

Norfolk County

# ACTIVE TRANSPORTATION ((AT)) STRATEGY

FINAL REPORT | August 2016









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#### **ACKNOWLEDGEMENTS**

Norfolk County and the consultant team of MMM Group would like to express their appreciation to the individuals and community partners who contributed to the development of this strategy.

There were numerous groups and individuals who also took the time to provide input and contribute to the development of the Strategy for which the study team is very grateful. We would like to specifically thank the representatives from Pathways for People and the Trails Advisory Committee for the time and input. We thank you for the time you took to help shape this strategy and the future of AT in Norfolk County.



#### 1.0 INTRODUCTION

In March 2015, MMM Group started to work with staff from Norfolk County to develop a long-term active transportation (AT) strategy. The Strategy was developed as a component of the Integrated Sustainable Master Plan (ISMP) which aims to coordinate the planning, design and implementation of County infrastructure.

Before the AT strategy is presented it is important to understand some of the assumptions that were used to shape the content (recommendations, guidelines, actions, etc.).

The Strategy is...

A long range flexible blueprint

A decision making tool

Guidelines for consistent design and application

The Strategy is not...

Prescriptive or set in stone

Intended as a tool only for County staff

Meant to replace other planning documents

With these assumptions in mind, this document has been developed for a number of different stakeholders and partners Figure 1 – AT Strategy Users.

The information contained in this strategy is intended to provide each of these partners with a common understanding of the intents, purposes and objectives for AT throughout the County.

It is also intended to provide users with a set of tools, guidelines and recommendations to establish a consistent approach to decision making based on best practices, previous work completed by the County and its partners, input from the public and key stakeholders to help promote safe, accessible, comfortable, connected and continuous active transportation facilities (both on and off-road)

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Figure 1 – AT Strategy Users

throughout Norfolk County.



#### 1.1 Supporting the AT Strategy

A successful AT Strategy builds upon existing initiatives, infrastructure, policies and plans. Since the development of the 2009 Trails Master Plan, a number of policies have emerged at various levels of government that support the planning, design, implementation and promotion of active transportation and recreation. A full summary of these policies can be found in a separately bound **Technical Appendix A-1**.

The Active Transportation Strategy is part of a hierarchy of policies and plans that, together with the Transportation Master Plan, help shape Norfolk County. Understanding the relationships between these policies and plans and how the AT Strategy will be used in relation to existing policies, is illustrated in **Figure 2**.

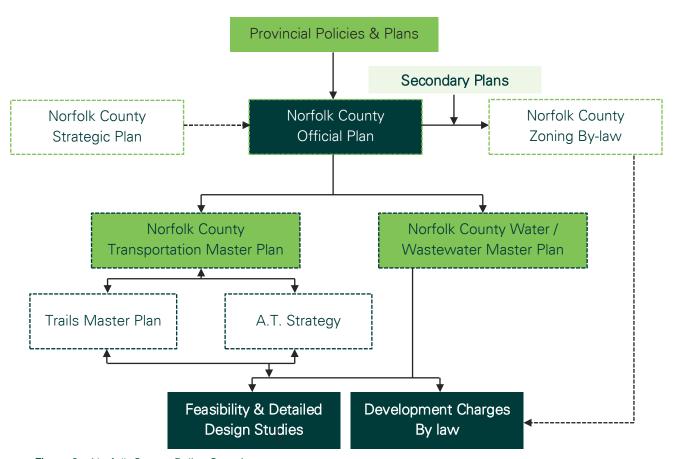


Figure 2 – Norfolk County Policy Overview



#### 1.2 What is Active Transportation?

Active Transportation refers to "any human powered transportation – walking, cycling, using a wheel-chair, in-line skating or skateboarding". This definition, provided by the Public Health Agency of Canada, provides the context and basis for the development of the strategy.

More specifically, for the purposes of the Norfolk AT Strategy, the project team has focused on designing routes and facilities that accommodate two primary AT user groups – pedestrians and cyclists.

#### Pedestrians

Walkers Hikers Joggers

#### Cyclists

Leisure Mountain (Sport) High Endurance

Though pedestrians and cyclists are the focus of this strategy, there are other groups that use AT facilities (both on and off-road), where feasible and permitted including individuals with mobility limitations (e.g. assistive devices).

In addition to the travel mode choice, AT routes can also be defined by "trip type". Based on trends and best practices trip types can typically be organized into two (2) categories:

- ➤ Casual: likely to prefer trails or cycling facilities that are located near their home town. They may venture to next community or beyond. The pedestrian or cyclist may be subject to moving to other interests, but usually replaced by others; may find trails repetitive & begin to look for options within their capabilities.
- ➤ Social / Touring / Sportif: venture widely at varying paces; ride duration usually two to three hours often more; prefer quieter roads, Touring & Sportif rarely object to additional kilometers; some especially Sportif embrace challenging terrain.

A trip type that is not noted above but was considered as part of the development of the AT strategy were those who choose to walk or bicycle to work or school should their destination be within an achievable distance and the facilities be provided.



#### 1.3 Why Invest in Active Transportation?

The goals and objectives set-out by the County and its partners are clear. The community aims to be active, healthy and sustainable for residents while being a desirable destination for visitors. It is understandable that a lot must be accomplished to achieve these goals and objectives and this will require County resources.

Investing in active transportation and recreation should be a significant municipal priority. The social, health, environmental, economic, safety and transportation benefits can result from further investment, growth, development and maintenance can be substantial. The following is a brief summary of some of the benefits that the County may experience should improvements be made to AT County-wide.

#### QUALITY OF LIFE...

Providing opportunities for active transportation or recreation can reduce heart disease, provides independence for youth and seniors, improves mental wellbeing and reduces the cost of medical care.

#### COMMUNITY SAFETY...

Studies confirm that as the number of cyclists and pedestrians increases other residents and visitors may be more inclined to engage in active forms of transportation and recreation. With more AT users present motorists appear to adjust their behaviour in their presence creating a safer environment for all – the phenomenon dubbed "safety in numbers".

#### THE ENVIRONMENT...

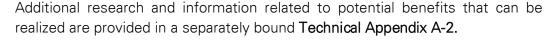
AT and recreation are energy-efficient and non-polluting. The benefits include reduced road congestion, maintenance costs, less costly infrastructure and decreased user costs.

#### TRANSPORTATION OPTIONS...

People appreciate having options. Connecting various modes of transportation by providing more route alternatives that accommodate walking and cycling has a positive multi-modal result.

#### LOCAL ECONOMY...

Communities that invest in active transportation tend to see an increase in business activity, employment growth and additional funding and grant support. Tourism related to cycling is a growing industry that brings significant economic benefits to communities.





#### 1.4 Building on Past Successes & Addressing Challenges

Norfolk County has long been a supporter of AT for recreational and touring purposes. The County and its partners are well-positioned to continue growing as a key destination for trail and cycling tourism in Southern Ontario and this AT Plan is intended to support this goal.

The development of an AT network is not just about the infrastructure that is built. Cultural change towards a more healthy and active community relies on four (4) key categories – planning and design; process and coordination; implementation and operation; and promotion and outreach. Though there are significant opportunities to build upon, there are also a number of challenges that need to be addressed.

#### Planning & Design:

#### Opportunities:

- Existing policies at the County and provincial level
- Consideration for various users as well as different trip types

#### ► Challenges:

- Updated legislation / standards regarding accessibility
- Vast geographic area with varying conditions
- Outdated design guidelines

#### Implementation & Operation:

#### Opportunities:

- Considerations for the design of AT facilities when redesigning roadways
- Existing local design precedents

#### ▶ Challenges:

- Inconsistent maintenance practices
- Undefined approach for the integration of active transportation into the development process

#### Process & Coordination:

#### ▶ Opportunities:

- Trails are integrated into the parks and recreation mandate
- Partnerships are already in place with the Health Unit

#### ► Challenges:

- Lack of coordination between key decision makers
- Lack of clarity on the specific roles and responsibilities of staff

#### Promotion & Outreach:

#### Opportunities:

- Existing initiatives e.g. Share the Road have been implemented
- Local natural and cultural destinations

#### Challenges:

- Pushback from local politicians due to concern about risk and liability
- Inconsistent messaging and information provided to the public



The intent of the Strategy is to build upon these opportunities and to establish solutions to mitigate the challenges. By establishing this understanding in the early stages of the development of the AT Strategy, the study team was able to work with staff, stakeholders and interest groups to identify priorities and actions which were addressed through policies, guidelines and recommendations in the Strategy.

#### 1.5 What is in the Norfolk AT Strategy?

Norfolk's AT Strategy is intended to provide County staff and its partners with the references, resources, tools, policies and guidelines to establish a more healthy and active population while continuing the County's growth as a destination for recreational tourism in Southern Ontario.

The AT Strategy contains the following sections:

2

#### **DEVELOPING THE AT STRATEGY**

- ► The process used to develop the AT Strategy including details on the consultation and engagement process and input received
- ► The goals, objectives and principles that shape the AT Strategy



#### **DEVELOPING THE NETWORK**

- Overview and documentation of the AT network development process including the results of each step
- Detailed documentation of the proposed active transportation network for Norfolk County



#### **ESTABLISHING AT ACTIONS**

- Strategic actions in the areas of planning, design, implementation and promotion for the County to prioritize
- ► Recommendations, policies and guidelines associated with each



#### IMPLEMENTING THE STRATEGY

- Proposed approach to phased implementation for the network and associated recommendations
- ► Tools to support the implementation of the Strategy



#### THE INVESTMENT

- ➤ A detailed overview of the costs associated with the implementation, operation and maintenance of the AT network
- ► Recommendations related to funding and partnerships to help facilitate the implementation of the Strategy



# 2.0 DEVELOPING THE ACTIVE TRANSPORTATION STRATEGY

The Active Transportation Strategy was developed as a collaborative effort between the consultant team, staff from the County and the Haldimand-Norfolk Health Unit, stakeholders from local interest groups and committees as well as the public.

The plan builds upon best practices and lessons learned from other municipalities throughout Ontario and responds to the requirements set-out in the original request for proposal (RFP) prepared by the County.

As the project team worked through the study process, opportunities and issues / challenges were identified and addressed through this strategy. The following sections provide an overview of the process that was used to develop the AT Strategy as well as the basis for the recommendations, policies and quidelines which are outlined in **Section 3.0** and **4.0**.

#### 2.1 How was the Strategy Developed?

#### 2.1.1 The Project Process

The Active Transportation Strategy developed for Norfolk County was developed as part of the higher level Transportation Master Plan and Integrated Sustainable Master Plan (ISMP). Similar to the development of the Master Plans, the Strategy was completed using a six (6) phase process between March 2015 and August 2016 as illustrated in **Figure 3**.





# 2.1.2 Consistency with the Municipal Class Environmental Assessment Process

When planning and designing for municipal infrastructure projects, the Municipal Class Environmental Assessment (MCEA) process (as identified in the Ontario Environmental Assessment Act) is normally applied. This process is intended to ensure that all potential environmental impacts are considered and that any negative impacts are identified so they can be appropriately addressed prior to implementation.

When preparing a master plan or strategy, the principles of the MCEA process typically apply – phases 1 and 2 (of the five (5) phased process) should be completed.

Figure 4 illustrates that MCEA phases and steps that were undertaken to complete the AT Strategy for Norfolk.

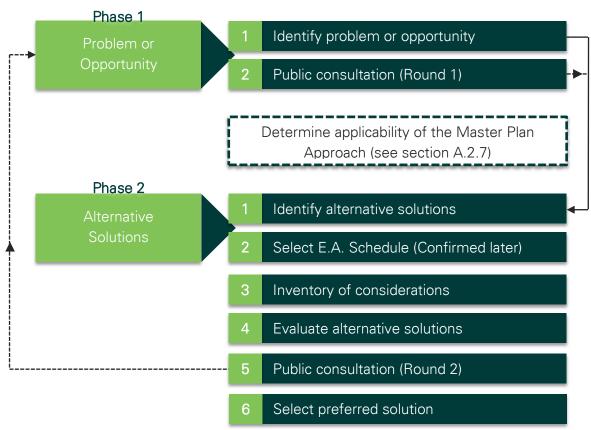


Figure 4 – Overview of the Municipal Class E.A. Process

Source: http://www.municipalcassea.ca



#### 2.2 Gathering Input

As noted in **section 2.1**, the Municipal Class EA process, which was followed when preparing the Norfolk AT Strategy, requires two rounds of consultation with members of the public and stakeholders. Consultation and engagement is a key component of developing a long-term strategic planning document because the discussions illuminate the key opportunities, issues, challenges, and needs of those who will ultimately be responsible for the implementation of the plan.

As part of the development of the Norfolk AT Strategy the project team worked with County staff, local stakeholder groups and members of the public to achieve a comprehensive and inclusive consultation program. The engagement opportunities that were identified and undertaken went beyond the Municipal Class EA requirements and allowed the project team to establish a collaborative approach to developing the Strategy.

A summary of each of the consultation activities including the inputs received is provided in a separately bound report. An overview of the consultation strategy and timeline – with specific references to its application to the active transportation strategy is presented in **Figure 5**.

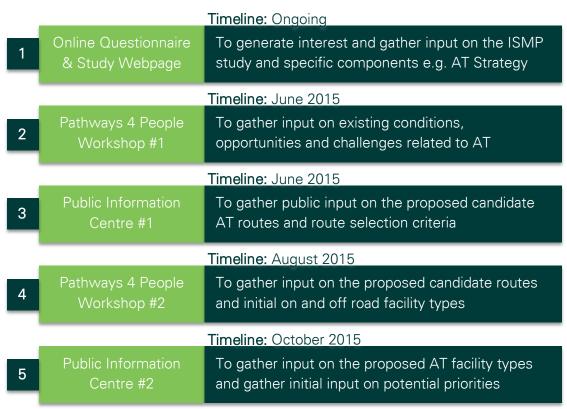


Figure 5 – Overview of Consultation and Engagement Activities for the A.T. Strategy



#### 2.3 Shaping the Strategy

The AT Strategy is founded on a number of key principles and statements. Using the input received through consultation and engagement and the requirements set-out in the Request for Proposal (RFP), the study team prepared the following principles to shape the policies, recommendations and guidelines outlined in the AT Strategy.

#### 2.3.1 Establishing a Problem / Opportunity Statement

The problem / opportunity statement is established at the beginning of a master plan if it is being undertaken consistent with the MCEA process (see detailed in section 2.1). A problem / opportunity statement was prepared for the Integrated Sustainable Master Plan and was developed to clearly identify what is intended to be addressed as a result of the completion of the study. The following is the statement that was prepared for Norfolk County.

"This study will propose a collection of active transportation, transportation and water / wastewater municipal infrastructure improvements that will function as a tool for Norfolk County to prioritize projects and implement them in an integrated fashion, based on a planning horizon of 2041.

The study will identify individual infrastructure needs for the above noted elements and will develop solutions that address these needs as well as their inter relationships and financial sustainability, on a short, medium and long term basis.

#### 2.3.2 The AT Vision for Norfolk

A more detailed version of the problem / opportunity statement is a strategy's vision statement. A long-term, active transportation specific vision was prepared for Norfolk County. It builds upon the trails vision established for the 2009 Trails Master Plan as well as input received from key stakeholders, interest groups, and County staff.

Norfolk County's Active Transportation system complements and connects existing and future off-road trails with a network of on road cycling facilities that link people with places. The system provides residents and visitors with a continuous and connected system of facilities that are designed with safety in mind and are comfortable for active transportation users and integrated with local transit (i.e. Ride Norfolk).



#### 2.3.3 County Objectives

The vision is supported by a set of objectives that the recommendations, policies and guidelines in the Strategy aim to achieve. Objectives are high-level outcomes that have been used to establish the actions and priorities identified in the short, medium and long-term. The objectives are documented in **Figure 6**.



Figure 6 - Overview of County AT Objectives

#### 2.4 AT Improvements for Norfolk County

The active transportation vision and objectives have been established and clearly articulated through this strategy. The intent is for them to be achieved through the implementation of the proposed strategies, recommendations, policies and initiatives found within the AT Strategy.

**Section 1.4** highlights the opportunities and challenges associated with active transportation within four key categories. Proposed AT improvements have been identified to address each category. The proposed actions and improvements are described in further detail in **section 4.0** and are intended to support the implementation of the Strategy and the achievement of the study vision. The proposed improvements are identified in **Figure 7**.



#### Planning & Design

- ► Establishing & Applying Consistent Design Guidelines
- **▶** Designing Complete Streets
- ► Implementing Interim Facilities
- Designing for Various User Groups
- Designing with Accessibility in Mind
- Prioritizing Sidewalk Improvements
- Consideration for Emergency
   & Service Vehicles

#### **Process & Coordination**

- ► Connecting Various Communities
- ► Integrating with the Development Community
- ► Defining Roles & Responsibilities
- ► Planning for Future AT Systems
- ► Establishing Supportive Policies
- ► Integrating the Land-use Planning Process



Graphic 1 - Norfolk County Pedestrian Bridge Source: norfolktourism.ca

#### Implementation & Operation

- ► Integrating the On and offroad network
- ► Implementing Network Amenities
- ► Integrating with other Infrastructure Planning Initiatives
- ► Seasonal Considerations
- ► Managing Risk & Liability
- ► Monitoring & Evaluating Successes

#### Promotion & Outreach

- ► Enhancing Cycling Tourism
- ➤ Designing for Safe Routes to School
- ► Coordinating with Existing Committees
- ► Moving Towards a Bicycle Friendly County
- ► Establish & Promote Key AT Messages
- ► Exploring New Partnerships



Figure 7 - Overview of the Proposed AT Improvements & Actions

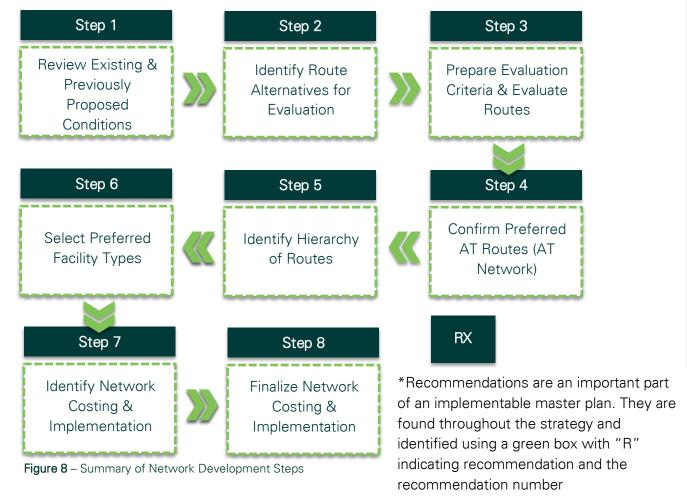
#### 3.0 DEVELOPING THE NETWORK

The development of the active transportation network for Norfolk County followed an iterative development process based on best practices, lessons learned, existing and previously proposed conditions and input from key stakeholders and interest groups.

The process and the outcomes are documented in the following section as well as **sections 4.0** and **5.0** of the Strategy report. The result is a set of recommendations, policies and guidelines which have been identified throughout the Strategy report.

#### 3.1 The Network Development Process

The network development process was made up of eight steps. As an iterative process the steps are not intended to be completed in sequence but rather the project team used the process as a guide – along with the requirements of the MCEA process – to confirm the preferred AT network, facility types and implementation strategy. The steps are illustrated in **Figure 8** and the results of each steps are documented in **section 3.2**, **section 5.0** and **6.0**.

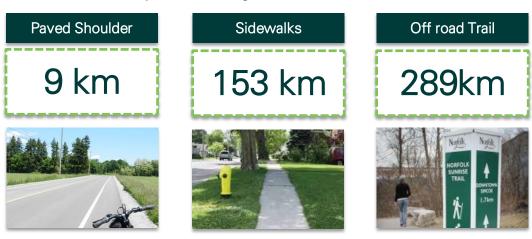




#### 3.2 Documenting the Outcomes

#### 3.2.1 Step 1: Existing & Previously Proposed Conditions

The aim of the AT Strategy for Norfolk County is to develop a network that builds on existing and previously proposed AT routes. As a result of the 2009 Trails Master Plan and other planning and design initiatives within the County there are a number of existing linkages. Information was provided by the County (in Geographic Information System (GIS) format) which was used to develop a database of conditions. The database was updated to reflect proposed AT infrastructure improvements and is intended to be used as a tool (see additional detailed in **section 4.0**). Using the GIS database, maps were generated of the existing and previously proposed / promoted AT conditions at both the County-wide and community specific levels. **Maps 1a – c** illustrate the results and a summary of the existing conditions can be found below.



Existing off-road trails are made up of a number of different trail types including:

- ➤ Rail Trails: trail linkages designed along abandoned trail beds throughout the County. There are a total of 48.2km of rail trails see details below.
- ▶ Urban Trails: pedestrian linkages found within the major urban areas of the County linking key community destinations. There are a total of 6.4km of urban trails found throughout the County;
- ► Hiking Trails: located in natural areas that accommodate hiking. There are a total of 3.3km of hiking trails within the County;
- ► Managed Park Trail: Backus Woods Trail which is owned and managed by the Nature Conservancy of Canada. There are a total of 21.5 km of trails found within Backus Woods.
- ► Woodlot Trails: trails found within conservation areas as well as County woodlots. There are a total of 289km of woodlot trails.

Maps 1a - c also illustrates a number of other key AT features. The following are descriptions of these features.



#### **REGIONAL CONNECTIVITY**

There are a number of existing regional connections found within Norfolk County. Specifically, the Trans Canada Trail (www.tctrail.ca) and the Lake Erie Waterfront Trail (www.waterfronttrail.org) are two (2) provincially significant walking and cycling routes. The routes are made up of predominantly signed connections that highlight regionally significant destinations and natural features e.g. the waterfront.

In addition, the County has also implemented a number of regionally significant rail trails that connect vast geographic areas within the County. There are a total of five regionally significant rail trails found within the County that accommodate both pedestrian and cyclist activities. The rail trails are illustrated with a mustard yellow line on Maps 1a - c and provide connectivity to a number of major community areas e.g. Delhi, Simcoe, Waterford and Port Dover. Figure 9 illustrates the different rail trail connections found within Norfolk County.



Figure 9 – Norfolk County Rail Trail Details

Source: www.norfolktrails.ca



#### CYCLE TOURING ROUTES

Touring Routes differ from regional connections in that they are routes that are promoted by local interest groups but do not necessarily have formal infrastructure to support walking and cycling. There are two type of touring routes found within Norfolk County, which the County and its partners should continue to promote as the AT Strategy is implemented. The touring routes tend to use paved roads with low volume and low speeds which in some cases may be supplemented by share the road signage (<a href="www.hnhu.org/sharetheroad">www.hnhu.org/sharetheroad</a>). There are a total of ten (10) cycle touring routes that are promoted throughout Norfolk County. The majority are loop connections within rural areas that access both major and minor community destinations.



Figure 10 – Norfolk County Touring Cycling Routes Source: www.norfolktrails.ca

#### **RUNNING ROUTES**

The County is supportive of both walking and cycling. Routes are not only proposed for cycle tourism but for those who wish to explore longer distance running routes. There are four different running routes of various lengths that are promoted by the County's community partners. The running routes vary from 10 km - 30 km (<a href="http://www.norfolktrails.ca/trails/running-routes">http://www.norfolktrails.ca/trails/running-routes</a>) in length and have a start and end point within the major County communities. Though not formally promoted by the County, the routes provide opportunities for a wider range of active transportation and recreational uses.



#### **COMMUNITY DESTINATIONS**

A primary consideration when developing the network is providing access to key community destinations including major and minor communities, areas of natural and cultural significance, tourism destinations and other points of interest. The GIS database provided by the County included a number of layers of community destinations including but not limited to accommodations, hospitals, libraries, sport facilities, tourist destinations, schools, community centres and arenas. The community destinations gave the study team a sense of the trip generators – point of origin and destination – which highlighted key missing links to help achieve County-wide connectivity.

#### INTER-MUNICIPAL CONNECTIVITY

Another consideration for network development is connectivity to the surrounding municipalities to help achieve more wide-spread regional connections. In order to understand the existing and previously proposed conditions, the study team reviewed active transportation related policies established by surrounding municipalities and identified potential points of connectivity. These connection points are illustrated with a black arrow and a description of the specific location of the connection is provided in a text box. Connectivity is important but so is continuity. Not only were connections to existing and proposed routes identified but the proposed facility type was also considered to ensure that the design and implementation of inter-municipal linkages facilitated a continuous network of facility types (where possible).

#### SUPPORTIVE SIGNAGE

As noted above, there are various regional routes found within Norfolk County. Each of these routes has its own distinct signage and wayfinding that has been applied. Typically signage can be organized into three categories: regulatory, warning and wayfinding / information. Each type of sign has its own intent and purpose – a more detailed description is provided below:

- Regulatory signage provides a direction message that must be obeyed, e.g. stop sign;
- ► Warning signage provides warning for a dangerous or unusual condition ahead such as a curve, turn, dip or side road; and
- Wayfinding / informational signage provides users with visual cues and messages which assist them with route orientation and directions to destinations and points of interest.



**Graphic 2** – Norfolk Share the Road Signage



For the prominent rail trails found within Norfolk County a significant amount of wayfinding / informational signage has been implemented including trail heads at key access points. For each distinct trail there is a distinct brand and signage concept. Images of some of the trail signage that has been implemented along these key linkages throughout the County are found on the following page. In 2010, Norfolk Council received communication from **Pathways** for People recommending the introduction of the "Share the Road" program. Stemming from that and with direction from local interest groups, public works and Haldimand-Norfolk Health Unit have worked together to develop and install Share the Road signs on popular cycling routes in Norfolk County.





In addition to the branded signage that has been implemented there is also existing signage for key regional routes (as noted above). Wayfinding markers for both the Trans Canada Trail and the Waterfront Trail are found throughout the County and are supplementary to existing Share the Road and other regulatory signage implemented by the County (see graphics below).







Graphic 3 – Sample Signage from Trails found throughout Norfolk County; Top Left (Delhi Rail Trail), Top Right (Port Rowan Wetlands), Middle (Sunrise Trail), Bottom Left (Waterford Heritage Trail)



#### 3.2.2 Step 2: Identify Route Alternatives for Evaluation

Route alternatives, also known as candidate routes, are potential AT connections – both on and off-road – that the study team identified which could form part of the County's AT network. The routes are illustrated on Maps 2a – c using a black dotted line. The routes were identified based on a number of key considerations including:

- ▶ Direct north-south and east-west connections throughout the County;
- Abandoned rail corridors and open spaces;
- New subdivisions or development areas;
- ► Available land is the road right of way sufficient to accommodate the implementation of a facility or would the development of a trail require additional land acquisition;
- Connections within community areas;
- Linkages to key destinations e.g. schools, libraries, community centres, etc.;
- Connections to surrounding municipalities;
- ▶ Routes promoted by local cycling groups and / or trail organizations e.g. Pathways for People, Silver Spokes, Turkey Point Mountain Biking Club, etc.:
- Connection between major community areas;
- Missing links in the Trans Canada Trail and Waterfront Trail routes;
- Overcomes physical barriers in the existing system;
- ► Gaps in the sidewalk and greater pedestrian system; and
- Linkages to existing trails (e.g. urban, woodlot, hiking, rail, etc.).

Though there is some initial support for these routes, additional investigation in the field and evaluation was needed to confirm whether they were considered suitable for the County-wide AT network. The results of this investigation are documented in the following section.

#### 3.2.3 Step 3: Prepare Evaluation Criteria & Evaluating Routes

Route selection and evaluation starts with a consistent set of criteria which can be applied to the route alternatives (candidate routes). The route selection criteria prepared for Norfolk County reflect a number of the objectives set out in the early stages of the planning process.

They also reflect the facility selection considerations set-out in OTM Book 18: Cycling Facilities as well as best practices and lessons learned from comparable municipalities throughout Ontario. The criteria and a description of each are presented in **Figure 12**.





Figure 11 - Norfolk AT Network Route Evaluation Criteria

The evaluation of route alternatives was completed using field investigations County-wide. Field investigations can be completed using a number of different techniques both in the field (i.e. on the ground) as well as through a desk-top review (i.e. using online interactive resources). The results of these investigations allowed the study team to gain a better understanding of the current conditions and unique characteristics of specific locations throughout the County.

There were three types of field investigation used to evaluate the candidate routes within Norfolk County. The steps are illustrated in **Figure 12** and are described in further detail below.



#### Step 1 Step 2 Step 3 In the Field Specific Area Desk-top Review Investigations Investigation For specific geographic The study team drove The study team used areas within the the candidate routes in the information July 2015 and County more focused provided in the field investigations gathered information County's Roads were undertaken e.g. about existing Database as well as area communities conditions e.g. onaerial imagery to street parking, road such as Simcoe. The confirm final route consultant team cycled preferences and to width, utilities, etc. the candidate routes The results were refine the candidate and evaluated them documented using routes as necessary. photographs and from a ride-ability G.P.S. waypoints. perspective. Videos were taken to document this.

Figure 12 - Norfolk AT Field Investigation Stages

The G.P.S. waypoints, photos and videos that were gathered through the field investigation process were used to develop a database of conditions and characteristics. The results of this investigation are presented in a separately bound **Technical Appendix A-3.** The information gathered was used to develop a KMZ file (GIS shapefile) which can be overlaid in GoogleEarth. The file can be used as a communication and future asset management tool as the project proceeds to implementation and specific routes and conditions need to be illustrated to the public, stakeholders and members of Council.

#### 3.2.4 Step 4 & 5: Confirm Preferred AT Routes & Identify Hierarchy of Routes

As a result of the field investigations and route evaluation, the preferred on and off-road AT routes throughout the County were selected. A number of routes were confirmed and others were deleted through this process. Map 3a - c illustrate the routes that make up the preferred AT network concept for Norfolk County. The map also illustrates a route hierarchy for the network concept. The hierarchy helps to determine the intent and purposes of the proposed route which in turn helps to determine the preferred facility types for that route. The route hierarchy was determined based on the objectives of the Strategy as well as the Ministry of Transportation Ontario's (MTO) existing road classification system.



The road classification was specifically used to understand how active transportation facilities relate to the design and implementation of various roadways County-wide. The road classification is broken into six categories – alleyways, local residential, local commercial or industrial, collector residential, collector commercial or industrial and arterial. Each of these road classifications is further defined based on their context e.g. urban, semi-urban or rural. For the purposes of the AT network, route hierarchy was related to local roadways, collector roadways, arterial roadways, and provincial highways which are described in further detail below:

- ► Local Roadway: Roads that provide access to residential developments as well as commercial or industrial areas.
- Collector Roadway: Roads that serve traffic between local residential and arterial roads and provide access to adjacent residential, commercial or industrial properties.
- ➤ Arterial Roadway: Roads that serve large volumes of all types of traffic moving at medium to high speeds. Direct access to adjacent development is limited and traffic flow is generally uninterrupted. Design speed ranges between 50km/h and 100 km/h.
- Provincial Highway: Roads under the jurisdiction of the Ministry of Transportation Ontario subject to permit control and approval under the Public Transportation and Highway Improvements Act.

The routes that make up the Norfolk AT network were classified under either the primary or the secondary route hierarchy. How the road classification and the route hierarchy relate is presented in **Table 1**. The descriptions are not meant to be prescriptive but a point of reference for future decision making should routes be added to the AT network that were not originally anticipated.

Table 1 - A.T. Network Hierarchy & Road Classification

Route Hierarchy	Objective	Road Class	Facility Design
Primary	Routes that make up part of the network spine and establish direct north-south or east-west connections between rural area and community areas. The system is the backbone of the network.	Provincial & Arterial	Potential high-speed and high-volume roadways which require more separation i.e. either designated or separated facility
Routes that provide local access to key community destinations and/or direct access to the primary system. The routes are less direct but can provide more options for short-distance trips.		Collection & Local	Lower volume and lower speed roadways that do not require separation i.e. shared facility or designated facility if space is available



One of the key objectives of the Strategy was to develop a continuous and connected system of active transportation facilities. The rationale for route hierarchy noted above speaks to the design and implementation of on-road AT facilities specifically. Though the on-road routes were of specific focus for the A.T. Strategy it is also important to appropriately integrate both on-road and offroad facilities. As noted earlier in the Strategy, the design and implementation of off-road AT linkages throughout Norfolk is driven by the routes and recommendations identified in the 2009 Trails Master Plan.

There are various types of trails in Norfolk County (see section 3.2.1 for additional details) which can be organized into two categories – woodlot trails and rail trails. As this is an active transportation strategy, the intent is to design a continuous network with facilities for a range of different AT user groups. With this in mind, the study team has assumed that the rail trails within the County make-up part of the primary AT system while the woodlot trails make-up part of the secondary system.

R1



Norfolk County's AT network is made up of primary "spine" routes and secondary "local" connections. The network is made up of both on and off-road linkages.

R2



County staff should use the definitions for the primary and secondary network and should assign a hierarchy to additional routes that are identified and ultimately incorporated into the AT network when implementing the strategy.

#### 3.2.5 Step 6: Select Preferred Facility Types

Determining the preferred facility types for the AT routes identified within Norfolk County was based on the facility selection process outlined in Ontario Traffic Manual (OTM) Book 18: Cycling Facilities and sound engineering judgement.

The approach was developed by practitioners involved in the planning, design and implementation of cycling facilities in Ontario and is now considered the standardized approach to decision making for cycling and active transportation facilities in the province. The process was used for Norfolk County based on the detailed information provided by staff in the early stages of the project process.



The facility selection tool identifies both preliminary and preferred facility recommendations but is intended to be flexible as it takes into consideration physical and operational characteristics that are unique to the road / context in which the facility is being designed. The process is made up of three steps – see Figure 13 for a more detailed description of each step.

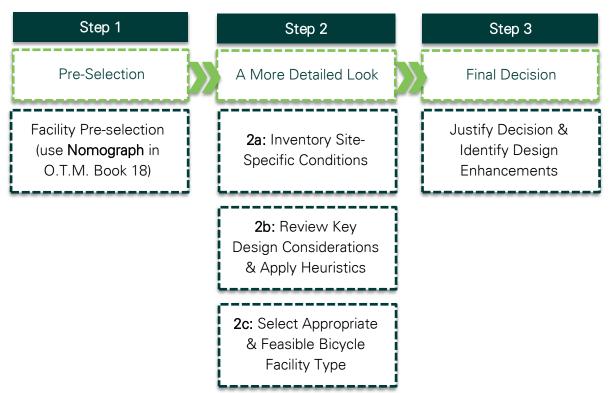


Figure 13 - Overview of the O.T.M. Book 18 Facility Selection Process

For the Norfolk AT Strategy, the consultant team completed steps one through three. Because of the nature of each of the steps, and the different results that are generated, how they have been documented varies throughout the report. The following sections document the results of each step to illustrate how the AT network was developed.





The County of Norfolk is encouraged to use the OTM Book 18 Facility Selection process should additional route opportunities arise as the County proceeds with the implementation of the AT Strategy and network.



#### STEP 1: FACILITY PRE-SELECTION

The proposed AT routes were evaluated based on the 85th percentile motor vehicle operating speed as well as the average daily traffic (ADT) volumes documented based on counts undertaken by the County. All of the information needed to perform this assessment was provided by the County as part of their comprehensive Roads Database. The information for each route was plotted on a nomograph to identify the preliminary facility type recommendation with respect to the preferred level of separation (e.g. shared, designated or separated). Figure 14 illustrates the nomograph that was used for this assessment, the results of which are documented in a separately bound Technical Appendix A-5.

the remainder of the AT Strategy. The ID number is unique to each route and read in conjunction with the network database. Route ID numbers have been

#### STEP 2: A MORE DETAILED LOOK

Step 2 takes the preliminary facility recommendations from Step 1 and refines them based on a more detailed list of design factors and considerations. A set of heuristic (knowledge-based rules) were developed and outlined in OTM Book 18 that reflects onsite specific conditions. Through applying these considerations, the study team was able to identify the preferred facility types. The assessment was completed using the following site-specific information provided by the County in its Roads Database which contained the following site specific considerations:

- Roadside Environment
- ▶ Design Classification
- Surface Type
- ► Length (in km) of Segment
- ► Platform Width / Surface Width / Shoulder Width
- AADT

- Traffic Flow
- Speed Limit
- Average Operating Speed
- ▶ Shoulder Type
- Surface Condition
- Maintenance Demand
- Lanes



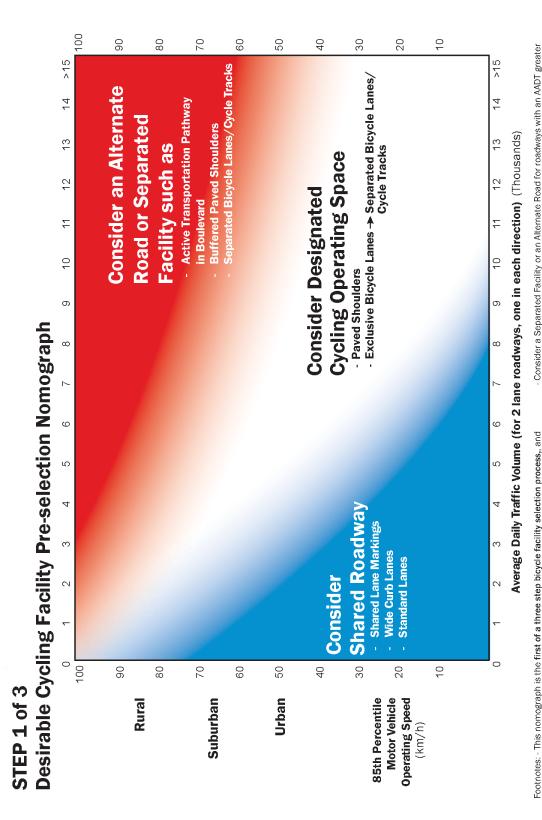


Figure 14 - OTM Book 18 Facility Selection Nomograph



Consider a Separated Facility or an Alternate Road for roadways with an AADT greater than 15,000 vehicles and an operating speed of greater then 50 km/h.

should not be used by itself as the justification for facility selection (see Steps 2 and 3).

The nomograph simply helps practitioners pre-select a desirable cycling facility type, The nomograph has been adapted for the North American context and is based on applicable for multi-lane roadways. For these situations, designers should consider

however the context of the situation governs the final decision.

the operating speed, total combined traffic volume and traffic mix of the vehicles international examples and research for two lane roadways. It is, however, still

traveling in the lanes immediately adjacent to the cycling facilities.

as on road segments with on-street parking. This needs to be considered when assessing driveways, midblock crossings and intersections (especially on multi-lane roads), as well For rural and suburban locations this nomograph assumes good sightlines are provided risk exposure in urban environments since it will influence the selection of a suitable for all road users. In urban areas, there are typically more frequent conflict points at

The information provided in the County's database was supplemented by information gathered in the field, submitted by Pathways for People, members of the public and other online resources including:

- "HEAT" mapping of current cycling and running routes documented throughout Norfolk County (see Figure 15 and Figure 16) – The HEAT mapping illustrates areas in the County where there are documented cycling routes – Areas with higher documented routes are shown in red where lower documented routes are illustrated in blue.
- ▶ Field investigation findings including the database of G.P.S. waypoints and photographs to highlight vehicle mix, operating speed and frequency of intersections or other key conflicts.
- ► The proposed hierarchy of routes.

#### STEP 3: JUSTIFY YOUR RATIONALE

The final step in the facility selection process is the documentation of the results of step 1 and 2 and results in the recommendation of a preferred facility types for the proposed cycling linkage. It is important to note that final decisions are made based on sound engineering judgement as more context sensitive conditions and considerations may be raised in these final stages. The results are illustrated in **Maps 4a** - c. There are some route segments where the results of steps 2 and 3 differ from that of step 1. The locations and rationale for the preferred facility are documented in **Table 2**.

Table 2 - Summary of Step 1 and Step 3 Variations

Location / Community	Step 1 Results	Step 3 Results	Rationale
St. George Street / Harbour Street (Port Dover)	Shared	Bike Lane	<ul> <li>Provides key north-south link through Port Dover and connects residents to key destinations (e.g. school, shops, waterfront, etc.)</li> <li>Interim solution proposed (signed route with edgeline) as opportunity to assess user interest in a long-term designated cycling facility.</li> <li>Sufficient road space to implement 1.5m bikes lanes.</li> </ul>
Donly Drive North (Simcoe)	Shared	Bike Lane	<ul> <li>Donly Drive North / South provides key north-south connection through Simcoe.</li> <li>Local route that provides alternative from high volume, high speed roadways e.g. Norfolk Street.</li> <li>Roadway width is 10.6m – sufficient space to implement bike lanes.</li> </ul>



Location / Community	Step 1 Results	Step 3 Results	Rationale
Highway 59 & Ireland Road (Simcoe)	Shared	Paved Shoulder	<ul> <li>Ireland Road provides key north-south connection to and from Simcoe.</li> <li>Proposed paved shoulder provides connection for cyclists and pedestrians to key destinations including Fanshawe College.</li> <li>Shoulder width varies from 1.5m to 2.6m – sufficient space to implement paved shoulders.</li> </ul>
Church Street East (Delhi)	Designated	Signed Route with Sharrow	<ul> <li>Roadway width is 7.4m – not enough space to accommodate a designated facility e.g. bike lanes.</li> <li>Proposed signed route with sharrows intended to alert motorists of shared roadway space with cyclists.</li> </ul>
Main Street South (Waterford)	Designated	Signed Route with Sharrow	<ul> <li>Roadway with varies from 8.6m to 8.7 – not enough space to accommodate a designated facility e.g. bike lanes.</li> <li>Proposed signed route with sharrows intended to alert motorists of shared roadway space with cyclists.</li> </ul>
Evergreen Hill Road (Simcoe)	Designated	Signed Route with Sharrow	<ul> <li>Roadway width is 9.3m – not enough space to accommodate a designated facility e.g. bike lanes.</li> <li>Proposed signed route with sharrows intended to alert motorists of shared roadway space with cyclists.</li> </ul>
James Street (Delhi)	Designated	Signed Route with Sharrow	<ul> <li>Short section (approximately 50m) of proposed signed route with sharrow to alert motorists of shared roadway space with cyclists.</li> <li>County staff should consider a complete streets redesign of James Street to accommodate various users e.g. pedestrians and cyclists as this roadway if a key north-south route in Delhi.</li> </ul>
13th Street East / Concession 13 Townsend (County)	Designated	Signed Route	<ul> <li>Roadway width is 7m wide and urban cross-section</li> <li>Not sufficient width to implement designated facility e.g. paved shoulders to the north and south of Norfolk County Road 19.</li> </ul>



#### 3.4 Designing Preferred AT Facilities

The design of AT facilities should be guided by best practices and industry standards including but not limited to:

- ► Ontario Traffic Manual Book 18: Cycling Facilities
- ▶ Ontario Traffic Manual Book 15: Pedestrian Facilities
- Transportation Association of Canada: Bikeway Traffic Control Guidelines
- ▶ Ministry of Transportation Ontario Bikeways Design Guidelines
- Accessibility for Ontarians with Disabilities Act

The primary facility design manual is Ontario Traffic Manual Book 18 has been the basis for the AT facility design guidelines prepared for the Norfolk County AT Strategy – see separately bound **Technical Appendix A-4**. The document focuses on the design of cycling facilities, however, they also contain other design considerations and features that form part of an integrated on and offroad active transportation system e.g. intersections and crossings, trail amenities, risk management and liability, facility transition points, etc.. Many of these additional design considerations respond to the challenges that have been identified by the County and its partners over the course of the project.

The design guidelines outlined in the separately bound appendix are intended to be used by County staff along with the more detailed design guidelines provided in OTM Book 18 and other design standards. As guidelines and standards are updated and new design principles emerge they should be refined to reflect them. The County has existing roadway design guidelines (i.e. Norfolk County Design Criteria – May 2009) which are used to guide design and construction. Suggested updates to the existing guidelines have been identified and should be considered by the County when they are next updated.





The County should adopt the design guidelines (Technical Appendix A-4) in addition to other industry standards and guidelines as the basis for the design of AT facilities County-wide. Designers and builders should be provided with the relevant resources for future decision making.





The County should review the suggested updates to the existing 2009 Norfolk County Design Criteria and should consider updating the document to reflect these changes.





Figure 15 - HEAT Mapping of Documented Cycling Routes in Norfolk County

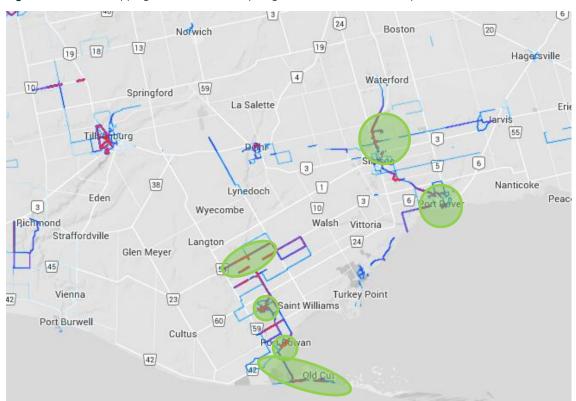


Figure 16 - HEAT Mapping to Documented Running Routes in Norfolk County



### 3.5 An Overview of the Proposed AT Network for Norfolk

The proposed AT network for Norfolk County is illustrated on Maps 4a - c. The routes and facility types have been identified based on the network development and facility selection process documented in section 3.0 which also mirrors the MCEA process. A summary of the proposed facility types is provided in Table 3.

Table 3 – Norfolk AT Network – Summary of Facility Types

Facility Type	Existing (Km)	Proposed (Km)	Total (Km)
Part 1 Cy	cling Facilities &	Trails	
Off-road Trail	368	23.2	391.2
In-boulevard multi-use trail	0	4.4	4.4
Buffered Paved Shoulder	0	33	33
Paved Shoulder	8.6	242.6	251.2
Bike Lane	0	12.7	12.7
Signed Bike Route	0	411.3	411.3
Signed Bike Route with Edgeline	0	3.2	3.2
Signed Bike Route with Sharrow	0	7.3	7.3
Part 2 Sidewalks			
Sidewalks	153.4	290.8 <sup>1</sup>	444.2
Total	530.2	1028.5	1558.5

<sup>1 –</sup> Proposed sidewalks have been identified on routes that make up part of the designated AT network. Total proposed km of AT facilities does not include 290.8km of sidewalks as they are already considered as part of the proposed km for facilities identified in Part 1 of this table.

A more detailed documentation of the proposed routes and facility types is also found in a separately bound **Technical Appendix B**.

R6



The AT Network presented in Maps 4a - c should be adopted by the County as the blueprint for the development of future AT facilities in combination with the 2009 Trails Master Plan Network (until next updated).

R7



Over time the AT network will change – to reflect new opportunities. The database and mapping should be updated to reflect these changes and the changes should be communicated to the appropriate staff members.



# 4.0 ESTABLISHING ACTIVE TRANSPORTATION ACTIONS

A well-defined approach is needed in order to effectively and efficiently implement the AT network and supportive strategy. Implementation should include a number of steps and stages which are achieved through specific actions. Recommended improvements initiated immediately following the adoption of the Strategy – also known as priority projects – will help to generate momentum and the medium and long-term actions will help to achieve the ultimate goals and objectives. Together they form a long-term implementation guide supported by tools that can be used by the County and its partners.

### 4.1 Planning & Design

Though a significant amount of preliminary planning has been done as part of the development of the AT Strategy, there are still key planning and design principles and considerations that need to be adopted in order to achieve a continuous and connected system of facilities County-wide. Planning and design of AT infrastructure should be guided by two key principles - comfort and user safety and should also prioritize the following actions.

### 4.1.1 Establish & Apply Consistent Design Guidelines

Consistency is important when planning a system of AT facilities. Facility selection, design and implementation should be guided by existing standards, quidelines and best practices. A set of design quidelines were developed (see the separately bound Technical Appendix A-4) which contain information that is consistent with and reinforces the current provincial guidelines and standards see additional details in section 3.3. Norfolk County should use OTM Book 18 and 15 as primary references for the design of AT facilities in conjunction with the design guidelines prepared for the AT Strategy. Though it is important to be consistent it is also important to acknowledge that in some locations more unique and context sensitive solutions may be needed. A context sensitive solution is one that may vary from a typical design and has been selected for a particular location based on roadway and surrounding conditions based on sound engineering judgement. There are no locations within the AT network where context sensitive solutions have been identified, however, through further planning and investigation (e.g. feasibility or detailed design studies), locations may be identified where these solutions may be required.

R8



Norfolk County should adopt and use OTM Book 18: Cycling Facilities and 15: Pedestrian Signals as the primary reference for the design of AT facilities in conjunction with the design guidelines prepared for the AT Strategy.



### 4.1.2 Designing Complete Streets

Complete streets are a relatively new but emerging trend in the area of transportation planning and design. The concept of complete streets is based on the principle that streets are meant to be designed for everyone. They are meant to be designed and operated to allow for safe access by all potential users including pedestrians, cyclists, motorists, transit users (e.g. Ride Norfolk), etc.

The key to complete streets is that their design accommodates people of various ages and abilities in a way that encourages a higher amount of interaction with the public space. Complete Streets can be implemented in both urban and rural environments and can make it easier for residents and visitors to cross the street, walk to local shops and get to and from major destinations using alternative modes of transportation.

Within Norfolk County there are a number of community area main streets that are designed only to accommodate motorized vehicles and are considered spaces that are not supportive of alternative modes. These corridors are illustrated on Maps 4a – c. These corridors are considered a priority for a full redesign as they are considered major thoroughfares, entry points and destinations within the County's major communities. Some design principles that could be considered for implementation include: wider sidewalks, lane narrowing, bump-outs, pedestrian crossings, bicycle parking, streetscaping, amenities, etc.





Graphic 4 – (Right) District of Saanich, BC – Rural Example; (Left) City of Ottawa Byward Market





As the main streets within the County's community areas come up for redesign, staff should consider the design and implementation of a complete street to accommodate various users along the key connections.



### 4.1.3 Implementing Interim Facilities

The AT Network illustrates full build-out. This means that the final proposed design solution has been identified. Though these facilities are the preferred outcome, in some locations it may be necessary to implement an interim facility in the short-term to achieve connectivity between existing facilities. The ultimate design solution is intended to be achieved in the medium or long-term following additional investigation.

As part of the Norfolk AT network there are eight locations where an interim facility type has been identified. For each location, the study team applied the facility selection process to identify the preferred enhancements. Though the linkages are considered key connection, the preferred enhancements may not be achievable in the immediate future requiring a more detailed investigation – including environmental impact studies, traffic impact studies, etc. Some reasons why interim facilities have been identified for these locations include:

- ▶ Insufficient space to accommodate the preferred facility type;
- ► Environmental constraints may be present which require an Environmental Assessments to confirm future impacts;
- ▶ Land is not available to the County to accommodate the facility type; or
- ► The budget is not thought to be available within the preferred timeline to implement the ultimate design.

**Table 4** summarizes the route segments where interim facilities have been identified.

Table 4 – Overview of Interim Facility Design Solutions

Route Segment & Description	Community	Interim Solution	Preferred Solution	Length (km)
St. George Street (Nelson Street West to Clinton Street)	Port Dover	Signed Route with Edgeline	Bike Lane	0.55
St. George Street (Greenock Street West to Nelson Street West)	Port Dover	Signed Route with Edgeline	Bike Lane	0.36
St. James Street South (Alice Street to Green Street)	Waterford	Signed Route	In-Boulevard Multi-use Trail	0.62
Wilson Avenue (Norfolk Street South to Hendry Street)	Simcoe	Signed Route	In-Boulevard Multi-use Trail	0.33
Highway 59 (Front Road to Erie Boulevard)	Port Rowan	Signed Route	Paved Shoulder	4.36
Windham Road 11 (Swimming Pool Road to Brantford Road)	Norfolk County	Signed Route	Paved Shoulder	2.03



Route Segment & Description	Community	Interim Solution	Preferred Solution	Length (km)
Colonel Talbot Road (Highway 59 to Orange Hall Road)	Norfolk County	Signed Route	Paved Shoulder	9.49
Erie Boulevard (Highway 59 to Road Terminus)	Port Rowan	Signed Route	Paved Shoulder	3.95

R10



The County should proceed with the implementation of the proposed interim facilities as identified in Table 4 with the goal of implementing the ultimate solution in the proposed timeline.

#### 4.1.4 Designing for Various User Groups

The AT Strategy aims to provide opportunities for various types of active transportation and recreation user groups by improving the infrastructure connectivity and quality. To do one must understand the different target user groups and their preferences. For the Norfolk AT Strategy two primary groups were considered – pedestrians and cyclists (please refer to separately bound Technical Appendix A-4 for additional design details). Though it is acknowledged that there are many other potential user groups (as defined in the 2009 Trails Master Plan) these two groups were the focus for facility design.

When designing the AT network, pedestrians typically use sidewalks and paved shoulders within the road right-of-way and trails outside of road rights-of-way. As such, there are typically fewer pedestrian considerations when selecting facility types. Cyclists, however, are considered vehicles under the Highway Traffic Act, which means that cyclists are expected to use the roadway in addition to off-road facilities.

When designing facilities, key determinants include level of comfort and skill. For cyclists, research shows that they can typically be defined by four categories - see **Figure 17**.



Figure 17 - Categorization of Cyclists - Source: Portland, OR



To design a network that is considered comfortable by the widest range of users, the Strategy aims to design facilities that are attractive to "interested but concerned" users while accommodating the "enthused and confident" and the "strong and fearless". This can be achieved by identifying and implementing a range of facility types.

Facility types can be organized into three categories based on the level of separation from motor vehicle traffic which in turn influences the level of user comfort. An overview of the three facility type categories including the various facilities that could be considered for implementation and how pedestrians and cyclists are accommodated is provided in **Table 5**.

Table 5 – AT Facility Type Category Overview

Table 5 – AT Facility Type Category Overview					
Shared Facilities	Designated Facilities	Separated Facilities			
Description: Facilities where the cyclists share the roadway with motorists.	Description: Facilities that provide a separated space for cyclists on the roadway.	Description: Facilities that are: (i) within the roadway and separated from motor vehicle traffic by a buffer, (ii) within the road right of way but separated from vehicle traffic and (iii) those that are outside of the road right-of-way.			
Types of Facilities:  Cyclists:  Signed Bike Route  Signed Bike Route with Sharrow  Pedestrians:  Sidewalk  Shoulder	Types of Facilities:  Cyclists:  Signed Bike Route with Paved Shoulder  Bike Lane  Pedestrians:  Sidewalk  Shoulder	Types of Facilities:  Cyclists:  ■ Buffered Bike Lane ■ In-Boulevard Multi-Use Trail ■ Off-Road Multi-Use Trail  Pedestrians: ■ Sidewalk ■ Shoulder ■ In-Boulevard Multi-Use Trail ■ Off-Road Multi-Use Trail			
Application: Facilities are comfortable predominantly for the enthused and confident cyclist. On local roads they may be used for short-distance trips by interested but concerned cyclists.	Application: Facilities that are comfortable for a range of cyclists but predominantly the enthused and confident as well as interested but concerned.	Application: Facilities are comfortable for the greatest range of cyclist types.			



Though pedestrians and cyclists are the focus of this strategy, other user groups may use these facilities where feasible and permitted. Other users could include individuals with mobility limitations, including those who require assistive devices, as well as users of e-bikes. E-Bikes are also a relatively new phenomenon in Canada. Growing in popularity, they are now regularly seen in urban environments traveling in bike lanes, trails and pathways and on sometimes on sidewalks. They are attractive because:

- ▶ They are affordable both in terms of the initial purchase cost and cost to
- ▶ They are small, light and can be easily maneuvered; and
- ▶ They are easy to park and can travel along very narrow corridors.

Although they are defined in provincial legislation, their use is not clearly regulated and municipalities are challenged to address where they should be permitted and how to enforce improper use. Many municipalities are challenged by simply trying to define various types of e-bikes and develop rules regarding their use. The municipality should ensure that their by-law provides clear direction on how to address e-bikes on AT facilities throughout the municipalities. Both the zoning and traffic by-law should be updated based on the following bullets:

- ▶ Preparing definitions for, and adding e-bikes to the list of restricted vehicles (both e-bikes / "Vespa"-type scooters and electric assist bicycles);
- ▶ Allowing the use of e-bikes by police and emergency services in the line of duty so these can be used for use for patrols and emergency access;
- ▶ Allowing the use of e-bikes by municipal staff while performing duties, should the municipality wish to use e-bikes for some duties in the future rather than full sized service vehicles or gators;
- ▶ Monitoring evolving best practices related to e-bikes, including any changes in legislation at the provincial level given this is a new issue that many municipalities are challenged to resolve; and
- ► Considering an increase in the speed limit on multi-use trails from 10mph/16km/hr to 20km/hr.

When developing the AT network and proposed facility types / network improvements, accessibility for people of all ages and abilities should be considered. The municipality should also take into consideration the suggested revisions to municipal by-laws to provide direction on the use of AT facilities by e-bikes throughout Norfolk County.



When implementing the AT network in Norfolk County, facilities should be designed with people of all ages and abilities in mind with specific reference to the design guidelines identified in TA-4.



#### 4.1.5 Design with Accessibility in Mind

Statistics Canada states that in 2012, about 3.8 million (~3.8%) Canadians reported having a disability. The Accessibility for Ontarians with Disabilities Act (A.O.D.A.) (2005) promotes the goal of making Ontario accessible for people with disabilities by 2025. Under the Integrated Accessibility Standards (Ontario Regulation 19/11), specifically the Design of Public Spaces and the Built Environment, there is direction provided on the planning, design and implementation of trails, parking, sidewalks, pathways, etc. Additional details on this document can be found in separately bound **Technical Appendix A-1**. One of the primary goals of the regulations is to design spaces that remove barriers to buildings and outdoor amenities<sup>1</sup>.

Accessibility is not only about providing people with mobility limitations with appropriate facilities but also about ensuring that connected spaces are designed appropriately. The AT network is made up of both on and off-road facilities to achieve ultimate connectivity. When designing off-road AT facilities, the County must refer to the Built Environment Regulations to ensure that the needs of all user groups are accommodated. County staff should also strive 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 provide the technical requirements for multi-use recreational trails.

Providing multi-modal opportunities to get to key community destinations is another consideration when designing for accessibility. The primary system provides the County with a spine network of direct connections to these destinations. The secondary system complements the primary network providing route alternatives which can be used depending on level of comfort and skill. Implementing both the primary and second system is an important component of network implementation. The phasing plan has been developed to allow for connectivity and access County-wide within each phase.

R12



When designing and implementing AT facilities and multiuse trails the County must refer to the Built Environment Standards (under the Integrated Accessibility Standards Regulation) as well as the AODA section 80.8 and 80.10 to satisfy the requirements to the greatest extent possible given the context of each trail's location, the surrounding environment and the type of trail experience that is desired.

<sup>&</sup>lt;sup>1</sup> Note: The standard only applies to new construction and extensive renovation and is not mandatory for the design of on-road cycling facilities.



### 4.1.6 Prioritizing Sidewalk Improvements

Sidewalks are a key component of the AT network and one of the primary facilities that accommodate pedestrians. Sidewalks are implemented within the more urban context above the curb of a roadway. It is typically 1.5m wide and made of concrete. Significant pedestrian connectivity issues occur when there are missing links or gaps in the sidewalk system. Due to the existing planning process and phasing of past projects within the County's community areas there are locations along the proposed AT network where there is a sidewalk only on one side of the roadway or locations where there are no sidewalks on either side of the roadway.

Where possible, the County should aim to have sidewalks on both sides of the roadways for routes that make up the designated AT network (within community areas). There may be other streets that have missing sidewalk linkages that are not part of the designated AT network which the County may select to implement as a separate initiative.

Sidewalks are also considered one of the facilities that provide youth with direct access to schools. One of the priorities of the strategy is providing youth with more opportunities to walk and cycle to school through active and safe routes. Those students who live within 1.6km of a school are considered "able" to use an alternate mode of transportation and are not identified as candidates for bussing. As such, proposed AT routes where no sidewalks currently exist within a 1.6km radius of a school should be considered a priority for the County.

As part of the AT Strategy, the project team mapped the location of these gaps as well as the "walkable area" around local schools. These linkages should be considered priorities for the AT network. The results of this assessment are presented in **Map 5a** and **b**. The County should consider identifying an annual budget which can be used to implement gaps in the sidewalk network. Though a cost has not been identified for the implementation of the sidewalk priorities, an estimated unit cost has been identified within the database of facility costs provided to the County.

For future implementation of sidewalks, priority should be given to designated AT routes where no sidewalks currently exist within the "walkable" area of local schools in order to establish a more connected pedestrian system. A summary of these routes is presented in **Table 6**. In addition, the County should provide direction on the design and implementation of future sidewalks through an updated sidewalk policy which could be achieved through the updated engineering and design standards.



Table 6 – Sidewalk Implementation Priority Projects

Table 6 – Sidewalk Implementation Priority Projects		
Project Description	Community	Length (km)
Barkley Crescent (Sheridan Boulevard to Donly Drive South)	Simcoe	1.3
Bay Street (Chestnut Street to Price Street)	Port Rowan	0.0
Bay Street (1st Concession Road to Chestnut Street)	Port Rowan	0.1
Brown Street / Montclair Crescent (Washington Street to Duncombe Street)	Waterford	0.3
Chapman Street West (St. George Street to St. Annie Street North)	Port Dover	0.2
Charles St / Beckett Blvd / Royal Rd / Holden Ave (Dora Drive to Bellevue Avenue)	Simcoe	0.6
Church Street East (Delcrest Avenue to Brantford Road)	Delhi	0.3
Clinton Street (St. George Street to St. Patrick Street)	Port Dover	0.0
Concession 2 Woodhouse (Cockshutt Road to Urban Limit)	Port Dover	1.9
Concession 8 Townsend / Mechanic Street West (Trans Canada Trail to Main Street North)	Waterford	0.3
Connaught Avenue (James Street to Northern Avenue)	Delhi	0.2
Connaught Avenue/ Callens Avenue (Northern Avenue to Church Street East)	Delhi	1.0
Decou Road (Norfolk Street South to Ireland Road)	Simcoe	0.9
Decou Road (Existing Off-Road Trail to Ireland Road)	Simcoe	0.8
Donly Drive North (Queensway East to Lynndale Road)	Simcoe	0.2
Donly Drive South (Victoria Street to Woodway Trail)	Simcoe	0.5
East Street (William Street to Imperial Street)	Delhi	0.1
Evergreen Hill Road (Norfolk Street South to Elm Street)	Simcoe	0.5
Evergreen Hill Road (Hillcrest Road to Oak Street)	Simcoe	1.3
Foster / Beckett / Sunset / Dora (Charles Street to Holden Avenue)	Simcoe	1.6
Future Planned Road in Port Dover (Concession 2 Woodhouse to New Lakeshore Road)	Port Dover	1.9
Hare Street / Kingsland Drive (Main Street North to Main Street North)	Waterford	0.7
Hunter Drive North (Front Road to 510m north of Front Road)	Port Rowan	0.5
Imperial Street (Main Street to East Street)	Delhi	0.0
Ireland Road (Lynndale Road to Concession 6 Woodhouse)	Simcoe	0.7
Main Street North (Mechanic Street West / Deer Park Road to Alice Street)	Waterford	0.0
Main Street South (Green Street to Thompson Road East / West)	Waterford	0.1
Nichol Street (Washington Street to Road Terminus at west)	Waterford	0.2
Nichol Street (St. James Street South to Main Street South)	Waterford	0.0



Norwich Road (Windham Road 20 to Talbot Road)	Delhi	2.1
Prospect Street (Main Street to Silver Lake Road)	Port Dover	0.5
Queen Street (South Drive to Evergreen Hill Road)	Simcoe	0.6
Silver Lake Drive / Cockshutt Road (Dover Mills Road to Prospect Street)	Port Dover	0.9
Somerset Dr / Newport Ln / Ocean Wy / Lakeview Ave (Hamilton Plank Road to New Lakeshore Road)	Port Dover	0.6
St. George Street (Clinton Street to Harbour Street)	Port Dover	0.3
Talbot Road (Talbot Road to Swimming Pool Road)	Delhi	0.0
Talbot Road (Norwich Road to James Street)	Delhi	0.1
Victoria Street (Norfolk Street South to Ireland Road)	Simcoe	0.5
Washington Street (Brown Street West to Thompson Road West)	Waterford	0.2
Western Avenue (Main Street in Delhi to Existing Off-Road Multi-Use Trail)	Delhi	0.0
Willowdale Cres/ Ivey Rose W/ Cardinal Ln (Willowdale Crescent to Main Street)	Port Dover	0.3
Wilson Avenue (James Street to Gage Street)	Delhi	0.3
Woodway Trail (Decou Road to Decou Road)	Simcoe	1.8

R13



The County should prioritize the implementation of sidewalks on routes that make up part of the County-wide AT network in specifically within the "walkable areas" of the County's communities. Reference should be made to the maps presented in **Map 5a** and **b** and the information in **Table 6** for the location of these priorities.

R14



The County should identify monies – on an annual basis – allocated to implement select sidewalk priorities with consideration for those identified in **Table 6**.

R15



The County should consider revising all existing sidewalk policies to reflect current design guidelines and standards for pedestrians. The policies should be included in the County's Official Plan and all other applicable guiding policy documents.



#### 4.1.7 Consideration for Emergency & Service Vehicles

A key design consideration for separated bicycle lanes, in-boulevard multi-use trails and off-road trails is providing access for authorized emergency and service vehicles. These facilities require special provisions to permit access by these vehicles while prohibiting access by unauthorized motorized vehicles. There are three alternatives that can be considered for this application including removable or retractable bollards, flex bollards and / or split path entrances. The alternatives are presented in Table 7.

Table 7 – Potential Separation Alternatives for AT Facilities

#### Removable Bollards Flex Bollards Split Path Entrances Removable bollards are Flex bollards are perhaps A split path entrance is a simple and economical the most economical one that splits the facility and functional member option, however, can be entrance into two difficult to maintain. The of the bollard family narrower one-way metal sleeves placed since they are very entrance paths. A low below grade can be inexpensive and can be concrete median or damaged by equipment quickly taken down by bushes between the and can become emergency workers. paths will discourage jammed with gravel and They are also safer for entry by unauthorized trail users since their debris from the path or vehicles; however trail. Retractable bollards flexibility allows them to emergency vehicles can are much more absorb energy in the drive over them in an expensive than event of a collision. emergency situation. removable bollards; however, they are more reliable and are not as pone to damage.



AT Pathway Removable Bollard



Flex Bollard



Split Path Entrance



The County's current guidelines promote the use of swing gates to identify the entrance and exit points of a trail. The County is still encouraged to maintain their current trail entrance design standards and guidelines but are encouraged to incorporate the entrance and exit features for emergency and service vehicles as the network is implemented.

R16



The County should continue to consider and design for service and emergency vehicles at trail access and exit points including the use of swing gates and bollards (where it is deemed appropriate).

#### 4.2 Process & Coordination

Clearly defining the steps needed to move forward through the implementation of the AT Strategy is important and should be communicated to all staff and partners involved in the planning, design and construction / implementation of infrastructure, programs and initiatives.

#### 4.2.1 Connecting Community Areas

Norfolk County's community areas are where the majority of people reside, are employed and where community destinations or recreational pursuits are found. On each of the maps prepared for the AT Strategy, the community areas have been defined and illustrated with zoom-in maps developed to gain a better understanding of the geography and connectivity.

Though connectivity within the communities is an important objective it is also important to provide AT opportunities in between the major community areas. Routes have been proposed within the rural areas with County-wide connectivity in mind.

There are a high number of recreational riders who both reside within the County or visit the County for touring purposes. Providing clear spine connections between major destinations for pedestrians and cyclists will be an important aspect to accommodating safe and comfortable cycling and improving cycling tourism County-wide.

Within Norfolk County these existing spine connections are made up of the rail trails that link Port Dover, Simcoe, Waterford and Delhi. In the future, the County should prioritize the implementation of paved shoulders and signed bike routes along major north-south and east-west rural arterial roads e.g. Charlotteville West Quarter Line Road, Cockshutt Road, Norfolk County Road 45, Charlotteville Road 1, etc. to allow for direct cycling connections in between the major community areas.



R17



The County should prioritize the implementation of shortterm routes that provide direct connections between the community areas to achieve connectivity in the near future.

### 4.2.2 Integrating with the Development Community

Implementing AT facilities is a critical component of the land development process. As part of the network development process, the consultant team acquired information from the County on future development sites. This information was incorporated into the network mapping and was developed to reflect how development information was considered as part of the study process. The County should use this information as they proceed with network implementation and work with the local development community to establish an iterative process to ensure that future communities reflect the objectives of the Strategy. Many developers understand the value of integrating cycling and pedestrian facilities into projects including the positive effect on home sales and neighbourhood desirability.

The County should review and revise their site plan and development approvals process to reflect the development of AT linkages. New development areas should provide direct connections to the AT network, where feasible, and should be implemented in the early stages of development. **Table 8** provides an overview of potential techniques that could be used to integrate AT facilities into the development process in Norfolk County.

R18



Changes to the development process should be made and communicated to the development community. Clear directions on the approach to review site plans and development applications should be clearly documented.



Table 8 – Overview of Strategies to Promote AT in the Development Process

Strategy	Description		
Prepare Conceptual / Layout Plans	<ul> <li>Requires developer to prepare and submit a conceptual / layout plan and typical details for facilities within the boundary of the development</li> <li>Conceptual plan would be reviewed by County staff and refined by the developer prior to the approval of draft plan of subdivision</li> <li>Concept plan will be consistent with the AT Strategy / proposed network and any Official Plan or Secondary Plan schedules</li> </ul>		
Detailed Design Drawings	Prior to Plan of Subdivision, approval and registration of the applicable phase of subdivision, the developer should be required to prepare and submit detailed design drawings, specifications and cost estimates for the construction of AT facilities to the County's satisfaction		
Development Agreement Requirements	infrastructure		
Inclusion Under DC By- law	► AT facilities should be included under the Development Charges (DC) by-law as part of the next by-law update by the County.		
Additional Consultation	When AT facilities are planned for new development areas, no additional consultation should be required beyond the typical approvals process.		

#### 4.2.3 Defining Roles & Responsibilities

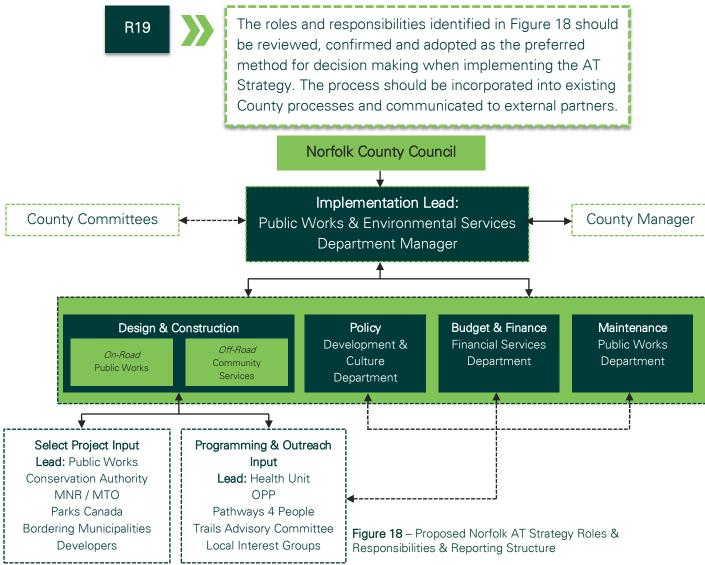
The implementation of the AT Strategy is intended to be a collaborative process between all County departments (including the Health Unit) and its partners. Potential partners are identified in **section 4.4.6**. A selection of the primary partners will be involved in the ongoing planning and implementation of the AT Strategy. The roles and responsibilities for these groups need to be defined to establish a preferred approach to communication and coordination which can be embedded into future decision making processes. Coordinated and effective decision making can be achieved through the use of an efficient reporting and implementation structure that is well-managed and involves relevant decision makers.



For the Norfolk AT Strategy, there are three key roles that could be played:

- ▶ Decision Makers: Staff that take the lead on the implementation of the AT Strategy and have the ultimate ability to make decisions
- ➤ Select Project Input: Groups that have input on specific aspects of the AT network including routes found under their jurisdiction facilitating connectivity to all areas within and outside of the County
- ► Programming / Outreach Input: Groups that are responsible for the coordination and initiation of programming and outreach initiatives to affect community / behavioural change

The study team reviewed the County's reporting structure and process, the key partners within the community and their existing roles and interests and have identified a reporting structure for the management of implementation of the AT Strategy. The structure is illustrated in **Figure 18**.





#### 4.2.4 Planning for Future AT Systems

The AT Strategy is meant to be a blueprint for short, medium and long-term improvements to active transportation in Norfolk County. There are some locations where the routes identified as part of the AT network require additional planning discussions. These routes are found on unopened road allowances within both the rural and community areas also known as desired connections and illustrated as such on the facility types map for Norfolk County.

For some of these connections it is unclear whether the connection is found under the jurisdiction of the County or another land owner – possibly private. As the County explores the implementation of these connections additional discussions will be required with County staff to determine the route's ownership. Should the connection be under private ownership, the County should engage in discussions with the owner to ensure that it is appropriate to move forward with next steps.

There are still a number of steps, including future land acquisition and securement or coordination with land owners, to move these projects forward. The County should explore / plan for these connections in the future, should the land owner(s) be willing to enter into an easement and agreement. In such cases, permission for access or a strategy to ensure ownership will be required in advance of further planning, design and construction.

20



The County should review the desired connections and identify the ownership of said connections to determine the appropriate course of action for implementation.





**Graphic 5** – (Left) Rail trail between Simcoe and Delhi – Source: tripmondo.com & (Right) Lynn Valley Trail Source- norfolktrails.ca



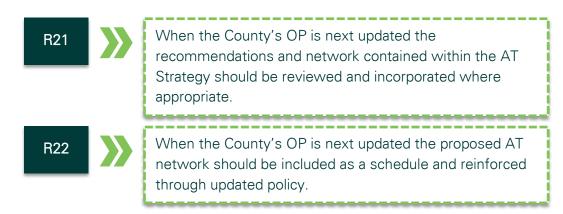
#### 4.2.5 Establishing Supportive Policies

Policies and plans are the drivers behind future change. The AT Strategy sets out routes and recommendations that can be further reinforced by improvements to County policies. There are already policies and plans in place at the County level that support the improvement of AT and recreation e.g. the 2009 Trails Master Plan. In addition, there are also provincial policies that provide support for future improvements and investments.

The County should ensure that their policies are consistent with the goals and objectives set-out in the AT Strategy. There are a number of key principles and planning practices that support and encourage AT that are not specifically reflected in existing policy. These principles should be referenced when County policies are next updated to ensure that there is consistency of messaging.

The Official Plan (OP) is the County's overarching policy document which guides community development. The County's current OP was last consolidated in 2011 making it a relatively recent planning document. Section 8.3 speaks to the implementation of walking, cycling and trails infrastructure. Recognized as infrastructure that helps to promote healthy communities, the County promotes bicycle and pedestrian trails and paths. The policies included in section 8.3 are very specific. As such, the County should consider updates to the OP which incorporate the design and implementation of on-road AT facilities when the OP is next reviewed.

In 2015 / 2016 the County was in the process of updating the Official Plan. The results of the ISMP and specifically the AT Strategy should be considered when reviewing, revising and updating OP policies. The County should include the AT network as a schedule in the OP to reinforce the integration of all aspects of transportation and land-use planning. In addition to the OP, the County should incorporate references to the design and implementation of AT infrastructure in other relevant planning document when next updated or developed.





### 4.2.6 Integration with the Land-use Planning Process

As part of the network development process, the study team acquired information from the County on future development areas. The boundaries and road network for these future sites was integrated onto the mapping and "desired connections" were identified to achieve future connectivity to these residential areas. Integrating existing and future land-use planning enables the County to design for current conditions and plan for anticipated growth that reflects planning and design priorities.

Land-use planning principles are what drive the development of communities within the County. The way communities are designed can influence the way people engage in the communities and the transportation and recreation choices that they make. "Shaping Active, Healthy Communities" (Heart and Stroke Foundation – found <a href="here">here</a>) documents findings that support the connection between the layout and design of communities and health, social interaction, safety and economic development.

Land-use planning policies found within the County's Official Plan and Zoning By-law determine the way in which communities are designed and should reflect the tools outlined in the Heart and Stroke Foundation's 'built environment toolkit'. A number of strategies are identified within the toolkit which can be used to promote active forms of transportation and recreation. Potential strategies are summarized in **Table 9**.





The County should explore the development and implementation of land-use planning policies that support active transportation including mixed-use, higher density community areas and user friendly streetscapes.

Table 9 - Land-use Planning & Design Principles to Promote Active Transportation

Strategy	Description
Mixed Use	► Mixing housing with other land uses decreases the distance people need to
Mixed OSe	travel to their destination making it more likely to walk or cycle
High Density	<ul> <li>Encouraging higher density development within the community areas by</li> </ul>
Development	situating amenities and destinations within walking distance for residents
Convenient	<ul> <li>Conveniently locating schools and other amenities that enable children to</li> </ul>
School	safely and securely cycle or walk to their school or key community
Locations	destination which also provides parents with a higher level of comfort
Integrated	► Integrated active living infrastructure e.g. parks, trails, sidewalks, street
Cycling	lighting and bicycle parking into overall community design can encourage
Infrastructure	physical activity by providing safe and secure end of trip facilities



Strategy	Description
Appealing Streetscapes	Making streetscaping appealing though effective design with good lighting, well maintained sidewalks, cycling facilities, signage, crossing treatments and improved aesthetics can encourage people to engage in more vibrant community environments with crime reduction in mind
Bikeway	▶ Designing streets that could be perceived as safer and more comfortable for
Boulevard	cyclists including lane narrowing, cycling facilities, landscaping, parallel
Design	parking, traffic calming, etc.
Recreational	▶ Providing recreation facilities such as parks, trails and safe outdoor spaces
Facilities	can help to encourage physical activity for younger age groups

### 4.3 Implementation & Operation

The implementation and operation of AT facilities will be the responsibility of County staff and its partners – as identified in **section 4.2.3** roles and responsibilities. Aspects of network operation and management that will occur following the implementation the proposed AT system will need to be considered in order to achieve the Strategy's objectives.

### 4.3.1 Integrating the On and Off-road Network

An AT network that includes both on and off-road routes will help to achieve a continuous and connected system of transportation and recreation facilities. To maximize connectivity two key 'locations' in the network should be considered. These include transitions between facility types and crossings of major and minor roadways. Both require context specific design solutions to help make those using the facilities feel comfortable and safe (see the network enhancements maps for some proposed design applications on maps 4a - c).

Conflicts typically occur when one of the user groups is trying to make a right or left turn. There are a number of different design solutions that can be applied in order to prevent conflicts between AT users and motorists and facilitate more comfortable and safe transitions / crossings. They vary in their design application and have different intents and purposes. The following are some of the treatments that have been considered for specific locations in the AT network. See **Technical Appendix A-4** for design guidance on these treatments.

- ► The most common and simple design for these locations is a curb cut. Curb cuts can be implemented at intersections to allow for a smooth transition for pedestrians and cyclists either using the sidewalk or an in-boulevard multiuse pathway.
- ➤ A cross-ride is a crossing treatment that allows cyclists to cross at intersections without having to dismount. The space is wider than a typical pedestrian crossing to accommodate the larger operating space of a cyclist. The design treatment can be combined or separated.





Graphic 6 - Sample Intersection & Trail Crossing Transition Design Treatments – (Left) Caledon Cross-Ride source: walkandrollpeel.com (Right) Source: Vancouver, BC

- A bike box is a designated area between the crosswalk and the stop bar for motorized traffic at a signalized intersection. The designated area is intended to increase a cyclist's visibility for motorists and allows cyclists to proceed ahead of motorists on a green light. The County should consider installing bike boxes at intersections with higher traffic volumes within the community areas where there are a higher number of cyclists or where a left turn movement is being encouraged by the design of the network.
- At intersections where cycling facilities are proposed the County should consider the design of signal heads, signal timing and detector loops to accommodate cyclist travel. Passive bicycle detectors such as in-pavement loops, microwave or infrared detectors should be used in locations where a bicycle signal is travel responsive.
- ➤ Signage and pavement markings should be used to guide cyclists on their appropriate position over detector loops. Where the signal actuation is activated through a push button, a signalized intersection crossing sign should be installed with a push button for both pedestrians and cyclists.
- ➤ Crossings of major rail corridors require additional consideration for pedestrians and cyclists both in awareness as well as in design. At the rail crossing approach, signage should be implemented to encourage cyclists to dismount and pedestrians to assess the crossing potential.

It is important to note that if implemented the above transition design treatments should not be placed near conflict points in order to decrease the likelihood of vehicles crossing the path of cyclists or pedestrians. When the network was developed for Norfolk County, the consultant team considered key conflict points. The County should refer to section 4.2.1.4 in OTM Book 18 for additional design considerations and alternatives when these routes and design treatments are being implemented.



R24



The County should make reference to the network enhancements identified as part of the phasing maps and should implement the proposed design treatments at the suggested locations as the routes are implemented.

R25



County staff should make reference to the design treatments outlined in section 4.2.1.4 in OTM Book 18 to confirm the preferred design treatment for the locations identified as part of the AT network.

### 4.3.2 Implementing Network Amenities

In addition to points of transition and conflict, there are also other aspects of the network that help to encourage active transportation and recreation. Other design treatments and enhancements can include network amenities, signage and trail heads, rest / staging areas, bicycle parking and/or end of trip facilities. Amenities are implemented along AT routes which can influence users' sense of comfort and safety. Norfolk County has implemented route amenities in the form of trailheads for major rail trail connections. Trailheads can include a number of different design treatments (e.g. signage / wayfinding, seating areas, waste receptacles, etc.).

Though there are existing amenities, with the expansion of the AT network, the County will need to invest in additional AT amenities at key origin and destination points to enhance network connectivity and continuity. Where possible, the County should also identify municipal buildings and community destinations where AT amenities should be implemented. Specifically, the County should prioritize the implementation of bicycle parking at these locations with enhanced design treatments if they are more frequently used destinations.

If possible, the County should work with local businesses and should partner with them to identify improvements that can be made to encourage active transportation and recreation. It may be possible to work with business improvement areas to identify the implementation of bike corrals in place of motor vehicle parking spaces or signage and bicycle maps at key community destinations.

R26



The County and its partners should explore the implementation of network amenities to complement the various on and off-road linkages implemented County-wide.



R27



The County and its partners should work with local businesses and interest groups to identify opportunities to improve local AT amenities such as bicycle parking, wayfinding or signage.

#### 4.3.3 Integrating with other Infrastructure Planning Initiatives

The AT Strategy was developed as part of the higher level Norfolk County Transportation Master Plan (TMP) with the goal of integrating and coordinating their implementation to achieve future budgetary efficiencies. As such, the implementation phasing and network management tools for both the AT Strategy and TMP have been developed in a way that allows them to be merged – if desired. By doing this, it is expected that many of the capital costs related to the construction / implementation of on-road and in-boulevard facilities will be included within planned County projects.

The TMP and AT network should be incorporated into the County's operating and capital budget and should reflect the priorities identified for the upcoming budgetary cycle. As Council determines the amount of budget available, staff should review the phasing plan for the TMP and AT Strategy to determine the preferred projects to be implemented within that fiscal year.

In addition to integrating implementation, the County should also consider the maintenance of AT facilities (see section 4.3.4 and 4.3.5) as part of the annual budgetary process for both on and off-road AT infrastructure. The preferred maintenance practices should be confirmed based on the recommendations highlighted in these sections and a budget for the preferred approach should be confirmed.

R28



The County should integrate the TMP and AT Strategy recommendations and phasing and should identify priorities for implementation based on the available annual budget as well as associated maintenance.



Graphic 7 - Boardwalk Over Hay Creek - Source: norfolktrails.ca



#### 4.3.4 Seasonal Considerations

Although there are some users who are active year-round, the number of users tends to decrease during the winter. Though it is not realistic to maintain the same ridership and levels of pedestrian activity during this time of the year there are practices that can be integrated into existing operations and maintenance processes that can improve AT conditions.

The County currently uses the Minimum Maintenance Standards for Municipal Highways to guide maintenance practices for various types of infrastructure throughout the County. The standards speak to maintenance of roadways as well as sidewalks but do not take into account the maintenance that will be required for County roadways that have on-road cycling infrastructure. The minimum maintenance standards are currently being updated. The revised standards are anticipated to include reference to the maintenance of on-road cycling infrastructure along with other infrastructure such as sidewalks and paved shoulders that support active forms of transportation in the County. In addition to the updated standards, information related to AT specific seasonal maintenance has been included in the separately bound Technical Appendix A-4 which should be reviewed and considered by County staff.

In addition to current standards and guidelines, the County also accommodates a number of snow removal programs through local services for seniors on a request-by-request basis. The County should explore enhancing or promoting this program to encourage higher activity levels among seniors and enhanced personal safety in the County.

Maintenance of off-road facilities varies from on-road facilities and requires a different set of maintenance standards. As part of the update to the 2009 Trails Master Plan the County should explore providing more detailed information on the maintenance of these AT facilities and should coordinate maintenance of off-road and on-road connected systems.





County staff should prepare and submit a summary report to Council on an annual basis that proposes updates and improvements to maintenance practices in order to accommodate new AT infrastructure that has been implemented.





The County should define their preferred level of service standards for winter and seasonal maintenance and should integrate maintenance for AT facilities including a guide for snow clearing and removal.



#### 4.3.5 Risk Management & Liability

Liability is a key consideration for municipalities throughout Ontario. As noted above, a bicycle is considered a vehicle under the Highway Traffic Act which means that if cycling facilities improperly designed, constructed or maintained, the County may be partially liable. On-road facilities typically fall into the same liability category as roadways and sidewalks, as do off-road facilities that permit cycling.

Because of past case law, cycling facilities would be considered under many of the same basic immunities as other Highways. This further reinforces the importance of adhering to provincial and national design guidelines and standards as they provide the greatest legal protection. To prevent issues from arising, it is important to try and incorporate the following risk management and liability considerations into day-to-day practices.

- ► Improve the physical environment, increase public awareness of the rights and obligations of users and improve access to educational programs;
- ➤ Select, design and designate facilities in compliance with the highest prevailing standards. The design of on-road cycling facilities should be consistent with OTM Book 18 and regulatory signs, consistent with OTM Book 15;
- ▶ Design concepts should comply with all applicable laws and regulations (e.g. Ontario Highway Traffic Act, current Municipal and County by-laws, etc.);
- Conform to acceptable standards;
- ▶ Monitor on and off-road facilities through regular patrols and document the physical conditions and operations. All reports of hazardous conditions should be promptly and thoroughly investigated. If hazards cannot be removed they should be isolated with a barrier or notified by clear warning signs;
- ► All monitoring and maintenance activities should be documented and maintained;
- ▶ Avoid using description such as "safe" or "safer" for on or off-road routes when promoting use. Industry practices suggest that users prefer to assess their own capabilities or level of comfort;
- Maintain proper insurance coverage as a safeguard against having to draw payment for damages from the public treasury;
- ▶ When considering new trail or cycling routes or proposing modifications to the approved network, document the assessment process used to select the preferred facility similar to the one presented in OTM Book 18 and the separately bound **Technical Appendix A-4** of the AT Strategy; and



Consider the use and application of the principles outlined in the Centre for Sustainable Transportation's Child and Youth Friendly Land Use and Transport Planning Guidelines (Ontario) for unique safety and transportation needs of children and youth.





When selecting and designing active transportation facilities within Norfolk County, staff should use the highest prevailing standards – OTM Book 18 – to guide decision making.





County staff should use the facility selection and documentation process outlined in OTM Book 18 to determine the preferred facility type and should document it in a similar fashion as has been done in the AT Strategy and incorporated into the AT database.

#### 4.3.6 Monitoring & Evaluating Successes

In order to understand what has been achieved through implementation, the results and outcomes need to be evaluated. The collection of data can help to evaluate user behavior which will assist staff in assessing the effectiveness and contribution of infrastructures and programs in achieving the Strategy vision and objectives. A set of performance measures can help to guide data collection and evaluation on an annual basis.

The reviews could help to inform annual priorities and decision making and may also contribute to budget allocation. Potential performance measures have been identified based on the following key areas of focus – engineering; education and encouragement; and enforcement (consistent with the #CycleON Strategy). See Table 10 for a detailed overview of the proposed performance measures.





The proposed performance measures identified for the Norfolk AT Strategy should be reviewed and revised (as necessary) before being adopted by the County to guide data gathering and evaluation.





The County should establish a process where data is collected every two years to measure the performance of infrastructure, policies and programs. The data collection should occur at the same time / season each year for consistency. An annual report should be submitted to Council documenting the status of implementation.



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Table 10 - Proposed Performance Measures for the Norfolk AT Strategy

	ed Performance Measures for the Norfolk AT Strategy
Proposed	
Performance	Description
Measure	
ENGINEERING	
Existing Use	The assessment of the number of different users, proximity to AT routes,
LXISTING USE	demographics of AT users and duration of typical trip
Network	An assessment of the amount of the network that has been built and the
Provisions	provision of typical end-of-trip facilities or staging areas
Investment	The amount of funding made available to implement the Strategy
Comfort &	The number facilities on County roadways that are plowed as well as the
Convenience	number of destinations found along the proposed route(s)
<b>EDUCATION &amp;</b>	ENGAGEMENT
Partnership &	Local events and businesses that help to support AT and external recognition
Recognition	for the County commitment (e.g. Cycling Friendly Community status)
Outreach &	The amount of educational materials that are developed and provided such
Provision	as maps, newsletters, educational brochures, etc.
	A range of opportunities for the public to be involved e.g. events, educational
Public	programs that have been implemented, the amount of media coverage
	generated, the number of views on webpages that promote AT, the amount
Engagement	of community support from stakeholders as well as the amount of tourism
	that is generated and the amount that is spent when they visit
ENFORCEMEN	Т
	The overall safety of cyclists assessed by the number of collisions and
0.1.1	injuries, the safety of trail users assessed by reported incidents and the use
Safety	of a Share the Road campaign to promote safe use on facilities in the
	community
0'1-1'	Police service are involved and how many citations or positive reinforcement
Citations &	campaigns they undertake to enforce safe use of the facilities or to
Ticketing	recognize positive community impacts

The proposed performance measures should be reviewed and revised as necessary based on input from County staff following the initial implementation of AT infrastructure and programming.

Should the County select to move forward with the application of performance measures it is recommended that data be collected every two to three years at a maximum of every 5 years at the same time every year. The results should be used to inform the development of updates to Council on the status of the Strategy's implementation and the overall achievement of community objectives.



#### 4.4 Promotion & Outreach

A comprehensive AT network is not only about the hard infrastructure but also about the supportive programs and initiatives that educate and encourage people to explore the use of active forms of transportation and recreation. In addition to the infrastructure actions and priorities outlined in the AT Strategy the County and its partner should also consider the following programming, outreach and educational actions to complement and enhance outcomes.

### 4.4.1 Enhancing Cycling Tourism

It is important to note that there are existing touring routes that are currently being promoted for both cycling and running County-wide. Though some of these routes have not been identified for future improvements, these routes should continue to be promoted as preferred touring routes within the County and integrated with the County-wide AT network where appropriate.

There are numerous economic benefits which can results from increased investment in active transportation and recreation. A report published by Ontario by Bike and Transportation Options – From Niche to Now: Cycle Tourism in Ontario – defines a cycle tourist as someone who has travelled 40+ km from their place of residence and is including cycling as their main trip purpose or as a secondary activity on their trip (February 2015). The report also indicates that 67% of cyclists participating in events took part in other non-cycling activities including visits to museums, breweries, wineries and outdoor activities.

Cycle tourism is considered a strategic objective for Norfolk County with an emphasis on the potential for inter-regional partnerships and opportunities for future growth and development. As part of the AT Strategy, the consultant team undertook a detailed investigation of the existing cycling tourism opportunities as well as the potential for future improvements and growth. The recommendations identified in the tourism assessment were used to shape a number of the priority projects identified as part of the AT network. The County and its partners are also encouraged to use the cycling tourism assessment as the basis for future improvements and initiatives related to AT tourism improvements. The detailed assessment is provided in the separately bound Technical Appendix A-6.





The County and its partners should use the tourism assessment to help prioritize future improvements related to AT tourism and promotion and should make specific reference to the recommendations outlined in the assessment.



#### 4.4.2 Designing for Safe Routes to School

Research indicates that 42% of children are driven to school despite the fact that the majority want the opportunity to walk and cycle more. The Active and Safe Routes to School program (www.saferoutestoschool.ca) provides support for communities that are looking to establish greater community involvement in the design and use of walking and cycling routes for children. There are a number of programs that can be initiated to help encourage this:

- School travel planning toolkit;
- ▶ Walk/wheel on Wednesdays;
- ► Walking school buses;
- ► IWALK Club; and
- ► Idle Free Zones.

Routes have been identified within the community areas of Norfolk County, which provide direct access to local schools from local neighbourhoods. If implemented, these linkages would provide children with direct and accessible connections while providing parents with more comfort that their children are using routes endorsed by the County.

In the past the Health Unit has developed and implemented a Safe Routes to School program in partnership with local schools and transportation service providers. Though not currently in place, the Health Unit should work with its partners to update and initiate this program in select locations throughout the County. Lessons learned from the last program should be highlighted in the early stages to ensure that they are addressed and mitigated. Funding from external partners such as the Heart and Stroke Foundation should be explore to help support the resurrection of this program.

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The Health Unit should update and implement the previously developed Active and Safe Routes to School program in partnership with the local school boards and should work with local schools to implement future initiatives.

R37



When implementing the AT network, the County should prioritize the implementation of connections within the community areas that provide direct connections to local schools.



#### 4.4.3 Coordinating with Existing Committees

The AT Strategy was developed with input a number of local committees and interest groups. More specifically, the consultant team worked with Pathways for People and the Trails Advisory Committee to help inform the development of the AT network. The consultation program (as noted in **section 1.0** of the report) included workshop sessions with representatives from these groups on three occasions over the course of the project. Through these workshop sessions, the study team was able to highlight the key issues and opportunities that have been addressed through the Strategy.

The working relationships that have been established prior to and throughout the development of the AT Strategy should continue beyond its adoption. The County should continue to work with these groups on an ongoing basis to ensure that their input is considered when routes are being selected for implementation, programs are being developed and future promotion is needed.

Working with local committees is also an excellent way for the County to move forward with programming and outreach initiatives. If possible, the County should work to engage the local AT and cycling supportive groups in identifying education and awareness programs to promote active transportation and recreation within the County and its community areas. Potential programs / initiatives could include:

- ► Bike RODEO for younger children to understand basic information about essential bicycle handling and safe riding
- ➤ Commuter Cycling Safety Program a program that gives people better knowledge of traffic theory and different techniques to improve cycling confidence and assertive cycling skills
- ► Rural Cycling for Youth Designed for youth, lessons would provide teenagers with riding experience and safe cycling lessons in rural areas
- ➤ Trail Riding for all Ages An educational tour on how to use the various trail types throughout the County e.g. woodlot trails, rail trails, urban trails, etc.
- ▶ Walking in Rural Areas A guided tour and educational lesson on how to safely and comfortably walk within the rural areas of the County using paved shoulders, etc.
- ➤ Cycling Parking at Events The use of bicycle corrals and bike valets at local events to promote cycling to and from local events in community areas.

R38



The Haldimand-Norfolk Health Unit should work with the community services department, local committees and interest groups to establish education and awareness programs to promote active transportation and recreation County-wide.



### 4.4.4 Moving Towards a Bicycle Friendly Community

As a means of further promoting AT and realizing funding and partnership opportunities, the County should explore applying to become a Bicycle Friendly Community. The program was launched by the Share the Road Cycling Coalition in 2010 and is an award recognition program for Ontario based municipalities. The following initial the steps would help Norfolk determine if bicycle friendly community status should be pursued:

- ➤ Step 1: Collect information needed for the application application check list can be accessed using the following link:

  http://www.sharetheroad.ca/files/BFC\_Checklist.pdf
- ➤ Step 2: Review the application to see how bicycle-friendly Norfolk is today including but not limited to the existence of an AT related committee. The application form can be accessed and submitted online
- ▶ Step 3: Plan a strategy for pitching bicycle-friendly improvements depending on the level of political involvement and community enthusiasm the approach may vary. The County should identify local Council members or stakeholders who will help to promote active transportation and recreation in the community and pursue AT related initiatives
- ➤ Step 4: Gather support inquire about a letter of recommendation from an organization that might support AT within the community e.g. Pathways 4 People, Accessibility Advisory Committee, Silver Spokes Cycling Club, etc.
- ➤ Step 5: Making a decision the County should review the information gathered and determine the most appropriate next step i.e. whether to explore applying to become a bicycle friendly community

There are a number of other steps involved in the suggested process, however, the County is encouraged to explore these initial steps to see if receiving bicycle friendly community status is an option. Applicants are judged in five key areas, the majority of which have been identified / highlighted in this Strategy engineering, education, encouragement, enforcement and evaluation. Applications can be submitted by a County staff member or someone working collaboratively with County staff with a letter of support from the County. There are 24 communities within Ontario who received recognition for their efforts. Many of these communities have been able to leverage this for future funding as well as commitment from local businesses and partners. The County is well positioned to be a Bicycle Friendly Community and should explore opportunities to work towards achieving this status.

R39



The County and its partners should explore the opportunity to become a Bicycle Friendly Community once some of the initial short-term AT infrastructure priorities have been implemented.



### 4.4.5 Establish & Promote Key AT Messages

Key messages provide residents and visitors with a common understanding of the goals, priorities and objectives related to active transportation and recreation within the County and vary based on your target audience. As the AT Strategy is implemented, the County should develop promotional tools and marketing initiatives that help increase awareness of the successes that have been achieved.

Those who are responsible for the development of these materials should be aware of and utilize a standard set of key messages that have been established and adopted by the County and its partners. A key overall message related to the promotion of active transportation which can be used for future messaging and promotion is:

"Active modes of transportation are enjoyable ways for people of all ages and abilities to experience their community, nature and to remain healthy."

In addition to this high-level message, some other potential messages have been identified for consideration by the County based on the audiences that would be engaged through the implementation of the AT network. The key messages are summarized in **Table 11**.

Table 11 - Key AT Messages for Target Audiences in Norfolk County

Audience	Values	Messages
Motorists	<ul><li>Road Safety</li><li>Trip</li><li>Efficiency</li><li>Budget</li></ul>	<ul> <li>Drive safely, be aware of cyclists and respect their right to share the road.</li> <li>The County benefits when roads are designed for all users. Everyone can get to where they want to go efficiently and safely.</li> <li>Using an alternate mode such as cycling can have a positive effect on your expenses, the environment and your health.</li> </ul>
Pedestrians	<ul> <li>Safety on         Roads &amp;         Trails</li> <li>Health         Benefits</li> <li>Relaxation</li> <li>Environment</li> <li>Budget</li> <li>Tourism</li> <li>Flexibility</li> </ul>	<ul> <li>Walk safely, be aware of motorists and cyclists and respect their right to share the road. Know the laws and practices to walk safely.</li> <li>Walking to work, for recreation or to run an errand can have a positive impact on your health, the environment and your expenses.</li> <li>Walking can be a group activity and can enhance social interactions and community building.</li> </ul>



Audience	Values	Messages
Cyclists	<ul> <li>Safety on Roads &amp; Trails</li> <li>Health Benefits</li> <li>Relaxation</li> <li>Environment</li> <li>Budget</li> <li>Tourism</li> <li>Flexibility</li> </ul>	<ul> <li>Bike safely, be aware of motorists and pedestrians and respect their right to share the road.</li> <li>Be aware of the rules and regulations on how to cycle safely, and operate a bicycle like you would drive your car.</li> <li>Cycling to work, for recreation or to run errands has a positive impact on your health, the environment and your expenses.</li> <li>Cycling can be a group activity and can enhance social interaction and community building.</li> </ul>
Other Users	<ul> <li>▶ Health         Benefits</li> <li>▶ Relaxation</li> <li>▶ Lack of         Conflict</li> <li>▶ Seasonal         experience</li> <li>▶ Tourism</li> <li>▶ Environment</li> <li>▶ Flexibility</li> </ul>	<ul> <li>There are various other users on the trail that you could encounter. It is important to respect all users and use the trail with safety and comfort in mind.</li> <li>Seasonal use of trails is an excellent way to remain healthy throughout the winter months.</li> <li>There are a number of excellent touring opportunities for long-distance rides, hikes, etc. try another activity using the trails.</li> </ul>

R40



When developing communication and outreach tools and promotional materials to support the AT Strategy, the County should review and confirm the key messages and incorporate them as appropriate.





**Graphic 8** – Canadian Tire Owner Pedal for Kids Bike Ride (Simcoe, ON) (Left); (Right) Build a Bike Program source. Simcoereformer.ca



#### 4.4.6 Exploring New Partnerships

The AT Strategy has been developed based on collaboration and coordination between County staff and its partners. The successful implementation of the promotion and outreach actions will require further coordination and collaboration to be achieved by these partners. Of each of the potential partners, there are some that will likely play a comprehensive role in the implementation of the proposed network and others that will be more involved in the programming and outreach initiatives. **Table 12** summarizes the potential partners who are intended to be involved in different aspects of the Strategy's implementation. The partners should be reviewed and confirmed by County staff and should be engaged, as necessary, as they proceed with implementation.

Table 12 - Overview of Proposed AT Strategy Partners

	Infrastructure Partners	Programming & Outreach Partners
Description	Responsible for providing input on infrastructure projects that directly or indirectly impact lands under their jurisdiction.	Partners that are involved in the design and implementation of programming and outreach initiatives.
Partners	<ul> <li>Norfolk County</li> <li>Bordering Municipalities</li> <li>Conservation Authorities</li> <li>School Boards</li> <li>Ministry of Transportation Ontario</li> <li>Trans Canada Trail</li> <li>Waterfront Trail</li> <li>First Nations Group</li> <li>Provincial Parks</li> <li>Parks Canada</li> </ul>	<ul> <li>Ontario Provincial Police</li> <li>Ministry of Environment and Climate Change</li> <li>Ministry of Natural Environment</li> <li>Norfolk County Tourism</li> <li>Pathways for People</li> <li>Silver Spokes Cycling Club</li> <li>Turkey Point Mountain Bike Club</li> <li>Ride Norfolk</li> <li>Committees to Council</li> <li>Public Representatives</li> <li>Local Businesses</li> <li>Lynn Valley Trail Association</li> <li>Waterford Heritage Trail Association</li> </ul>

R41



The County should work with local partners to move the AT Strategy forward to the implementation phase and should make reference to the partners outlined in Table 10 and their specific roles and responsibilities when determining who to engage and when.



### 5.0 IMPLEMENTING THE STRATEGY

### 5.1 Building the Network: Phasing

Momentum is needed beyond the development of the AT Strategy. The intent of the Strategy is to guide County staff and its partners in the next steps of implementation beyond the short-term timeline through to the full development of the AT network.

A plan to guide implementation of the Strategy is needed which not only identifies the ultimate goals / objectives but also identifies strategies, priorities and actions that can be achieved in the immediate future ("quick wins"), short-term and medium-term to establish buy-in for future planning, design and development County-wide. The information contained in the following sections is meant to help facilitate the implementation of the AT Strategy in coordination with other County initiatives.

#### 5.1.1 Proposed Phasing

The implementation of the AT Network has been organized into three phases (short term: 0-5 years; medium-term: 6-15 years and long-term: 15+ years) –consistent with those identified for the transportation master plan and water / wastewater master plan to achieve efficiencies, coordination and economies of scale.

The project team reviewed each of the proposed routes that make up the AT Network and identified a proposed phase for each segment. The phasing was identified based on a number of considerations:

- ► Road improvement information (including type of work, budget and timeline) provided in the County's Roads database;
- Capital works projects as identified in the County's Capital Works Plan;
- ► Future planned and approved developments;
- ► The Strategy's objectives as outlined in **section 1.0**;
- ► Route selection criteria: and
- ▶ Input provided by members of the public and stakeholders.

The phasing strategy focuses on the short and medium-term (the next 15 years) which is the anticipated timeline until the next update to the County's active transportation strategy. Within each phase the previously budgeted / confirmed capital works (as determined by Council) and projects identified in the County's roads database as potential projects for future reconstruction and / or rehabilitation are identified. It has been assumed that funding has been made available for the capital works projects while future funding may be made available for the previously planned projects.



The AT system that is achieved solely with the implementation of capital works projects, project funded by development charges and road improvements is relatively comprehensive. The routes are illustrated on **Maps 6a** –  $\mathbf{c}$ .

Though there are a number of routes that have already been planned for, there are still some missing links that could provide County-wide connectivity and continuity for cyclists and pedestrians. In order to achieve some of the overall strategy objectives, select linkages were identified for the County's consideration within the short and medium-term in addition to those projects illustrated on Maps 6a - c. These routes are considered "additional strategic linkages" for consideration by the County should additional funds be made available. Map 7a - c illustrate the "additional strategic linkages".

The AT network phasing is intended to be a flexible tool for the County to consider as they work towards improving County-wide infrastructure. The phasing information prepared for the AT Strategy is meant to be integrated into the planning and implementation of other infrastructure improvements i.e. road reconstructions, watermain construction, etc. and determined through the County's budgetary process. With this in mind, "Full build-out" of the AT network does not have a set timeline allowing the County to have flexibility in future decision making.

Route phasing has been identified based on a number of key assumptions that should be understood when reviewing the AT network:

- ➤ The proposed phasing should not be perceived as prescriptive. The anticipated completion date and proposed phasing for routes are dependent on available budgets and strategic priorities for the County and its partners.
- ➤ The phasing plan does not reflect a recommended point of commencement for the planning and design work that is required in advance of implementation. Project commencement should be determined by the County based on future planning.

Though the focus of the implementation strategy are the short and long-term phases, a break-down of proposed facilities by total distance (km), jurisdiction and phase is provided in **Table 13**. A more detailed overview of the routes identified within each phase is presented in separately bound **Technical Appendix B**.



Phase	Capital Projects (km)	Future Planned (km)	Strategic Linkages (km)	Total (km)
Short-term	7	160	133	299
Medium-term	0.6	79	38	117.6
Total	7.6	239	171	417

It is recommended that the County use the proposed AT network and short and medium-term implementation schedule to guide the development of AT infrastructure in conjunction with other planned infrastructure improvements.

As the network is implemented the database should be updated to reflect these changes. An update should also occur if a route is implemented earlier or later than previously planned / anticipated. The information contained within the network phasing database should inform future decision making related to capital projects and road reconstruction / rehabilitation. As annual budgets and priorities are identified, staff should make reference to the phasing plan to ensure that they are in-line with what has been identified in the AT Strategy.

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The network phasing identified in Map 6a – c and Maps 7 a – c should be used by the County to guide the development of the AT network and should be used as a reference by external partners when future connections are being explored.

#### 5.1.2 Implementing AT Priorities

A master plan is defined as a long-term planning strategy that influences municipal planning, design and implementation. Though a long-term vision is key to achieving community objectives it is also important to set-out priorities to help make early decisions related to facility implementation.

The short-term and medium-term projects identified have been selected because of their ability to help achieve some of these priorities. The routes and the priorities that they support are identified in **Appendix B** – network database and should be used to guide future decision making regarding the planning, design and construction of AT infrastructure.

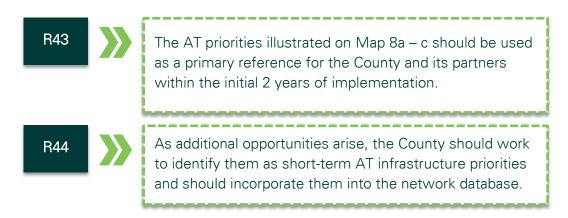
There are six (6) key priorities for Norfolk County. The priorities were developed based on input from staff, stakeholders and the public and help to shape the future of active transportation and recreation County-wide. In addition to the route selection criteria, these priorities should be used to help evaluate future AT linkages to determine if and when they should be implemented.



- ➤ Signed Routes (within Community Areas): There are a number of signed routes that make up the County's AT network. Due to the low volume and low operating speed of many roadways throughout the County, separated facilities are not required to accommodate cyclists. Signed routes make up 41% of the total number of kilometers of AT facilities identified as part of the County's AT network. The cost of signage is minimal compared to other AT facility types and with prioritized implementation can achieve a well-connected system of cycling routes.
- ▶ Bike Lanes (those only requiring repainting): There are a number of proposed bike lanes identified within the County that do not require any changes to the width of the roadway. To achieve these improvements, the County would be expected to repaint the lines on the roadway a cost significantly less than a full roadway redesign. Many of the proposed routes where bike lanes are identified as the preferred facility type provide direct connections within the community areas. If prioritized, along with the signed routes, a well-connected and continuous system would be achieved.
- ▶ Waterfront Trail & the TCT Gaps: One of the primary goals of the AT network is to formalize the Waterfront Trail and TCT connections throughout the County. The proposed AT network identifies solutions for the missing links within these Regional systems. The gaps identified include proposed signed routes as well as more formal AT facilities.
- ▶ Paved Shoulders in Rural Areas: Paved shoulders are considered a County-wide priority for a number of the local cycling groups due to their ability to provide additional separation between cyclists and motorists on major rural roads. There are some key connections within the County which have sufficient shoulder width available to accommodate paved shoulders. These routes also provide direct connections to major community areas through the rural areas and mirror many of the existing touring routes within the County.
- ▶ Erie Boulevard & Long Point Causeway: A significant priority for key members of the community, this linkage will require both an interim and ultimate solution. There are a number of environmental restrictions within the area which must be addressed in order to move forward with significant changes to the roadway. As such, the County should consider prioritizing the interim solution including a reassessment of the location and application of share the road signage and where possible paved shoulders.



➤ Sidewalk Gaps: Gaps in the sidewalk on the designated AT network provide significant barriers for pedestrians specifically youth walking to and from schools within local communities. Section 4.1 includes a more detailed investigation of areas within the local communities where there are missing links / gaps in the sidewalk system which create significant pedestrian barriers. A recommended approach for how to address these missing links is provided as well as a list of priority linkages for the County to consider.



## 5.2 Implementation Supportive Tools

The AT Strategy is not only meant to be a network of proposed routes, the plan was developed with 'action' and effectiveness in mind. As such, the Strategy is supported by a set of tools which are meant to help facilitate implementation.

The actions identified in **section 4.0** of the Strategy are meant to provide the County and its partners with clear initiatives and recommendations to guide future implementation. A set of tools has also been identified to help guide future planning, decision making and development. They have been developed based on an understanding of existing County practices and processes as well as the partnerships that are already in place.





The implementation tools identified in the AT Strategy should be adopted in principle by County Council, staff and its partners and used to guide network design and development.



#### 5.2.1 A Process for Design & Implementation

The policies, processes and actions identified in the AT Strategy are not intended to be prescriptive. They should be used as tools and support staff as they move forward with the different components associated with the implementation of proposed AT infrastructure. The implementation of future AT routes will evolve through the environmental assessment, planning and capital budget process. A step-by-step process to guide the implementation of the AT system on a project by project basis is required to ensure that all of those involved in the implementation of the AT Strategy understand the process that will be used to achieve future successes.

The proposed steps for the development process are documented below.

#### Step I

Preliminary Review



- ► When an A.T. project is advanced to the planning stage or a new opportunity arises the preliminary review should be undertaken including:
  - o Identification of jurisdictional responsibility;
  - o Comparing timing of the project to master plan priorities;
  - o Assessing whether an A.T. facility can be implemented cost effectively; and
  - o Determining whether feasibility assessment is required.

#### Step II

Feasibility Assessment



- ► If confirmed through Step I a brief feasibility assessment should be undertaken;
- ► The Feasibility Assessment should consider:
  - o Route Selection Criteria and design principles;
  - o Roadway characteristics A.A.D.T. Volumes, collision data and commercial vehicle percentage; and
  - o Context sensitive issues through field checks.
- ➤ A Preliminary Functional Design should be prepared including cost/benefit analysis, timing, costs and efficiencies achieved, less costly alternatives and their relationship to the overall network and next steps.
- Process may take place in conjunction with a roadway or public works M.C.E.A. or functional design.



#### Step III

Detailed Design, Tender & Implement



- Once approval has been obtained, detailed design should be completed which can be coordinated with primary capital roads projects.
- ► This should also include the exploration of possible partnerships for cost sharing and should be scheduled into roads programs and a budget allocated to proceed to tender.
- ▶ If, through detailed design, the County decides not to proceed with at proposed AT project, the GIS database and mapping should be updated to reflect this change.
- ► The design of A.T. facilities should be completed in accordance with the design guidelines (separately bound Technical Appendix A-6), O.T.M. Book 18 and 15 as well as the Provincial Built Environment Standards.
- ▶ Phasing for the master plan should be consistent with the Strategy outlined in the A.T. plan with priorities adjusted as necessary based on opportunities that arise, community demand or direction from Municipal Council.

#### Step IV

Monitoring & Evaluation



- Once the facility has been constructed the design and use should be monitored to ensure that they function as intended.
- ► The facility should be properly / regularly maintained and when necessary the facility should be upgraded.

#### Step IV

Official Plan & Policy Updates



► When necessary the transportation components of the OP should be updated to reflect the A.T. network or for the network to be included as a schedule in the O.P.



#### 5.2.3 Streamlining Implementation: the Municipal Class E.A. Process

As noted in **section 1.0**, the Municipal Class E.A. process was used to inform the development of the AT Strategy and the I.S.M.P. Originally established in 2010, the Act has experienced a number of amendments of which many allow for a more efficient approval of active transportation projects.

Most recently, amendments allow for the construction or operation of sidewalks, bicycle paths or bike lanes – within the existing road right-of-way (no changes to the width or alignment of the roadway are needed) – are considered pre-approved. These projects typically fall within the category of an A+ project. For both schedule A and A+ projects, do not require a full E.A. to be completed but require formal public notification at the commencement of the project.

A "road diet" is the reallocation of existing General Purpose Lanes (G.P.L.) through the application of signage or pavement modifications and does not require physical construction modifications. For new parking or turning lanes, the conversion of a roadway from one-way to two-way and the conversion of a G.P.L. to a High Occupancy Vehicle (H.O.V.) lane, these fall under the requirements of a Schedule A or A+. The Ministry of the Environment, in 2015, issued a Road Diet Clarification to allow municipalities to repurpose a G.P.L. as a cycling lane and would be included as a Schedule A+ project with no financial limitation.

The Road Diet Clarification states that:

"There may be situations, particularly in densely populated urban areas where the pedestrian volumes may compete with vehicular traffic volumes, where there is a desire to reconstruct a roadway with fewer travel lanes. Reconstruction projects of this nature are frequently referred to as Road Diets and involve the reduction of through lane capacity with the retention of turn lanes at intersections. Where it can be demonstrated through the completion of a traffic study that sufficient capacity in the roadway will remain following the removal of travel lanes (e.g. the capability of the roadway remains the same), project proponents may determine, through the use of their engineering judgement, that the objective and application of the roadway remain unchanged and the volume, size and capability do not exceed the minimum municipal standard, or the existing rated capacity, and that on this basis, a road diet may be more appropriately subject to a Schedule A+ process under Activity No. 19."



It can generally be concluded that 4 lane roads with an AADT of less than 15,000 may be considered "good candidates" for a road diet consistent with the recommendations found in AASHTO 2012 and OTM Book 18: Cycling Facilities.

For the routes identified as part of the AT network for Norfolk County, the study team reviewed the proposed facility type and its anticipated impacts on the roadway and cost. Through this exercise, the study team was able to determine the anticipated Municipal Class EA schedule on a project by project basis – the results of which are presented in separately bound **Technical Appendix B.** 

Because of the detailed information provided by the County to inform the facility selection process the study team was able to select preferred route alignments where no changes to the width or alignment of the roadway were required to accommodate the proposed facility. As such through the master planning process, no additional steps in the Municipal Class EA process would be needed to meet legislative requirements outside of future feasibility studies and detailed design assignments – these projects are known as pre-approved environmental assessments.

#### 5.2.4 The Network Management Tool

The GIS database and Roads database (network management spreadsheet - excel) provided by the County was updated to reflect the AT Strategy. These updated tools are meant to be used as tools as the County proceeds with the implementation of the AT Strategy to track progress related to network development and to provide the County with a clear understanding of County assets.

In addition to the GIS database management and network spreadsheet, the project team also generated a KMZ file (see a snapshot of the outcome in Figure 19) which can be overlaid on GoogleEarth presenting the existing and proposed AT routes County-wide. Also included in the file are waypoints and photos - taken while completing field work for the assignment - which provide a visual representation of the existing conditions in specific locations.



Figure 19 - Snapshot of the Norfolk AT KMZ



The KMZ file is intended to be used as a communication tool for staff, stakeholders and the public as the County and its partners proceed with the implementation of the Strategy.

The tools are meant to be used in combination by staff and the County's partners in the following ways:

- As a communication tool with members of the public, stakeholders and interest groups as well as members of Council when communicating future priorities and next steps;
- ► A tracking tool by County staff to confirm the feasibility of facilities as well as future network priorities and incorporated into capital budgeting and public works decision making;
- ➤ A tracking tool by County staff to document the implementation of segments by updating the "facilities" segment of the database helping to decrease the need for future master plan updates in the short-term; and
- Develop network mapping and associated promotional tools associated with the AT Strategy through partnerships with the Health Unit and Tourism promoters.

R46



The database prepared for the AT Strategy should be integrated into the County's existing database and regularly updated to track, manage and budget for AT improvements.

R47



The database should be used as a communication tool in various formats including an electronic display of the network as well as promotional mapping prepared by County partners.



# 6.0 THE INVESTMENT

As documented in **section 1.0** of the Strategy there are significant benefits that can be realized when investing in improvements to AT. As these benefits are realized, it may help to justify future improvements by the County.

When investing in AT, it is not only the cost associated with the implementation of the infrastructure, but staff and Council should also consider the costs associated with planning, design, construction, operation and maintenance of on and off-road AT facilities. In addition, the cost of education, promotion and outreach to help promote the use of the infrastructure that is built should also be considered.

This section provides an overview of the approach that was used to develop costing associated with the proposed AT network. It provides a detailed overview of these costs as well as proposed tools to help inform and determine operating and capital budget on an annual basis.

#### 6.1 Costing the Strategy

#### 6.1.1 The Approach Used

Costing was developed by applying unit costs which were established based on recent related active transportation construction projects for municipalities throughout Ontario of a similar scope and scale. The unit costs used to project the costing of the Norfolk AT Network are provided in a separately bound **Technical Appendix B**.

The project team assumed typical or normal / average conditions for construction while also taking into consideration more context sensitive conditions (e.g. urban vs. rural, surface types, retrofitting vs. new built, etc.).

As the unit costs are reviewed one should note that it does not include:

- Property acquisition, utility relocation, driveway / entrance, restoration, permits or approvals for construction;
- ► Annual inflation (including increase cost of labour, materials, fuel, etc.);
- Professional services and / or staff time for detailed design; and
- Applicable taxes.

The unit costs are intended to be flexible and should be updated if costs change over time. The information has been presented in a manner that is intended to be integrated with the County's existing Roads Database. Key highlights from the network implementation database / tool / spreadsheet include:

- ► An overview of the way to read the spreadsheet content and how to format the information for the most effective communication;
- ▶ The assumed unit costs for various facility types and contexts;



- ➤ The segment I.D. and breakdown of route segments (including the start and end point of the proposed route);
- The jurisdiction under which the route falls;
- ► Total length of the route segment;
- ▶ The route context;
- ▶ Proposed network phasing (colour coded consistent with Map 6a c); and
- ▶ Identification of priorities for short-term implementation.

R48



The County should use the unit cost spreadsheet as a tool to inform future budgeting and cost allocation. As needed, the spreadsheet should be updated to reflect changes to costing to ensure the information is accurate.

#### 6.1.2 What will the AT Network Cost?

Based on the unit cost assumptions noted in **Technical Appendix B**, costing has been developed for the short and medium-term phases of the AT network. The reality is that in order to achieve full build-out, a significant investment would be needed and the County only has a certain amount of funds that can be put towards improving all necessary infrastructure.

As noted in **section 5.1** of the strategy, the consultant team reviewed and incorporated the projects that had been previously identified as part of the County's capital budget as well as other future planned projects as identified in the County's roads database. The intent of the funding strategy is to identify, where possible, economies of scale by coordinating the implementation of infrastructure. When costing the proposed AT improvements, a unit cost has been used which reflects this approach. The majority of the costs include the implementation of signage and pavement marking with the assumption that larger construction costs would be included as part of a roads or water capital project.

**Table 14** summarizes the costs associated with the previously planned capital projects, the future planned roadway reconstruction / rehabilitation projects and the strategic actions.

Table 14 - Summary of AT Network (Cycling Facilities & Trails) Costing for Norfolk County

Phase	Capital Projects (\$)	Future Planned (\$)	Strategic Linkages (\$)	Total (\$)
Short-term	16,311	5,261,102	4,129,737	9,407,150
Medium-term	4,183	6,864,754	3,325,582	10,194,519
Total	20,025	12,125,856	7,455,319	19,601,669



Detailed costing is presented in the separately bound **Technical Appendix B**. All information related to phased network costing can also be found in the network database and is intended to be used as part of the phasing and costing tool.

Taking into consideration programming and outreach costs, the total anticipated cost to implement the AT Strategy is presented in **Table 15**Error! Reference source not found..

Table 15 – Rationale for AT Strategy Implementation

	Short term (5 year horizon)	Medium term (15 year horizon)
	(5 year Horizon)	(15 year Horizoti)
AT	\$9,407,150	\$10,194,519
Improvements	\$5,407,130	\$10,134,313
Cost Per Year	\$1,881,430	\$1,019,452
Cost per Person	\$30	\$16

<sup>1</sup> Total cost includes both capital costs as well as costs for future planned improvements

The costing does not reflect costs associated with encouragement, education and evaluation programs and initiatives. In addition to funding allocated to infrastructure improvements, the County should also identify an annual budget to educate and encourage residents to use active transportation **section 4.4** of the Strategy.

It is important to note that the costing developed for Phase 2 and 3 of the implementation strategy will need to be revisited as the County and its partners proceed with implementation. The amount budgeted will be depend on achieving economies of scale as a part of future capital planning as well as future partnership and funding opportunities (see section 6.2 and 6.3).



As the plan is implemented, the cost associated with phases 2 and 3 should be revisited and revised to reflect up to date unit costing and confirmed facility types.





The capital costing identified in the spreadsheet for the AT Strategy should be integrated with the costing identified for the T.M.P.



<sup>2</sup> Based on statistics Canada 2011 population of 63,175

#### 6.2 How to Fund the AT Strategy?

In order for the implementation of the AT Strategy to be successful resources are needed. Resources come in two forms, monies and staff level of effort. Both are needed at the County level as well as through its partners to ensure that the implementation of the AT Strategy moves forward.

In addition to the County's annual budgeting process, there are other opportunities for budget efficiencies and funding. The information presented in the following sections is intended to support the monies component of implementation.

#### 6.2.1 Coordinating with Capital Projects

Implementing the AT system should be included in the County's operating and capital budget reflecting infrastructure priorities for the upcoming year(s). It is Council's responsibility to determine the amount of money allocated to the implementation of AT infrastructure. County staff should review the phasing plan and costing – integrated with the TMP – to determine preferred projects that can be implemented within that year.

The AT Strategy has been developed as part of the higher level transportation master plan. The intent is that this will allow for efficiencies related to capital costs for the construction and implementation of on-road and in-boulevard active transportation facilities. The phasing of AT projects was identified based on the detailed information generated as a result of the TMP as well as the information provided in the County's Roads database. Coordination should be achieved using the tools identified in the Strategy.

When determining the costing of projects, the County should consider the costs associated with maintaining facilities and should include these when identifying annual operating budgets for both on and off-road facilities. Information related to the costs of various maintenance practices is identified in **section 4.3**.

R51



County staff should work together to ensure that the budgeting for proposed linkages as identified in the TMP is coordinated with those identified in the AT Strategy using the costing / implementation tool.



#### 6.2.2 Exploring Funding Options

The implementation of the AT Strategy should be a collaborative effort between the County, its partners and external funding sources and partnership opportunities. There are a number of funding strategies that are available for municipalities throughout the Province of Ontario at the federal and provincial level. Norfolk County has utilized funding opportunities to achieve many of their AT successes in past years e.g. Trillium Grant and Healthy Communities Funding.

Continuing to explore these opportunities to fund the development of proposed AT facilities and programs / initiatives would be an effective way to offset some of the costs identified. Potential funding options available to Norfolk County are presented in **Table 10**Error! Reference source not found..

Table 16 - Overview of Potential Funding Sources to Support AT Infrastructure Implementation

Table 16 - Overview of Potential Funding Sources to Support AT Infrastructure Implementation			
Funding Sources	Additional Details		
Federal / Provincial Gas Tax	<ul> <li>For the federal program please refer to:         http://www.infrastructure.gc.ca/plan/gtf-fte-eng.html     </li> <li>For the provincial program please refer to:         http://www.mto.gov.on.ca/english/service-commitment/gas-tax-programs.html     </li> </ul>		
ecoMobility (TDM) Grant Program	For details on the ecoMobility Grant Program please refer to: <a href="http://data.tc.gc.ca/archive/eng/programs/environment-ecomobility-menu-eng-144.htm">http://data.tc.gc.ca/archive/eng/programs/environment-ecomobility-menu-eng-144.htm</a>		
Federation of Canadian Municipalities Green Municipal Fund	► For additional details regarding the Green Municipal Fund and potential funding alternatives please refer to: <a href="http://www.fcm.ca/home/programs/green-municipal-fund.htm">http://www.fcm.ca/home/programs/green-municipal-fund.htm</a>		
Federal and Provincial Infrastructure / Stimulus Programs	<ul> <li>For Federal Government infrastructure stimulus fund details please refer to:         <ul> <li><a href="http://www.bcfontario.ca/english/isf/guide.html">http://www.bcfontario.ca/english/isf/guide.html</a></li> </ul> </li> <li>For Provincial Government infrastructure stimulus fund details please refer to:         <ul> <li><a href="http://www.moi.gov.on.ca/en/infrastructure/stimulus.asp">http://www.moi.gov.on.ca/en/infrastructure/stimulus.asp</a></li> </ul> </li> </ul>		
Ontario Trillium Foundation	► For details regarding potential funding alternatives please refer to: <a href="http://grant.otf.ca/">http://grant.otf.ca/</a>		



Corporate	For additional details regarding MEC's fund to
Environmental	preserve recreationally significant landscapes please
Funds (Shell and	refer to:
MEC)	<a href="http://www.mec.ca/AST/ContentPrimary/Community/Community/Community/Community/CommunityContributions/LandAcquisition.jsp">http://www.mec.ca/AST/ContentPrimary/Community/Community/Community/Contributions/LandAcquisition.jsp</a>
Corporate Donations	Money or service in kind and have been contributed by a number of large and small corporations over the years
Connecting Links Funding	► The Connecting Links Program was initiated by the Ministry of Transportation Ontario to help pay the construction and repair costs for municipal roads and connect communities. Though the formal period to apply for the program was completed in 2016 it may be extended in the future: <a href="http://www.mto.gov.on.ca/english/highway-bridges/connecting-links.shtml">http://www.mto.gov.on.ca/english/highway-bridges/connecting-links.shtml</a>
Trans Canada Trail	For additional information regarding trail funding
Funding and Federal	alternatives please refer to:
Fund Matching	http://old1.tctrail.ca/trail_funding.php

In addition to those funding opportunities identified in the table above, future funding from the province of Ontario may be made available through the #CycleON Action Plan or future funding programs by #CycleON. The County should remain aware of the various potential funding sources and on an annual basis identify additional funding opportunities to support the implementation of the AT Strategy.





The County should review potential funding opportunities and explore those that are applicable to fund the future implementation of the AT Strategy.





The Health Unit should be responsible for reviewing potential funding sources on an annual basis to highlight additional opportunities and should communicate these opportunities in advance of the capital budgeting process.



# 7.0 CONCLUSION

The Norfolk AT Strategy was developed as a collaborative effort between County Staff, Public Health representatives, key stakeholders and interest groups as well as members of the public. The recommendations, actions and initiatives found within this strategy reflect this collaborative approach and are intended to provide the County with the tools needed to move the strategy through to implementation.

The content of the strategy aims to achieve the objectives established by the County and the needs of its various communities. It takes into consideration the growth that is occurring and the strategies and priorities set-out in existing policies and plans.

The County and its partners are encouraged to use this plan and the resources found within it to guide planning and design, process and coordination, implementation and operation and promotion and outreach. The content has been developed specifically for Norfolk County to provide a variety of realistic and feasible solutions.

By developing and implementing this strategy in concert with the other ongoing AT supportive initiatives County-wide, Norfolk County is well on its way to becoming a key destination for active transportation and recreation and a healthy and desirable community to live and visit.





Norfolk County AT Strategy

**SEPERATELY BOUND TECHNICAL APPENDIX A -**BACKGROUND INFORMATION

August 2016









# Appendix A-1

Background Policy Review

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# A1.1 SUMMARY OF BACKGROUND INFORMATION

#### A1.1.1 Why Review Background Information?

One of the primary goals of the active transportation strategy prepared for Norfolk County is to build upon past policies and initiatives related to the planning, design and implementation of on and off-road active transportation facilities.

This supportive technical appendix provides a summary of the relevant policies and plans that were reviewed as part of the initial phases of the study process. Policies have been highlighted at all levels of government – federal, provincial and County. The study team has also highlighted relevant and influential policies from surrounding municipalities that will influence future connectivity of active transportation facilities.

By understanding the policy context for active transportation, the study team is able to shape future recommendations to be explored and considered by County staff and Council including but not limited to revisions or additions to existing policies. More specifically, the County is currently in the process of updating their Official Plan. Where possible, policies should be consistent; facilitating the implementation of strategic goals and objectives of the County.

Through the development of an AT strategy for Norfolk County, the study team was able to gather a better understanding of the supportive policies that require reinforcement as well as contradictory policies that may need to be reviewed further and updated. A summary of these policies in found in the following sections.

# A1.2 THE POLICIES & PLANS

#### A1.1.1 Federal

#### **Transport Canada**

The Strategies for Sustainable Transportation Planning: a review of practices and options (2005) identifies guidelines for consideration when incorporating sustainable transportation into municipal policies. The report includes principles that support the promotion of active transportation as a mode of sustainable transportation at the federal level and the promotion of active transportation as a viable form of transportation.



Potential strategies identified in the Transport Canada guidelines include those that:

#### 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**

- Mitigate air quality and noise impacts of transportation activities.
- ➤ Set goals and objectives for reducing the need to travel, improving transit mobility, and preserving minimum levels of service on roadways.
- ► Address the transportation needs of persons with disabilities, notably public transit service and barrier-free design in public rights-of-way.

#### **MODAL SUSTAINABILITY**

- 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).
- ▶ Make transit operations more sustainable.
- The strategies identified in Transport Canada's report, demonstrate the federal government's commitment to developing national standards and practices which can be used to help improve conditions for walking and cycling.

#### Federation of Canadian Municipalities

The Federation of Canadian Municipalities (FCM) fosters the development of sustainable communities enjoying a high quality of life by promoting strong, effective and accountable municipal government. FCM recently developed the "Communities in Motion: Bringing Active Transportation to Life Initiative". A key resource for all Canadian municipalities, it sets out goals for promoting active transportation and eliminating barriers to different travel modes. A key consideration for active transportation presented in the initiatives includes:

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. 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.

#### A1.1.2 Provincial

#### Provincial Policy Statement (2014)

The 2014 Update to the Provincial Policy Statement (PPS) set the foundation for regulating land use planning 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 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 are dispersed throughout the PPS. Policies which specifically address the development of active transportation infrastructure and programs include Section 1.1.3.2, 1.6.7.4 and 1.5.1.

#### Ontario Cycling Strategy #CycleON

In November 2012 the Ministry of Transportation Ontario (MTO) published the Draft Cycling Strategy. The strategy acknowledges the importance of developing cycling infrastructure to help reduce GHG emissions, ease gridlock, enhance the economy, increase tourism and increase quality of life for Ontario residents. The strategy was developed based on increasing demand from local municipalities for direction from the province on the development of cycling facilities and responds to recommendations 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 outlines recommended cycling infrastructure, 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 – #CycleON was released by the MTO along with a clear set of action plans



#### Bikeways Planning Design Guidelines

In 2014, the Ministry of Transportation Ontario released the first set of provincewide design guidelines specifically related to cycling facilities. The guidelines were developed as a collaborative effort between the Ministry and representatives from local municipalities.

More specifically, this document contains a set of guidelines that show geometric designs for a number of bicycle facilities. We would encourage municipalities to review best practices in bicycle design in other Canadian provinces and US States for additional guidance. Also, national cycling guidelines are available through Transportation Association of Canada.

#### Bill 51 Planning Act 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 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.

#### Municipal Act (2001)

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



#### Highway Traffic Act

Bicycles are recognized as a vehicle under the HTA. 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 or any roadway restricted for cycling by a municipal by-law. The HTA contains a number of cycling related policies including bicycle lanes on municipal roadways, vehicles interacting with bicycles, bicycles being overtaken, and regulating or prohibiting bicycles on highways. In 2015 the Provincial Government through Bill 31 amended and/or added a number of cycling related clauses in the HTA, most notably introducing the 1.0m passing requirement and permitting a bicycle symbol lens for bicycle traffic signals. As future amendments are implemented the Municipality should be aware of how these changes impact the implementation of enforcement of safe cycling.

#### Ontario Trails Strategy

The Ontario Trails Strategy was developed by the Ministry of Tourism, Culture and Sport between 2003 and 2005 and formally launched on October 6, 2005 with a commitment to \$3.5M in funding over the next 5 years. The Strategy is a long-term plan that establishes strategic directions for planning, managing, promoting and using trails in Ontario.

The Strategy sets out a strategic vision for trails within Ontario. The Ministry and its partners throughout Ontario aim to establish "a world-class system of diversified trails, planned and used in an environmentally responsible manner that enhances the health and prosperity of all Ontarians". The strategy focus on single and shared-use trail networks within urban, rural and wilderness areas which are meant for recreational, active living, utilitarian and tourism purposes.

The strategy sets out five strategic directions including:

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

The work that the County has done to support similar objectives on a local scale has been significant and should continue to expand County-wide.



#### Accessibility for Ontarians with Disabilities Act (2005)

The Accessibility for Ontarians with Disabilities Act (AODA) was passed on June 13, 2005. The policy calls on the business community, public and not-for-profit sector and people with disabilities to develop, implement and enforce mandatory standards. The policy makes Ontario the first jurisdiction in Canada to develop, implement and enforce accessibility standards applied to both private and public sectors. These guidelines provide directives on how businesses in Ontario can 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.

Recently a revision and update of the Built Environment Standard was undertaken and released in early 2013. "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 applies to new construction and redevelopment of existing facilities.

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 minimum clear width of 1,000 mm; a clear height that provides a minimum head room clearance of 2,100 mm above the trail; a firm and stable surface type; and where trail is constructed adjacent to water or a drop-off, it must have edge protection that constitutes an elevated barrier that runs along the edge of the; a top edge of at least 50 mm above the trail surface; a protection barrier that does not impede the drainage of the trail surface; a clear opening of between 850 mm and 1,000 mm, whether the entrance includes a gate, bollard or other entrance design; and trail head signage that provides relevant accessibility 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).



#### Transit Supportive Guidelines (2012)

In 1992, the Ontario Ministries of Transportation and Municipal Affairs and Housing published the Transit-Supportive Land Use Planning Guidelines which was recently updated to reflect continued progress in the development of more compact, transit-supportive communities. The updated 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 and consists of over 50 guidelines and approximately 450 specific strategies to guide urban and 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.

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. Specific reference is also made to the design and development of complete streets.

#### Ontario Trails Strategy - Trails Action Plan

The Trails Action Plan was completed in December 2015 as a result of further consultations and engagement on the Ontario Trails Strategy. The Action Plan aims to identify priority issues and opportunities and identify an action plan to three key pillars.

The Action Plan is founded on five core values including:

- Respecting private and public lands, including agricultural lands, Crown lands and the traditional land-use areas of Aboriginal communities;
- ► Protecting, conserving and appreciating the environment, including cultural heritage and natural heritage;
- Valuing regional differences and supporting local decision-making;
- Providing a variety of trail opportunities in the diverse trail interests of Ontario's population and visitors; and
- Adopting good planning principles and approaches.

The Action Plan pillars are supported by a number of strategic actions with leads and supporters identified to facilitate implementation and as well as an anticipated timeline for implementation. A number of the strategic actions align with the work being done in Norfolk county providing additional support for future implementation initiatives.



#### A1.1.3 Norfolk County

Official Plan (Adopted 2006, Amended 2011)

The Norfolk County Official Plan was adopted by Council in May 2006 and approved by the Ministry of Municipal Affairs and Housing in December 2008. The Plan was last amended in January 13, 2011 to section 4.2.5.6 and Schedule B. The Official Plan was developed following the amalgamation of the County into a single-tier municipality to include the former Town of Simcoe, Township of Delhi, Township of Norfolk and the westerly portion of the City of Nanticoke. The Official Plan incorporates the results of a comprehensive visioning and strategic planning exercise to address a number of issues and new challenges in Norfolk County. The plan promotes a holistic approach to planning by recognizing the interconnected nature of healthy communities, economic vitality and a protected natural environment as it relates to growth management and land use planning.

The Official Plan recognizes that the County's networks and infrastructure, including roads and trails, play a fundamental role to determine the County's sustainability, quality of life and accessibility. Roads should facilitate the safe and efficient movement of both people and costs while promoting a development pattern that is supportive of economic activity. The following policies are outlined in the Official Plan to support walking and cycling as alternate modes of travel:

- ▶ Safe and convenient pedestrian interfaces with roads shall be encouraged
- Existing and proposed trails for non-motorized users are generally illustrated in Schedule 'E' to this Plan. The County shall work towards providing bicycle and pedestrian paths, separated from the roadway, on existing and proposed roads, on abandoned rail corridor, on utility corridors, and within parks and open spaces, as appropriate.
- ► The County shall consider adapting roads to provide safer travel for bicycles, where feasible and appropriate.
- ► The County shall undertake to interconnect existing walking trails and bicycle paths, where feasible and appropriate.
- ► The County shall encourage the integration of bicycle path and walkway systems into the design of transportation facilities by including facilities such as protected bicycle storage areas at stations, places of employment and major community, institutional, educational, cultural and shopping locations, where appropriate.
- ➤ The County shall encourage the continued use and development of multipurpose trail system connecting Simcoe, Delhi, Waterford and the City of Brantford, as well as connections to the Trans Canada Trail.



The County shall work towards the development of a waterfront trail between Port Dover and Long Point, the details of which shall be established through the Lakeshore Secondary Plan, further to Section 3.8.1 (Lakeshore Special Policy Area).

The policies outlined in the Official Plan are based on a 20-year planning horizon (to the year 2026). It is recommended that the plan be reviewed every five years to identify trends and planning opportunities within the County, to analyze effectiveness of the policies and to allow for adjustments and updating.

#### Corporate Strategic Plan (2014-2019)

The Strategic Plan provides County staff and Council with a framework for decision making and strategic direction to effectively manage and support growth within the County. Community engagement is valued as a vital component of the planning process to ensure objectives, priorities and actions reflect the needs and values of the community.

The vision for the Norfolk County Strategic Plan is:

The Norfolk County way of life is rooted in our natural environment, unique sense of place and community, business diversity, and confidence and collaboration to achieve results and adapt to change we encounter.

To develop the Strategic Plan, the community was engaged through different initiatives including an online community survey, resident and stakeholder phone interviews, an online survey for City Council and local facilitated group conversations. Residents and local stakeholders provided input to support the development of active transportation facilities including:

**CREATE BIKE LANES** (they encourage activity, proven to increase business to shops by up to 50%, increase in activity leads to overall better health and less strain on the hospitals, better for the environment, trips less than 5km by bike rather than car can save 15% fuel consumption and \$600/year, keeps e-bikes and scooters off the roads so therefore safer for them).

#### Trails Master Plan (2009)

In 2009, Norfolk County developed their Trails Master Plan to provide guiding principles and strategic directions for linking communities, parks and destinations as well as to manage the County's current and future trail assets. The plan is intended to enhance the quality of life for the users and to increase recreational opportunities, increase tourism spending, promote alternative modes of transportation and expand economic development.



The initial phases of the master plan included three consultation processes with community trail committee members, public and private agencies and municipal officials. The second draft of the Trails Master Plan identified trails needs and priorities. Recommendations and implementation strategies were developed for 0-2 years (high priority), 3-5 years (medium priority) and 5-7 years (low priority). The Trails Master Plan identified future trail links along abandoned railway corridors. These links include the TH&B Railway to Brant County (to the north); Concession Road 14 and new Lakeshore Road to Haldimand County trails (to the east); Lakeshore Road to Elgin County (To the West); and Highway 3 and 59 to Oxford County.

The Trails Master Plan states that trails in Norfolk County should be developed to the draft Trail Standards authored by the Community Services Department. These standards are consistent with the Ministry of Natural Resources standards for trails and include guidance for permitted trail uses such as hiking, walking, trail bike, etc. When developing these trail networks, trail amenities should also be implemented to include signs, gates, furniture, parking areas and washrooms.

The Norfolk County Active Transportation Master Plan (as part of the Integrated Sustainable Master Plan) will build upon the recommendation outlined in the Trails Master Plan and identify a connected network of on and off-road active transportation routes throughout the County.

#### Lakeshore Special Policy Area Secondary Plan (2009)

The Lakeshore Special Policy Area Secondary Plan was adopted by Council in 2009. Following development of the County's Official Plan, County staff concluded that the lakeshore area required further study through a comprehensive secondary plan process. The Lakeshore Secondary Plan addresses the interrelated matters outlined in the Official Plan, including growth and settlement, agriculture, servicing, traffic, trails, community design, environmental hazards, and cultural and built heritage. These matters were explored through a variety of technical background studies including transportation and trails / cycling overview. The Secondary Plan provides a policy framework to manage growth and development within the policy area over a 20-year planning horizon (to the year 2026).

The Plan outlines a sustainable transportation strategy to support alternate modes of travel and to create a comprehensive trails and cycling network. The following are some of the policies included in the secondary plan:

► The County shall support the preparation of a County Trails Master Plan in accordance with the policies of Section 11.7.3 (County Trails Master Plan).



▶ In addition to, or in combination with Ontario's South Coast Scenic Route, the County shall support the creation of an off-road pedestrian walking and hiking footpath, established along the lakeshore between Ontario's South Coast Scenic Route and Lake Erie, as generally identified on Schedule "E".

The Norfolk County Active Transportation Master Plan (as part of the Integrated Sustainable Master Plan) will build upon the recommendations outlined in the Lakeshore Special Policy Area Secondary Plan to develop a network of active transportation routes for pedestrians and cyclists.

#### Parks, Facilities and Recreation Master Plan (Draft 2015)

In 2005, Norfolk County completed its first Parks, Facilities and Recreation Master Plan. In 2015 the County developed a more comprehensive master plan to respond to the continuing growth of the County and emerging trends. The 2015 master plan is based on five levels, including a strategic plan foundation, specific initiatives and an implementation framework. The master plan notes the importance of partnerships with social, health, education and community services to provide a balance of parks and recreation facilities involving trails and other opportunities.

Trails are considered as an amenity within Norfolk County which are part of the open space and natural heritage system and build upon the active transportation networks. Trails can contribute to healthy communities and have great economic, social and environmental benefits. Specific community trail improvements are recommended including:

- ▶ Develop an Active Transportation Plan at the county-wide level, which connects communities, as well as infrastructure such as shoulder widening, safe routes for school, and recreational/commuter bike routes.
- ► Address individual urban communities in an Active Transportation Plan in order to deal with specific barriers and connections.
- Engage a community-based group and/or champion, to gain momentum and support which will lead to resources and action regarding trail planning and improvements.
- Work with community-based groups and/or champions in order to identify, assess and implement solutions to various County and community-wide trail issues.
- ▶ Develop additional multi-use trails on abandoned railway corridors, connecting various communities. Proposed future trail links could include:
  - Concession 14 as well as the new Lakeshore Road which have been identified to link to Haldimand County trails
  - Lakeshore Road which has been identified as a link to Elgin County
  - Highways 3 and 59 which have been identified as links to Oxford County



- Utilize existing public land owned and managed by the Canadian Wildlife Service, Ontario Ministry of Natural Resources, the Long Point Region Conservation Authority and Norfolk County in order to connect and expand trail networks and recreational opportunities. In addition, take advantage of land that is owned by non-governmental agencies, such as the Nature Conservancy of Canada and the Long Point Land Trust.
- Develop trails adjacent to the water along Big Creek and the Lake Erie waterfront.

The Norfolk County Active Transportation Master Plan will build upon these recommendations to develop a network of on and off-road routes (including trails) throughout the County.

#### A1.1.4 Conservation Authorities

#### **Grand River Conservation Authority**

The Grand River Conservation Authority (GRCA) was formed in 1932 and covers the north-east portion of Norfolk 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 Norfolk County.

#### Long Point Region Conservation Authority

The Long Point Region Conservation Authority (LPRCA) 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. The LPRCA manages and operates conservation areas within Norfolk County including Waterford North Conservation Area, Sutton Conservation Area, Brook Conservation Area, Hay Creek Conservation Area, Norfolk Conservation Area, Deer Creek Conservation Area, Backus Heritage Conservation Area and Lee Brown Waterfowl Management Area.

# A1.1.5 Agencies / Organizations

#### **Regional Tourism Organization**

The development of supportive active transportation policies and infrastructure in Norfolk County can help promote the County as a key tourism destination for local residents and visitors. Following recommendations identified in Ontario's Ministry of Tourism, Culture and Sport report, Tourism Competitiveness Study (2009), 13 tourism regions were developed, each with its own Regional Tourism Organization.



Research indicates that Regional Tourism Organization 1 (RTO1) had the second highest number of visitors in Ontario (2010) at 13.1% of all 103.7 million tourism based visits to Ontario.

RTO1, also known as Southwest Ontario Tourism Corporation (SWOTC), is a provincially mandated tourism organization for South-western Ontario. SWOTC works with marketing organizations and tourism stakeholders across South-western Ontario to promote this area as a vibrant and prosperous tourism region. The SWOTC identifies priority strategic market sectors to further promote tourism, such as the waterfront and associated activities (e.g. walking, cycling, etc.). Southwest Ontario Tourism Corporation further identifies potential partnership and funding strategies to receive funds from Ontario's Ministry of Tourism, Culture and Sport for tourism projects and initiatives that are consistent with the organization's priorities.

#### A1.1.6 Surrounding Municipalities

#### **Brant County**

The County of Brant has highlighted trail and cycling opportunities in County documents, such as the County of Brant Transportation Master Plan, but does not currently have any which specifically addresses development of AT facilities.

#### **Elgin County**

Elgin County and its local municipalities have recently developed policies and plans to support the development of active transportation facilities including the Elgin-St. Thomas Cycling Master Plan, Elgin-St. Thomas Active Transportation Initiative and other AT related initiatives in the Township of Norwich

#### **Haldimand County**

Haldimand County has highlighted active recommendation and opportunities to develop active transportation facilities in their Trails Master Plan and Partnership Framework Study.

#### **Oxford County**

Oxford County and its local municipalities have recently adopted policies to support the development of active transportation facilities including the County's Trails Master Plan, Tillsonburg Trails Master Plan, Tillsonburg Parks, Recreation and Culture Strategic Master Plan, Tillsonburg Gateway Community Improvement Plan (By-law #3251), and other AT related initiatives in the Township of Norwich.



# Appendix A-2

Benefits of Active Transportation

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# A2.1 SUMMARY OF POTENTIAL AT BENEFITS

#### A2.1.1 Health & Fitness

Walking and cycling are a low-cost and enjoyable form of exercise and recreation. Studies have shown that people who use active transportation are, on average, more physically fit, less obese and have a reduced risk of cardiovascular disease. Evidence suggests that increasing the quality and quantity of active transportation facilities encourages greater bicycle use.

Cycling and other active transportation modes significantly decrease the risk of a variety of serious health conditions. Increased physical activity on a daily basis can reduce the risk of coronary heart disease, premature death, high blood pressure, obesity, adult-onset diabetes, depression and various types of cancer. A more active population can in turn reduce the cost of medical care, decrease workplace absenteeism and maintain the independence of older adults and younger children exploring potential new active transportation options.

Canadians above the age of 12 report being physically inactive. 26% of youth between ages of 2 to 17 are overweight or obese (Statistics Canada, 2005). This growing obesity rate amongst youth presents a large problem for the future in Canadian communities. In order to reverse the trend of obesity, communities should adopt practices and strategies that encourage physical activity in the daily lifestyles of youth and adults. This includes creating active transportation opportunities for all community members. Adults commuting to work by cycling or walking are significantly less likely to be obese or overweight. Students that walk or cycle to school are more likely to adopt healthy lifestyle choices, which improve academic performance and enhance local communities. Developing and promoting safe and effective active transportation ensures more commuters and students will choose to cycle or walk to their destination.

Other health benefits: Exploring different modes of active transportation can enhance one's mental outlook and well-being, improve self-image, social relationships and increase self-reliance by instilling a sense of independence and freedom. These can contribute to healthier and happier personal relationship and improve work and school productivity.



#### A2.1.2 Transportation

While being popular recreational activities, walking and cycling are also used as an effective, affordable mode of short-distance travel while generating no pollution. The transportation benefits of walking, cycling and other active transportation modes include reduced road congestion and maintenance costs, less costly infrastructure, increased road safety and decreased user costs. In distances up to 10 km in urban areas, cycling can be the fastest mode of transportation from door to door.

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 me to my workplace in less than 30 minutes at a comfortable pace". These facts clearly demonstrate the potential for increasing the number of trips by bicycle in Norfolk County.

By emphasizing active transportation modes, the County can reduce annual roadway costs. Roadway funding requirements include maintenance costs, safety and enhancement costs and the addition of roadway capacity through lane widening or additions. These costs are also usually paid for by road users through property and gas taxes. Bicycles are lightweight and cause little wear and tear on a road surface. By developing more and safer cycling facilities, cyclists can also travel safely over long distances, reducing the number of traffic incidents over time.



## A2.1.3 Community & Safety

Facilities that promote active transportation, such as bicycle lanes and multi-use trails, make transportation safer and more accessible for all transportation types by reducing the number of cars on the road and by isolating different transportation types to their respective passage corridors. Cycling facilities and off-road trails create a more pleasant, safer community environment with reduced noise and pollution. These facilities encourage social interaction, leading to a stronger sense of community in the local area.

A network of active transportation facilities connecting communities to each other and to surrounding municipalities creates more accessible transportation choices to people who live in communities with otherwise limited options. A full network provides affordable commuting options to people who would otherwise be driving to their work or school within the community or surrounding municipalities.

## A2.1.4 Local Economy & Tourism

Active transportation facilities reduce transportation costs by reducing overall car usage, traffic congestion and safety incidents, leading to lower maintenance costs and usage costs. AT facilities also reduce health care costs due to the reduction in air and water pollutants caused by the reduction in car usage and also due to an active lifestyle leading to a reduction in various health complications.

Strengthening the network of multi-use trails and on-road transportation facilities also benefits the community by making the area more attractive to active tourists and eco-tourists that search for trails and routes that provide a safe and pleasant experience while cycling or hiking. This form of tourism contributes to the local economy due to the tourists' spending on food, entertainment and lodging while staying in the community. Adding active transportation facilities caters to the growing demand for ecotourism activities in Southern Ontario. Tourists desire to explore new areas by cycling or hiking in order to experience nature and to take in interesting sights. Tourism and local bicycle trips also have a positive economic impact on bicycle purchases and repairs, a possible business opportunity for the community.



## A2.1.5 Sustainable Transportation & the Environment

Active transportation is energy efficient and non-polluting. Cycling has been proven too often be faster door-to-door than driving short distances in urban areas. Studies also show that improving bicycle infrastructure increases the number of beginner and infrequent cyclists significantly (British Columbia Cycling Coalition Budget Submission, 2007). By building infrastructure that encourages walking or cycling short distances over driving, the reduction in motor vehicles lowers overall pollutant emissions into the local atmosphere. This leads to a more sustainable community that is reducing the effects of climate change in the local area.

Cycling and walking also reduce the level of noise in a neighbourhood compared to motorized vehicles. Since these transportation modes are also smaller, the infrastructure that caters to them requires less land, leading to a more efficient and compact community. The reduction in noise, water and air pollution also increases property values of the local community.

In addition to the research noted in Table 1, there are also a number of key resources that can be referenced when outlining the benefits of sustainable forms of transportation. As the Municipality proceeds with the implementation of the A.T.P. it may be necessary to provide residents, staff, visitors, business and Councillors with educational research and information in support of future investment, change and growth in active transportation and recreation.

The Municipality should work with its partners to develop these supportive / educational materials (see section 4.2.4). The following is a list of some useful references and resources for the Municipality to use when developing these materials or communicating with members of the public and stakeholders:

- ► The Business Case for Active Transportation The Economic Benefits of Walking & Cycling: <a href="http://thirdwavecycling.com/pdfs/at\_business\_case.pdf">http://thirdwavecycling.com/pdfs/at\_business\_case.pdf</a>
- ► BEAT The Path to Health Benefits of Investing in Active Transportation: http://physicalactivitystrategy.ca/pdfs/BEAT/BEAT\_Publication.pdf
- ► Transportation Research Board: TR News Active Transportation Implementing the Benefits:
  - http://onlinepubs.trb.org/onlinepubs/trnews/trnews280.pdf
- ► Transportation Options Research economic & tourism benefits: http://www.transportationoptions.org/research.html
- Cycling Opinion Poll Overview of 2014 Results (Share the Road Coalition): http://www.sharetheroad.ca/opinion-poll-data-s17022



# Appendix A-3

Field Investigation – Summary of Results

Table 1 – Documentation of Stage 1 of Norfolk AT Plan Field Investigation

Geographic Area	Street Name / Route Description	Comments & Mark ups	
	Highway 6 / Main St. & Pheasant Trail	Inquiry as to whether this is a new development area. Additional investigation is required.	
	Prospect St.	Access to the Lynn Valley Trail – providing increased connectivity	
	Cockshutt Rd.	Road has wide shoulders and an existing platform Low presence of agricultural traffic	
	Highway 3 & Cockshutt Rd.	There is a variation of platform size. The road includes poor quality conditions.	
Port Dover	Concession 2 Woodhouse	dhouse Desire line is questionable. Ownership needs to be confirmed.	
	Megrl Dr.	Roll curb is narrow due to the on street parking.	
	Silver Cres. View of Silver Lake Park and access to natural features.		
	St. George Str. & Chapman St.	Intersection includes on street parking. The complete streets are narrow. Area contains multiple stop signs because of its residential location.	
	Main St. & Walker St.	Intersection experiences constraints. Additional AT design consideration may not be possible within the existing space.	
	Western Ave.	There is no parking on the street. Hilll with good sightlines.	
	Talbot Rd. & Church St.	Intersection includes questionable desired connection. Additional investigation is required.	
	William St.	High traffic speed on roadway. May not be ideal for cyclists. Confirm operating speed and AADT	
Delhi	William St. & Old Mill Rd.	Intersecting with river crossing.	
Dellil	Old Mill Rd.	Poor Sightlines	
	Western Ave.	Road follows the path of the river running alongside the road. Access to key natural afeatures	
	Main St. & William St.	There is no curb on the south side of the intersection but an asphalet curb has been implemented on the north side of the roadway	
	Norfolk Ave.	Located beside Centennial Park.	



Geographic Area	Street Name / Route Description	Comments & Mark ups	
	Talbot Rd. & Mill St.	Intersection includes complete streets in a residential area. The poor sight lines are resulting in dangerous crossing. Even more so, there is no signage for residential or agricultural traffic.	
	William St. & Queen St.	Located in a residential area with new pavement. A measurement of on street parking is required on the north side.	
	Queen St. & Wellington Ave.	Roads include on street parking.	
	Swimming Pool Rd. & Talbot Rd.	Roads are disconnected. Additional investigation is required.	
	James St. & Williams St.	There is heavy use of on street parking. Streets and traffic lanes are narrow.	
	James St. & Argyle Ave.	Area is experiencing an increase of traffic volume which could be a result of the narrow lanes for vehicles to use. Road includes a setback on the east side.	
Delhi	Argyle Ave. & Delcrest Ave.	Land around is used for industrial use.	
	Swimming Pool Rd. south of Windham Rd. 11	Curbs are varying in size. Some of the shoulders are adequate in size.	
	Brantford Rd.	Road possesses wide platform with gravel shoulder.	
	Church St. E. & Callens Ave.	Current stop is controlled and includes a good line of sight.	
	Callens Ave.	Road has wide composure and includes a rolling curb.	
	Fertilizer Rd.	Minimal shoulder space on east side of road.	
	Fertilizer Rd. & Rail Crossing	A significant trail head ends at the east side of Fertilizer Road.	
	Croton Ave.	There is no platform due to the narrow construction of the rural road.	
	James St. & Ewell St.	Includes rolling curb with an asphalt sidewalk.	
	Wilson Ave.	Route has accommodating signage. Visible ditch on the south side of road.	



Geographic Area	Street Name / Route Description	Comments & Mark ups	
	Wilson Ave. W. of Fertilizer Rd.	There is no platform and road is narrow in width. Line of sight is good.	
Port Dover	Tisdale Side Road	There is no platform and road is narrow in width. Line of sight is good. Some sides for sharing of the road.	
	Norwood Rd.	Sidney back tract.	
	Talbot St. N. of Highway 3	Located in a residential area. Curb is nonexistent and there is a visible ditch on the north side.	
	Talbot St. & Highway 3	Road has high volumes and a high operating speed which may be a complex condition for pedestrians and cyclists	
	King Cres.	Church with surrounding residential area. Potential development to the west.	
Courtland	Talbot S.t S. of Adam St.	Roadway is residential with the edge line of the road not including a shoulder. Rural complete streets include wide on street parking resulting in narrow traveling lanes.	
	Byerlay Side Road	Share the road signs are posted. Road includes minimal shoulder width. Ditches are located on either side of street with a greater amount located on the west side.	
	1st Concession Rd.	Includes a wide gravel platform.	
	Dedrick Rd. S. of 1st Concession Rd.	Ist Intersection does not include curb or platform but does have on street parking.  The intersection has some sight line issues.	
	Hunter Dr. N.	Access to trail head with lookout point.	
	Backus Dr.	Road constructed with roll curb including an asphalt buffer. High amount of pedestrian traffic. Surrounding neighbourhood is industrial and residential.	
	Upper Canada Dr.	Access to private trail system.	
Port Rowan	Carolina Wy.	Narrow road with on street parking.	
	Front Rd. & East Quarter Line	Pedestrian sidewalk not wide enough.	
	Front Rd. S. of East Quarter Line	Share the road signs are visible. Road includes access to waterfront trail.	
	Front Rd. & Erie Ave.	Constructed sidewalk on north side.	
	Dedrick Rd. & Lakeshore Rd.	Area is a common destination because of the birding center nearby.	



Geographic Area	Street Name / Route Description	Comments & Mark ups	
Port Rowan	Lakeshore Rd. east of East Quarter Line	Intersection has a wide shoulder and platform.	
	Mcdowell Rd. & Woodland Dr.	Proper platform width and sightline. Approaching Glenshee there may be some repair required. Additional investigation is required.	
	Forestry Farm Rd. S of McDowell Rd. E.	Located in a residential area. Includes a small shoulder with edge line but no platform.	
	Forestry Farm Rd. & St John's Rd. W.	Intersection has wide shoulders and provides good sightlines.	
	Forestry Farm Rd. & Highway 24	Intersection needs road improvements and includes poor sight lines.	
	Jackson Side Road & Plowman's Line	Includes rural and complete streets that have no shoulders or platforms. The intersection has low volume and a narrow space for the right of way.	
	Jackson Side Rd. & Plowman's Line	There are issues with sightlines. There is also a jog in the road.	
	Colonel Talbot Rd.	Road has fresh tar and gravel. Also includes a wide platform.	
County- wide Map	Mall Rd.	Located in a residential area. Road has a gravel shoulder and wide platform. Road is in poor condition – in need of maintenance.	
	Fernlea Side Road & 1 Concession Rd.	Good sight lines.	
	1 Concession Rd. east of Fernlea Side Road	Road occupies agricultural vehicles. Some utilities are close to the roads edge at some points. Visible ditch on the north side.	

#### Documentation of Stage 2 Field Work Results

Stage 2 of the field investigation was completed by D'Arcy McKittrick from the Tourism Company who was able to ride a number of candidate routes. The following is a summary of some of his experiences which are also complemented by videos that were taken of the routes that were ridden.

#### Fourteenth St. E. & W.

Suitable routes for shared roadway with marked cycle lane and paved shoulder; however link from east to west across Norfolk is problematic (very busy 4 lane with commercial traffic).

#### Norfolk St. N.

Suggest this be avoided unless a separated cycle lane is installed; narrow lanes, high traffic volume. Off road cycle path to east traverses entire town from north to south with good connections to main commercial district.

#### Davis St. E. & Gilbertson Dr.

Ok for on-road marked cycle lane but not sure it adds anything that the off-road path doesn't already offer. Also the intersection at Gilbertson & Queensway is a problem. There are high traffic volumes, on a slope, almost impossible to navigate from Gilbertson to the off-road path to the west with narrow bridge and traffic volume.

#### Norfolk St. S.

Similar to Norfolk Street North e.g. avoid if possible. Narrowing of 4 to 2 lanes south of Simcoe near Lynn Valley Road.

#### Ireland Rd. & Lyndale Rd.

Ok for shared on-road route if paved shoulders added. However, unsure of value given quality of Lynn Valley off road path.

#### Victoria St.

Ok for on-street shared route with marked cycle lane. I would suggest extending it across Norfolk to Talbot or Queen and using either as alternate north-south arterial to Norfolk Street south of Queensway; Queen is probably better since it connects to Evergreen Hill Road.

#### West St. & Chapel St.

Ok for on-road shared route with marked cycle lane as western entrance to town.

## Talbot St. to Union St., Robinson St. and Norfolk St. S.

Ok for on-road shard route with marked cycle lane as connectors to main commercial areas on Norfolk Street South.



#### Oak St.

Ok for on-road shared route with marked cycle lane as another connector to Evergreen Hill and Chapel.

#### Elm St. & Parker Dr.

Ok for on-road shared route with marked cycle lane as collector/connector to Evergreen Hill and Decou Road (connecting to Lynn Valley off-road trail).

#### Decou Rd. and Parker Dr.

Heavy traffic on Norfolk and exit from shopping plaza/Tim Hortons at Decou Road.

### Woodway Trail

Ok for on-road shared route with marked cycle lane as collector/connector from south end neighbourhood to Victoria.

### Lynn Valley Rd.

Marginal as connector to from Lynn Valley off-road trail; steep hills and narrow road, also access to from Norfolk South problematic (see above).

# Appendix A-4

AT Designers' Toolbox – Design Guidelines

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## A4.1 USING THE GUIDELINES

The following Technical Appendix has been prepared as a "quick guide" to inform the design and implementation of the active transportation (AT) network for Norfolk County.

The guidelines are consistent with and reinforce provincially accepted design guidelines and best practices including:

- ▶ Ontario Traffic Manual (OTM) Book 18: Cycling Facilities (2014);
- ▶ Ontario Traffic Manual (OTM) Book 15: Pedestrians (2011);
- ▶ Transportation Association of Canada (TAC) Bikeway Traffic Control Guidelines (2008);
- Ministry of Transportation Ontario (MTO) Bikeways Design Guidelines (2013); and
- Accessibility for Ontarians with Disabilities Act (A.O.D.A.) 2005 and Integrated Accessibility Standards (Ontario Regulation 19/11, consolidation date January 1, 2013).

Similar to the other components of the AT Strategy, the guidelines are not intended to be prescriptive. They are meant to provide County planners and engineers with tools needed to inform future decision making.

It is also important to note that though the design solutions identified in this document should generally be considered, in select locations context-sensitive (unique to the character of the roadway) design solutions may be required. Additional details about this concept are outlined in the AT Strategy report as well as the guidelines below.





The County should use Ontario Traffic Manual Book 18: Cycling Facilities and Ontario Traffic Manual Book 15: Pedestrians as the primary reference for the design of cycling and pedestrian facilities.





This Technical Appendix should be adopted as a "quick guide" to inform the design of AT facilities by County staff and should be shared with designers and contractors to ensure consistent design and implementation.



# A4.2 CONSIDERATIONS FOR DESIGN

## A4.2.1 User Groups and Characteristics

#### A4.2.3.1 Primary User Groups

Designing for AT users is not a one-size-fits-all approach. User groups have different preferences, characteristics and interests which influence the facility types that they use and the destinations that they wish to travel to. For the purposes of the County's AT Strategy, pedestrians and cyclists were assumed to be the most common user group. Design considerations for the primary users are presented in **Table 1**.

Table 1 - Design Considerations of Primary User Groups

#### **PEDESTRIANS**

#### **CYCLISTS**

#### **USER GROUPS**

Walkers, hikers and joggers as well as people with mobility devices (similar operating speed)

Short distance and long-distance on-road cyclists, mountain bikers and commuter cyclists

#### TRAVEL SPEED

Typically travel at lower speeds (with the exception of some groups e.g. joggers) and generally require less manoeuvering space

Typically travel between 15 – 20 km/h and 18 – 30 km/h on-road and 30 – 50 km/h downhill

#### INTEREST AND MOTIVATION

Varies for each group but can range from leisure and recreation to fitness and contact with nature

Varies for each group but can include fitness, tourism or day to day transportation

#### **TYPES & DISTANCE OF TRIPS**

People walking may engage in commuter trips and those hiking and jogging will typically engage in recreational trips – hikers 5 – 30kms and joggers 3 – 15 km

Cyclists may engage in commuter trips, longdistance cycling (multi-day) trips or for fitness purposes

The design of the AT network should take into considerations the design, trips and experience preferences of the primary user groups. Users typically value their sense of comfort and safety. Though hard to qualify, comfort and safety can be influenced by level of separation and the interaction with other road users – which will be addressed in the guidelines below. Though cyclists and pedestrians are the focus of this strategy, there are other groups that use AT facilities, where feasible and permitted including individuals with mobility limitations (e.g. assistive devices), as well as users of electric bikes. These are discussed in further detail in the body of the AT Strategy report.

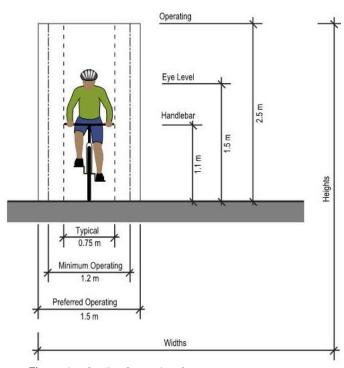


## A4.2.2 Operating Space Requirements

Cyclist operating space is an important factor in facility design as cyclists require a certain amount of space to maintain stability when operating a bicycle. The operating space is determined by examining typical bicycle dimensions, space requirement for maneuverings, horizontal clearance and vertical height. Operating characteristics can vary with different bicycles, cyclist skill level and the surrounding environment. Figure 1 illustrates the typical operating space required for a cyclist operating on a roadway.

An operating space of 1.2m to 1.5m is sufficient to accommodate the forward movement of the majority of cyclists. Cyclists do not travel in a straight line. Manoeuvring space is needed to allow for side-to-side movement during operation. This dimension accommodates 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. However, in some cases the vertical clearance may need to be greater in order to permit the passage of maintenance and emergency vehicles. Both the operating space and height should be assessed on a site-by-site basis taking into consideration context sensitive site characteristics.



**Figure 1 –** Cyclist Operating Space Source – O.T.M. Book 18: Cycling Facilities

The design of on and off-road AT facilities requires different considerations when designing for the operating space of various The minimum operating users. dimensions referenced above pertain specifically to cyclists using facilities. The on-road design parameters outlined below address design considerations typical required for the design of trail facilities.



## A4.2.3 AT Facility Types Overview & Selection

One of the primary objectives of the AT Strategy is to develop a network that builds upon existing and previously proposed routes and facilities (i.e. off-road linkages identified in the 2009 Trails Master Plan) and offers a variety of on and off-road options which can be used for utilitarian as well as recreational purposes. These network purposes / objectives have a direct influence on the level of separation that is provided for the primary users in various contexts.

AT facilities can be organized into three categories based on level of separation from motor vehicle traffic – shared, designated and separated. A description of each of these categories is provided in **section 4.1.4** of the AT Strategy report. For more information on design details refer to OTM Book 18. When designing AT facility types the following key considerations should be addressed:

- ► AT user groups vary widely in levels of skill, experience and confidence;
- ▶ No single type of AT facility design alternative will suit every user;
- ▶ Designers need to gather information on existing and future conditions in order to identify the needs and concerns for users in a specific location;
- ► The choice to provide a separated versus non-separated facility is not a simple "yes or no" answer; it is based on the consideration of a number of factors described in OTM Book 18;
- ➤ Criteria to select one facility type over another need to be flexible to be able to accommodate each site's unique set of circumstances; and
- ▶ No facility design can overcome a lack of operator skill or lack of attention by the user.

When selecting the preferred facility types Norfolk County is encouraged to use the Facility Selection Tool identified in OTM Book 18. The tool consists of three steps as described in detail in section 3.2.5 of the AT Strategy report. The process is intended to be used by practitioners to aid in the selection and implementation of on and off-road AT facilities. The following is a brief description of each of the steps:

- ➤ Step 1 allows practitioners to pre-select the desired facility type based on the motor vehicle operating speed and the average daily traffic volume. This step is accomplished using the 'Desirable Bicycle Facility Pre-Selection Nomograph (Figure 3.3 of OTM Book 18).
- ➤ Step 2 guides practitioners to take a more detailed look at site specific characteristics in order to determine the appropriateness of the pre-selected facility type. Practitioners use this step to critically evaluate the situation in order to select the most appropriate facility type.
- ➤ Step 3 guides practitioners in documenting their rationale for their final decision. Sections 3.2.2.1 to 3.2.2.3 (of OTM Book 18) provide more detailed information about each step.



Though this process has been designed to identify the preferred facility type, in some locations a context sensitive solution may be required. Context sensitive solutions address site-specific characteristics which directly influence the way motorists, cyclists or pedestrians will interact within the environment. In these situations, practitioners are encouraged to work through the facility selection process identified in OTM Book 18 but should rely on sound engineering judgement and investigation to confirm the preferred solution.

## A4.3 OTHER DESIGN CONSIDERATIONS

## A4.2.1 Intersections, Crossings and Signals

#### A4.2.3.1 Intersections

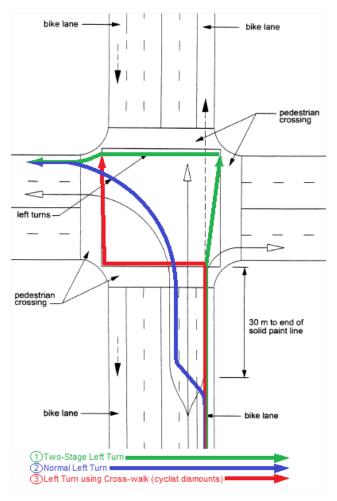
An intersection is where two or more roadways intersect at grade. It is a point where different modes of transportation and associated facilities cross paths and therefore most conflicts between pedestrians, cyclists and motorists occur at intersections.

The typical conflict points that occur between motorists and cyclists at an intersection can be broken into right-turn conflicts and left-turn conflicts.

- ▶ Right-turn conflicts may occur when a cyclist is trying to make a through movement while a motorist is trying to make a right turn and to do so the motorist must cross over the on-road bicycle facility.
- ▶ Left-turn conflicts may occur when cyclists try to merge across one or more lanes of through vehicle traffic in order to turn left using the same path as motorized vehicles.

Both types of conflicts can be mitigated using innovative design solutions that incorporate elements such as pavement markings and signage, pavement colour, designated holding areas for cyclists, medians, and bicycle traffic signals or by adjusting signal timings to accommodate cyclists. Figure 23 illustrates the typical bicycle and automobile movements at an intersection which can be used to better understand the different conflict points which can occur at major intersections of multi-lane roadways.





**Figure 2** – Typical Intersection Conflict Points for Bicycles and Motorists Source – Based on T.A.C. Geometric Design Guide for Canadian Roads, 1999

The OTM Book 18 and TAC Bikeway Control Guidelines (2012) set out measures to decrease roadway user risk by:

- ▶ Increasing visibility for pedestrians, cyclists and motorists and other roadway users (ensure pedestrians, cyclists and motorists can easily see each other);
- ▶ Designating and clearly marking a travel path for all roadway and intersection users including pedestrians, cyclists and motorists;
- ▶ Introducing designs that minimize the need for complex manoeuvres for cyclists;
- Managing intersection access to mitigate conflict points; and
- ► Facilitating awareness and understanding between competing modes of transportation.

Refer to OTM Book 18's facility type sections for associated intersection design details considered on a site by site basis.



#### A4.2.3.2 Cyclist Signals and Detection at Intersections

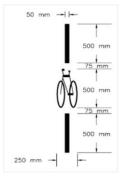
At intersections where bicycle facilities are provided, cyclists should be considered in the timing of the traffic signal cycle and in the selection, sensitivity and placement of traffic detection devices. Just like motor vehicles, it is important for cyclists to be able to process through intersections safely and efficiently.

The presence of bicycle traffic should be conveyed to bicycle signals though passive bicycle detectors (e.g. in-pavement loops, microwave or infrared detectors, etc.) or active detection (e.g. push buttons, etc.). A detector loop embedded with the roadway may be used to actuate the bicycle signal. Signage and pavement marking should be applied to guide cyclists on their appropriate positioning over the detector loop.

The Bicycle Stencil sign could be installed in advance of an intersection with actuated bicycle signals. This sign should be used with the Signal Loop Detector Stencil. At locations where the signal actuation is activated through a pushbutton, a Signalized Intersection Crossing Sign should be installed at the pushbutton. A sample of some of the design treatments for cyclist detection are presented below.



Figure 4 – Standard Bicycle Signal Head (Pending H.T.A. Approval) Source - M.U.T.C.D.C.





(Left) Bicycle Signal Loop Detector Stencil Pavement Marking, (Right) Example Pavement Marking for Bicycle Actuation Location Source – T.A.C. Bikeway Traffic Control Guidelines, 2012





(Left) Signalized Intersection Crossing Sign; (Right) Example of Cyclist Pushbutton in Portland Source – (Left) T.A.C. Bikeway Traffic Control Guidelines, 2012; (Right) MMM Group



#### A4.2.3.3 Crossings

#### MINOR ROADS

When designing crossings of lower volume, and / or lower speed roadway, consideration should be given to the 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 route to alert users of the upcoming roadway crossing;
- ➤ The alignment of the crossing point to achieve as close as possible a perpendicular crossing of the roadway, to minimize the time that users are in the traveled portion of the roadway and a 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" intersection with roads. At uncontrolled intersections, users are required to wait for a gap in traffic before crossing. Pavement markings designed to look like a pedestrian cross over may give users the false sense of right-of-way over motor vehicles, contrary to the Highway Traffic Act.

In some locations, signing may not be enough to get users to stop before crossing the road. Under these circumstances or in situations where the sight lines for motorists are reduced, the addition of other elements may be necessary. Changing the alignment may help to get users to slow and top prior to crossings. Changes to the streetscape may also provide a cue and traffic calming effect for vehicles.

The County should refer to their Trails Master Plan (2009) for more guidance on implementing mid-block crossings of multi-use trails.

G3



Crossings of local minor roads at mid-block locations should include advance advisory pedestrian crossing signs on the roadway approach and a yield or stop sign on the trail approach.



#### MEDIAN REFUGE ISLANDS

Refuge islands are medians placed in the centre of the roadway separating opposing lanes of traffic. They are intended for mid-block crossings of multi-lane roads and allow users to cross one direction of traffic at a time, using the refuge island as a resting area.

Typical refuge islands are designed with a minimum length of 6m and a width of at least 1.8 m (2.4 m is preferred to accommodate wheelchairs in a level 1.2 m wide landing). Curb ramps should be provided to allow access to the roadway and island for wheelchair users and detectable warning devices should be placed at the bottom of the curb ramps. The pathway should be constructed of concrete as 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.

Signage can include "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.

Pavement 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. When designing the space, railings are not recommended as they are a hazard in potential collisions and some pedestrians will walk in front of or behind the island to avoid the railings, which is not as safe as waiting on the refuge island.



Sample Median Refuge Island Source – www.catsip.berkley.edu



Mid-block Pedestrian Signal with Median Refuge Source – MMM Group



#### MIDBLOCK PEDESTRIAN SIGNALS

Midblock pedestrian signals may be considered when crossing a high volume and / or multi-lane road, a grade separation is not practical or if the nearest signalized crossing is far enough away from the trail crossing that it is inconvenient for trail users to travel to. The pedestrian signal is intended to assist pedestrians and is a more positive and effective crossing device than a pedestrian crossover (PXO).

A midblock pedestrian signal includes standard traffic signal indications to control traffic on the major street and the application of 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.

For additional details regarding the application of pedestrian signals please refer to section 3.2.2 in Ontario Traffic Manual Book 15.

G4



At-grade mid-block trail crossing of a collector or arterial roadway should be controlled by pedestrian signals where possible.

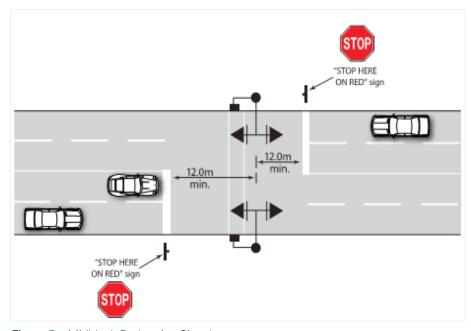


Figure 5 – Midblock Pedestrian Signal Source – OTM Book 15



#### CROSSINGS AT CONTROLLED INTERSECTION

There are a number of design alternatives which could be used to help pedestrians and cyclists to safely cross at controlled intersections. The crossing design can vary based on the type of controlled intersection – signalized or stop controlled. A design alternative that has recently emerged is the cross-ride. A cross-ride can be used by both pedestrians and cyclists. It provides a designated space for both users and helps to prevent possible conflicts at the crossing. There are three crossride configurations for practitioners to consider:

- ► A separate crossing, with separate space for cyclists and pedestrians;
- ► A full-sized combined crossing with cyclist crossing areas on both sides of the pedestrian crossing; and
- ► A reduced width combined crossing (generally only applied to unsignalized intersections).

Recently implemented in communities such as the City of Mississauga, the design features of the cross-ride options are included in OTM Book 18 specifically in section 4.4.1.4.

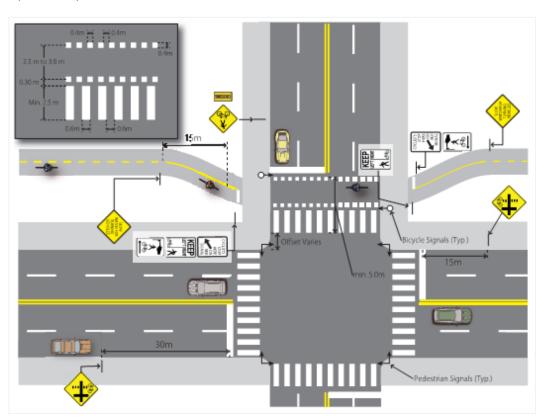


Figure 6 – Separated Pedestrian and Cyclist Cross-ride (Signalized) Source – O.T.M. Book 18



#### A4.2.3.4 Supportive Amenities

Developing and maintaining a comprehensive network of an on-road and off-road AT facilities does not automatically imply that people will use the network. The network has to be promoted, users need to feel comfortable, and there should be direct access to adequate trip-end facilities / amenities at strategic locations. There are a number of types of AT amenities and trip end facilities available for consideration when designing a network. Network continuity, connectivity and feasibility are further enhanced through the implementation of staging areas. In some cases, amenities can be the factor which makes an individual decide whether or not to make a trip using an active mode of transportation.

#### **END OF TRIP FACILITIES**

End of trip facilities (in addition to bike parking) include a variety of supportive spaces that make it easier for active transportation users to do so comfortably. Features can include showers, change rooms, bike rooms, lockers, bicycle repair stations etc.

Providing showers and change rooms can be a strong incentive to encourage bicycle use, and are particularly important for individuals who commute to work or school. The number of shower and changing stalls provided should be based on expected usage or on the amount of long-term bicycle parking being provided. Showers and change rooms should be located adjacent to bicycle parking facilities or in close proximity to the building entrance for easy access by users. For an additional level of service, change rooms may contain day lockers for personal items and cycling equipment storage.

G5



The County should encourage the implementation of endof-trip facilities for employers, patrons and visitors at all public buildings, where feasible, and work with the private sector and local employers to do the same.



Private Showers & Changing Rooms in Bicycle Friendly Workplaces Source – Velo City



Work Place Lockers Source – Unknown



#### **REST AND STAGING AREAS**

Rest and staging areas are designated locations along an AT route that provides users with a comfortable location to stop. The design can include lighting, seating, car and bicycle parking, signage, loading / unloading areas, garbage receptacles, washroom and amenity buildings and gates / access barriers.

As per OTM Book 18, rest and staging areas should be provided at least every five kilometres on popular rural recreational routes, or at major intersections and gathering places near bicycle facilities. In urban centres, rest and staging areas should be provided more frequently. In areas where demand is high such as along popular urban trails, waterfront promenades or trails near seniors' centres, locations for sitting and resting should be more closely spaced, typically at intervals of 100 to 250 m.

In the urban and semi-urban areas, rest and staging areas could be integrated into many of the existing park spaces and tourist destinations. In the rural areas, rest and staging areas may play a key role in the marketing package for trail use and tourism.

G6



Rest and staging areas should be provided at strategic locations such as gathering points, attraction and destination as well as other locations where users are expected to stop. The design of these areas should take into consideration the recommended features as suggested in OTM Book 18 while also considering context sensitive characteristics.



Trail Bench Source – MMM Group



Trail Rest Area Source – MMM Group



#### **BICYCLE PARKING**

In addition to the amenities notes above there are a number of design alternatives available for secure bicycle parking. Bicycle parking can be incorporated into both rest areas as well as end-of-trip facilities. When designing bicycle parking the following factors should be considered:

- Type and location of bicycle parking area;
- Visibility and security;
- ► Type of bicycle parking facility;
- Weather protection: and
- Clearance considerations.

There are two main bicycle parking alternatives – bike racks and bike lockers. Section 7.1 of OTM Book 18 provides more specific details about the types and applications of different bicycle parking.

Table 3 - Bike Racks versus Bike Lockers

#### **BIKE RACKS**

#### **BIKE LOCKERS**

#### DESCRIPTION

Bike racks can vary from a simple post Bike lockers differ from bike racks in and ring stand for two bicycles, to more elaborate systems for multiple bicycles at destinations where use and parking. They are typically enclosed demand are high.

that they are individual storage unit most often used for long-term and weather protected.

#### **PURPOSE**

The purpose of a bike rack is to allow cyclists to securely and efficiently local up their bicycle in a convenient location.

The purpose of a bike locker is to provide cyclists with a longer-term, individual alternative to lock up their bicycle.

#### **EXAMPLE**



Example Bike Rack Source - APBP



Example Bike Lockers Source - Unknown



## A4.2.2 Personal Security

To the extent that it is possible, bike and pedestrians 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 and 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 4 below.

Table 4 - Guiding Principles of CPTED

#### NATURAL ACCESS CONTROL

# NATURAL SURVEILLANCE



Deters access to a target and creates a perception of risk to the offender.

Source - CPTED Ontario



The placement of physical features and / or activities and people that maximizes natural visibility or observation.

Source - CPTED Ontario

# TERRITORIAL REINFORCEMENT

# MAINTENANCE



Defines clear borders of controlled space from public to semi-private to private, so that users develop a sense of ownership.

Source - CPTED Ontario



Allows for the continued use of space for its intended purpose.

Source - CPTED Ontario



G7



When implementing networks, the underlying principles of CPTED should always be considered including:

- Natural Access Control;
- ► Natural Surveillance;
- ► Territorial Reinforcement; and
- ▶ Maintenance.

#### A4.2.3 Maintenance

Appropriate maintenance of cycling facilities supports user safety and comfort which plays a key role in encouraging the use of active transportation (e.g. cycling) and supports preservation of bicycle facilities in terms of function and investment. A number of different maintenance activities should be considered in order to maintain an appropriate level of service for cycling facility users and to minimize costly future repairs. These activities vary depending on the type of bicycle facility involved, its features, local environment and available resources. It is recommended that the County include sweeping, surface repairs, signage and pavement marking maintenance, vegetation management, snow clearance / ice control, and drainage improvements of cycling facilities as part of their maintenance program. Refer to OTM Book 18 for more details on cycling facility maintenance strategies and provisions.

#### A4.2.3.1 Sweeping

A range of debris may accumulate on cycling facility surfaces. The presence of wet leaves, gravel, sand, garbage, glass etc. can lead to slippery and unsafe conditions for cyclists (e.g. excess gravel can cause skidding and loss of control). It is recommended that the County sweep cycling facilities at the beginning of the spring season and regularly thereafter, adjusting the frequency of sweeping when needed (e.g. seasonal changes or construction activities).



An Example of Seasonal Sweeping Requirements Source – O.T.M. Book 18



#### A4.2.3.2 Surface Repairs

Due to the narrow width of their wheels, cyclists are more vulnerable to pavement defects than any other type of road user including pedestrians, who may be able to safely negotiate surface imperfections that are hazardous for cyclists. Possible pavement defects may include cracking, bumps or depressions, potholes and / or pavement drop-offs at shoulders.

Cracking is one of the most common distresses that occurs on the road surface throughout its service life and may become a major problem if cracks are not properly repaired. Defects may be caused by freeze-thaw processes and surface deterioration due to age or excessive wear, differential settlement of the subsoil, tree roots, etc. In all cases, the cause of the defect should be identified and addressed so that recurrence of the defect can be mitigated.



Bicycle Lane with Cracking Source – The Baltimore Sun

# A4.2.3.3 Pavement Marking and Signage Maintenance

It is important to maintain pavement markings and signage used to guide and warn AT facility users (and motorist). Pavement markings can become worn and difficult to read over time due to environmental factors, traffic and snow removal operations. Signage can become discoloured and lose reflectivity due to environmental factors and is often subject to theft, damage, and vandalism.



Well Maintained Bicycle Lane Source – ibikenopa.blogspot.com

Pavement markings and signage maintenance should be included in regular roadway inspections and be kept in a good

condition so that they are legible and effective in guiding cyclists and other road users. Pavement markings and signage found in poor condition or missing signage should be replaced as soon as possible.



Faded Pavement Markings Source – onemorespoke.blogspot.com



#### A4.2.3.4 Vegetation Management

Vegetation management is often most important for off-road bicycle facilities. However, if there are trees or other invasive plants in the vicinity of the on-road bicycle facility, then pavement surface breakup due to roots can occur and must be repaired. To prevent root intrusion and surface breakup from occurring, roots can be restricted with vertical steel plates or other root barriers. In addition, any shrubbery or vegetation encroaching on the on-road bicycle facility or blocking sight lines or sight corners should be removed.

#### A4.2.3.5 Snow Clearance / Ice Control

Although cycling traffic tends to decrease in the winter, there are many people who cycle year-round. In many cases, they do not own or have access to a motor vehicle, and cycling is their primary mode of travel.

Apart from being difficult to ride on, snow and ice can obscure roadway defects, pavement markings and damaging debris. Snow clearing operations should include all designated bicycle facilities on or adjacent to the roadway including paved shoulders and AT paths.



Cycling Facility Not Cleared of Snow Source – Hyedie, 2011 (flickr)



Cycling Facility Cleared of Snow Source – copenhagenize.com

### A4.2.3.6 Drainage Improvements / Maintenance of Drainage Grates

Keeping cycling infrastructure surfaces clear of water is necessary for safe riding conditions. Not only can puddle formation lead to slippery surfaces, as well as accelerate winter freeze-thaw processes causing pavement break down, standing water can also obscure debris or surface defects that may damage bikes or cause cyclists to lose control.

Catch basins and drainage grates are often located next to the curb and should be cleaned regularly to prevent sediment and debris built up such as wet leaves. Cleaning these areas is not only an important measure in facilitating proper drainage but also in mitigating hazards (i.e. debris build up) for cyclists using on-road cycling facilities.



The frequency of drainage facility clean-up should depend on factors such as need, the season and the amount of vegetation present within the vicinity of the cycling facility. In general, the areas around drainage grates require more frequent road repairs due to local cracking, roadway depression and potholing. Regularly maintaining these areas as well as regular surface repairs will reduce safety concerns for cyclists.

The type of drainage grate can also pose a hazard to cyclists. Parallel bar drainage grates and gaps around catch basin frames can trap bicycle tires causing loss of control. Along designated cycling routes consideration should be given to replacing old style grates with bicycle-safe and hydraulically efficient inlet grates with openings perpendicular or diagonal to the line of travel (e.g. a grate with herring bone openings). A preferred solution for a new or reconstruction project is the installation of inlets within the curb face which completely eliminates a cyclist's exposure to grate inlets.



Catch Basin Inlet within the Curb Face Source – O.T.M. Book 18



Drainage Grate with a Cycling Facility with Herring Bone Openings

The information contained in this Technical Appendix is intended to be used by County staff, and those responsible for the design and implementation of AT facilities in Norfolk, as a "quick guide" for a number of common AT design elements. Designers should always refer to the more detailed primary guidelines for future decision making including:

- Ontario Traffic Manual Book 18: Cycling Facilities;
- Ontario Traffic Manual Book 15: Pedestrian Design;
- ▶ Transportation Association of Canada (TAC): Bikeway Traffic Control Guidelines;
- Ministry of Transportation Ontario (MTO) Bikeway Design Guidelines; and
- ► Accessibility for Ontarians with Disabilities Act (AODA) Integrated Accessibility Standards for the Built Environment.



# Appendix A-5

Norfolk County Cycling Tourism Review

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# A5.1 SUMMARY OF POTENTIAL AT BENEFITS

#### A5.1.1 Overview

For host communities, tourism, including cycle tourism or bicycle tourism, is an economic activity with economic benefits in the form of contribution to gross domestic product, generation and support of jobs, and taxes paid to municipal, provincial and federal governments.

When tourism is sustainable, the economic benefits are realized in combination with environmental and social/cultural stewardship. This "triple bottom line" results in an enhanced quality of life for host community residents as well as an authentic visitor experience for tourists.

Cycle tourism infrastructure in Norfolk Count represents a sustainable tourism initiative that benefits tourists and residents across the County. These benefits include, but are not limited to:

- ▶ Establishment of a cycle tourism route network linking many if not all of the communities in Norfolk County in a shared tourism initiative with the potential to brand the County as an provincial and possibly national and international cycling destination. With the recent completion of the Waterfront Trail along Lake Erie, the County is served by and linked to a cycling route of more than 1,000 km from the Windsor to the Ontario/Quebec border. The combination of the Lyn Valley Trail, the Norfolk Sunrise Trail and the Waterford Heritage Trail from Port Dover to the northern boundary of the County, connects Norfolk to the GTA via Brant county trails, City of Brantford trails and the Brantford-Dundas Rail Trail. Furthermore, the Trans Canada trail traverses Norfolk County making use of County cycling trails and including the Delhi Rail Trail, Norfolk Sunrise Trail and Waterford Heritage Trail, connecting the County to the rest of Canada.
- Increased regional tourism economic benefits (see below) as a promoted cycle tourism destination, cycle tourist spending will be attracted to the County.
- ► Expansion of existing cycling infrastructure within the urban and rural parts of the County, allowing for the hosting of regional, provincial and possibly national level cycling events. The County currently hosts the Le Tour de Norfolk event annually, and part of the Hamilton Brantford Paris Port Dover Trail Weekend event (September 19-20, 2015).



- ▶ Increased safety of cycling within the County by providing attractive, compelling cycling experiences that redirect cyclists off busy highway corridors such as Provincial Highways 3, 24 and 59, and when that is not possible, provides appropriate cycling facilities along these corridors.
- ► Enhanced regional quality of life use of the cycle tourism infrastructure, in sections or in its entirety, by County residents for recreation and for transportation between communities, facilitates increased physical activity and its related health and fitness benefits, while replacing some motorized travel with bicycles thus reducing air pollution and greenhouse gas emissions.

## A5.1.2 Who are the Existing & Expected Cycle Tourists

In order to fully understand the potential community benefits, it is important to define the user groups and types of activity that is, and can be expected to continue to take place in Norfolk County. Indeed, some of this activity is currently occurring as evidenced by:

- ► Attendance at trail events in Norfolk County including le Tour de Norfolk and the Hamilton Brantford Paris Port Dover Trail Weekend:
- ► Informal discussions and interviews with owners of businesses in Norfolk County including convenience stores, bicycle shops, restaurants and lodging; and
- ▶ Personal observations of the consultants while conducting fieldwork for this study.

Cycle or bicycle tourists are generally defined as "someone who has travelled greater than 40km from their place of residence and includes cycling as either their main trip purpose or as a secondary activity on their trip. These can be day trips or overnight stays and are enjoyed by a variety of types of cyclists". The cycling activity includes both long distance and short distance cycling. A 2011 study completed by the Province of Ontario outlined a set of defining characteristics for long and short distance touring cyclists based on consultation with stakeholders and interest groups<sup>2</sup>. **Table 1** outlines these user groups.



<sup>&</sup>lt;sup>1</sup> Pg. 3, "From Niche to Now: Cycle Tourism in Ontario", Transportation Options, February 2015.

<sup>&</sup>lt;sup>2</sup> Data Inventory of Cycling Routes throughout Ontario. Ministry of Transportation Ontario (MTO). 2011.

Table 1 – Description of Various Recreational and Touring Cyclist groups

Table 1 – Description of Various Recreational and Touring Cyclist groups				
	Long Distance Recreational Touring	Short distance / Local Community		
	Cyclists	Recreational Touring Cyclists		
Type of User	Long-distance recreational touring cyclists are engaged in multi-day touring trips and are willing to spend money on accommodations and food. These cyclists are typically avid riders who are generally receptive to exploring new routes and trails, although often will seek the most direct route from point A to point B.	Short-distance recreational touring cyclists are typically interested in undertaking trips to provide access to scenic attractions, points of interest, historical sites and key community destinations for recreational purposes such as community centres or local parks which can be undertaken in a day or less. These cyclists are typically interested riders who often cycle but are wary of the route and terrain on which they ride. Cyclists are often looking to rent / borrow bicycles at their destination.		
Trip Length	Multi-day trips of 2 days or more.	1 day or less (typically do not stay overnight). Sometimes multiple excursions of less than a day each during extended stays at a destination.		
Type of Route Used	<ul> <li>Connecting Key Geographic Areas;</li> <li>Long Distance Routes (e.g. Waterfront Trail);</li> <li>Loop or Circle Routes; and</li> <li>Routes which facilitate cross provincial touring routes and access to bordering Provinces (e.g. Quebec and Manitoba).</li> </ul>	<ul> <li>Connections to local destinations (i.e. community centres or schools);</li> <li>Connections to segments of existing cycling routes (i.e. the Waterfront Trail); and</li> <li>Areas of Local Natural Beauty.</li> </ul>		
Amenities Accessed <sup>1</sup>	<ul> <li>Daily Food and Drink;</li> <li>Housing / Accommodations for multinight stays;</li> <li>Complementary transportation;</li> <li>Destination signage and Distance Markers;</li> <li>Local Maps and Touring Information;</li> <li>Detailed information on trail / route conditions;</li> <li>Emergency Response Providers;</li> <li>Guides and trip support such as luggage transfer;</li> <li>Secure bicycle storage at overnight stays; and</li> <li>Bike / Repair Shops.</li> </ul>	<ul> <li>Food and Drink;</li> <li>Signage and destination markers;</li> <li>Emergency Response providers;</li> <li>Local Maps and touring information;</li> <li>Rental or loaner bicycles; and</li> <li>Access to alternatives modes of transportation (i.e. public transit or parking).</li> </ul>		

<sup>1</sup> Not all amenities are accessed by all cyclists



In the February 2015 report entitled "From Niche to Now: Cycle Tourism in Ontario" prepared by Transportation Options and based on research from a number of Ontario studies, characteristics of cycle tourists and cycle tourism were identified, including the following:

- ▶ "85% of visitors in Ontario are residents from Ontario, 5% are from other Canadian provinces, 8% from the USA, 2% are from overseas.
- ▶ With Ontario residents being the most frequent visitor it is interesting to note that the majority of Ontarians (54%) indicated that they would prefer to cycle more.
- ▶ 96% who want to cycle more said yes to more recreational cycling activities, 48% said yes to cycle tourism in Ontario.
- ▶ 66% of cyclists travel in groups of two to four people.
- ▶ 59% participated in events with friends or family.
- Average group size participating in events ranges from three to seven people.
- ▶ 69% of cyclists have taken overnight or day trips in Ontario within the past two years 49% in 2010.
- ▶ 70% of experienced cyclists took cycling trips in Ontario vs. 30% of recreational / leisure cyclists. This holds true for cycling trips taken outside of Ontario too (75% vs. 25%).
- ▶ In 2014, cyclists took an average of 3.1 cycling trips in Ontario and an average 1.9 cycling trips outside of Ontario.
- ➤ 72% of bike club road cyclists have taken self-guided trips in the past 24 months.
- ▶ 69% of road cyclists would be most interested in self-guided road tours from community to community and 62% interested in self-guided day trips from a central hub, both higher than in 2013.
- ▶ 24% of all cyclists had an interest in a guided tour, similar to 2013.
- ➤ Top activity preferences are culinary experiences, visiting cultural sites and museums, hiking, camping, wine tasting and shopping.
- ▶ 67% of cycling event participants took part in other non-cycling activities including visits to museums, breweries/wineries, kayaking³.

MORFOLK ISMP

<sup>&</sup>lt;sup>3</sup> Pgs 4-5, "From Niche to Now: Cycle Tourism in Ontario", Transportation Options, February 2015.

#### A5.1.3 Existing & Proposed Experiences

The Norfolk County cycle tourism experience is based on a variety of established off-road and on-road cycle routes and trails, of varying lengths. These include:

- ► Lake Erie Waterfront Trail (on-road)
- ► Lyn Valley Trail (off-road)
- Norfolk Sunrise Trail (off-road)
- Waterford Heritage Trail (off-road)
- ► Simcoe-Delhi Rail Trial (off-road)
- ► Antique Cycling Tour (on-road)
- ▶ Big Creek Circle Cycling Tour (on-road)
- Carolinian Cycling Tour (on-road)
- ► Heart of Windham Tour (on-road)
- Port Town Cycling Tour (on-road)
- South Coast Cycling Tour (on-road)
- ► Talbot Cycling Tour (on-road)

A combination of fieldwork (cycling the trails and routes) and map analysis was conducted to identify areas of potential improvement to the Norfolk County cycling experience, by assessing the 6 S's of the cycle tourism experience. Table 2 describes each of the 6 elements of the cycle tourism experience and identifies opportunities for enhancing each element within Norfolk County.

Table 2 - Overview of Cycle Tourism Experience Results

#### Cycle Tourism Experience Element

- ➤ Surface ideally, surfaces must accommodate a full range of cycle types from road bikes with narrow, highpressure tires to touring bikes to fat tire bikes.
- ➤ Slope to accommodate as wide a variety of types of rides as possible, from families with small children to senior cyclists and everything in between, grades on cycle tourism routes should be gentle, or when they are steep (exceeding 5%), not long.

#### **Current Conditions in Norfolk County**

- ► All of the established trails and routes in the County offer surfaces suitable for riding on a full range of cycle types.
- ➤ The surface on some sections of the Simcoe-Delhi rail trail are currently, or soon will be, in need of upgrading as sections are becoming overgrown and the gravel surface is deteriorating.
- Much of Norfolk County is relatively flat, and this is also true of most of the trails and routes. One notable exception is the Waterfront Trail which contains a number of sections with steep slopes.
- No improvement is currently required to provide trails accessible to a full range of cycle tourists



#### Cycle Tourism Experience Element

# ➤ Safety – ideally, on road routes with high traffic volumes, particularly commercial and truck traffic, and high speed traffic (above 60km/hr) should be avoided unless a physically separated cycle facility can be provided. Paved shoulders of a minimum 1m width are acceptable on low speed, low volume roads. Offroad, dedicated or shared (with pedestrians) paths and trails are the safest option

#### **Current Conditions in Norfolk County**

- ▶ In general the existing trails and routes offer safe riding conditions. Once possible exception is the road access from the Waterfront Trail to Long Point which is a narrow busy road without paved shoulders.
- ► Elsewhere in this report recommendations are provided for upgrading cycle facilities within communities and in the rural areas that would enhance safety on some of the onroad routes. Of particular note is Norfolk Street through Simcoe, Highway 3 through Simcoe and the access road to Long Point.
- ➤ Services the cadence of cycle tourism calls for limited services comprising washrooms, potable water, rest area/shelter every 25 km, and full services comprising limited services plus food and lodging every 50 km on designated cycle tourism routes. The location of the services must be identified with signs on routes as well as hard copy and online maps.
- ➤ Signs (& Information) ideally all cycle tourism routes should have wayfinding signs in sufficient quantity and strategically located so that cyclists who are unfamiliar with a route can effectively navigate using only the signs. In premiere cycle destinations this is supported with hard copy and online maps that can be used for trip planning, as well as gps enabled, mobile apps or maps that can be used by cyclists while riding on the routes.
- ➤ All of the designated cycle tourism trails and routes offer access to limited services at 25km intervals, while full services are offered within 50km intervals on the most prominent trails and routes including the Waterfront Trail, Lyn Valley Trail and Waterford Heritage Trail.
- ► Little or no improvement is required.
- Wayfinding signs exist on all trails and route, however on all on-road routes they can be improved with more frequent signs and signs at all intersections.
- A substantial amount of information and trip planning tools are available on-line, while a hard copy map of cycle trails and routes is available at tourism information locations.
- ➤ Consideration should be given to producing a waterproof hard copy map for use while cycling, and for expanding distribution of the hard copy maps beyond tourism information centres



#### Cycle Tourism Experience Element

➤ Scenery (& Attractions) – for cycle tourists, the riding experience is often as much a part of the overall tourism experience as the interim and final destinations. This requires that as much as possible routes are selected to maximize visual appeal and interest, including following watercourses and shorelines, and lead past and to cultural and natural heritage attractions.

#### **Current Conditions in Norfolk County**

- Most of the trails and routes offer enjoyable riding experiences from a scenery perspective, and provide access to most if not all of the key natural and cultural heritage attractions within the County.
- ➤ The Simcoe-Delhi rail trail is an exception with respect to the scenic values of the trail which could be improved through maintenance and cutting of trailside vegetation along many sections of the trail.

#### A5.1.4 County Benefits & Impacts

Cycling activities provide significant health and fitness, transportation, environmental, economic and tourism benefits. Municipalities throughout the Province of Ontario are implementing initiatives to promote and encourage active transportation including cycling activities as a viable alternative to the private automobile for short-distance trips and as a method of promoting a more active and healthy lifestyle.

The following provides an overview of some of the key benefits associated with the development of active transportation including cycling tourism and is organized to highlight current research and trends in the field of active transportation (pedestrian and cycling). Best practices and lessons learned are presented to demonstrate specific benefits which have been experienced by communities throughout Canada.

#### A5.1.1.1 Economic Benefits

Quantifiable study area economic benefits generated directly or indirectly by cycle tourism in Norfolk County will arise from three sources:

- Capital investment in bicycle infrastructure;
- Spending by cycle tourists in Norfolk County; and
- ➤ Ongoing spending by Norfolk County and its partners in operating cycle tourism infrastructure, including marketing and maintenance.

The potential or expected amounts of these benefits can be estimated using the Ontario Ministry or Tourism's Tourism Regional Economic Impact Model (TREIM), an input-output economic model which reports on contribution to gross domestic product, labour income, jobs and taxes collected by each of the three levels of government based on planned investment and projected annual spending.



**Table 3** summarizes the potential economic benefits associated with cycle tourism in Norfolk County.

Table 3 – Overview of Potential Economic Impacts

		Outputs						
Inputs	Gross Domestic Product (Annual)	Employment Income (Annual)	Jobs (Person / years)	Tax Revenue Collected				
Capital Investment in cycle tourism infrastructure – \$1 million	\$351,800	\$227,400	3	Federal - \$89,100 Provincial - \$80,100 Municipal – \$2,000				
Visitor Spending – \$333,500 for 2,000 visitors staying 2 nights each	\$176,200	\$117,600	3	Federal - \$47,900 Provincial - \$39,300 Municipal - \$450				
Cycle tourism infrastructure operations spending \$250,000/year	\$260,000	\$188,100	5	Federal - \$62,600 Provincial - \$41,000 Municipal - \$5,900				

Source: The Ontario Ministry of Tourism, Culture and Sport, Tourism Regional Economic Impact Model (TREIM), September 2015 As illustrated in the table above:

- ▶ In 2017, if approximately \$1 million were invested in cycle tourism infrastructure, it would have the potential to generate approximately \$351,800 in contribution to regional gross domestic product, approximately \$227,400 in employment income for regional residents, and sustain approximately 3 jobs. In addition, potential tax revenues of approximately \$89,100 are projected to accrue to the Federal Government, approximately \$80,100 to the Provincial Government, and approximately \$2,000 in total to municipal governments within the region.
- ▶ In 2017, if approximately 2,000 cycle tourists visited Norfolk County to engage in cycle tourism and stayed an average of 2 nights each, their estimated total spending of \$333,500 would generate approximately \$176,200 in contribution to regional gross domestic product, approximately \$117,600 in employment income for regional residents, and sustain approximately 3 jobs. In addition, potential tax revenues of approximately \$47,900 are projected to accrue to the Federal Government, approximately \$39,300 to the Provincial Government, and approximately \$450 in total to municipal governments within the County. Benefits at or above these levels would be realized annually as long as the number of cycle tourists remained at or exceeded 2,000 and they stayed on average 2 nights each while cycle touring in Norfolk County.



Additional economic benefits would accrue in 2017 if spending on marketing and maintaining Norfolk County's cycle tourism infrastructure totaled approximately \$250,000. The amount of operational expenditures would generate approximately \$260,000 in contribution to regional gross domestic product, approximately \$188,100 in employment income for regional residents, and sustain approximately 5 jobs. In addition, potential tax revenues of approximately \$62,600 are projected to accrue to the Federal Government, approximately \$41,000 to the Provincial Government, and approximately 5,900 in total to municipal governments within the region. Benefits at or above these levels would be realized annually as long as operational expenditures remained at or exceeded \$250,000 annually.

The potential economic benefits identified in the table above, are based on the following key assumptions:

- ➤ The region where the spending occurs and the benefits will accrue is the Census Division of Haldimand-Norfolk as defined by Statistics Canada. The cycle tourism infrastructure is assumed to be located entirely within this geographical area.
- ➤ The total capital investment of approximately \$1 million represents an assumed amount related to cost of improvements to cycle infrastructure in Norfolk County. For the purpose of illustrating potential economic benefits, this spending is assumed to occur in 2017, and is assigned to "building & renovation" (5%), "other supplies (35%), and other services (60%) categories;
- An average level of use of 10 cycle tourists/day for a 200-day period (mid-April through end of October) has been assumed and assigned to 2018. A ratio of 85% Ontario residents, 5% other Canadian residents, 8% US residents and 2% overseas residents, consistent with the ratio reported above, was assumed, and
- ▶ Operations spending comprising marketing (\$50,000 budget) and infrastructure maintenance and repair (\$200,000 budget) was assumed to occur annually beginning in 2018.

#### A5.1.1.2 Tourism Benefits

It has been shown that there is a growing demand for cycling and eco-tourism throughout Ontario and North America. Studies indicate that economic benefits of tourism related to active transportation infrastructure will continue to grow<sup>4</sup>. The demand stems from an increasing desire to explore new areas though an active mode of transportation and experience one's natural surroundings.

<sup>&</sup>lt;sup>4</sup> The Business Case for Active Transportation, Better Environmentally Sound Transportation - BEST, Go for Green, March 2004



The largest beneficiaries of cycling and eco-tourism are eating/drinking establishments, retail and lodging services. Though tourism benefits from AT and Trail facilities prove to provide an injection into the local economy there are also a wide range of social, environmental and health benefits associated with AT and trail tourism. As people become increasingly more aware of the benefits to trail use and pedestrian and cycling activities there tends to be a continuous increase in the number of cycling tourists who will provide further benefits to their communities and the communities to which they visit. In a study completed by

Rverson benefits University these are documented for potential implementation in Southern Ontario's Greenbelt Region<sup>5</sup>. Findings from a number of recent studies such as a 2009 study completed for the "Bike Train" by a Cycle Tourism based organization called Transportation Options<sup>6</sup> indicate an increase in business and employment opportunities and health an environmental benefits associated with cycle tourism.

#### Key highlights include:

- "As the demand for cycle tourism increases, cyclists' spending on food, drinks, entertainment and other expenses related to the sport will also increase at travel destinations."7
- "There are many employment opportunities with the growth of cycle tourism. The Bicycle Trade Association of Canada (BTAC) suggests that an annual requirement between 50 and 100 new mechanics in the GTA, and as many as 1000 in other major cities in Canada, will be demanded as cycling continues to gain popularity."8
- "Cycle tourism has become an increasingly important component within rural sustainable development projects between of its contribution to eliminating greenhouse gas emissions. Cycle tourism plays a part in eliminating the use of motorized travel (i.e. for sightseeing purposes)."9

Similarly, Transportation Options also developed initiated the "Welcome Cyclists" program in 2009, rebranded "Ontario by Bike Network" in 2014. The Ontario by Bike Network is a program certifying and promoting bicycle friendly businesses and cycle tourism in a growing number of regions across Ontario.

BTAC - Bicycle Trade Associated of Canada. Retrieved September 2010 "2009 Data Capture". from http://www.btac.org/files/BTAC-2009\_Data\_Capture-Media.pdf. (2009) BTAC - Bicycle Trade Associated of Canada. Retrieved September 2010 from Data Capture". http://www.btac.org/files/BTAC-2009\_Data\_Capture-Media.pdf. (2009) BTAC - Bicycle Trade Associated of Canada. 2010 "2009 Data Capture". Retrieved September from http://www.btac.org/files/BTAC-2009\_Data\_Capture-Media.pdf. (2009)



<sup>&</sup>lt;sup>5</sup> Gal, D., Kamal, M., Lopez Silveira, M.A., Naccarato, G., Scott, S., and Dodds, R. "The Demand for Cycle Tourism in Ontario's Greenbelt Region". Ryerson University, Toronto, ON Canada. Ted Rogers School of Hospitality and Tourism Management. December 2010.

<sup>&</sup>lt;sup>6</sup> Lafontaine, J. "2009 Bike Train Final Report". Transportation Options. 2009.

Currently, in Norfolk County there are 18 cycle friendly businesses, including accommodation, attractions, bike tours, cafes & restaurants, and wineries listed on the Ontario by Bike Network website (www.ontariobybike.ca)

The Network is open to accommodations, food services, attractions, cycling related businesses and organizations interested in cycle tourism. The Ontario by Bike Network is launched in each region with an informative workshop, after which local businesses may register on-line, at no charge, to participate and ultimately reach the growing number of cycle tourists in Ontario<sup>10</sup>.

The cycle tourism and economic benefits realized by this program have grown as the program is implemented in new communities. A linked system / database of cycle touring supporters as well as local businesses helps to boost the local economy with cycle tourism dollars while increasing local awareness about safe practices of cycle touring.

#### A5.1.5 Conclusion

The County has identified Cycling Tourism as a potential economic opportunity. Local businesses, cycling routes and promotional activities are being recognized by agencies such as Ontario by Bike for the way in which they enhance cycling tourism within the County and as part of the greater south-western Ontario. The County should continue to explore cycling tourism opportunities as they implement the AT Strategy. Additional actions and recommendations are outlined in section 4.4.1 of the AT Strategy report.

<sup>&</sup>lt;sup>10</sup> Welcome Cyclists. Retrieved from: www.welcomecyclists.ca/network. July 26, 2012



10



Norfolk County AT Strategy

**SEPERATELY BOUND TECHNICAL APPENDIXX B -**NETWORK DATABASE

August 2016









## Appendix B

Norfolk County AT Network Database

## Norfolk AT Strategy - Implementation and Network Cost Detail August 2016

The Norfolk AT Strategy - Implementation and Network Cost Detailed Spreadsheet is intended to be a tool for County staff and its partners to organize, record and update data on an on-going basis as the A.T. network is implemented. This tab includes instructions and guidance on how to format and use this spreadsheet. Directions have been provided on the preferred view and page layout of each tab as well as an overview of the information contained within it and how it is meant to be used. Please note that formatting is not always consistent in the Microsoft Excel program. If the spreadsheet is being used in an electronic format please refer to the "view" and "page layout" to appropriately format your page for optimal viewing.

Tab Name	View	Page Layout	Information Included
Tab #1 - Database Guide	Page Layout - 100%	11"x17" - Landscape Orientation	This tab provides information for the different tabs contained in the Norfolk AT Strategy - Implementation and Network Cost Details.
Tab #2 - Unit Price Schedule	Page Layout - 100%	11"x17" - Landscape Orientation	This tab provides the assumed unit costs for: active transportation facilities, structures and crossings, barriers and access control, signage and other elements of an active transportation network. All unit prices exclude tax, contingency, design and approvals costs.
Tab #3 - Network Overview	Page Break Preview - 100%	11"x17" - Landscape Orientation	This tab provides an overview of all of the proposed active transportation linkages that make up the AT network. Segments are organized by facility type and location. Information is also included related to unit price (tab #2), Segment ID, Segment / Street Name, To, From, Location, OTM Step 1 Results, Ultimate Facility Type, Interim Facility Type, Jurisdiction, Length (km), Hierarchy and additional considerations for select linkages.
Tab #4 - Previously Planned Capital Projects	Page Layout - 100%	11"x17" - Landscape Orientation	This tab provides a summary of all AT routes that are located on roads which have been identified in the County's capital works and / or the County's road database of planned construction / rehabilitation projects. Cells highlighted in pink identify routes which are located on roads identified in the County's capital works. Cells highlighted in turquoise identify routes which are located on roads identified in County's database for planned construction / rehab.
Tab #5 - Short Term Projects	Page Layout - 100%	11"x17" - Landscape Orientation	This tab provides a summary for all the network segments identified for implementation in the short term phase. This tab contains several columns that include information regarding Segment ID, Segment / Street Name, To, From, Location, Ultimate Facility Type, Unit Cost, Length (km), Segment Cost, MCEA Schedule and priorities.
Tab #6 - Medium Term Projects	Page Layout - 100%	11"x17" - Landscape Orientation	This tab provides a summary for all the network segments identified for implementation in medium term. This tab contains several columns that include information regarding Segment ID, Segment / Street Name, To, From, Location, Ultimate Facility Type, Unit Cost, Length (km), Segment Cost, MCEA Schedule and priorities.

	DESCRIPTION	UNIT	VALUE	COMMENTS/ ASSUMPTIONS								
		1.0	SENERAL 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 Route with Edgeline	linear KM	\$4,000.00	Price for both sides of the road, includes signs and edge line. Price is for conventional paint, (assumes painted lane line at \$1 / m + \$2000 for signs)								
1.5	Signed Bike Route with Wide Curb Lane (Does not require Road Reconstruction)	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)								
1.6	Signed Bike Route with Wide Curb Lane (Requiring Road Reconstruction)	linear KM	\$240,000.00	Price for both sides of the road, includes curb replacement, catch basin adjustments, lead extensions and driveway ramps								
1.7	Signed Bike Route with Paved Shoulder (Conjunction with existing road reconstruction / resurfacing)	linear KM	\$110,000.00	Price for both sides of the road, 1.5m paved shoulder. Assumes cycling project pays for additional granular base, asphalt and edgeline. Price may vary from \$110,000 to \$150,000 depending on work needed to improve platform.								
1.8	Signed Bike Route with Buffered Paved Shoulder (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)								
1.9	Addition of Rumble Strip to Existing Buffered Paved Shoulder (rural)	linear KM	\$3,000.00	Price for both sides								
1.1	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 ar	nd Separated Bike Lanes				
1.11	Conventional 1.5m-1.8m Bicycle Lanes by Adding Bike Lane Markings and Signs	linear KM	\$12,000.00	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/km + \$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				
1.12	Conventional 1.5m-1.8m Bicycle Lanes through Lane Conversion from 4 lanes to 3 lanes	linear KM	Price for both sides. Includes grinding of existing pavement, markings, signs, line painting and symbols					
		Con	ventional and Se	parated Bike Lanes - CONT'D				
1.13	Conventional 1.5m-1.8m Bicycle Lanes (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				
1.14	141 I I I I I I I I I I I I I I I I I I			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.				
1.15	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				
1.16	Buffered Bicycle Lane with Hatched Pavement Markings (Assumes Already Planned New Road or Road Reconstruction/Widening)	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				
1.17	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 centered in hatched buffer zone at 10m intervals. Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) subbase only				
1.18	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				

			Су	cle Tracks
1.19	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
1.20	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
		Act	ive Transportatio	n Paths and Multi-Use Trails
1.21	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)
1.22	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)
1.23	Concrete Splash Strip placed within road right-of-way between Active Transportation Multi-Use Path and Roadway	m²	\$150.00	Colour Stamped Concrete
1.24	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

	Active Transportation Paths and Multi-Use Trails - CONT'D									
1.25	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						
1.26	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						
1.27	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)						
1.28	Upgrade existing granular surface trail to meet 3.0m wide compacted granular trail standard	linear KM	\$50,000 - \$100,000	Includes some new base work (25% approx.) and an average of 20 regulatory signs per kilometre						
1.29	Off-Road Multi-Use Trail Outside of Road Right-of-Way on Abandoned Rail Bed	linear KM	\$80,000.00	3.0m wide, compacted stone dust surface, includes signage along trail and gates at road crossings						
1.30	Granular Surfaced Multi-use Trail in a Woodland Setting	linear KM	\$120,000.00	2.4m wide, compacted stone dust surface						
Sidewalks										
1.3	Sidewalk	m	\$160	Price may vary from \$90 to \$160 / m for one side of the roadway. 1.5m concrete sidewalk.						
			2.0 STRUCTUF	RES 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	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						
2.4	Metal stairs with hand railing and gutter to roll bicycle	vertical M	\$3,000.00	1.8m wide, galvanized steel						
2.5	Pathway Crossing of Private Entrance	each	\$1500 - \$2000	Adjustment of existing curb cuts to accommodate 3.0m multi-use pathway						

	2.0 STRUCTURES AND CROSSINGS CONT'D									
2.6	Median Refuge	each	\$20,000.00	Average price for basic refuge with curbs, no pedestrian signals						
2.7	Pedestrian and Cyclist Crossride	each	\$80,000.00	Average price for pedestrian and cyclist crossride including signals						
2.8	Mid-block Crossing	each	\$80,000.00	Average price for mid-block crossing						
2.9	Intersection Pedestrian Signal	each	\$80,000.00	Average price for intersection pedestrian signal						
2.10	At grade railway crossing	each	\$120,000.00	Flashing lights, motion sensing switch (C.N. estimate)						
2.11	At grade railway crossing with gate	each	\$300,000.00	Flashing lights, motion sensing switch and automatic gate (C.N. estimate)						
2.12	Below grade railway crossing	each	\$500,000- \$750,000	3.0m wide, unlit culvert style approx. 10 m long for single elevated railway track						
2.13	Multi use subway under 4 lane road	each	\$1,000,000- \$1,200,000	Guideline price only for basic 3.3 m wide, lit.						
2.14	Retaining Wall	m²	\$600.00	Face metre squared						
	3.0 BARRIERS AND	ACCESS CO	ONTROL FOR MUL	TI-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 furnishings, such as garbage receptacles and bike racks.						

	3.0 BARRIERS AND ACCESS CONTROL FOR MULTI-USE TRAILS OUTSIDE OF THE ROAD RIGHT-OF WAY CONT'D								
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					
			5.0	O OTHER					
5.1	Bike Box	each	\$1,000	Price may vary depending on road cross-section (e.g. two lane roadway, four lane roadway, etc.). Price includes installing a bike box on the approach of an intersection using a bike stencil and thermoplastic e.g. green surface treatment (\$250 / each). Price also include estimate to move stop-bar back to provide space for bike box.					
5.2	Major rough grading (for multi-use pathway)	m³	\$10-\$25	Varies depending on a number of factors including site access, disposal location etc.					
5.3	Clearing and Grubbing	m²	\$2.00						
5.4	Bicycle rack (Post and Ring style)	each	\$150-\$250	Holds 2 bicycles , price varies depending on manufacturer (includes installation)					

	5.0 OTHER CONT'D								
5.5	Bicycle Rack	each	\$1,000-\$1,200	Holds 6 bicycles, price varies depending on manufacturer (includes installation)					
5.6	Bicycle Locker	each	\$3,000.00	Price varies depending on style and size. Does not include concrete mounting pad					
5.7	Bike Loop	each	\$2,500	Price for installation including labour and equipment. Price also includes materials e.g. two channel detector for traffic cabinet, bike loop (wire and sealant), cable to traffic cabinet, handhole and conduit.					
5.8	Bicycle Corral (one parking space with bollards)	each	\$1,500 to \$2,900	Price may vary from \$1,500 (galvanized finish with the mad shield corrosion warranty) to \$2,900 (stainless finish with the mad shield corrosion warranty) for one parking space.					
5.90	Bench	each	\$1,000-\$2,000	Price varies depending on style and size. Does not include footing/concrete mounting pad					
5.10	Safety Railings/Rubrail	linear M	\$100-\$120	1.4m height basic post and rail style					
5.11	Small diameter culvert	linear M	\$150-\$250	Price range applies to 400mm to 600mm diameter PVC or CSP culverts for drainage below trail					
5.12	Pathway Lighting	linear M	\$130-\$160	Includes cabling, connection to power supply, transformers and fixtures					
5.13	Relocation of Light / Support Pole	each	\$4,000.00	Adjustment of pole offset (distance between pole and roadway)					
5.14	Relocation of Signal Pole / Utility Box	each	\$8,000.00	Adjustment of pole offset (distance between pole and roadway)					
5.15	Flexible Bollards	each	\$100.00	Should be placed at 10m intervals where required					
5.16	Pavement Markings	linear M	\$1.00						
5.17	Upgrade Granular Surface Back Road to Chip Seal Surface	linear M	\$40,000.00	Price includes pulverizing existing surface with double treatment or tar and chip at 7m wide.					

#### Notes:

- 1. Unit Prices are for functional design purposes only, include installation but exclude contingency, design and approvals costs (unless noted) and reflect 2016 dollars, based on projects in southern Ontario.
- 2. Estimates do not include the cost of property acquisitions, signal modifications, utility relocations, major roadside drainage works or costs associated with site-specific projects such as bridges, railway crossings, retaining
- Assumes typical environmental conditions and topography.
   Applicable taxes and permit fees are additional.

	0 // 0/ / N	<u> </u>						Length		
ID	Segment / Street Name	То	From	Location	OTM Step 1 Results	Phasing	Jurisdiction	(km)	Hierarchy	Additional Comments
		E	BIKE LANES			Line Type:	— — :			
	Street North / South	Maple Street	South Drive	Community	Designated		County	1.20	S	County Road Project - Phase 2 - Road Rehab
2 St. Geo	orge Street Planned Road in Port Dover	Nelson Street West Concession 2 Woodhouse	Clinton Street  New Lakeshore Road	Community Community	Shared Designated	-	County County	0.55 1.85	P S	
4 Victoria		Norfolk Street South	Ireland Road	Community	Designated		County	1.80	S	County Road Project - Phase 2 - Road Rehab
	Drive South	Victoria Street	Woodway Trail	Community	Shared		County	0.91	S	County Road Project - Phase 2 - Road Rehab (Victoria
6 Cedar S	Street treet of Delhi	Windham Street	Queen Street North William Street	Rural	Designated		County	1.21 0.33	P S	
	Street East	Western Avenue James Street	Delcrest Avenue	Community Community	Designated  Designated		County County	0.33	<u>Б</u>	James Street to Delcrest Avenue - 2023 - \$1,505,000
	Street West	Queen Street	James Street	Community	Designated		County	0.24	S	Ţ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
10 Walker		St. George Street	Main Street	Rural	Designated		County	0.12	Р	
11 St. Geo		Greenock Street West Main Street	Nelson Street West St. Patrick Street	Community Rural	Shared Designated		County County	0.36 0.24	S	
13 Washir		Brown Street West	Thompson Road West	Community	Designated		County	0.24	S	Green Street to Thompson Road West - 2023 -
14 Robins		Talbot Street North	Norfolk Street North	Community	Designated		County	0.29	Р	·
	Street South	Evergreen Hill Road	Decou Road	Rural	Designated		County	0.43	P	County Dood Ducinet Dhood 4 Dood County which
16 Donly [ 17 Donly [		Queensway East Lynndale Road	Lynndale Road Victoria Street	Community Community	Designated Shared		County County	0.72 0.71	S	County Road Project - Phase 1 - Road Construction  County Road Project - Phase 2 - Road Rehab
18 Queen		South Drive	Evergreen Hill Road	Community	Designated		County	0.60	S	County reduct region remains
19 St. Geo	orge Street / Harbour Street	Clinton Street	Harbour Street	Community	Shared		County	0.31	Р	
		BUFFEREI	D PAVED SHOULDER			Line Type:				
20 Highwa	•	3rd Concession Road	Norfolk County Road 60	Rural	Separated		County	3.40	Р	
21 Cocksh		County Road 19	Thompson Road East	Rural	Designated or Separated		County	6.51	P	County Dood Droingt Dhoon 2 Dood Dohah
22 Old Hig 23 Cocksh	nutt Road	Highway 24  Jenkins Road	Concession 12 Townsend 495m north of County Road 19	Rural Rural	Separated Designated or Separated		County County	1.73 3.60	S	County Road Project - Phase 2 - Road Rehab
24 Turkey		Vittoria Road	Charlotteville Road 1	Rural	Separated Separated		County	4.00	P	
25 Highwa		6th Concession Road	Middleton North Walsingham	Rural	Separated		County	12.56	Р	County Road Project - Phase 2 - Road Rehab (Highway 59
26   Main S	treet Walsingham	480m north of Concession	710m south of Concession	Rural	Separated		County	1.19	P	
			OUTE WITH EDGELINE			Line Type:				
27 South I		Queen Street South	Talbot Street South	Community	Shared		County	0.33	P	County Road Project - Phase 1 - Road Rehab
28 Talbot 29 Queen		Maple Street King Street	South Drive William Street	Community Community	Shared Shared		County County	1.22 0.55	S P	Robinson Street to Maple Street - 2019 -\$1,380,000 County Road Project - Phase 1 - Road Construction
30 Lynnda		Donly Drive North	Ireland Road	Community	Shared		County	0.55	S	County Noda 1 Toject - 1 Hase 1 - Noda Construction
31 South I		Oak Street	Queen Street South	Community	Shared		County	0.52	Р	John Street to Queen Street - 2017 - \$1,130,000
32 Queen	Street	King Street	William Street	Community	Shared		County	0.07	S	County Road Project - Phase 1 - Road Construction
		IN BOULEV	ARD MULTI-USE TRAIL			Line Type:				
	nes Street South	Alice Street	Green Street	Community	Separated		County	0.62	S	
34 Highwa	ay 59 on Plank Road	Arnold Sayeau Drive John Street	Talbot Road Somerset Drive	Community Rural	Separated Separated	_	County MTO	0.15 0.63	S	
	on Plank Road	Somerset Drive	Ocean Way	Rural	Separated Separated	-	MTO	0.63	P	
37 Main S		Russell Street	Deer Park Road	Rural	Separated		County	0.46	S	
	son Road East	Main Street	Duncombe Road	Rural	Designated		County	0.51	Р	
39 Wilson 40 Queens		Norfolk Street South Existing Off-Road Multi-Use	Hendry Street  Donly Drive North	Community Community	Designated Separated	_	County MTO	0.33	S	
+o  Queen	ovray ∟ast		D MULTI-USE TRAIL	Community	ocparateu	Line Type:	WITO	1.13		
14 Ott D-	ad Trail along Abandonad Bail Carrida			Durol	Concreted	спе туре.				
	ad Trail along Abandoned Rail Corridor ad Trail along Abandoned Rail Corridor	Bayham-Norfolk Boundary Trans Canada Trail in	Tillsonburg Windham West Quarter Line	Rural Rural	Separated Separated		County County	3.63 14.35	S S	
	ad Trail along Abandoned Rail Corridor	Main Street South	Thompson Road East	Community	Separated		County	3.03	S	
	ad Multi-Use Trail		St. James Street	Community	Separated		County	0.25	S	
45 Off-Roa	ad Trail along Abandoned Rail Corridor	Existing Off-Road Multi-Use	Lynn Valley Road	Rural	Separated		County	1.95	S	
			ED SHOULDER			Line Type:				
46 1st Cor	ncession Road North	Bylerlay Sideroad Charlotteville Road 7	Hawtrey Road Vittoria Road	Rural Rural	Designated  Designated		County County	9.00 4.26	S	
47 Hillcres		Thompson Road East	Concession 2 Woodhouse	Rural	Designated or Separated		County	9.64	) S	County Road Project - Phase 1 - Road Rehab and
49 Thomp	son Road East	Duncombe Road	Cockshutt Road	Rural	Designated		County	2.86	P	County Road Project - Phase 2 - Road Rehab
50 Ireland		Victoria Street	Concession 5 Woodhouse	Rural	Shared		County	1.40	Р	County Road Project - Phase 1 - Road Rehab
51 Highwa	ay 59 ton North Walsingham Townline Road	Front Road Rhineland Road	Erie Boulevard East Quarter Line Road	Rural Rural	Designated Shared or Designated		County County	4.36 3.34	P S	
	I Talbot Road	Elgin County Road	North Road	Rural	Shared or Designated		County	1.29	) S	
54 Charlot	teville West Quarter Line Road	Lynedoch Road	Charlotteville Road 10	Rural	Designated		County	2.55	P	County Road Project - Phase 2 - Road Rehab
55 Lynedo		Charlotteville West Quarter	Yuell Road	Rural	Designated		County	1.91	Р	County Road Project - Phase 2 - Road Rehab
56 Conces	ssion 6 Woodhouse	Ireland Road Windham Road 12	Cockshutt Road Rail Corridor (north of	Rural Rural	Designated  Designated		County County	5.51 1.03	S	
57 Fertilize		Backus Mill Road	1st Concession Road	Rural	Designated		County	1.03	P	
_ JU _Lancon			111 21112000101111000	1.070	2 co.gracou		County		1 1	

Phase 1 (0-5 Years) Phase 2 (5-15 Years) Phase 3 (15-25 Years)

					i e			1	
ID Segment / Street Name	То	From	Location	OTM Step 1 Results	Phasing	Jurisdiction	Length	Hierarchy	Additional Comments
				i i			(km)		
59 County Road 45	Elgin County Road 55	Charlotteville West Quarter	Rural	Shared or Designated		County	26.76	Р	County Road Project - Phase 2 - Road Rehab (Norfolk
60 Lakeshore Road	Highway 59	West Quarter Line Road	Rural	Designated		County	4.88	Р	
61 Front Road	East Quarter Line Road	Townline Street	Rural	Designated		County	4.49	Р	
62 Lakeshore Road	Gore Road	West Quarter Line Road	Rural	Designated		County	3.78	Р	
63 Windham Road 20	Norwich Road	Swimming Pool Road	Rural	Shared or Designated		County	1.00	S	County Road Project - Phase 2 - Road Construction
64 Windham Road 11	Swimming Pool Road	Brantford Road	Rural	Shared or Designated		County	2.03	S	
65 Brantford Road	Church Street East	Windham Centre Road	Rural	Designated		County	6.26	Р	County Road Project - Phase 1 - Road Rehab
66 Brantford Road	Brantford Road	Windham Road 12	Rural	Designated		County	0.08	S	, ,
67 Windham Road 12	Windham West Quarter Line	Fertilizer Road	Rural	Designated		County	1.80	P	
68 Windham Road 12	Brantford Road	Fertilizer Road	Rural	Designated		County	0.16	P '	
69 Fertilizer Road	Existing Off-Road Multi-Use	Windham Road 13	Rural	Designated	-	County	0.38	<u> </u>	
70 Windham Road 20	Hawtrey Road	Norwich Road	Rural	Shared or Designated		County	0.96	<u>і</u> D	
71 Pine Grove Road	Scott's Street	Lynedoch Road	Rural	Designated Designated Designated		County	1.50	S	
72 Radical Road	Port Ryers Road	Regent Street	Rural	Designated		County	4.79	) D	
73 Ireland Road	Lynn Valley Road	Decou Road				•		Г	
	, ,		Rural	Designated		County	1.21	S	
74 Old Highway 24	Jenkins Road	Russell Street	Rural	Designated		County	9.23	S	
75 Hillcrest Road		Evergreen Hill Road	Rural	Designated		County	2.31	<u> </u>	
76 Hillcrest Road	Evergreen Hill Road	Eighth Street West	Rural	Designated		County	0.30	Р	
77 Colonel Talbot Road	Highway 59	Orange Hall Road	Rural	Designated		County	9.49	P	County Road Project - Phase 1 - Road Rehab
78 Lakeshore Road	Backus Mill Road	East Quarter Line Road	Rural	Designated		County	1.32	Р	
79 Swimming Pool Road	La Salette Road	265m north of Windham Road	Rural	Designated		County	3.91	Р	
80 Windham Centre Road	Windham West Quarter Line	Highway 24	Rural	Designated		County	10.96	Р	
81 Concession 12 Townsend	Old Highway 24	Cockshutt Road	Rural	Shared or Designated		County	5.48	S	
82 Thompson Road East	Cockshutt Road	County Line	Rural	Designated		County	7.23	Р	
83 Queensway West	Hillcrest Road	Windham East Quarter Line	Rural	Designated		County	0.60	S	
84 Vittoria Road / Radical Road	Hillcrest Road South	Port Ryere Road	Rural	Designated		County	2.50	Р	
85 Lakeshore Road	7th Concession Road	Gore Road	Rural	Designated		County	3.98	Р	
86 Lakeshore Road	County Road 28	7th Concession Road	Rural	Designated		County	5.65	Р	
87 Colonel Talbot Road	North Road	County Road 23	Rural	Shared or Designated		County	0.70	Р	
88 North Walsingham South Walsingham Townline	Byerlay Side Road	East Quarter Line Road	Rural	Shared or Designated		County	0.78	S	
89 Elgin County Road 55	County Road 45	Colonel Talbot Road	Rural	Designated		County	6.66	P	-
90 Thompson Road West	Existing Off-Road Multi-Use	Main Street South	Rural	Designated		County	0.97	<u>'</u> Р	
91 Rhineland Road	1st Concession Sideroad	Middleton North Walsingham	Rural	Shared or Designated		County	2.99	S	
92 Vittoria Road	Mill Pond Road	Hillcrest Road South	Rural	Designated		County	1.60	D	
93 Old Brook Street	Water Street	Mill Pond Road	Rural	Designated		County	0.82	P D	
94 Turkey Point Road	Charlotteville Road 1	Cedar Drive	Rural	Designated		County	2.88	P	
95 Charlotteville Road 7	Turkey Point Road	Hillcrest Road	Rural				7.36	P	County Dood Project Dhoop 2 Dood Construction
				Designated		County		Р	County Road Project - Phase 2 - Road Construction
96 Concession 8 Townsend	Existing Off-Road Multi-use	1.4km west of existing trail	Rural	Designated		County	1.40	Г	
97 Concession 8 Townsend	Highway 24	1.4km west of existing trail	Rural	Designated		County	1.10	P	
98 Front Road	Dancey Side Road	Turkey Point Road	Rural	Designated		County	8.91	P	
99 Middleton North Walsingham Townline Road	Highway 59	Byerlay Side Road	Rural	Shared or Designated		County	2.90	S	
100 Erie Boulevard	Highway 59	Road Terminus	Rural	Designated		County	3.95	P	
101 Hillcrest Road	Charlotteville Road 8	Charlotteville Road 7	Rural	Designated		County	1.40	P P	
102 Cockshutt Road	Thompson Road East	Concession 13 Townsend	Rural	Shared		County	5.59	P	
162 Blue Line Road	Concession 10 Townsend	Concession 13 Townsend	Rural	Shared		County	4.13	S	County Road Project - Phase 1 - Road Construction
209 Park Road	Existing Off-Road Multi-Use	Windham Street	Rural	Shared		County	0.96	Р	County Road Projects - Phase 1 - Road Rehab (14th
278 Blue Line Road	Thompson Road West	Concession 10 Townsend	Community	Shared		County	1.46	S	
286 County Road 24	Turkey Point Road	Simcoe Town Limit (Decou Road)	Rural	Design		County	14.8	Р	Road Resurfacing project scheduled in 2019
	·	SNED ROUTE			Line Type:				
					Line Type:				
103 Old Mill Road / Hillside Avenue / Big Creek	William Street	Existing Off Road Trail	Community	Shared		County	0.35	S	County Road Project - Phase 1 - Road Construction
104 Swimming Pool Road	Talbot Road	Windham Road 11	Rural	Designated		County	1.13	Р	
105 Lehman Dam Side Road / Old Mill Road	William Street	Schaeffer Road	Rural	Shared		County	2.12	S	
106 Bay Street	Chestnut Street	Church Street	Community	Shared		County	0.24	Р	
107 Wolven Street	Bay Street	East Quarter Line Road	Community	Shared		County	1.44	Р	
108 New Lakeshore Road	John Street	County Boundary	Rural	Shared		County	4.10	P	
109 Main Street	Prospect Street	Lynn Park Avenue	Community	Shared or Designated		County	0.32	S	
110 Cedar Street	Windham Street	412m east of Windham Street	Rural	Shared		County	0.41	P	
111 Decou Road	Norfolk Street South	Ireland Road	Rural	Shared		County	1.00	P '	
112 Evergreen Hill Road	Hillcrest Road	Oak Street	Rural	Shared		County	1.34	P	County Road Project - Phase 1 - Road Construction
113 Deer Park Road / Concession 8 Townsend	Cockshutt Road	Community Limit	Rural	Shared		County	2.44	P D	County Noad Froject - Friday Fri Noad Collatituction
113 Deer Park Road / Concession 8 Townsend	Old Mill Road	Main Street of Delhi		Shared			-	S	County Road Project - Phase 1 - Road Construction
			Community			County	0.85	5	County Road Project - Phase T - Road Construction
115 Decou Road	Existing Off-Road Trail	Ireland Road	Rural	Shared		County	0.81	Р	
116 Bay Street	Chestnut Street	Price Street	Community	Shared		County	0.24	Г	
117 Old Mill Road / Hillside Avenue / Big Creek	William Street	Highway 59	Community	Shared		County	0.22	S	
118 Deer Park Road / Concession 8 Townsend	Community Limit	Old Highway 24	Community	Shared		County	0.93	P	
119 New Lakeshore Road	John Street	County Boundary	Community	Shared		County	1.85	P	
139 East Quarter Line Road	Middleton North Walsingham	County Road 21	Rural	Shared		County	1.89	S	County Road Project - Phase 1 - Road Construction
140 East Quarter Line Road	County Road 21	Walsingham Townline Road	Rural	Shared		County	9.86	S	County Road Project - Phase 1 - Road Construction

		1		August 2010		1	1		1
ID Segment / Street Name	То	From	Location	OTM Step 1 Results	Phasing	Jurisdiction	Length (km)	Hierarchy	Additional Comments
141 Windham East Quarter Line Road	Windham Road 13	Highway 3	Rural	Shared or Designated		County	2.75	S	
142 Concession 12 Townsend	Cockshutt Road	County Line	Rural	Shared or Designated		County	7.21	S	-
143 Concession 13 Townsend	Culver Road	Cockshutt Road	Rural	Shared or Designated		County	4.23	S	
144 Robinson Street	Elgin Avenue	Talbot Street North	Community	Shared		County	0.49	S	County Road Project - Phase 1 - Road Construction
145 Nichol Street	Washington Street	Road Terminus at west	Community	Shared		County	0.65	S	County Road Project - Phase 1 - Road Construction
146 Brown Street / Montclair Crescent	Washington Street	Duncombe Street	Community	Shared		County	1.17	S	Main Street to Washington Street - 2020 - \$1,215,000
147 Imperial Street	Main Street	East Street	Community	Shared		County	0.48	S	
148 1st Concession Road	Lake Shore Road	Community Limit	Community	Shared		County	0.87	S	
149 Price Street / College Avenue	Bay Street	Front Road	Community	Shared		County	0.85	S	
150 Mall Road / Schaeffer Road	County Boundary	Lehman Dam Side Road	Rural	Shared		County	5.48	S	County Road Project - Phase 1 - Road Construction (1st
151 Dalton Road / Tisdale Sideroad	Norwood Road	Croton Avenue	Rural	Shared		County	2.59	S	-
152 Port Ryerse Road	Lynn Valley Road	Radical Road	Rural	Shared	_	County	4.21	S	-
<ul><li>153   Woodway Trail</li><li>154   County Road 19 West</li></ul>	Decou Road Windham Road 19	Decou Road Bookton Lane	Community	Shared		County	2.74 1.85	S S	County Road Project - Phase 1 - Road Rehab
155 County Line	Thompson Road East	Concession 12 Townsend	Rural Rural	Shared or Designated Shared or Designated		County County	4.17	) D	County Road Project - Phase 1 - Road Rehab
156 Oak Street	South Drive	Evergreen Hill Road	Community	Shared Shared		County	0.60	D D	-
157 Charlotteville Road 1	Charlotteville West Quarter	Turkey Point Road	Rural	Shared		County	3.71	D D	-
158 Bayham Boundary Road / Gore Side Road	County Boundary	Orange Hall Road	Rural	Shared		County	2.08	S	-
159 Concession 2 Woodhouse	Cockshutt Road	Community Limit	Community	Shared	_	County	1.93	S	-
160 Thompson Drive / Mergl Drive	Highway 6	Greenock Street West	Community	Shared		County	1.18	S	-
161 Concession 8 Townsend / Mechanic Street	Trans Canada Trail	Main Street North	Rural	Shared		County	1.38	P	-
163 Windham East Quarter Line Road	Windham Road 3	Windham Road 6	Rural	Shared or Designated		County	4.16	S	
164 County Road 23	Colonel Talbot Road	Barth Side Road	Rural	Shared		County	8.28	P	County Road Project - Phase 1 - Road Construction
165 County Road 23	Norrfolk Coutny Road 45	North Walsingham Townline	Rural	Shared		County	2.81	P	The state of the s
166 Windham Road 13	Fertilizer Road	Windham West Quarter Line	Rural	Shared or Designated		County	1.80	S	
167 Windham Road 13	Windham West Quarter Line	Windham East Quarter Line	Rural	Shared or Designated		County	7.28	S	County Road Project - Phase 1 - Road Construction (Nixon
168 Norwich Road	Windham Road 20	Talbot Road	Rural	Shared		County	2.13	Р	
169 Talbot Road	Norwich Road	James Street	Community	Shared		County	0.56	Р	
170 Talbot Road	Talbot Road	Swimming Pool Road	Community	Shared		County	0.04	Р	
171 Concession 6 Townsend / Angling Road	Existing Off-Road Multi-Use	Cockshutt Road	Rural	Shared or Designated		County	6.74	S	
172 Charlotteville West Quarter Line Road	Vittoria Road	Charlotteville Road 1	Rural	Shared		County	4.20	S	
173 Windham Road 3 / Concession 3 Townsend	Windham West Quarter Line	Cockshutt Road	Rural	Shared or Designated		County	18.93	S	County Road Project - Phase 1 - Road Construction
174 Port Ryers Road / Front Road	Chillan Road	Radical Road	Rural	Shared		County	3.75	Р	
175 Charlotteville West Quarter Line Road	Charlotteville Road	Front Road	Rural	Shared		County	1.96	S	
176 Charlotteville West Quarter Line Road	Charlotteville Road 7	Vittoria Road	Rural	Shared		County	4.18	S	
177 North Road	County Road 45	Fairground Road	Rural	Shared		County	10.25	S	
178 Fairground Rod	North Road	6th Concession Road	Rural	Shared		County	8.26	Р	
179 Queen Street	King Street	Talbot Road	Community	Shared		County	0.12	S	
180 Western Avenue	Main Street in Delhi	Existing Off-Road Multi-Use	Community	Shared		County	0.40	S	
181 Hawtrey Road / Norwich Townline Road	County Boundary	Windham Road 20	Rural	Shared		County	2.12	Р	County Road Project - Phase 2 - Road Construction
182 Hawtrey Road / Norwich Townline Road	Windham Road 20	Highway 59	Rural	Shared		County	0.72	S	Asso Otros ( to MUII asso Otros ( to 0040
183 East Street	William Street	Imperial Street	Community	Shared	_	County	0.33	S	Ann Street to William Street - 2019 - \$470,000
184 Main Street of Delhi	William Street Pine Grove Road	Imperial Street Tisdale Side Road	Community	Shared		County	0.38 0.74	S	-
185 Norwood Road 186 William Street	Main Street of Delhi	James Street	Rural	Shared Shared		County	0.74	S S	-
187   Connaught Avenue/ Callens Avenue	Northern Avenue	Church Street East	Community Community	Shared	_	County County	1.02	S	-
188 Delcrest Avenue	Church Street East	Connaught Avenue	Community	Shared		County	0.39	S	-
189 King Crescent	Queen Street	Talbot Street	Community	Shared		County	0.38	S	County Road Project - Phase 2 - Road Construction
190 Queen Street	West Lane	King Crescent	Community	Shared		County	0.36	S	County Road Project - Phase 2 - Road Construction
191 James Court	West Lane	King Crescent	Community	Shared		County	0.34	S	County Read Froject Fridad 2 Read Contituenti
192 Talbot Street	Highway 59	Byerlay Side Road	Community	Shared		County	2.29	P	-
193 Byerlay Side Road	Community Limit	Middleton North Walsingham	Rural	Shared		County	6.47	S	County Road Project - Phase 1 - Road Construction
194 Byerlay Side Road	1st Concession Road	Talbot Street	Rural	Shared		County	2.03	S	, , , , , , , , , , , , , , , , , , , ,
195 Bay Street	1st Concession Road	Chestnut Street	Community	Shared		County	0.78	Р	
196 Front Road	Dedrick Road	Wolven Street	Community	Shared		County	1.40	P	
197 Hunter Drive North	Front Road	510m north of Front Road	Community	Shared		County	0.51	S	
198 Front Road	Dedrick Road	Highway 59	Community	Shared		County	0.37	Р	
199 Greenock Street West	St. George Street	Mergl Drive	Community	Shared		County	0.68	S	
200 St. Patrick Street / Bridge Alley	Existing Off-Road Multi-Use	Clinton Street	Community	Shared		County	0.78	S	
201 Somerset Dr / Newport Ln / Ocean Wy /		New Lakeshore Road	Community	Shared		County	1.42	S	
	Hamilton Plank Road			Shared		County	2.02	S	County Road Project - Phase 2 - Road Construction
202 Prospect Street	Main Street	Silver Lake Road	Community	Silaieu			2.02		County House Frieds 2 House Construction
<ul><li>202 Prospect Street</li><li>203 Hare Street / Kingsland Drive</li></ul>	Main Street Main Street North	Silver Lake Road Main Street North	Community Community	Shared		County	0.67	S	
<ul> <li>202 Prospect Street</li> <li>203 Hare Street / Kingsland Drive</li> <li>204 Nichol Street</li> </ul>	Main Street Main Street North St. James Street South	Silver Lake Road	·	Shared Shared			0.67 0.28	S	St. James Street South to Auty Street - 2017 - \$550,000
<ul> <li>202 Prospect Street</li> <li>203 Hare Street / Kingsland Drive</li> <li>204 Nichol Street</li> <li>205 Duncombe Road</li> </ul>	Main Street Main Street North St. James Street South East Church Street	Silver Lake Road Main Street North Main Street South Thompson Road East	Community Community Community	Shared Shared Shared		County County County	0.67 0.28 0.74	\$ \$ \$	
<ul> <li>202 Prospect Street</li> <li>203 Hare Street / Kingsland Drive</li> <li>204 Nichol Street</li> <li>205 Duncombe Road</li> <li>206 St. James Street</li> </ul>	Main Street Main Street North St. James Street South East Church Street Green Street	Silver Lake Road Main Street North Main Street South Thompson Road East Brown Street West	Community Community Community Community	Shared Shared Shared Shared		County County County County	0.67 0.28 0.74 0.18	\$ \$ \$ \$	St. James Street South to Auty Street - 2017 - \$550,000
<ul> <li>202 Prospect Street</li> <li>203 Hare Street / Kingsland Drive</li> <li>204 Nichol Street</li> <li>205 Duncombe Road</li> <li>206 St. James Street</li> <li>207 West Church / East Church Street</li> </ul>	Main Street Main Street North St. James Street South East Church Street Green Street Main Street South	Silver Lake Road Main Street North Main Street South Thompson Road East Brown Street West Duncombe Road	Community Community Community Community Community	Shared Shared Shared Shared Shared		County County County County County County	0.67 0.28 0.74 0.18 0.45	\$ \$ \$ \$ \$	
202 Prospect Street 203 Hare Street / Kingsland Drive 204 Nichol Street 205 Duncombe Road 206 St. James Street 207 West Church / East Church Street 208 Nichol Street	Main Street Main Street North St. James Street South East Church Street Green Street Main Street South Washington Street	Silver Lake Road Main Street North Main Street South Thompson Road East Brown Street West Duncombe Road St. James Street South	Community Community Community Community Community Community Community	Shared Shared Shared Shared Shared Shared Shared		County County County County County County County	0.67 0.28 0.74 0.18 0.45 0.22	\$ \$ \$ \$ \$ \$	St. James Street South to Auty Street - 2017 - \$550,000  County Road Project - Phase 1 - Road Construction
<ul> <li>202 Prospect Street</li> <li>203 Hare Street / Kingsland Drive</li> <li>204 Nichol Street</li> <li>205 Duncombe Road</li> <li>206 St. James Street</li> <li>207 West Church / East Church Street</li> </ul>	Main Street Main Street North St. James Street South East Church Street Green Street Main Street South	Silver Lake Road Main Street North Main Street South Thompson Road East Brown Street West Duncombe Road	Community Community Community Community Community	Shared Shared Shared Shared Shared		County County County County County County	0.67 0.28 0.74 0.18 0.45	\$ \$ \$ \$ \$	St. James Street South to Auty Street - 2017 - \$550,000

Phase 1 (0-5 Years) Phase 2 (5-15 Years) Phase 3 (15-25 Years)

ID	Segment / Street Name	То	From	Location	OTM Step 1 Results	Phasing	Jurisdiction	Length (km)	Hierarchy	Additional Comments
212	Union Street	Elgin Avenue	Norfolk Street South	Community	Shared		County	0.79	S	County Road Project - Phase 1 - Road Rehab
	Elgin Avenue	Union Street	Robinson Street	Community	Shared		County County	0.79	S	County Road Project - Phase 1 - Road Renab  County Road Project - Phase 1 - Road Construction
	Stanley Street	Queen Street South	Talbot Street South	Community	Shared		County	0.33	S	County Road Floject - Fliase F-Road Construction
_	Wilson Drive / Lynndale Road	Argyle Street	Donly Drive North	Community	Shared		County	0.76	P	County Road Project - Phase 1 - Road Rehab (Argyle
	Wilson Drive / Lynndale Road	0,	Argyle Street	Community	Shared		County	0.28	S	County Road Projects - Phase 1 - Road Construction (East
217	Ireland Road	Lynndale Road	Concession 6 Woodhouse	Community	Shared		County	0.68	Р	County Road Project - Phase 1 - Road Rehab
218	Lynn Valley Road	Ireland Road	Highway 3	Rural	Shared or Designated		County	11.11	S	
	Lynn Valley Road	Abandoned Rail Corridor	Norfolk County Road 24	Rural	Shared		County	1.21	S	
	Lynn Valley Road	Ryers Road	Ireland Road	Rural	Shared		County	0.69	S	
	Evergreen Hill Road	Oak Street	Elm Street	Rural	Shared		County	0.69	Р	Occupto Donal Decinal Disease A. Donal Debah
	Barkley Crescent Clinton Street	Sheridan Boulevard	Donly Drive South St. Patrick Street	Community Community	Shared Shared		County	1.26 0.36	S	County Road Project - Phase 1 - Road Rehab
	Davis Street West / North Court	St. George Street Existing Off-Road Multi-Use	Existing Off-Road Multi-Use	Community	Shared		County County	0.36	S P	
_	Argyle Street	Existing Off-Road Multi-Use	Lynndale Road	Community	Shared		County	0.40	S	
	Argyle Street	Argyle Street	Lynndale Road	Community	Shared		County	0.05	S	
	Steiner Road	Windham Road 3	Windham Road 5	Rural	Shared or Designated		County	2.93	P	County Road Project - Phase 1 - Road Construction
	Teeterville Road	Windham Road 5	Windham Road 6	Rural	Shared or Designated		County	1.74	Р	County Road Project - Phase 1 - Road Construction
229	Teeterville Road	Windham Road 6	Windham Centre Road	Rural	Shared or Designated		County	2.95	Р	County Road Project - Phase 1 - Road Rehab
230	Windham Road 12	Windham West Quarter Line	Nixon Road	Rural	Shared or Designated		County	3.65	S	
	Windham Road 12	Windham East Quarter Line	Highway 24	Rural	Shared or Designated		County	3.68	S	County Road Project - Phase 2 - Road Rehab
	Highway 24	Windham Road 12	200m north of Windham Road	Rural	Shared or Designated		MTO	0.20	S	
	Concession 13 Townsend	Cockshutt Road	County Boundary	Rural	Shared or Designated		County	5.55	S	Occurry David Davi
_	13th Street East / Concession 13 Townsend	Windham East Quarter Line	Culver Road	Rural	Shared or Designated		County	6.85	S	County Road Project - Phase 1 - Road Construction
	Windham East Quarter Line Road	Abandoned Rail Corridor	Windham Road 13	Rural	Shared or Designated		County	6.60	S P	County Road Project - Phase 1 - Road Construction
	Cockshutt Road  Cockshutt Road	45m south of County Road 19 County Road 19	45m south of County Road 19	Rural Rural	Designated  Designated		County County	0.26 0.56	P	
	County Road 19	Bookton Lane	Windham Road 4	Rural	Shared		County	1.21	S	County Road Project - Phase 1 - Road Rehab
	Little Lake Road	Windham Road 4	Windham West Quarter Line	Rural	Shared		County	1.09	S	County Road Project - Phase 1 - Road Construction
	East Quarter Line	Lynn Valley Road	New Lakeshore Road	Rural	Shared or Designated		County	5.24	S	South y read 1 reject 1 read construction
	1st Concession Road	Gore Road	Highway 59	Rural	Shared		County	8.05	S	
242	Orange Hall Road	Colonel Talbot Road	Plowman's Line	Rural	Shared		County	2.02	S	
243	Middleton-North Walsingham Townline Road	Highway 59	County Road 23	Rural	Shared or Designated		County	7.32	S	
	County Road 23	1st Concession Road	3rd Concession Road	Rural	Shared		County	2.74	Р	
	East Quarter Line Road	Front Road	North Walsingham South	Rural	Shared		County	8.74	S	County Road Project - Phase 1 - Road Rehab
	Front Road	Old Dump Road	Fairground Road	Rural	Shared		County	0.76	P	
	County Road 23	Norfolk County Road 45	10th Concession Road	Rural	Shared		County	2.42	P	
	Old Dump Road	Elgin County Road 55	North Road	Rural	Shared		County	1.34	P	
	Elgin County Road 55  Bayham Norfolk Boundary Road	Old Dump Road Gore Side Road	Lakeshore Road Colonel Tablot Road	Rural Rural	Shared Shared		County County	4.03 2.03	P	
_	Charlotteville West Quarter Line Road	Charlotteville Road 10	Charlotteville Road 7	Rural	Shared		County	4.21	P	
	1st Concession Sideroad / Schaffer Side Road	Lehman Dam Side Road	Byerlay Sideroad	Rural	Shared		County	7.85	S	County Road Project - Phase 1 - Road Construction (1st
	3rd Concession Road	Highway 59	Norfolk County Road 23	Rural	Shared		County	7.32	P	Today or the control of the control
	3rd Concession Road	Highway 59	Charlotteville West Quarter	Rural	Shared or Designated		County	11.03	Р	
255	Old Brook Street	Fisher's Glen Road	Charlotteville East Quarter Line	Rural	Shared		County	0.63	Р	
	Old Brook Street	Fisher's Glen Road	Water Street	Rural	Shared		County	0.56	Р	
	Vittoria Road	Turkey Point Road	Charlotteville East Quarter Line	Rural	Shared		County	3.68	Р	
	Fertilizer Road / Lynedoch Road	Yuell Road	Windham Road 13	Rural	Shared		County	3.45	P	County Road Project - Phase 2 - Road Rehab (Highway 3
	Charlotteville Road 7	Charlotteville West Quarter	Turkey Point Road	Rural	Shared		County	3.66	P	County Road Project - Phase 2 - Road Construction
	Cultus Road / 6th Concession Road  Lakeshore Road	County Road 23 Elgin County Road 55	Fairground Road Norfolk County Road 28	Rural Rural	Shared Shared		County County	2.16 5.42	S	
	Front Road	Townline Street	Dancey Side Road	Rural	Shared		County	1.12	P	
-	Front Road	Fisher's Glen Road	Mole Side Road	Rural	Shared		County	3.69	P	
	Front Road	Fisher's Glen Road	Chillan Road	Rural	Shared		County	3.49	P	
	Cedar Drive	Turkey Point Road	Front Road	Rural	Shared		County	1.47	S	
	Croton Avenue / Main Street	Dalton Road	Imperial Street	Community	Shared		County	0.94	S	Croton Avenue (Main to South) - 2017 - \$210,000
	La Salette Road	Swimming Pool Road	Windham West Quarter Line	Rural	Shared		County	3.77	Р	
	Concession 2 Townsend	Cockshutt Road	Indian Line	Rural	Shared		County	4.93	S	
	8th Concession Road	East Quarter Line Road	1.4km west of East Quarter	Rural	Shared		County	1.35	S	
	8th Concession Road	Highway 59	600m east of Highway 59	Rural	Shared		County	0.60	S	
	Elgin County Road 55	County Road 45	Old Dump Road	Rural	Shared		County	3.95	P	
	Gore Road Wilson Avenue	Lakeshore Road Viola Court	1st Concession Road Fertilizer Road	Rural Rural	Shared Shared		County	1.78 1.53	S	
	Windham East Quarter Line Road	Windham Road 6	Abandoned Rail Corridor	Rural Rural	Shared or Designated		County County	3.02	S	
	Windham Road 12	Nixon Road	Highway 24	Rural	Shared or Designated Shared or Designated		County	3.62	S	
	Willowdale Cres/ Ivey Rose W/ Cardinal Ln	Willowdale Crescent	Main Street	Community	Shared		County	0.34	S	County Road Project - Phase 2 - Road Construction
	Thompson Drive / Mergl Drive	Greenock Street West	Nelson Street West	Community	Shared		County	0.24	S	County Road Project - Phase 1 - Road Construction
	Concession 2 Woodhouse	Community Limit	East Quarter Line	Rural	Shared		County	1.87	S	
	Hawtrey Road / Norwich Townline Road	County Boundary	Highway 59	Community	Shared		County	1.21	S	County Road Project - Phase 2 - Road Rehab
281	Byerlay Side Road	Talbot Street	Community Limit	Community	Shared		County	0.65	S	County Road Project - Phase 1 - Road Construction

Phase 1 (0-5 Years) Phase 2 (5-15 Years) Phase 3 (15-25 Years)

				11.19.00 = 0.10						
ID Segment / Street Name	То	From	Location	OTM Step 1 Results	Phasing	Jurisdiction	Length (km)	Hierarchy	Additional Comments	
282 1st Concession Road	Dedrick Road	Community Limit	Rural	Shared		County	0.78	S		
283 County Road 23	3rd Concession Road	North Walsingham South	Rural	Shared		County	3.4	Р		
284 County Road 23	1st Concession Road	North Walsingham South	Rural	Shared		County	2.1	Р		
285 Villa Nova Road	Concession 2 Townsend	Concession 13 Townsend	Rural	Shared		County	15.1	S		411.32
	SIGNED RO	OUTE WITH SHARROW			Line Type:				•	
120 Swimming Pool Road	Windham Road 11	265m north of Windham Road	Rural	Shared or Designated		County	0.27	Р		
121 Connaught Avenue	James Street	Northern Avenue	Community	Shared		County	0.29	S	County Road Project - Phase 1 - Road Rehab	
122 Church Street East	Delcrest Avenue	Brantford Road	Rural	Designated		County	1.09	Р		
123 Wilson Avenue	James Street	Gage Street	Community	Shared		County	0.27	S		
124 Bay Street	Church Street	Wolven Street	Community	Shared		County	0.11	Р		
125 Nelson Street West	St. George Street	Regent Avenue	Rural	Shared		County	0.24	Р		
126 Walker Street / Hamilton Plan Road	John Street	St. Patrick Street	Rural	Shared		MTO	0.36	Р		
127 Main Street South	Nichol Street	East Church Street	Community	Designated		County	0.23	Р		
128 Main Street North	Mechanic Street West / Deer	Nichol Street	Community	Designated		County	0.40	Р		
129 Main Street South	Green Street	Thompson Road East / West	Community	Designated		County	0.48	Р		
130 Alice Street	St. James Street South	Main Street South	Community	Shared		County	0.27	S		
131 Colborne Street South	Maple Street	Bonnie Drive	Community	Shared		County	0.08	Р	Robinson Street to Windham Street - 2018 - \$2,140,000	
132 Argyle Street	Norfolk Street North	Pond Street	Community	Shared		County	0.33	S		
133 Stanley Street	Norfolk Street South	Talbot Street South	Community	Shared		County	0.30	S		
134 Evergreen Hill Road	Norfolk Street South	Elm Street	Rural	Designated		County	0.47	Р		
135 Chapman Street West	St. George Street	St. Annie Street North	Community	Shared		County	0.92	Р	County Road Project - Phase 1 - Road Construction (Silver	
136 Main Street South	West Church Street	Green Street	Community	Designated		County	0.24	Р		
137 James Street	William Street	Connaught Street	Community	Designated		County	0.05	S		
138 Silver Lake Drive / Cockshutt Road	Dover Mills Road	Prospect Street	Rural	Shared		County	0.92	Р	County Road Project - Phase 1 - Road Rehab and	

Tab #4 - County Approved Projects
August 2016

1	Segment ID	Segment / Street Name	То	From	Location	Phasing	Jurisdiction	Length (km)	Short Term Cost <sup>1</sup>	Medium Term Cost <sup>1</sup>	Long Term Cost <sup>1</sup>	Additional Comments
The state of the control of the co			BIKE LANE	ES .		Line Type:			·	Unit Cost:	\$7,500	
The content of the	1	Queen Street North / South	Maple Street	South Drive	Community		County	1.2		\$8,976		County Road Project - Phase 2 - Road Rehab
1	4				,			1.8				,
1.		-										
1.			<u> </u>		,				\$2,340	\$4,183		
10   10   10   10   10   10   10   10			-1	·								
Control   Cont	17	Donly Drive South	Lynndale Road	Victoria Street	Community		County	0.7		\$5,292		County Road Project - Phase 2 - Road Rehab
The content of the			<b>BUFFERED PAVED S</b>	SHOULDER		Line Type:				Unit Cost:	\$150,000	
2   Control	22	Old Highway 24	Highway 24	Concession 12 Townsend	Rural		County	1.7		\$258,837		County Road Project - Phase 2 - Road Rehab
To   1.0	25	Highway 59	6th Concession Road	Middleton North Walsingham Townline Road	Rural		County	12.6		\$1,883,708		County Road Project - Phase 2 - Road Rehab (Highway 59 to 0.2km north of Norfolk County Road
The first Part   Sept Part			SIGNED ROUTE WITH	H EDGELINE		Line Type:				Unit Cost:	\$4,000	
The contract   Property   Prope	27	South Drive	Queen Street South	Talbot Street South	Community		County	0.3	\$1,306			County Road Project - Phase 1 - Road Rehab
2			<u> </u>		,							
The content of the					,							· ·
The content of the									\$2,004			
A					, i	Line Type:				Unit Cost	\$110,000	
Comment   Comm	40	Cookshutt Dood			Durol	сте туре.	County	0.6	\$4,060,40G		φ110,000	County Pood Project Phase 1 Pood Pohah and Construction
Complete			· · · · · · · · · · · · · · · · · · ·						\$1,060,406			
Company   Comp									\$153,491	ψο τ 1,1 σο		,
Company   Comp			1 2									, ,
The content of the		•					•					
Description   County Service   County		·	·									, ,
Description   Property   Table									\$688,110			, ,
Second   S			+ 0 /	ů .	Rural		County	9.5				,
Part			-						Ф450 O55			, ,
County Face 2												
SOLD POOT    SOL									the state of the s			· · · · · · · · · · · · · · · · · · ·
100   100			SIGNED ROL	JTE		Line Type:					\$1.000	\$1,500
112   Compress Hill Road   Fillers Road   Court   Co	103	Old Mill Road / Hillside Avenue / Rid			Community		County	0.4	\$532		<b>V</b> 1,000	
The control of the Court Float Float   Courty Head Float   Court			- 1		,			- I				
See Section	114	William Street	Old Mill Road	Main Street of Delhi	Community		County	0.9	\$1,277			·
144   Nothins Steet   Eligi Avenue   Table Steet North   Control												, ,
14.0   Norm Breet   Whentington Street   Whenting			<u> </u>	<u>,                                      </u>			•					,
1-06   Blasem Street   Manifester Officers   Manifester				· ·								, ,
14-4									The state of the s			, ,
1946   County Road 23												County Road Project - Phase 1 - Road Construction (1st Concession Road to south of Railway)
1-		·										,
173   Windram Road of Concession 3   State 5   County Road Project - Piese 2 - Road Construction		·										,
198   King Greater   William Street   Importal Street   Community   County   0.4   S577   County   0.4   S577   County   County   0.4   S577   County   County   0.4   S577   County   County   County   0.4   S577   County   Cou	173											· · ·
Fig.   Courty   County   Cou		•	, ,							\$2,122		
198   System   West Lane   King Cressent   County   County   0.4   S64   County Road Proposed Press   Possed Proposed Press   Rarial   County   County   0.5   \$8.66   County Road Proposed Press   Rarial   County   Cou					,				\$490	¢577		
193   Systey Side Road												,
204   Ninbi Street   St. James Street South   Main Street South   Main Street South   Duncombe Road   Ubtan   County   0.4   \$668     207   West Church / East Church Street   Main Street South   Duncombe Road   Ubtan   County   0.4   \$668     210   Foster / Backet / Surset / Dan Street   St. James Street South   Duncombe Road   Ubtan   County   0.7     212   Union Street   Bigh Avenue   Union Street   Bigh Avenue   Union Street   Robinson Street   County Road Project - Phase 1 - Road Construction   County Road Project - Phase 1 -									\$6,466	<del>*************************************</del>		,
270   Wast Church Jean Church Street   Main Street   South   Uncombe Road   Uthan   County   0.4   \$668		· ·			,					\$3,028		, ,
210   Foster / Bectett / Started   Holden Avenue   Urban   County   1.7   S2.610   Dora Diver (Holden to Calverty - 2019 - \$730,000							•					
212   Union Street   Elgin Avenue   Union Street   Robinson Street   Community   County   0.3   \$4.77   County Road Project - Phase 1 - Road Rehab   County Road Project - Phase 1 - Road Construction   Road Construction   Road Society Road Project - Phase 1 - Road Rehab   Road County Road Project - Phase 1 - Road Rehab   Road County Road Project - Phase 1 - Road Rehab   Road County Road Project - Phase 1 - Road Rehab   Road County Road Project - Phase 1 - Road Rehab   Road County Road Project - Phase 1 - Road Rehab   Road Rehab   Road County Road Project - Phase 1 - Road Rehab   Road Re												
213   Eigin Avenue   Union Street   Community   County   0.3   \$4.77							•					County Road Project - Phase 1 - Road Rehab
216   Wilson Drive / Lymdale Road   Hendry Street   Argyle Street   Argyle Street   Community   County   0.3   \$425		<u> </u>	Union Street				•		\$477			,
217   Ireland Road		•					•					, ,
Seried Barkley Crescent   Sheridan Boulevard   Donly Drive South   Country   1.3   \$1,884   Country Road Project - Phase 1 - Road Rehab		·	<del>                                     </del>									, , , , , , , , , , , , , , , , , , , ,
Steiner Road   Windham Road 3   Windham Road 5   Rural   County   2.9   \$2.930												·
Testerville Road   Windham Road 6   Windham Road 12   Windham Road 12   Windham Road 12   Windham Road 13   Windham Road 13   Rural   County   6.9   \$6,851			Windham Road 3	Windham Road 5	Rural		County	2.9	\$2,930			County Road Project - Phase 1 - Road Construction
231   Windham Road 12   Windham East Quarter   Highway 24   Rural   County   3.7   Sa,881   County Road Project - Phase 2 - Road Rehab   County Road Project - Phase 2 - Road Rehab   County Road Project - Phase 2 - Road Rehab   County Road Project - Phase 2 - Road Rehab   County Road Project - Phase 1 - Road Construction (Windham East Quarter Line Road Road In Mindham Road 13   Rural   County Road Project - Phase 1 - Road Construction (Windham Road 9 to 0.40km north of Road Road In Mindham Road 9 to 0.40km north of Road Road Road Road Road In Mindham Road 4   Rural Road Road Road Road Road Road Road Road												,
234   13th Street East / Concession 13   Windham East Quarter   Culver Road   Rural   County   6.9   \$6,851     235   Windham East Quarter Line Road   Abandoned Rail Corridor   Windham Road 13   Rural   County   6.6   \$6,60     238   County Road 19   Bookton Lane   Windham Road 4   Rural   County   6.6   \$6,60     239   Little Lake Road   Windham Road 4   Windham Road 4   Windham Road 4   Rural   County   1.1   \$1,089     245   East Quarter Line Road   Front Road   Front Road   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 1 - Road Construction   Rural   County   Road Project - Phase 2 - Road Rehab   Rural   County   Road Project - Phase 2 - Road Rehab   Rural   County   Road Project - Phase 2 - Road Rehab   Rural   County   Road Project - Phase 2 - Road Rehab   Rural   Rur							•		\$2,947	¢2 604		,
Windham East Quarter Line Road Abandoned Rail Corridor South Road 13 Rural County 6.6 South Road 19 Bookton Lane Windham Road 14 Rural County 1.2 St. 208 County Road 19 Bookton Lane Windham Road 4 Rural County Road Project - Phase 1 - Road Rehab Rehab County Road Project - Phase 1 - Road Rehab Rehab County Road Project - Phase 1 - Road Rehab Rehab Rehab County Road Project - Phase 1 - Road Construction Rehab Reha	234			0 ;			•		\$6.851	φ3,081		County Road Project - Phase 2 - Road Renab  County Road Project - Phase 1 - Road Construction (Windham E 1/4 Line to Norfolk Street North)
Little Lake Road Windham Road 4 Windham Road 4 Windham Road 4 Windham West Quarter Line Road Rural  245 East Quarter Line Road Front Road North Walsingham South Walsingham Rural  252 Ist Concession Sideroad / Schaffer Leman Dam Side Road Species - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  259 Charlotteville Road 7 Charlotteville West Turkey Point Road Rural  260 Croton Avenue / Main Street  261 Dalton Road Imperial Street  262 Willow dale Cress/ Ivey Rose W/ Willow dale Cress/ Ivey Road Project - Phase 2 - Road Construction  263 County Road Project - Phase 2 - Road Construction  264 County Road Project - Phase 2 - Road Construction  265 County Road Project - Phase 2 - Road Construction  266 Corton Avenue (Main to South) - 2017 - \$210,000  276 Willow dale Cress/ Ivey Rose W/ Willow dale Cress/ Willow Road Project - Phase 2 - Road Construction  277 Thompson Drive / Mergl Drive Green Street West  280 Hawtrey Road / Norwich Townline County Boundary  280 Hawtrey Road / Norwich Townline  280 County Road / Norwich	235								\$6,601			County Road Project - Phase 1 - Road Construction (Windham Road 9 to 0.40km north of
East Quarter Line Road Front Road North Walsingham South Walsingham Rural County 8.7 \$8,737 \$10 County Road Project - Phase 1 - Road Rehab County Road Project - Phase 1 - Road Rehab County Road Project - Phase 1 - Road Rehab County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  Z59 Charlotteville Road 7 Charlotteville West Turkey Point Road Rural County 3.7 County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  Z50 Croton Avenue / Main Street Dalton Road Imperial Street Community County 0.9 \$1,409 Croton Avenue (Main to South) - 2017 - \$210,000 County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  Z70 Thompson Drive / Mergi Drive Greenock Street West Nelson Street West Nelson Street West Nelson Street West Nelson Street West Community County Road Project - Phase 2 - Road Rehab County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Construction  County Road Project - Phase 2 - Road Rehab (County Road Project - Phase 2 - Road Rehab)		·										,
1 st Concession Sideroad / Schaffer   Lehman Dam Side Road   Syerlay Sideroad   Rural   County   7.9   \$7,853    258 Fertilizer Road / Lynedoch Road   Yuell Road   Windham Road 13   Rural   County   3.5   \$3,455    259 Charlotteville Road 7   Charlotteville West   Turkey Point Road   Rural   County   3.7    260 Croton Avenue / Main Street   Dalton Road   Imperial Street   Community   County   0.9    270 Willow dale Cress/ Ivey Rose W/ Willow dale Cressent   Main Street West   Nelson Street West   Community    280 Hawtrey Road / Norwich Townline   County Boundary   Highway 59    281 St Concession Sideroad / Street   County   7.9    3.5 County   7.9   \$7,853    County Road Project - Phase 1 - Road Construction (1st Concession Road STR to south of County   0.9    3.5 County   3.5    County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)    County Road Project - Phase 2 - Road Construction    County Road Project - Phase 2 - Road Construction    County Road Project - Phase 2 - Road Construction    County Road Project - Phase 2 - Road Construction    County Road Project - Phase 1 - Road Construction    County Road Project - Phase 1 - Road Construction    County Road Project - Phase 1 - Road Construction    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2 - Road Rehab    County Road Project - Phase 2				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			•					,
Fertilizer Road / Lynedoch Road Yuell Road Windham Road 13 Rural County 3.5 County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  Croton Avenue (Main to South) - 2017 - \$210,000  Croton Avenue (Main to South) - 2017 - \$210,000  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 1 - Road Construction  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Rehab  County Road Project - Phase 2 - Road Rehab			<u> </u>	· ·								,
County Road 7 Charlotteville Road 7 Charlotteville West Turkey Point Road Rural County 3.7 County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Construction  County Road Project - Phase 2 - Road Rehab				• •					Ψ1,003	\$3,455		, ,
276 Willowdale Cres/ Ivey Rose W/ Willowdale Crescent Main Street Community 277 Thompson Drive / Mergl Drive Greenock Street West Nelson Street West County 280 Hawtrey Road / Norwich Townline County Boundary 278 Willowdale Cres/ Ivey Rose W/ Willowdale Crescent Main Street Community 280 County Road Project - Phase 2 - Road Construction 280 County Road Project - Phase 1 - Road Construction 280 County Road Project - Phase 1 - Road Construction 280 County Road Project - Phase 2 - Road Rehab 280 County Road Project - Phase 2 - Road Rehab	259	Charlotteville Road 7	Charlotteville West	Turkey Point Road	Rural		County	3.7				County Road Project - Phase 2 - Road Construction
Thompson Drive / Mergl Drive Greenock Street West Nelson Street West County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Construction  County Road Project - Phase 2 - Road Rehab				·					\$1,409	0.500		
280 Hawtrey Road / Norwich Townline County Boundary Highway 59 Community County Road Project - Phase 2 - Road Rehab		·							<b>\$257</b>	\$503		,
		·							<b>\$357</b>	\$1.813		,
y y y z z z z z z z z z z z z z z z z z		Byerlay Side Road	Talbot Street	Urban Limit	Community		County	0.6	\$970			

## Tab #4 - County Approved Projects August 2016

Segment ID	Segment / Street Name	То	From	Location	Phasing	Jurisdiction	Length (km)	Short Term Cost <sup>1</sup>	Medium Term Cost <sup>1</sup>	Long Term Cost <sup>1</sup>	Additional Comments
	SIGNED ROUTE WITH SHARROW			Line Type:				Unit Cost:	\$4,000		
121	Connaught Avenue	James Street	Northern Avenue	Community		County	0.3	\$1,170			County Road Project - Phase 1 - Road Rehab
131	Colborne Street South	Maple Street	Bonnie Drive	Community		County	0.1	\$328			Robinson Street to Windham Street - 2018 - \$2,140,000
135	Chapman Street West	St. George Street	St. Annie Street North	Community		County	0.9	\$3,687			County Road Project - Phase 1 - Road Construction (Silver Lake Bridge to Prospect Street)
138	Silver Lake Drive / Cockshutt Road	Dover Mills Road	Prospect Street	Rural		County	0.9	\$3,667			County Road Project - Phase 1 - Road Rehab and Construction

Previously Planned Capital Works Project

Future Planned Road Construction and / or Rehab Project1

#### Note:

1. Previously planned projects are based on the County's capital budget and desired roadway rehabilitations and / or construction. Projects have been organized by short, medium and long term phase based on timelines identified in the Norfolk TMP and ATMP (as part of the ISMP).

ψ5,007			County Road Froject Tric
Estimated Cost - Short Term	Estimated Cost - Medium Term	Estimated Cost - Long Term	Total Estimated Cost
\$5,277,413	\$6,868,937	\$ -	\$12,146,350
Estimated Distance - Short Term		Estimated Distance - Long Term	Total Distance (Km)
166.1	79.1	0	245.2

## Tab #5 - Short Term Projects August 2016

									Ne	twork Objecti			
ID Segment / Street Name	То	From	Location	Jurisdiction	Length (km)	Segment Cost	M CEA Schedule	Signed Route	Bike Lane	Regional Route Gap	Erie Boulevard & Longpoint Causeway	Paved Shoulder	Additional Comments
	BIKE LANE	ES .	<u>'</u>	Line Type			Unit Cost:	\$7,500			Janes a ,		
9 Church Street West	Queen Street	James Street	Community	County	0.24	\$1,784							
<ul><li>13 Washington Street</li><li>16 Donly Drive North</li></ul>	Brown Street West Queensway East	Thompson Road West Lynndale Road	Community Community	County County	0.31 0.72	\$2,340 \$5,379			<b>√</b>				Green Street to Thompson Road West - 2023 - \$1,245,000  County Road Project - Phase 1 - Road Construction
To Bonny Brive North	BUFFERED PAVED S	, ,	Community	Line Type	0.72	ψο,οιο	Unit Cost:	\$150,000	8 <u> </u>		8 8000000000000000000000000000000000000		County reduction reduction
24 Turkey Point Road	Vittoria Road	Charlotteville Road 1	Rural	County	4.00	\$600,657		Ψ130,000				<b>✓</b>	
21 Tarkey Forne Road	SIGNED ROUTE WITH		raidi	Line Type	1.00	ψοσο,σοτ	Unit Cost:	\$4,000					
27 South Drive	Queen Street South	Talbot Street South	Community	County	0.33	\$1,306		<b>↓</b>					County Road Project - Phase 1 - Road Rehab
28 Talbot Street	Maple Street	South Drive	Community	County	1.22	\$4,892	N/A	· ✓					Robinson Street to Maple Street - 2019 -\$1,380,000
29 Queen Street	King Street	William Street	Community	County	0.55	\$2,187		<b>√</b>					County Road Project - Phase 1 - Road Construction
31 South Drive 32 Queen Street	Oak Street King Street	Queen Street South William Street	Community Community	County County	0.52 0.07	\$2,064 \$266		<b>✓</b>					John Street to Queen Street - 2017 - \$1,130,000  County Road Project - Phase 1 - Road Construction
	PAVED SHOU		1	Line Type		, , , , , , , , , , , , , , , , , , ,	Unit Cost:	\$110,000	000000000000000000000000000000000000000		00 00000000000000000000000000000000000		
48 Cockshutt Road	Thompson Road East	Concession 2 Woodhouse	Rural	County	9.64	\$1,060,406		<b>V</b> ,					County Road Project - Phase 1 - Road Rehab and Construction
50 Ireland Road	Victoria Street	Concession 5 Woodhouse	Rural	County	1.40	\$153,491	A+					✓	County Road Project - Phase 1 - Road Rehab
60 Lakeshore Road 61 Front Road	Highway 59 East Quarter Line Road	West Quarter Line Road Townline Street	Rural Rural	County County	4.88 4.49	\$536,451 \$494,169				<u>√</u>		<b>√</b>	Signed Route in short term. Paved shoulder in long term.
62 Lakeshore Road	Gore Road	West Quarter Line Road	Rural	County	3.78	\$416,328				<u> </u>		<b>V</b> ✓	Signed Route in short term. Paved shoulder in long term.
65 Brantford Road	Church Street East	Windham Centre Road	Rural	County	6.26	\$688,110	A+			,			County Road Project - Phase 1 - Road Rehab
70 Windham Road 20 72 Radical Road	Hawtrey Road Port Ryers Road	Norwich Road  Regent Street	Rural Rural	County County	0.96 4.79	\$105,615 \$526,880				<u>√</u>		<b>√</b>	
77 Colonel Talbot Road	Highway 59	Orange Hall Road	Rural	County	9.49	\$1,043,484				<u> </u>		<b>▼</b>	County Road Project - Phase 1 - Road Rehab
84 Vittoria Road / Radical Road	Hillcrest Road South	Port Ryere Road	Rural	County	2.50	\$275,458	-					✓	
88 North Walsingham South Walsingham Townline Ro	Dancey Side Road  Dancey Side Road	East Quarter Line Road  Turkey Point Road	Rural Rural	County County	0.78 8.91	\$85,313 \$979,847				<b>√</b>		<b>√</b>	
286 County Road 24	Turkey Point Road	Simcoe Town Limit (Decou Road)	Rural	County	14.78	\$1,625,822				· · · · · · · · · · · · · · · · · · ·		<b>✓</b>	Road Resurfacing project scheduled in 2019
209 Park Road	Existing Off-Road Multi-	Windham Street	Rural	County	0.96	\$105,291	N/A	✓					County Road Projects - Phase 1 - Road Rehab (14th Street West
162 Blue Line Road	Use Trail Concession 10	Concession 13 Townsend	Rural	County	4.13	\$453,855	N/A	<b>✓</b>					to CN Railway - Simcoe)  County Road Project - Phase 1 - Road Construction
	SIGNED ROL			Line Type			Unit Cost:	\$1,000	\$1,500				
103 Old Mill Road / Hillside Avenue / Big Creek Drive	William Street	Existing Off Road Trail	Community	County	0.35	\$532		<b>4</b> .,555	<b>4.,000</b>				County Road Project - Phase 1 - Road Construction
107 Wolven Street	Bay Street	East Quarter Line Road	Community	County	1.44	\$2,162	N/A	✓		✓			
108 New Lakeshore Road	John Street Hillcrest Road	County Boundary Oak Street	Rural	County	4.10 1.34	\$4,095		<b>√</b>		✓			County Dood Project Phase 1 Dood Construction
112 Evergreen Hill Road 114 William Street	Old Mill Road	Main Street of Delhi	Rural Community	County County	0.85	\$1,339 \$1,277		<b>▼</b>					County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Construction
119 New Lakeshore Road	John Street	County Boundary	Community	County	1.85	\$2,770	N/A	✓		✓			
139 East Quarter Line Road  140 East Quarter Line Road	Middleton North County Road 21	County Road 21 Walsingham Townline Road	Rural Rural	County County	1.89 9.86	\$1,895 \$9,858		<b>√</b>					County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Construction
143 Concession 13 Townsend	Culver Road	Cockshutt Road	Rural	County	4.23	\$4,231		<b>→</b>					County Noau Floject - Fliase 1 - Noau Construction
144 Robinson Street	Elgin Avenue	Talbot Street North	Community	County	0.49	\$739		<b>√</b>					County Road Project - Phase 1 - Road Construction
145 Nichol Street  146 Brown Street / Montclair Crescent	Washington Street Washington Street	Road Terminus at west  Duncombe Street	Community Community	County County	0.65 1.17	\$971 \$1,758	N/A N/A	<b>✓</b>					County Road Project - Phase 1 - Road Construction  Main Street to Washington Street - 2020 - \$1,215,000
150 Mall Road / Schaeffer Road	County Boundary	Lehman Dam Side Road	Rural	County	5.48	\$5,477		✓					County Road Project - Phase 1 - Road Construction (1st
154 County Road 19 West 156 Oak Street	Windham Road 19	Bookton Lane	Rural	County	1.85	\$1,848		<b>√</b>					County Road Project - Phase 1 - Road Rehab
150 Oak Street 157 Charlotteville Road 1	South Drive Charlotteville West	Evergreen Hill Road  Turkey Point Road	Community Rural	County County	0.60 3.71	\$896 \$3,709		<b>✓</b>		✓			
164 County Road 23	Colonel Talbot Road	Barth Side Road	Rural	County	8.28	\$8,283	N/A	✓					County Road Project - Phase 1 - Road Construction
167 Windham Road 13 173 Windham Road 3 / Concession 3 Townsend	Windham West Quarter Windham West Quarter	Windham East Quarter Line Road	Rural Rural	County County	7.28 18.93	\$7,282 \$18,928	N/A N/A	<b>√</b>					County Road Project - Phase 1 - Road Construction (Nixon Road County Road Project - Phase 1 - Road Construction
174 Port Ryers Road / Front Road	Chillan Road	Radical Road	Rural	County	3.75	\$3,754		<b>→</b>		✓			County Road Project - Phase 1 - Road Construction
178 Fairground Rod	North Road	6th Concession Road	Rural	County	8.26	\$8,258		✓		✓			
183 East Street  184 Main Street of Delhi	William Street William Street	Imperial Street Imperial Street	Community Community	County County	0.33 0.38	\$490 \$571	N/A N/A	<b>✓</b>					Ann Street to William Street - 2019 - \$470,000
186 William Street	Main Street of Delhi	James Street	Community	County	0.72	\$1,081	N/A	✓					
187 Connaught Avenue/ Callens Avenue	Northern Avenue	Church Street East	Community	County	1.02	\$1,531		<b>√</b>					County Dood Drainst Dhood A Dood Construction
<ul><li>193 Byerlay Side Road</li><li>196 Front Road</li></ul>	Community Limit Dedrick Road	Middleton North Walsingham Townline Road Wolven Street	Rural Community	County County	6.47 1.40	\$6,466 \$2,093		<b>▼</b>		✓			County Road Project - Phase 1 - Road Construction
200 St. Patrick Street / Bridge Alley	Existing Off-Road Multi-	Clinton Street	Community	County	0.78	\$1,175	N/A	✓					
204 Nichol Street 207 West Church / East Church Street	St. James Street South  Main Street South	Main Street South  Duncombe Road	Community Community	County County	0.28 0.45	\$420 \$668		<b>√</b>					St. James Street South to Auty Street - 2017 - \$550,000  County Road Project - Phase 1 - Road Construction
208 Nichol Street	Washington Street	St. James Street South	Community	County	0.43	\$324		<b>✓</b>					County Road Floject - Fliase 1 - Road Construction
210 Foster / Beckett / Sunset / Dora	Charles Street	Holden Avenue	Community	County	1.74	\$2,610		✓					Dora Drive (Holden to Calvert) - 2019 - \$730,000
212 Union Street 213 Elgin Avenue	Elgin Avenue Union Street	Norfolk Street South Robinson Street	Community Community	County County	0.79 0.32	\$1,178 \$477		<b>✓</b>					County Road Project - Phase 1 - Road Rehab  County Road Project - Phase 1 - Road Construction
215 Wilson Drive / Lynndale Road	Argyle Street	Donly Drive North	Community	County	0.76	\$1,135		<b>√</b>					County Road Project - Phase 1 - Road Rehab (Argyle Street to
216 Wilson Drive / Lynndale Road	Hendry Street	Argyle Street	Community	County	0.28	\$425 \$1,026		<b>√</b>					County Road Projects - Phase 1 - Road Construction (East 1/4
217   Ireland Road	Lynndale Road	Concession 6 Woodhouse	Community	County	0.68	\$1,026 		<b>*</b>	64 500				County Road Project - Phase 1 - Road Rehab
222 Parklay Crassant	SIGNED ROUTE -		Comment	Line Type	4.00	04.004	Unit Cost:	\$1,000	\$1,500				County Dood Project Phase 4 Dood Palist
222 Barkley Crescent 224 Davis Street West / North Court	Sheridan Boulevard Existing Off-Road Multi-	Donly Drive South  Existing Off-Road Multi-Use Trail	Community Community	County County	1.26 0.46	\$1,894 \$691	N/A N/A	<b>✓</b>		✓			County Road Project - Phase 1 - Road Rehab
227 Steiner Road	Windham Road 3	Windham Road 5	Rural	County	2.93	\$2,930	N/A	✓		-			County Road Project - Phase 1 - Road Construction
228 Teeterville Road	Windham Road 5 Windham Road 6	Windham Road 6 Windham Centre Road	Rural	County	1.74 2.95	\$1,736 \$2,047		<b>√</b>					County Road Project - Phase 1 - Road Construction  County Road Project - Phase 1 - Road Rehab
<ul><li>229 Teeterville Road</li><li>233 Concession 13 Townsend</li></ul>	Cockshutt Road	County Boundary	Rural Rural	County County	2.95 5.55	\$2,947 \$5,552		<b>∨</b> ✓					County Road Floject - Phase T - Road Renab
234 13th Street East / Concession 13 Townsend	Windham East Quarter	Culver Road	Rural	County	6.85	\$6,851	N/A	✓					County Road Project - Phase 1 - Road Construction (Windham E
<ul><li>235 Windham East Quarter Line Road</li><li>238 County Road 19</li></ul>	Abandoned Rail Corridor Bookton Lane	Windham Road 13 Windham Road 4	Rural Rural	County County	6.60 1.21	\$6,601 \$1,208		<i>J</i>					County Road Project - Phase 1 - Road Construction (Windham County Road Project - Phase 1 - Road Rehab
200 Oounty Noau 18	POOKIOH FAIR	vviiiuliaiii Nuau 4	Nuidi	Louinty	1.21	\$1,208	IN/A	· •			1		Obumy Noau Froject - Fridse I - Kudu Keridu

## Tab #5 - Short Term Projects August 2016

									Netw	vork Objectiv	/es		
ID Segment / Street Name	То	From	Location	Jurisdiction	Length (km)	Segment Cost	M CEA Schedule	Signed Route	Riko Lano	Regional Route Gap	Erie Boulevard & Longpoint Causeway	Paved Shoulder	Additional Comments
239 Little Lake Road	Windham Road 4	Windham West Quarter Line Road	Rural	County	1.09	\$1,089	N/A	✓					County Road Project - Phase 1 - Road Construction
245 East Quarter Line Road	Front Road	North Walsingham South Walsingham Townline Road	Rural	County	8.74	\$8,737	N/A	✓					County Road Project - Phase 1 - Road Rehab
246 Front Road	Old Dump Road	Fairground Road	Rural	County	0.76	\$759	N/A	✓		✓			
248 Old Dump Road	Elgin County Road 55	North Road	Rural	County	1.34	\$1,341	N/A	✓		✓			
249 Elgin County Road 55	Old Dump Road	Lakeshore Road	Rural	County	4.03	\$4,033	N/A	✓		✓			
252 1st Concession Sideroad / Schaffer Side Road	Lehman Dam Side Road	d Byerlay Sideroad	Rural	County	7.85	\$7,853	N/A	✓					County Road Project - Phase 1 - Road Construction (1st
253 3rd Concession Road	Highway 59	Norfolk County Road 23	Rural	County	7.32	\$7,321	N/A	✓		✓			
254 3rd Concession Road	Highway 59	Charlotteville West Quarter Line Road	Rural	County	11.03	\$11,028	N/A	✓		✓			
260 Cultus Road / 6th Concession Road	County Road 23	Fairground Road	Rural	County	2.16	\$2,155	N/A	✓		✓			
261 Lakeshore Road	Elgin County Road 55	Norfolk County Road 28	Rural	County	5.42	\$5,417	N/A						
262 Front Road	Townline Street	Dancey Side Road	Rural	County	1.12	\$1,116	N/A	✓		✓			
263 Front Road	Fisher's Glen Road	Mole Side Road	Rural	County	3.69	\$3,690	N/A	✓		✓			
264 Front Road	Fisher's Glen Road	Chillan Road	Rural	County	3.49	\$3,490	N/A	✓		✓			
266 Croton Avenue / Main Street	Dalton Road	Imperial Street	Community	County	0.94	\$1,409	N/A	✓					Croton Avenue (Main to South) - 2017 - \$210,000
277 Thompson Drive / Mergl Drive	Greenock Street West	Nelson Street West	Community	County	0.24	\$357	N/A	✓					County Road Project - Phase 1 - Road Construction
281 Byerlay Side Road	Talbot Street	Community Limit	Community	County	0.65	\$970	N/A	✓					County Road Project - Phase 1 - Road Construction (Highway 3
284 County Road 23	1st Concession Road	North Walsingham South Walsingham Townline Road	Rural	County	2.14	\$2,137	N/A	✓		✓			
285 Villa Nova Road	Concession 2 Townsen	d Concession 13 Townsend	Rural	County	15.1	\$15,106	N/A						
	SIGNED ROUTE WITI			Line Type			Unit Cost:	\$4,000					
121 Connaught Avenue	James Street	Northern Avenue	Community	County	0.29	\$1,170	N/A	<b>✓</b>					County Road Project - Phase 1 - Road Rehab
122 Church Street East	Delcrest Avenue	Brantford Road	Rural	County	1.09	\$4,379	N/A	✓		✓			
126 Walker Street / Hamilton Plan Road	John Street	St. Patrick Street	Rural	MTO	0.36	\$1,435	N/A	✓		✓			
127 Main Street South	Nichol Street	East Church Street	Community	County	0.23	\$936	N/A						
131 Colborne Street South	Maple Street	Bonnie Drive	Community	County	0.08	\$328	N/A						Robinson Street to Windham Street - 2018 - \$2,140,000
135 Chapman Street West	St. George Street	St. Annie Street North	Community	County	0.92	\$3,687	N/A						County Road Project - Phase 1 - Road Construction (Silver Lake
138 Silver Lake Drive / Cockshutt Road	Dover Mills Road	Prospect Street	Rural	County	0.92	\$3,667	N/A						County Road Project - Phase 1 - Road Rehab and Construction

#### Legend





Future Planned Road Construction and / or Rehab Project<sup>1</sup>

- 1. Future planned Road Construaction and / or Rehab projects were identified based on input provided in the County's Roads Database. A unit cost has been used to reflect a conservative cost for improvements. However, should the link be identified in a future capital works plan economies of scale may be achieved.
- 2. Cost estimates for the capital projects have been developed based on unit costs which reflect AT improvements such as route signage or pavement markings. It has been assumed that the construction costs have already been considered and addressed through the County's budgetary process.

0.02	φο,σο.
0.92	\$3,667
Total Estimated	Total Estimated Cost
Distance (Km)	(\$)
299.2	\$9,407,150
Estimated Cost for	\$16,311
Capital Projects <sup>2</sup>	\$10,311
Estimated Cost for Future Planned Projects	5,261,102
Estimated Cost for Strategic Linkages	4,129,737

Tab #6 - Medium Term Projects
August 2016

ID Segment / Street Name	То	From	Location	Jurisdiction	Length (km)	Segment Cost	M CEA Schedule	Additional Comments
	BIKE LANES			Line Type:			Unit Cost:	\$7,500
1 Queen Street North / South	Maple Street	South Drive	Community	County	1.20	\$8,976	А	County Road Project - Phase 2 - Road Rehab
4 Victoria Street	Norfolk Street South	Ireland Road	Community	County	1.80	\$13,522		County Road Project - Phase 2 - Road Rehab
5 Donly Drive South	Victoria Street	Woodway Trail	Community	County	0.91	\$6,844	А	County Road Project - Phase 2 - Road Rehab (Victoria Street to Boswell Street)
8 Church Street East	James Street	Delcrest Avenue	Community	County	0.56	\$4,183	А	James Street to Delcrest Avenue - 2023 - \$1,505,000
17 Donly Drive South	Lynndale Road	Victoria Street	Community	County	0.71	\$5,292	Α	County Road Project - Phase 2 - Road Rehab
	<b>BUFFERED PAVED SHOULDE</b>	R		Line Type:			Unit Cost:	\$150,000
20 Highway 59	3rd Concession Road	Norfolk County Road 60	Rural	County	3.40	\$510,490	A+	
	Highway 24	Concession 12 Townsend	Rural	County	1.73	\$258,837	A+	County Road Project - Phase 2 - Road Rehab
25 Highway 59	6th Concession Road	Middleton North Walsingham Townline	Rural	County	12.56	\$1,883,708	A+	County Road Project - Phase 2 - Road Rehab (Highway 59 to 0.2km north of
26 Main Street Walsingham	480m north of Concession Street	710m south of Concession Street	Rural	County	1.19	\$178,340	A+	
	IN-BOULEVARD MULTI-USE TR	RAIL		Line Type:			Unit Cost:	\$250,000
38 Thompson Road East Main Street		Duncombe Road	Rural	County	0.51	\$127,226	Α	
PAVED SHOULDE				Line Type:				\$110,000
49 Thompson Road East	Duncombe Road	Cockshutt Road	Rural	County	2.86	\$314,750	A+	County Road Project - Phase 2 - Road Rehab
<u> </u>	Rhineland Road	East Quarter Line Road	Rural	County	3.34	\$367,808	A+	
54 Charlotteville West Quarter Line Road	Lynedoch Road	Charlotteville Road 10	Rural	County	2.55	\$280,036	A+	County Road Project - Phase 2 - Road Rehab
	Charlotteville West Quarter Line Road		Rural	County	1.91	\$210,093	A+	County Road Project - Phase 2 - Road Rehab
	,	Charlotteville West Quarter Line Road	Rural	County	26.76	\$2,943,636	A+	County Road Project - Phase 2 - Road Rehab (Norfolk County Road 23 to
		Swimming Pool Road	Rural	County	1.00	\$110,526	A+	County Road Project - Phase 2 - Road Construction
85 Lakeshore Road	7th Concession Road	Gore Road	Rural	County	3.98	\$437,573	A+	
86 Lakeshore Road	County Road 28	7th Concession Road	Rural	County	5.65	\$621,400	A+	
90 Thompson Road West	<u> </u>	Main Street South	Rural	County	0.97	\$106,292	A+	
91 Rhineland Road		Middleton North Walsingham Townline	Rural	County	2.99	\$329,207	A+	
94 Turkey Point Road	Charlotteville Road 1	Cedar Drive	Rural	County	2.88	\$317,180	A+	
95 Charlotteville Road 7	Turkey Point Road	Hillcrest Road	Rural	County	7.36	\$809,152	A+	County Road Project - Phase 2 - Road Construction (Charlotteville Road 7 to
99 Middleton North Walsingham Townline Road	Highway 59	Byerlay Side Road	Rural	County	2.90	\$319,067	A+	
	SIGNED ROUTE			Line Type:			Unit Cost:	\$1,000
	Fertilizer Road	Windham West Quarter Line Road	Rural	County	1.80	\$1,795	N/A	
	County Boundary	Windham Road 20	Rural	County	2.12	\$2,122	N/A	County Road Project - Phase 2 - Road Construction
	Queen Street	Talbot Street	Community	County	0.38	\$577		County Road Project - Phase 2 - Road Construction
190 Queen Street		King Crescent	Community	County	0.36	\$545	N/A	County Road Project - Phase 2 - Road Construction
		Silver Lake Road	Community	County	2.02	\$3,028	N/A	County Road Project - Phase 2 - Road Construction
	East Church Street	Thompson Road East	Community	County	0.74	\$1,112	N/A	
231 Windham Road 12		Highway 24	Rural	County	3.68	\$3,681	N/A	County Road Project - Phase 2 - Road Rehab
	Norfolk County Road 45	10th Concession Road	Rural	County	2.42	\$2,421	N/A	
		Charlotteville Road 7	Rural	County	4.21	\$4,206	N/A	County Bood Project   Dhoop 2   Bood Bobok (Highway 2 to Vital Bood)
258 Fertilizer Road / Lynedoch Road	Yuell Road Charletteville West Quarter Line Road	Windham Road 13	Rural	County	3.45	\$3,455 \$3,659		County Road Project - Phase 2 - Road Rehab (Highway 3 to Yuell Road)
	Charlotteville West Quarter Line Road	,	Rural Rural	County	3.66 1.47	\$3,658 \$1,465	N/A	County Road Project - Phase 2 - Road Construction
265 Cedar Drive 276 Willow dale Cres/ Ivey Rose W/ Cardinal Ln			Community	County County	0.34	\$1,465 \$503	N/A N/A	County Road Project - Phase 2 - Road Construction
			Community	County	1.21	\$1,813		County Road Project - Phase 2 - Road Construction
200   Hawtiey Noau / Notwich Townline Road	County Boundary	Highway 59	Community	County	1.41	φ1,013	IN/A	Outrity Noau i Toject - i Hase 2 - Noau Nellau

#### Legend



Previously Planned Capital Works Project



Future Planned Road Construction and / or Rehab Project<sup>1</sup>

#### Note

1. Future planned Road Construaction and / or Rehab projects were identified based on input provided in the County's Roads Database. A unit cost has been used to reflect a conservative cost for improvements. However, should the link be identified in a future capital works plan economies of scale may be achieved.

scale may be achieved.

2. Cost estimates for the capital projects have been developed based on unit costs which reflect AT improvements such as route signage or pavement markings. It has been assumed that the construction costs have already been considered and addressed through the County's budgetary process.

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Estimated Distance of MT Routes	Total Estimated Cost
117.6	\$10,194,519
Estimated Cost for Capital Projects <sup>2</sup>	\$4,183
Estimated Cost for Future Planned Projects	\$6,864,754
Estimated Cost for Strategic Linkages	\$3,325,582

### Tab #7 - Network Enhancements August 2016

Symbol	Network Enhancement	Proposed Design Application	Phase	Segment Description	Location	Р	roposed Cost
	Enhanced Railway Crossing	consideration for s. 5.7 (OTM Book 18)		East Street crossing at railway	Delhi (Map 4c)	\$	120,000
RC	Enhanced Railway Crossing	consideration for s. 5.7 (OTM Book 18)		Main Street crossing at railway	Delhi (Map 4c)	\$	120,000
CE	Proposed Crossing Enhancement	consideration for s. 5.8 (OTM Book 18)		Decou Road at existing off-road trail	Simcoe (Map 4b)	\$	80,000
	Proposed Crossing Enhancement	consideration for s. 5.8 (OTM Book 18)		Union Street at Norfolk Street North	Simcoe (Map 4b)	\$	80,000
EPC	Proposed Pedestrian Access	Bicycle Gutter up stairs		St. Patrick Street to Walker Street	Port Dover (Map 4b)	\$	80,000
	Proposed Pedestrian Crossing	Implementation of an IPS		Main Street South at East Church Street	Waterford (Map 4b)	\$	80,000
PPC	Proposed Pedestrian Crossing	Implementation of an IPS		Evergreen Hill Road at Oak Street	Simcoe (Map 4b)	\$	80,000
	Proposed Pedestrian Crossing	Implementation of an IPS		James Street at Williams Street	Delhi (Map 4c)	\$	80,000
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Front Road south of Wolven Street	Port Rowan (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Front Road south of Dock Street	Port Rowan (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Chapman Street West at Lynn Street	Port Dover (Map 4b)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		William Street south of Old Mill Road (north side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		William Street south of Old Mill Road (south side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		William Street west of Main Street (north side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		William Street west of Main Street (south side)	Delhi (Map 4c)	\$	250
STR	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Old Mill Road north of William Street (south side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Old Mill Road north of William Street (north side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Old Mill Road west of William Street (north side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Old Mill Road west of William Street (south side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Wolven Street east of Grave Street (north side)	Port Dover (Map 4b)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Wolven Street east of Grave Street (north side)	Port Dover (Map 4b)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Teeterville Road north of Ellington Lane (east side)	County wide (Map 4a)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Teeterville Road north of Ellington Lane (west side)	County wide (Map 4a)	\$	250
	Proposed Share the Road Signage	Sigarige every 400 - 600m (Orban), 500m (Nurai)		Windham Road 13 east of Windham West Quarter Line Road	County wide (Map 4a)	\$	250
PS	Proposed Sharrow Marking	Pavement markings every 75m		Argyle Street at Norfolk Street South	Simcoe (Map 4b)	\$	250
	Proposed Trailhead	Trail Amenities at key locations		Big Creek Drive at existing off road trail	Delhi (Map 4c)	\$	7,000
	Proposed Trailhead	Trail Amenities at key locations		Thompson Road West / East at existing off road trail	Waterford (Map 4b)	\$	7,000
	Proposed Trailhead	Trail Amenities at key locations		Concession 8 Townsend at existing off road trail	Waterford (Map 4b)	\$	7,000

#### Tab #7 - Network Enhancements August 2016

Symbol	Network Enhancement	Proposed Design Application	Phase	Segment Description	Location	Proposed Cost	
WS	Proposed Wayfinding Signage	Direcational signage		Davis Street West / North Court	Simcoe (Map 4b)	\$	500
STR	Proposed Crossing Enhancement	consideration for s. 5.8 (OTM Book 18)		Highway 6 at Somerset Drive	Port Dover (Map 4b)	\$	80,000
	Proposed Crossing Enhancement	consideration for s. 5.8 (OTM Book 18)		Wilson Drive at North Street North	Simcoe (Map 4b)	\$	80,000
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Tisdale Side Road north of Norwood Road	Delhi (Map 4c)	\$	250
		Sigange every 400 - 800m (Urban), 500m (Rural)		Tisdale Side Road south of Norwood Road	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Swimming Pool Road south of Windham Road 11 (west side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Swimming Pool Road south of Windham Road 11 (east side)	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Swimming Pool Road north of Talbot Road	Delhi (Map 4c)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Cockshutt Road south of Norfolk County Road 19 East	County wide (Map 4a)	\$	250
	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Cockshutt Road north of Norfolk County Road 19 East	County wide (Map 4a)	\$	250
PS	Proposed Sharrow Marking	Pavement markings every 75m		Victoria Street at Norfolk Street South	Simcoe (Map 4b)	\$	250
•	Proposed Trailhead	Trail Amenities at key locations		Western Avenue at existing off road trail	Delhi (Map 4c)	\$	7,000
RC	Enhanced Railway Crossing	consideration for s. 5.7 (OTM Book 18)		James Street crossing at railway	Delhi (Map 4c)	\$	120,000
PS	Proposed Sharrow Marking	Pavement markings every 75m		Talbot Road at Highway 59 / Big Creek Drive	Delhi (Map 4c)	\$	250
<b>G</b> E	Proposed Crossing Enhancement	consideration for s. 5.8 (OTM Book 18)		Proposed off road trail at Decou Road	Simcoe (Map 4b)	\$	80,000
	Proposed Crossing Enhancement	consideration for s. 5.8 (OTM Book 18)		Queensway East at Donly Drive	Simcoe (Map 4b)	\$	80,000
STR	Proposed Share the Road Signage	Sigange every 400 - 800m (Urban), 500m (Rural)		Decou Road west of existing off road trail	Simcoe (Map 4b)	\$	250
	Proposed Trailhead	Trail Amenities at key locations		Proposed off road trail along abandoned rail corridor	Simcoe (Map 4b)	\$	7,000
<b>U</b>	Proposed Trailhead	Trail Amenities at key locations		Proposed off road trail along abandoned rail corridor	Simcoe (Map 4b)	\$	7,000