asked respondents of Question 4 to provide additional details on the trail location that they use most frequently.

Response Findings: The trails most commonly noted by respondents included trails found in conservation areas, County forests, Lawson Tract, Pittock Trail, Trillium Woods, Trans Canada Trail, Wildwood Lake and local municipal park trails. In addition responses also indicated the use of on-road connections including Highway 59, Springbank Road in Woodstock and Landsowne Avenue.

Potential Conclusions: Responses indicate a strong support for off-road trails in natural areas throughout the County as well as on-road linkages which provide direct connections to major urban areas or community destinations. Responses also indicate the support and demand for increased equestrian opportunities on off-road trail connections. The master plan and trails network aim to provide alternatives for all user groups considered, where possible, and a range of on and off-road facility types for people of all ages and abilities.

Question 6:

What types of trail or cycling facilities do you typically use in Oxford County?

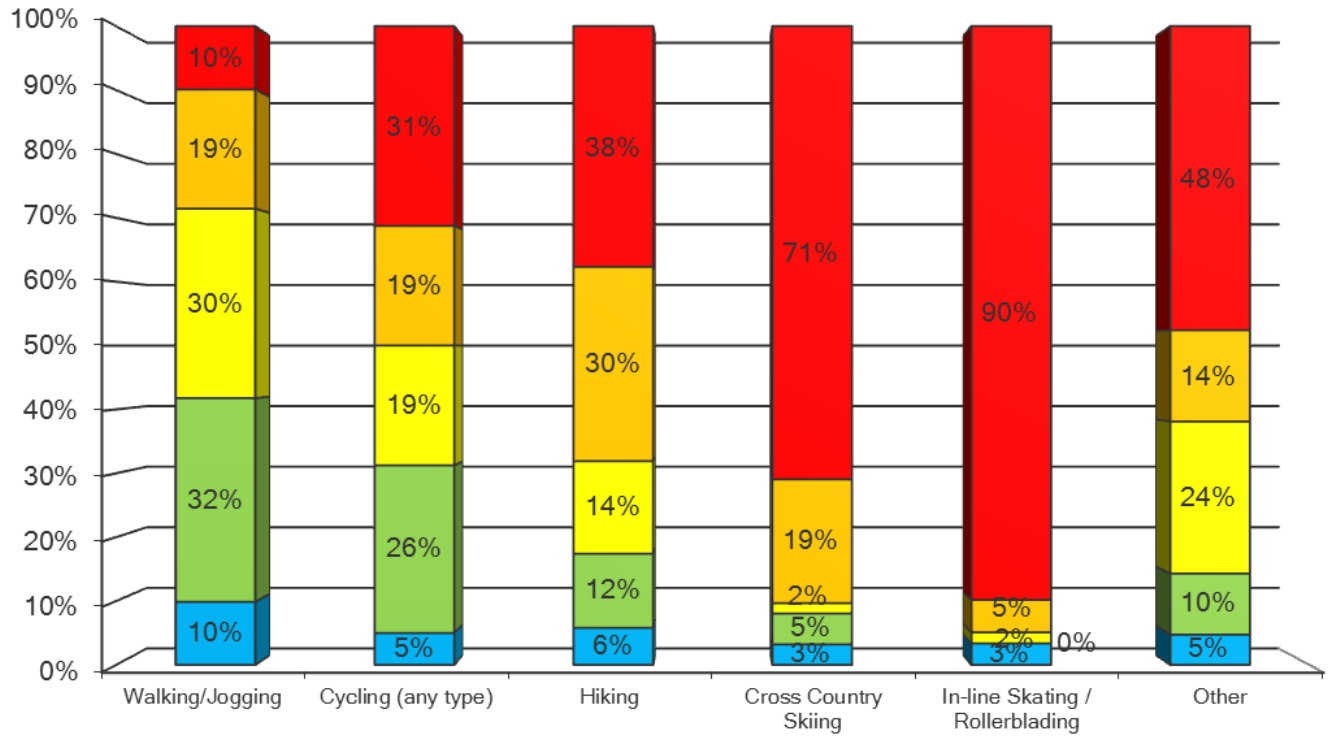


Response Findings: 38% of respondents indicated that they primarily use single track hiking trail followed by 23% who use off-road multi-use trails in a utility corridor or open space and 19% that cycle on paved shoulders (on high volume rural roads).

Potential Conclusions: Responses indicate that those who engage in active forms of transportation and recreation typically use facilities which provide a designated space for pedestrians and cyclists away from motor vehicle traffic. There are a lower number of responses for off-road multi-use trails within the road right-of-way and paved shoulders than for single track hiking trails and off-road multi-use trails in an open space or utility corridor. The results could be influenced by the fact that there are few paved shoulders and multi-use trails within road rights-of-way in the County. In addition, it is also very telling that 12% of respondents indicated that they were unsure of the facility type that they used. This indicates an increased need and demand for trail and cycling awareness including what the different trail types are and how they are to be used safely.

Question 8:

How often do you use multi-use trails in the County to participate in the following activities?

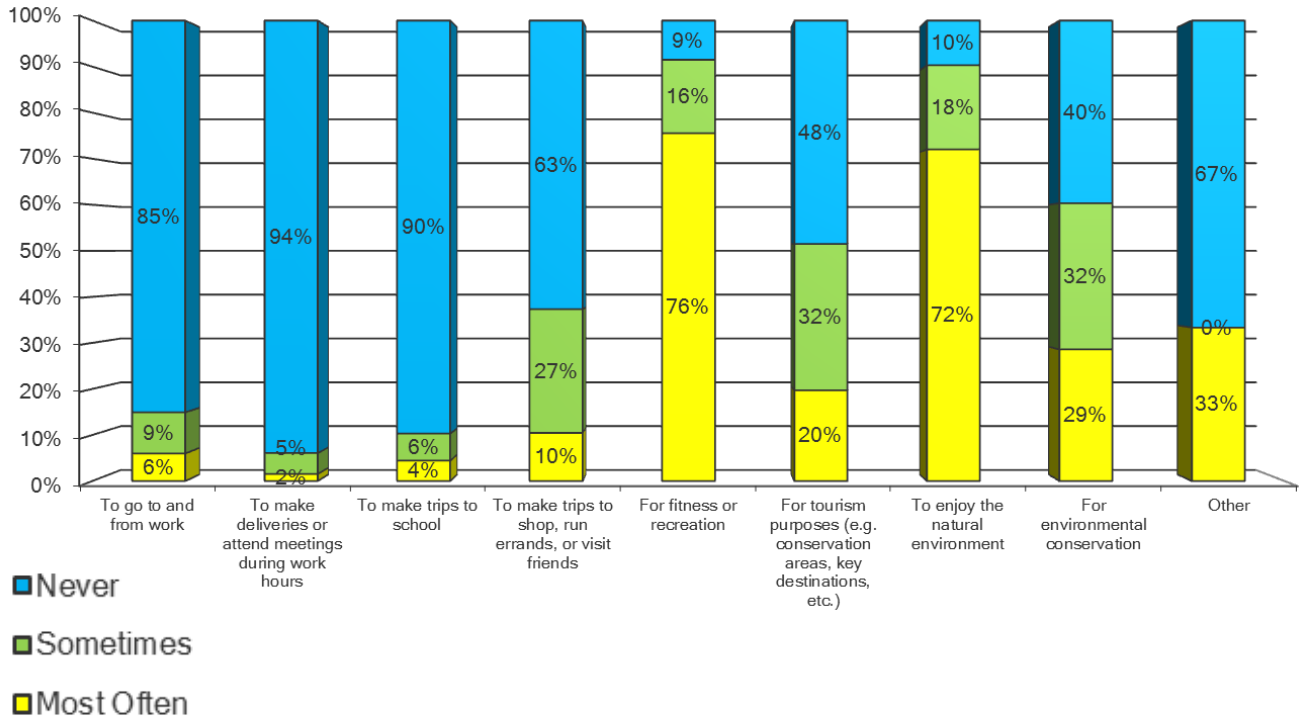


Response Findings: Results indicate respondents engage in walking and cycling for the greatest proportion of their active transportation and recreation trips. More specifically 42% of respondents walk or jog either a few times a week or every day and 31% cycle a few times a week or every day. There are also a significant number of responses for hiking – 32% indicated that they hike a few times a month or more.

Potential Conclusion: The findings from this question support the master plan's focus on pedestrian and cycling activities as primary trail user groups. The responses show a high demand for daily walking and cycling alternatives / facilities which support the expansion of the on and off-road network County-wide. In addition. The high number of responses in support of hiking indicates the demand for increase or improved active recreation opportunities, more specifically off-road trails. As identified in previous responses, a number of respondents indicated "other", such as equestrian use and snowmobiling, as mode of choice for trail use. The responses / trends from Question 8 are consistent with the conclusions drawn from Question 4.

Question 9:

Please select the reasons why you use trails or cycling facilities in Oxford County.

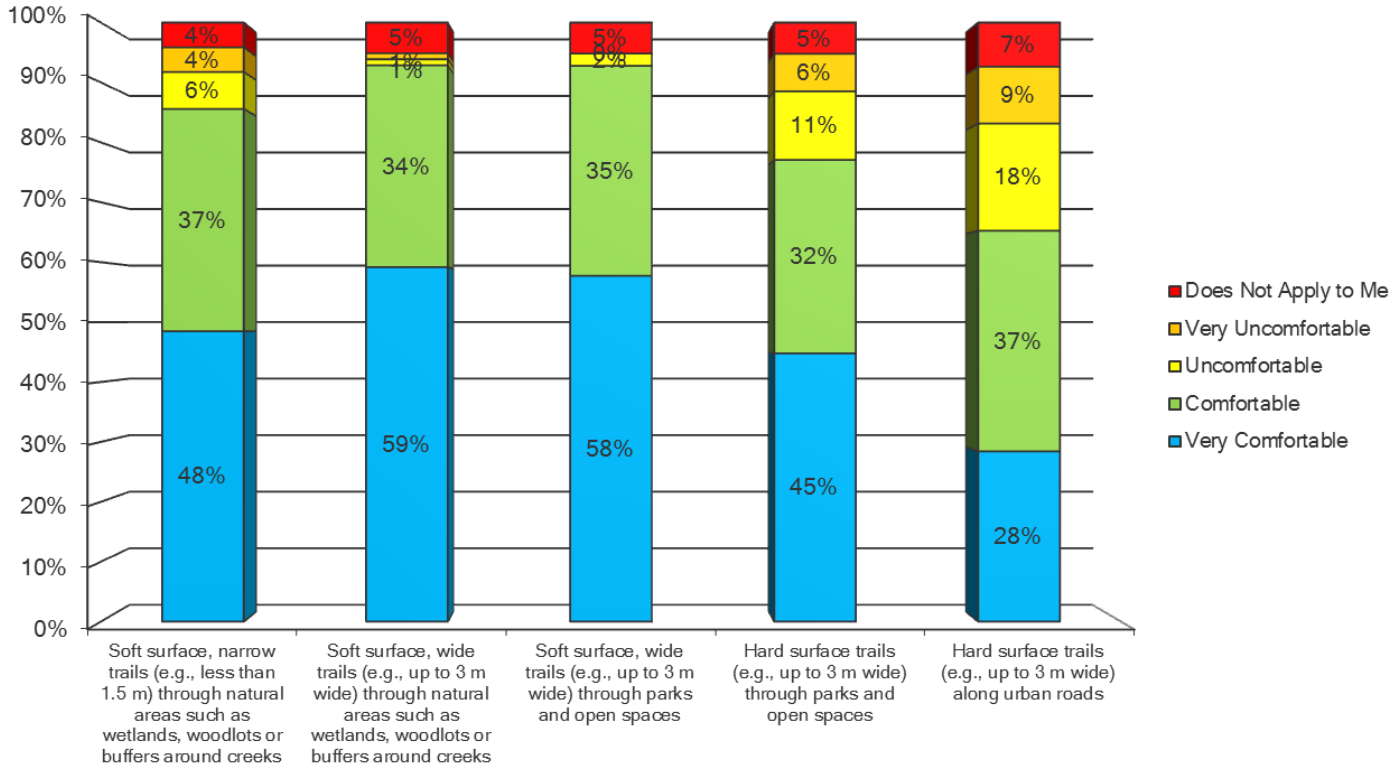


Response Findings: Responses indicate that trails and cycling facilities in the County are predominantly used for fitness or recreation with 76% of respondents indicating that they use trails for this purpose most often. This is followed by significant support and emphasis placed on enjoying the natural environment (72%). The least amount of support was placed on making deliveries or attending meetings during work hours, to make trips to school and to go to and from work. Each of their responses indicated 85% or over who never engaged in active transportation or recreation for these purposes.

Potential Conclusions: The results generated from this question support a common trend in many municipalities which are comprised of a mix of urban and rural land uses. When communities are further apart and commuting distances increase there is a decrease in trips made by active forms of transportation as shown by the 85% of respondents who never use trail or cycling to go to and from work and the 90% of respondents who never use trail or cycling facilities to make trips to school. Although distance between destinations in the rural area is an important factor to consider, these results may also be due to the lack of infrastructure, current land use planning practices as well as a lack of promotion County-wide to encourage people to engage in active transportation for daily activities.

Question 10:

For each of the following trail types please indicate your personal comfort level. Soft surfaces include loose materials such as compacted gravel / stonedust or woodchips. Hard surfaces include paved materials such as asphalt.

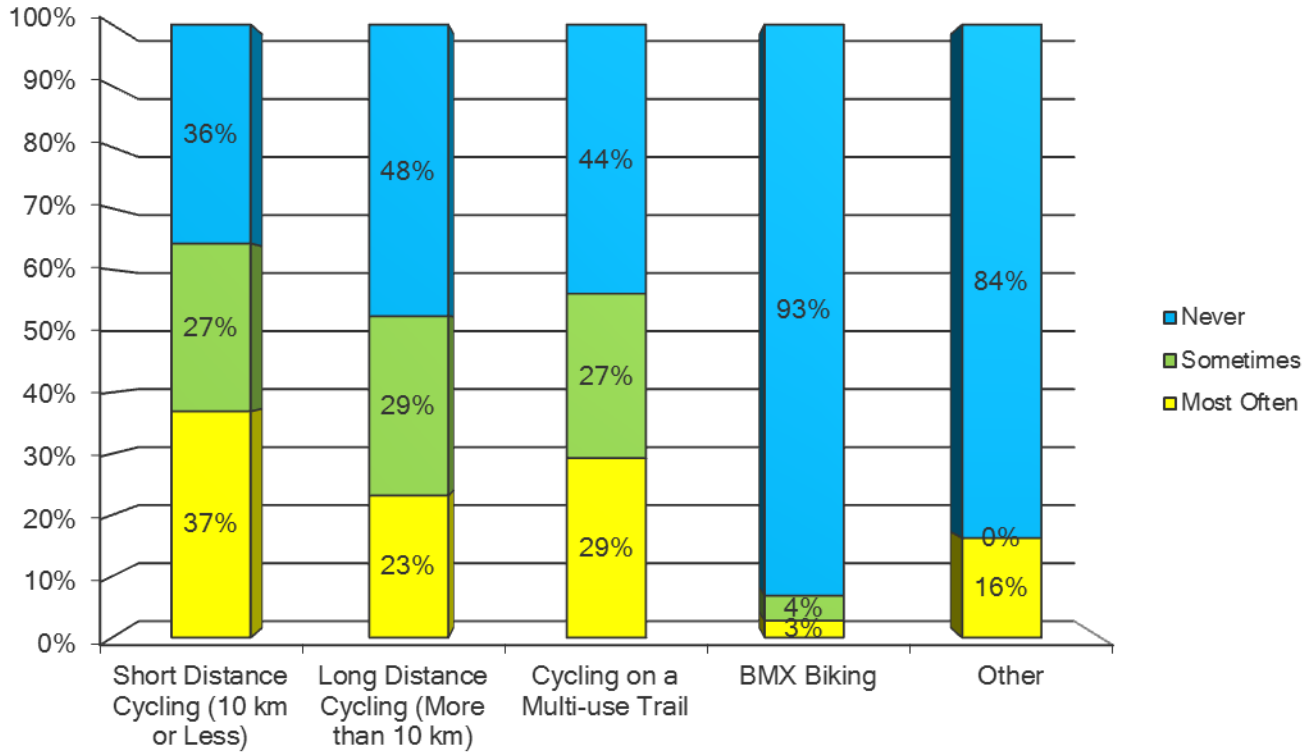


Response Findings: Respondents indicated the highest level of comfort with soft surface wide trails through natural areas (95% were very comfortable or comfortable) and soft surface trails through park spaces (93% were comfortable or very comfortable). The facility type which had the least amount of support was hard surface trails along urban roads.

Potential Conclusions: In order to inform the identification and selection of preferred trail facility types the study team asked questions about the respondents' level of comfort with different trails. The results from this question are consistent with the conclusions drawn from the results in Question 6; as 38% of respondents report using single track hiking trails and 23% use off-road multi-use trails in a utility corridor or open space. Respondent's level of comfort with soft surface trails in natural areas or parks and open spaces is also consistent with findings from question 9 which indicate one of the primary reasons for trail use as experiencing and appreciating the natural environment. Respondents' lack of comfort with hard surface trails along urban roads may occur because of the lack of these facility types County-wide and the recreational focus of current trail users.

Question 11:

If you use trails or other facilities to cycle within Oxford County, please tell us about the type of cycling you do and how often you cycle.

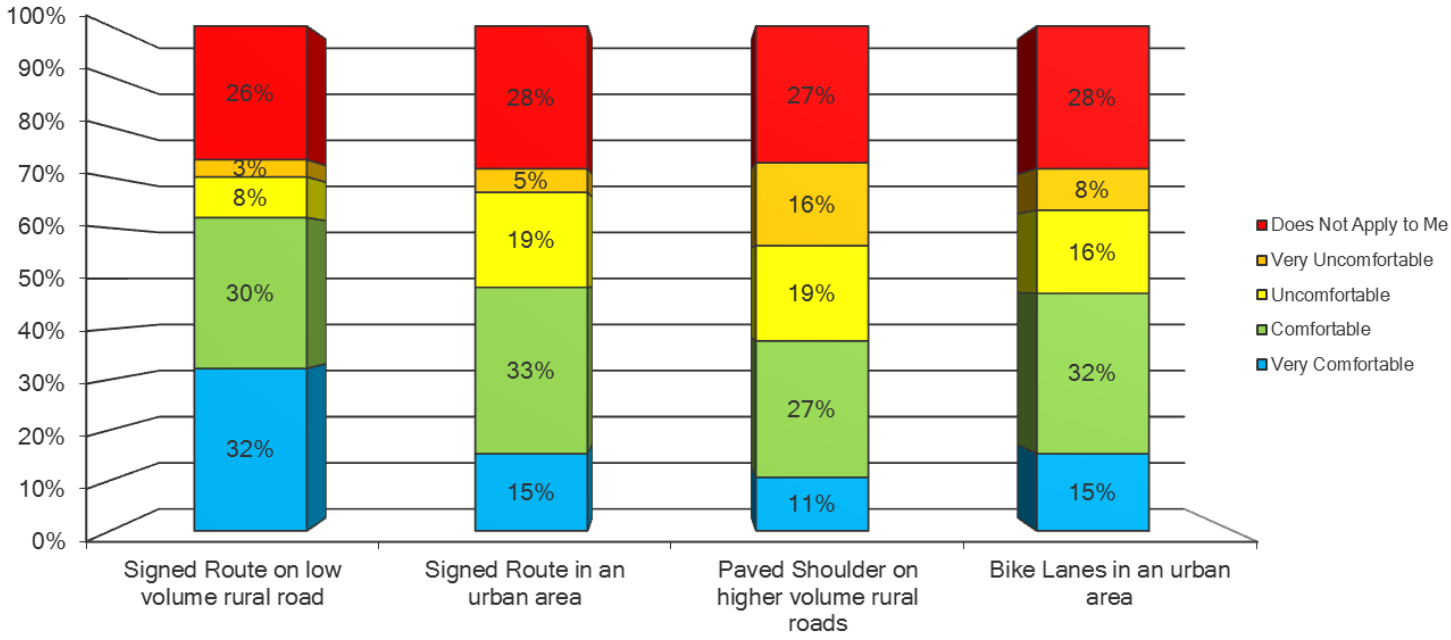


Response Findings: Respondents indicate that they most often (37%) engage in short distance cycling trip when using cycling facilities in the County. This is followed by a significant proportion of respondents who choose to cycle on a multi-use trail (29%). There are the fewest number of BMX cyclists with less than 10% who indicated that they sometimes or most often engage in this cycling activity. Additional comments were provided regarding "other" types of cycling including cross-county mountain biking and short distance mountain biking. In other cases some respondents used this as an opportunity to voice additional support for other trail uses including equestrians, ATVs and snowmobiles.

Potential Conclusions: Responses indicate the most support for short distance cycling trips (10km or less) which is consistent with much of the research regarding recreational and utilitarian cycling – please see responses to question #3.

Question 12:

For the following types of cycling facilities, please indicate how comfortable you are using each one.

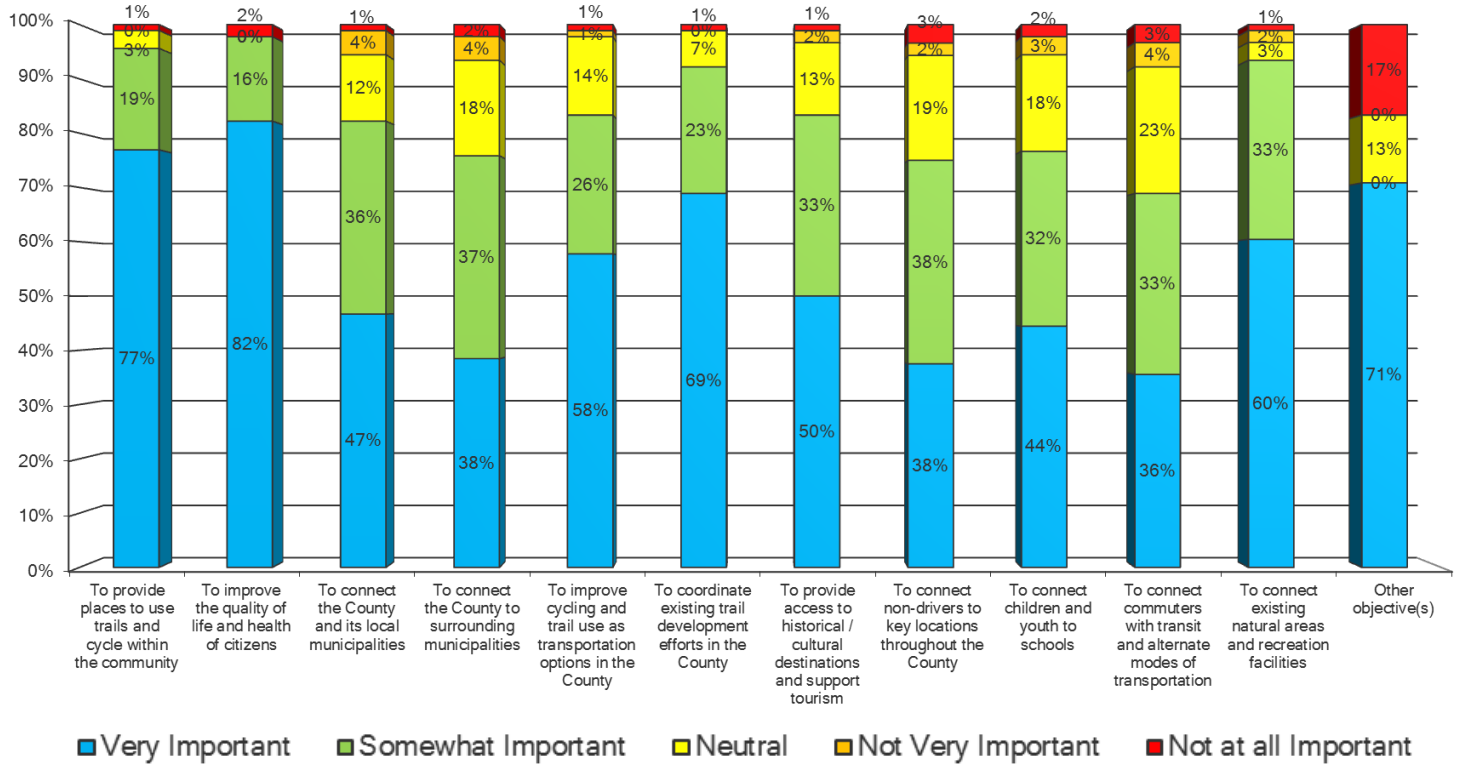


Response Findings: Respondents indicated the greatest degree of comfort using signed routes on low volume roads (62%). This is followed by signed routes in an urban area and bike lanes in an urban area. The least amount of comfort, though not significantly less than others, was expressed for paved shoulders on higher volume rural roads (38%).

Potential Conclusions: Research indicates that people are typically more comfortable using cycling facilities where there are low volumes of traffic and on roads with low speeds. In many cases they also prefer a greater amount of separation from motorized vehicles. The responses provided to this question support some of these findings as the greatest level of comfort was expressed with routes found on low volume rural roads. In order to increase the number of on-road cyclists the County and its partners could consider increasing awareness through education campaigns, promotional materials, signage and mapping. As such, it may be the implementation of new facilities combined with an education campaign that will help respondents feel more comfortable using a range of facility types.

Question 13:

The objectives listed below describe some of the reasons why trails master plans are developed. In your opinion, how important are each of these for Oxford County?

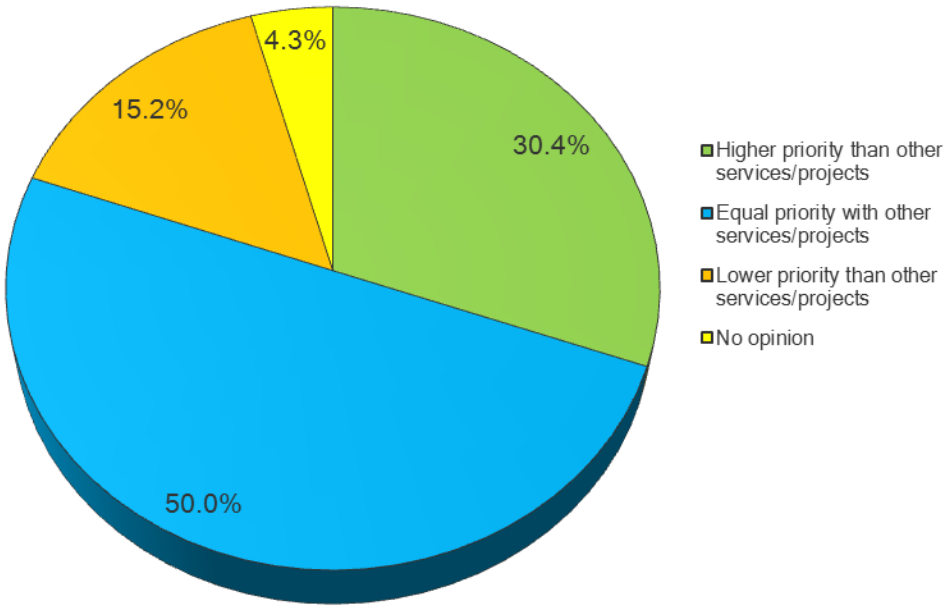


Response Findings: Respondents placed the greatest emphasis (a combination of very important or somewhat important) on developing a trails network which improves the quality of life and health of citizens (98%), provides places to use trails and cycle within the community (96%), to connect existing and natural areas and recreation facilities (93%) and to coordinate existing trail development efforts in the County (92%).

Potential Conclusions: As noted in Question 9, one of the primary reasons for Oxford County residents and visitors to engage in trails and cycling is for fitness and leisure purposes. As such, it is plausible that most people would value the increased quality of life that can result from developing a long term Trails Master Plan. In addition, results from Question 9, show that respondents using trail facilities are doing so to enjoy the natural environment. These findings are consistent with the results in Question 13 as 93% of respondents indicated that the County should develop a Trails Master Plan to connect existing natural areas and recreation facilities. It is interesting to note the emphasis placed on coordinating existing trail development. Respondents are supportive of a more collaborative approach between the County and its partners when designing and developing future trail facilities. Other objectives were also noted including the accommodation of equestrians and ATVs on trails and to increase tourism.

Question 14:

Recognizing that County and local municipal funds are used to cover a broad range of important infrastructure projects (e.g. roadways, public open spaces, community facilities, etc.), please tell us how important the funding of the trail network and cycling and walking supportive facilities is to you and/or your family in comparison to other infrastructure projects.

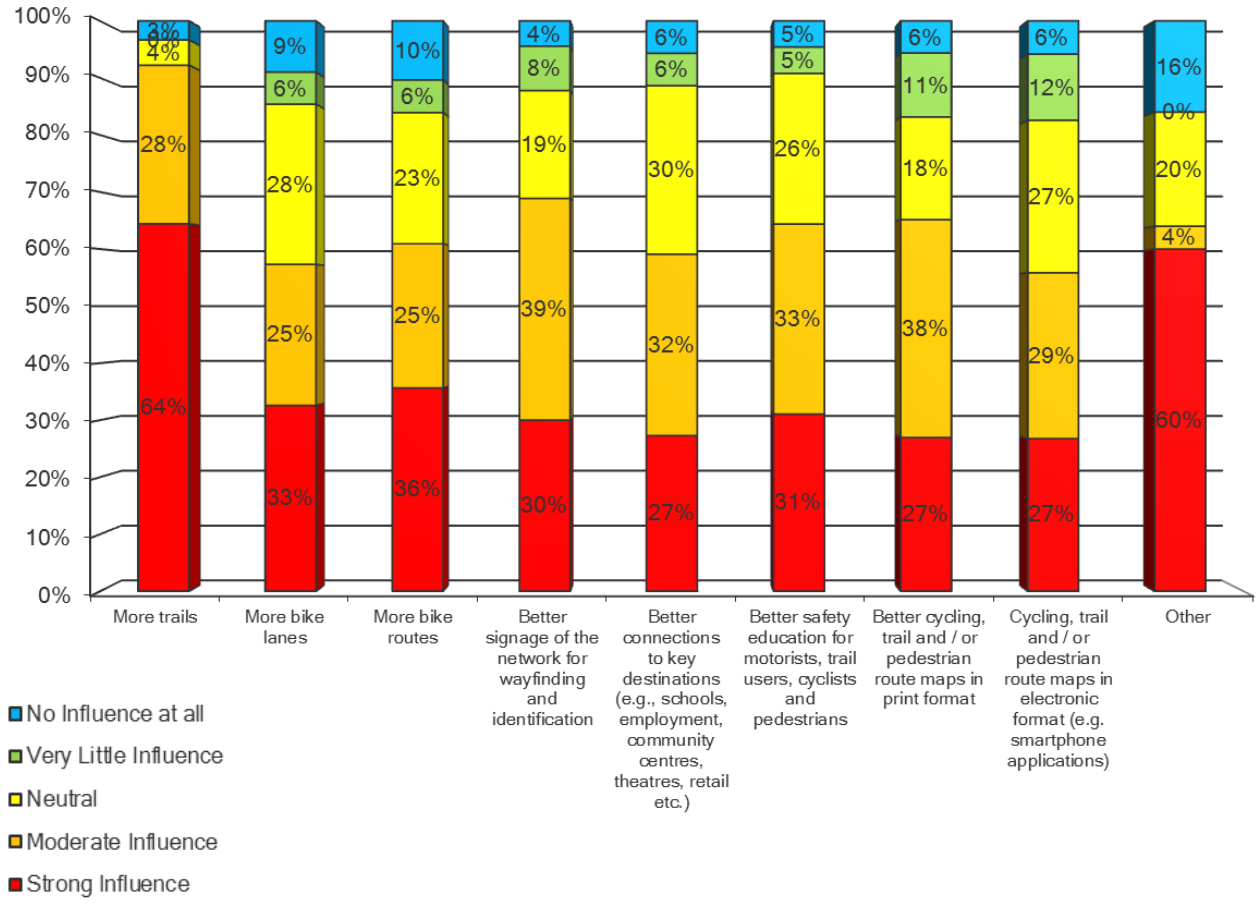


Response Findings: Respondents are generally supportive of County investments made to improving the trail network and cycling and walking facilities. 80.4% of respondents agree that the funding of the trail network and cycling and walking facilities are of equal or higher priority than other services / projects.

Potential Conclusions: These results help to support decisions to dedicate staff time and County resources to the development of trails.

Question 15:

How much influence would the following possible improvements have on how often you use trails or engage in active forms of transportation (e.g. walking, cycling, hiking, etc.)?



Response Findings: The greatest number of respondents indicated that the development of more trail infrastructure (92%) would have a strong or moderate influence on their engagement in active forms of transportation. This was followed by the development and implementation of better signage and wayfinding (69%) and better cycling, trail or route mapping (65%) and safety education (64%).

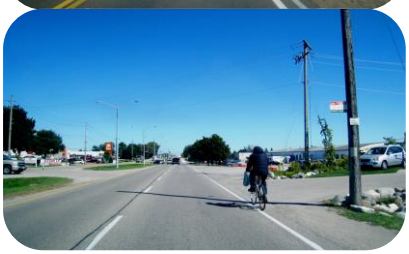
Potential Conclusions: The results indicate that development and implementation of additional walking and cycling facilities, infrastructure and routes would have a strong and / or moderate influence to engage in active forms of transportation. These findings support a number of the conclusions from previous questions which surmised that the reason for some lower responses for active forms of transportation and recreation could be due to the lack of opportunities available. However, a successful trails and cycling network cannot rely solely on the implementation of infrastructure, it must also be complemented by promotion, outreach and education programs. Responses have indicated that this is also a priority for the residents and visitors and should be explored once the master plan has been adopted. There were also "other" comments provided by respondents which identified additional support for the development of education information, trails which accommodate other user groups e.g. equestrians and organized trail and cycling tours to encourage the social element / benefits of active transportation.

Question 16:

What are the top three locations in Oxford County that you would like to cycle or walk to? Respondents identified the following as important locations to cycle or walk to in Oxford County:

- Pittock Park
- Woodstock
- Ingersoll
- Roth Park
- Abandoned rail corridors
- Thamesford
- Innerkip

Top Locations (top to bottom): Abandoned rail corridor in Tillsonburg, Charles St. E. in Ingersoll, Dundas St. in Woodstock

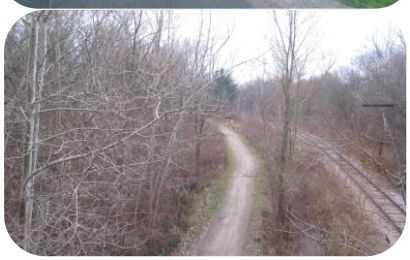


Question 17:

What are the top three locations where improvements need to be made to encourage people in Oxford County to cycle, walk or use trails more often? - Respondents identified the following important locations where improvements are needed:

- Trail connection in Beachville from Ingersoll to Woodstock
- Thames River
- County Roads
- Connections to Trans Canada Trail in Tillsonburg
- Lansdowne Ave.
- Pittock Park
- Innerkip
- Embro Pond Conservation Area

Top locations where improvements are needed (top to bottom): Embro Pond Conservation Area, County Rd. 22, Trans Canada Trail in Tillsonburg.



C.

TRAIL DESIGNER'S TOOLBOX

TABLE OF CONTENTS

C.1 INTRODUCTION

The guidelines prepared for the Oxford County Trails Master Plan should be treated as a reference for the development and construction of the trail network including primarily off-road trail connections as well as some key on-road linkages. Although they are meant to provide guidance for the range of conditions typically encountered in a municipal-wide network, they are not intended to address every condition encountered. As a guidance document this appendix is not meant to be prescriptive nor is it intended that these replace "sound engineering judgement". The intent is to have regard to the individual guidelines when implementing facilities at specific locations to arrive at the most appropriate solution.

In some cases an interim solution may be appropriate where the desired long-term solution cannot be achieved in the short or mid-term, provided that the interim solution meets users' needs and safety considerations.

When using these guidelines it may also be appropriate to consult additional guidelines on a case-by-case basis. Other useful references include but are not limited to:

- The County of Oxford Transportation Master Plan Study– Section 5.0 – Cycling
- Ontario Traffic Manual (OTM) Book 18 (Cycling Facilities)
- OTM Book 15 (Pedestrians)
- Transportation Association of Canada Bikeway Traffic Control Guidelines
- Accessibility for Ontarians with Disabilities Act, 2005, Amending O. Reg. 191/11. Part IV.1 Design of Public Spaces Standards (Accessibility Standards for the Built Environment)

C.2 HOW TO USE THE DESIGN GUIDELINES

C.2.1 THE PURPOSE

The purpose of these guidelines is to assist County and local municipal staff in making informed decisions about off-road trail and on-road cycling facility design.

C.2.2 HOW TO USE THE GUIDELINES

The guidelines provide general information on a range of trail user groups including but not limited to cyclists, pedestrians, cross county skiers, equestrians, etc. Where appropriate, summary tables are provided which highlight recommended design treatments and / or considerations when addressing key features associated with various on and off-road trail and cycling facilities proposed in the Oxford County Trails Master Plan. The information included in these guidelines is thought to represent currently accepted design practices in North America, and incorporates ongoing research and experience by the consulting team and other professionals involved with trail and cycling facility design.

Guidelines:

C-1: Adopt the trail design guidelines presented in Appendix C of the Oxford County Trails Master Plan as the basis for the design of trails County-wide.

C-2: County staff should distribute the trail design guidelines to trail designers and builders e.g. the Oxford Trails Council and conservation authorities to encourage consistent trail design and implementation County-wide.

C-3: County staff should supplement the Master Plan design guidelines with additional resources including but not limited to the Ontario Traffic Manual (OTM) Books 18 and 15 and other best practices as they emerge.

C.3 CONSIDERATIONS WHEN DESIGNING TRAILS

Many elements of trail design need to be considered when a trail is being developed, and the elements vary depending on location. Some of these include:

- New construction versus upgrading existing trails;
- Trail location;
- Context (urban, rural or suburban);
- Level of separation (on vs. off-road);
- Width;
- Surface type;
- User groups;
- Level of use;
- Seasonal versus year round use;
- Gradient;
- Accessibility;
- Degree of difficulty;
- Length;
- Ownership;
- Sustainability and ability to maintain;
- Access points;
- Transition points / linkages;
- Context sensitive conditions;
- Road crossings; and
- Signage.

Trans Canada Trail in Tillsonburg, ON
Source: MMM Group

C.3.1 TYPES OF USERS

Trail users vary in age and level of physical ability. They have their own sense of what the trail experience should be, which in part depends on the use they are interested in or what user group they consider themselves to be a part of. A "one size fits all" design approach does not apply to trails and it is important to try and match the trail type and design with the type of experience that is desired, while at the same time achieving a predictable and recognizable quality and consistency in the design. This will enhance the experience, enjoyment and safety for a range of trail users and add value to the communities the trail network travels through.

It is always important to consider the characteristics and preferences of potential user groups. In Oxford County the user groups that have been considered and are expected to be the primary users of the trail system are pedestrians and cyclists. However, other groups such as cross county skiers, snowshoers and equestrians have also been considered and are expected to be seasonal users of the system.

It is acknowledged that other user groups such as Equestrians, All-Terrain Vehicle (ATV) operators and snowmobilers currently own, operate, maintain and use some of the trails found throughout the County. Motorized trail users have not been considered within the Oxford County Trails Master Plan, though there may be some cases where trails intended for non-motorized users overlap with existing trails intended for motorized recreational users. Although the cases may be infrequent, adequate and proper signage related to safe interactions should be implemented. This is also the case for users that may surround the trail systems including the potential for in-season hunters.

The following is a brief description of the primary user groups, how they typically use the trails and design parameters which should be considered when proceeding with trail design.

Pedestrians

For the Oxford County Trails Master Plan "pedestrians" include walkers, hikers, joggers and runners. **Table C.1** provides additional design considerations for the anticipated pedestrian user groups.

Ninety-five percent of all pedestrian trips are less than 2.5km in length, though it is reasonable to expect that some walkers whose trips are motivated by exercise / health / fitness might make trips that are between 5 and 10km in length.

Table C.1 - Pedestrian User Groups

Walkers	
Definition:	• Walkers represent a wide range of interests and motives such as leisure, relaxation, socializing, exploring, making contact with nature, meditation, fitness, or dog walking. It is also important to consider pedestrians who walk for utilitarian or transportation purposes. This group is typically community-focused and engage in trips focusing on shopping and errands and walking to work and school. • Utilitarian Walkers are typically found within more urban areas and tend to use sidewalks, parking lots and plazas as well as trails where they are convenient, well designed and properly maintained. In many cases, trails provide a convenient "short cut" to traveling the sidewalk network to get to their destination. • Where no sidewalks are provided and there are no shoulders (in urban and/or rural areas), pedestrians should walk on the edge of the roadway facing oncoming traffic consistent with the Ontario Highway Traffic Act. Signs warning motorists of pedestrians ahead are recommended in high use locations.
Hikers	
Definition:	• Hikers are often considered the elite of the recreational walking group and may challenge themselves to cover long distances and be willing to walk on sections of rural roadway shoulder considered less safe or less interesting by the majority of leisure walkers. • This group typically engages in day trips that may range between 5 and 30 km in length, may be more keenly interested in natural features, are often more adept at map reading, are more self-sufficient than leisure walkers, may expect fewer amenities and are often attracted to challenging terrain and rural areas. • Trail planners should assume that there may be hikers even in remote or highway environments despite the fact that the frequency may be very low.
Joggers / Runners	
Definition:	• Although the primary motivation for joggers and runners may be fitness, they may share more in terms of profile characteristics with distance hikers than they do with leisure walkers. • This group typically is accomplishment oriented, enjoy trails at higher speed for distances between 3 and 15 km or more and avoid hard surfaces such as asphalt and concrete and prefer to run on granular, natural (earth) and turf surfaces as they provide more cushioning effect.

Cyclists

Some bicycles, including the "mountain" or "hybrid" can travel easily over stone dust and gravel surfaces, whereas, traditional narrow-tired touring and racing bicycles require very well compacted granular surfaces or hard surface pavements such as asphalt.

Points to consider when designing for cyclists:

- The mechanical efficiency of the bicycle allows users of all ages to travel greater distances at a higher rate of speed than pedestrians.
- Distances covered vary widely from a few kilometres to well over a hundred depending on the fitness level and motivation of the individual cyclist.
- Cyclists have the right to access the public roadway system, with the exception of the 400 series and major provincial highways or where prohibited by law.
- Some cyclists feel unsafe sharing the road with automobiles and do not have the desire or skill level to ride in traffic.
- Some cyclists tend to prefer off-road trails, shared with pedestrians as these facilities offer the less experienced and less confident cyclist a more comfortable environment.
- Cyclists that travel longer are more likely to focus a significant portion of their route on the roadway network, and often seek out quieter, scenic routes over busier roads even if the pavement quality is lower than on busier roads.

The average travel speed for a cyclist on a trail is in the range of 15-20 km/h and 18-30+ km/h on a road, with speeds in excess of 50 km/h. while traveling downhill on roads and some hard surface trails. Where excessive speed is a potential issue on trails, speed limits and warnings should be posted to discourage fast riding and aggressive behaviour.

Cyclists other than young children should be discouraged from cycling on sidewalks because of potential conflicts with pedestrians and potentially dangerous intersections with intersecting public road, private driveways and entrances. Many municipalities have prohibited sidewalk cycling through local by-law, however, many municipalities permit sidewalks cycling for children learning to ride.

When using roads, cyclists generally travel 0.5 – 1.0m from the curb or other obstruction because of the possibility of accumulated debris, uneven longitudinal joints, catch basins, steep cross slopes, or concern over hitting a pedal on the curb or handlebar on vertical obstacles. However, when cyclists use or cross a public roadway they are considered vehicles by law and are expected to follow the same traffic laws as motorized vehicles.

Cycling on Off road Trails
Source:
blog.hembrowcyclingholidays.com

Equestrians

Trail riding on horseback is most desirable in quiet, natural settings, however there are occasions when equestrian users require access to public roads, trails and road rights-of-way.

According to the Ontario Highway Traffic Act, equestrians are permitted on provincial roads, although many municipalities place restrictions on equestrians in urban areas. Safety is a significant consideration when horses must mix with motorized vehicles and other trail users. Trail width should include a minimum shy distance of 0.6m, to allow for uneasy horses to move to one side of the trail, and pull-out sections should be regularly located to allow for passing of other equestrians or other trail users. The trail edge and passing areas should be free of protruding or sharp objects, wires, etc. as these can frighten horses and hinder horse and rider safety. Visual barriers such as vegetation or solid fences are recommended where trails are adjacent to roadways or areas of high activity, such as sports fields where sudden movements may alarm the horse. At road crossings, increased visibility and open sight lines are necessary so that both equestrians and oncoming motorists have a clear view of each other, and equestrians can decide when it is appropriate to cross.

When designing a trail to accommodate equestrians, a gravel surface is typically preferred over an asphalt surface, and a route that is at a minimum 5km in length is advised. Where possible, routes of 20km or greater are encouraged for long-distance riding. At staging areas trailer parking, loading areas and hitching posts should be provided to facilitate loading/unloading and gearing up.

Where bollards are used to limit trail access, it should be noted that mounted riders generally cannot pass through bollards spaced less than 1.5m apart, unless they are under 0.9m in height. Note however that the 1.5m wide opening also allows the passage of many ATV and some snowmobile models. In areas where ATV use is to be restricted, but equestrian use permitted, a "step-over" gate design should be considered.

For the purposes of the Oxford County Trails Master Plan, equestrians will be permitted on some of the County-wide trails to provide connections between major communities and to privately owned equestrian trails. The provision of recreational trails with varied terrain will generally be the responsibility of private equestrian clubs and landowners, working independently or in collaboration with Oxford County, local municipalities and the Oxford County Trails Council.

All-Terrain Vehicles (ATVs)

Rapidly expanding recreational ATV use in Ontario has created an increased demand for trails, primarily in rural and urban edge areas. While many ATV clubs develop and maintain their trail networks on privately owned land through private landowner agreements there are occasions when access to public trails and road rights-of-way is desired, potentially bringing ATV users into conflict with other trail users.

Safety of all trail users is of particular concern, as ATVs can reach high speeds on straight and flat trail sections. Nevertheless, with proper design to reduce ATV travel speeds, clear signage restricting ATV use of predominantly pedestrian and cycling trails, and adequate enforcement of trail regulations, it is possible for non-motorized and motorized trail users to coexist.

ATV use will generally be restricted on the County's on and off-road trail linkages. The provision of other recreational ATV trails will be the responsibility of privately owned and operated ATV organizations which follow the Ontario Federation of Snowmobile Club's management model.

Speed limits should be posted along all trails where ATV use is permitted (the County's existing Gold Trails). Stopping sight distance is the distance required to for the trail user to come to a full controlled stop upon spotting an obstacle. It is a function of the user's perception and reaction time. At 40km/h, an ATV rider has a sight stopping distance of approximately 34m, thus all potential hazards, including trail intersections, should be signed at least 45m in advance. Slower speeds can be encouraged by including curves, grade changes and trail narrowing, although these design features should be accompanied by signage indicating that the ATV rider should reduce speed.

In these shared use trail locations the trail surface should be hard and smooth, with no rocks or roots protruding more than 7.5cm, no depressions larger than 0.6m wide or 15cm deep, and trail clear width should be a minimum of 0.6m beyond the edge of the trail bed. To allow safe passing of other trail users, pull-out sections of at least 8m in length should be added at regular intervals along the trail.

ATV and Snowmobile Use of Trails
Source: gunflint trail.com

An additional characteristic of ATVs to consider when designing shared trails is weight of the vehicle. The combined weight of an ATV and rider can exceed 350kg, which has the potential to result in significant wear on the trail bed and surface. In abandoned rail corridors where the rail bed is in place, the trail bed can be assumed to be capable of supporting the weight of an ATV, however trail surfaces should be sufficiently stabilized to resist deformation and erosion, and they should be inspected and maintained regularly to repair potholes and ruts that may result from ATV use. Similar design guidelines should be applied to snowmobile use in winter, on trails where ATV use is permitted.

Hunting should not be permitted on trails or from trails, although hunters may be using parts of the trail system to access hunting areas at certain times of the year. It should also be noted that hunting may be permitted at certain times of the year in some County forests where trails are also located. Where hunters are using trails to access hunting areas, firearms must not be loaded. Trailhead signage should clearly communicate hunting prohibitions / seasonal permissions and advise trail users that hunters may be present on lands surrounding some trails at certain times of the year. Rules related to hunting must be strictly enforced to ensure safety for all users.

C.3.2 GENERAL DESIGN PARAMETRES

Cyclists require a certain amount of space to maintain stability when operating a bicycle. **Figure C.1** illustrates the typical Cyclist Operating Space. Generally an operating width of 1.2m to 1.5m is sufficient to accommodate forward movement by most cyclists, however there can be considerable difference in the physical dimensions and operating space requirements depending a cyclist's age and skill level. Cyclists do not travel in a straight line and manoeuvring space is needed to allow for side-to-side movements during operation.

The 1.2m to 1.5m operating width is greater than the physical width momentarily occupied by a cyclist in order to accommodate natural side-to-side movement that varies with speed, wind, and cyclist proficiency. The operating height of 2.5 metres can generally accommodate an average adult cyclist standing upright on the pedals of a bicycle.

Careful consideration should be given to the physical, aesthetic and environmental requirements for each multi-use trail type. In many instances physical design criteria related to operating space, design speed, alignment and clear zones are often governed by the needs of the fastest, most common user group on the majority of the trails, that being the cyclist.

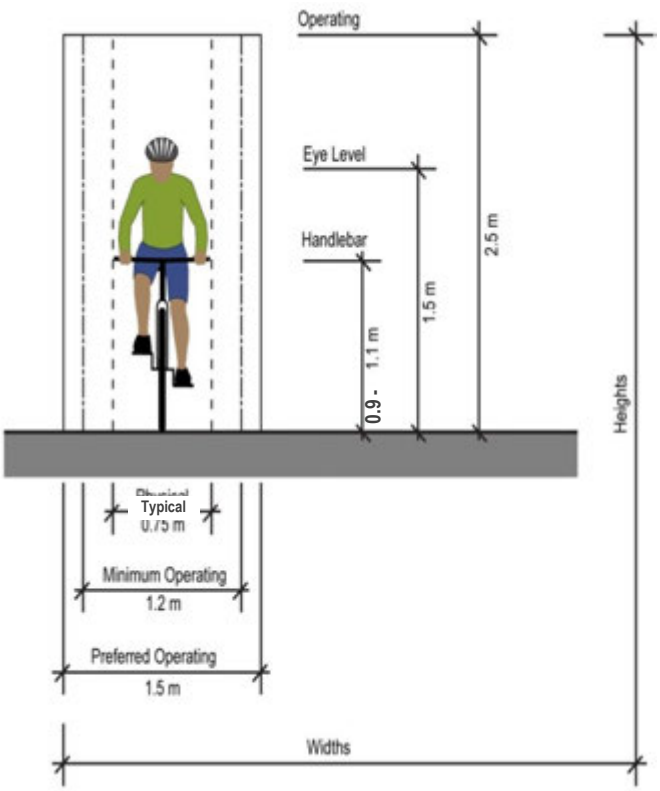


Figure C.1 – Typical Cyclist Operating Space
Source: Based on information from the AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities, 2012

Therefore, many of the physical design criteria outlined in the following sections are recommended for to cycling. This is not to say that all multi-use trails need to be designed to meet the requirements for cyclists; however, when multi-use trails are being designed it is prudent to use design parameters for the cyclist. When considering single or specialty uses where part of the trail experience involves maneuvering through challenging conditions, such as BMX or mountain cycling, the parameters outlined below may not apply. In these instances, designers should consult directly with the user group and/or design manuals that are specific for that use. Trail user operating space is a measurement of the horizontal space that the user requires. In the case of in-line skating and cycling, the space includes room required for side to side body motion used to maintain balance and generate momentum. **Table C.2** outlines minimum and preferred operating space for different uses.

Table C.2 – Minimum and Preferred Operating Space

Operating Condition by Trail User Type	Minimum (metres)	Preferred (metres)
One way travel (one wheelchair user)	1.2	1.5
One way travel (two pedestrians)	1.5	2.0
One way travel (one cyclist)	1.2 (in constrained locations)	1.5+
One way travel (one in-line skater)	2.3	3.0
One way travel (one equestrian)	1.7-2.4	4.3-5.5
Two way travel (two cyclists)	3.0	3.0+
Two way travel (two wheelchair users)	3.0	3.0+

Horizontal clear distance is the space beside the trail bed that should be kept clear of protruding objects. Vertical clear distance is the space above the head of the user while using the trail (i.e. walking or mounted on their bicycle). **Table C.3** provides minimum and preferred horizontal and vertical clear distance.

Table C.3 – Horizontal and Vertical Clear Distance

Clearance Condition	Minimum (metres)	Preferred (metres)
Horizontal clearance to stationary objects	0.3	1.0
Vertical clearance to stationary objects	2.5	3.0

Slope refers to both the measured fall over a given distance along the centerline (referred to as longitudinal slope) and perpendicular to the centerline (referred to as cross slope). Cross slope can be configured so that all runoff is directed to one side of the trail, or so that there is centre crown and runoff is shed to either side of the trail. **Table C.4** provides guidance regarding longitudinal and cross slope.

Table C.4 – Longitudinal and Cross Slope

Longitudinal Grade or Slope	
0% to 3%	• Preferred
5%-10%	• Provide additional trail width where trail segments are greater than 100m in length • Introduce level rest areas every 100 to 150m of horizontal distance • Consider design strategies such as switchbacks when slopes approach 10% • Install signing to alert users of upcoming steep grades • Avoid grades over 5% for off road trails. Where steeper slopes are necessary "trail hardening" should be considered • Note: 10:1 (horizontal distance or run: vertical distance or rise), or 10% is the maximum permissible slope for meeting accessibility standards. Level landings or rest areas are required at regular intervals.
10% to 15%	• Consider the use of structures such as steps, step and ramp combinations, or stairways • Consider locating the trail elsewhere
15% or over	• 15% represents the maximum possible longitudinal slope for a sustainable trail surface. Where slopes approach or exceed 15% significant washouts become an ongoing issue. • Structures such as steps, step and ramp combinations and stairways should be employed. Otherwise, an alternative location for the pathway should be sought.
Cross Slope	
2%	• Minimal, acceptable on hard surfaced trails, may not provide adequate drainage on granular surfaced trails
2 to 4%	• Preferred range for both hard and granular surfaced trails
Greater than 5%	• Avoid wherever possible as excessive cross slopes can be difficult and potentially dangerous for some levels of physical ability and certain user groups as they can result in difficulty maintaining balance, especially among user groups with a high centre of gravity.

Design speed is used to determine trail width, minimum curve radius, horizontal alignment and banking or super elevation to ensure that trail users have adequate space and time to safely approach and navigate sharper curves along the trail. The design speed for recreational cyclists is generally considered adequate for all self-propelled trail users including pedestrians, in-line skaters, skateboarders, scooter users and those using mobility devices such as wheelchairs.

The average recreational cyclist can maintain speeds of up to 18-25 km/h on some multi-use pathways. For granular surfaced off-road multi-use pathways or trails, a design speed in the area of 25 km/h is usually adequate, whereas a design speed of 40 km/h should be considered for hard surfaced multi-use pathways and trails on steeper descents. Cautionary signing should be used to warn of upcoming steep grades and sharp curves.

Cyclists are the critical user group when designing off-road multi-use trails for self-propelled users as they have the highest average travel speed. The minimum radius of a curve on an off-road cycling facility depends on the bicycle speed and super-elevation. The AASHTO Guide for the Development of Bicycle Facilities, published in 2012 recommends that the general design speed should be 29km/h for multi-use trails where cycling is the highest speed user group.

Based on research, 29km/h represents the 85th percentile for bicycle speed on granular surfaced trails. The slightly lower design speed will allow for slightly smaller curve radii and potentially less construction impact as compared to multi-use pathways and trails requiring larger radii. Refer to **Table C.5** for suggested centerline radii for a range of design speeds and super elevation rates.

Table C.5 – Suggested Pathways and Trail Radii Based on Travel Speeds

Design Speed (km / h)	Suggested Radius (m) where super elevation = 0.02 m/m	Suggested Radius (m) where super elevation = 0.05 m / m
25	15	14
30	24	21
35	33	30
40	47	42
45	64	57

When horizontal curves are sharp (i.e. a very small radius), facility widening should be considered to compensate for the tendency of cyclists to track toward the outside of the curve. **Table C.6** provides additional widening requirements for curves on multi-use pathways and trails where the radii are less than the recommended minimum for the design speed selected.

Table C.6 – Additional Trail Widening on the Outside of the Curve

Radius (m)	Additional Widening (m)
0 - 7.5	1.2
7.5 - 15	0.9
15 - 22.5	0.6
22.5 - 30	0.3

Stopping sight distances for off-road multi-use trails are typically governed by the distance required for cyclists since pedestrians and other trail users can typically stop more quickly than cyclists, regardless of the trail configuration.

Guideline(s):

C-4: The County, local municipalities and representatives from the Oxford Trails Council should refer to the minimum and preferred trail user operating space widths identified in **Table C.2** when developing or reviewing multi-use trail design concepts.

C-5: The County, local municipalities and representatives from the Oxford Trails Council should refer to the minimum and preferred horizontal and vertical clear distance identified in **Table C.3** when developing or reviewing multi-use trail design concepts.

C-6: The County, local municipalities and representatives from the Oxford Trails Council should refer to the longitudinal and cross slope guidelines identified in **Table C.4** when developing or reviewing multi-use trail design concepts.

C-7: County, local municipalities and representatives from the Oxford Trails Council should consider the suggested trail curve radii and additional trail widening dimensions identified in **Table C.5** when developing and reviewing multi-use trail design concepts.

C.3.3 TYPES OF USER TRIPS

Trail users can also be defined by their trip purpose and intent. Trip purpose can be divided into the following three (3) categories – utilitarian, recreational and touring. Additional details regarding each of these groups are presented in **Table C.7**.

Table C.7 - Trail User Trip Purpose

Utilitarian	
Definition:	• Those who use cycling or walking as their day to day mode of transportation to get to and from work, school, errands, etc. • Utilitarian trail users often use the on and off-road linkages that make up the trails network year-round in all weather conditions as opposed to those roads which do not make up part of the designated network. In some cases they may choose to use public transit or other modes of transportation during the winter season. • Typically utilitarian users have good mobility skills and are cognisant of the "rules of the road".
Recreational	
Definition:	• These pedestrians and cyclists will typically use the network for fitness or leisure purposes. • Trips are typically used for travel on weekends as opposed to weekdays and will consist of trips to and from destinations of cultural or natural significance including off-road recreational trails. • They will typically use the off-road or secondary connections as part of the overall network.
Touring	
Definition:	• These pedestrians, cyclists and other seasonal trail users use trails as a means of exploring areas of significance long-distances from their point of origin. • Trips can vary from full day excursions to multi-day excursions. They may plan their trips in advance and are willing to spend money for accommodation and food at their destination point. In some cases they travel in groups.

C.3.4 ACCESSIBILITY

Approximately one in eight Canadians suffer from some type of physical disability. Mobility, agility, and pain-related disabilities are by far the most common types, each accounting for approximately 10% of reported disabilities nationally. Disability increases with age: from 3.3% among children, to 9.9% among working-age adults (15 to 64), and 31.2% among seniors 65 to 74 years of age. Disability rates are highest among older seniors (75 and over), with fully 53.3% in this age group reporting a disability.

The Accessibility for Ontarians with Disabilities Act (AODA) states that "The people of Ontario support the right of persons of all ages with disabilities to enjoy equal opportunity and to participate fully in the life of the province." The stated goal of the AODA is "to make Ontario accessible for people with disabilities by 2025."

The Accessibility Standards for the Built Environment is the standard that applies to pathways and trails. The intent is that it will help remove barriers in buildings and outdoor spaces for people with disabilities. The standard will only apply to new construction and extensive renovation. The guidelines and criteria set out in these documents apply to the development of recreational trail and sidewalk facilities, and are not mandatory for the design of on-road cycling facilities.

AODA criteria which are to be considered include: operational experience, width, longitudinal / running slope, cross slope, total slope, surface, changes in level and signage.

When designing and implementing cycling facilities, the County and local municipalities should refer to the guidelines outlined in the Built Environment Standards to ensure that the needs of all user groups are accommodated and to satisfy the requirements of the AODA to the greatest extent possible, given the context of each trail's location, the surrounding environment and type of trail experience that is desired. Sections 80.8 and 80.10 of the Accessibility Standards for the Built Environment provide the technical requirements for recreational trails: These include:

- Minimum clear width 1.0m
- Minimum head room clearance of 2.1m above trail
- Surfaces are to be firm, stable with minimal glare
- Maximum running/longitudinal slope of 10%
- Maximum cross slope of 2%
- High tonal or textural changes to distinguish the edge
- Standards also address changes in level, openings in the surface, edge protection (e.g. near water)
- Signage shall be easily understood and detectable by users of all abilities. It is important to ensure that signage and mapping / messaging clearly communicate which trails are accessible so that users can make an informed personal decision about which pathways they will use.

Universal Trail Design is a concept that takes into consideration the abilities, needs, and interests of the widest range of possible users. In regards to trail and multi-use pathway design, it means planning and developing a range of facilities that can be experienced by a variety of users of all abilities.

Principles of universal trail design can be summarized as follows:

- Equitable use: provide opportunity for trail users to access, share and experience the same sections of trail rather than providing separate facilities;
- Flexibility in use: provide different options for trail users in order to accommodate a variety of experiences and allow choice;
- Simple, intuitive and perceptible information: whether conveying trail information through signage, maps or a web site, communicate using simple, straightforward forms and formats with easy to understand graphics and/or text;
- Tolerance for error: design trails and information systems so as to minimize exposure to hazards, and indicate to users any potential risks or challenges that may be encountered;
- Low physical effort: trails may provide for challenge but should not exceed the abilities of the intended users; where appropriate, rest areas should be provided; and
- Size and space for approach and use: trails and amenities should provide for easy access, comfort and ease in their usage.

Ontario's Best Trails – (2006) provides an in depth discussion of the application of Universal Design principles and their application.

Where possible and practical trails should be designed to be accessible to all levels of ability. It must be recognized, that not all trails and multi-use pathways throughout the system can meet all accessibility requirements. Steep slopes are one of the most significant barriers for those with physical disabilities. Designing trails to be below the threshold (5% longitudinal slope) for universal access will not only overcome this significant barrier but it will help to reduce the potential for erosion of the trail surface. The following are some additional considerations for making existing and new trails accessible:

- Designers should use the most current standards;
- Where the trail requires an accessibility solution that is above and beyond what is normally encountered, a representative of the local accessibility advisory committee should be consulted early on in the process to determine if it is practical and desirable to design the specific trail to be accessible;
- Where it has been determined that accessibility is feasible, the accessibility representative should be consulted during the detailed design process to ensure that the design is appropriate; and
- Work collaboratively with the local accessibility advisory committee to consider developing signage/content to clearly indicate trail accessibility conditions, which allow users with mobility-assisted devices to make an informed decision about using a particular trail.

Guideline(s):

C-8: Every effort should be made to ensure that primary trails meet or exceed minimum accessibility requirements. Secondary multi-use trails will be designed to meet minimum accessibility requirements where feasible and practical.

C-9: Signage and maps should be designed to communicate which pathways and trails meet minimum accessibility requirements so that users can make their own decisions in advance about using the route.

C.3.5 PERSONAL SECURITY

To the extent that it is possible trail routes should be designed to allow users to feel comfortable, safe, and secure. Although personal safety can be an issue for all, women, the elderly, children, are among the most vulnerable groups. Principles of Crime Prevention Through Environmental Design (CPTED) should be considered and applied to help address security issues concerning trail use, particularly in locations where trails are lightly used, isolated or in areas where security problems have occurred in the past. The four main underlying principles of CPTED are presented in **Table C.8**.

Some specific trail design strategies that other jurisdictions have employed include:

- Providing good visibility for other by having routes pass through well-used public spaces.
- Providing the ability to find and obtain help using signage that tells users where they are along the trail system.
- Providing signs near entrances to isolated areas to inform users and suggest alternative routes.
- Providing escape routes from isolated areas at regular intervals.
- Maintaining sight lines and sight distances that are appropriately open to allow good visibility by users.
- Providing trailhead parking in highlight visible areas.
- Minimizing routes close to features that create hiding places such as breaks in building facades, stairwells, dense shrubs and fences.
- Designing underpasses and bridges so that users can see the end of the feature as well as the areas beyond.

Table C.8 – Guiding Principles of CPTED for trail Design

Natural Access Control	
Deters access to a target and creates a perception of risk to the offender.	 Credit: CPTED Ontario www.cptedontario.ca
Natural Surveillance	
The placement of physical features and / or activities and people that maximizes natural visibility or observation.	 Credit: CPTED Ontario www.cptedontario.ca

Table C.8 – Guiding Principles of CPTED for trail Design

Territorial Reinforcement	
Defines clear borders of controlled space from public to semi-private to private, so that users of an area develop a sense of ownership.	 Credit: CPTED Ontario www.cptedontario.ca
Maintenance	
Allows for the continued use of space for its intended purpose.	 Credit: Friends of King Gap www.friendsofkingsgap.org

Guideline(s):

C-10: When implementing the trails network, the underlying principles of CPTED should be considered including natural access control, natural surveillance, territorial reinforcement and maintenance.

C-11: Properly located entrances, exists, fencing, landscaping and lighting should direct both foot and automobile traffic in ways that discourage crime.

C.3.6 URBAN, SUBURBAN AND RURAL AREAS

Typically urban / suburban users live closer to their destinations than rural users. As such they are more likely to make short trips and utilitarian / commuter trips. Urban will generally have a higher order and density of infrastructure than rural systems due to the higher density of users.

The application of bike lanes, paved shoulders, signed routes, multi-use trails in the road right-of-way should be considered for those routes found in the County's and local municipal urban and suburban areas. Routes in rural areas may include paved shoulders, fewer designated routes, some linear off-road trails (e.g. trails within abandoned railway or utility corridors), and destination trails at conservation areas.

C.4 TRAIL DESIGN ALTERNATIVES

The trail network for Oxford County is divided into three main categories: on-road facilities, multi-use trails within active road ROW and multi-use trails outside of active road ROWs. **Table C.9** provides a general description of each

Table C.9 – General Design Categories

Multi use Trail within an Active Road Right of way
Multi-use trails within active road rights-of-way (also referred to as a boulevard multi-use trail or Active Transportation Pathway) is a type of on-road facility that is within the roadway right-of-way but is physically separated from motor vehicle traffic where possible by a buffer.

Table C.9 – General Design Categories

Multi use Trail outside of an Active Road Right of Way
These include trails of varying width, alignment and surface type that are located through conservation areas, public open spaces, valleys and parklands, as well as linear corridors such as abandoned railway lines, unopened road allowances and utility corridors.

On Road Linkages
"On-road facility" refers to facilities within the roadway right-of-way that are located on or along an existing road and may be incorporated into the existing or future street network.

C.4.1 OFF-ROAD ROUTES

There are a range of off-road trail types which could be considered for implementation as part of the Oxford County Trails Network. The selection of the preferred design concept should be confirmed by County and local municipal staff based on a detailed assessment of existing characteristics and natural surroundings.

The design concepts and guidelines prepared for Oxford County are intended to be used by County staff as well as those responsible for the design and implementation of trail facilities throughout the County including but not limited to the applicable conservation authorities, representatives from the Oxford County Trails Council, local municipalities as well as private land owners. The following trail design concepts should be considered as the County moves forward with the implementation of the master plan as well as the design and development of trail facilities.

Each of the design concepts includes a description of its definition, the user groups that are accommodated on the trail, the types of materials which could be used to design the trails as well as some other design consideration.

Figures C.2 – C.24 illustrate the different trail design concepts that are proposed for consideration by Oxford County. Additional descriptions / details regarding some of the design concepts are provided later in the appendix.

C.4.2 ON-ROAD LINKAGES

One of the primary objectives of the County's Trails Master Plan is to develop a trail system that is off-road wherever possible. However, in some cases this will not be possible and on-road connections will need to be implemented. Typically, this is the case in the rural areas of the County where long distance connections will need to be made to link key off-road trail systems.

This may also be the case in urban and suburban areas in older residential neighbourhoods where public space is confined to road rights-of-way and centralized park lands.

Where public land (other than the road right-of-way) is not available and access agreement for trails on private lands are not feasible, it is necessary to provide connecting links using the road network. Where this is the case, pedestrians are expected to use the sidewalk network in urban areas and road shoulders in rural areas. Cyclists are expected to use on-road facilities of multi-use / active transportation pathways in place of a sidewalk.

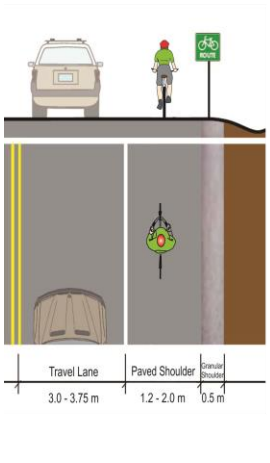
As mentioned above, for those on-road linkages found within the County's trails network, County and local municipal staff are encouraged to use the County's Transportation Master Plan – Cycling Component, OTM Book 18 and 15 as well as the TAC Bikeway Traffic Control Guidelines (2012) to evaluate and confirm the most appropriate cycling facility type.

OTM Book 18 sets out a facility selection process that can assist staff and those responsible for the design and implementation of on-road trail facilities. The facility selection process provides a consistent framework that is easy to apply, technically based (was developed based on current research and knowledge of facility type selection), and allows flexibility to account for the differences in physical and operational characteristics from one site to another.

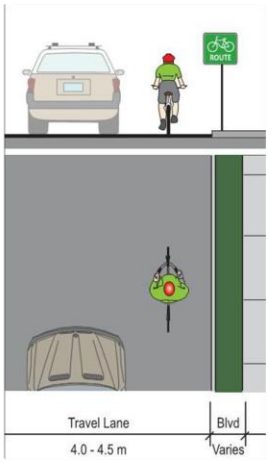
The selection tool does not tell designers when and when not to provide a certain facility type but rather sets out a process for selecting an appropriate facility type given the context and readily available data.

In Oxford County, a number of options exist for on-road cycling routes including but not limited to signed bicycle routes, edgelines, bike lanes and paved shoulders. In addition to the commonly encountered situations where standard design guidelines and treatments can be applied, there are other situations where the proper design requires a more context sensitive solution where more innovative techniques need to be employed by a design specialist who is well versed in emerging trends and best practices.

The graphics included on page C-25 illustrate some of the proposed on-road cycling facility types which are proposed for the County to consider and are consistent with the OTM Book 18 guidelines and standards.

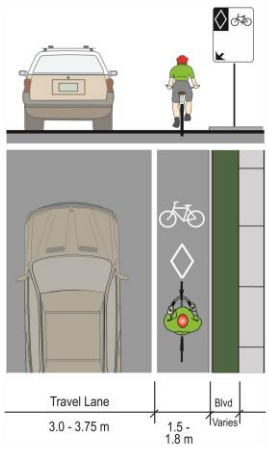


Signed Bike Route with Paved Shoulder

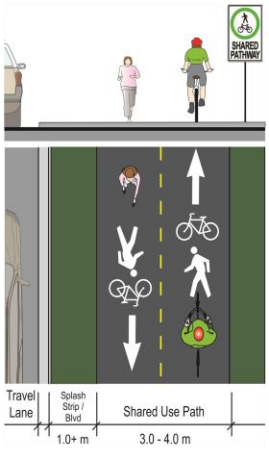


Signed Bike Route on Local Roadway

Signed Bike Route with Sharrow



Bike Lane



Multi-use Trail within the Road Right-of-Way

C.4.3 ROUTES CROSSING 400 SERIES HIGHWAYS AT INTERCHANGES

The integration of pedestrians and cyclists at interchanges is often more complex than that for straight roadway segments. Interchanges possess unique characteristics and functions that present challenges when designing for the integration of cyclists especially when retrofitting bicycle facilities on existing interchange structures.

Trails as well as individual pedestrian and cycling facilities can either be implemented for an existing interchange during an upgrade or retrofitting project or as part of a new interchange design. Within Oxford County Highway 401 and 403 are considered key barriers to trail network connectivity. In order to ensure that the on and off-road system of trails and cycling facilities provides linkages to local municipalities and key community destinations, a number of interchanges have been selected which are proposed as on-road trail links.

It is important to note that should the County and / or local municipalities choose to retrofit any of their existing interchanges the following guidelines should be considered:

- For lower speed merging/diverging ramps (< 70 km/h.), the bicycle lane should continue straight across the ramp using a white, dashed line pavement marking.
- For high speed merging/diverging ramps (> 70 km/h.), the bicycle lane should not be carried straight across the ramp. Instead, it is recommended that for diverging ramps, designers either place a crossing further up the ramp with indicating signage or implement a "jughandle" crossing.

For more details on the design of these facilities, the County and local municipalities should refer to the interchange and ramp crossing design treatments outlined in the OTM Book 18 and TAC's Bikeway Traffic Control Guidelines (2012).

C.4.4 SURFACE TYPES & ALTERNATIVES

There are a number of options for trail surfaces, each with advantages and disadvantages related to cost, availability, ease of installation, lifespan and compatibility with various trail users groups. **Table C.10** is a summary of the most commonly used trail surfacing materials along with some advantages and disadvantages for each. There is no one surface material that is appropriate in all locations, and material selection during the design stage must be considered in the context of the anticipated users and location.

Table C.10 – Comparison of Trail Surfacing Materials

Type	Advantage	Disadvantage
Concrete	• Smooth surface, can be designed with a variety of textures and colours, providing flexibility for different urban design treatments. • Long lasting, easy to maintain.	• High cost to install. • Requires expansion joints which can create discomfort for users with mobility aids. • Must be installed by skilled trades people. • Is not flexible; Cracking can lead to heaving and shifting, sometimes creating large step joints.
Unit Pavers	• Smooth surface, available in a variety of patterns and colours to meet urban design needs • Long lasting, can be easily repaired by lifting and relaying.	• High cost to install. • Users with mobility aids may find textured surface difficult to negotiate. • Must be installed by skilled trades people.

Table C.10 – Comparison of Trail Surfacing Materials

Type	Advantage	Disadvantage
Asphalt	• Smooth surface, moulds well to surrounding grades, and is easily negotiated by a wide range of trail user groups. Relatively easy to install by skilled trades. • Patterned and coloured surface treatments are available, however patterning in surface may be difficult for some user groups to negotiate, and may not satisfy AODA requirements. • Retains heat and dries more quickly in comparison to other materials, allowing for easier use during the winter months.	• Moderate-high cost to install. • Must be installed by skilled trades people. Has a lifespan of 15-20 years depending on the quality of the initial installation. Poor base preparation can lead to significant reduction in lifespan. • Cracking and "alligatoring" occurs near the edges, grass and weeds can invade cracks and speed up deterioration. • Must be appropriately disposed of after removal.
Granulars (for bases only)	• Pit Run: Mixed granular material "straight from the pit" containing a range of particle sizes from sand to cobbles. Excellent for creating a strong sub base, relatively inexpensive (for bases only)	• Not appropriate for trail surfacing
	• 'B' Gravel: Similar characteristics to Pit Run with regulated particle size (more coarse than 'A' Gravel). Excellent for creating strong, stable and well drained sub bases and bases. Relatively inexpensive. (for bases only)	• Not appropriate for trail surfacing
	• 'A' Gravel: Similar characteristics to 'B' Gravel, with smaller maximum particle size. Excellent for trail bases, may be appropriate for trail surfacing of rail trails in rural areas and woodlands. Easy to spread and regrade where surface deformities develop. (for bases only)	• Subject to erosion on slopes. • Some users have difficulty negotiating surface due to range in particle size and uneven sorting of particles that can take place over time with surface drainage.
Granulars	• Clear stone: Crushed and washed granular, particles of uniform size, no sand or fine particles included. Excellent bedding for trail drainage structures and retaining wall backfilling, if properly leveled and compacted, makes an excellent base for asphalt trails. (for bases only)	• Not appropriate for trail surfacing

Table C.10 – Comparison of Trail Surfacing Materials

Type	Advantage	Disadvantage
	• Stone dust (Screenings): Mixture of fine particles and small diameter crushed stone. Levels and compacts very well and creates a smooth surface that most trail users can negotiate easily. Easy to spread and regrade where surface deformities develop. Inexpensive and easy to work with. Widely used and accepted as the surface of choice for most granular surfaced trails. • Crushed 3/8" Limestone material. This surfacing material has been used successfully by some municipalities where finer stone dust has washed out.	• Subject to erosion on slopes • Wheelchair users have reported that stone shards picked up by wheels can be hard on hands. • May not be suitable as a base for hard surfaced trails in some locations.
Mulches and Wood Chips	• Bark or wood chips, particle size ranges from fine to coarse depending on product selected, soft under foot, very natural appearance that is aesthetically appropriate for woodland and natural area settings. • Some user groups have difficulty negotiating the softer surface, therefore this surface can be used to discourage some uses such as cycling. Generally does not meet AODA requirements • May be available at a very low cost depending on source, and easy to work with.	• Breaks down over time, therefore requires "topping up". • Source of material must be carefully researched to avoid unintentional importation of invasive species (plants and insects).
Earth / Natural Surface	• Using existing soil from the trail corridor. Only cost is labour to clear and grub out vegetation and regard to create appropriate surface. Appropriate for trails in natural areas provided that desired grades can be achieved and that soil is stable (do not use organic soils). • May not meet AODA requirements.	• Subject to erosion on slopes. • Different characteristics in different locations along the trail can lead to soft spots. • Some user groups will have difficulty negotiating surface.

Table C.10 – Comparison of Trail Surfacing Materials

Type	Advantage	Disadvantage
Soil Cement and Soil Binding Agents	• Soil Cement = mixture of Portland Cement and native/parent trail material. When mixed and sets it creates a stable surface that can be useful for "trail hardening" on slopes, particularly in natural settings. • Soil Binding Agents = mix of granulars and polymers that create a solid, yet flexible surface that may be appropriate for "trail hardening" on slopes in natural areas. • May not meet AODA requirements • Limits volume and weight of materials to be hauled into remote locations.	• Useful for specific locations only. • Soil binding agents tend to be expensive and have been met with mixed success.
Wood	• Attractive, natural, renewable material that creates a solid and level travel surface. Choose rough sawn materials for deck surfacing for added traction.	• Requires skill to install, particularly with the substructure. • Wood gradually decomposes over time, this can be accelerated in damp and shady locations, and where wood is in contact with soil. • Expensive to install.

C.4.5 TRAIL LIGHTING

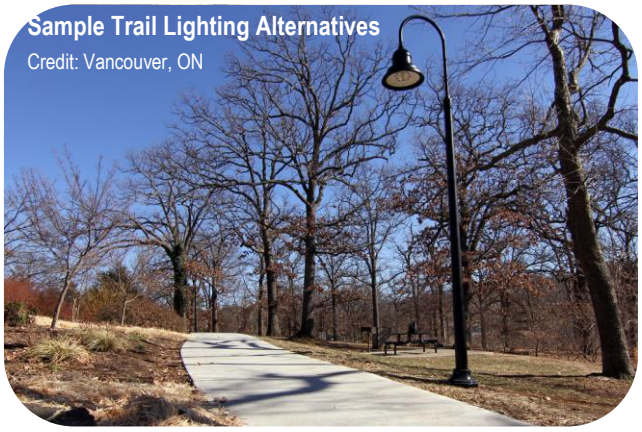
Lighting multi-use pathways must be carefully considered. Very few municipalities make the decision to light their entire trail system for a number of important reasons, including:

- The cost of initial installation can be prohibitive. General budget figures range from $130,000 to $160,000 per kilometre including cabling, transformers, power supply and fixtures;
- Staff time and material cost to properly monitor, maintain lamp fixtures and replace broken and burned out bulbs on an ongoing basis;
- A tendency for vandals to target light bulbs, however, light fixtures can be designed to protect bulbs;
- Energy consumption, however, options for energy-efficiency lighting are available;
- Excessive light pollution, especially in residential rear yards and adjacent to natural areas (though this can be controlled with proper shielding);
- Potential detrimental effects on flora and fauna, especially with light pollution in natural areas such as woodlands and tributary buffers;
- Lighting can promote use which may create greater security if users increase their presence; and
- Inability of the human eye to adapt to the high contrast resulting from brightly lit and dark shadowed areas adjacent to one another.

Although generally not recommended there may be some locations along multi-use pathways where lighting may be appropriate. The decision of whether or not to light segments of the multi-use pathway network should be made on a location-specific basis. Some criteria for pathway lighting include:

- Main connections to important attractions such major parks;
- Heavily used commuter routes (anecdotal information on volume of use supported by user counts);
- Key school routes; and
- Numerous requests for lighting, supported by similar results through public consultation.

Where it has been determined that lighting is appropriate, the quality and intensity of lighting should be consistent with prevailing standards that fit the setting being considered.



Sample Trail Lighting Alternatives
Credit: Vancouver, ON

C.5 ADDITIONAL DESIGN CONSIDERATIONS

The provision of additional design considerations and features is a key and sometimes overlooked element of the design of the trail network. Developing and maintaining a comprehensive network of on-road and off-road trail facilities do not automatically mean people will use the network. The network has to be promoted, users' needs to feel comfortable and safety using it and they should have access to adequate on and off-road trail facilities at strategic locations. This section outlines many of the amenities that should be considered during the design and implementation of the trail network.

C.5.1 TRAIL CROSSINGS

C.5.1.1 Minor Roads

In the case of lower volume, and / or lower speed roads the crossing should include the following:

- Creation and maintenance of an open sight triangle at each crossing point;
- Access barriers to prevent unauthorized motorized users from accessing the pathway;
- Advisory signing along the roadway in advance of the crossing point to alert motorists to the upcoming crossing;
- Signing along the pathway to alert users of the upcoming roadway crossing;
- Alignment of the crossing point to achieve as close to possible a perpendicular crossing of the roadway, to minimize the time that users are in the traveled portion of the roadway;
- Concrete ramp in boulevard between the sidewalk and roadway; and
- Curb ramps on both sides of the road.

Pavement markings, to delineate a crossing, should not be considered at "uncontrolled" trail intersections with roads as trail users are required to wait for a gap in traffic before crossing at these locations. Pavement markings designed to look like a pedestrian cross over may give pedestrian and trail users the false sense that they have the right-of-way over motor vehicles, which is contrary to the Highway Traffic Act of Ontario for uncontrolled intersections.

In some locations signing on the trail may not be enough to get trail users to stop before crossing the road. Under these circumstances or in situations where the sight lines for motorists are reduced and/or where there is a tendency for motorists to travel faster than desirable, the addition of other elements into the trail crossing may be necessary. Changing the trail alignment may help to get trail users to slow and stop prior to crossing. Changes to the streetscape may also provide a cue and traffic calming effect for vehicles.

Guideline(s):

C-12 Trail crossing of local minor roads at mid-block locations include advance advisory pedestrian crossing signs on the roadways approaches and a yield or stop sign on the trail approaches.

C.5.1.2 Crossing with Median Refuge Island

Refuge islands are medians that are placed in the centre of the roadway separating opposing lanes of traffic. They allow trail users to cross one direction of traffic at a time, resting on the refuge island in the centre. They are particularly suited for roadways with multiple lanes since the cognitive requirements to select a gap in traffic traveling in two directions in multiple lanes is considerably higher than that required for cross two lanes of traffic. A number of jurisdictions have implemented Pedestrian Refuge Islands. Guidelines for the typical design elements for a pedestrian refuge island are as follows:

- Islands are typically a minimum of 6 m in length
- Islands should be a width of at least 1.8 m wide, but 2.4 m is preferred to accommodate wheelchairs in a level landing 1.2 m wide plus 0.6 m wide detectable warning devices on each side. The 2.4 m width will also accommodate bicycles in the refuge;
- Curb ramps are provided to allow access to the roadway and island for wheelchair users, and detectable warning devices (0.6 m in width) should be placed at the bottom of the curb ramps;
- The pathway on the island is constructed of concrete, not asphalt. Users with low vision or complete visual impairment can better detect the change in texture and contrast in colour supplemented by the detectable warning devices to locate the refuge island;
- Appropriate tapers are required to diverge traffic around the island based on the design speed of the roadway
- The pathway on the island can be angled so that pedestrians are able to view on-coming traffic as they approach the crossing;
- Illumination should be provided on both sides of the crossing;
- Signage associated with the pedestrian refuge island includes "Keep Right" and "Object Marker" warning signs installed on the island facing traffic, and "Pedestrian Crossing Ahead" warning signs installed on the roadway approaching the crossing. "Wait for Gap" warning signs can be installed on the far side of the crossing and on the refuge island if pedestrians are failing to cross in a safe manner;
- Crosswalk markings are not provided unless the crossing is at an intersection controlled by signals, stop or yield signs, or controlled by a school crossing guard; and
- Railings on the island to control pedestrian access are not recommended because they are a hazard in potential collisions (spearing of driver or pedestrian). Some pedestrians will walk in front of or behind the island to avoid the railings, a less safe refuge location than on the island.

There are a number of design alternatives which could be used to ensure the safe crossing of roadways by pedestrians and cyclists when on trails. One of the design alternatives that has recently emerged is a Cross-Ride. A cross-ride can be used by pedestrians and cyclists when crossing a roadway and provides a designated space for both users and helps to prevent possible conflict areas at crossings. Recently implemented in communities such as the City of Mississauga the Burlington, this innovative design features is now endorsed and promoted by OTM Book 18. In addition, there may be some instances where proposed trail crossings are identified in urban areas within the County of Oxford. In these instances, the County or its local municipality is encouraged to explore the design and implementation of an urban trail crossing.

C.5.1.3 Midblock Pedestrian Signals

The midblock pedestrian signal is a device to assist pedestrians crossing major streets and is a more positive and effective pedestrian crossing device than a pedestrian crossover (PXO). A midblock pedestrian signal includes:

- Standard traffic signal indications to control traffic on the major street; and
- Standard pedestrian "Walk" and "Don't Walk" signals, activated by push buttons, for pedestrians wishing to cross the major street at the designated crossing point.

Midblock pedestrian signals may be considered when:

- A multi-use path or trail crosses a high volume and / or multi-lane road;
- A grade separation is not practical; and
- Crossing nearby.

The graphic above illustrates an application of a midblock pedestrian signal.

Guideline(s):

C-13: At-grade mid-block multi-use pathways crossings of collector and arterial roadways should be controlled by a pedestrian signal or pedestrian cross over where possible.

Mid block Pedestrian Signal Without Median
Credit: MMM Group, 2012

C.5.1.4 Active Railways

Currently, in order to establish a pathway crossing of an active rail line, proponents must submit their request directly to the railway company. Submissions need to identify the crossing location and its basic design. Designs should be consistent with Draft RTD-10, Road/Railway Grade Crossings: Technical Standards and Inspection, Testing and Maintenance Requirements (2002) available from Transport Canada. In the event that an agreement cannot be reached on some aspect of the crossing, then an application may be submitted to the Canadian Transportation Agency, who may mediate a resolution between the parties.

The graphic below illustrates an at-grade crossing of an active railway in Newmarket, ON and some design concepts and considerations which could be explored for a similar location.

At Grade Trail Crossing of a low frequency Railway
Location: Newmarket, ON
Credit: MMM Group, 2012

C.5.1.5 Abandoned Rail Lines

In rural areas where abandoned rail corridors are being considered for multi-use trails, owners of farming operations who have property on both sides of the corridor and/or are using a portion of the corridor to gain access to their fields are sometimes apprehensive when plans are made for trails as they see this important access being restricted or discontinued.

Where site specific concerns are identified it is important for trail designers and managers work with the adjacent landowner(s) to develop a mutually beneficial solution.

Successful solutions have been developed elsewhere in Ontario and have included:

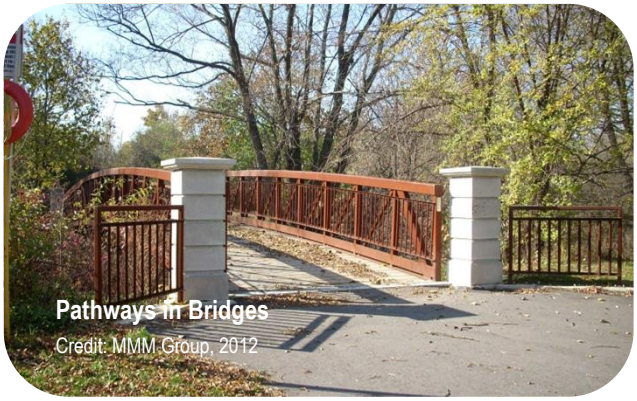
- Post and wire fencing along both sides of the corridor in the section of concern;
- Lockable wire or metal gates in locations that serve the landowner's needs, with a local that remains in the possession of the landowner;
- Access ramp(s) to reach the trail bed, which may already be in place and require only minor improvements such as grading, culverts or drainage;
- Trail widening where the machinery must cross and / or along the length of the segment that the owner may be required to travel on the trailbed (in the case of a diagonal or offset crossing);
- Cautionary signs to warn trail users in advance of the crossing point or zone that the machinery needs to use the trailbed; and
- Signs at trailheads to forewarn trail users that they may expect to encounter farm machinery crossing or using the trail, and that this may be more frequent during certain times of the year.

C.5.1.6 Bridges

Where possible, the trail network should make use of existing bridges, including pedestrian bridges, vehicular bridges and abandoned railway bridges in appropriate locations. In cases where this is not possible a new structure will be needed and the type and design of a structure needs to be assessed on an individual basis. The following are some general considerations:

- In most situations the prefabricated steel truss bridge is a practical, cost effective solution;
- In locations where crossing distances are short, a wooden structure constructed on site may be suitable;
- Railings should be considered if the height of the bridge deck exceeds 60cm above the surrounding grade, and should be designed with a "rub rail" to prevent bicycle pedals and handlebars from becoming entangled in the pickets;
- When considering barrier free access to bridges, an appropriate hardened surface should be employed on the trail approaches and bridge decking should be spaced sufficiently close to allow easy passage by a person using a mobility-assisted device;
- Decking running perpendicular to the path of travel is preferred over decking running parallel, as the latter is more difficult for use by wheelchairs, strollers, in-line skates and narrow tired bicycles;
- Maintenance considerations; and
- Accessibility.

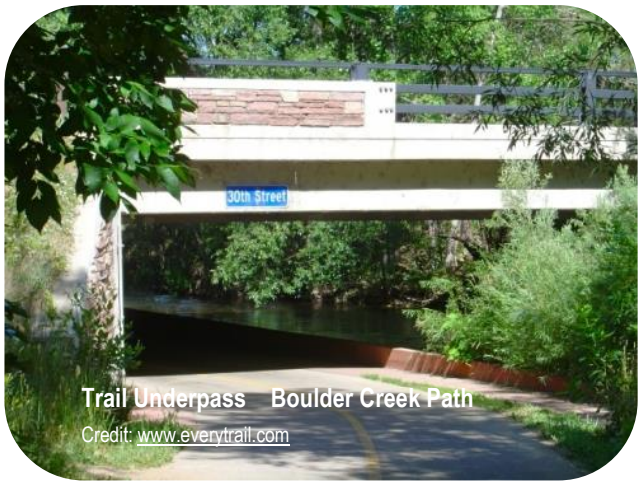
The graphic below illustrates a pedestrian bridge in Brampton, ON.



C.5.1.7 Underpasses and Tunnels

Often an underpass or tunnel is the only way to cross significant barriers such as elevated railways and multi-lane highways. Designing trails through underpasses and tunnels can be challenging because of the confined space. Underpasses should be wide enough to accommodate all trail users whether they are traveling by foot, bicycle, in-line skates, wheelchair or other forms of active transportation.

Where feasible, it is suggested that trail widths through underpasses be equal to or greater than that of the approaching trail. The guidelines provided below outline key considerations for the development of an underpass crossing. The following graphics illustrate some sample trail underpasses.



Trail Underpass Boulder Creek Path
Credit: www.everytrail.com

Guideline(s):

C-14:

- The minimum recommended underpass or tunnel width for a multi-use pathway is 3.5m. Where the structure exceeds 20m in length, in high traffic and/or urban areas the width should be increased to 4.2m or greater where possible;
- For shorter length underpasses, a vertical clearance of 2.5m is usually sufficient;
- For longer structures a vertical clearance of 3.0m should be considered.
- If service and/or emergency vehicles are to be accommodated within the underpass, an increase in vertical clearance may also need to be provided;
- Underpasses and tunnels can be a security concern and also present maintenance challenges. To address these issues, tunnels should be well lit with special consideration made to security, maintenance and drainage. Approaches and exits should be clear and open to provide unrestricted views into and beyond the end of the structure wherever possible;
- Abutments should be appropriately painted/marked with reflective hazard markings; and
- Ideally, the transition between the multi-use pathway and underpass crossing should be level and provide for accessibility. In the case where an underpass crosses beneath ground-level travel/road ways, ramps should be provided to allow a transition down to the lower grade under the passage, with grade or alignment changes being taken up by the access ramps wherever possible.

C.5.2 TRAIL STRUCTURES

C.5.2.1 Gate and Barrier System

Access barriers are intended to allow free flowing passage by permitted user groups, and prohibit access by others. Barriers typically require some mechanism to allow access by service and emergency vehicles. Depending on site conditions, it may also be necessary to provide additional treatments between the ends of the access barrier and limit of the multi-use pathway right of way to prevent bypassing of the barrier altogether. Each access point should be evaluated to determine if additional treatments are necessary.

Additional treatments can consist of plantings, boulders, fencing or extension of the barrier treatment depending on the location. There are many designs for trail access barriers in use by different trail organizations, some are more successful than others. In general, it should be assumed that the design of the gates and bollards should be done to encourage cyclists to dismount. They can generally be grouped into three categories – Bollards, Offset Swing Gates and Single Swing Gates.

Bollards

The bollard is the simplest and least costly barrier, and can range from permanent, direct buried wood or metal posts, to more intricately designed cast metal units that are removable by maintenance staff. An odd number of bollards (usually one or three) are placed in the multi-use pathway bed to create an even number of "lanes" for users to follow as they pass through the barrier. Although the removable bollard system provides flexibility to allow service vehicle access, they can be difficult to maintain as the metal sleeves placed below grade can be damaged by equipment and can become jammed with gravel and debris from the trail bed.

Swing Gates

The single swing gate combines the ease of opening for service vehicle access, with the ease of passage of the bollard. Gates also provide a surface/support for mounting signage. The swing gate should provide a permanent opening to allow permitted users to flow freely through the barrier. The width of the permanent opening must be carefully considered so that it will allow free passage by wheelchairs, wide jogging and double strollers and bicycle trailers and electric scooters, yet not allow passage by unauthorized vehicles such as snowmobiles and all-terrain vehicles.

The offset gate is similar to the single swing gate, except that barriers are paired and offset from one another. Although they can be effective in limiting access by unauthorized users and can be easily opened by operations staff, some groups including cyclists, especially cyclists pulling trailers and wheelchair users, can have difficulty negotiating the offset swing gate if the spacing between the gates is not adequate.

In urban areas the single swing gate or bollard is quite effective for most applications. For large parks, park service access/pathway routes, more rural settings and locations where unauthorized access is an ongoing problem, a more robust single swing gate should be employed.

C.5.2.2 Boardwalks

Where multi-use pathways and trails pass through sensitive environments such as marshes, swamps, or woodlands with a large number of exposed roots, an elevated trailbed or boardwalk is usually required to minimize impacts on the natural feature.

If these areas are left untreated, trail users tend to walk around obstacles such as wet spots, gradually creating a wider, often braided trail through the surrounding vegetation.

The turnpike and low profile boardwalk are two relatively simple yet effective methods for some trails. The turnpike is a low tech, low cost method that works very well in areas where organic soils are encountered. Various geosynthetic products have also been successfully used to overcome difficult soil conditions.

Low profile boardwalks have been successfully employed by trail managers across Ontario. In some cases, the simple construction method provides a great opportunity for construction by supervised volunteers where precast "deck blocks" have been used for the foundation of the boardwalk. Where the trail is in a high profile location, where it is necessary to provide an accessible trail, or where the trail surface must be greater than 60cm above the surrounding grade, a more sophisticated design and installation is necessary. This is likely to include engineered footings or abutments, structural elements and railings.

A professional who is trained in structural design and approval requirements should be retained for these types of applications.

Boardwalk Examples: Boardwalk Foundation on Helical Piles (Halton Hills) (bottom)
Credit: MMM Group

C.5.2.3 Switchbacks and Stairs

Pedestrian and some self-propelled users are capable of ascending grades of 30% or more whereas some users are limited to grades of less than 10%. For example, a slope of 5% is the threshold for an accessible facility.

Once trail slopes exceed this threshold and slopes are long (i.e. more than 30m) it is important to consider alternative methods of ascending slopes. Two alternatives to consider are switchbacks and stairs.

Where construction is feasible, switchbacks are generally preferred because they allow wheeled users such as cyclists to maintain their momentum, and there is less temptation to create shortcuts, as might be the case where stairways are used. Switchbacks are constructed with turns of about 180 degrees and are used to decrease the grade of the multi-use pathway. A properly constructed switchback also provides outlets for runoff at regular intervals, thus reducing the potential for erosion.

Switchbacks typically require extensive grading and are more suited to open locations where construction activity will not cause major disruption to the surrounding environment. Switchbacks can be difficult to implement in wooded areas without significant impacts to surrounding trees.

The graphics illustrate a sample switch-back design concept and design concept for stairs which could be implemented on a steep trail.

- Use slip resistant surfacing materials, especially in shady locations.
- Incorporate barriers on either side of the upper and lower landing to prevent trail users from bypassing the stairs; and
- Provide signs well in advance of the structure to inform users that may not be able to climb stairs.

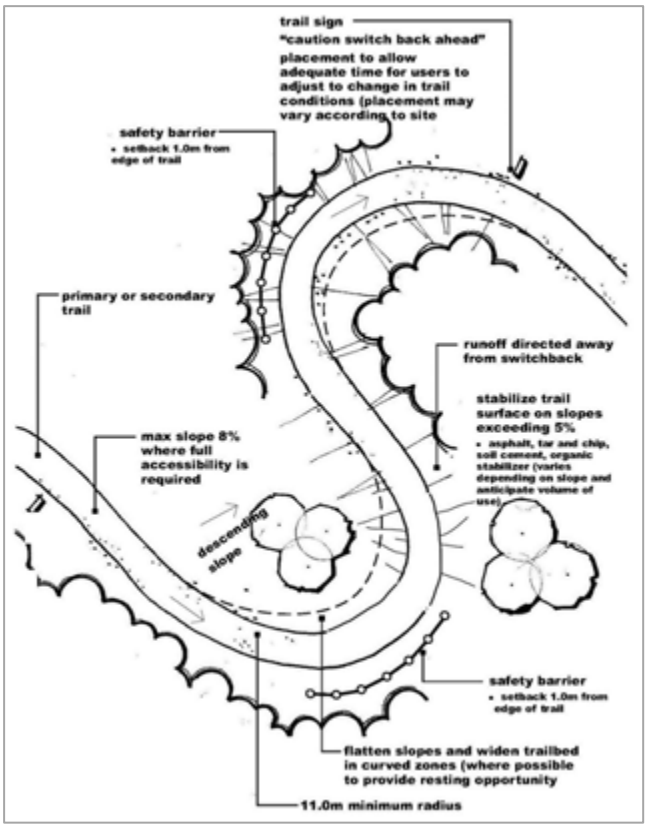
In addition, there are a number of design concepts which can be considered for trails which are designed in a space with a greater than permitted slope.

Guideline(s):

C-15: When slopes exceed 15%, or where there is inadequate room to develop a switchback or another accessible solution, a stairway system should be considered. In these situations the site should be carefully studied so that the most suitable design can be developed.

The following are some considerations for stairway design:

- Provide a gutter integrated into the stairway for cyclists to push their bicycles up and down (where appropriate to have bicycles);
- Develop a series of short stair sections with regularly spaced landings rather than one long run of stairs;
- For long slopes, provide landings at regular intervals (e.g. every 8-16 risers) and an enlarged landing at the mid-way point complete with benches to allow users the opportunity to rest;
- On treed slopes, lay the stairway out so that the minimum number of trees will be compromised or removed.



Switchback Example (top) and Woven Metal Stairs, Dundurn Stairs, Hamilton (bottom)
Credit: MMM Group, Word Press

C.5.3 TRIP END FACILITIES & STAGING AREAS

C.5.3.1 Seating and Rest Areas

Seating provides the opportunity to pause along the trail at points of interest or just to rest. Young children, older adults and those with disabilities will need to rest more frequently than others.

Benches are the most common form of seating, but walls of appropriate height and width, large flat boulders, and sawn logs are some alternatives depending on the trail setting. Where seating/rest areas are planned, the design should consider a 1m wide level area with a curb or other appropriate wheel stop for mobility-assisted devices.

Staging areas, trail nodes and heavily used trails typically require a higher density of seating opportunities. For heavily used trails it is reasonable to provide some form of seating at approximately 500m intervals.

C.5.3.2 Waste Receptacles & Washrooms

Waste receptacles should be located at regular intervals and in locations where they can be easily serviced. Mid-block crossing points, staging areas, trail nodes and in association with other site amenities such as benches and interpretive signs are ideal locations. They must be monitored and emptied on a regular basis to prevent unsightly overflow.

Washrooms should be provided along or near the trail at key locations. Typically, they are located at major trailheads and where possible make use of existing facilities (i.e. at community centres and in major parks). As trail use continues to increase, and as the network becomes denser, it may be necessary to provide additional facilities. Where this is necessary, they must be placed where they can be easily accessed for maintenance and surveillance.

Pathway Seating & Rest Areas

Credit: (Bottom) MMM Group Caledon, Ontario, ON (Top) MMM

Many trail groups have used portable washrooms prior to installing permanent facilities, which provides the opportunity to determine the most appropriate location before the investment is made in design and construction of permanent facilities.

C.5.3.3 Bicycle Parking

The provision of bicycle parking facilities is essential for encouraging more bicycle use throughout Oxford County. The lack of adequate bicycle parking supply or type can deter many from considering using their bicycle as a basic mode of transportation. Bicycle parking can be divided into two categories bicycle racks and bicycle lockers.

Bicycle Racks

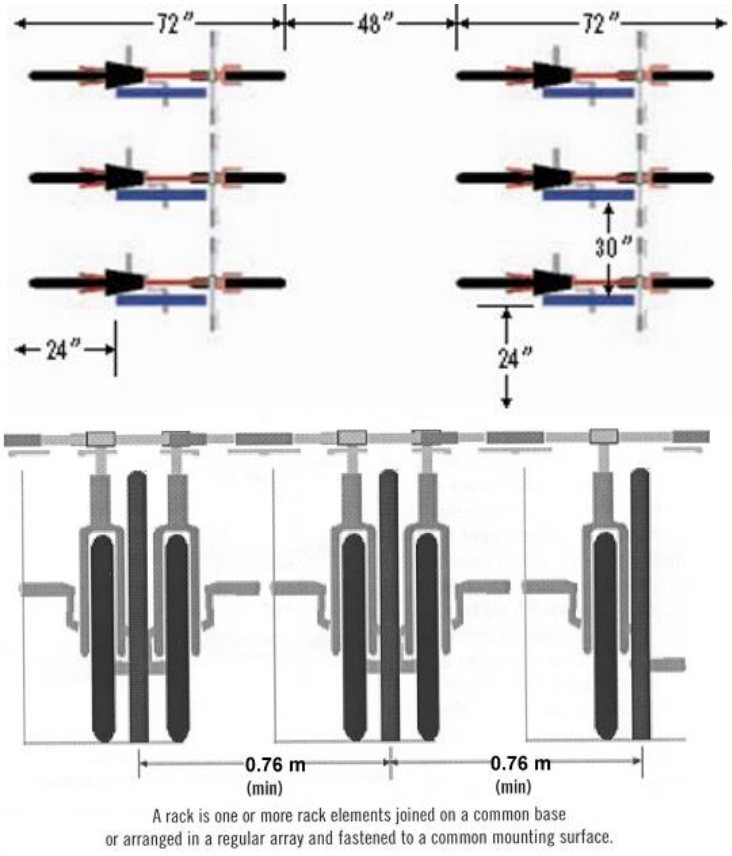
When designing bicycle racks the following components presented in **Table C.11** must be considered. Additional considerations and guidelines can be found in the TAC Manual as well as OTM Book 18.

Table C.11 - Design Considerations for Bicycle Racks

The Rack Element	The Rack	The Rack Area
Definition: The portion of a bicycle rack that supports the bicycle.	**Definition:** A grouping of rack elements.	**Definition:** The "bicycle parking lot" or area where more than one bicycle rack is installed. Bicycle racks are separated by aisles, much like a typical motor vehicle parking lot.
Key Considerations: • Can be joined on any common base or arranged in a regular array and fastened to a common mounting surface. • May be used to accommodate a varying number of bicycles securely in a particular location. • Various types of available bicycle rack designs e.g. "Ribbon" rack, the "Ring" rack, the "Ring and Post" rack and the "Swerve" rack. • Rack should support the bicycle by its frame in two places and prevent the wheel from tipping over. • Should allow front-in parking and back-in parking with a U-lock able to	**Key Considerations:** • Consist of a grouping of the rack elements either by attaching them to a single frame or allowing them to remain as single elements mounted in close proximity to one another. • Should be securely fastened to a mounting surface to prevent the theft of a bicycle attached to a rack. • Be easily and independently accessed by the user. • Should be arranged to allow enough room for two bicycles to be secured to each rack element. • Should be arranged in a way that is quick, easy and convenient for a cyclist to lock and unlock their bicycle	**Key Considerations:** • The recommended minimum width between aisles should be 1.2 m. • Aisle widths of 1.8 m are recommended in high traffic areas. • A 1.8 m depth should be provided for each row of parked bicycles. • Large bicycle rack areas with a high turnover rate should have more than one entrance to help facilitate user flow. • Rack area should be sheltered to protect bicycles from the elements. • Bicycle racks should be placed as close as possible to the entrance, no more than 15m, and should be clearly visible along a major building

Table C.11 - Design Considerations for Bicycle Racks

The Rack Element	The Rack	The Rack Area
lock the front and the rear wheel.	to and from the rack.	approach line but not impede pedestrian traffic. • To avoid excessive bicycle riding on the grass, bicycle racks should only be placed on grass surfaces located within close proximity to a paved cycling route, such as on off-road multi-use trail, or an on-road route.
Bicycle racks should not only allow for a secure lock between the bicycle and the rack, but should also provide support for the bicycle frame itself. The rack element should also be designed to resist being cut or detached by common hand tools such as bolt and pipe cutters, wrenches and pry bars which can easily be concealed in backpacks.	N/A	Bicycle racks should not be placed in the following areas: bus loading areas, goods delivery zones, taxi zones, emergency vehicle zones, hotel loading zones, within 4.0 m of a fire hydrant, within 2.5 m of a driveway or access lane and within 10.0 m of an intersection.



A rack is one or more rack elements joined on a common base or arranged in a regular array and fastened to a common mounting surface.

Sample Bicycle Parking Design Concepts and Applications

Credit: APBP

Bicycle Lockers

Definitions: Bicycle lockers are individual storage units. They are weather-protected, enclosed and operated by a controlled access system that may use keys, swipe card (key fob) or an electronic key pad located on a locker door. Some locker systems are set up for multiple users (i.e. coin operated or secured with personal locks). On average, two standard car parking spaces (of 5.6 m x 2.6 m each) can accommodate 10 individual bicycle locker spaces but this may differ depending on the locker model.

Key Considerations:

- Security and durability are important to consider when selecting a bicycle locker.

Design Alternatives:

- Transparent panels are available on some models to allow surveillance of locker contents;
- Stackable models can double bicycle parking capacity on site;
- Options for customer access can vary from a simple, single-use key system to a multi-user system that allows secure access through smart card technology or electronic key pads;
- Bike Lockers require a level surface, clearance for locker doors and should be located close to building entrances or on the first level of a parking garage and within range of security surveillance. Bicycle Lockers are best placed away from sidewalks and areas with high pedestrian traffic. High quality, durable models should be able to withstand regular use, intense weather conditions and potential vandalism; and
- The installation of lockers and showers at workplaces and educational institutions helps to promote the use of cycling for utilitarian purposes. Businesses or institutions with more than 20 employees commuting by bicycle should be encouraged to offer these facilities.

Guideline(s):

C-16: Using the criteria outlined the type of bicycle parking facility, number of available spaces and location should be carefully considered on a site by site basis.

C-17: Oxford County, local municipalities and partners should build upon any infrastructure previously implemented and consider initiating a program to install racks on an as requested basis for destinations throughout the County.

Sample Design for Bike Lockers
Credit: www.transportation.ubc.ca (top) and www.winnipegtransit.com (bottom)

C.5.4 CLOSURES AND REHABILITATION

From time to time it will be necessary to temporarily close sections of trails or entire routes to public access. Situations such as inundation by water, culvert washout or general trail construction are typical reasons for temporary trail closures. As these situations arise, users must be informed well in advance of the closure. If the closure is planned advance notices should be placed at all access points for the affected section(s). In the event of an emergency closure, notices must be placed at these locations immediately following the discovery of the problem.

Signing and temporary barricades, notification in community newspapers, on local radio stations and the County and local municipal webpages are possible methods of informing users of about temporary trail closures.

Permanent trail closures may also be required at some point in the life cycle of the trail, especially in the case of trails in woodlots and other natural settings. It is important when closing a trail to rehabilitate the landscape to match the surrounding conditions, inform trail users that it has been closed, and to provide reasons for the closure. Depending on the location, appropriate rehabilitation measures in natural/naturalized settings may include:

- Slope stabilization, using engineered materials and methods for severely eroded slopes.
- Terracing, using locally collected low-tech materials for eroded slopes of moderate and low severity.
- Live staking using locally collected cuttings from appropriate species.
- Plantings with appropriate native species (may include plants salvaged from nearby sites.
- The application of erosion blankets and mulches, and/or seeding with mixes that are appropriate for the site in which they are to be applied.
- Scarification of the surface of the trail to be closed and covering it with forest litter (leaves, branches, and limbs) in a naturalistic manner which can help to reinforce the message that the trail is closed, reduce erosion, and supply nutrients to plants during establishment.
- Erecting signage describing the closure to inform users of the conditions and "Water Me" signs for newly planted trees.

C.6 SIGNING THE TRAIL NETWORK

The design and construction of the network should incorporate a hierarchy of signs each with a different purpose and message. This hierarchy is organized into a "family" of signs with unifying design and graphic elements, materials and construction techniques. The unified system becomes immediately recognizable by the user and can become a branding element. Generally the family of signs includes:

Orientation & Trailheads

- Typically located at key destination points and major network junctions.
- Provide orientation to the network through mapping, network information and rules and regulations.
- Useful landmark where network nodes are visible from a distance.
- Used as an opportunity to sell advertising space to offset cost of signs.

Guideline: Orientation signs could be considered for implementation when entering the County, one of its local municipalities or at trail junctions.

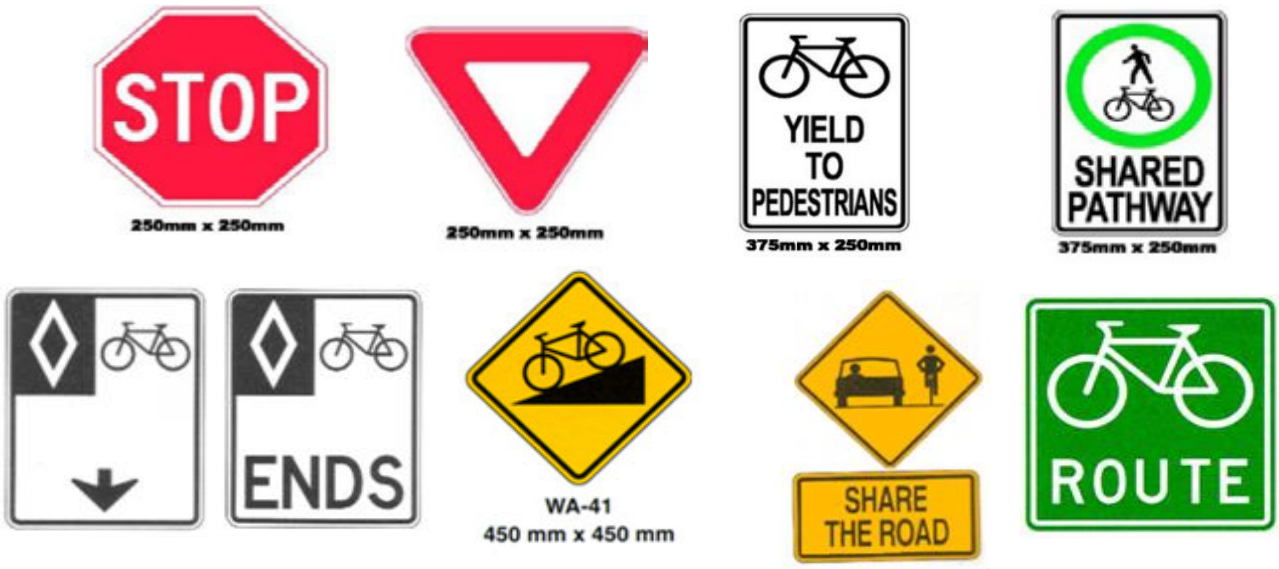
Regulatory, Warning and Information

- Required throughout the system. Where traffic control signs are needed (stop, yield, curve ahead etc.), it is recommended that recognizable traffic control signs be used (refer to the TAC Bikeway Control Guidelines or OTM Book 18).
- Intended to control particular aspects of travel and be used along the road or off-road network.
- Warning signs are used to highlight bicycle route conditions that may pose a potential safety or convenience concern to network users.
- These signs are more applicable to cycling routes and multi-use trails than pedestrian systems.

Guideline: Signs should be considered for implementation along proposed multi-use trails or in locations where conditions may change enough that users should be made aware.

User Etiquette
• Should be posted at public access points to clearly articulate which trail uses are permitted, regulations and laws that apply, as well as trail etiquette, safety and emergency contact information. • At trailheads, this information can be incorporated into trailhead signs. • Information can be integrated with access barriers.
Guideline: Etiquette signs should be considered for implementation at public access points or where trailheads are located.
Interpretive
• Should be located at key trail features having a story to be told. These features may be cultural, historical, or natural. Interpretive signs should be highly graphic and easy to read. • Should be located carefully in highly visible locations to minimize the potential for vandalism.
Guideline: Signs should be implemented throughout the network in locations where cultural or historic information should be highlighted.
Route Marker & Trail Directional
• Should be located at key network intersections and at regular intervals along long, uninterrupted sections of network. • Purpose is to provide a simple visual message to users that they are travelling on the pathway network. • May include the network logo or "brand" and communicate other information to users such as directional arrows and distances in kilometres to major attractions and settlement areas. • Should be mounted on standard sign poles and be located on all legs of an intersection or off-road trail junction, as well as at gateways.
Guideline: Signs should be considered as part of the overall network to identify a route brand and provide users with directional / wayfinding information.

Regulatory Sign Examples



Examples of Warning and Informtation Sign – Regulatory, Warning and Information
Source: OTM Book 18, TAC

Interpretive Signs Examples

Interpretive Sign Examples; Top Left: Erin; MMM, Bottom Left: Fundy National Park; MMM; Top Right: Tobermory; MMM; Bottom Right: Sauble Beach; MMM Group.

Route Marker & Trail Directional Sign Examples

Route Marker & Trail Directional Sign Examples - Essex (Left)-Photo Essex Region Conservation Authority; Kissing Bridge Trail, Guelph / Eramosa (Second from left) Photo MMM Group; Halton Hills (Third from Left)-Photo MMM Group; Confederation Trail (Right) Photo MMM Group

D.

LAND ACQUISITION STRATEGIES

Table D.1 - Summary of Potential Land Acquisition and Securement Strategies

Techniques	Description	Advantages/ Disadvantages	Legislative Basis	Who/How Administration	Type of lands
Purchase includes "First Right of Refusal" Local Area Levies and Local Improvement Charges	Purchase of land at fair market value.	Municipal or other group directly acquires land. Permanent protection and public access. Options exist to recover costs through levies or charges on benefitting owners.	Municipal Act (right of municipality to acquire and dispose of own land) and right of municipality to levy local improvement charge on benefiting land.	Municipal government Land Trusts Non-Profit Groups (e.g. Nature Conservancy) Community Co-operative Partnerships	Any greenspace, particularly those requiring environmental protection.
Land Exchange (Equivalent to Outright Purchase)	Lands or interest in land can be traded to achieve mutual interests, and net differences in values can then be settled.	Same cost as purchase; permanent protection; public access possible. Must be equitable for both parties.	Municipal Act (right of municipality to acquire and dispose of own land).	Municipal most common – public ownership.	Any land or land use greenspace or other type of use including housing.
Donation/ Bequest, Including a Life Estate	Land or interests in land donated during an individual's lifetime or by private corporation or as a bequest as part of an estate. The donor may opt to retain use of land until death.	Low cost/ permanent protection and public access. Tax benefits for donor. Lands must meet Federal Tax rules for donation in order to qualify for tax exemptions.	Municipal Act Income Tax Act	All of the above Both public and private ownership.	Any greenspace or other type of lands including housing.
Parkland Dedication	Lands dedicated to municipality for parkland purposes as a result of subdivision development. Usually relates to recreation land but may be used to acquire natural areas.	Provides parkland in growing communities: Can be converted to cash for more flexibility. Planning Act limits amount of land that can be required at no charge.	Planning Act	Municipal ownership	Any greenspace, but usually active parkland.

Table D.1 - Summary of Potential Land Acquisition and Securement Strategies

Techniques	Description	Advantages/ Disadvantages	Legislative Basis	Who/How Administration	Type of lands
Traditional Land Use and Other Regulatory Controls	Use of land use planning (Official Plan/Zoning/ Subdivision Watershed and Sub-watershed Plans) and other regulatory controls. Land Ownership does not change.	Intent for the land is provided in the Official Plan. Permanent protection can be achieved. May not be popular and does not provide for public access. May trigger requests for financial compensation or purchase.	Planning Act Conservation Authorities Act Fisheries Act Aggregate Resources Act	Municipal, Province, Conservation Authorities. Usually private ownership or public ownership other than the City.	Any greenspace if designation or zoning is not successfully challenged.
Sale with Restrictions (Including acquisition and resale)	Land can be sold with restrictions in place to control future uses.	Generates revenue while maintaining greenspace; permanent protection; public access can be negotiated. Restricted land more difficult to sell, limited market and reduced value.	Municipal Act Conservation Land Act	Municipal/Provincial Government	Greenspaces requiring environmental protection where public access may not be as critical.
Land Trust	Non-profit organizations dedicated to conserving open space, natural areas, etc.	High profile grass-roots organization. Provides permanent protection and public education. Limits public access. Needs high profile and independence to get funds.		Generally non-profit, incorporated community organization or a chapter within an existing organization.	Usually land needing environmental protection or recreational trails.

Table D.1 - Summary of Potential Land Acquisition and Securement Strategies

Techniques	Description	Advantages/ Disadvantages	Legislative Basis	Who/How Administration	Type of lands
Corporate Landowner Agreement/ Condominium Agreement	Similar to Land Trust Conservation land can be owned by a shareholder's corporation or condominium devoted to the protection and management of the lands.	An alternative to government ownership and management; no cost; flexible; management costs borne by those directly benefiting. Protection not guaranteed. Little used; no guarantee of public access, needs a willing corporate entity.	Corporations Act Condominium Act	Private landowners, would not involve public ownership.	Any greenspaces.
Conservation Easement	An agreement that restricts uses for conservation purposes, and when registered on title they bind both current and future landowners.	Low cost; may be more acceptable to landowner; can provide permanent protection. Cost of easements may be as great as purchase; public access may be limited; requires ongoing monitoring; not extensively used in Ontario.	Ontario Heritage Act; Ministry of Government Services Act Ontario Conservation Land Act	Only government agencies and registered charities including land trusts. Private ownership	Usually land needing environmental protection as well as heritage buildings.
Restrictive Covenant	A condition on title that restricts the landowner's use of land or assigns certain rights or access to an adjacent landowner. Applicable where a government wishes to control land use without ownership.	Low cost; can provide permanent protection. Can only be used under certain conditions; unlikely to be able to specify long-term management obligation. Public access not likely.	Common Law	Any government or conservation authority. Private ownership	Usually land needing environmental protection.

Table D.1 - Summary of Potential Land Acquisition and Securement Strategies

Techniques	Description	Advantages/ Disadvantages	Legislative Basis	Who/How Administration	Type of lands
Lease /License	A lease gives exclusive rights to use land for a specified term and cost. Licenses give permission to use a property for a purpose but not exclusive rights – is not binding.	Public access can be negotiated Agreement must be renewed periodically; may not protect land in perpetuity.		Legal lease or license agreement between parties. Private or public ownership.	Any land
Incentives/ Assistance i.e. Tax Rebates/ Credits/ Management Agreements/ Funding Assistance	Tax or management incentives to encourage retention/ restoration of natural areas. Usually linked to land use restrictions e.g. Provincial policy and zoning.	Lower cost and non-confrontational; willing landowner agreement. Difficult to monitor compliance; does not provide public access or permanent protection. Lost tax revenue.	Woodlands Improvement Act; Games and Fish Act; Conservation Authorities Act; Conservation Land Act	Ministry of Natural Resources; Conservation Authorities Private ownership	Usually land needing environmental protection.
Stewardship Support/ Education	Private land owner care and protection of land. Can be linked to incentives.	Voluntary. Least costly; non-threatening; builds rapport. Not permanent. No public access or protection.	N/A	Private although all levels of government publicize and provide support.	Usually land needing environmental protection.

Source: City of Ottawa. Department of Planning and Growth Management. *Greenspace Master Plan - Strategies for Ottawa's Urban Greenspaces*. City of Ottawa, 2006. Print

E.

ON & OFF-ROAD ROUTE MAINTENANCE CONSIDERATIONS

Maintenance Considerations for Off Road Trails	
Immediate (within 24 hours of becoming aware of the situation through a "hotline", email, other notification or observation)	• As a minimum, mark, barricade and sign the subject area to warn trail users, or close the trail completely until the problem can be corrected. • Remove vegetation and/or windfalls, downed branches etc., where traffic flow on the trail is being impaired or the obstruction is resulting in a sight line issue. Remove hazard trees that have been identified. • Repair or replace items that have been vandalized or stolen/removed. This is especially important for regulatory signs that provide important information about trail hazards such as road crossings, steep grades, and sharp curves. • Removal of trash in overflowing containers or material that has been illegally dumped. • Repair of obstructed drainage systems causing flooding that poses a hazard to trail users or that is resulting in deterioration that poses an immediate safety hazard. • Monitor trail areas and structures that are prone to erosion after severe summer storms and repair as required. • Repairs to structural elements on bridges such as beams, railings, access barriers and signs.
Regularly (weekly / biweekly / monthly)	• Trail patrols/inspections should review the trail conditions (as often as weekly in high-use areas), to assess conditions and prioritize maintenance tasks and monitor known problem areas. • Mow grass along edges of trails (in open settings only). Depending on trail location this may be done weekly, biweekly or monthly and the width can vary according to the location (typically 0.5 to 1.0m). This helps to keep the clear zone open and can slow the invasion of weeds into granular trail surfaces. Not all trails will have mown edges. In woodland and wetland areas, pruning and brushing is typically the only vegetation maintenance to be undertaken. • Regular garbage pickup (10 day cycle or more frequent for heavily used areas). • Restock trailhead information kiosks with brochures as needed. • Repair within 30 days or less, partially obstructed drainage systems causing intermittent water backups that do not pose an immediate safety hazard, but that if left unchecked over time will adversely affect the integrity of the trail and/or any other trail infrastructure or the surrounding area.
Seasonally	• Patching/minor regarding of trail surfaces and removal of loose rocks from the trailbed. • Culvert cleanout where required. • Top up granular trail surfaces at approaches to bridges. • Planting, landscape rehabilitation, pruning/beautification. • Installation/removal of seasonal signage.
Annually	• Conduct an annual safety audit. This task is not necessarily specific to trails and may be included with general annual safety audits for parks and other recreation facilities. • Evaluate support facilities/trailside amenities to determine repair and/or replacement needs. • Examine trail surface to determine the need for patching and grading. • Grading/grooming the surface of granular trails, and topping up of wood chip trails. • Pruning/vegetation management for straight sections of trail and areas where branches may be encroaching into the clear zone. This task is more of a preventative maintenance procedure. Cuttings may be chipped on site and placed appropriately or used as mulch for new plantings. Remove branches from the site unless they can be used for habitat (i.e. brush piles in a woodlot setting), or used as part of the rehabilitation of closed trails. Where invasive species are being pruned and/or removed, branches and cuttings should be disposed of in an appropriate manner. • Inspect and secure all loose side rails, bridge supports, decking (ensure any structural repairs meet the original structural design criteria). • Aerate soils in severely compacted areas.

Maintenance Considerations for Off Road Trails	
Every 3 to 5 Years	• Cleaning and refurbishment of signs, benches and other trailside amenities.
Every 10 to 20 Years	• Resurface asphalt trails (assume approximately every 15 years). • Replace or reconstruct granular trails (assume approximately every 15 years, but this may not be necessary if adjustments/repairs are made on an annual basis). • Major renovation or replacement of large items such as bridges, kiosks, gates, parking lots, benches etc.
Note. A trail maintenance log should be used to document maintenance activities. The log should be updated when features are repaired, modified, replaced, removed, or when new features are added. Accurate trail logs also become a useful resource for determining maintenance budgets for individual items and tasks, and in determining total maintenance costs for the entire trail. In addition, they are a useful source of information during the preparation of tender documents for trail contracts, and to show the location of structures and other features that require maintenance.	
Maintenance Considerations for On Road Routes	
Distortions in the road surface that may pose a potential hazard for cyclists	**Bumps or depressions** causing ponding of water on at least one third of the width of the or cycling surface; **Drop-offs** at the edges of pavement greater than 5cm in height over a horizontal distance of 20m. Vertical discontinuities greater than 2.5cm; **Cracks** (especially those running parallel to the path of travel) greater than 5cm wide by 2.5cm deep by 2.5cm long; **Potholes** greater than 10cm in diameter and 2.5cm in depth
Street Sweeping and Debris Removal	Sand left over from winter road maintenance and leaves allowed to accumulate in bike lanes can be hazardous to cyclists. Sweeping crews should be instructed to pay particular attention to the right edge of the road along designated bikeways. Another useful strategy is to organize the spring sweep so that roads with bike lanes and routes are swept first, recognizing the potential hazard to cyclists of not doing so.
Snow Plowing	On-road routes should be cleared as part of the regular removal and de-icing of roadways. A priority-shift to include roads with bike lanes and routes that serve major origins/designations should be considered.
Catch Basin Cover	Service covers and roadway edges are often the first place where cracking, heaving and breakup of asphalt occurs. A 2cm vertical ridge and a 1cm groove paralleling the direction of travel can be hazardous to cyclists. The condition of road surfaces particularly near the curb and at corners/intersections is one of the most common complaints about on-road cycling facilities. Patching and pavement overlay procedures may have to be increased to meet these tolerances within the traveled portion of the bikeway.

Maintenance Considerations for On Road Routes	
Signing and Pavement Marking	Maintain on-road route and regulatory signs in the same manner that other roadway signs are maintained. Renew lane markings and symbols at the same time that other roadway lane markings are renewed.

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ITEM	DESCRIPTION	UNIT	VALUE	COMMENTS/ASSUMPTIONS
1.0	**GENERAL ACTIVE TRANSPORTATION FACILITIES**			
	Shared Lanes / Paved Shoulders			
1.1	Signed Bike Route in Urban Area	linear KM	$1,500.00	Price for both sides of the road, assumes one sign a minimum of every 330m / direction of travel (e.g. 6 signs / km).
1.2	Signed Bike Route in Rural Area	linear KM	$1,000.00	Price for both sides of the road, assumes one sign a minimum of every 600m / direction of travel (e.g. 4 signs / km)
1.3	Signed Bike Route with Sharrow Lane Markings	linear KM	$3,500.00	Price for both sides of the road, includes route signs every 330m ($1,500/km both sides), and sharrow stencil every 75m as per Ministry Guidelines (Painted $75 each x 26/km = $1,950 in table) If thermoplastic type product is used assume $250 / each x 26 = $6,500 source Flint Trading Inc.
1.4	Signed Bike Route with Wide Curb Lane with Construction of a New Road	linear KM	$60,000.00	Price for both sides of the road, assumes 0.5m to 1.0m widening on both sides of the road (3.5m to 4.0m)
1.5	Signed Bike Route with Wide Curb Lane with Road Reconstruction Project	linear KM	$240,000.00	Price for both sides of the road, includes curb replacement, catch basin adjustments, lead extensions and driveway ramps
1.6	Signed Bike Route with Paved Shoulder in conjunction with existing road reconstruction / resurfacing	linear KM	$55,000.00	Price for both sides of the road, 1.5m paved shoulder, assumes cycling project pays for additional granular base, asphalt and edge line (assume $110,000 per kilometre if additional widening of granular base required)
1.7	Signed Bike Route with Buffered Paved Shoulder in conjunction with existing road reconstruction / resurfacing project	linear KM	$150,000.00	Price for both sides of the road, 1.5m paved shoulder + 0.5 to 1.0m paved buffer, assumes cycling project pays for additional granular base, asphalt, edge lines and signs (buffer zone framed by white edge lines)
1.8	Addition of Rumble Strip to Existing Buffered Paved Shoulder (rural)	linear KM	$3,000.00	Price for both sides
1.9	Granular Shoulder Sealing	linear KM	$3,000.00	Both sides spray emulsion applied to harden the granular shoulder. This will reduce gravel on the paved portion of the shoulder and significantly reduce shoulder maintenance.
	Conventional and Separated Bike Lanes			
1.10	Conventional 1.5m-1.8m Bicycle Lanes by Adding Bike Lane Markings and Signs	linear KM	$7,500.00	Price for both sides of the road, includes signs, stencils and edge line. Price is for conventional paint, (assumes painted lane line at $1 / m + $75 / symbol x 26 + $2000 for signs)increase budget to $20,000 /km for Thermoplastic) e.g. lane line in thermo is $5.50/m compared to $1.00/m for paint
1.11	Conventional 1.5m-1.8m Bicycle Lanes through Lane Conversion from 4 lanes to 3 lanes	linear KM	$35,000.00	Price for both sides. Includes grinding of existing pavement, markings, signs, line painting and symbols
1.12	Conventional 1.5m-1.8m Bicycle Lanes in Conjunction with a New Road or Road Reconstruction Project	linear KM	$300,000.00	Price for both sides of the road, assumes 1.5m bike lanes on both sides of the roadway (1.5m x 2 sides = 3.0m). Includes catch basin leads, asphalt, signs, pavement markings sub-base only. Road project funds all other improvements
1.13	Conventional 1.5m-1.8m Bicycle Lanes by Retrofitting / Widening Existing Road	linear KM	$700,000.00	Price for both sides of the road, includes the cost for excavation, adjust catch basins, lead extensions, new curbs/driveway ramps, asphalt and sub-base, pavement markings and signs.
1.14	Wide Bicycle Lane (2.0m - 2.5m BL) in Conjunction with New Road or Road Widening Project	linear KM	$250,000.00	Price for both sides of the road, assumes 2.0m to 2.5m bike lanes on both sides of the roadway . Includes catch basin leads, asphalt, signs, pavement markings sub-base only

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1.15	Buffered Bicycle Lane with Hatched Pavement Markings - Assumes New Road or Road Reconstruction/Widening already Planned	linear KM	$350,000.00	Price for both sides of the road, assumes 1.5m bike lanes + 0.5m - 1.0m buffer zone with hatched pavement markings on both sides of the roadway. Includes catch basin leads, asphalt, signs, pavement markings sub-base only. Road project funds all other components
1.16	Buffered Bicycle Lane with Flex Bollards - Assumes New Road or Road Reconstruction/Widening Already Planned	linear KM	$365,000.00	Price for both sides of the road, assumes 1.5m bike lanes + flex bollards centred in hatched buffer zone at 10m intervals. Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) sub-base only
1.17	Buffered Bicycle Lane with Pre-Cast Barrier - Assumes New road or Road Reconstruction/Widening Already Planned	linear KM	$400,000.00	Price for both sides of the road, assumes 1.5m bike lanes + pre-cast and anchored curb delineators . Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) sub-base only
Cycle Tracks				
1.18	Uni-directional Cycle Tracks: Raised and Curb Separated - Retrofit Existing Roadway	linear KM	$500,000 - $1,200,000	Both sides. Includes construction but excludes design and signal modifications. Form of cycle track and materials as well as related components such as bike signals, upgrade/modification of signal controllers, utility/lighting pole relocations, bike boxes etc. are project specific and will impact unit price
1.19	Two Way Cycle Track - Retrofit Existing Roadway	linear KM	$500,000 - $800,000	One side. Includes construction but excludes design and signal modifications. Form of cycle track and materials as well as related components such as bike signals, upgrade/modification of signal controllers, utility/lighting pole relocations, bike boxes etc. are project specific and will impact unit price
Active Transportation Paths and Multi-Use Trails				
1.20	Two Way Active Transportation Multi-use path within road right-of-way	linear KM	$250,000.00	3.0m wide hard surface pathway (asphalt) within road right of way (no utility relocations)
1.21	Two Way Active Transportation Multi-use path within road right-of-way on one side with removal of existing sidewalk	linear KM	$275,000.00	3.0m wide hard surface pathway (asphalt) within road right of way on one side of road in place of 1.5m concrete sidewalk (includes crushing of existing sidewalk and compacting for trail base)
1.22	Concrete Splash Strip placed within road right-of-way between Active Transportation Multi-Use Path and Roadway	m²	$150.00	Colour Stamped Concrete
1.23	Hard Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting (New)	linear KM	$250,000.00	3.0m wide hard surface pathway (asphalt) within park setting (normal conditions) 90mm asphalt depth
1.24	Hard Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting (Upgrade existing granular surface)	linear KM	$100,000.00	Includes some new base work (25% approx.), half of the material excavated is removed from site. Add trail marker signs
1.25	Granular Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting	linear KM	$140,000.00	3.0m wide, compacted stone dust surface normal site conditions
1.26	Granular Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Rural Setting (New)	linear KM	$200,000.00	3.0m wide, compacted stone dust surface in complex site conditions (includes cost of clearing and grubbing)
1.27	Upgrade existing granular surface trail to meet 3.0m wide compacted granular trail standard	linear KM	$50,000.00	Includes some new base work (25% approx.) and an average of 20 regulatory signs per kilometre
1.28	Off-Road Multi-Use Trail Outside of Road Right-of-Way on Abandoned Rail Bed in a Rural Setting	linear KM	$130,000.00	3.0m wide, compacted stone dust surface, includes signage along trail and gates at road crossings
1.29	Granular Surfaced Multi-use Trail in a Woodland Setting	linear KM	$120,000.00	2.4m wide, compacted stone dust surface

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2.0 STRUCTURES AND CROSSINGS				
2.1	Pedestrian Boardwalk (Light-Duty)	linear KM	$1,500,000.00	Structure on footings, 3.0m wide with railings
2.2	Self weathering steel truss bridge	m²	$2000 - $2500	Footings/ abutments additional, assume $30,000 per side for spread footings; $50,000 - $90,000 per side for piles
2.3	Retrofit / Widen Existing Pedestrian / Trail Bridge (29m long, 3m clear width)	m²	$2,500.00	Price assumes modifications to existing abutments
2.4	Grade separated cycling/overpass of major arterial/highway	each	$1,000,000- $8,000,000	Requirements and design vary widely, use price as general guideline only
2.5	Metal stairs with hand railing and gutter to roll bicycle	vertical M	$3,000.00	1.8m wide, galvanized steel
2.6	Pathway Crossing of Private Entrance	each	$1500 - $2000	Adjustment of existing curb cuts to accommodate 3.0m multi-use pathway
2.7	Pathway / Road transition at unsignalized intersection(crossride)	each	$5,000.00	Typically includes warning signs, curb cuts and minimal restoration (3.0m pathway)
2.8	Pathway / Road transition at existing signalized intersection (crossride)	each	$25,000.00	Typically includes installation of 4 signal heads, 2 poles, 2 foundations, 2 controller connector and 2 arms.
2.9	At grade mid-block crossing	each	$5,000.00	Typically includes pavement markings on pathway, warning signs, curb cuts and minimal restoration. Does not include median refuge island.
2.1	Median Refuge	each	$20,000.00	Average price for basic refuge with curbs, no pedestrian signals
2.11	Mid-block Pedestrian Signal	each	$75,000-$100,000	Varies depending on number of signal heads required
2.12	At grade railway crossing	each	$120,000.00	Flashing lights, motion sensing switch (C.N. estimate)
2.13	At grade railway crossing with gate	each	$300,000.00	Flashing lights, motion sensing switch and automatic gate (C.N. estimate)
2.14	Below grade railway crossing	each	$500,000-$750,000	3.0m wide, unlit culvert style approx. 10 m long for single elevated railway track
2.15	Multi use subway under 4 lane road	each	$1,000,000-$1,200,000	Guideline price only for basic 3.3 m wide, lit.
2.16	Retaining Wall	m²	$600.00	Face metre squared

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3.0 BARRIERS AND ACCESS CONTROL FOR MULTI-USE TRAILS OUTSIDE OF THE ROAD RIGHT-OF-WAY				
3.1	Lockable gate (2 per road crossing)	each	$5,000.00	Heavy duty gates, price for one side of road (2 required per road crossing). Typically only required in rural settings or city boundary areas
3.2	Metal offset gates	each	$1,200.00	"P"-style park gate
3.3	Removable Bollard	each	$500-$750	Basic style (e.g. 75mm diameter galvanized), with footing. Increase budget for decorative style bollards
3.4	Berming/boulders at road crossing	each	$600.00	Price for one side of road (2 required per road crossing)
3.5	Granular parking lot at staging area (15 car capacity-gravel)	each	$35,000.00	Basic granular surfaced parking area (i.e. 300mm granular B sub-base with 150mm granular A surface), with precast bumper curbs. Includes minor landscaping and site furnashings, such as garbage receptacles and bike racks.
3.6	Page wire fencing	linear M	$20.00	1.5m height with peeled wood posts
3.7	Chain link fencing	linear M	$100.00	Galvanized, 1.5m height
4.0 SIGNAGE				
4.1	Regulatory and caution Signage (off-road pathway) on new metal post	each	$150-$250	300mm x 300mm metal signboard c/w metal "u" channel post
4.2	Signboards for interpretive sign	each	$500-$800	Does not include graphic design. Based on a 600mm x 900mm typical size and embedded polymer material, up to 40% less for aluminum or aluminum composite panel
4.3	Staging area kiosk	each	$2,000-$10,000	Wide range provided. Price depends on design and materials selected. Does not include design and supply of signboards
4.4	Signboards for staging area kiosk sign	each	$1,500-$2,000	Typical production cost, does not include graphic design (based on a 900mm x 1500mm typical size and embedded polymer material). Up to 40% less for aluminum or aluminum composite panel
4.5	Pathway directional sign	each	$500-$750	Bollard / post (100mm x100mm marker), with graphics on all 4 sides
4.6	Pathway marker sign	each	$250.00	Bollard / post (100mm x100mm marker), graphics on one side only
4.7	Pathway marker sign	linear KM	$1,500.00	Price for both sides of the path, assumes one sign on average, per direction of travel every 0.5 km

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5.0 OTHER				
5.1	Major rough grading (for multi-use pathway)	m^3	$10-$25	Varies depending on a number of factors including site access, disposal location etc.
5.2	Clearing and Grubbing	m^2	$2.00	
5.3	Bicycle rack (Post and Ring style)	each	$150-$250	Holds 2 bicycles , price varies depending on manufacturer (includes installation)
5.4	Bicycle rack	each	$1,000-$1,200	Holds 6 bicycles, price varies depending on manufacturer (includes installation)
5.5	Bicycle Locker	each	$3,000.00	Price varies depending on style and size. Does not include concrete mounting pad
5.6	Bench	each	$1000-$2,000	Price varies depending on style and size. Does not include footing/concrete mounting pad
5.7	Safety Railings/Rubrail	linear M	$100-$120	1.4m height basic post and rail style
5.8	Small diameter culvert	linear M	$150-$250	Price range applies to 400mm to 600mm diameter PVC or CSP culverts for drainage below trail
5.9	Pathway Lighting	linear M	$130-$160	Includes cabling, connection to power supply, transformers and fixtures
5.10	Relocation of Light / Support Pole	each	$4,000.00	Adjustment of pole offset (distance between pole and roadway)
5.11	Relocation of Signal Pole / Utility Box	each	$8,000.00	Adjustment of pole offset (distance between pole and roadway)
5.12	Flexible Bollards	each	$100.00	Should be placed at 10m intervals where required
5.13	Pavement Markings	linear M	$1.00	

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1.15	Buffered Bicycle Lane with Hatched Pavement Markings - Assumes New Road or Road Reconstruction/Widening already Planned	linear KM	$350,000.00	Price for both sides of the road, assumes 1.5m bike lanes + 0.5m - 1.0m buffer zone with hatched pavement markings on both sides of the roadway. Includes catch basin leads, asphalt, signs, pavement markings sub-base only. Road project funds all other components
1.16	Buffered Bicycle Lane with Flex Bollards - Assumes New Road or Road Reconstruction/Widening Already Planned	linear KM	$365,000.00	Price for both sides of the road, assumes 1.5m bike lanes + flex bollards centred in hatched buffer zone at 10m intervals. Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) sub-base only
1.17	Buffered Bicycle Lane with Pre-Cast Barrier - Assumes New road or Road Reconstruction/Widening Already Planned	linear KM	$400,000.00	Price for both sides of the road, assumes 1.5m bike lanes + pre-cast and anchored curb delineators . Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) sub-base only
Cycle Tracks				
1.18	Uni-directional Cycle Tracks: Raised and Curb Separated - Retrofit Existing Roadway	linear KM	$500,000 - $1,200,000	Both sides. Includes construction but excludes design and signal modifications. Form of cycle track and materials as well as related components such as bike signals, upgrade/modification of signal controllers, utility/lighting pole relocations, bike boxes etc. are project specific and will impact unit price
1.19	Two Way Cycle Track - Retrofit Existing Roadway	linear KM	$500,000 - $800,000	One side. Includes construction but excludes design and signal modifications. Form of cycle track and materials as well as related components such as bike signals, upgrade/modification of signal controllers, utility/lighting pole relocations, bike boxes etc. are project specific and will impact unit price
Active Transportation Paths and Multi-Use Trails				
1.20	Two Way Active Transportation Multi-use path within road right-of-way	linear KM	$250,000.00	3.0m wide hard surface pathway (asphalt) within road right of way (no utility relocations)
1.21	Two Way Active Transportation Multi-use path within road right-of-way on one side with removal of existing sidewalk	linear KM	$275,000.00	3.0m wide hard surface pathway (asphalt) within road right of way on one side of road in place of 1.5m concrete sidewalk (includes crushing of existing sidewalk and compacting for trail base)
1.22	Concrete Splash Strip placed within road right-of-way between Active Transportation Multi-Use Path and Roadway	m²	$150.00	Colour Stamped Concrete
1.23	Hard Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting (New)	linear KM	$250,000.00	3.0m wide hard surface pathway (asphalt) within park setting (normal conditions) 90mm asphalt depth
1.24	Hard Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting (Upgrade existing granular surface)	linear KM	$100,000.00	Includes some new base work (25% approx.), half of the material excavated is removed from site. Add trail marker signs
1.25	Granular Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting	linear KM	$140,000.00	3.0m wide, compacted stone dust surface normal site conditions
1.26	Granular Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Rural Setting (New)	linear KM	$200,000.00	3.0m wide, compacted stone dust surface in complex site conditions (includes cost of clearing and grubbing)
1.27	Upgrade existing granular surface trail to meet 3.0m wide compacted granular trail standard	linear KM	$50,000.00	Includes some new base work (25% approx.) and an average of 20 regulatory signs per kilometre
1.28	Off-Road Multi-Use Trail Outside of Road Right-of-Way on Abandoned Rail Bed in a Rural Setting	linear KM	$130,000.00	3.0m wide, compacted stone dust surface, includes signage along trail and gates at road crossings
1.29	Granular Surfaced Multi-use Trail in a Woodland Setting	linear KM	$120,000.00	2.4m wide, compacted stone dust surface

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2.0 STRUCTURES AND CROSSINGS				
2.1	Pedestrian Boardwalk (Light-Duty)	linear KM	$1,500,000.00	Structure on footings, 3.0m wide with railings
2.2	Self weathering steel truss bridge	m²	$2000 - $2500	Footings/ abutments additional, assume $30,000 per side for spread footings; $50,000 - $90,000 per side for piles
2.3	Retrofit / Widen Existing Pedestrian / Trail Bridge (29m long, 3m clear width)	m²	$2,500.00	Price assumes modifications to existing abutments
2.4	Grade separated cycling/overpass of major arterial/highway	each	$1,000,000- $8,000,000	Requirements and design vary widely, use price as general guideline only
2.5	Metal stairs with hand railing and gutter to roll bicycle	vertical M	$3,000.00	1.8m wide, galvanized steel
2.6	Pathway Crossing of Private Entrance	each	$1500 - $2000	Adjustment of existing curb cuts to accommodate 3.0m multi-use pathway
2.7	Pathway / Road transition at unsignalized intersection(crossride)	each	$5,000.00	Typically includes warning signs, curb cuts and minimal restoration (3.0m pathway)
2.8	Pathway / Road transition at existing signalized intersection (crossride)	each	$25,000.00	Typically includes installation of 4 signal heads, 2 poles, 2 foundations, 2 controller connector and 2 arms.
2.9	At grade mid-block crossing	each	$5,000.00	Typically includes pavement markings on pathway, warning signs, curb cuts and minimal restoration. Does not include median refuge island.
2.1	Median Refuge	each	$20,000.00	Average price for basic refuge with curbs, no pedestrian signals
2.11	Mid-block Pedestrian Signal	each	$75,000-$100,000	Varies depending on number of signal heads required
2.12	At grade railway crossing	each	$120,000.00	Flashing lights, motion sensing switch (C.N. estimate)
2.13	At grade railway crossing with gate	each	$300,000.00	Flashing lights, motion sensing switch and automatic gate (C.N. estimate)
2.14	Below grade railway crossing	each	$500,000-$750,000	3.0m wide, unlit culvert style approx. 10 m long for single elevated railway track
2.15	Multi use subway under 4 lane road	each	$1,000,000-$1,200,000	Guideline price only for basic 3.3 m wide, lit.
2.16	Retaining Wall	m²	$600.00	Face metre squared

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3.0 BARRIERS AND ACCESS CONTROL FOR MULTI-USE TRAILS OUTSIDE OF THE ROAD RIGHT-OF-WAY				
3.1	Lockable gate (2 per road crossing)	each	$5,000.00	Heavy duty gates (e.g. equestrian supported step over gate). Price for one side of road - 2 required per road crossing. Typically only required in rural settings or city boundary areas
3.2	Metal offset gates	each	$1,200.00	"P"-style park gate
3.3	Removable Bollard	each	$500-$750	Basic style (e.g. 75mm diameter galvanized), with footing. Increase budget for decorative style bollards
3.4	Berming/boulders at road crossing	each	$600.00	Price for one side of road (2 required per road crossing)
3.5	Granular parking lot at staging area (15 car capacity-gravel)	each	$35,000.00	Basic granular surfaced parking area (i.e. 300mm granular B sub-base with 150mm granular A surface), with precast bumper curbs. Includes minor landscaping and site furnashings, such as garbage receptacles and bike racks.
3.6	Page wire fencing	linear M	$20.00	1.5m height with peeled wood posts
3.7	Chain link fencing	linear M	$100.00	Galvanized, 1.5m height
4.0 SIGNAGE				
4.1	Regulatory and caution Signage (off-road pathway) on new metal post	each	$150-$250	300mm x 300mm metal signboard c/w metal "u" channel post
4.2	Signboards for interpretive sign	each	$500-$800	Does not include graphic design. Based on a 600mm x 900mm typical size and embedded polymer material, up to 40% less for aluminum or aluminum composite panel
4.3	Staging area kiosk	each	$2,000-$10,000	Wide range provided. Price depends on design and materials selected. Does not include design and supply of signboards
4.4	Signboards for staging area kiosk sign	each	$1,500-$2,000	Typical production cost, does not include graphic design (based on a 900mm x 1500mm typical size and embedded polymer material). Up to 40% less for aluminum or aluminum composite panel
4.5	Pathway directional sign	each	$500-$750	Bollard / post (100mm x100mm marker), with graphics on all 4 sides
4.6	Pathway marker sign	each	$250.00	Bollard / post (100mm x100mm marker), graphics on one side only
4.7	Pathway marker sign	linear KM	$1,500.00	Price for both sides of the path, assumes one sign on average, per direction of travel every 0.5 km

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5.0 OTHER				
5.1	Major rough grading (for multi-use pathway)	m^3	$10-$25	Varies depending on a number of factors including site access, disposal location etc.
5.2	Clearing and Grubbing	m^2	$2.00	
5.3	Bicycle rack (Post and Ring style)	each	$150-$250	Holds 2 bicycles , price varies depending on manufacturer (includes installation)
5.4	Bicycle rack	each	$1,000-$1,200	Holds 6 bicycles, price varies depending on manufacturer (includes installation)
5.5	Bicycle Locker	each	$3,000.00	Price varies depending on style and size. Does not include concrete mounting pad
5.6	Bench	each	$1000-$2,000	Price varies depending on style and size. Does not include footing/concrete mounting pad
5.7	Safety Railings/Rubrail	linear M	$100-$120	1.4m height basic post and rail style
5.8	Small diameter culvert	linear M	$150-$250	Price range applies to 400mm to 600mm diameter PVC or CSP culverts for drainage below trail
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Appendix G- Potential Performance Measures

Performance Measure	Indicator		Data Source	Location of Monitoring Activity	Frequency of Measurement	Baseline Information	Target
	Definition	Measurement					
Engineering							
Use	Existing Users	% of all Trips AADT cyclists for key corridors Distance travelled to use trail # residents within 2.5km radius of trails % children walk or bike to school % residents who commute by bike or walking % elderly residents who walk or cycle Duration of AT or trail trip	Traffic Counts Census Data (2011)	County-wide High-volume corridors Trail heads	Annual or Bi-annual Review		
Provisions	Building the Network	Km cycling facilities added Km trail facilities added	GIS Database & Tracking Tool	County-wide	On-going through implementation Annual Reporting		
	End-of-Trip Facilities	# of bike rack spaces per 100Kresidents. # trail or route signs # amenities for trail facilities # long-term parking facilities (bikes) # trail access points / staging areas	GIS Database & Tracking Tool On-site survey	County-wide	On-going inventory Annual or Bi-annual Review		
Investment	Municipal Funding	$ investment in cycling and trail / 1000 residents	County Budget Reports	County-wide	Annual		
Comfort & Convenience	Bike Lanes		monitoring (internal survey)				
	County-wide Destinations	# key County destinations found along the proposed route	Inter Municipal Working Group	County-wide	Bi-annually		
Education & Encouragement							
Partnerships & Recognition	Supporting Events & Businesses	# events organized for trail and cycling promotion	Recreation & Culture (internal survey) Inter Municipal Working Group Trails and Active Transportation Advisory Committee	N/A	Bi-annually		
	External Recognition	Bicycle Friendly Community Status	Recreation & Culture or Operations & Engineering	N/A	Annually		
Outreach & Provision	Educational Materials Provided	Availability / # of maps distributed Creation of cycling specific newsletters Creation of educational brochures Consistency of mapping to existing facilities and signage	County and local muncipalities Inter Municipal Working Group Trails Advisory Committee	County-wide	Bi-annually		