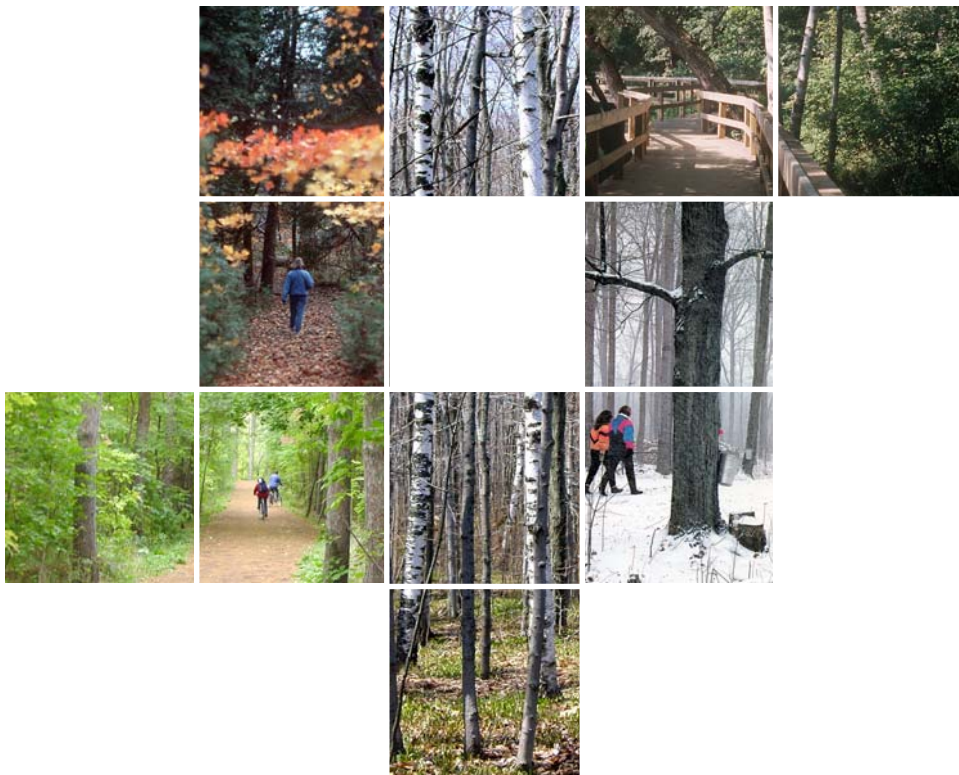


TOWN OF

BRADFORD WEST GWILLIMBURY

Trails System

MASTER PLAN



JANUARY 2010

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1.0 INTRODUCTION

1.1 Purpose of the Study

The Town of Bradford West Gwillimbury commissioned this Trails Master Plan Study to define the existing pedestrian and cycling trail inventory and guide future recreational trail development in the Town. In advance of the study, to accelerate the Town’s trail development and to encourage the use of alternative transportation, the Council appointed a Trails Committee, comprised of members of Council and stakeholders in the community.

The Trails Master Plan has been developed with the objectives of: linking to external trail networks; improving access to trails; improving connectivity throughout the Town; encouraging alternative transportation; enhancing recreational and health benefits; and promoting awareness and use of existing trails. The goal of the Trails Master Plan is to create a document that addresses route planning; trail standards; and the development of a phasing and priorities.



The Town of Bradford West Gwillimbury has a series of well developed urban trails but lacks a comprehensive system, as some of the trails are isolated from each other. There is potential to provide opportunities for residents and visitors to become more physically active by providing a trails network that will connect all parts of the municipality and link to the external trail systems. Although the Town is recognized for its agricultural land, it is fast becoming an urban center with accelerated growth into the future. By providing trails linkages to the downtown and throughout new developing areas, the Town can ensure that it has the proper trails infrastructure to support sustainable growth in the future.

1.2 Study Process

The study was conducted as a two-phase process, commencing in February 2009, and concluding in September 2009. The consultant team worked with staff and the Trails Committee to prepare the overarching strategy and proposed Trails Master Plan. The consultant team is grateful for the assistance and commitment that the members of the Committee provided throughout the process.

Trail Committee Members

- Mark Contois – Town of Bradford West Gwillimbury Councillor
- Thomas Graham – Town of Bradford West Gwillimbury, Director of Leisure Services
- Lorri Jackson – Volunteer
- Brian Kemp – Lake Simcoe Regional Conservation Authority, Director of Conservation Lands

Craig McLaughlin – Volunteer and Trail Committee Chair
Anita Snow – Volunteer
Nicholas Warman – Town of Bradford West Gwillimbury, Recreation Manager
Michael O’Hare – Town of Bradford West Gwillimbury, Manager of Facilities, Parks, and Cemeteries
Gerry Guay – Volunteer

Consultant Team Members

Eha Naylor – Project Director
Andrew Tenyenhuis – Project Manager
Jay Leasa – GIS Mapping
Danielle Davis – Research and Document Preparation

Key tasks of the study process are outlined below:

PHASE 1: Inventory and Analysis

Project start-up meeting – Committee meeting
Identification and review of background information
Trends and benefits assessment
Public consultation – Stakeholder workshop
Inventory and analysis mapping
Review meeting – Committee meeting

PHASE 2: Preparation of Trails Master Plan

Preparation of trails concept plan
Development of preliminary guidelines and standards
Review meeting – Committee meeting
Development of implementation strategy
Preparation of draft master plan
Review meeting – Committee meeting
Presentation at trails awareness events
Trails Master Plan Report

1.3 Community and Holland Marsh Historic Background

One of the best recognized features in Bradford West Gwillimbury is the Holland Marsh. It is important because it has had a significant economic impact on the development of the Town, and it is important to this study because it also presents an opportunity to advance inter-regional trail use and to become a more significant recreational and tourism resource expanding economic opportunities for the community. A brief historic summary is presented in the following.

Located in the floodlands of the Holland River, the Holland Marsh stretches across 16,000 acres from Lake Simcoe to just northeast of Schomberg. The portion north of Bradford and Highway 11 covers 7,800 acres, and the portion southwest of Bradford covers the remaining 8,200 acres. The drainage scheme implemented in the 1920’s transformed the area of originally low land value into a thriving market garden.

Like the rest of Canada, the Holland River Valley was formed by the glaciers, shaping the land into the Marsh that has led to this region's agricultural success. In turn, the valley became a dry bed and fostered deciduous forest growth. When the earth's crust rebounded as the weight of the glacier was removed, it caused the water to flow south, triggering a flood of the forested valley. With the flooding came a series of other factors that broke down the vegetation: bacteria, enzymes, insects, fungus, chemical reactions, and physical forces such as winds, freezes and thaws. The vegetation rotted and became the foundation of the first layer of organic soil in the area formed 4000 years ago.

Evidence of early hardwood species was uncovered during an examination of soil at Keswick Marsh (part of the Holland Marsh) during the late 1980s. A layer of muck soil formed from the deciduous growth lies beneath the peat that accumulated from the grassy growth that occurred later. Muck soil is a finer, more fully decomposed soil, while peat is coarser and may contain leaves and twigs. Both can hold three to four times their dry weight in water; this quality is what enables the valley to be a saturated marshland. Furthermore, the Holland River has only seven feet of fall from Schomberg to Lake Simcoe so it was virtually stagnant. In dry periods, this ample supply was a useful reservoir.

Studies suggest that the earliest human presence in the area was that of the Paleo-Indian people circa 11 000 B.C. to 7000 B.C. The first established populations settled around Bradford in 4000 B.C., encouraged by the abundance of fish and fowl in a considerably hospitable environment with a strategic transportation corridor along the waterways. The Holland River was part of a popular fur trading route that became known as the "Toronto Carrying Place Trail," used by Native peoples and Europeans alike in the 17th and 18th Centuries, connecting the Upper Great Lakes to Lake Ontario.

The trail had its head in Toronto and then forked into two paths; one winding up the Humber river to Woodbridge, then going North through the Oak Ridges Moraine reaching the Western Holland river; and the other going up through the Rouge River to the Oakridges Moraine reaching the Eastern Holland River at a point that is now the city of Aurora. The two branches then merged, continuing to Lake Simcoe to become one of the busiest fur trading routes. It also helped to build Native-European relationships while opening up the large portion of Southern Ontario surrounding the trail, including the Holland Marsh, for European settlement. In 1793, the British Lieutenant Governor, John Graves Simcoe, decided to abandon the trail, deemed not tactical for defense against possible American invaders, and replace it with Yonge Street, a straight road that would extend in a line from Lake Ontario at Toronto, to Lake Simcoe, to establish the longest road in the world. With a more formalized road in place, development of the lands surrounding Yonge Street flourished as floods of Loyalists came from the United States after the War of Independence, founding a series of towns and creating the agricultural base which made it possible for Toronto to become an industrial, financial, and political center of Canada¹.

The first survey in the area was conducted in 1791 by Major Holland, Surveyor General of Canada and the namesake of the Marsh and River. The land was purchased from the Aborigines in 1818, and became the home of English, Scottish and Dutch loyalist farmers from the United States.

¹ Humber Watershed Task Force. 1997. Legacy: A Strategy for a Healthy Humber. Downsview, Ontario: Toronto and Region Conservation Authority.

The muck and peat soils of the area were recognized by Professor W. H. Day in the early 1900s for their virtues regarding vegetable farming: the land is level and therefore easy to work; the surface layer of black soil heats early in spring; the soil moves with the plant and does not restrict growth; rainwater, irrigation water, and fertilizer are stored and released when needed; and the soil does not turn to mud thereby avoiding mobility issues during planting and harvesting.



The Plaque marking the terminus of the original Carrying-Place Trail in the Holland Marsh (ENVision photo)

An advocate of on-farm drainage, Professor Day was the main visionary behind what became known as The Big Scheme – the draining of the Holland Marsh through the creation of a canal around its perimeter. Though he worked with other community figures including W. S. Fraser and W. D. Watson, Day alone saw the project through to its construction. The design created included three elements. The first was a 24 kilometer perimeter canal that would empty into the river below the reclaimed area. This idea was unique at the time as it used the existing river as the drainage ditch. The second element was the construction of a dam at the lower end of the reclaimed area, to prevent lake water from backing up the enclosed river bed. The last element was the introduction of pumps at the dam to bring the river water over the dam and into Lake Simcoe.

When the proposed design was rejected by the West Gwillimbury council, Day sought private investment to finance the project. In 1911, Day and Watson formed the 5-member Holland Marsh Syndicate to solicit funding from Toronto investors and other bigger players. Although the syndicate was first unsuccessful in securing investors, in 1916, Day was able to renegotiate the contracts to be extended, granting enough time to attract the interest of small investors to purchase plots. The First World War disrupted the process of drawing in outside investment, but Day was able to involve his personal network of friends and colleagues in the ownership of the marsh. The new group took the old name of The Holland Marsh Syndicate, owning sixty-one percent of the marshlands. This new Syndicate operated under the Municipal Drainage Act, allowing financing of the Scheme to be provided by loans from the municipality and paid back over time.

The labour involved in The Big Scheme went beyond the creation of the 24 kilometer canal: nearly 765 000 cubic meters of muck and clay were to be moved; one hundred and eighty acres of bush and scrub trees to

be cleared; and the construction of three dams and a pumping station capable of moving 180 000 liters of water per minute. The cost estimate provided by Baird was \$130 770.00, though the final tally increased to \$197 000 divided amongst the three townships. However, the Ontario government was able to subsidize the cost by providing a twenty percent grant under the Municipal Drainage Act.

Construction began in September 1925 with the first dredge initiating excavation of the northern canal on the banks of the Holland River at Bradford. The canal and embankment plans were designed to have no excess earth moved away from the site; the excavated material would be deposited on both sides of the canal, with space left to allow for drainage outlets and road access for bridges. The embankments with the highest clay components were found to be the most effective in acting as a continuous dam as the clay bound together to form a seal.

The construction of The Big Scheme was completed in 1930. By request of the Marsh Land Owner's Association, established in 1929, a Commission was created with the authority to manage The Big Scheme: the Holland Marsh Drainage Commission. Though the drainage system had been constructed, the land still needed to be broken. The Marsh was not entirely cleared until the early 1950's. Nevertheless, the Holland Marsh has become a successful market garden with remarkable growing capability for vegetables such as onions, carrots, potatoes, lettuce, and celery.

The Bradford Marsh, north of the Holland Marsh proper, also created a drainage system with the construction of a canal. The design was called The Little Scheme, but despite proximity and similarity, it operated independently of The Big Scheme, as it still does to this day. Cultivation began in the Bradford Scheme in 1927². The canal itself is currently used for water-based recreation such as canoeing and paddling and the roads are used informally for walking, hiking and cycling.



Marsh Mash 2009 (ENVision photo)

² George Jackson, [The Big Scheme: The Draining of the Holland Marsh](#). November 1998.

2.0 RECREATION AND LEISURE TRENDS

2.1 Community Profile of Bradford West Gwillimbury

In trails and recreation planning, it is important to first understand the current and projected population and community profile of the Town, in order to predict the recreation and leisure preferences that are tied to specific demographics and age cohorts.

Statistics Canada reports that the 2006 population of Bradford West Gwillimbury was approximately 24,039 persons, an increase of approximately 8.1% over the Town's 2001 population of 22,228.

In 2006 the median age in Bradford West Gwillimbury was 36.7 which is slightly younger than Ontario as a whole at 39³. This is likely due to new family-oriented housing that has been developed in Bradford in recent years. Consequently, youth and families continue to be an important segment of the Town's population in planning for recreation needs. Notwithstanding this, the average age of Bradford West Gwillimbury residents is growing older with the rest of Ontario.

2.2 Demographics and Interests

Studies have shown that age is a key factor in how people are likely to spend their income and their time. Reflective of general aging trends across Canada, an increasing percentage of Ontario's population is the so-called 'baby boomer' generation, in Canada born between 1946 and 1964. With typically more leisure time on hand, and retirement anticipated or achieved, this age cohort is viewed as one that is increasingly more active, and seeking to stay healthy through recreational pursuits. They are generally considered to be one of the highest users of trails.

In a survey of Canadians undertaken in 2005, the types of activities that are supported by trails rank highest amongst adult users aged 45 to 65. In fact, walking was ranked as the top physical activity for both men and women, with seven in ten (71%) of all adults 20 years of age and older, reporting having undertaken it in the 3 months prior to the survey. Bicycling also ranked in the top 5 activities (20%) for all adults, exceeded only by gardening (49%), home exercise (33%), and swimming (22%)⁴.

As well, of interest to Bradford West Gwillimbury with its relatively young median age and stable youth population, the same study identified that for youth under the age of 19, trails-supported activities - walking (66%), jogging, running (56%), and bicycling (49%) were the top-ranked activities.⁵

In a 2006 survey, 71 percent of surveyed Canadians ranked "appreciation of the natural environment" over issues of employment and national security. The same study found that these views are strongest amongst adults aged 44-65 and that the degree of support for the environment increased with levels of education⁶.

3 2006 Community Profiles, Statistics Canada

4 Statistics Canada (2005) Canadian Community Health Survey.

5 , Statistics Canada (2005) Canadian Community Health Survey.

6 R.A.L Consulting Ltd. (2005) Demographic Trends in Ontario.

As well, as the population of Ontario ages, it is anticipated that there will be a shift away from participation in more strenuous outdoor activities such as team-based sports and skiing, toward more passive pursuits. This combination of factors suggests that in the future, an aging baby boomer cohort nearing retirement will be strong supporters of environmental conservation, and of initiatives such as trails that combine nature-based recreation and stewardship activities.



David K. Foot, economist and author of the widely-read 'Boom, Bust and Echo' and 'Boom, Bust and Echo, 2000' notes:

"Even with the impacts of the echo generation, Canada probably has all the football fields, squash courts and volleyball courts it needs. If funds are available for new facilities, they should be devoted to walking trails, curling rinks and swimming pools for recreational swimming, because an older population continues to engage in these activities."

As a majority of the population moves from activities like tennis and spectator sports to ones like walking and birding, the movement to make the countryside more accessible will intensify."

3.0 BENEFITS OF TRAILS

ACTIVE2010 is the Province's strategy to increase levels of physical activity among Ontarians for personal health benefits, and to reduce overall health care costs. The Ontario Trails Strategy is a long-term plan prepared in 2006 as part of the Active 2010 Strategy. It establishes strategic directions to assist in the planning, management, promotion, and use of trails in Ontario, and was developed in collaboration with other Provincial ministries and a wide range of stakeholders.

The Ontario Trails Strategy identifies a number of potential benefits to communities that can be realized through trails and trail-related activities. These include:

3.1 Support for Active Living

Having access to trails encourages an active lifestyle. Health benefits are afforded to a wide range of users including the physically active as well as the elderly, children and youth, and persons with disabilities.

- With many urban residents experiencing increasingly busy lives, they are more encouraged to seek fitness opportunities through access to unstructured recreation activities, such as walking, cycling and jogging, all of which are well suited to outdoor trails.

- As an example, 30 minutes of brisk daily walking is all that is needed for improved fitness levels, and health benefits.⁷

3.2 Social Benefits

- Trails can help build the social fabric of a community, physically connecting neighbourhoods and outlying communities together, and encouraging casual interactions. The Town of Bradford West Gwillimbury trail system has been developed to date as a collaborative effort with community volunteers and local sponsors. The Hills of Headwaters Communities in Action initiative is promoting the strengthening of ties between communities for the purposes of Community Health; Economic Prosperity; and Environmental Well-being. Key to this program is the development of a Headwaters Trails Network that will build on a well-developed framework of local and regional trails.
- By linking shopping, entertainment, workplaces, and parks, trails can help to structure compact neighbourhoods that promote alternative transportation, and contribute to economically and environmentally sustainable, and liveable communities. In newer areas of Bradford West Gwillimbury, trails such as the Mill Creek Trail are providing this connectivity.
- Trails offer low cost, unstructured recreation that can be enjoyed in solitude, by families, and as group activities.
- Trails are available to all ages and the associated activities (e.g., bird watching, walking, cycling, cross-country skiing, etc.) can be relatively inexpensive in comparison to other recreation activities that have user fees and/or require expensive equipment.
- With appropriate design, most urban trails can be made physically accessible to a wide range of skills and abilities.
- Many trails can be used in all seasons, through a variety of activities.
- Trails offer leisurely opportunities to appreciate and enjoy nature, and the surrounding community.
- Volunteerism and collaboration, which have been the underpinnings of trails development in Bradford West Gwillimbury, and across Ontario, strengthen community bonds and foster interaction and partnerships with business and community organizations.

3.3 Environmental Benefits

- Trails support both urban and rural recreational lifestyles and can support broader environmental and ecological objectives through the protection of greenspace corridors.
- By rationalizing and re-routing random and informal paths, trails can serve to keep users away from sensitive environmental areas.
- The use of trail maps and interpretive signage can help to enhance appreciation and awareness of ecology, and promote stewardship.

⁷ Active Living 2010 – a program of the Government of Ontario

3.4 Economic /Tourism Benefits

- As one of the most highly requested recreational amenities, trails promote a high quality of life for communities and indicate a desirable place to both live and operate a business.
- Trails can be used to connect key destinations such as natural parks, cultural heritage features, or other community amenities and in doing so can encourage visitation by both local residents and tourists.
- Trails can create both direct jobs through construction as well as indirect jobs, relating to tourism and visitation. This might include restaurants, lodging, food and beverage and other expenses.
- Many trail users purchase local goods to support their trail activities, e.g., mountain bikes, jogging gear, hiking shoes, etc. These purchases contribute to the local economy through jobs and taxes.
- Research has indicated that proximity to trails contributes to real estate values, and properties close to or adjacent to trails are often highly marketable.



Looking north from Bridge Street (ENVision photo)

4.0 TRAILS OPPORTUNITIES AND POTENTIALS

4.1 Trail Planning Principles

4.1.1 Town of Bradford West Gwillimbury Official Plan

To guide future trails planning in the Town of Bradford West Gwillimbury, it is necessary to be consistent with overarching policy directives. Trails development in Bradford West Gwillimbury is indirectly supported by the Guiding Principles in the 2002 Official Plan.

Broad Goal Statement

To recognize and protect the integrity of an agricultural industry which is of considerable importance to the Province of Ontario and to Canada while overseeing the continued growth of a vibrant, urban community which seeks to be self-sufficient and to provide a complete neighbourhood atmosphere for its residents⁸.

Key areas of importance:

- *The expansion and redevelopment of the Commercial Core will be actively encouraged.*
- *The Town will continue to expand its urban base, and will become a strong urban centre in South Simcoe, while retaining its 'small town' character.*
- *The high quality agricultural land which makes up the bulk of the land area within the Town, including the Holland Marsh, shall be kept exclusively for agricultural use.*
- *The preservation and conservation of wooded areas will be encouraged throughout the Town.*
- *New development will be directed away from significant natural features such as the wetlands adjacent to the Holland River and the valleys of all streams throughout the Town.*
- *The importance of improving the movements of automobile traffic and new pedestrian facilities in neighbourhoods is recognized*
- *To ensure that a full range of community facilities is developed to serve the expanding residential community, the adequacy of school sites and other community facilities.*
- *Residents in all parts of the Town must feel safe and secure in the community. The level of service provided will be appropriate to the needs of both the rural and urban residents⁹*

A **new guiding principle** should be added when the Official Plan is updated to include support for trails development, for example:

- *To provide a connected, diverse, accessible and sustainable multi-use trails network throughout the Town and eventually connect to surrounding communities and the Trans Canada Trail.*

⁸ Town of Bradford West Gwillimbury Official Plan- February 15, 2000

⁹ (All clauses above) Town of Bradford West Gwillimbury Official Plan- February 15, 2000

4.1.2 Trail Vision and Principles

The Ontario Trails Strategy identifies a Vision, Goals and Values for the future of a trails network in Ontario, as follows:

A world class system of diversified trails, planned and used in an environmentally responsible manner, that enhances the health and prosperity of all Ontarions.

A world class system: The trails community will work together effectively.

Diversified trails across Ontario: Trails in all parts of Ontario will meet the needs of varied users.

Environmentally responsible: Trails will be planned and used in a manner that preserves and appreciates the environment.

Enhanced Quality of life: Trail use will help improve the health and prosperity of all Ontarions.

4.1.3 Principles for the Bradford West Gwillimbury Trail System

At the March 30, 2009 stakeholder workshop, participants were asked to consider what was important for the community and to assist in defining the vision and principles for the Town of Bradford West Gwillimbury Trails Master Plan. Many ideas from this discussion had common themes, and were suggested by several participants.

The Town of Bradford West Gwillimbury Trails System will be:

Planned: Trails will be considered an integral component of all community planning and development.

Connected: Trails will serve to connect the communities of Bradford West Gwillimbury, both internally and externally, and will link key recreational destinations.

Diverse: The trail system will be designed to appeal to a wide range of users and interests.

Inspiring: Trails will promote and encourage use and enjoyment of the Town's natural, cultural and recreational features.

Accessible: The trail system will provide opportunities for four-season use, and will include a core network of trails that are accessible to people of all ages and abilities.

Safe and Inviting: Safety, security, and user comfort will be considered in the design and management of the trail system.

Sustainable: The trail system will be developed and managed in a manner that preserves the environment, is financially responsible, and encourages opportunities for partnership and stewardship.

4.2 Existing Trails Inventory

4.2.1 *Town of Bradford West Gwillimbury Trail System*

The original Town of Bradford can be viewed as historically being aligned along a central spine comprised of Holland Street, with Barrie Street acting as the main perpendicular Street. As the Town expanded, key roads and neighbourhoods extended from Holland Street making the downtown core more accessible to the new communities.

In 1991, the Town of Bradford was amalgamated with parts of the former Townships of West Gwillimbury and Tecumseh, to form the Town of Bradford West Gwillimbury. In some of these areas, the creek valley systems provided a network of open space, which together with new roads and neighbourhood development have afforded opportunities for new greenway trails. Although not yet signed as such, local roads and sidewalks comprise interim or connecting trails for cycling and walking between the greenway trails.



Scanlon Creek (Lake Simcoe Regional Conservation Authority photo)

The existing trail system in Bradford West Gwillimbury is comprised of some of the following key trail segments (refer to *Figure 1: Town of Bradford West Gwillimbury Trailways Plan*¹⁰).

Path through Lions Park

- Located in the center of downtown Bradford, north of Holland Street, and east of Barrie Street along Britannia Ave. to Colborne St.;
- Entry is marked by Lion sculptures on pedestals, guarding each side;
- The park has many amenities such as an outdoor swimming pool, a playground, tennis courts, a junior baseball diamond, and a pavilion;
- The path is very well used for civic events and plays host to the Terry Fox Run, The Bradford Summer Olympics, The Mayor's Walk, and is also used by summer camps and Leisure Services.

Henderson Memorial Park Trail System

- Located on the South-West corner of 9th Line and 10th Sideroad;
- Park is to be re-developed by 2011 to include a trails system - opportunity to connect this park to the broader trails system over the long term;
- Concepts include: full-sized and mini soccer pitches, all weather soccer pitch, playground, picnic area, splash pad, and open-space network.

Fuller Heights Park

- Located on Collings Avenue;
- A valley park with playground and general parkland.

Taylor Park

- Located on 6th Line and Parkwood;
- Park consists of a linear trail, soccer fields, playground, and parkland.

Alan Kuzmich Memorial Park

- Located on Aishford Road in the southwest quadrant of town;
- Park consists of a playground, soccer field, basket ball court, and parkland.

¹⁰ Town of Bradford West Gwillimbury map of existing and planned trails.

Inventory information derived from field investigations, and "Status of Bradford West Gwillimbury Trailway System, June 2007" provided by the Town.



Scanlon Creek (Lake Simcoe Regional Conservation Authority photo, used with permission)

The recreational trails beyond the urban area are located in Scanlon Creek Conservation Area and or associated with natural features. Some of these trails are potential linkages to the Town's system (Refer to *Figure 1: Town of Bradford West Gwillimbury Trailways Plan¹¹*).

Kingfisher and Sugar Maple Trails

- Located 4km north of the Town of Bradford within the Scanlon Creek Conservation Area.
- Comprises 282 hectares of woodlands and meadows to with a mix of paved, gravel and non-surfaced well marked trails to explore marshlands, reservoir, forests and glacial erratic.
- Entrance gate and parking lot at concession road 9.
- Visitors can enjoy picnic tables, picnic pavilions, washrooms, camp sites and the opportunity to fish in the area's reservoir.

Thornton Bales Trail

- Also known as the **99 Step Trail**, named for its steep sloped and rugged beauty.
- Located West of Newmarket at Mulock sideroad and Yonge Street.

¹¹ Town of Bradford West Gwillimbury map of existing and planned trails.

Inventory information derived from field investigations, and "Status of Bradford West Gwillimbury Trailway System, June 2007" provided by the Town.

- Trails are located within an area of natural and scientific interest; also part of the Oak Ridges Moraine.
- For advanced hiking and mountain biking.

Nokiidaa Trail System

- Currently comprises six non-continuous trail segments following the Holland River from Aurora to Holland Landing.
- Surfaces of the multi-use trails include: hard surface, stone chip, natural surface, single track
 - a) Simcoe Trail
 - b) Holland River Trail
 - c) Rogers Reservoir
 - d) Mabel Davis CA
 - e) Wesley Brooks Memorial
 - f) Sheppard's Bush

Coulson Hill Road Trail

- Located North of Bradford, at the intersection of 11th Line and Simcoe County Road 4 in Coulson's Hill
- Single and double track mountain bike trails that wind through the Hodgeson and Sinclair County Forest, offering mountain bike races.

Welsh Tract Trail

- 2.2 km of multi-use loop trail that accommodates walking, snowshoeing and skiing through rolling hills of old growth forest.
- Located South of Cookstown, at country road 27 and 12th line

4.2.2 Scanlon Creek Conservation Area

Scanlon Creek is a 282 hectare conservation area four kilometers north of Bradford. It was created in 1965 from many pieces of property purchased by the Holland Valley Conservation Authority now the Lake Simcoe Region Conservation Authority. The park features a network of walking trails popular local and regional users. It is also available for cross country skiers in the winter. Facilities include toilets, picnic tables and picnic pavilions with barbeques which can be reserved and prove a popular location for family, church and school picnics, as well as family reunions.

The Professor E. A. Smith Natural Resources Educational Centre was built in the park in 1978 to provide conservation education to school children in the surrounding areas. The centre works with the York Region School Board and the York Catholic District School Board to host educational day programs that can accommodate up to 60 students. The addition of food services staff and expansion of the centre, have made it possible for school groups to stay for up to 5 days; providing children with the chance to explore outside the urban and suburban landscapes with a unique environmental immersion experience.

The Conservation Area offers a range of trails and trail related amenities and is a key attraction and destination in Trails Master Plan. Through the Trails Master Plan process, the need to create trail linkages to the Conservation Area was identified as a priority.



Scanlon Creek (Lake Simcoe Regional Conservation Authority photo, used with permission)

4.3 Trail Planning Opportunities

The Town has been planning and successfully building trails in conjunction with new development in Bradford for several years. Recently, interest in trail development has heightened and the Trails Committee has been established to provide community input and to assist facilitating trail development activity. In the past, trail development has occurred on an ad hoc basis when capital budgets were available or in the recent past when trails have been constructed as part of the subdivision development process.



The existing system is a good starting point, however, the Town needs to become more proactive in establishing a Plan that directs where new linkages are required and what standards need to be met. With the guidance of the Trails Committee, the Trails Master Plan represents an opportunity to assemble, investigate and prioritize opportunities that link together the existing trails system in local parks and to extend them to connect to an inter-regional system that includes conservation areas and points of interest. Also, the Holland Marsh is a resource that has been underutilized for trails purposes. The current remediation involving dredging and the reconstruction of the dykes around the marsh presents a timely opportunity to consider the development of a unique trail that could become a significant attraction with positive economic spin off benefits. The three main goals for the trails planning work are: 1) to connect local trails into a comprehensive system; 2) to establish inter-regional trail linkages to systems in adjoining communities and; 3) to investigate the potential of a Holland Marsh Trail that takes advantage of the rehabilitation of the canal and dykes.

Through discussions with the Trails Committee and the workshop held with interested stakeholders in March 2009, a number of suggested opportunities for trails development were put forth.

Opportunities identified and discussed included (not in any order of priority):

- Connecting **existing neighbourhoods to the downtown and municipal amenities**
- Connecting to the **Region of York** trails system
- Connecting to the **Thornton-Cookstown Trans-Canada Trail**
- Connecting to conservation area trails in **Scanlon Creek Conservation Area**
- Developing long term planning for **on-road cycle system and pedestrian/cycle friendly crossings of major highways** (Bradford By-pass and Highway 400)
- Developing policies and standards for **trails in new communities**
- Creating new **nature based trails** in greenways as part of new development

- Connecting to the trail **systems in adjacent communities** (Newmarket, East Gwillimbury, King Township)
- Establishing a **Holland Marsh Trail** – interpretive water based and multi-use recreation amenity

5.0 DESCRIPTION OF THE TRAIL SYSTEM

5.1 The Overall Trail System

The Town of Bradford West Gwillimbury is in close proximity to many environmentally and culturally interesting places and already has trails that offer a diverse range of experiences. However, many of the trails are disconnected from each other and downtown Bradford. A priority for trail development is to fill in the missing local links and expand the network to reach beyond its boundaries and connect Bradford to Newmarket, Scanlon Creek Conservation Area, Holland Marsh, Bondhead, and the Trans Canada Trail to the north.

With the development of the future Bradford Bypass, a priority should be established to ensure that the highway corridor design considers pedestrian and cycle overpasses in strategic locations that support an interconnected trail system. The crossings need to be safe, accessible and convenient, ensuring that the public realm is attractive and supportive of uses other than the automobile. Without appropriate design and consideration, the Bypass could become a formidable barrier to north-south trail linkages.

A new recreational and tourism focused trail should be considered in conjunction with the maintenance and reconstruction work associated with the Holland Canal and dykes. The canal is already popular with paddlers and canoeists and the exiting roads are well used by cyclists. Support facilities such as trail heads with modest floating docks should be provided as part of the trails system amenities. A main trail head with parking and self-interpreting signage should be provided at Bridge Street's entrance into the Bradford urban boundary.

The route of the Carrying Place Trail links into the Town through the Holland Marsh and this pathway should connect to a system that utilizes the canal dykes where feasible and the exiting public road right-of-ways where the dykes are inaccessible or conflict with privately owned agricultural lands.

Through the study process many other opportunities were identified for the creation of trail segments connecting new neighbourhoods to the network, and extending the local trail system to link other municipalities and areas of environmental and cultural significance. These trails are to be considered in long term planning processes and should continue to be investigated and implemented as opportunities arise, e.g. negotiated with new residential development plans, or in collaboration with other partners.

The Trails Master Plan is based on a hierarchy of trail types that reflect type of use, location, and environmental considerations. As a long-term objective, and as funding permits, a 2.5 m asphalt surfaced trail is recommended as the Primary Trail surface. This could include linkages beyond the urban areas and include trails to Bondhead, the Holland Canal trails, and boulevard based multi-use trails to adjacent municipalities. Notwithstanding that asphalt-surface is the Town's current development standard, it is possible that a granular surfaced trail may be developed initially and resurfaced with asphalt at a later date

when funding permits. As well, there will be areas where trails may be developed within natural environment areas, and where a low-impact, granular surfaced or a natural-surfaced trail, or a boardwalk will be more appropriate. These trails may be narrower in width.

Detailed design guidelines for a hierarchy of primary multi-use trails, off-road soft surface greenway trails and on-road cycling facilities are provided in the *Appendix B*.

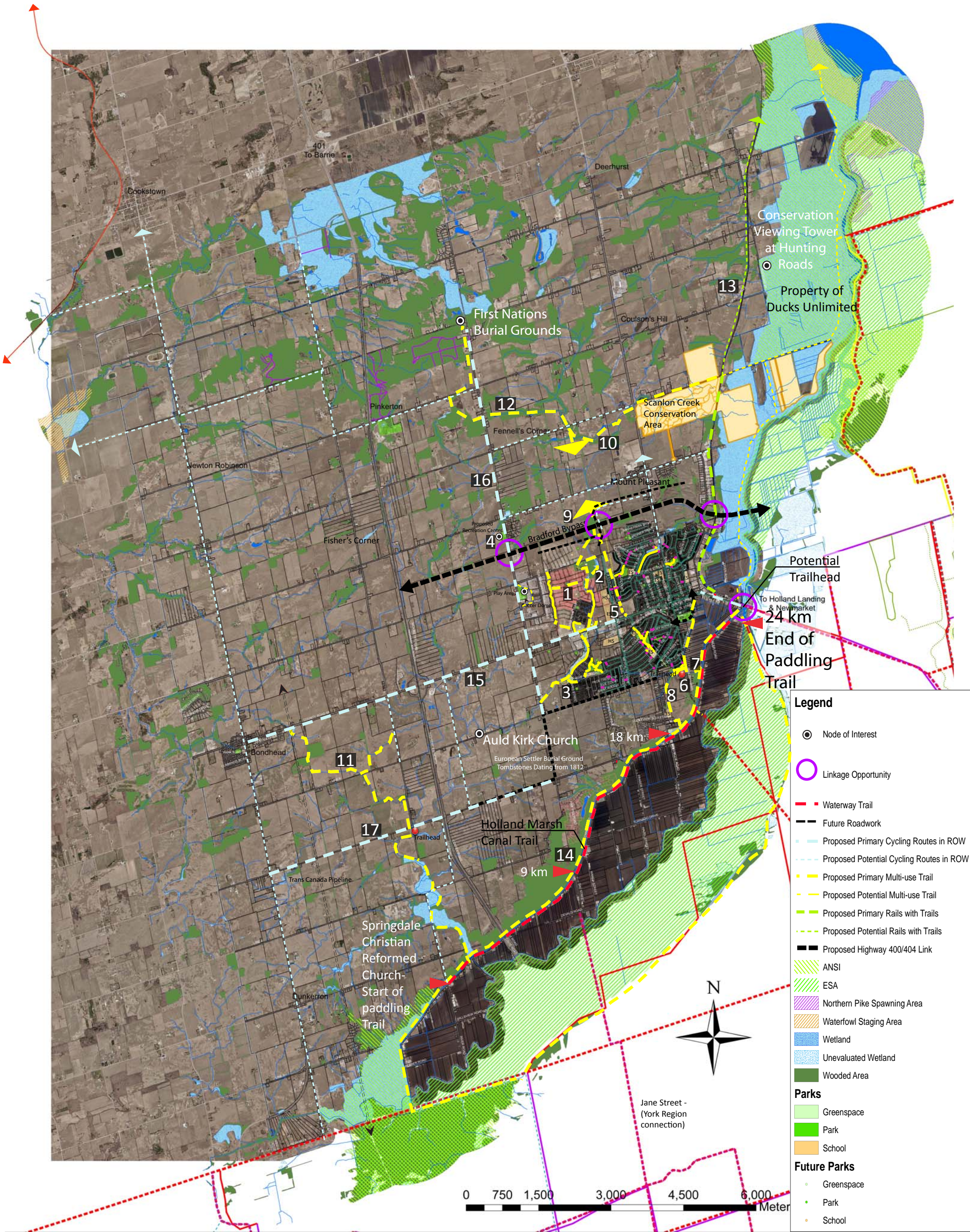


Fig. 1 Bradford West Gwillimbury Trails Master Plan Regional Concept Plan



5.2 The Trails Master Plan

The main features of The Trails Master Plan are described in the following sections.

5.2.1 Local Connector Trails

The primarily off-road system will be focused on linking existing neighbourhoods to each other, connecting to the downtown and to municipal recreation amenities. The existing trails utilize greenways, local roads and sidewalks in locations where linkages are yet to be provided. The Plan proposes a connected multi-use system in the greenways and on adjacent boulevards wherever possible.

Although the Trails Committee was enthused by opportunities to develop new trails, another priority is to provide identification and marketing of the existing trail system through improved signage at trail entrances, directional signage along the route and at road crossings. A trail brochure and map should be prepared to serve as a guide about Town. Signage welcoming users to the BWG trails system at inter-regional boundaries should be implemented as well.



Improving accessibility of the trails for use by those with disabilities, the elderly, and parents with strollers, was raised as an issue, as there are both paved and unpaved trails in the Town. The need to ensure that trail users are safe was of particular importance along any proposed rail-trail or more isolated locations.

Priority areas of improvement and connection to existing trails are illustrated on Figure 2 Trails Master Plan – Bradford Enlargement:

- *Multi-use trail in Hydro Corridor connecting Northgate to Breeze with entrance to Davey Lookout;*
- *Multi-use trail loop connecting Davey Lookout Park to Northgate Lookout ravine continuing around floodplain;*
- *Multi-use trail extension in new Brookfield subdivision extending around storm water management pond at Aishford Road to create loop around perimeter of storm water management pond;*
- *Henderson Park Woodland Trail is the first component of an integrated trail system that is part of a master planned recreation sports park;*
- *Connecting trail from Fuller Heights Park through the Hydro Corridor to Taylor Park;*

- *Trailhead at Taylor Park with multi-use trail to Centennial Park;*
- *Multi-use trail from Taylor Park to the proposed North Canal trail (two trails);*
- *Multi-use trail connecting across the Bradford By-pass to the new NW subdivisions;*
- *Multi-use trail to Scanlon Creek Conservation Area;*
- *Multi-use trail connecting Bondhead;*
- *Hiking trail to First Nations cultural heritage site;*
- *Hiking trails along Lake Simcoe;*
- *Multi-use trail along North Canal Road berm;*
- *On-road cycling routes.*

As described above, the focus of the Trails Master Plan and the first priority is to better connect local systems together and to expand trails into newly developing areas to ensure that the system of comprehensive. The longer term objective of the Plan is to explore the potential of new trails into currently undeveloped areas and to connect inter-regionally through special projects for which partnerships and other funding partners should be secured.

5.2.2 Rail-with-Trail along the North Canal

Bradford West Gwillimbury has an opportunity to explore trail development along the rail line on the west side of Lake Simcoe towards Barrie. The railway to Bradford was completed in 1853 and was built to facilitate South Simcoe trade. By the late 21st Century, when motor vehicles took the place of commuter transportation, the railway traffic gradually diminished to only carrying irregular freight trains. After a first failed attempt by Go Transit to bring back commuter rail to Barrie and Bradford, a second attempt was made in 2007 by the City of Barrie, through the Go Trip program to expand rail lines in Southern Ontario in partnership with the Federal and Provincial governments. Funding was provided for the reopening of rail service to Barrie via Bradford West Gwillimbury and Innisfil. The Go Train runs through Bradford times daily and allows riders to bring their bicycles, creating new possibilities for the Town to expand tourism. This service provides greater incentive to residents to switch from private vehicles to transit. Ultimately, with improved transit services, BWG can develop into an employment node with commuters entering Town to work, rather than leaving.

The opportunity exists in the future, to connecting via a trail-trail from the Bradford train station to the Scanlon Creek Conservation Area, allowing visitors to access the popular site for day trips or longer camping trips. The proposed link, part of The Trails Master Plan, could be located along the railway, taking advantage of the newly renovated and expanded railway corridor and direct route from the train station to Scanlon Creek. Careful design and safety standards would need to be implemented as part of this initiative.

While many decommissioned rail lines in Ontario have been purchased by local municipalities and converted to trails, the presence of the railway offering regular passenger service to the Town, provides the potential for a *rail-with-trail*, where a trail co-exists parallel to an active track.



Based on precedent examples in other jurisdictions an active rail line requires the establishment of minimum separation distances and fencing. The detailed requirements need to be studied in more detail as part of an inter-regional rail trail initiative with senior government partners.

The rail-with-trail feasibility study will need to address warning signs on approach to, and stop signs at road crossings, as well as warning signs at all trail entrances identifying that it is an active rail line.

A potential first phase for the rail-with-trail facility is the segment between the Bradford train station at Bridge Street and Given Road, climbing northwards along the railway corridor, over the future Bradford Bypass and terminating at Line 10 (approximately 6 km).

The railway corridor extends north to Lake Simcoe, Innisfil and Barrie, and there is potential for the trail to eventually continue further to make connections to these destinations.

Examples of the success of rail-with-trail initiatives in other areas of Canada and the US are provided in *Appendix A*, along with a summary of findings relating to design of protection barriers and separation between the railway and the trail

5.2.3 On-Road Cycling Routes

The Trails Master Plan includes road-based routes identified as interim and connecting trails that would link cyclists and pedestrians to the greenway trails, and create a continuous looped trail system through areas where no greenway opportunities are possible. Most confident cyclists will find their own preferred routes around Town. However, safer routes need to be provided for novices and recreational cyclists who are seeking an off-road greenway experience. The two main on-road cycling routes include Holland Street (from Leonard Road in Bondhead, to Professor Day Drive in Bradford, approximately 7.7 km) and a section of Sideroad 10 (from the 6th Line to the 12th Line, requiring an overpass over the Bradford Bypass, approximately 8 km). A third section could start at 10th (Middleton) Sideroad and 6th Line and run through Auld Kirk church to Highway 27, approximately 10 km. This will form the main axis upon which many of the multi-use trails and potential future inter-regional cycling routes will be based. This trail connects key points of interest, such as the Auld Kirk Church, the Henderson Lands, and the First Nations Burial Grounds to downtown.

Potential cycling routes were reviewed throughout the study process and were selected based on the potential for connecting to off-road trail segments and between community destinations.

To become supportive of the recreational trail system, on-road bicycle routes should be signed to direct users to the off-road trail system. The Trails Map identifying these routes could support wayfinding and identify segments that are suited to multi-use.

The longer term opportunities to develop on-road cycling facilities such as bike lanes and widened paved shoulders have been identified through the study and suggested guidelines for the development of cycling facilities are provided in the Trail Development Guidelines provided as *Appendix B*. The Town is also committed to the establishment of cycling routes as part of its ongoing alternative transportation initiatives.

5.2.4 External Trail Connections

Although enhancement of the existing town trail system was a clear priority for the stakeholders, opportunities to connect into adjacent recreation areas and the inter-regional trail network was also identified as important. The following initiatives were identified as having immediate interest and value to completing the Trails Master Plan within the Town.

1. Creating a Western link to Bondhead and the Auld Kirk Church

- The destinations are accessible from the proposed North Canal multi-use trail and downtown Bradford via Trailside Drive, passing Auld Kirk Church and leading to the multi-use trailhead.
- From the North Canal Road, just east of Sideroad 5, a proposed multi-use trail winds to the north through the protected wetland and along the river to align with Sideroad 5 and the 5th Line (approximately 4.5 km)
- The multi-use trail continues north, reaching the 6th Line (approximately 2.5 km).
- Eastward to the 6th Line, north-east to Sideroad 5 where it turns South becoming an on-road trail to meet its point of origin, forming a loop (multi-use trail eastern extension approximately 1.5 km).
- North West to meet Highway 88 east of Mulock Drive, connecting to Bondhead (approximately 2.5 km).

2. Creating a Northern link to Coulston's Hill, the First Nations Burial Grounds and Scanlon Creek Conservation Area

- Multi-use trail tracking north via: the proposed multi-use trail extending from Longview Street, and the proposed multi-use trail extending from the new development areas in north-west quadrant of Bradford.
- The trail requires an overpass over the new Bradford Bypass, where it continues north to meet the 10th Line (approximately 2.5 km from overpass).
- Forks into two multi-use paths, one following the natural feature east to the Scanlon Creek Conservation Area (approximately 5 km); and another traveling north-east, crossing Sideroad 10 and intersecting with the 11th Line, where it continues to its terminus at the First Nations Burial Grounds (approximately 6.2 km).

- The east branch of this trail provides access to the Kingfisher and Sugar maple Trails, while the north-west branch provides access to Coulson’s Hill mountain bike trails and the Welsh Tract trails.

3. Creating a Southern link along the Canal and connecting the Nookiitaa and Newmarket

- A proposed multi-use trail could be developed on the reconstructed dykes along two branches of the Holland River: The North Canal stream, and the South Canal stream.
- The North Canal route could extend from the source at Bridge Street and Canal Road, then track west, running parallel to Canal Road, the North Canal, and the existing waterway trail, until going south to meet with the South Canal at West Canal Bank Road (approximately 24 km).
- The South Canal trail will begin at Canal Road and West Bank Canal Road, and stay parallel to the South Canal, tracking east along West Bank Canal Road to South Bank Canal Road to Woodchoppers Lane where the trail departs the road system to follow the Canal. The trail rejoins the road system at Pumphouse Road, where it finally merges to the North Canal multi-use trail at Canal Street to form a large loop trail (approximately 26 km).

5.3 Recommendations for Implementing the Trail System Plan

In addition to the physical trail development and improvement initiatives described above, the following are key recommendations for facilitating the implementation of the Trails Master Plan.

5.3.1 Trails Planning & Design Recommendations

1. Add a new guiding principle when the Official Plan is updated to include support for trails development, for example: *To provide a connected, diverse, accessible and sustainable multi-use trails network throughout the Town.*
2. Trail development should focus on filling in the missing local links and expanding the network to reach beyond its boundaries connecting Bradford to York Region, Scanlon Creek Conservation Area, Holland Marsh, Bondhead and the Trans Canada Trail to the north.
3. Ensure that the development of the future Bradford Bypass design considers pedestrian and cycle overpasses in strategic locations that support an interconnected trail system. The crossings need to be safe, accessible and convenient, ensuring that the public realm is attractive and supportive of uses other than the automobile.
4. Develop a new recreational water-based and land-based tourism focused trail in conjunction with the maintenance and reconstruction work associated with the Holland Canal and dykes. Support facilities such as trail heads with modest floating docks should be provided as part of the trails system amenities.
5. Support the establishment of road-based routes identified as interim and connecting trails that would link cyclists and pedestrians to the greenway trails, and create a continuous looped trail system through areas where no greenway opportunities are possible.

6. Investigate the feasibility of rail-with-trail opportunities to connect via the rail corridor from the Bradford towards the Scanlon Creek Conservation Area and north to Innisfil and Barrie along the west side of Lake Simcoe.
7. Notwithstanding priorities that may be established for the trails development capital budget, the Town should continue ongoing dialogue/investigation of all potential trail initiatives in association with new development areas.
8. To ensure that trail planning is effective and consistent with community objectives and the intent of the Trails Master Plan, the Town should continue to seek early and ongoing input from the Trails Committee at the earliest stages of site plan approvals.
9. Ensure that trail opportunities and plans are identified in community master plans and sales information to inform homebuyers, and to facilitate later implementation of trail development.
10. All development projects will need to be preceded by feasibility and technical design, including the potential for Environmental Impact Studies for lands with environmental constraints.
11. Within the suggested trail hierarchy, trails should be designed to a consistent set of standards (refer to *Appendix B* for suggested trail types and guidelines) and initial budgets and fundraising for development should consider needed amenities and appurtenances including signage, rest areas, trailheads.
12. Develop a comprehensive Park Master Plan for the Henderson Lands with an interconnected trail system that provides a hierarchy of trail types serving a broad group of users.
13. Prepare a trail brochure and map to serve as a guide about Town. Signage welcoming users to the BWG trails system at inter-regional boundaries should also be implemented.

5.3.2 Maintenance / Monitoring Recommendations

- Trails development should be accompanied by a corresponding increase in funds for annual maintenance. In addition to routine maintenance such as garbage removal, surface repair, and replacement of lights (where applicable, it will be important to undertake periodic assessment of trail conditions to identify and rectify potential safety hazards and to monitor potential environmental impacts from trail usage).
- Trails may not be cleared in the winter; however, winter use of trails should be considered and maintaining access to the trails from parking areas and roadways should be considered in the identification of areas for snow dumping. As well, boulevard trails that serve as sidewalks should be considered for clearing as they may be located in areas without adjacent landowners to be responsible.
- Signs should be placed at the entrance to trails that are not cleared of snow, warning of the inherent risks of such hazards as slippery conditions. As well trails adjacent to creek systems should have signs warning of the potential for flooding or washouts.

5.3.3 Establishing Priorities

Over the long term when establishing priorities for new trail construction or improvements there are a number of factors that should be considered, including (in no order of priority):

- Visibility and profile of the trail segment;
- Status of approvals and ease of construction;
- Contribution to existing route connectivity;
- Availability of capital budgets;
- External partnerships and funding opportunities, such as grant programs; and,
- Timing of new development; and
- Ability to include trail development with road improvements (boulevard trails, cycle lanes, widened paved shoulders).

5.3.4 Funding

Not for profit community organizations have access to other sources such as government or foundation grants or corporate funds that are not available directly to municipalities, and the continued involvement of local trail organizations and enthusiasts in trails development should be encouraged.

Most available programs require some co-payment from the municipality, and grants typically serve to boost, rather than replace municipal contributions. As this is a 10-year plan and grant opportunities change on a frequent basis, The Trails Committee should continue working with Town staff to assist in reviewing potential government and foundation grants programs and developing a strategic approach to accessing external funds and engaging potential sponsors.

See descriptions on current programs under the section **Potential Funding Sources**.

5.3.5 Marketing and Promotion

- Develop a **trails map/brochure** and web materials for marketing of the existing trail system, with periodic updates as major trails initiatives are accomplished;
- Continue to **develop/implement activities** to promote use and awareness of trails, or as fundraisers for special projects, e.g.:
 - Trail related special events – Trail Week in BWG: Marsh Mash, School Hike, and Community Hike
 - Water based paddling and canoeing events
 - Cultural/historical walks;
 - Fitness events / marathons / triathlons;
 - Carnivals / children’s fairs;

- Bicycle safety rodeos; and
- Trail / creek clean-ups.

6.0 IMPLEMENTATION STRATEGY

6.1 Priorities and Phasing

The Trails Master Plan is proposed as a **10-year plan** with phased implementation of the following key elements.

The focus of capital funds for trails development initiatives, in the proposed order of priority, are the following initiatives:

1. Short Term – High Priority
 - Completing local trail loops in Bradford as described in the Trails Master Plan to connect existing trail segments with new boulevard and greenway trails. Some of these trails are expected to proceed in tandem with new development and, therefore, may occur out of sequence with identified priorities.
2. Medium Term – High Priority
 - Building a network of trails on the Henderson Lands.
3. Medium Term – Medium Priority
 - Developing broader connections to: the Holland Marsh, Scanlon Creek Conservation Area, Bondhead, the Trans-Canada Trail in Cookstown and adjacent municipalities.

Other initiatives within the 10-year plan

- Identification and signing of cycling /walking routes that complete the trail loops;
- Developing a trails map/brochure for marketing of the existing trail system, with periodic updates as major trails initiatives are accomplished;
- Improvements to signage on the existing trail system, as needed, e.g. directional, trail entrance marking. As this is an ongoing matter, a small annual budget should be considered to address this need.
- Investigating the feasibility for the rail-with-trail initiative;
- Undertaking the detailed planning for the Holland Marsh Canal Trail and Trail Head (interpretive trail).
- Re-surfacing of selected granular trails to asphalt.

Specific initiatives and timing for specific projects are identified in **Figure 3: 10-Year Implementation Plan** under categories of Trails Planning & Design, Trails Development, Trails Improvements, and Marketing and Promotion.

6.2 Project Costs

Capital Projects

Table 1: 10-Year Implementation Plan also identifies a target year and estimated project costs to assist the Town in its planning and budgeting, as well as for use in seeking alternative funding sources. The costs identified are high-level and provided for budgetary purposes, and will need to be confirmed through a detailed design exercise. It is assumed that all trail development will be accompanied by standard design and construction implementation activities and the costs include an estimated 10% for design/engineering fees. Special projects requiring additional feasibility studies and/or assessment due to environmental or other considerations are noted separately under Planning & Design activities, with estimated fees for undertaking them.

Table 2: Summary of Unit Costs provides estimated unit costs (in 2009 dollars) that can be applied to any new development project.

Notwithstanding the identified priorities and projected time-lines, it is understood that the allocation of funds for trails development will need to be carefully balanced with other municipal capital projects and expenditures. The Town should also continue to act on all opportunities for trails development as they arise, including negotiation of easements, implementation through subdivision agreements, or utilizing volunteerism or partnership. Consequently, some projects may be advanced ahead of others.

6.2.2 Operational Costs

Research into other multi-use trails in Ontario suggests that maintenance costs for trail segments within urban areas are in the order of \$1500 per km per annum. These include trails in larger urban areas, and regional trails with higher volumes of users (upwards of 500 users per day) such as the Georgian Trail and the Dundas Trail. Due to lower usage, costs for trail maintenance may currently be lower in Bradford West Gwillimbury. The costs include litter control, garbage pick-up, and the maintenance of amenities, which may be located along the trail.

There is frequently discussion over whether granular-surfaced trails require higher or lower maintenance efforts than asphalt trails, when deciding to what standard to build trails. Investigations by other trail-builders indicate that the routine maintenance costs are comparable for both types of surfacing. However in areas where trails may be particularly vulnerable to flooding or washouts from nearby creeks, the cost of repairing granular-surfaced trails suggests that asphalt may be less costly when averaged over the long-term. Notwithstanding this, the reduced environmental impacts that are attributed to permeable surfaces should be considered when trail-building in natural areas.

Figure 3: 10-year Implementation Plan		
INITIATIVE	ITEM	COST IMPLICATION
	A. YEARS 1-10 (2009 –2019) * All costs to be determined through detailed design, includes 10% design and engineering fees. Distances are approximate.	
	1. Multi-use trail in Hydro Corridor connecting Northgate to Breeze with entrance into Davey Lookout (750m). Short Term – Highest Priority <ul style="list-style-type: none"> • Contact Hydro to obtain permission for use along the right of way • Undertake a vegetation assessment to identify if there are sensitive species • Undertake preliminary trail route layout 	\$45,000
	2. Multi-use trail loop connecting Davey Lookout Park, to Northgate Drive Ravine with trail continuing around flood plain. Trail links existing walkway system (1,400 m). Short Term – High Priority to be constructed over multiple years <ul style="list-style-type: none"> • Identify trail route • Identify and plan for crossing the floodplain • Identify potential trail head for signage 	\$175,000
	3. Multi-use trail extension (south) in new Brookfield subdivision extending around SWM pond at Aishford Road to create loop around perimeter of storm pond. (600 m asphalt trail) Short term - High Priority in three to five years <ul style="list-style-type: none"> • Undertake a vegetation assessment to identify if there are sensitive species • Undertake preliminary trail route layout Identify and plan for crossing(s) the floodplain • Identify potential trail head for signage 	\$80,000

<p>4. Henderson Park Woodland Trail is the first component of an integrated trails system that is part of a master planned (future) recreation sports park. (1,000 m wood chip trail) Medium Term – High Priority</p> <ul style="list-style-type: none"> • Undertake a vegetation assessment to identify if there are sensitive species • Identify trail route that avoids sensitive vegetation 	<p>\$75,000</p>
<p>5. Connecting trail from Fuller Heights Park through the hydro corridor to Taylor Park consisting of a combination trail/sidewalk and a natural surface in the hydro lands (1,600m). Short Term – Medium Priority</p> <ul style="list-style-type: none"> • Contact Hydro to obtain permission for use along the right of way • Identify preliminary trail route 	<p>\$80,000</p>
<p>6. Trailhead at Taylor Park (north branch) with a multi-use trail connecting Taylor Park to Centennial Park, via the proposed SE arterial to Dissette and Bridge Streets (1,450 m asphalt trail) Medium term – Medium Priority</p> <ul style="list-style-type: none"> • Identify trail route along road right of way • Coordinate with construction planning and design 	<p>\$185,000</p>
<p>7. Multi-use trail from Taylor Park (east branch)to the proposed North Canal Trail connecting south on Zima Parkway, east along the stream corridor and south to the proposed North Canal Trail (460 m asphalt trail) Long Term- Medium Priority</p> <ul style="list-style-type: none"> • Identify trail route along road right of way • Undertake a vegetation assessment to identify if there are sensitive species 	<p>\$87,500</p>

<p>8. Multi-use trail from Taylor Park (south branch) to the proposed North Canal Multi-use trail – traveling south along stream corridor then south to St. Charles Elementary School to meet North Canal Multi-use trail (1,455m asphalt trail) long <i>Term</i></p> <ul style="list-style-type: none"> • Identify location of road crossing • Undertake a vegetation assessment to identify if there are sensitive species • Identify preliminary trail route 	<p>\$181,875</p>
<p>9. Multi-use trail connecting Bradford Bypass to new NW subdivisions including linkages through the Bradford Bypass to new development north of Holland Street West and west of Professor Day Drive (1,600m asphalt trail) Long Term - Pending Bradford Bypass and development partners</p>	<p>\$200,000</p>
<p>10. Multi-use trail connecting Scanlon Creek Conservation Area to the Bradford urban boundary across the Bradford Bypass(3,200 m granular trail) Long Term – With partners</p>	<p>\$240,000</p>
<p>11. Multi-use trail connecting Bondhead (5th Sideroad and 3rd Line) to Holland Marsh (4,000 m granular trail) Long term – with partners</p>	<p>\$300,000</p>
<p>12. Hiking trail connecting to Burial grounds – Complete from First Nations Burial Grounds at 10th Sideroad and 12th Line to Bradford urban boundary (6,000 m) Long Term – in Partnership with Simcoe County and others</p>	<p>\$90,000</p>
<p>13. Hiking trail connecting from southern tip of Lake Simcoe to Scanlon Creek Conservation Area (5,000 m) Long Term – in partnership with Simcoe County and others</p>	<p>To be determined</p>
<p>14. Multi-use trail along North Canal Road berm – Perimeter of Holland Marsh (24,000 m asphalt trail) Long term - strategic tourism initiative in partnership with Simcoe County and partners</p>	<p>To be determined</p>
<p>15. On-road Highway 88 cycling route from Professor Day Drive along Highway 88 to Bondhead (7,700 m) Long term – with partners</p>	<p>\$81,875</p>
<p>16. On-road 10th Sideroad cycling route from 6th Line along 10th Sideroad to 12th Line (8,000 m) Long term – with partners</p>	<p>\$320,000</p>

	17. On-road 6 th Line cycling route from 10 th Sideroad to Highway 27 (6,100m) Long term – with partners	\$250,000
<i>Existing Trails Improvements</i>	Identification/signing of bicycle routes that form part of the Trails Master Plan i.e. Barrie Street and Holland Street, (approx. 14 directional signs)	\$3,500
	Miscellaneous signs for existing trails, e.g. Entrance/Directional (allowance for 5 signs)	\$2,500
<i>Marketing & Promotion</i>	Develop trails map / brochure and web-based information on the trails system for the Town's web site	\$5,000
	Develop / Implement seasonal trails activities to promote use and involvement in trails building	Staff / Volunteers
<i>Long Term Planning & Design</i>	Undertake a feasibility study / technical design for the development of a regional rail trail along the railway corridor recommendations for location, construction techniques, phasing, safety measures and costs	\$100,000

Figure 4: Summary of Unit Costs

IMPROVEMENTS	WIDTH (m)	DESCRIPTION	UNIT	COSTS \$
Cycling Facilities				
Shoulder Paving (one side)	1.5	Asphalt over existing gravel shoulder (as part of road reconstruction)	km	40,000.
	1.5	Asphalt over existing gravel shoulder (individual contract)	km	75,000.
	1.5	Surface treated existing gravel shoulder	km	50,000.
Signs and Pavement Markings		Cycling Route sign installed on existing post	ea	110.
		Cycling Route sign installed on new post	ea	220.
		Bicycle symbol on pavement	ea	25.
		Bi-directional Bicycle Lane Line painting – 6 lines	km	15,000.
Off-Road Greenway / Boulevard Trails				
Hiking Trail	1.25 to 1.5	Wood chip / Natural Surface (Minimal tree removal, includes understorey clearing and brushing)	km	15,000.
Multi-Use Path	2.5	Compacted limestone screenings	l. m	75.
	2.5	Asphalt	l. m	125.
	2.5	Upgrade limestone screenings to Asphalt	l. m	50.
	2.5	Boardwalk	l. m	625.
Signs and Pavement Markings	N/A	Trail Crossing Signs (Road)	ea	220.
		Trail Distance Marker Signs	ea	100.
		Regulatory Signs	ea	220.
		Interpretive Sign	ea	1200.
		Trail Entrance Sign	ea	500 to 800
Trailhead Amenities	N/A	Lockable Vehicular Barrier Gate	ea	2,500.
		Armourstone blocks (e.g. for seating, retaining edges)	l. m	400.
		Trailhead Kiosk / Pavilion	ea	\$5,000 to 7,500.
		Benches	ea	1500.
		Trash Receptacle (decorative)	ea	1000.
		Bike Rack	ea	800.

6.3 Potential Funding Sources

Primary sources of funding for municipal trails development are typically:

- Capital Budgets;
- Development contributions, e.g. development charges, site plan requirements;
- Community fund-raising / corporate sponsorship / public donation programs;
- Partnerships with other agencies providing leisure services, e.g. Conservation Authority;
- Funding/grant programs.

It is expected that trails development in Bradford West Gwillimbury will need to draw on any, and all, of these possibilities. They are discussed in the following sections.

Capital Budgets

There are a range of trail initiatives that have been identified for the Town of Bradford West Gwillimbury which are of interest to the community, and which will compete for available trails development monies. Potential municipal sources of funds are:

- Municipal capital budget, e.g. for new trails development, including signs, trailheads, rest areas and other amenities along the trail;
- Maintenance & operations budgets, e.g., for signage replacement / improvements;
- Economic development / marketing funds, e.g. for trail brochure;
- Road improvements programs, e.g. for in-pavement cycling facilities and related infrastructure.

6.3.2 *Development Contributions*

In recent years, Bradford West Gwillimbury has been pro-active in planning and acquiring new trails within open space lands in association with new development. The success of this can be seen in Bradford, in particular. There are currently a number of trail development projects comprised of new segments of trails that are tied to new residential development, and which are pending approval. Key projects that are tied to the completion of trail loops identified in The Trails Master Plan are identified in the section on Priorities and Phasing. All other current and future opportunities to acquire new trails in association with new development should continue with a view to completing the town-wide trail network and providing all residential areas with access to trails.

6.3.3 *Community Fundraising / Corporate Sponsorship*

Sponsors may include service groups, corporate donations or public donation programs. Fundraising programs or events are potential sources of revenue for trails development; however, at any given time there

may be competing interests for donations from the general public, including other recreational facilities, hospital needs, etc. As well fundraising takes a significant amount of work and depending on the cost of the event may not be as profitable as hoped for. A more consistent source of funding may be local service organizations that are conversant in fund-raising. As a long-term prospect, it should be noted that many service organizations across Ontario are suffering from an aging membership and a corresponding decline in volunteerism.

The potential for corporate sponsors should also be investigated. The Chrysler Greenway in Essex County and the Second Marsh interpretive area in Oshawa are good Ontario examples of corporate involvement in trails projects. While Bradford West Gwillimbury does not have such major employers, there may be now and in the future willingness by local businesses and corporations to contribute to fund-raising efforts in support of a high quality of living in the Town.

The involvement of service organizations and community clubs should also be solicited. In particular smaller projects such as trailheads, route and interpretive signs, and the development of short, soft-surface nature trail loops lend themselves to community fund-raising or sponsorship.

6.3.4 Partnerships with Other Agencies

Opportunities for external trails connections are discussed in the sections describing the Trails Master Plan. There is currently a significant interest and momentum in trails development in the surrounding region, and Bradford West Gwillimbury is positioned to assist with and benefit from this. External groups and agencies who may be interested in partnerships and collaborative ventures are:

- Lake Simcoe Region Conservation Authority
- Holland Marsh Drainage System Joint Municipal Services Board

6.3.5 Funding Programs (2009)

The following is a summary of grant programs and other initiatives that are related to trails development and trail promotion. Most of the programs require community organization involvement as the lead applicant and manager of the project and funds, with municipal support as a requirement. The provincial infrastructure funds are directed to municipalities and while not trail-focused, offer some opportunities for active transportation or other trails supportive initiatives. In some instances, municipalities have been successful in receiving grants for trails building projects.

6.4 Provincial Grant Programs

6.4.1 Ontario Trillium Foundation

The *Ontario Trillium Foundation (OTF)*, is an arms-length agency of the Government of Ontario's Ministry of Culture and one of Canada's leading grant making foundations. The OTF has provided extensively to Ontario municipalities and organizations supporting trails.

The Ontario Trillium Foundation distributes its funding to charities and not-for-profits through two granting programs: Community and Province-Wide. Within those programs, funding is allocated in four sectors: Arts and Culture, Environment, Sports and Recreation, and Human and Social Services.

The Community Program is for activities that take place in one catchment area and have a local impact in one or more communities within that catchment area. Community grants account for 80% of the Ontario Trillium Foundation's funding.

- Single or multi-year grants of up to \$75,000/year for up to five years
- Grants of up to \$150,000 for renovations/repairs and equipment purchases over one year

The Province-Wide program is for activities that have a province-wide impact. In Southern Ontario, at a minimum, the work must take place in three catchment areas. Province-wide grants account for 20% of the funding, and have a larger grant base of:

- Single or multi-year grants of up to \$250,000/year for up to five years
- Grants of up to \$150,000 for renovations/repairs and equipment purchases over one year

According to the current grant guidelines, the Ontario Trillium Foundation places priority on initiatives that:

- Promote physical activity for people of all ages and abilities;
- Promote recreational activities for people of all ages and abilities;
- Enhance and help protect human and ecosystem health;
- Create conditions for people to reach their full health and well-being potential;
- Promote cultural and artistic activities for people of all ages and abilities.

The OTF will accept grant applications from a range of not-for-profit, charitable organizations and First Nations or other aboriginal communities. Municipalities with populations over 20,000 cannot directly apply for grants, but can partner with an eligible organization.

More information can be found at www.trilliumfoundation.org

6.4.2 ACTIVE2010 Strategy

Communities in Action Fund (CIAF) is a key initiative of the government's ACTIVE2010 Strategy and Ontario's Action Plan for Healthy Eating and Active Living. In the past the Ontario government invested \$5 million into

the (CIAF) program. Eligible program applicants can receive non-capital funding for projects falling under one or a combination of categories covering planning, implementation, and/or development of programs that encourage physical activity. In recent years, trail related grants have focused on programs to encourage or market trails use, such as orienteering, geo-caching and the development of active transportation initiatives. The deadline for the 2009 program has closed, however the program will continue through 2010.

Trails for Life is a provincial grants program with a commitment to provide up to \$440,000 in grants annually for five years, beginning in 2005 and ending with the 2009/2010 grant year, for trails initiatives and programs that have a regional or Ontario-wide focus. The initiatives must address one or more of the following strategic directions of the Ontario Trails Strategy:

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

This program is not likely to fund municipal trails development; however, Community Living Dufferin received funding for the Headwaters Trails Council Project and a subsequent grant to promote the trails of the Headwater area (Bradford West Gwillimbury plus seven surrounding communities).

Information on both programs can be found on the Ministry of Health Promotion website at www.mhp.gov.on.ca

6.4.3 Go Green Ontario

The *Community Go Green Fund (CGGF)* was announced by the Province in late 2007 as a four year, \$6.6 million dollar program that provides funding for local projects that reduce greenhouse gas (GHG) emissions. Press releases indicate that “The Community Go Green Fund will provide funding for not-for profit groups at the local and grassroots level to take action on global warming and run programs in Ontario communities.” Registration for information is available at www.gogreenontario.ca

6.4.4 Provincial Infrastructure Funding

Infrastructure Ontario provides information on current capital infrastructure grant financing through Ontario. The Province of Ontario has invested a significant amount in municipal infrastructure over the past several years through a range of programs including the one time only 2007/2008 Municipal Infrastructure Initiative (MII) under the Renew Ontario initiative. The provincial infrastructure programs are updated periodically, and are focused on major capital infrastructure projects. Municipalities have benefited from these programs for trails development, including the following announcements in 2008: the Millers Trail North, in Ajax; and the East Hamilton Recreational Trail and Hub, Hamilton.

Infrastructure Ontario's *OSIFA Loan Program* provides affordable loans for public sector borrowers:

- Affordable rates updated weekly online
- On-line application and access to funds within 6-8 weeks
- Loans can be used for any depreciable capital expenditure
- Flexible terms (up to 40 years) designed to match the life of the asset

Information on Infrastructure Ontario programs can be found at www.infrastructureontario.ca

APPENDIX A: RAILS-WITH-TRAILS IN OTHER JURISDICTIONS

1.0 RAILS-WITH-TRAILS IN THE UNITED STATES

In the United States the popularity of rails-with-trails has grown along with rail-trail conversions. In the United States, the Rails to Trails Conservancy (RTC), which is the leading advocacy organization for rail-trails, first reported on Rails-with-Trails in 1996. At that time there were 37 rails-with-trails identified. The RTC second report, prepared in 2000¹, analyzed 61 existing rails-with-trails, with at least another 20 in the planning stages. The rails-with-trails corridors traversed 837 kilometres (523 miles), with 382 kilometres (239 miles) (46%) running adjacent to an active rail line. The website for the Rails-to-Trails Conservancy states that there are currently more than 115 rails-with-trails in the US.

In Canada, however, there are relatively few examples of rails-with-trails, likely due to our more limited system of railways and the extent of recent rail line decommissioning in urban and near-urban areas which has allowed for the development of rail-trails. An article written in 2004, for Canada's *Leisure Trends Monitor*², identified 6 known examples of rails-with-trails across Canada. Four are profiled here.

2.0 CANADIAN EXAMPLES OF RAILS-WITH-TRAILS

Montreal, Quebec. A 3 km path which runs alongside a four-track main line of CP Rail. The corridor is owned by the City with a portion leased back to CP. The trail was initiated in the early 1990s by the former City of Montreal, Parks Service Department as an off-road cycleway. The trail is separated from the rail line by a 2m (7 foot) chain-link fence.

Waterloo, Ontario. The Laurel Trail, a 5 km section of the Trans Canada Trail through the downtown core and the University of Waterloo campus. Formerly a CN Rail Line, the corridor is now owned by the Region of Waterloo. In 2004, the track operated slow freight trains, two or three times daily. A trail count on a weekend day found 458 users during a 6-hour period. At some locations the track and trail are as close as 1m, with no barrier fencing. In 2004, the City reported that since establishment as a trail route, there has never been an incident. This corridor has been identified as a major transportation line for future light rail transit.

St. Thomas, Ontario. A 4.8 km long, 3m (10 foot) wide asphalt trail, which runs east/west through downtown St. Thomas, population 35,000. The corridor is owned by CN/CP with a portion leased to the St. Thomas Trans Canada Trail Committee and the City of St. Thomas. Although not heavily used, the line is considered active. A 1.8m (6 foot) chain-link fence, separates the rail from the trail. The 3m (10 foot) asphalt path is maintained by committee members, trail users, and the City, and is reported to be well used by commuters, families, youth and seniors.

Victoria, B.C. The E&N is a short-line railway, over 160 km (100 miles) in length, and only one of two remaining railways on Vancouver Island. In 2006, the railway and its historic assets, which include 6 stations and several trestle bridges, were donated to a newly formed not-for-profit organization, the Island Corridor Foundation, comprised of local governments and the First Nations. A rail-with-trail was proposed by the local community. The ICF was receptive to the rail trail plan and discussions have led to the development of a master plan, which is currently in its first phase of implementation. The width of the railway corridor ranges from 15-to 30-metres, and the trail will range from 3m- to 4m in width. Where the corridor is wide enough, there will be a natural separation between the

¹ Rails To Trails Conservancy, Rails-with-Trails: Design Management and Operating Characteristics of 61 Trails Along Active Railroads

² Rails-with-Trails in Canada, Anne Robinson. produced for Canada's *Leisure Trends Monitor*. 2004

trail and rail operations. Where the corridor is narrower, physical barriers will separate the two uses. The 17-kilometre trail is expected to be completed prior to the Winter Olympics in 2010³. Freight and VIA Rail passenger service continues, and commuter rail between the southern communities of Victoria and Duncan will be studied in the future.

3.0 DESIGN STANDARDS FOR RAILS-WITH-TRAILS

Of most concern to those investigating rails-with-trails is the safety aspect of running a trail alongside an active rail line, and the design standards that should be applied in developing trails. The literature review suggests that this would appear to be a function of opportunity, local site conditions, and agreed-upon standards between governmental jurisdictions and rail companies. The Rails to Trails Conservancy reports that rails-with-trails are operating successfully under a wide variety of conditions. Some are located very close to the rail tracks, while others are located some distance away. Trails are located along active tracks operating high-speed, high-frequency train services, as well as on industrial branch lines or tourist railroads with slower trains operating only a few times per week. Rail-with-trail examples in the United States have both at-grade crossings as well as utilizing bridges and underpasses or overpasses.

Most relevant to the Town of Bradford West Gwillimbury is how to define an appropriate setback of the trail from the rail line, and whether to provide a protection barrier, such as fencing, between the two. Ownership of the lands where the rail traverses should be determined because this could place a municipality in the unique position of being able to make its own determination on the design criteria. For reasons of shared potential liability, the interests and opinions of the rail line owner, rail operator and its users will need to be considered during the design and implementation of the trail. To assist in this discussion, the findings of the Rails to Trails Conservancy 2000 report with respect to trail separation and protection barriers are summarized below.

Most of the US rails-with-trails examples include a wide range of conditions and operational circumstances, including trails adjacent to high speed, frequent train service and those along industrial spur lines where trains operate a few times per week. Due to the number of jurisdictions and railroad operators involved in rails-with-trails across the US, the 61 case studies examined by the Rails-to-Trails Conservancy include a range of design standards. Some use extensive separating fences or barriers, while other trails are designed to be unprotected. Even on fairly active rail lines separation of the trail from the rail line ranges from a minimum of 0.60m (2 feet) to a maximum 30m (100 feet).

Of the 61 case studies examined by the Rails to Trails Conservancy, 32 of the 61, or 52% had a separation between rail and trail of less than 6m (20 feet), and 14 of the 61 surveyed (23%) were 3m (10 feet) apart or less. Of those with setbacks less than 3m, the setback ranged as low as 0.60m (2 feet), with most (8 out of 14), under 6 feet.

Although more than 60% of the Rails-with-Trails studied included some type of protection barrier, of those with setbacks less than 3m (10 feet), a total of 9 out of the 14 (65%) had no barrier between rail line and trail, while the balance (5 out of 14, or 35%) had a barrier. Protection methods in these cases included 1.2m (4 ft) chain link fences (2), grade separation (1), vegetation along selected sections (1), and a split-rail fence (1). With the exception of the chain link fence, the barriers for the most part do not protect against intentional crossing of the rail line, but might serve against accidental straying, or improve the level of comfort for trail users.

³ The E&N Rail Trail Newsletter, Fall 2007, Capital Regional District of Vancouver Island

| The Rails to Trails Conservancy study also included an assessment of liability, insurance and claims across the 61 case studies. After examining 34 years of rail-with-trail history in the US, the study identified only three known cases of an accident involving trains and trail corridors. In all cases, the accident did not involve trail users, and could have occurred in the absence of a trail. One involved a cyclist who drove around the warning gates, and collided with a train at a road/rail crossing; the second involved a pedestrian that crossed a trail corridor from an adjacent residential area and tried to jump on a slow-moving train; and the third was an alcohol related incident whereby the car drove along a disused rail line (not yet a trail), fell off a bridge and was hit by a train on another line. Based on the low occurrence of accidents, the RTC study concluded that using a rail-with-trail may be significantly safer than walking or cycling next to a busy road.

APPENDIX B: TRAIL DEVELOPMENT GUIDELINES

1.0 GREENWAY TRAILS

Greenway trails are trails that are located in parks and open space lands. In Bradford West Gwillimbury, these include the 'boulevard trails', those developed in the boulevard adjacent to a road in lieu of a sidewalk. The guidelines include a hierarchy of greenway trail types and development standards to suit a variety of local conditions.

1.1 Walking/Hiking Trails

- i) *Suitable Locations*. Buffer areas, and natural environment areas such as woodlots, wooded or narrow valleys, where environmental constraints exist; or in rural to semi-rural areas where low usage is anticipated (<5000 users per year).

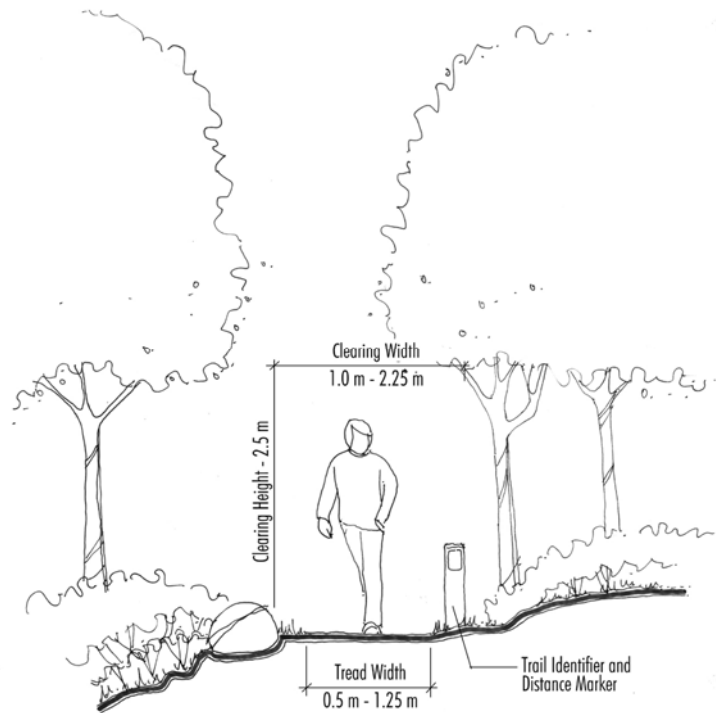


Figure C-1: Walking/Hiking Trail Cross-section

- ii) The following design standards shall apply (Figure C-1):
 - Clearing width*. 1.0 m minimum – 2.25 m
 - Tread width*. 0.5 minimum - 1.25 m
 - Clearing height*. 2.5 m respecting sensitive vegetation.
 - Surface*. Natural surface or woodchips

Grades: The trail is to match the natural terrain as much as possible to minimize environmental impacts. 0-20% with maximum sustained grades of 25% for short distances with regard for erosive slopes and sensitive embankments.

- iii) Trail width and surfacing shall be determined based on site specific conditions. Low use walking/hiking trails and trails through sensitive natural environment areas (where approved) shall be based on minimum widths to minimize environmental impacts. In areas of lesser environmental sensitivity, parks, or close to residential areas where higher usage is anticipated, wider tread widths and granular surfaces may be used (see Low Impact Multi-Use Trails, following).

1.2 Low Impact Multi-Use Trails

- i) *Suitable Locations:* Broad, open valleys and floodplains; dry woodland areas; buffer and setback zones adjacent to environmental areas; parks; and in close proximity to residential areas where walking and limited seasonal cycling uses are anticipated and/or permitted.

- ii) The following design standards shall apply (Figure C-2):

Clearing width: 3.0 – 5.0 m

Tread width: 2.0 – 2.7 m. Wider minimum tread width in areas where cycling is anticipated, or where trail may eventually be paved.

Clearing height: 3.0 m.

Surface: Compacted limestone fines. Can be upgraded to asphalt should use increase or cycling and accessibility be a consideration.

Grades: 0-5% with maximum sustained grades not exceeding 10%.

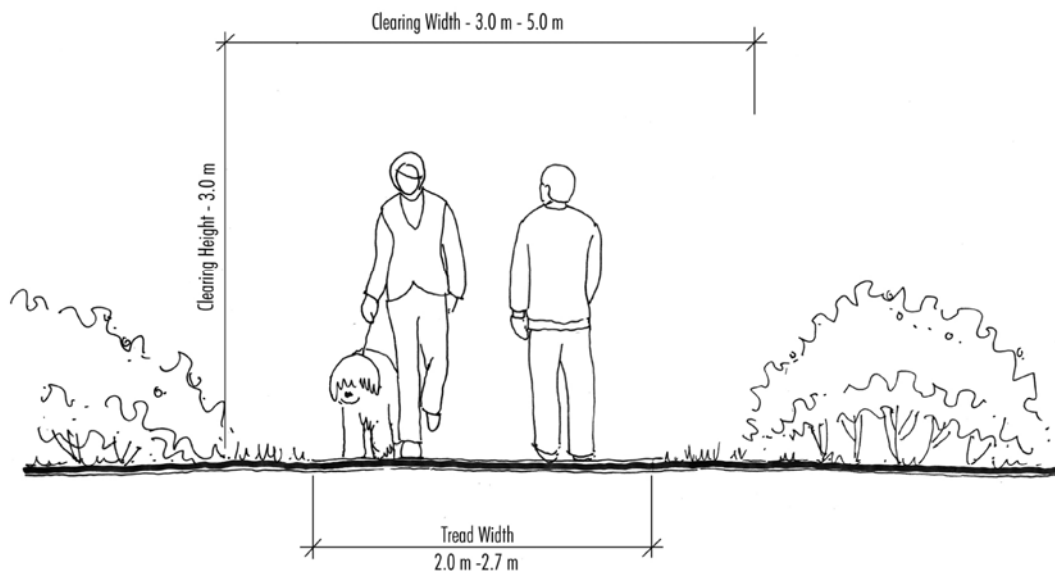


Figure C-2: Low Impact Multi-use Trail (granular surface)

1.3 Paved Multi-use Trail

- i) Suitable Locations: Roadway boulevards, urban parks and open space areas, broad open valleys and floodplains or buffer areas without significant environmental constraints, and where moderate to high levels of use are anticipated including cycling and rollerblading. Also, areas where full accessibility or winter clearing is a consideration.
- ii) The following design standards shall apply (Figure C-3):
 - Clearing width:* 4.5 m – 8.5 m
 - Tread width:* < 500 users/day = 2.5 m.
>500 users/day = 4.0 to 4.5 m.
 - Clearing height:* 3.0 m
 - Surface:* Asphalt or concrete (see pavement specification in Section 3.15)
 - Grades:* 0-5% with less than 3% optimal. Maximum sustained grades of 6 %
- iii) Trails that are intended to accommodate cycling and in-line skating shall avoid blind corners, sudden grade changes or steep slopes terminating at path to path or road or path intersections. Also, additional tapered path widening should be provided on the inside of significant curves.
- iv) Where steep grade changes occur on an approach to a roadway, a switchback shall be provided.

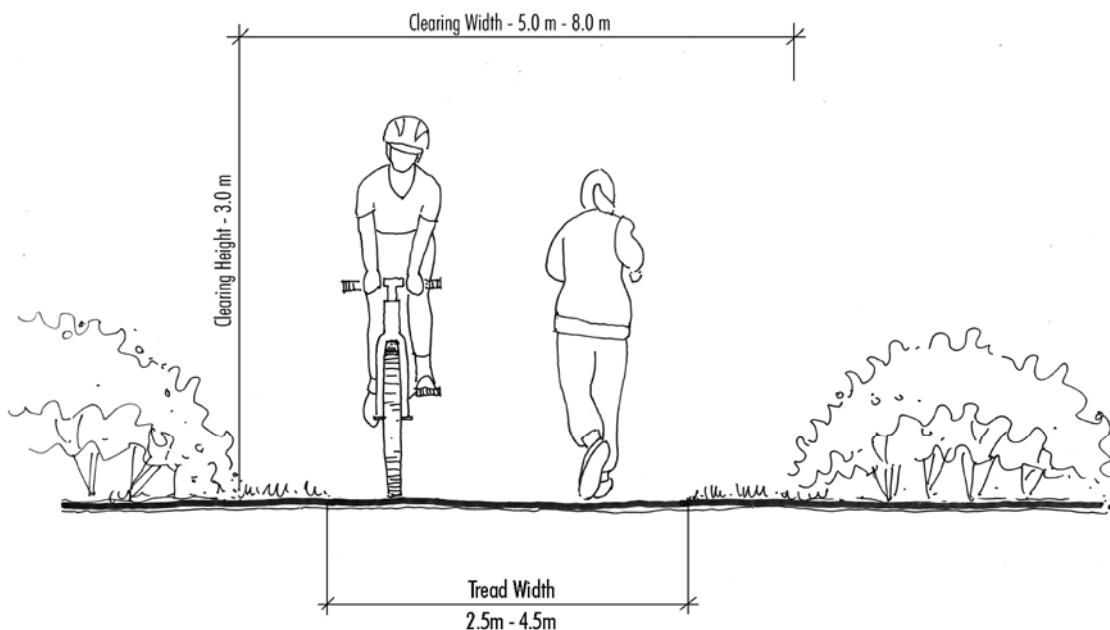


Figure C-3: Paved Multi-use Trail

- v) Signs shall be provided indicating changes from one trail type to another (non-motorized multi-use to motorized multi-use trails). Users not permitted shall be re-routed to other trail routes or to staging areas where motorized trail riding equipment can be loaded onto trailers.
- vi) Pathways should be designed with a minimum 2% cross-slope for stormwater runoff. This slope should be lower on the inside of any curve for greater cornering safety. Swales will be required on the uphill side of paths to reduce hazards on the path and maintain its structural integrity.
- vii) Grades on multi-use paths should be kept to a minimum, especially on long inclines. Grades greater than 5% for paved surfaces and 3% for unpaved surfaces (e.g. crushed stone), are undesirable because the ascents are difficult for many cyclists to climb and the descents cause some cyclists to exceed the speeds at which they are competent. However as terrain dictates, grades over 5 percent and less than 150m long are acceptable when a higher design is used and additional width is provided. It is recommended that a minimum of 0.5 percent be used for proper drainage. Routes with steep grades should be assessed by the designer to ensure that the prevailing conditions fit the type of cyclists expected.

1.3.1 Design Criteria for Cycling

- i) *Clear Zone* :
 - (a) 6:1 slopes for 0.6m adjacent to path
 - (b) 1.5m separation to slopes steeper than 3:1
- ii) *Horizontal Clearance*:

A minimum horizontal clearance of 0.5m is recommended with a preferable clearance of 1.0m for obstructions such as poles, trees, fences, etc. A curb with a height greater than 150mm is considered a lateral obstruction as measured from the bikeway edge. Fences/ barriers should have a lateral clearance of 1.0m from the edge of the path. If this is not possible, the edges should curb back so that they are at least 1.0m away. This distance will prevent the cyclist's handlebars from clipping the edge of the barrier and falling.
- iii) *Vertical Clearance*:

A minimum vertical clearance of 2.5m should be used with 3.5m preferable. The 2.5m will allow just enough comfort space for a cyclist. A minimum of 3.5m should be used for tunnels and underpasses. Overhanging foliage should also be trimmed to this height. Fence railings should be a minimum of 1.4m high to prevent cyclists from falling over the top. This height will allow cyclists to maintain proper visibility.

2.0 RAIL WITH TRAIL

It is assumed that the rail with trail itself will be designed to the standard of a multi-use, paved trail. However, a careful measurement of the total right-of-way is needed to determine setback. It may prove that no specific standard can be applied along the length with respect to trail and rail separation, and a detailed assessment is required to confirm the most feasible routing and design of the trail. No comprehensive standards are available for rails-with-trails, as the situation and conditions varies across the spectrum of examples. The US based Rails to Trails Conservancy is the best source of information regarding rails-with-trails. Appendix A summarizes some of the findings of the organization's research¹.

¹ Rails To Trails Conservancy, Rails-with-Trails: Design Management and Operating Characteristics of 61 Trails Along Active Railroads

40 km/hr	47
50 km/hr	74

3.3 Vertical Alignment

- i) Grades on multi-use paths should be kept to a minimum, especially on long inclines. Grades greater than 5 percent for paved surfaces and 3 percent for unpaved surfaces (e.g. crushed stone), are undesirable because the ascents are difficult for many cyclists to climb and the descents cause some cyclists to exceed the speeds at which they are competent. However, terrain dictates, grades over 5 percent and less than 150m long are acceptable when a higher design is used and additional width is provided. It is recommended that a minimum of 0.5 percent be used for proper drainage. Routes with steep grades should be assessed by the designer to ensure that the prevailing conditions fit the type of cyclists expected.
- ii) Crest curves control the distance that a cyclist can see ahead. The longer the curve, the farther a cyclist can see. The minimum length required is a function of the sight distance and algebraic difference between grades on either side of the crest. For information on crest and sag vertical curves, see reference sources 3 and 4 in the Technical Bibliography.

3.4 Grades

- i) Paved Paths \leq 5%
 5-6% for up to 150m
 7% for up to 120m
 8% for up to 90m - Also add width for long steep climbs to permit passing
 9% for up to 60m
 10% for up to 30m
 11% for up to 15m
- ii) Gravel or unpaved paths \leq 3%

3.5 Stopping Sight Distance

Stopping Sight Distance is the distance required by a cyclist to come to a complete stop upon spotting an obstacle. It is a function of perception and reaction time, tire/surface friction coefficient, grade, cyclist speed and the braking capabilities of the bicycle. The following formula can be used to calculate the estimated stopping distance.

$$S = 0.694V + \frac{V^2}{255 (f + G/100)}$$

Where: S = stopping sight distance, in metres
 V = speed, km/hr
 f = coefficient of friction
 G = grade, % (upgrade is positive and downgrade is negative)

Stopping Sight Distance for Design Speeds ²

Design Speed	Grade % (Downgrade = negative, Uphill =positive)
	Stopping Plus Reaction Distance (M)

² Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 1999

(km/hr)							
	+10%	+6%	+2%	0	-2%	-6%	-10%
10	8	8	8	9	9	9	10
15	13	13	14	14	14	15	16
20	18	19	20	20	21	22	24
25	24	25	26	27	28	30	34
30	-	32	34	35	36	39	44

3.6 Cross-Section Elements

i) The width of a cycling envelope and the required road cross-section designs depend upon the forecasted Average Annual Daily Traffic (AADT) volume of the road, parking along the roadway, posted speed (km/hr), and the percent heavy trucks. A brief explanation of each element is provided below:

- Forecast Year: The forecast year is ten years beyond the year of construction.
- Posted Speed: The lane widths are for roads with posted speeds less than 70 km per hour. For roads with speeds posted at 80 km. per hour a separation from the travelled way to the bike lane of 0.50m should be provided between the motorized traffic vehicles and bicycle lane. For roads with posted speed greater than 80 km per hour, on road bicycle facilities are not recommended.
- Trucks: The lane widths are for roads with 6% or less trucks. For roads with greater than 6% trucks, a separation should be provided between the motor vehicle lane and bicycle lane of 0.5 m. This 0.5m is in addition to vehicle separation identified for posted speeds of 80 km per hour.
- Rural Roads: The minimum lane widths are for both urban and rural cross-sections. Although compacted granular shoulders provide for greater flexibility in rural areas, the higher speeds of traffic warrant a greater separation between the bicycle and motorized vehicle. The hard surfacing of road shoulders in rural areas not only accommodates bicycles but considerably reduces road maintenance costs.

ii) On-Road Lane Widths

For on-street bikeways, lane widths are measured from the edge of the gutter pan to the edge of lane markings. Wheels of heavy vehicles tend to cause rutting along the outer road edges lowering the actual travel space available. Extra width should be provided on roads with heavy vehicle traffic to ensure proper travel space for cyclists. Widths of multi-use paths are intended as the actual travelled portion of the path. **Table C-1** summarizes suggested lane widths, based on design criteria found throughout the literature review, and widely in practice.

iii) Bicycle Lane Adjacent to Parking Stalls

When a bike lane is located adjacent to parking stalls, a minimum additional width of 1.6m is recommended to accommodate cycling. This is enough space to ensure that a cyclist will not be hit by a motorist opening the car door, and will provide space for cyclists to move into when vehicles are entering/exiting the parking spaces (Figure C-5).

TABLE C-1: ON-ROAD BICYCLE CROSS-SECTION DESIGN STANDARDS			
Road Class	Roadway/Volume (summer weekday average)	Cycling Lane Treatment	Required Pavement Width
Rural Concession Road, Collector Road or Arterial Road (Figure C-4)	>3,500 vpd (assumes lane width of 3.75m otherwise see below)	Partial paved shoulder with edgeline	< 70 km/h: 1.0m > 70 km/h: 1.5m
	1,500 to 3,500 vpd where lane widths are < 3.5m	Partial paved shoulder with edgeline (< 70 km/h: no paved shoulder)	> 70 km/h: 1.5m
Urban Collector/ minor arterial (Figure C-5)	Urban 3,000 – 10,000 vpd	Shared curb lane	5.0m
Urban Arterial (Figure C-6)	> 10,000 vpd	Exclusive cycle lane	< 6% Trucks: 1.5m > 6% Trucks: 1.5m + .5m separation
Urban Local/minor collector (e.g. signed Cycling Routes)	Urban < 3,000 vpd	Shared use curb lane	No minimum

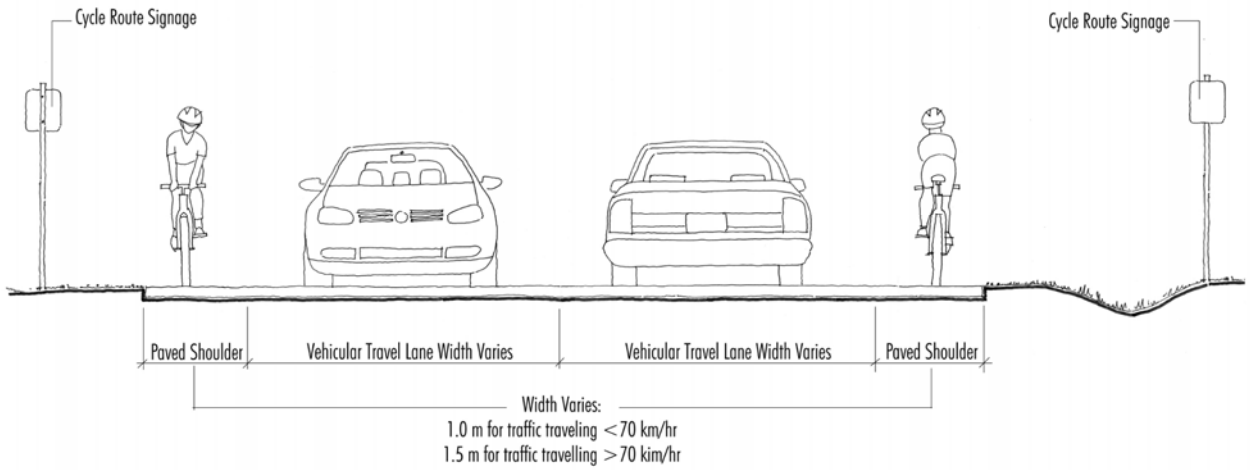


Figure C-4: Cross-Section of Rural Concession Road, Collector Road or Arterial Road

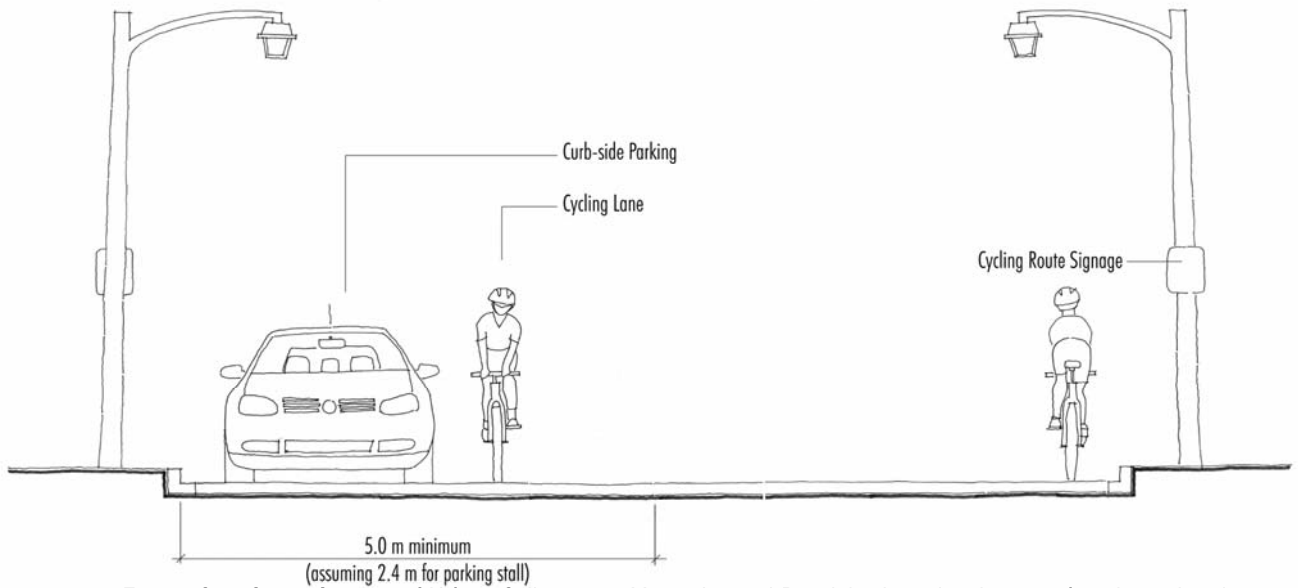


Figure C-5: Cross-Section of Urban Collector or Minor Arterial Road (with and without curb-side parking)

3.7 Designation of Cycling Routes on Roadways

- i) Considerations for Signing a Cycling Route: (indicating particular advantages to using these routes)
 - (a) facilitates travel in high use corridors or areas
 - (b) is part of a loop and/or connects discontinuous segments of greenway trails
 - (c) has restricted parking
 - (d) a smooth surface has been provided, e.g. Catch Basins are bicycle proof
 - (e) route is maintained to a higher standard, swept, debris, etc.
 - (f) wider curb lanes are provided, or paved shoulders meet or exceed lane width requirements

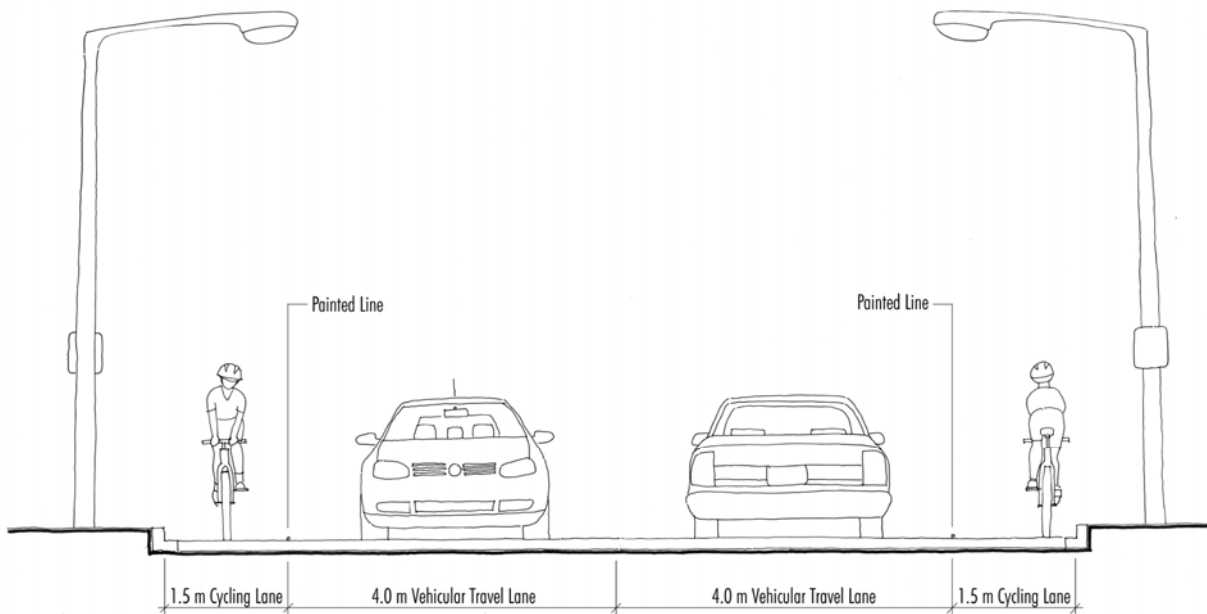


Figure C-6: Cross-Section of Urban Arterial Road

3.8 Cycling Route Signage Types and Requirements

Sign Category	Off-Road Routes	On-Road Routes
1. Regulatory (required by-law or legislation)	Use of regulatory signs requires appropriate regulatory by-law accompanied by regular enforcement. Since enforcement is not available and trails are not considered to be public roads, regulatory signs as defined by the Highway Traffic Act have limited usefulness in off-road locations.	1. Cyclists using shared use lanes are governed by the roadway signage and treated as a vehicle under the Highway Traffic Act in Ontario. The Provincial and National sign standards manuals apply to both motorists and cyclists. 2. Designation of Bike Lanes requires specific by-laws to be accompanied by signage and pavement markings Note: As of March 2008 the Transportation Association of Canada (TAC) is in the process of developing a suitable standard for signage and pavement markings for designated bicycle routes, as one of several supplements to its 1999 Bikeway Traffic Control Guidelines for Canada. This should serve as the design reference when completed³). 3. Greenway boulevard trails are treated as sidewalks although they are parallel and separate. <u>Signing at intersections to indicate crossing on foot by cyclists is required by Provincial statute.</u>
2. Warning Signs	Examples: - Intersection Ahead, STOP Ahead, Railroad Crossing Ahead - Steep Hill Ahead, Sharp Curve - Roadway/pathway Narrows - hazard markers: Bump Ahead, Low clearance/headroom, truck entrance - Door Opening Warning (parking)	1. Standard roadway signs as per MUTCD for Canada ⁴ apply to roadway traffic operations regardless of the location of the trail in the road allowance. Note: MUTCD guidelines pertaining to bicycle facilities and signage are under review by TAC in conjunction with updating of the Bikeway Traffic Control Guidelines.
3. Information Signs	- Trail name / designation - direction arrow - “keep to the right, pass on the left” - Destination information (i.e. “Downtown 2 km”) - identification of municipal borders and cross-street names - way-finding signs where greenway trails continue along on-road routes	1. Shared use bike routes and Greenway Boulevard trails require designation and destination directional information signs, e.g. ‘to Downtown’. These information tabs are applied with arrows indicating direction when choices are available. 2. Designation of ‘ Exclusive Bike Lanes ’ requires route markers and directional information signs similar to the above. Other information signs common to both trail types include:

³ Transportation Association of Canada, www.tac-atc.ca

⁴ Manual of Uniform Traffic Control Devices for Canada, Transportation Association of Canada, 2000

Sign Category	Off-Road Routes	On-Road Routes
		<ol style="list-style-type: none"> keep right except to pass identification of municipal borders and cross-street names
Information Map with Route Legend	<ul style="list-style-type: none"> At trailheads showing overall routes by colour and skill level These signs should be accompanied by pamphlet style pocket maps for way-finding along the trail routes. The pocket maps could save costly route marking for the lengthy trail routes. 	<ol style="list-style-type: none"> At Trail heads These signs should be accompanied by pamphlet style pocket maps for way-finding along road routes. The pocket maps could save costly route marking for the lengthy on-road system.

3.9 Sign Mounting

- Off-Road: 1.0m to 2.0m offset; 1.8m mounting height
- On-Road: 0.60m offset from curb; 1.8m to 3.6m offset from e/p rural cross-section

3.10 Pavement Markings

- On-Road Shared Use – more passive use
 - wider lane
 - cycling route signs
- On-Road Cycling Lanes AASHTO Page 22-32 (refer to Transportation Association of Canada (TAC) when new Bikeway Traffic Control Guidelines are complete)
 - designated
 - diamond signage
 - by-law designations (Municipal Act RSO 1990 Section 308(5))

3.11 Posted Speed Limits

- Off-road shared use trails/paths
 - paved 20 km/hr limit (20 km/hr design speed)
 - gravel 15 km/hr

NB: unenforceable speed limits should be discouraged. Instead, design the path to signal users as to the safe operating speed, i.e. positive guidance.

3.12 Sewer Grates and Utility Covers

- OPSD Drawing 610.01 Rev. 1 – catchbasin grate designed not to catch wheels

3.13 Intersection with Bicycle Lanes

- Intersection with bicycle lanes should be marked according to TAC⁵ guidelines.

3.14 Path Crossings

- Mid-block path crossings with busy streets are discouraged since motorists are often not prepared for cyclists crossing the street at mid-block. Advanced alignment (horizontal and/or vertical) changes should be applied to reduce cyclists' speed for a stop or yield. Proper sight distances to cross the roadway are required.

⁵ Geometric Design Manual Chapter 3.4 Bikeways, Transportation Association of Canada, Ottawa, Ontario, 1999

3.15 Pavement Surfaces / Thickness

- i) On-Street Bikeway Lane
 - surfacing and thickness to match driving lane

- ii) Multi-Use Path Accommodating Cycling
 - 40mm HL3 asphalt surface (MTO standard)
 - 150mm Granular 'A'
 - 150 to 300mm Granular 'B' as required
 - 100mm portland cement concrete
 - 100mm Granular 'A'
 - 75mm limestone screening
 - 100mm Granular 'A'
 - 150 to 300mm Granular 'B' as required
 - 250mm of rail bed ballast for rail trails
 - 2 aggregate lifts on surface treatment binder
 - 100mm Granular 'A'
 - 150 to 300mm Granular 'B' as required

3.16 Bridges, Underpasses and At Grade Crossings

- i) Where possible, road crossings across the major creek systems should employ open span bridges or box culverts that will facilitate the construction of the trail system. The construction of bridges should ensure adequate shelf area for the construction of the trail system as part of the bridge construction works.

- ii) Mid-block crossing of collector road and higher classifications roadways, shall be accommodated using median refuge treatments. In addition, mid-block crossing of minor arterials shall be accommodated using intersection pedestrian signals. Careful consideration of the location of such crossings shall have regard for pedestrian patterns, vehicular speed and volume.

- iii) Bridges, tunnels and at grade road and rail crossings require special consideration to avoid hazardous conflicts between users, particularly higher speeds. Where a path requires these facilities, the following should be considered.
 - Maintaining path widths

Trails through open areas are designed with a clear strip on each side as a safety area should there be an emergency. The minimum clear width through a structure or between the railings of a bridge should be the same as the approach path. It should have the width of the paved area plus the clear area. The minimum width of the paved path plus 0.6m on each side is recommended. This clear area provides for the horizontal shy distance from the railing or barrier and maneuvering space to avoid conflicts with pedestrians and other cyclists who are stopped on the bridge.

 - Ensure adequate sight distances

Most paths are kept back of top of bank as they travel along the valley. In these settings there is adequate sight distance to avoid surprises. The sight distance should enable you to stop in half the distance you can see or at least avoid an obstacle on the path. As the path approaches structures

crossing the valley, it is forced closer to the water to get under or over these structures. This change of alignment must be sufficiently early with gentle curves to maintain adequate sight distance. There may be circumstances where this is difficult to achieve. In these situations other means, such as partial path barriers must be installed to reduce bicycle travel speed for adequate sight distance. Other measures that should be considered for improved safety where site distances are limited include, strategically placed mirrors, two broad lines down the centre of the path, a system at each end to give audible warning of the approach of cyclists such as metallic plates in the ground and signs prohibiting passing.

- Construct safe railings

Where railings are required for safety, they must be designed to avoid being a hazard. The railing should be a minimum 1.1m high, with its end a minimum 1 metre from the traveled path. This separation of railing from path can be accommodated by flaring the ends away from the path or, where there is sufficient room, by locating the railing a constant 1m from the path.

- Smooth pavement surfaces on approaches

Differential settlement and frost heave between structures and on ground paved surfaces, the paths approaching structures may require more regular maintenance to prevent an unsafe condition. When constructing new facilities, care must be taken to provide sufficient compaction (minimum SPD of 98%) of soils and granular base to avoid problems in the future.

- Proper curb cuts and bollard at path entrances

Most paths entrances have restrictions to motorized vehicles in the form of bollards. These posts must be colourfully painted and have appropriate lane markings so as not to be a hazard to path users. In addition where a path has an at-grade road crossing, the curb cuts should be designed to provide a safe transition in the grade differences. Also, adequate signage and restrictions on direct travel must be installed to provide path users with adequate opportunity to cross the street safely. Painted lines or alternative pavement treatment on the road surface will assist in alerting motorists to the crossing.

- Barrier gates

Barrier gates may be required at the intersection of cycling trails with major arterial roads, to ensure that users slow down sufficiently to assess the traffic conditions, and to deter non-recreational vehicle access.

- Safe angles for railroad crossings

Significant grooves in the traveled path such as railway tracks cause a hazard for thin wheeled bicycles. These obstacles should be crossed at 90 degrees if possible.

- Adequate compensation for dark tunnels

Visibility is severely limited by the difference in light between inside and outside a tunnel. In situations where tunnels are long or the approach does not offer a direct line of sight to the other side, consideration should be given to providing lighting in the tunnel.

Recommended design references for bicycle trails and crossing structures are: *Guide for the Development of Bicycle Facilities* by the American Association of State Highway and Transportation Officials, 1999, the *MTO Ontario Bikeways Planning Guidelines* and the *Review of Planning Guidelines and Design Standards for Bicycle Facilities* by the Institute of Transportation Engineers.

4.0 AMENITIES AND INFRASTRUCTURE

- i) Community access areas and rest stops should be located at strategic points along the trail system. The location and design of these *minor trailheads* should consider public safety and accessibility for maintenance vehicles. Facilities might typically include seating, bike racks, waste receptacles and trail route signs.
- ii) Additional facilities along the trail systems will vary depending on locale and trail type – i.e. lighting may be desirable for trails within a park setting or through areas with limited egress, and public visibility, while not appropriate for valley trails due to wildlife considerations.
- iii) Bike parking racks shall be encouraged at all destination points (parks, shopping areas, public facilities). Additionally they shall be located at access points to walking-only trail segments to ensure appropriate trail use.
- iv) At a minimum, bicycle racks shall be of a design that permits use of steel U-locks for secure locking of one wheel and frame, (both wheels for bicycles equipped with quick release front wheels) and must support the bicycle above the axle. These types of facilities are best suited to short term use in busy areas. More secure bicycle facilities that permit the bicycle frame and both wheels to be locked without removing a wheel could be considered for longer term parking or areas where there is little pedestrian traffic (e.g. day hiking areas).
- v) Litter receptacles shall be provided for all urban trails, with consideration of access by maintenance vehicles and animal problems. Signage directing trail users to carry out garbage, coupled with provision of receptacles, including recycling, at trail access points shall be provided for non-drivable trail segments.

5.0 SAFETY AND SECURITY

5.1 Lighting

The lighting of trails is governed by municipal by-laws concerning hours of use in parks, financial consideration, and safety concerns. Generally trails will not be lit in Bradford West Gwillimbury, however where trails are to be lit, the following should be considered:

- i) Lighting of trails can present an illusion of safety and should not be used in remote areas where safety concerns exist. Lighting of urban greenspace trails where the trail is visible from adjacent streets, residences or other well-used areas, particularly those connecting to transit nodes, may be appropriate.
- ii) Trails to be lit shall provide consistent lighting, avoiding areas of darkness, and ensuring both horizontal (pathway, obstacles and pavement markings) and vertical illumination (signs, approaching cyclists and visibility to motorists). If the path contains hazards such as sharp turns or concealed slopes, the illumination levels should be higher.
- iii) Higher illumination levels shall be provided in tunnels and at intersections with streets for a distance of 25m.
- iv) Metal halide and high pressure sodium lamps are typical light sources, chosen for high efficiency, high quality light and long lamp life. High pressure sodium is frequently recommended for lighting pathways,

however facial identity and colour rendition may be less distinct, creating a feeling of insecurity for pedestrians.

It should also be noted that Cyclists are required to have a front light and reflectors when cycling on roadways at night and one-half hour before sunset and one-half hour after sunrise.

5.2 Roadway Crossings

- i) Open sightlines to the road from the trail should be provided:
 - 60 m back from high speed roads
 - 30 m back from low speed roads
- ii) Sightlines should be open far enough along the road to gauge how fast traffic is moving at non-signalized crossings.
- iii) Lockable gates should be installed at all trail/road junctions to prevent access by non-permitted users.
- iv) Signage should be provided along the roadway to alert motorists to the trail crossing ahead.
- v) Signage should be provided along the trail to alert users of upcoming roadway junctions.

5.3 Vegetation Management

- i) Vegetation planted adjacent to trails shall be located to prevent low hanging branches and protect sightlines, particularly at curves and hills.
- ii) Periodic inspection and trimming of trees and vegetation shall be undertaken to ensure trail safety and to maintain minimum clearing widths.

5.4 Awareness

- i) For trails in secluded locations, i.e. through valley corridors, signage should be posted at trailheads and entrance points noting the remoteness and distance to the next access point.

6.0 TRAIL SIGNAGE SYSTEM

6.1 General Design Criteria

- i) Signage for the trail system should be designed as a comprehensive family of signs with a consistent identifying graphic style, image or trail logo. The following general guidelines apply to all signage types.
 - consistency of design and graphic communication;
 - clarity in conveying the desired message to a range of users, from adults to children;
 - vandal and weather resistant materials;
 - of a size and design that is clearly visible and understandable to the targeted trail user, i.e. cyclists vs. pedestrians;
 - compatibility with surroundings, in use of colour, materials, size and placement;

- ii) Signage should be designed to address general trail information, regulatory and directional information, and interpretation/education (refer to Section 3.8 for sign standards specific to bikeways).

6.2 Trail Identification/Information Signs

- i) These signs would be provided at *major trailheads* and key access points, and could include:
- trail identification including: trail name, trail identity logo and Town of Bradford West Gwillimbury information. Trails that are components of a larger regional system, e.g. if marketed as part of the 'Hills of Headwaters' could also carry the logo of the parent trail.
 - trail route map (at trail heads and road crossings), showing trail loops and distances, degree of difficulty, and any notable hazards such as steep slopes;
 - In addition to trailblazer signs posted along road routes, pocket route maps are an essential to aid planning of trip length and gauging skill demand and difficulty. The pamphlets should be placed at trail heads in waterproof clear plastic containers affixed to the overall route sign for easy, visible access.
 - trail user code of conduct;
 - notice board for promotion of trail related events or activities;
 - areas for patron recognition or sponsors;
 - trail management contact information.

6.3 Directional Signs

- i) Directional signs should be located at trail junctions and access points throughout the system, directing users to nearby facilities or other trail routes, and may include:
- trail system logo, styling and colours compatible with trail information signs;
 - trail name and/or distinctive logo, distance marker and directional arrows;
 - simple post markers with graphic or colour coding that identify the trail or trail loop and correspond with an overall route map at trailheads or on brochures.
- ii) Directional signs also include route markers used on roads. These signs shall be designed with a trail identity logo and/or colour coding and shall be in conformity with recognized standards in the Manual of Uniform Traffic Control Devices (refer to Section 2.8). In addition to trailblazer signs posted along road routes, pocket route maps are an essential to aid planning of trip length and gauging skill demand and difficulty. The pamphlets should be placed at trail heads in waterproof clear plastic containers affixed to the overall route sign for easy, visible access.

6.4 Regulatory Signs

- i) Regulatory signs display prohibitive information, warnings and cautions. Areas where these signs may be needed include: natural areas where access is discouraged; potential hazard areas (e.g. steep slopes, or bridges) and changes in trail type (e.g. multi-use to walking trails). Temporary trail closures due to conditions, wildlife considerations or environmental restoration should also be signed.
- ii) Regulatory signs should be designed as part of the overall signage system, using compatible styling, however the message should be easily recognized from a distance (e.g. international symbols, visible colours). Use of metal signs and posts typical of roadway signs is a cost effective design.
- iii) Prohibitive information should include brief, informative explanation with reason for the restriction, encouraging co-operation, and noting whether the situation is temporary or permanent.

6.5 Interpretive/Educational Signs

- i) These signs may be used in conjunction with a themed trail, or special feature areas along the trail. Trails may be developed on themes of wildlife and natural ecosystems, landscape or cultural heritage. The information presented should be both interesting and informative, and in natural areas, be oriented to building stewardship and responsibility for environmental management.
- ii) Interpretive/educational signs should be located within a widened trail node, at viewing locations or rest areas, to allow for unimpeded use of the trail.
- iii) Sign design and construction may vary according to the trail setting or storyline. A consistent design should be used within each trail loop, and each sign series should be compatible with an overall Town trail system identity.
- iv) The presentation of information should be suited to a wide range of users, including adults and children. The message should be both interesting and informative, oriented to educating trail users.

7.0 NATURAL ENVIRONMENT PROTECTION AND RESTORATION

The following are considerations for the development of trails within creek valleys and other natural areas. These are general guidelines and do not preclude the need for investigation of site specific conditions and trail design to suit, or the potential need for an Environmental Impact Study and/or approval by regulatory agencies.

- i) Wherever possible trails should be located above the regional storm flood line. Through narrow valley conditions or constrained areas, outside the 5 yr. flood line to reduce maintenance and reparation costs. Through underpasses this criteria may not be met. Temporary closure of trails during spring runoff or extended wet periods may be required.
- ii) In undefined creek valley corridors where minimum setbacks of 15 m (warm-water streams) and 30 m (coldwater streams) define the open space corridor, flood lines may not delineate the setback requirements. In these instances adequate setbacks from watercourses should be provided for all trails to allow for riparian planting. A setback distance of 5-10 metres is preferable with a minimum distance of 3m through constrained areas.
- iii) Planted riparian buffer strips shall be established adjacent to all stream courses that will assist in sedimentation control, erosion protection and filtration of runoff from adjacent paths. All work within these zones shall be in accordance with Conservation Authority requirements.
- iv) Development of new facilities such as trails, bridges, etc. should be undertaken with minimal disturbance to existing vegetation and without loss of stream corridor function or aquatic habitat, (e.g. the use of longer span bridges, natural stone rather than gabions within the stream channel).
- v) Perimeter fencing, log barriers or a buffer planting of thorny or prickly native species, (e.g. raspberry) may be required to deter access through sensitive areas or to block random trail routes.
- vi) Periodic/seasonal closures or re-routing of trails may be necessary to prevent permanent damage or to allow regeneration of the woodlot understory.
- vii) Construction within stream corridors shall be undertaken during the season when the stream is least sensitive (generally summer), and with the least impact on fish or wildlife habitat.

- viii) Restoration in riparian areas should include native species that have a high tolerance to flood conditions with deep or wide-spreading root systems to bind soil and reduce erosion. Aquatic habitat enhancement should be considered through the planting of species that overhang and shade the stream bed.
- ix) Landscaping within and adjacent to all natural environment areas should avoid invasive species. Native species should be used with an emphasis on species that are indigenous to the local conditions, as determined through field assessment and use of available data, (e.g. Ecological Land Classifications for Southern Ontario, Ministry of Natural Resources).

8.0 TRAIL ADVOCACY AND EDUCATION

- i) Public awareness and education are of paramount importance in responsible trails use, reduction in user conflicts and the prevention of environmental damage, and should be part of the marketing and promotion of recreational uses in natural areas.
- ii) Partnerships with trail associations, school environmental groups and community organizations should be encouraged for re-vegetation and planting programs, trails development (e.g. walking trails), and garbage clean-up, through such programs as Adopt-a-Park and Adopt-a-Trail.
- iii) Barriers (log fences or plantings) may be necessary to restrict access to trails or sensitive natural areas.
- iv) Reduced mowing strategies and naturalization in urban valley systems can be perceived by the public as neglect, and the use of these areas through recreational trails may draw additional attention to these issues. Informative signage will increase public acceptance of such measures. Natural areas that lie immediately adjacent to housing may require a higher level of maintenance to alleviate public concerns, such as mowing strips adjacent to fences.

9.0 MANAGEMENT AND MONITORING

- i) The recreational benefits derived from the use of the natural corridors for trails and other passive uses must be carefully balanced with the potential increase in impact on the natural environment. Monitoring of these developed natural areas will be important in ascertaining the successful integration of recreation with ecological objectives.
- ii) Routine trail maintenance should include monitoring for environmental damage, (e.g. twice yearly when mowing is done). Input from trail users and local residents should also be solicited. Specific areas of concern include:
 - Destruction of understorey vegetation and slopes as a result of trail breaking, “hang-out” areas, mountain biking, etc.
 - Destruction of trail surfacing by prohibited uses.
 - Creekbank erosion and destruction of riparian vegetation as a result of public access to the water’s edge.
 - Encroachment into natural areas from adjacent land-uses. The presence of public trails within buffer zones and natural areas, which are accessible to maintenance staff may reduce the occurrence of environmentally detrimental activities such as dumping, expansion of gardens, etc.

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APPENDIX C: TRAIL MAINTENANCE REGIME

TIMING	ACTIVITY	POTENTIAL INVOLVEMENT OF VOLUNTEERS/TRAIL ORGANIZATIONS
Multi-Use Trails (paved and granular-surfaced)		
Seasonal	Ensure snow clearing dumps do not block trails access and trailhead parking areas	
	Clear snow from boulevard trails and other selected paved trails that serve as sidewalks, or connecting links to sidewalk system, schools, etc.	
	Posting of trail conditions / closures on creek valley and other trails through natural environment areas, as needed, due to environmental considerations (e.g. nesting season), or safety hazards (e.g. washouts, flooding)	✓
	Annual major spring clean-up of garbage and debris	✓
	Monitoring of weeds, grasses and brush twice should be undertaken annually during the growing season and destruction of invasive species and noxious weeds undertaken in accordance with municipal by-laws	
	Monitoring of brush and vegetation should be undertaken at a minimum twice yearly, accompanied by the removal or trimming of brush and vegetation that: <ul style="list-style-type: none"> ▪ encroaches on the minimum clearing width of 3.5m and vertical clearance of 3.5m; ▪ obstructs sightlines at access points and road crossings, based on a minimum daylight triangle. 	✓
	Maintenance of <u>granular surfaced trails</u> to remove potholes, washouts, groom surface and re-compact surface, as needed. To facilitate cycling, maintenance should also ensure that stones larger than ¼” are not used for the surfacing of the trail. <ul style="list-style-type: none"> ▪ Annually, following spring thaw, or as needed after a major rain event 	
	Surface cleaning of asphalt trails: <ul style="list-style-type: none"> ▪ Quarterly, or as needed after major rain events 	
	Review and inspection of the entire corridor length (or more frequently as needed): patrol, identify, record any deficiencies associated with trail surfacing, barrier gates, signage, drainage and culverts, fencing, structures and bridges, or requiring repair from vandalism or wear). Undertake appropriate action to address deficiencies/ hazards, in a timely fashion, and prioritized by safety concerns.	

TIMING	ACTIVITY	POTENTIAL INVOLVEMENT OF VOLUNTEERS/TRAIL ORGANIZATIONS
Monthly	Clearing of drainage structures, culverts, catch basins that may affect trail use	
	Garbage / debris removal from littering / illegal dumping (or on as needed basis)	✓
Weekly	Mowing of grass verges (during the growing season) to maintain step-off area, and sightlines at curves	
	Emptying of waste receptacles, and general clean-up at parking and trailhead areas, and along urban trails	
	Maintenance of landscaping at trailheads and along urban trails	
Natural Surfaced Trails (e.g. hiking/walking nature trails)		
Seasonal	Periodic inspection and trimming of trees and vegetation shall be undertaken to ensure trail safety and to maintain minimum clearing widths, i.e. 1.0-2.25 m horizontal clearing width .5m vertical clearance	✓
	General review and repair of trail surface conditions e.g. washouts, and removal of hazards, i.e. fallen trees.	✓
	Periodic monitoring for and closure of randomly developed trails using brush piles, logs, temporary signs, on an as-needed basis	✓
	Planned temporary closure of trails for environmental reasons, e.g. through or near seasonal habitat, nesting areas, flood conditions	
Monthly	Review and inspection of trail conditions (or more frequently as needed): patrol, identify, record any maintenance deficiencies associated with trailheads and signs, trail washouts; potholes; fallen trees or limbs; exposed roots; trip hazards (i.e. not conforming to Trail Development Standards). Undertake appropriate action to address deficiencies, hazards, in a timely fashion and prioritized by safety concerns.	✓
	Periodic trail patrolling, i.e. as part of an by-law enforcement (more frequently during peak times or if volunteer trail watch program is implemented)	✓
Weekly	Garbage / debris removal from littering / illegal dumping (or on as needed basis)	✓

TIMING	ACTIVITY	POTENTIAL INVOLVEMENT OF VOLUNTEERS/TRAIL ORGANIZATIONS
Cycling Routes		
Seasonal	Review and inspection of route conditions: patrol, identify, record any maintenance deficiencies such as damaged or missing signs, shoulder washouts, pavement buckling, obstacles such as catch basins. Undertake appropriate action to address deficiencies, hazards, in a timely fashion, and on a priority basis according to safety concern. Ongoing monitoring/reporting back could be undertaken by volunteer organizations, with formal inspections/repair undertaken by the Town.	✓ Monitoring only
Monthly	Inspection and replacement/repair of missing or damaged signs. Ongoing monitoring and reporting back could be undertaken by volunteer organizations, with formal inspections and repair undertaken by the Town.	✓ Monitoring only

APPENDIX D: BRADFORD WEST GWILLIMBURY TRAILS USE SURVEY

1.0 BRADFORD WEST GWILLIMBURY TRAILS USE SURVEY – RESULTS DISCUSSION

The most common trail users are from the adult age bracket (20-64). There was only one instance where 'Child under 12' or 'Youth 13 – 19' was selected without the selection of 'Adult 20 – 64' as well. One might make the assumption that the trails are used by entire families walking together, while children and youth tend not to use them on their own. However, this may just be the outcome of the time and place of the survey distribution. A number of questions may be raised:

1. Do children not know about the trails because their parents do not use them?
2. Is there a way to attract more children and youth independently of family ties?
3. Are parents (who do not use the trails themselves) apprehensive about the safety of the trails, therefore asking their children not to use them?

The majority of respondents use the trails just for walking. Dedicated bike paths may be underused and trail users may respond more positively with more pedestrian paths. In the survey, 46% of the respondents felt that pedestrians and cyclists should be separated; however, a number of respondents felt that a divided lane was sufficient. There was a fairly wide consensus (70%) that cyclists and motorized vehicles should be kept separate, with safety and threat of collision as stated concerns.

Both of the surveyed groups responded by saying they most commonly use the trails to move around the conservation area and around the community. Nevertheless, the lack of trail use to travel to school or work may be reflective more of a social choice (i.e., to spend less time commuting) than a statement about the provision of a path network through the community.

When asked for the top five destinations one would walk or cycle to within the town, Scanlon Creek was the most popular choice, with more general selections such as 'parks' and 'stores' also mentioned. More specific destinations included Lions Park, Holland Marsh Canal Road, bike trails such as 11th line, and an ice cream bar.