

3.0 Background Information: Previous Studies, Case Studies, Existing Conditions and Analysis

The following section outlines background information pertaining to the benefits of pathways and trails, existing studies within the Town that were considered, and an analysis of the existing pathway and trails system including opportunities and constraints.

3.1 Benefits of Walking and Cycling

Walking and cycling are evolving to become a practical, cost effective, environmentally sensitive and healthy mode of transportation for both recreational and utilitarian purposes across North America. It is recognized as an integral and necessary component of a balanced transportation system and as an alternative to the automobile.

The following general trends have been observed, all of which have implications for walking and cycling:

- there is a renewed interest in spending “quality time” with family and friends, while pursuing high quality recreational experiences;
- staying healthy through active recreational pursuits is viewed as important;
- there is a strong interest in tourism and recreational activities that respect the natural and cultural environments, and also offer educational opportunities; and
- there is a pervasive interest in getaway travel where the goal is to obtain a high quality recreational experience at a reasonable cost.

The promotion of walking and cycling has significant transportation, recreation, health and fitness, environmental, and economic benefits.



3.1.1 Transportation Benefits

Walking and cycling are popular recreational activities and means of transportation that are efficient, affordable and accessible. They are the most energy efficient modes of transportation, as they both generate no pollution, except in the manufacture of bicycles. The transportation benefits of walking and cycling include reduced congestion and road maintenance costs, less costly infrastructure, increased road safety and decreased user costs. For distances up to 10 km in urban areas, cycling is the fastest of all modes from door to door.

Typical roadway funding requirements include maintenance costs, safety and enhancement costs plus the addition of roadway capacity through lane widening or additions. Furthermore, the costs for road construction, reconstruction and maintenance are usually paid for by road users through gas taxes. An emphasis on cycling and other “active transportation” modes such as walking can result in a reduction in roadway costs since bicycles are lightweight vehicles that take up little space and cause less “wear and tear” on a travel surface.

A reduction in car use results in a reduction in the amount of parking spaces required. Parking is a significant cost of operating an automobile. Encouraging more people to walk and cycle to work could lead to a reduction in the number of parking spaces required at a place of employment. Bicycle parking facilities could be provided in an existing surface or underground parking lot with no additional parking lot expansion required. The cost of providing additional parking spaces for an automobile on a surface parking lot is about \$3,000 per stall or \$16,000 to \$20,000 per stall in an underground parking garage¹.



¹ The Business Case for Active Transportation, The Economic Benefits of Walking and Cycling; Section 4.1.5; Go for Green, March 2004.

3.1.2 Recreation, Health and Fitness Benefits

Walking and cycling provide enjoyable, convenient and affordable means of exercise and recreation. The most effective fitness routines are moderate in intensity, individualized and are incorporated into our daily activities. Walking and cycling can accomplish this and at the same time provide mobility.

There are other health benefits in addition to the physical gains. Cycling can enhance one’s mental outlook and well-being, improve self-image, social relationships and increase self-reliance by instilling a sense of independence and freedom. These can contribute to healthier and happier personal relationships, and improve work and school productivity.

Improving active transportation methods such as walking and cycling and reducing automobile traffic can help make communities more “liveable” by creating an environment that is pleasant and safe without noise and pollution. This can help to encourage more social interaction within a neighbourhood and create a stronger sense of community. Walking and cycling can provide a form of mobility for people who do not have regular access to an automobile and live in communities with limited transportation alternatives.

Trail and pathway projects (construction, operation, maintenance and promotion) can help to foster partnerships among individuals, government, local business and interest groups. There are many examples of successful private and public-sector partnerships that have developed as a result of the development of trails across the country, such as the Chrysler Greenway through Essex County, near the City of Windsor.

Making an investment to include active transportation modes such as walking and cycling into daily commuting habits and errands, and recognizing the pathways and trails system as an integral component of the Town of Markham’s transportation network, can help to promote a healthy and active lifestyle for the Town’s residents.



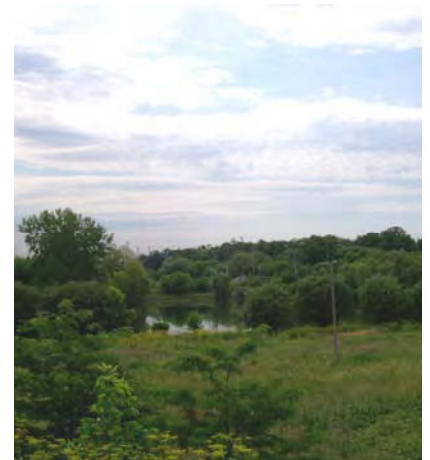
3.1.3 Environmental Benefits

Walking and cycling are energy-efficient, non-polluting modes of travel. Short distance, motor vehicle trips are the least fuel-efficient and generate the most pollution per kilometre. These trips have the greatest potential of being replaced by cycling trips and integrated cycling-transit trips. Shifting to these modes can mitigate ozone depletion, the greenhouse effect, ground-level air pollution, photochemical smog, acid rain, water pollution and hydrologic disruptions, land use and noise pollution.

Reducing the amount of vehicles on the road reduces the number of hazardous pollutants that are emitted into the atmosphere by motor vehicles. Climate change is another problem that can be mitigated by encouraging drivers to use other modes, or to travel outside rush hours. Motor vehicles, roads and parking facilities are major sources of water pollution and hydrologic disruptions due to such factors as road de-icing, air pollution settlement, roadside herbicides, road construction along shorelines, and increased impervious surfaces.

Noise refers to unwanted sound and vibration. Motor vehicles generate various types of unwanted noise that cause disturbance and discomfort to residents. This includes engine acceleration, tire/road contact, braking, horns and vehicle theft alarms. Bicycles make little or no noise and walking is not disruptive to communities from a noise perspective.

Automobile dependent communities require more land for road rights-of-way and parking than communities that are not as reliant on the automobile. Making communities less auto-dependant by providing infrastructure for alternative transportation modes, such as walking and cycling, can reduce the amount of land required to construct new communities, thus creating more compact subdivisions that are easier to manage from a transportation perspective.



Walking and cycling can help preserve and enhance the natural environment.

3.1.4 Economic Benefits

A study published by Go for Green in March of 2004 establishes a convincing Business Case for Active Transportation in the report entitled “The Economic Benefits of Walking and Cycling”.² These benefits include:

- Reduction in road construction, repair and maintenance costs;
- Reduction in costs due to greenhouse gas emissions;
- Reduction in health care costs due to increased physical activity and reduced respiratory and cardiac disease;
- Reduction in fuel, repair and maintenance costs to users;
- Reduction of costs due to increased road safety;
- Reduction in external costs due to traffic congestion;
- Reduction in parking subsidies;
- Reduction of costs due to air pollution;
- Reduction of costs due to water pollution;
- The positive economic impact of bicycle tourism;
- The positive economic impact of bicycle sales and manufacturing;
- Increased property values along greenways and trails; and
- Increased productivity and a reduction of sick days and injuries in the workplace.
- There is ample evidence that pathways and trails provide significant economic benefits for adjacent landowners and local businesses. They provide benefits to the local economy during both construction and operation. Construction activity results in direct benefits such as jobs, including the supply and installation of materials. Following construction, benefits emerge in the form of expenditures by users.

Pedestrian and cycling systems can have varied levels of attraction for tourists. They can be travel destinations in themselves, encouraging visitors to extend their stay in the area or enhancing business and pleasure visits. By increasing the “level of tourist draw”, travellers can be expected to stay longer, resulting in an additional night’s lodging and meals, a major direct new benefit to local businesses.

Bicycle manufacture, sales and repairs, as well as bicycle tourism, recreation and delivery services contribute to the economy with little to no public investment or subsidy



Increase in trail use can decrease automobile traffic, reducing pollution, maintenance, and parking constraints.

² The Business Case for Active Transportation, Go For Green, Better Environmentally Sound Transportation – BEST, March 2004.

Increased walking and cycling can provide a number of transportation, economic, environmental and social benefits to the Town of Markham. According to the aforementioned Go for Green study, “The current economic benefits are enough to justify increased government expenditures on active transportation in Canada. The projected benefits of doubling the mode share of active transportation make the case even more compelling”³.

Clearly, experience from other jurisdictions as well as data collected at the provincial and federal levels in Canada confirm the positive benefits of supporting walking and cycling.

Additional statistics on the benefits of Pathways and Trails are available in *Appendix D*.

3.2 Town Documents, Policies, Official Plan and Studies

3.2.1 Official Plan

The Town of Markham Official plan contains a number of policies related to pathways and trails and supports the development of Pathways and Trails Master Plan.

Section 2.2.2. Environmental Management outlines as an objective “to improve public accessibility to important natural features and recreational facilities of the Town” and to “Integrate the Town’s Greenway System with broader inter-regional systems”.

Section 2.2.2.3 Greenway System specifically outlines that the Greenway system should “provide access to natural areas, and provide continuous trails linking the Town’s Greenway System with the Rouge Park, the Oak Ridges Moraine, and the Don River Valley south of Steele’s Ave.”

Section 2.2.2.12 Activity Linkages, outlines that it is “the Town’s intent to develop a linked trail system to provide continuous pedestrian movement throughout the Town and to link significant natural features, and areas of local, regional and inter-regional significance. In the urban area, existing parks and public open spaces shall be utilized and, where feasible, enhanced to create a linked trail system.” It also outlines that “where naturalized trails are not feasible through urban areas, Activity Linkages may be comprised of sidewalks, roads and walkways, and incorporate

³ The Business Case for Active Transportation, Better Environmentally Sound Transportation – BEST, Go for Green, March 2004.

public uses and facilities all appropriately designed to facilitate pedestrian movement as part of a linked greenway system.”

Additionally, *Section 2.2.3 Rural areas* outlines that the “Town shall endeavour to develop a linked open space system, incorporating conservation areas and valley lands. This will include a system of neighbourhood, community and Town parks as well as natural areas.” It indicates that this system “shall contain continuous walkways for pedestrians and a system of separate trails for the use of non-motorized bicycles. These pedestrian and bicycle systems shall be designed to link homes to parks, open spaces, schools, recreation and shopping facilities and transit stops.

Section 3.9 Open Space outlines that “the System of walkways and trails shall be designed to provide attractive, efficient and convenient pedestrian and bicycle connections”.

3.2.2 Town-Wide Bicycle System Study, 1998

In 1998, a Town-Wide Bicycle System Study was undertaken by ENTRA Consultants with Victor Ford & Associates. It reviewed on and off road cycling routes, and design guidelines. The focus of this plan was cycling, but it contained a number of recommendations and routes that were further considered in this study.

3.2.3 Cycling Master Plan, 2005-2007

In 2005-2007 the Town worked with MMM Group Ltd. to prepare a Cycling Master Plan. This study focused on Cycling within the road allowances. This plan was coordinated with the Pathways and Trails Master Plan, to ensure overall network connectivity and interface points. An overlay methodology, utilizing GIS mapping, was used to accomplish this.

3.2.4 The Rouge North Management Plan, 2001

The Rouge North Management Plan (2001) provides the framework for the creation of the Rouge Park in Markham. A significant portion of the Rouge Park has now been established in Eastern Markham through the dedication of provincial lands for Rouge Park purposes.

These lands are managed under the direction of the Rouge Park Alliance through a partnership with the Town, TRCA and government and non-government parties. These lands include the Bob Hunter Memorial Park, Little Rouge Creek Corridor and Easter Markham. Management Plans for

these lands either have been prepared or are being prepared which identify a network of ‘regional and loop trails’ throughout the park lands. Implementation of the Rouge Park is the responsibility of the Rouge Park and may include partnerships with the province of Ontario, Region of York, TRCA, Town of Markham and other stakeholders. The Town of Markham Pathway and Trails Master Plan identifies key linkage trail connections into the Rouge Park and the conceptual main north-south Rouge Park Trails. The detailed Rouge Park Master Plans will identify the internal loop trails which will be prioritized and constructed under the direction of the Rouge Park Alliance. As the Pathways and Trails Master plan is periodically updated by the Town, constructed Rouge Park trails should be incorporated into the plan.

3.3 Inventory and Analysis of Existing Pathways and Trails

The Town of Markham’s existing pathway and trail system consists of approximately 74 km of facilities primarily located in parks, valley lands, and public utility corridors. The specific condition of each trail was not reviewed as part of this study. Generally, though there are pathway and trail systems and loops within the Town, they are not well connected or continuous throughout the Town. They are more focused locally on specific neighbourhoods and parks. (**Map 1**)

3.4 Users

The pathways and trails system is and will be used by a variety of users. The following users were identified as existing or potential users of the pathways and trails, and their needs and preferred facility type are outlined in **Figure 3.1** Pathway and Trail Users.



Users include canoeists and kayakers accessing the Town’s waterways from the pathways and trails network.

Pathway and Trail Users

Figure 3.1

USER GROUP	TYPE OF USE	NUMBERS OF USERS	PREFERRED FACILITY TYPE(S) AND USER NEEDS
Pedestrians	Recreation, utilitarian, exercise and rehabilitation. May be with dogs, pushing/pulling carriages, strollers or wagons.	Alone, in small or large groups. May use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Adaptable to a variety of facility types from broad asphalt or concrete surfaces to narrow footpaths. Narrow footpaths are limiting to carriages, strollers and wagons etc. Steep grades may be limiting to some pedestrians depending on their age and physical ability. 2. Often walk from home or work. Not as likely as some other user groups to travel by car to get to preferred facilities. 3. Use/consider sidewalks as part of the system.
Joggers / Runners	Recreation, rehabilitation or for exercise/training.	Alone, in small or large groups. May use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Adaptable to a variety of surfaces. Generally smooth, groomed granular surfaces facilities are preferred. Asphalt is acceptable to some. Concrete is not preferred. Steeper grades are often considered as a challenge. 2. Run from home or work. May also arrive at preferred facility destination by car. 3. May use/consider sidewalks as part of the system.
Hikers	Recreation, enjoyment and interpretation of nature.	Alone or in small groups. May use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Adaptable to a variety of surfaces and obstacles. Narrow earth footpaths in natural areas are often preferred. Other types of facilities are considered as “access routes” to preferred facility type. 2. May hike from home. Often arrive at preferred destination by car. 3. Do not consider sidewalks as part of the system.
Persons using mobility assisted devices	Recreation, utilitarian and exercise or rehabilitation.	Alone or in small groups. May use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Somewhat adaptable to a variety of surfaces. Hard surfaces (asphalt and concrete) are preferred. Some users can negotiate smooth granular surfaced facilities provided that surfaces are free from significant ruts and potholes. Imprinted and uneven surfaces such as patterned asphalt, unit pavers and cracked concrete can be difficult to negotiate. 2. Steep grades can limit access. Disability guidelines and codes recognize grades less than 8.3% as negotiable. 3. Often use sidewalks and consider them as part of the system.
Cross Country Skiers	Recreation, utilitarian, rehabilitation or for exercise/training.	Alone, in small or large groups. May wish to use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Users can be generally divided into 2 groups; those that prefer marked and/or groomed facilities, and those that prefer going “off trail”. 2. Within this group there are 2 different styles/techniques of skiing, the more traditional diagonal stride and the more modern skate. 3. Diagonal Stride: Can use a narrower corridor (narrower facility, narrower clearing width). Some recreational skiers may use paths created by walkers, others prefer to develop tracks beside paths created by walkers. Some skiers prefer only groomed facilities and will drive long distances to find them. Skating: Require a wider corridor, wider clearing width and larger radii on corners. More likely to be fitness skiers and seek extensive groomed facilities. 4. Steep grades and challenging facilities may limit some skiers, and may “invite” others. 5. May walk to trailheads if residing in adjacent neighbourhoods, will arrive by car if from elsewhere in the Town. Parking areas will be required (explore opportunities to share parking with nearby schools). Cross country ski facilities in Markham will be limited to tracks created by skiers (i.e. no track setting, or skate-ski routes will be provided by the Town), the need to accommodate a variety of uses, the cost to develop and maintain groomed facilities, and the unpredictable nature of snowfall in the area.
Snowshoers	Primarily recreation and for exercise.	Alone, in small or large groups. May wish to use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Users can be generally divided into 2 groups; those that prefer marked facilities and those that prefer going “off-trail”. More often the “off trail” experience in soft, deep snow is sought, no specific facilities required. 2. Marked facilities may not be necessary for vast majority of this group. For those that prefer marked facilities, they will walk beside packed footpaths created by winter walkers and hikers. May walk to trailheads if residing in adjacent neighbourhoods, will arrive by car if from elsewhere in the Town. Parking areas will be required.
Cyclists	Recreation, utilitarian, rehabilitation or for exercise/training.	Alone, in small or large groups. May use the facilities from time to time for organized events.	<ol style="list-style-type: none"> 1. Adaptable to a variety of facility surfaces and facility types depending on level of experience and type of bicycle. Asphalt, concrete, screenings, granular and natural surfaces can be negotiated by bicycle. 2. Experienced cyclists will use the roads for utilitarian purposes and to link between off-road facility segments. Steep grades and challenging facilities may limit some types of cyclists, and may “invite” others. May ride from home, will also arrive at preferred destination by car. Some may use the sidewalks, although this is typically in contravention of local bylaws for riders other than those “just learning” and/or those with wheels greater than a given diameter (e.g. 40cm).
In-line skaters & other wheeled users (scooters, skateboards)	Primarily recreation or for exercise, utilitarian in some cases.	Alone, in small or large groups.	<ol style="list-style-type: none"> 1. Typically only able to use hard surfaced areas (asphalt-preferred, concrete and pavers-acceptable). 2. May use sidewalks and or streets where appropriate hard surfaced areas are not available.
Canoeists / Kayakers	Recreation.	Alone, or in small groups.	<ol style="list-style-type: none"> 1. Appropriate access to the water’s edge, with portage trail wide enough to carry canoe, space at the water’s edge, parking. 2. No needs from an in-water standpoint. Capable of navigating shallow water depths.