

PEDESTRIAN AND BICYCLE MASTER PLAN STUDY



Prepared by:

In association with:





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1.0 INTRODUCTION

The City of Vaughan is committed to both improving and expanding conditions for walking and cycling for residents as well as those who work in Vaughan. An expanded network of on and off-road pedestrian and cycling facilities can provide Vaughan residents of all ages with improved access to convenient travel modes that are practical alternatives to the private automobile. Implementing and promoting the network will also support public transit use by encouraging people to combine walk/transit and bike / transit trips. The network plan also recommends an improved recreational trail system through out the City. By encouraging people to walk and cycle more often in Vaughan, for both utilitarian (e.g. going to school, work and the corner store) and recreation, the overall health of Vaughan’s residents as well as the livability of their City will significantly improve.

The Vaughan Pedestrian and Bicycle Master Plan (the VPBP) is a plan that has emerged through extensive public and staff consultation. It is a Plan designed to be flexible so it can evolve over time as it is implemented. This means that routes and facility types proposed in the plan may need to be refined or reconsidered in the design stage or as development and other growth occurs, yet the spirit and intention of the plan should always be maintained.

It is a 20 year plan that has been designed with guidelines and recommendations that will assist City staff in the development and implementation of new programs and facilities that can make Vaughan one of the most pedestrian and cycling friendly cities in Canada.

The Plan consists of a number of key components that include:

- A recommended network of on and off-road cycling facilities and multi-use trails as well as recommendations on how to improve the pedestrian environment and support public transit use;
- A recommended set of pedestrian and cycling route and facility planning & design guidelines;
- Policy & program suggestions; and
- An implementation strategy.

1.1 ABOUT VAUGHAN

The study area covered by the Plan includes the City of Vaughan and is illustrated in **Figure 1-1**. It encompasses the communities of Thornhill, Woodbridge, Kleinburg and Maple.



The City of Vaughan, “the City Above Toronto” is one of Canada’s fastest growing urban centres.



1.2 WHY DOES VAUGHAN NEED A PEDESTRIAN & BICYCLE MASTER PLAN?

The planning, design and construction of walking, hiking and cycling routes has increasingly become a priority for municipalities across Ontario, including the City of Vaughan. People are increasingly aware of the importance of health and exercise and the need to reduce the impact motor vehicle use is having on the environment we live in. Public input received through a number of studies in Vaughan, including the study that resulted in the development of this Plan, clearly indicates that if convenient pedestrian and cycling facilities are provided, more people will choose to walk or ride a bicycle more often. In response to this growing interest in alternative travel modes and growing demand for expanded recreational

trails, City

Council directed staff to proceed with the development of a pedestrian and cycling plan for Vaughan.

The purpose of this Plan is to create a comprehensive City-wide pedestrian and cycling network that, when implemented over the next 10 to 20 years, will accommodate a wide range of users and add to existing pedestrian and cycling facilities in the City. The benefits of this plan will include an expanded range of recreational and utilitarian pedestrian and cycling facilities. It will complement and support public enjoyment of the natural geography, landscape and environmental features offered in Vaughan. It will encourage and support active transportation and healthy living and foster a better understanding of the negative effects of motor vehicle use on the

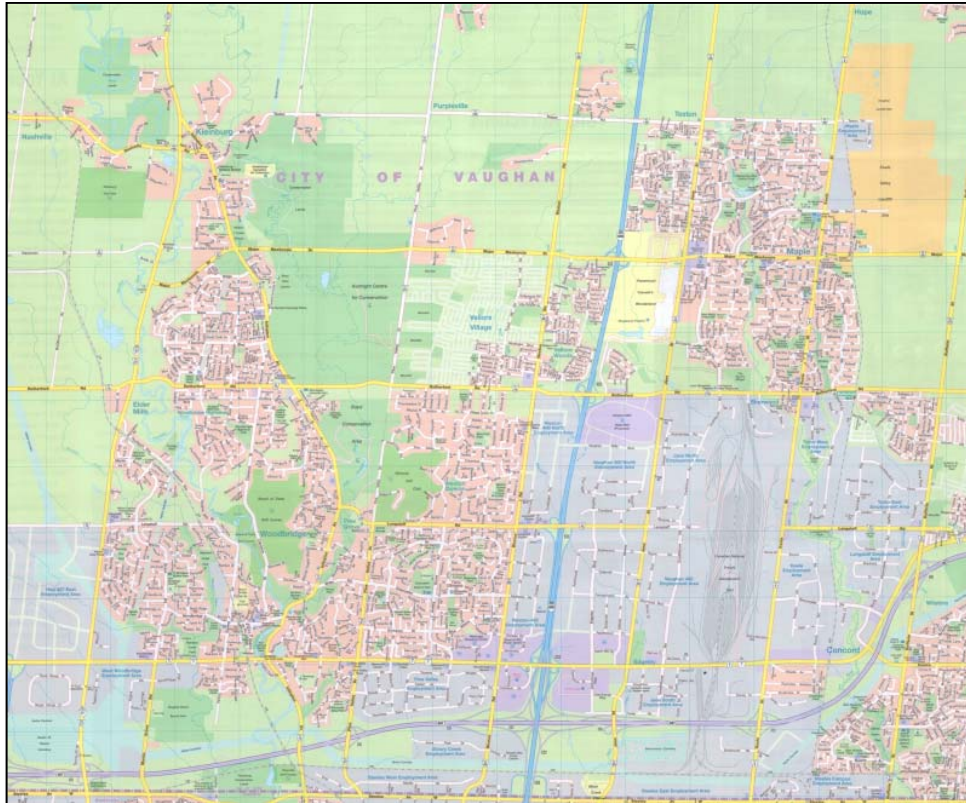


Figure 1-1: Study Area, City of Vaughan



fragile environment we live in. Finally, implementing this plan will offer residents of Vaughan the opportunity to choose more environmentally friendly transportation and recreational activities that foster improved health and quality of life.

The Pedestrian and Bicycle Master Plan was prepared with the public in mind. A comprehensive public consultation program was developed and executed to keep residents and employees who travel to and work in Vaughan informed, and to encourage them to submit their ideas throughout the study. Therefore, this plan has been developed with the needs of existing and future users in mind. It also recognizes the financial realities that the City of Vaughan, Region of York and the Toronto Region Conservation Authority face in providing infrastructure and services.

1.3 VISION FOR WALKING AND CYCLING IN THE CITY OF VAUGHAN

As this Plan is implemented, it is anticipated that the pedestrian and cycling network will connect neighbourhoods and facilitate a sense of community and stewardship among residents. It will improve access and mobility for pedestrians, cyclists and other system users, and expand the range of recreational activities available to the residents of Vaughan. It will result in an increased awareness of the natural and environmental features that are offered in Vaughan, and will improve the health and quality of life of those residents who use the network. Finally, the Plan will significantly enhance Vaughan's attractiveness as a community of choice to live, work and visit.

The Vision for this Master Plan is to develop a comprehensive and connected network of pedestrian and cycling facilities consisting of off-road multi-use pathways, on-road bike lanes

and routes, boulevard pathways and sidewalks that will help to facilitate walking and cycling in the City for leisure and commuting purposes.



The Vaughan Pedestrian and Bicycle Master Plan is meant to support the City of Vaughan and York Region's initiatives to create "people-friendly" communities and encourage the use of alternate non-auto modes of transportation. (Image Source: York Region Rapid Transit Plan, 2003)

To help translate this vision into reality, existing and proposed pedestrian and cycling facilities must be integrated and co-ordinated within the City of Vaughan and with its neighbouring municipalities in the following ways:

- Developing an understanding of the elements that affect walking and cycling in Vaughan.
- Establishing standards, programs and implementation methods/approaches.
- Defining implementation priorities.
- Integrating long-term road and trail systems planning.
- Identifying a seamless clearly marked and signed network, featuring linkages to both existing and planned trails, routes and on-road bike lane systems in the City and adjacent municipalities.
- Encouraging multimodal transportation facilities to multiply the benefits of intermodal and interconnecting terminals for



pedestrian, bicycle, bus, rail and automobile travel, and

- Improving access to the network to ensure "connectivity" among neighbourhoods and to improve overall livability by finding creative ways to overcome barriers.

Vaughan's Pedestrian and Bicycle Master Plan provides a strategy to achieve this integration at the neighbourhood level and City-wide level. It also recommends an implementation process to ensure results. The Plan focuses on a City-wide on and off-road cycling and pedestrian network and trail system as well as provides recommendations on how to improve the overall pedestrian environment. It also offers a proven set of planning and design guidelines for implementing cycling and pedestrian facilities within Vaughan.

The Vaughan Pedestrian and Bicycle Master Plan consists of the following parts:

1. **A Master Plan** which provides a comprehensive network plan and set of supporting recommendations, including promotion and education strategies and an implementation strategy to guide City staff over the next 20 years.
2. **Appendix A** summarizes the public and stakeholder consultation completed during the study that resulted in this Plan. This includes the findings of an on-line Walk-ability and Bike-ability User Survey as well as the results from a user survey completed on the streets and trails of Vaughan.
3. **Appendix B** outlines the route selection and evaluation criteria used to develop the Vaughan Pedestrian and Bicycle Master Plan. This is also discussed in **Chapter 4.0 – Network** of this report.

4. **Appendix C** details the unit prices used to estimate the construction cost of the various on-road cycling facility types recommended in this Plan. This is also discussed in further detail in **Chapter 7.0 – Implementation** of this report.

Volume 2 of the Plan is a Technical Appendix that sets out a set of recommended Pedestrian and Cycling Planning and Design Guidelines to assist in the planning, design, implementation and on-going maintenance of the proposed system.



2.0 CONTEXT

2.1 BENEFITS TO WALKING AND CYCLING

Cycling and walking are cost effective, environmentally sensitive and healthy modes of transportation for both recreational and utilitarian purposes across North America. These travel modes are recognized as integral and necessary components of a balanced transportation system that complement public transit and act as alternatives to the automobile.



With the ever-increasing gas prices in the Toronto area, alternate non-auto modes of transportation are being explored more and more each day. (Photo credit: www.cdnauto.org)

The demand for cycling and walking facilities is increasing in our communities. Across Ontario, recreational cycling is recognized as one of the top three recreational pursuits, having a 20 % participation rate and estimated annual growth rate of 2.3 % (Ministry of Citizenship, Culture

and Recreation, 1998). Municipalities such as Toronto, Ottawa, Brampton, Markham, London, Milton and Windsor, are actively developing networks to encourage cycling and walking, as a way to reduce reliance on the automobile.

In the City of Toronto, approximately 20 % of the population cycle for utilitarian purposes, such as getting to work, school, shopping, errands, while 44 % of the population cycle for recreational purposes to follow leisure and fitness pursuits (Decima Research Inc., 1999).

The City of Vaughan can benefit in many ways by making a long-term investment in a pedestrian and bicycle master plan. An example of some of these benefits is summarized in the following sections:

2.1.1 TRANSPORTATION BENEFITS

- Providing additional pedestrian and cycling infrastructure can help make more efficient use of the transportation system by providing a greater balance in the travel modal-share, encouraging more people to consider walking and cycling as an alternate travel mode.
- Sidewalks, pathways and trails serve as critical links in a transportation network providing non-auto access to schools, commercial, employment and recreational areas.

2.1.2 RECREATION, HEALTH AND FITNESS BENEFITS

- Walking and 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 productivity¹.

- Walking and cycling provide enjoyable, convenient and affordable means of exercise and recreation. The most effective fitness routines are moderate in intensity, individualized and walking and cycling can be incorporated into daily activities².

2.1.3 ENVIRONMENTAL BENEFITS

- Cycling is an energy-efficient, non-polluting mode 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.
- Bicycles take up fewer resources in their production and maintenance than motor vehicles, reducing the demand on materials and energy resources.



Walking and Cycling can promote an active and healthy lifestyle which can lead to numerous personal health benefits as well as environmental benefits.

2.1.4 ECONOMIC BENEFITS

- There is ample evidence that trails provide significant economic benefits for adjacent landowners and local businesses. Trails provide benefits to the local economy during both construction and operation. Trail construction results in direct benefits such as jobs, including the supply and installation of materials. Following construction, benefits emerge in the form of expenditures by trail users.
- Trail 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.

2.2 PREVIOUS CITY INITIATIVES

Vaughan has already begun investing in off-road pedestrian and cycling facilities throughout the City. This includes focused investments in trail planning, design, development, maintenance and marketing. A summary of some of these initiatives is outlined in **Map 1**.

Map 1 illustrates Existing Parks and Open Spaces and Pathways in the City of Vaughan.

¹ The Business Case for Active Transportation, The Economic Benefits of Walking and Cycling; Section 4.7.2; Go for Green, March 2004.

² The Business Case for Active Transportation, The Economic Benefits of Walking and Cycling; Section 4.7.2; Go for Green, March 2004.



As illustrated on *Map 1*, Vaughan’s partnership and investment is most evident in the existing off-road pathways in the City. These include trails in the Kortright Centre for Conservation, a popular destination for residents seeking recreation, relaxation, closer connection to the natural environment and social interaction. The Bartley Smith Greenway is also a popular walking and cycling route in the City of Vaughan. Numerous other subdivisions throughout the City have networks of sidewalks and other off-road pathways that provide shortcuts between adjacent streets for pedestrians or connections to local parks.

The City has also approved Official Plan Amendments, Landscape Master Plans and Secondary Plans for development Blocks throughout the City where new subdivisions are proposed. Most of these Block Plans emphasize pedestrian connections and amenities such as walkways, landscaping of boulevards in road right-of-ways and the provision of benches at key gathering places and community gateways. New roads built within these subdivisions are either proposed or being constructed with road rights-of-way that are suitable for cycling facilities.

2.3 MASTER PLAN INITIATIVES

In an effort to understand existing attitudes towards walking and cycling in the City of Vaughan and what residents do or do not want, it was important in the development of this Plan to engage the public and obtain their input in order to ensure an appropriate pedestrian and cycling plan.

2.3.1 USER SURVEYS

As part of the Vaughan Pedestrian and Bicycle Master Plan, a “Walkability” and “Bikeability” survey was developed and provided on-line at www.vaughanhikenbike.com, a website

developed specifically for this Master Plan. Surveys were also available at many local community centres throughout the City. The “Walkability” and “Bikeability” user surveys were developed for people who walk and cycle along streets or off-road paths in the City of Vaughan.

The purpose of these two user surveys was to gain a better understanding of public attitudes towards walking and cycling issues within Vaughan.

Specifically, the surveys were used to:

- Determine user characteristics of both pedestrians and cyclists;
- Estimate the frequency and purpose of walking and cycling trips;
- Determine the types of improvements sought by pedestrians and cyclists; and
- Promote and raise awareness of walking and cycling in Vaughan.

2.3.2 INTERCEPT USER SURVEYS

An intercept survey was also conducted in the as another method of determining the public’s attitude towards walking and cycling in the City. Respondents were selected at random and asked to complete the “Walk-ability” or “Bike-ability” questionnaire.

The survey was conducted in the Fall of 2002, on a clear and sunny day from 9:00 a.m. to 5:00 p.m. at the following locations.

- Sonoma Greenway in the Napa Valley subdivision;
- Bindertwine Trail, near the McMichael Art Gallery in Kleinburg;



- Bartley Smith Greenway, near Glen Shields Avenue in Concord; and
- Keele Street, north of Major Mackenzie in Maple.

A contact list was also developed to record the names of those who provided input and to permit the team to inform study participants on any new developments of the project.

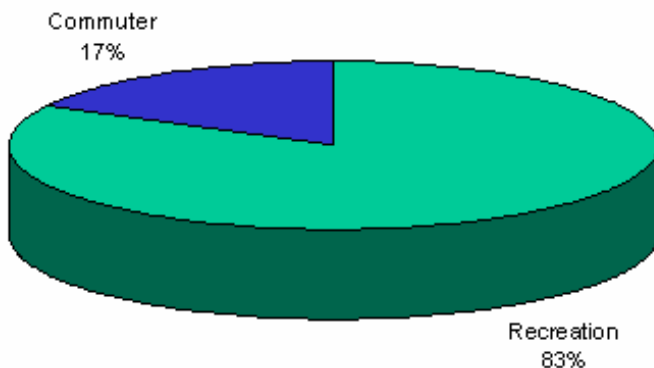
The results of these surveys provide a benchmark for pedestrian and cycling behaviour and attitudes in the City of Vaughan. The summary of key findings from these surveys is outlined herein.

2.3.3 GENERAL FINDINGS

The majority of sidewalk and pathway users in the City of Vaughan walk or cycle for recreational purposes, accounting for approximately 83% of users.

The most popular age group for sidewalk and trail users is 35 to 44, accounting for 33% of total users. The 25 to 34 age group is the second most popular, accounting for another 25% of the total.

Purpose of Walking/Cycling Trips



The majority of respondents (49%) preferred asphalt surfaces for off-road trails, followed by

earth/single-track surfaces (26%) and stone/dust surfaces (25%).

Of the total pedestrians surveyed, 53% were male, showing nearly a 50/50 gender split among pedestrians. Cycling is more popular among males, as they accounted for 65% of the total cyclists surveyed.

PEDESTRIANS

Walking in Vaughan is considered a pleasant experience according to 47% of the respondents who said they had a pleasant walk on pathways and sidewalks. Pedestrians generally feel confident when crossing streets at signalized intersections, as 74% stated that they had no problems crossing at traffic signals. However, 13% stated that motorists did not yield to pedestrians when crossing streets.



The majority of pedestrians state that walking is a “pleasant experience” in Vaughan

Off-road pathways were viewed as spacious and comfortable for walking as 49% of those surveyed stated that they had sufficient room. 19% said they were “inconvenienced by sidewalks and paths that started and ended abruptly”.



Valleys and open space pathways were also readily available to pedestrians. The results show that 66% of the total respondents live less than 10 minutes (walking) from a valley or open space pathway.

The survey results suggest that walking is more popular on sidewalks as opposed to off-road routes. 49% of the respondents walk along sidewalks almost daily (5 - 7 days/week), while only 32% of the respondents walk on off-road trails nearly every day (5 - 7 days/week). The majority of respondents who walk along trails (34%) do so 2 to 4 days per week.

The following were the top 5 suggested improvement for walking in the City of Vaughan:

- More destinations to walk to;
- Separate paths for cyclists, skaters and pedestrians;
- Reduction in automobile speeds;
- More interesting places to see en-route; and
- More benches

CYCLISTS

While cyclists are generally comfortable biking in Vaughan, 14% of the respondents suggested that improved signage in terms of quantity, location, and consistency should be available.

Cycling is a popular activity during good weather months in Vaughan. The results show that 36% of the cyclists surveyed cycle one to two days per month during good weather months. An additional 30% said they cycle frequently or 5 to 10 days per month during good weather months.

Off-road and open space trails are readily accessible to cyclists as the majority of users (55%) live under 10 minutes away (by bicycle) from an open space pathway.

Cyclists are generally comfortable riding through signalized intersections, as only 13% of the respondent felt they had to wait too long for traffic signals to change.

The following four points emerged as the main concerns for cyclists, and are listed below in order of importance:

1. **Safety:** Only 20% of the cyclists surveyed felt safe cycling on streets. The majority of respondents complained about inconsiderate drivers who drove very fast and passed too close.
2. **Maintenance:** Only 21% of the respondents felt comfortable with the surface they traveled on, whether on or off-road. The remainder complained about poor maintenance, specifically cracked and broken pavement (21%) and debris on paths and trails (14%).
3. **Lack of space:** Many cyclists complained about the minimal space provided, either on or off-road. Only 22% of the cyclists surveyed felt they had sufficient space to cycle along roads shared with motor vehicles. While cycling on off-road routes, 42% of the respondents believed they had adequate room to cycle. 16% of off-road cyclists stated that there were too many other users on the pathways (pedestrians, in-line skaters, etc.) and there was not enough room to accommodate everyone.
4. **Better Facilities:** The following were the top 5 suggested improvements for cycling in Vaughan:



- Repair potholes and broken pavement on roads;
- Provide on-street bike lanes;
- Provide wider paths on trails off-street;
- Better signage; and
- Provide bike racks at key public transit stops and destinations.

A report summarizing the findings of the Walkability and Bikeability Surveys is provided in **Appendix B**.

2.3.4 PUBLIC & STAKEHOLDER EVENTS

Four public and stakeholder events were held throughout the development of the VPBP. These events included stakeholder meetings, two public open houses, one in 2002 and a second in 2005, and a series of steering committee meetings.

An initial public open house was held in September 2002 to announce the initiation of the project, present the results of the User Survey and the objectives of the Plan and inform residents as to where they could find updated information on the project. As mentioned in *Section 2.3.2*. The “Walkability” and “Bikeability” surveys were made available to the Public via the project website (www.vaughanhikenbike.com).

A second public open house was held in April 2005 to provide an update on the project, present the initial draft of the proposed pedestrian and cycling network, for public comment, the next steps for the project and the expected completion date.

2.4 DEVELOPING A PLAN THAT RESPONDS TO THE NEEDS OF VAUGHAN RESIDENTS

Based on the results of all the surveys and public input received, pedestrians are generally satisfied with the walking conditions in the City of Vaughan, whereas cyclists have more concerns, particularly with regard to their safety and convenient routes. It was clear from the public and stakeholder input that future expansion and development of the pedestrian and cycling network should address the concerns of both cyclists and pedestrians in Vaughan, without compromising the needs of either.

The public suggested that an expanded pedestrian and cycling network should serve the needs of recreational users by providing facilities such as scenic routes through residential neighbourhoods and valley trails, access to community centres, libraries and educational institutions. As well as access to shopping centres and tourists attractions with ample, secure bicycle parking available, well-marked routes with attractive signage and rest areas welcoming all users.

The need for the expansion and connection of existing routes and trails throughout the City of Vaughan as well as inter-regional routes connecting to neighbouring municipalities such as Brampton, Toronto, and Markham were identified. Routes to major employment centres plus connections to major transit stops and stations also emerged from public input.

Chapter 3 outlines the goals and objectives that were developed based on the public input which guided the development of the Vaughan Pedestrian and Bicycle Master Plan.





3.0 DIRECTION

The development of the City of Vaughan Pedestrian and Bicycle Master Plan was guided by a goal and supporting set of objectives based on input received from the public, stakeholders and City staff. The study purpose was defined, a comprehensive study approach was established and then executed. This chapter documents the guiding elements that gave direction to the study.

3.1 GOAL AND OBJECTIVES

The vision selected for the Plan is to build upon current pedestrian and cycling network efforts by the City of Vaughan and its partners, including the Toronto Region Conservation Authority (TRCA) and the Regional Municipality of York.

By building on these efforts, the goal of this Plan is to develop new and enhance existing environments within the City of Vaughan for both pedestrians and cyclists.

The concept of a “pedestrian environment” includes the creation of an environment that engages or attracts a pedestrian. It’s about making communities more “pedestrian-friendly” and encouraging people to walk more often.

This concept is supported through the development of a proposed visible and connected pedestrian and cycling network throughout the City of Vaughan including the promotion of land-use development patterns and streetscapes that encourage walking.



One of the Goals of this Plan is to build upon past City initiatives and enhance existing environments in the City for both pedestrians and cyclists.

As the proposed network is implemented, the pedestrian and cycling network will connect neighbourhoods and facilitate a sense of community and stewardship among residents. It will improve access and mobility for pedestrians and cyclists, as well as expand the range of recreational activities and social events available to residents of Vaughan. It will result in an increased awareness of the environmental features in Vaughan, and improve the health and quality of life of residents. It will also foster an increase in walking and cycling for both recreational and utilitarian purposes, while significantly enhancing Vaughan’s attractiveness as a community of choice to both live and work.

The Plan has been developed based on the following goal:



Goal:

To create new environments and enhance existing ones for both pedestrians and cyclists in the City of Vaughan. These environments should be supported by developing a visible and connected pedestrian and cycling network in Vaughan that integrates, enhances and expands the existing on and off-road pedestrian and cycling facilities.

Achieving the goal will facilitate an increase in walking and cycling for leisure (recreational) and utilitarian (commuting) purposes. The clearly signed network will include pedestrian and cycling facilities comprising off-road multi-use pathways, pedestrian footpaths, on-road bike lanes/paved shoulders and signed-only cycling routes, as well as boulevard multi-use pathways and sidewalks.

Objectives:

Clear objectives address the key components of a successful Master Plan for the City. They are intended to address all facets of an integrated system that includes establishing pedestrian and cyclists' needs and desires, developing/refining the network, creating supporting policies, facilities and programs for walking, hiking and cycling, and establishing the priorities for implementation.

A number of objectives were developed to guide the preparation of the Plan. Following careful consideration of input from the public and City staff, these objectives were refined into a set of eight primary objectives. These consist of the following:



Another key Goal of this Plan is to facilitate an increase in walking and cycling for leisure and utilitarian purposes.

1. Develop an understanding of walking and cycling in Vaughan.
2. Inventory existing conditions and identify opportunities and constraints.
3. Identify a seamless, clearly marked and signed network, featuring linkages to both existing and planned pathways, including on and off-road routes, multi-use pathways, footpaths and sidewalks in the City that connect to adjacent municipalities and conservation lands.
4. Improve access to ensure “connectivity” among neighbourhoods and to improve overall liveability by finding creative ways to overcome barriers.
5. Recommend planning and design criteria, and develop a comprehensive set of guidelines for implementing the pedestrian and cycling network that meet the full range of expected conditions in Vaughan.
6. Integrate long-term infrastructure (road), land use and pathway system planning.
7. Develop a short (5-10 year) and long-term (20 year) implementation plan for acquiring, developing and maintaining a comprehensive pedestrian and cycling



network throughout the City of Vaughan that is practical and fiscally sound.

8. Develop and recommend a set of strategies and policies that the City should adopt to encourage and promote walking and cycling in Vaughan and to support the development of the Vaughan Pedestrian and Cycling network.

The study purpose and approach undertaken to develop the Plan is articulated and illustrated in the remaining sections of this chapter.

3.2 STUDY PURPOSE

The purpose of the Vaughan Pedestrian and Bicycle Master Plan Study is to create a comprehensive pedestrian and cycling network that, when implemented over the next 10 to 20 years, will accommodate a wide range of users and add to existing on and off-road pedestrian and cycling facilities. This Plan will serve to guide the City and its partners in the development of an enhanced City-wide on and off-road pedestrian and cycling network, and will provide the necessary tools to make it happen.

These tools include a long-term strategy that clearly lays out a course of action over a 20-year period. It also identifies the means to implement the Plan in stages and as key opportunities arise, plus the Plan provides supporting policies to encourage and promote walking and cycling. Also in the toolbox, is a comprehensive set of planning and design guidelines developed for the City of Vaughan to facilitate implementation of the proposed network plan.

3.3 THE MASTER PLAN STRATEGY

The chapters outlined in this report follow a clear and concise structure that lays out steps taken to develop this master plan, and the recommended steps that the City of Vaughan should follow when implementing the Pedestrian and Bicycle Master Plan.

Chapters 4.0 through 6.0 identify specific objectives that relate to the specific goals identified in each of these chapters, and the overall goal of the Vaughan Pedestrian and Bicycle Master Plan. Each of these objectives are accompanied by a set of recommended action items or “strategies” that should be followed to ensure that the Plan’s goals can be achieved.

Chapter 4.0 details the goals and objectives of the pedestrian and cycling network, and facility types and alignments proposed for the Vaughan pedestrian and cycling network.

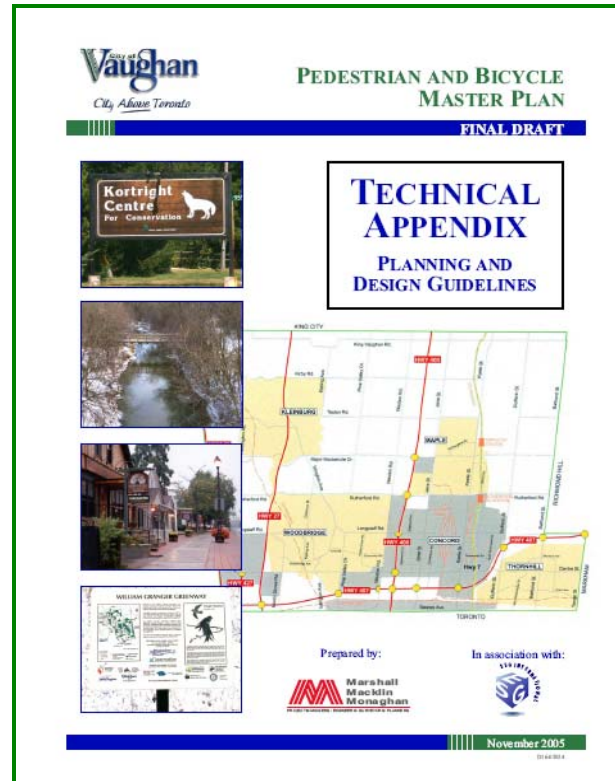
Chapter 5.0 goes beyond the infrastructure and proposed route information provided in *Chapter 4.0* by identifying a set of recommendations for the creation of a “positive pedestrian environment” in the City of Vaughan. Creating a pedestrian network is more than just providing pedestrian infrastructure such as pathways and sidewalks. An environment that entices a user to walk must be created in order for a pedestrian system to be successful.

Chapter 6.0 lists the objectives for an Outreach program to educate, enforce and encourage more walking and cycling in the City of Vaughan.



Chapter 7.0 defines the proposed strategy through which the Pedestrian and Bicycle Master Plan infrastructure and supporting policies will be implemented. This chapter outlines a clear and feasible strategy for implementing the recommendations of the Vaughan Pedestrian and Bicycle Master Plan by defining a recommended process, management structure and set of steps considered necessary to implement the Plan.

The Technical Appendix, the **Planning and Design Guidelines**, provided under separate cover and are intended to aid City staff in implementing the Vaughan Pedestrian and Bicycle Master Plan. The Planning and Design Guidelines focus on specific pedestrian and cycling design features that should be considered when implementing the Plan. Some of the key guidelines described in the **Technical Appendix** are also introduced in the main report.



The Planning and Design Guidelines provided as a Technical Appendix under separate cover detail specific design features that should be considered when implementing this Plan.



4.0 THE NETWORK

4.1 CREATING A PEDESTRIAN AND CYCLING NETWORK

Pedestrian and cycling facilities, whether they are located within City boulevards, on City streets or within green space corridors must reflect and respond to residents' needs and desires. This Plan reflects the needs and desires of residents and will promote walking and cycling and encourage a wide user base. The first action of this Plan is to provide a comprehensive network, which establishes the footprint for the overall Plan.

The majority of people who use the existing pedestrian and cycling system are Vaughan residents. In order to maintain and broaden the appeal of Vaughan's system, the Plan must be able to set the right conditions to promote its use. Increased usage of Vaughan's pedestrian and cycling network is one of the measures of success for this Plan.



Cycling or Pedestrian facilities, whether located on City boulevards, streets or within greenspace corridors must reflect and respond to residents' needs and desires.

4.2 NETWORK GOAL AND OBJECTIVES

The goal of this Plan with respect to networks is to provide a continuous and accessible City-wide pedestrian and cycling network that is user friendly and safe, that provides convenient connections to major commercial, employment, educational and industrial nodes throughout the City.

The objectives of the City of Vaughan Pedestrian and Bicycle Network are to:

- 4a. Determine a clearly defined network structure that appeals to a broad range of both pedestrians and cyclists of all skill levels.
- 4b. Provide designated on and off-road pedestrian and cycling facilities.
- 4c. Develop specific route selection criteria to ensure that the most suitable pedestrian and cycling routes are selected.
- 4d. Develop a logical network development process to help form a City-wide network of pedestrian and cycling facilities.

4.3 OBJECTIVE 4A: DETERMINING A CLEARLY DEFINED NETWORK STRUCTURE

Strategies

The proposed Vaughan Pedestrian and Cycling Network is based on a concept that has been developed in direct response to input received for this study from stakeholders, the public and City staff. The concept is based on a two-tier



network (Community and Neighborhood) and includes a hierarchy of pedestrian and cycling facility types that together form the proposed network. An explanation of each tier follows.

Community System

The first tier consists of a *primary* pedestrian and cycling network, which will serve as a City or community-wide system. It will link Vaughan to adjacent municipalities and provide access to employment and residential areas throughout the City. Each Community Planning Area within the City will be served by one or more segments of this community level system.

The Community System (CS) also provides for a number of loops throughout Vaughan, allowing users to plan a recreational or utilitarian trip without having to return using the same route. These loops form part of the primary recreational component of Vaughan’s existing and proposed pedestrian and cycling network.

Typically, CS routes tend to be direct, used for both recreational and utilitarian purposes, and are evenly distributed in a north/south and east/west orientation, equivalent to approximately a 2 to 3 kilometre grid. Where off-road routes are not feasible, on-road routes are proposed to provide links. This means multi-use boulevard pathways or sidewalks for pedestrians and bike lanes, paved shoulders (rural) or signed routes for cyclists. Linear parks and open space or valley systems, major utility corridors and select arterial or collector road corridors are to be used for these routes. Since CS facilities will form the spine of the network, the design standard and facility type is of the highest order relative to other pathways and routes in the network.

CS routes are proposed to typically consist of hard surface pathways, such as concrete, asphalt or limestone in some locations, have higher order amenities, as well as gateways at key locations. As the primary recreational component of the network, they should be designed to accommodate the widest range of users. These may include pedestrians, wheelchairs/strollers, in-line skaters, joggers, skateboarders and cross-country skiers. All motorized vehicles, with the exception mobility devices and maintenance vehicles would be prohibited from off-road segments of the primary CS.

Road right-of-way segments of the CS will include multi-use boulevard pathways, usually in place of a sidewalk on one side of a road, or bike lanes / paved shoulders, wide curb lanes or signed routes for cyclists and sidewalks for pedestrians.

Similar to an arterial and collector road network, the CS is intended to connect the major nodes and destinations within the City. The Neighbourhood system on the other-hand, is analogous to a local residential collector road in that its primary purpose is to promote and accommodate walking and cycling within a neighbourhood and provide access to the primary or community trail system. The CS should be maintained year round and regularly cleared of debris, as well as snow where usage levels and location warrant.

Neighbourhood System

The Neighbourhood System (NS) forms a *secondary* tier of the network and is intended to serve as a local system within each secondary plan area. This secondary system will constitute the largest portion of the network. The NS will serve residents who travel within their own



neighbourhood, provide connections to local parks and greenways, and in most cases, provide local recreational trail loop opportunities.

The NS will connect the neighbourhood to the primary CS of routes. In addition, these secondary routes will reflect desire lines and provide access to recreational and utilitarian destinations at the neighbourhood level, including local points of interest. Some of these may include local commercial nodes, places of worship, transit stops, parks and community centres and schools.

The NS will consist of both off-road and on-road routes. Off-road facilities will consist primarily of multi-use pathways and sidewalks. These trails may be granular (limestone screening) or hard-surfaced (asphalt), and may have fewer trailside amenities than envisioned for the primary system. On-road facilities will include bike lanes, wide curb lanes and signed routes for cyclists and sidewalks or tertiary footpaths for pedestrians. The NS should be maintained year round.



The Neighbourhood system will consist of many off-road multi-use pathways, many with granular surfaces in environmentally sensitive areas.

4.4 OBJECTIVE 4B: PROVIDE DESIGNATED ON AND OFF-ROAD PEDESTRIAN AND CYCLING FACILITIES

Strategies

Residents use existing pathways for a variety of uses, including walking, jogging, cycling and in-line skating. Accordingly, several classes of facilities are recommended to accommodate the widest variety of uses. The recommended pedestrian and cycling facility types are provided in the following section.

Detailed planning and design guidelines for each cycling / pedestrian facility type listed, as well as recommendations for the creation of walking and cycling-friendly streets are provided in Volume II: Technical Appendix - Vaughan Pedestrian and Cycling Master Plan Planning and Design Guidelines.

4.4.1 CLASS 1 FACILITIES: MULTI-USE PATHWAYS

Multi-Use Recreational Pathways

Off-road, Multi-Use Recreational Pathways typically are located in parks and open spaces, primarily serving recreational users, although there are notable exceptions. These exceptions include pathways along valley lands, river corridors, and active or abandoned rail lines, hydro corridors and other linear routes that serve the needs of both recreational and utilitarian pedestrians and cyclists. In Vaughan, multi-use pathways will form parts of both the Community and Neighbourhood Systems.

Off-road multi-use recreational pathways should be designed to accommodate a variety of user groups. These groups may include pedestrians,



hikers, cross-country skiers, equestrians and cyclists. A review of various multi-use pathway design guidelines from throughout North America indicates that standards vary depending upon the paths location, the anticipated number of users and the permitted uses.

The minimum recommended width is typically 3.0 m, which allows for flow in two directions. On popular, more heavily travelled multi-use pathways, widths of 4.0 to 5.0m are recommended to allow for a wider variety and greater number of users. Multi-use recreational pathways (MRP) should be considered as the preferred facility type for the Community and Neighbourhood pedestrian and cycling systems within parks and open spaces.

MRPs can have asphalt or granular surfaces such as stone-dust or gravel. It is recommended that stone-dust or gravel surfaces be used for MRPs in environmentally sensitive areas, especially those proposed in the rural areas of the City and environmentally sensitive areas in valley lands.

Asphalt surfaces are recommended for MRP's that provide key connections within urban areas, and are anticipated to receive high use, especially for utilitarian cyclists or pedestrians.

Figure 4-1 illustrates a cross-section for a typical MRP.

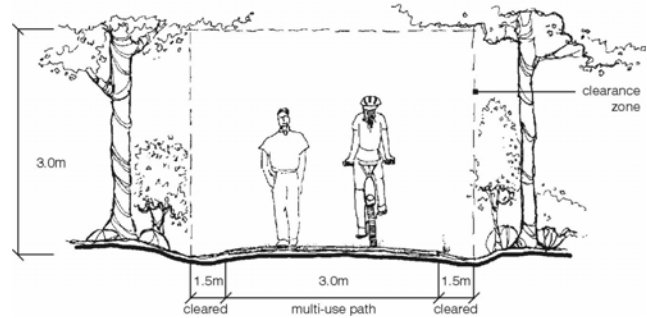


Figure 4-1: Example of a typical minimum cross-section for a Class 1 Multi-Use Recreational Pathway

Multi-Use Boulevard Pathways

Multi-Use Boulevard Pathways (MBP) are off-road pathways that are designed to accommodate a variety of user groups, including cyclists, pedestrians and in-line skaters (but not equestrians). The difference between Recreational and Boulevard Multi-Use Pathways is that, although Boulevard Pathways are off-road facilities, they are constructed in the road right-of-way within the roadway boulevard, and are physically separated from motor vehicle travel lanes. This separation usually consists of a setback from the curb, which may contain grass, trees or shrubbery. MBPs are also typically located in urban areas. A schematic example of a MBP is illustrated in **Figure 4-2**.

Other potential configurations for implementing a MBP within an unconstrained road right-of-way may include:

- Boulevard pathways on both sides of the road right-of-way. These may be implemented where Class 1 multi-use pathways are used to connect Class 2 or Class 3 cycling facilities where cyclists normally use both sides of the roadway.



- Boulevard pathways on both sides of the road right-of-way combined with parallel sidewalks on one or both sides of the street.

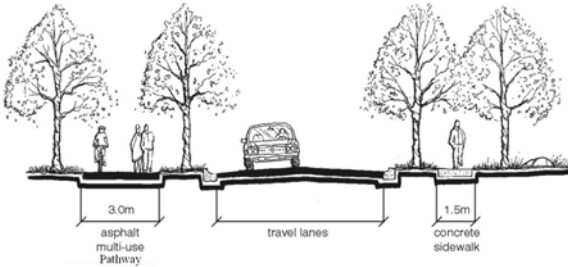


Figure 4-2 – Typical Cross-Section of a Multi-Use Boulevard Pathway

MBPs may form part of the Community and Neighbourhood pedestrian and cycling systems in urban areas.

In certain situations, boulevard pathways are proposed for short segments to direct pedestrians and cyclists to a bridge or tunnel crossing or connect to a proposed or existing off-road pathway. In urban or semi-rural areas, boulevard pathways can also serve as pedestrian connections, although cyclists typically prefer on-road facilities in road corridors. The main reason for this is that cyclists on boulevard pathways are required to yield at driveways and therefore may be faced with frequent stops. On-road cyclists on the other hand, like motor vehicles, have the right-of-way on the road as they intersect private driveways and side streets.

Depending on the number of intersecting roadways or driveway crossings along the route, boulevard pathways can be an appropriate facility type in Vaughan. The following are considered acceptable thresholds for driveway crossings as they relate to multi-use pathways:

- In locations where a boulevard pathway may intersect with more than four vehicle crossings per kilometre (intersections / driveways), consideration may be given to implementing an on-road bicycle facility type.
- For road segments where ten or more crossings of a boulevard pathway would occur, the preferred facility for the City Network should be a Class 2 or 3 on-road bicycle facility, with parallel sidewalks outside of road right-of-ways.

4.4.2 CLASS 2 FACILITIES: BIKE LANES / PAVED SHOULDERS

Bike Lanes

A Bike Lane (BL) is defined as a facility located in the travelled portion of the street or roadway and is designed for one-way cyclist traffic. BLs are provided on a road through pavement markings. BLs should form part of the Community and Neighbourhood systems and are normally constructed in urban areas only. An example of an on-street bike lane is illustrated in the following photograph. **Figure 4-3** illustrates a typical cross-section for a bicycle lane.

For routes that are served by bike lanes, it is expected that pedestrians and in-line skaters will be accommodated on the sidewalk. However, it must be recognized that in-line skaters may prefer to use the bike lane.



Example of a Class 2 Bicycle Lane with Parallel Sidewalk

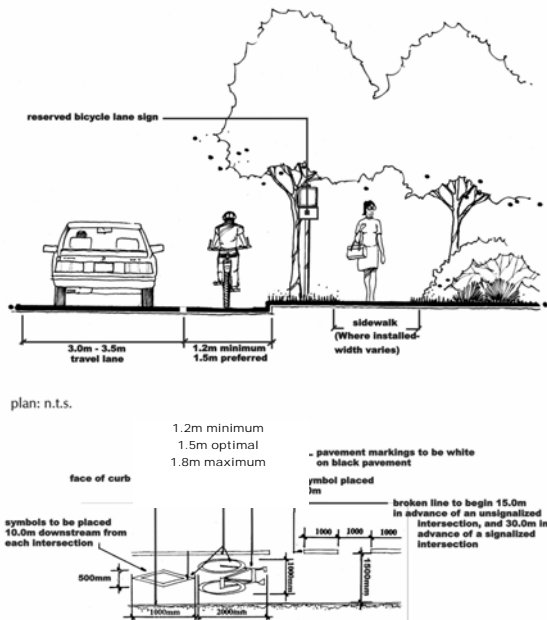


Figure 4-3: Typical Bike Lane Cross-Section

Paved Shoulders

Paved Shoulder Bikeways (PSBs) are located on roads with *rural* cross-sections and no curbs. When off-road routes are not feasible or desirable, paved shoulders should be considered to establish key connections between adjacent systems and to facilitate utilitarian use. A

schematic illustration of a PSB is illustrated in **Figure 4-4**.

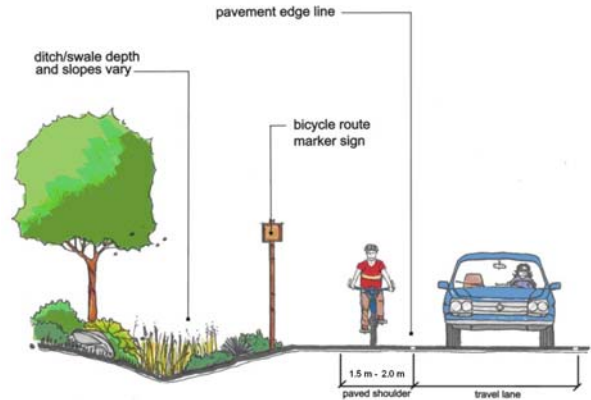


Figure 4-4 – Example of a Class 2 - Paved Shoulder Bikeway (PSB)

4.4.3 CLASS 3 FACILITIES: SIGNED-ONLY ROUTES

On-street signed bicycle routes are typically implemented on local and collector roads to form a connection in a network. On-street signed routes typically are only implemented where wide curb lanes exist or can be provided, or where traffic volumes are moderate, such as is typically found on a local or collector road. An on-street signed route can also form part of a trail network when the addition of bike lanes is not possible in the short term due to limited pavement or right-of-way widths and/or because of the existence of on-street parking.

On-street signed bicycle routes should be incorporated into both the Community and Neighbourhood systems, and are applicable in both urban and rural areas.

Instead of cycling route marker signs for on-street routes, consideration should be given to shared-use pavement markings.



Streets should typically only be signed as an on-road bicycle route if there is adequate pavement width to safely accommodate both motor vehicles and cyclists. Otherwise, alternative routes should be investigated. In some locations the use of narrow roadways may be to make key connections.



Example of Signed-Only Bicycle Route with a Wide Curb Lane and bicycle route pavement marking – City of Ottawa

One of the primary recommendations of the Vaughan Pedestrian and Bicycle Master Plan Study is, where feasible, to provide paved shoulders or bike lanes on all roads in the City designated for cycling facilities and that are part of the Community System. However in many situations, cycling route segments can be implemented in the short term by introducing signed routes and/or wide curb lanes in urban areas.

Over the longer term (10 to 20 years), when a road designated on the City's Cycling Network is scheduled to be resurfaced or reconstructed, an assessment should be undertaken to confirm whether the preferred facility type can be accommodated in the scheduled roadway

improvement. One potential outcome of such an assessment may be the decision that a signed route is sufficient for the purposes of the network at a particular location. Moreover, the additional cost of implementing bike lanes or paved shoulders to the specified design width (1.5 to 2.0 m) might be perceived to be better applied to another bicycle route segment. Details of a process to undertake such an assessment is provided in **Chapter 7.0 – Implementation**.

When the minimum standard for paved shoulders cannot be implemented, an edge line should still be marked on rural roads with adjacent gravel shoulders to encourage motorists to travel away from the pavement edge, therefore providing more space for cyclists.

Streets should typically only be signed as on-road bike routes if there is adequate pavement width to safely accommodate both motor vehicles and cyclists, or when adequate sight lines and an appropriate AADT volume exist. Otherwise, alternative routes should be investigated or paved shoulders/bike lanes implemented when the opportunity presents itself.

4.4.4 CLASS 4 FACILITIES: FOOTPATHS / HIKING TRAILS

Footpaths and hiking trails are typically narrow single-track routes with a soft surface (earth or granular) and are intended for pedestrian use only, unless otherwise designated. Future footpaths and hiking trails should be built into the Tertiary system in parks and open spaces where feasible. An example of a footpath / hiking trail is illustrated in the following photograph.



Class 4 trail facilities form part of the Tertiary System (TS) of the Vaughan Pedestrian and Bicycle Network.

The Tertiary System will typically be designed to accommodate more passive or special uses and are expected to experience less volume than the primary Community and secondary Neighbourhood systems. Footpaths and hiking trails in parks and open spaces will be the main facility types in the tertiary system. These trails may often be located in more environmentally sensitive areas, parks and greenways and certain types of uses may be restricted. Special design solutions may apply to these types of trails. These include measures such as narrower widths, softer surfaces and boardwalks through or adjacent to wetlands.

Existing and future footpaths and hiking trails should be built into the Tertiary system in parks and open spaces. Many informal existing trails exist today. These should be inventoried in the future by the City and TRCA and a decision made on those that should be identified as part of the Tertiary System component of the Vaughan Pedestrian and Cycling Network.



Existing Footpath / Hiking Trail – Oak Ridges Trail
(Photo Credit: www.oakridgestrail.org)

4.5 OBJECTIVE 4C: DEVELOP SPECIFIC ROUTE SELECTION CRITERIA

Strategies

In order to encourage the use of the pedestrian and cycling network, a specific set of route selection criteria were developed to serve as guiding principles in the selection of cycling and pedestrian routes. These principles are as follows:

4.5.1 ROUTE SELECTION PRINCIPLES

VISIBLE The pedestrian and bicycle routes should be a visible component of the transportation system.

CONNECTED The routes should be connected to form the overall network.

ACCESSIBLE Pedestrian and bicycle routes should be easily accessible from all neighbourhoods and major destinations within Vaughan.

SCENIC Pedestrian and bicycle routes should take advantage of attractive, interesting and scenic areas, views and vistas.

DIVERSE The network should provide a diverse on and off-road walking and cycling experience.

FLEXIBLE Routes should take advantage of all rights-of-way capable of accommodating pedestrians and cyclists.

INTEGRATED The network should be integrated with other modes of transportation, particularly public transit.



4.5.2 NETWORK DESIGN

SAFETY The pedestrian and bicycle routes should be designed to maximize the safety of all users.

NEIGHBOURHOODS Pedestrian and cycling facilities should complement the character of local neighbourhoods

WAYFINDING The network should be clearly signed so that users of all age-ranges can easily navigate the system. The application of multilingual-signs should also be considered at key junctions and nodes throughout the network to reflect the wide range of languages spoken in the City of Vaughan and Toronto area.

SUPPORT FACILITIES Supportive services and facilities, such as benches and bicycle parking facilities should be available along routes and at destinations.

A detailed chart outlining the route selection and evaluation criteria used to develop the Vaughan Pedestrian and Bicycle Master Plan network is illustrated in **Appendix B**. It outlines the goals and objectives of the proposed network and describes in more detail the route selection process outlined in this section.

4.6 OBJECTIVE 4D: DEVELOP A LOGICAL NETWORK DEVELOPMENT PROCESS AND CITY-WIDE PEDESTRIAN AND CYCLING NETWORK

Residents have indicated that they use existing cycling and pedestrian facilities for two purposes: recreational interest and utilitarian trips. Utilitarian trips are travel activities where the destination is of primary importance, such as

going to work, school, shopping or visiting friends.



A scenic and diverse network is essential in order for the proposed network to attract a wide variety of user groups.

Residents also indicated that convenient access to the Vaughan network was important. Based on past experience, this typically means that users seek connections within a 15 minute walk or a five minute bike ride from any given point in the City as being convenient.

Based on this premise, the recommended network for the City of Vaughan was developed using the following principles:

Identify Major Attractions and Destinations. Map 2 depicts some of the major destinations in Vaughan. Commercial, employment,



institutional, recreation centres, parks and transportation nodes were identified and categorized.



Destinations such as the Vaughan Mills Mall and Boyd Conservation Area are currently popular destinations for cyclists and pedestrians.

Identify Opportunities and Constraints.

Map 3 illustrates some of the major constraints in Vaughan, including the 400 series highways, railway corridors, major arterial roads and right-of-ways. These constraints should be considered as opportunities. For example, under a re-development scenario, a major arterial could present an opportunity to expand the network in the boulevard or the road.

Develop and Evaluate Candidate Routes.

Candidate routes were developed closely with staff, the public and consulting team. Accordingly, each route was evaluated by the consulting team and staff through field visits and the consideration of various evaluation factors such as continuity, safety, traffic volumes, available space and attractiveness. The selection of routes underwent several iterations with input from the public, stakeholders and City staff, until the preferred corridors were chosen.



Support facilities such as signing and information posts are essential components to the network.

4.7 RECOMMENDED PEDESTRIAN AND BICYCLE NETWORK

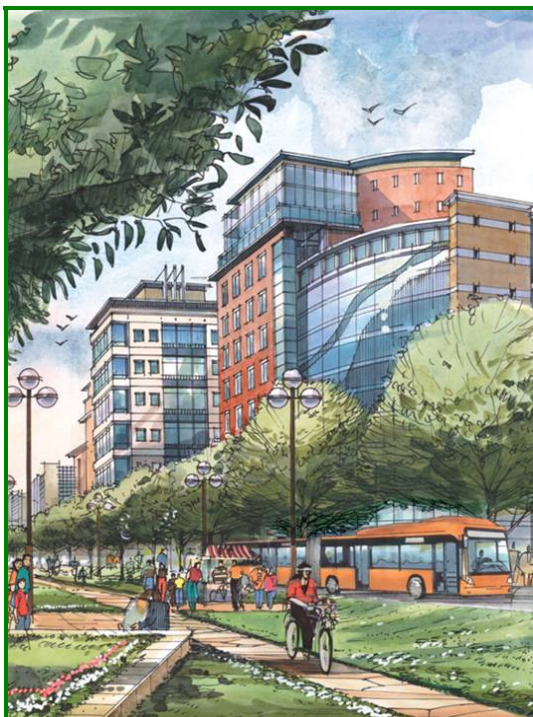
The recommended Pedestrian and Bicycle network is provided in **Map 4**. It is based on the existing road grid of north-south and east-west routes spaced approximately 1 to 2 kilometres apart. This spacing should ensure that all residents will be within the 15 minute walk or five minute bike ride from the network.

Similar to most transportation networks, such as roads with arterial, collector and local designations, the Vaughan Pedestrian and Cycling system is represented by various categories. Although these categories do not represent a formal hierarchy, they do act as an organizing tool when applying design criteria.



5.0 THE PEDESTRIAN ENVIRONMENT

Creating a pedestrian environment is more than just creating a network of connecting pedestrian facilities such as sidewalks and pathways. Although pedestrian infrastructure such as sidewalks and pathways are important, the essential element is to create an environment that “engages” a pedestrian and makes them feel comfortable when using it, rather than an environment that treats pedestrians as an after-thought. The concept of “every street being a pedestrian street” is a notion that should be adopted as part of this Plan, with the goal being to improve the environment for pedestrians of all age levels and to create an environment that is accessible to all types of users.



An ideal pedestrian environment is accessible to various modes of transportation and user groups. (Drawing Credit: York Region Rapid Transit Plan, 2003)

5.1 VAUGHAN’S EXISTING PEDESTRIAN ENVIRONMENT

The pedestrian environment in the City of Vaughan today can be described as a two-tier system. The first tier or primary system coincides with providing pedestrian facilities along major roads and providing connections to major City destinations. The secondary tier corresponds to the provision of pedestrian facilities that connect destinations that are more local in nature, such as local parks, community centres, school and plazas. The secondary tier systems are more neighbourhood-based and provide internal connections within a community.

Although the City of Vaughan has taken measures to ensure that pedestrian infrastructure is in place, adjustments to land-use patterns and enhancements to pedestrian infrastructure could improve the Pedestrian Environment in the City and help to achieve the goals and objectives of this Plan.

5.2 STRATEGIES FOR IMPROVING THE PEDESTRIAN ENVIRONMENT

The City of Vaughan has already taken measures to improve the pedestrian environment within the City. Some of these measures, include the provision of raised sidewalks at locations where off-road pathways meet an intersection at grade.

In order to further-improve the pedestrian environment, the strategic actions described in



the following sub-sections are recommended for consideration as part of the Vaughan Pedestrian and Bicycle Master Plan.

Strategies

5.2.1 VIEW NETWORK MAP AS SPINE PEDESTRIAN NETWORK

The recommended network illustrated in *Map 3* although mainly consisting of designated cycling facilities, can also be viewed as a spine for the City-wide pedestrian network. All roads identified on *Map 3* with designated network routes in urban areas should have sidewalks provided on **both sides of the road**. These sidewalks should provide direct uninterrupted connections to adjacent destinations, network facilities and transit stops.

5.2.2 IMPROVE URBAN DESIGN AND STREETSCAPING

As mentioned previously, creating a pedestrian environment is more than just installing a sidewalk along a street, it is creating a street that encourages walking. This can be achieved through appropriate urban-design practices and streetscaping. Pedestrian-oriented development includes the provision of pedestrian amenities along walking corridors such as benches and patios.

Another key component of streetscaping is the provision of shops and residences that are directly alongside and accessible to a sidewalk, typical of main-street type developments such as those in Kleinburg. In order to make areas more pedestrian-friendly, the City should steer-away from the development patterns and site plans that cater strictly to the automobile.



Benches and patios should be provided along pedestrian corridors, especially at major junctions between other pedestrian routes and at major attractions and destinations.

This type of automobile oriented development is typical of traditional suburban areas, which were designed specifically with the automobile in mind and pedestrians as an after-thought.

The City of Vaughan and the Region of York should therefore consider the needs of pedestrians when designing new roads and developments so that an environment is created that “entices” people to walk.



Despite the presence of sidewalks, environments with little streetscaping and pedestrian amenities and fast moving traffic, discourage people from walking through them.

cyclists. (Drawing Credit: York Region Rapid Transit Plan, 2003).

The City of Vaughan’s Urban Design Guidelines and Policies identify recommended practices for improving pedestrian conditions in the City of Vaughan such as the proposed “Vision” for Highway 7 (Avenue 7) which includes the provision of pedestrian amenities and the construction of pedestrian and transit-oriented development. It is vital that these street guidelines for streetscaping and urban design be followed to ensure the Vision of this Plan is implemented over the long term.



Improved streetscaping can help to create an inviting environment for both pedestrians and



Vastly improved streetscaping accompanied with pedestrian and transit-oriented development is proposed along Highway 7 (future Avenue 7) for the proposed Vaughan Corporate Centre. (Illustration Credit: York Region Rapid Transit Plan, 2003)

5.2.3 REVISIONS TO SIDEWALK POLICY

The City of Vaughan currently has a sidewalk policy in place for the construction and maintenance of sidewalks in the City of Vaughan. It is recommended that the City’s current sidewalk policy be **reviewed and**



updated as part of this Plan in order to make the City more “pedestrian-friendly.”

Key points from the City’s current sidewalk policy are as follows:

- Sidewalks are required where they form part of a walkway system;
- Sidewalks are required on one side of internal industrial roads;
- Sidewalks are required on both sides of collector and arterial roads;
- Sidewalks are required in locations where pedestrian routes connect to local amenities such as schools, parks, transit routes, retail areas, etc, as follows:
 - One sidewalk where 40 to 100 units are tributary to the sidewalk route;
 - Two sidewalks where over 100 units are tributary to the sidewalk route; or
 - Where only one sidewalk is required, it shall be located on the side of the street that provides the most direct route to a local amenity.

Since the current requirement is to provide sidewalks on both sides of all collector and arterial roads, pedestrian routes will therefore be provided on many of the routes proposed as part of the Vaughan Pedestrian and Cycling Network. In residential areas specifically on local streets, there may be segments where 40 to 100 residential units are present, which as per the current sidewalk policy, would require only a single sidewalk on one-side of the street. However, this policy should be modified for routes that form part of the Vaughan Pedestrian and Cycling Network. On roads in urban areas

including those within residential subdivisions where pedestrian / cycling routes are proposed, these routes should have sidewalks on both sides of the road, even if the 40 unit minimum is not met. This is recommended in order to provide pedestrian connectivity along all routes of the network and to support a more pedestrian-friendly environment. In an effort to make walking more accessible to all residents of Vaughan, it is recommended that sidewalks be provided on at least one side of all residential streets. There currently are some residential streets in finished subdivisions that do not have sidewalks on either side of the road. This practice should be discontinued.

New subdivisions should not be built without sidewalks on at least one side of the road and sidewalks on both sides of the road are recommended, especially for streets that comprise part of the City of Vaughan Pedestrian Network. Installing new sidewalks on streets within existing neighbourhoods may be a challenge to the City. Some residents believe that their property extends from their house to the street curb, and thus, the installation of a sidewalk would be perceived as a loss to a portion of their property and reduce space available for parking.



Sidewalks should be installed on all roads in urban areas that comprise part of the pedestrian network.

Furthermore, it should also be noted that in locations where there is a lack of appropriate pedestrian facilities, particularly sidewalks, residents tend to complain, especially when the safety of their young children are concerned when they are walking to and from school. A lack of sidewalks in neighbourhoods, especially in school zones can lead to increased congestion on the street between pedestrians and motorists around schools and thus result in a reduction in safety to pedestrians in school zones. Also, residents may also complain about pedestrians walking on their property where there is a lack of sidewalks. It is for these reasons that sidewalks should be installed in existing neighbourhoods where sidewalks are not currently present when roadways are improved, and if a majority of residents on a street are in support.

In newer subdivisions that are currently under construction or being planned, sidewalks should be installed preferably on both sides of the street before residents move in to avoid potential conflicts between residents and the City over a

percieved loss in property over the installation of a sidewalk at a later date.

5.2.4 IMPROVED PEDESTRIAN CONNECTIVITY AND ACCESSIBILITY

Connectivity is a key when creating any type of network. In the context of the Vaughan Pedestrian and Bicycle Master Plan, connectivity, especially for pedestrians is very important. Although this plan is both a Pedestrian and Cycling Plan, different approaches to connectivity must be taken in regards to pedestrians and cyclists.

Some on-road cycling routes identified in this plan utilize roads that may not provide the most direct route to a destination, such as along a major arterial road, but have more favourable cycling conditions such as less traffic. This approach may be suitable for cyclists since cyclists travel much faster than pedestrians and therefore can use a less-direct route where favourable cycling conditions exist without a significant loss in travel time. This approach however is not suitable for pedestrians.

What may seem like a short detour to a cyclist may be considered an extremely long detour to a pedestrian since pedestrians travel at much slower speeds than cyclists. The average speed of a cyclist is 15 km/h whereas the average speed for a pedestrian approximately 4.32 km/h, depending on age and a person's physical condition). Therefore, it is important that pedestrian facilities be designed in such a manner as to provide direct connections between each other.



Direct pedestrian connections to major attractions, destinations and to other network routes should be provided wherever possible.

Strategies

Major destinations and attractions throughout the City of Vaughan are typically located on major arterial roads. Although some arterials may not provide favourable cycling conditions, pedestrians can be readily accommodated on major roads through the provision of designated pedestrian facilities within the road right-of-way. Therefore, parallel pedestrian routes on “less-busy” streets may not be required since pedestrians do not actually travel on the road itself like cyclists do. Pedestrian connections should be provided to and along main roads because that is typically where pedestrians want to travel to access pedestrian destinations such as shopping malls, plazas, theatres, businesses and transit stops.

On major arterial roads with heavier traffic volumes, pedestrian amenities such as landscaped boulevards can help make walking conditions along major roads more pleasant for pedestrians. The Planning and Design Guidelines that forms a separately bound Technical Appendix to this Plan details

numerous pedestrian amenities that can be considered to improve the “pedestrian environment” and improve walking conditions for pedestrians along all roads in the City of Vaughan.



The planting of trees between a sidewalk and road can create Pedestrian “buffer zones” which can help to provide a barrier between pedestrians and automobiles and help make pedestrians feel more comfortable when walking along streets.

Whenever possible, direct pedestrian connections should be provided to link major destinations and attractions throughout the City, as well as to provide pedestrian connectivity throughout the network itself.

Pedestrian connectivity also includes pedestrian connections to other travel modes, and especially public transit. Nearly every transit trip includes a walking trip of some type. Therefore, appropriate connections to transit facilities such as bus stops and transit terminals should be provided and viewed as implementation priorities by the City. It should be noted that connectivity to transit also includes cyclists and the provision of cycling facilities. The recently implemented VIVA bus rapid transit network, which has routes in



Vaughan, provides bicycle parking facilities at all of its stops.

provided from the building to the street, the impact of wind and shadows is minimized,

5.3 SUMMARY OF “PEDESTRIAN ENVIRONMENT”

The creation of an attractive and safe pedestrian environment is a crucial component of the Vaughan Pedestrian and Bicycle Master Plan and is essential for the Plan’s success. The creation of a pedestrian friendly environment is more than just providing sidewalks and pathways, it is about creating places where people want to be. It should be noted that the pedestrian environment includes many different people and users, including people in wheelchairs and other people who use mobility assistance devices. The following key points and recommendations identified below form the basis of a strategy to make Vaughan a more pedestrian friendly community.

protection from the elements is provided and scenic views are framed and protected.

- Pedestrian infrastructure such as sidewalks and pathways are important, to specifically accommodate pedestrians in a way that is safe, convenient and enjoyable and makes them feel as if they belong rather than being an afterthought.
- An emphasis should be placed on good streetscaping, urban design and pedestrian oriented development to enhance the built and pedestrian environment in the City of Vaughan.
- These elements should be designed to create a sense of place and points of interest that “engages” pedestrians, cyclists and motorists alike.
- The siting, scale and massing of buildings and landscaping create a neighbourhood’s streetscape. Care should be given when siting and designing buildings so that a direct visual and physical connection is provided from the building to the street, the impact of wind and shadows is minimized,
- protection from the elements is provided and scenic views are framed and protected.
- In instances where private lands contribute to the public realm (malls, courtyards, front yards, parking areas etc.) care should be given to ensure suitable connection and integration to the surrounding public pedestrian infrastructure. Pedestrian access should be integrated into the design of the site to provide an attractive and an unobstructed access that is safe and welcoming and that acknowledges the various ways in which a pedestrian traverses a site.
- Parking areas should be located so as to minimize the visual impact they have on the public realm. The access points to parking areas should be organized, designed and minimized to provide adequate sight lines for pedestrians and cyclists with safe and demarcated crossing points.
- The location of existing and proposed destination places, such as District Centres, parks, woodlots and institutions, should be considered when determining pedestrian routes. These destination areas require increased pedestrian connectivity to the surrounding neighbourhoods and between one another. By providing interesting places to go and ways to easily get there, people are likely to walk more.
- While sidewalks and pathways are the primary infrastructure required for a successful pedestrian network and environment, the City and private



development should provide other infrastructure along the network and at points of interest. This should include street furniture, interpretive signage, lighting, places to gather, street trees and other appropriate landscape features.

- The location of sidewalks, trails and pathways should be such that they create multiple connected route options. In some instances people may want a direct route, while others would prefer a more leisurely, circuitous route. The provision of pedestrian infrastructure should allow the various users to easily modify their route selection within the network.
- The layout of sidewalks, trails and pathways should consider and enhance points of interest. Points of interest, includes items such as scenic vistas, locations of natural or scientific interest, heritage buildings and landscapes.
- Sidewalks and pathway routes should be an integral part of the planning process of new development and not an afterthought. The design, location and layout of road networks, lotting patterns, urban design standards, location and type of public spaces contribute to the creation of a successful pedestrian environment and should be implemented in a manner that enhances the pedestrian environment and public realm.
- In existing developments, the installation of sidewalks and paths and the routes selected should be sympathetic to the abutting properties and should consider the level of interest the proposed route may have for pedestrians.
- All new pedestrian facilities, especially sidewalks should be designed and be consistent with accessibility guidelines set

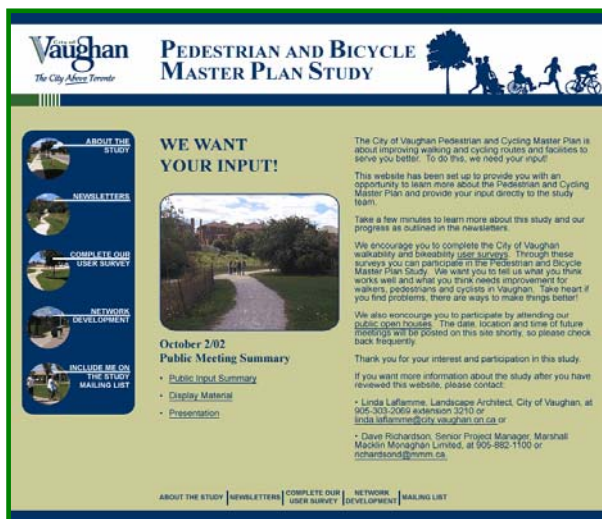
out in the Ontarians with Disabilities Act 2001.



6.0 OUTREACH

Pedestrian and cycling infrastructure such as sidewalks, multi-use pathways and trails, bike lanes, benches, pavement markings and treatments are all important components of a pedestrian and cycling master plan. However, facilities alone will not produce and support a successful walking and cycling community.

Many of the comments received through the consultation process for the Vaughan Pedestrian and Bicycle Master Plan indicate the need to provide a safe and desirable environment for walking and cycling. Furthermore, a strategic framework is needed to develop, manage and deliver walking and cycling programming and outreach support services to ensure that residents and visitors to the City of Vaughan can be made aware of existing and new walking and cycling initiatives taking place in the City.



The internet is an excellent tool for reaching out to City of Vaughan residents to inform them on Pedestrian and Cycling initiatives being undertaken by the City. The www.vaughanhikenbike.com is a useful example of such initiatives.

6.1 GOALS OF OUTREACH

The goal of the “Outreach” for the Vaughan Pedestrian and Bicycle Master Plan has been categorized into these three main components:

1. Education;
2. Encouragement / Promotion; and
3. Enforcement.

Specifically, the goal of the Outreach program of the Vaughan Pedestrian and Bicycle Master Plan is to Educate, Encourage / Promote and Enforce user-friendly walking and cycling practices throughout the City of Vaughan.

The framework set out in this chapter of the Plan supports the continuation and improvement of initiatives in these areas, as these important services will inherently support the many benefits of cycling and walking, including those highlighted in *Chapter 2* of this Plan.

6.2 EDUCATION OBJECTIVES

Education of residents is one of the most important components of this Plan.. Pedestrian and cycling network users and non-users alike need to be educated and need to clearly understand safe on and off-road operating procedures in order to create a safe and inviting environment for walking and cycling in the City. The objectives of the education program for the Vaughan Pedestrian and Bicycle Master Plan are as follows:



- 6a: Educate pedestrians, cyclists and other non motorized travellers on safe operating procedures on multi-use pathways and roads;
- 6b: Educate pedestrians and cyclists on safe operating procedures within road right-of-ways;
- 6c: Develop walking and cycling advocacy, advisory and information groups and programs; and
- 6d: Adequately fund existing and proposed pedestrian and cycling programs developed for the City.

6.2.1 OBJECTIVE 6A: EDUCATE PEDESTRIANS AND CYCLISTS ON SAFE OPERATING PROCEDURES ON MULTI-USE PATHWAYS

Strategies

- i) Clearly define the proper right-of-way for travel on a pathway through signing and pavement markings, such as signs indicating “cyclists yield to pedestrians” and solid yellow lines along the centre of a pathway, encouraging road-like operating procedures.
- ii) Promote proper pathway etiquette through the provision of clear signing, pavement markings and aggressively promote responsible pathway behaviour. This information could be provided through pamphlets, advertisements and on information-posts at key gateways, junctions and along routes. Information on safe operating procedures should be presented in a clear, attractive and easy-to-understand method.

- iii) Provide directional signs and information-posts at locations where many pathway users are expected to congregate, such as gateways or where numerous pathways and other pedestrian / cycling routes meet. This will assist in dispersing various user groups along their preferred route.
- iv) Provide an adequate number of kilometres of pathways, including minor pathways that branch off of primary routes along the network. This will provide pathway users with a variety of pathway experiences and help to reduce congestion and conflicts, allowing users to choose conditions that are best suited to the experiences they desire.
- v) Support the implementation of “Share the Path” campaigns that encourage etiquette and safety for multi-use pathways and trails.

The publication, *Trail Etiquette on Multi-Use Trails*, was produced by the Regional Niagara Bicycling Committee (RNBC), and is directed at all off-road trail users including cyclists, walkers and in-line skaters. The City of Vaughan should consider producing a similar document for Vaughan residents and visitors.

6.2.2 OBJECTIVE 6B: EDUCATE PEDESTRIANS AND CYCLISTS ON SAFE OPERATING PROCEDURES WITHIN ROAD RIGHTS-OF-WAY

Strategies

- i) Support the Vaughan Pedestrian and Bicycle Master Plan in developing a “Share the Road” campaigns for motorists.
- ii) Encourage the Ministry of Transportation to update the Driver’s Handbook to educate



motorists regarding sharing the road with cyclists.

- iii) Continue programs such as Active & Safe Routes to School to educate children and parents alike on safe walking and driving practices in school zones which may also be applicable to other areas of the City.
- iv) Consider the use of existing material developed by other municipalities and agencies to educate users, rather than developing new original material at increased cost to the City of Vaughan.

The following are documents developed by the RNBC and could be adopted for use in Vaughan:

- *Lighten Up, Eh* – a pamphlet encouraging cyclists to have appropriate reflective materials and clothing to increase their visibility to motorists;
- *Sidewalk Cycling-Risky Business* – a pamphlet dedicated to informing cyclists about the hazards of riding on sidewalks and the need to ride on the road;
- *Bike to Work Guide* – a pamphlet dedicated to encouraging more cyclists to ride to work and school



Existing programs such as Active and Safe Routes to School help to educate and encourage pedestrians and motorists alike on safe operating procedures in school zones.

The Canadian Cycling Association through its affiliate, the Ontario Cycling Association and the City of Toronto Bicycle Committee have developed the Can-Bike Program. This education program teaches people of all ages how to safely ride bicycles on public streets and pathways.

6.2.3 OBJECTIVE 6C: DEVELOP WALKING AND CYCLING ADVOCACY, ADVISORY AND INFORMATION GROUPS AND PROGRAMS

Strategies

- i) Create a pedestrian and cycling advisory committee to provide input to City staff and Council on pedestrian and cycling initiatives to be undertaken by the City
- ii) Support the Vaughan Pedestrian and Bicycle Master Plan in developing, facilitating and administering a safe-cycling skills program for all ages such as the nationally accredited Can-Bike course.
- iii) Encourage and compensate all City employees who cycle to work to take a recognized safe-cycling skills course.
- iv) Invest in instructor development and develop a pool of qualified CANBIKE instructors to meet the demand for courses.
- v) Identify qualified instructors to teach special groups of cyclists. This implies a greater number of female instructors, instructors who can teach in other languages and instructors with special



interests in teaching children, teens, people with disabilities and seniors.

6.2.4 OBJECTIVE 6D: FUND EXISTING AND FUTURE PEDESTRIAN AND CYCLING PROGRAMS

Strategies

- i) The City should continually allocate a portion of their annual budget to support pedestrian and cycling infrastructure and programs.
- ii) Investigate entrepreneurial approaches for the generation of support revenue and to facilitate an atmosphere where new ideas can be generated through the consideration of a Bicycle Safety Partnership.
- iii) Introduce a Road and Pathway Safety Ambassador Program similar to that initiated in the City of Toronto in 1977, which uses a number of public/private supporters to hire and train “Ambassadors” during the cycling season.

6.3 ENCOURAGEMENT / PROMOTION OBJECTIVES

Educating the public on walking and cycling can be an effective method of encouraging Vaughan residents and visitors to consider walking and cycling as an alternate travel mode to the automobile. However, the proper conditions and a suitable environment must be available to pedestrians and cyclists so that they feel comfortable undertaking these travel modes. People will only consider walking and cycling as recreational, and more importantly, utilitarian

purposes if it is attractive, convenient, safe and comfortable. Achieving the following objectives will help to encourage walking and cycling in Vaughan:

- 6e: Make walking and cycling more convenient for Vaughan residents and visitors.
- 6f: Develop support services that help to make walking and cycling feasible modes of transportation around Vaughan.
- 6g: Market and promote walking and cycling as well as walking and cycling tourism in the City of Vaughan.

The following strategies outline methods of achieving the objectives of encouragement for the City of Vaughan Pedestrian and Bicycle Master Plan.

6.3.1 OBJECTIVE 6E: MAKE WALKING AND CYCLING MORE CONVENIENT

Strategies

- i) Implement the proposed pedestrian and cycling network described in *Chapter 4.0* over the next 20 years providing designated facilities designed specifically for pedestrian and cycling use.
- ii) Provide “trip-end” facilities such as benches, shelters and secure parking for bicycles at major employment, educational, commercial and other nodes that people frequent throughout the City. This would give people the option of



using their bicycle or walking to a destination where they may have otherwise chosen to drive.

- iii) Require all new developments to be planned and designed in a pedestrian-friendly manner as opposed to being primarily auto-oriented..

6.3.2 OBJECTIVE 6F: DEVELOP SUPPORT SERVICES TO MAKE WALKING AND CYCLING MORE FEASIBLE

Strategies

- i) Incorporate cycling with transit by requesting the Region of York provide bicycle racks on buses, improve bicycle parking and improve pedestrian and bicycle access at major transit stops and terminals. This would allow cyclists to carry their bikes on public transit vehicles during peak periods.
- ii) Work with local school boards to incorporate safe cycling as a school activity and develop a bike-to-school program.

6.3.3 OBJECTIVE 6G: MARKET AND PROMOTE WALKING AND CYCLING IN VAUGHAN

Strategies

- i) Provide free pedestrian and cycling network maps at various public venues and update them on an annual basis, highlighting new routes.
- ii) Market and promote walking and cycling through promotional

advertisements in local newspapers, on local television networks, public transit vehicles, schools and community centres.

- iii) Hold annual pedestrian and cycling community events such as hikes, walking tours and bicycle tours to further promote these activities as contributors to a healthy and active lifestyle.



Volunteer events including community tree-planting and clean-up days are excellent ways of promoting trail use and proper trail etiquette to visitors and residents. (Photo: www.bartelysmithgreenway.ca)

- iv) Work with the local tourism industry, the private sector and other tourism stakeholders to identify, promote and market the City of Vaughan as a walking and cycling destination for tourists, visitors and vacationers, highlighting the pedestrian and cycling-friendly nature of the City with its many attractions, pedestrian and cycling facilities and support services.
- v) Consult with local pedestrian and cycling programming partners, such as School Boards, to identify walking and cycling issues related to children and



work to improve the pedestrian and cycling mobility skills of children in schools.

- vi) Undertake off-season cycling events and programs to demonstrate the feasibility and enjoyment of year-round cycling.



Existing organizations in the City of Vaughan such as the *Toronto and Region Conservation Authority* are excellent examples of organizations that could participate in the Marketing and Promotion of Active Transportation in the City of Vaughan.

6.4 ENFORCEMENT OBJECTIVES

The area of enforcement is a key ingredient to pedestrian and cycling safety with the principle objective of reducing incidents causing property damage, injury and death. Enforcement should be applied to on and off-road segments of the proposed pedestrian and cycling network.

The main objective of enforcement for the Vaughan Bicycle and Pedestrian Master Plan is:

“To create and maintain a safe and attractive pedestrian and bicycle system in the City of Vaughan that encourages more use”.

This can be accomplished through the following recommended strategies.

Strategies

- i) Work in co-ordination with York Regional Police to provide patrols of the

Pedestrian and Bicycle Network to enforce proper operating rules to pedestrians, cyclists and motorists alike:

- target cyclists who disobey the law as part of an Integrated Road Safety Program;
 - Increase the number of officers using bicycles and patrol pathways as part of a community policing approach;
 - Contribute to the development of materials to assist cyclists and pedestrians involved in collisions and other mishaps;
- ii) Include pedestrian and cycling safety material in training programs for driver examiners, police recruits, fleet/transit operators and other officials; and
 - iii) Request Provincial funding for pedestrian and bicycle safety and promotional programs to assist the City in its efforts to promote walking and cycling, and educate all road users with the objective of reducing cycling collisions.



7.0 IMPLEMENTATION

The Vaughan Pedestrian and Bicycle Master Plan is comprehensive and strategic in nature. As such, it will need to be implemented efficiently through an incremental process over a 20-year period, with each step or action building upon previous ones. While the Plan presents a clear vision and detailed recommendations for implementation it is a Plan designed to be flexible, allowing the City to adapt the Plan to changes and constraints and respond to opportunities as they arise.



A strategic and incremental approach is recommended for the implementation of the Vaughan Pedestrian and Bicycle Master Plan.

7.1 GOAL FOR IMPLEMENTATION THE VAUGHAN PEDESTRIAN AND BICYCLE MASTER PLAN

The goal for implementing the Vaughan Pedestrian and Bicycle Master Plan is to establish a clear, logical and realistic set of steps that will guide City staff over the next 20 years as the City develops and implements the infrastructure and supporting programs for the Vaughan Pedestrian and Bicycle Master Plan.

This chapter outlines the goals for implementing the Master Plan and lists a series of objectives and supporting strategies to achieve these goals. This chapter also defines a recommended process, management structure and set of steps considered necessary to implement the Vaughan Pedestrian and Bicycle Master Plan.

7.2 IMPLEMENTATION OBJECTIVES

The key objectives for implementing the Vaughan Pedestrian and Bicycle Master Plan are as follows:

- 7a: Develop short-term and long-term implementation strategies that define network priorities;
- 7b: Determine a process to estimate the cost for the Plan and establish potential sources of funding; and
- 7c: Implement and Monitor the Plan.

7.3 OBJECTIVE 7A: DEVELOP SHORT-TERM AND LONG-TERM IMPLEMENTATION STRATEGIES

Strategies

- i) Determine network priorities.

Implementation of the proposed pedestrian and cycling network was divided into two phases:

- Phase 1, short-term (2008 – 2016)
- Phase 2, long-term (2016 – 2026)



The approach used to prioritize the proposed network involved applying the network development approach set out in *Chapter 4*. In addition, consideration was given to the following strategic actions:

- Connecting existing pedestrian and cycling facilities;
- If platform width is sufficient but existing pavement width is inadequate, schedule implementation at the same time road resurfacing occurs;
- Scheduling implementation with already planned and/or scheduled capital road and servicing projects; and
- All roads proposed for signed-only routes should be implemented in Phase 1.

Map 5 depicts existing facilities, short-term (Phase 1 2007 – 2016) and long-term (Phase 2 2017 – 2026) implementation priorities for the City of Vaughan Pedestrian and Bicycle Master Plan network. Each of the phases is distinguished according to colour. The ultimate network (following build-out) would be represented by the combination of all of the colours.

A number of route segments and related facility types proposed for implementation in Phase 1 may prove not to be feasible because of other City priorities or other circumstances. However, an interim solution may be possible and should be investigated by City staff.

For some of these roads, the current roadway characteristics, such as the average annual daily traffic volume (AADT) and commercial vehicle percentage (see **Technical Appendix - Planning and Design Guidelines, Section 5.2**

Retrofitting City Roads, Tables 5.1 or 5.2) may not exceed the maximum threshold for a signed-only route for at least 7 – 10 years. In these situations, a great opportunity exists for the City to provide more of the cycling network sooner, and at a moderate cost through the installation of signage only. In time, as these same roads are reconstructed or resurfaced, the City would then upgrade the signed-only route to the desired cycling facility type and relocate the route signage. There will not be any throw-away cost in applying this approach.

Table 7.1 summarizes the number of kilometres of existing and new on and off-road pedestrian and / or cycling routes proposed for implementation in both Phase 1 (2008 – 2016) and Phase II (2016 – 2026) by facility type. **When completed, the Vaughan Pedestrian and Bicycle Network will consist of approximately 613.49 kms of on and off-road pedestrian and/or cycling routes.**

7.3.1 DEVELOP AN IMPLEMENTATION PROCESS TOOL

The timing and details related to implementation, particularly the location of recommended routes and pedestrian and cycling facility types should evolve through community consultation and detailed technical studies when appropriate. At the same time, the extensive community and stakeholder effort that established the overall direction for this Plan should be respected.

It should be noted that the complete pedestrian and cycling network priorities recommended in this Plan should evolve through the environmental assessment, planning and capital budget process.



Table 7.1: Proposed Length of Pedestrian and Cycling Network by Facility Type

Facility Type	Distance (km)			
	Existing	Proposed		
		Phase 1 2006 - 2016	Phase 2 2017 - 2026	Ultimate
Class 1: Multi-Use Recreational or Boulevard Pathway	17.23	117.26	82.04	216.53
Class 2: Bike Lanes	0	99.01	70.53	169.54
Class 2: Paved Shoulders	0	9.01	53.94	62.95
Class 3: Bicycle Signed-Only Route / Sidewalk	0	144.99	3.88	148.87
Class 4: Footpath / Hiking Trail	0	15.6	0	15.60
TOTAL	17.23	385.87	210.39	613.49

Note: All on-road cycling routes are assumed to have parallel sidewalks. The identification of new sidewalks and related costs are beyond the scope of this Master Plan.

Central to the proposed implementation process tool is a proposed new City guideline that would require that the Vaughan Pedestrian and Bicycle Master Plan be reviewed when road or other infrastructure projects are identified or scheduled. This should include the City’s road maintenance program as well as the reconstruction or resurfacing of roads, and any investigation of potential new road alignments or the reuse and / or selling of abandoned rail and utility corridors.

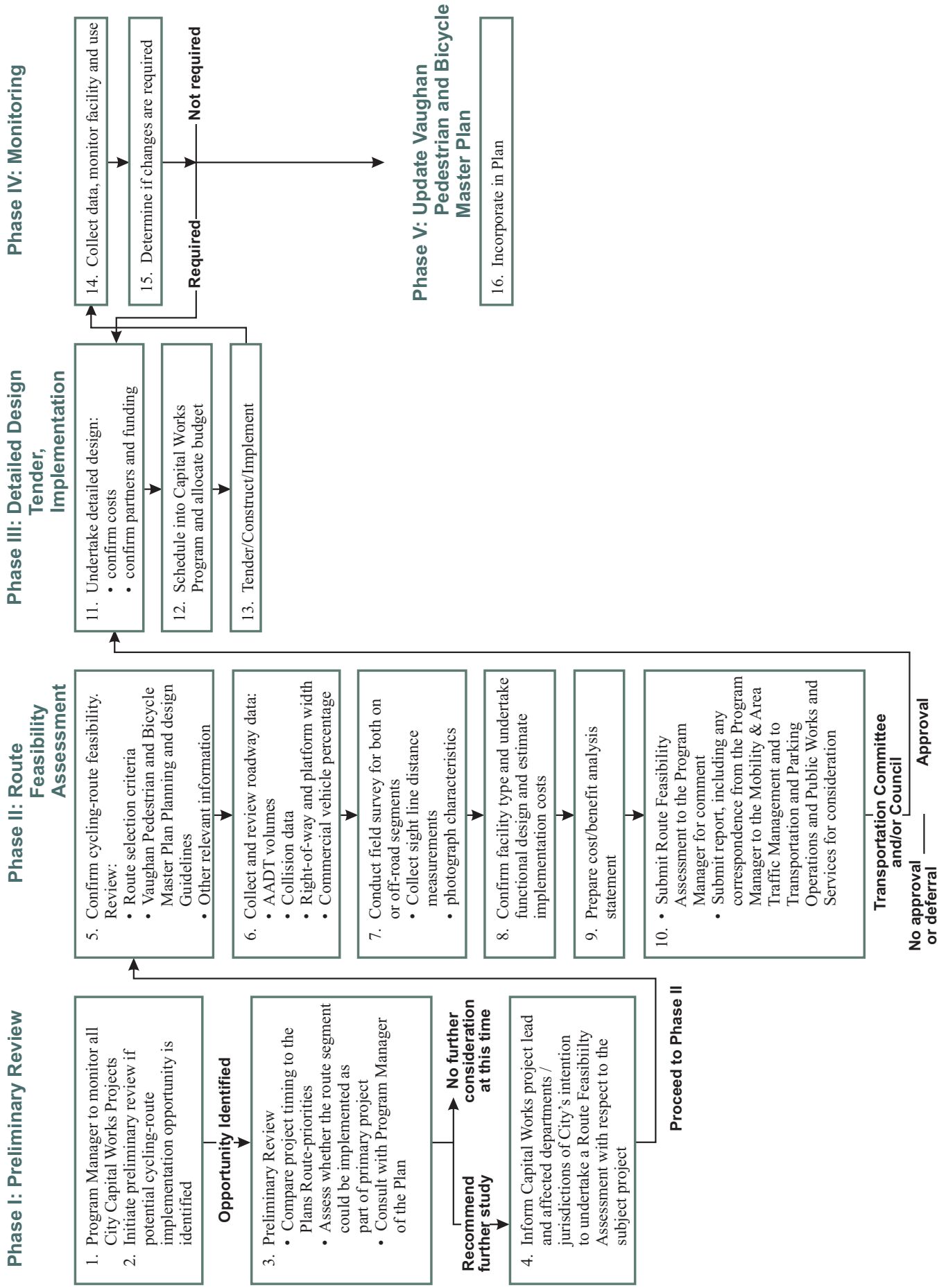
The objective is to ensure that the City’s assets, particularly roads designated in the Vaughan

Pedestrian and Bicycle Master Plan for future pedestrian and cycling facilities, are given due regard when planning, designing and budgeting for larger capital works projects. Without this step, network opportunities could be lost and cost efficiencies not realized.

Building upon this central guideline, **Figure 7-1** outlines a proposed process tool for guiding the implementation of the pedestrian and bicycle network. It is recommended that City staff review this tool and adapt it as necessary to establish a clear and practical process for

Figure 7-1

NETWORK IMPLEMENTATION PROCESS





implementing the proposed Vaughan Pedestrian and Bicycle Network in the City.

Phase I: Preliminary Review

The first step in implementing segments of the Vaughan Pedestrian and Bicycle Network is to identify opportunities and to communicate these to those leading a particular project. The Program Manager should monitor all road projects scheduled for consideration. When a project involving a corridor or road proposed as a route in the Vaughan Pedestrian and Bicycle Master Plan is advanced to the planning stage, or an opportunity to establish a new route not identified in the Plan, comes forward, the Program Manager should undertake a Phase 1 Preliminary Review. This review should:

- Compare the timing of the project to the short and long term implementation priorities identified in the Master Plan;
- Assess whether the nature of the project may permit implementation of the preferred facility type at the same time; and
- Inform the project lead and affected departments whether or not a cycling feasibility assessment should be included as part of their study or project to confirm the feasibility and costs for implementing the proposed cycling route as part of the subject project.

The key aspect of this initial phase is communication. Staff from various departments should report all upcoming projects that may involve or have an impact on a pedestrian / cycling route designated in the Vaughan Pedestrian and Bicycle Master Plan. From this point forward, the Program Manager would be expected to work through the remaining three

phases of the implementation process with various City departments, public interest groups and through Senior Management and Council.

Phase II: Route Feasibility Assessment

If a pedestrian or cycling-related project is confirmed through the preliminary review process (Phase I) City staff, led by the Program Manager, should undertake a Route Feasibility Assessment. This is proposed to include some if not all of the following steps:

- Confirm the feasibility of the route based on a review of the Vaughan Pedestrian and Bicycle Master Plan and supporting route selection and planning and design criteria, as well as and other relevant information.
- Collect and/or review current roadway characteristic information including AADT volumes, collision data and the commercial vehicle percentage. Data collection may include manual traffic counts over different time periods to estimate current walking / cycling demand, if any is thought to exist.
- Conduct a field survey for both on and off-road route segments to identify any other issues that should be considered and to measure sight line distances.
- Undertake a functional design for the on-road or off-road cycling route segment and estimate implementation costs, including construction and signing.
- Prepare a cost / benefit analysis statement. This “statement” should comment on the following:
 - the timing for implementing the proposed pedestrian / cycling route;
 - identify costs and efficiencies achieved;



- identify any less costly alternatives and how they may fit within the overall network; and
- provide a draft recommendation on how to proceed.

This process will typically take place in conjunction with or as input to a roadway Class EA or functional design process whereby design alternatives are prepared. The design for the pedestrian / cycling portion of the facility should be in accordance with the Planning & Design Guidelines in the separately bound **Technical Appendix** of this Plan, as well as other relevant provincial and national design standards. Through consultation with the public and agencies, the preferred alternative is then identified. The City should confirm the feasibility of a proposed facility (e.g. boulevard pathway, multi-use pathway, sidewalk, signed-only route, wide curb lane, bike lane, etc.) during the implementation stage.

Consideration should be given to situations where there is a clear community demand for a pedestrian or cycling facility. If site specific circumstances prevent a facility from being constructed in association with a particular improvement project being considered, other nearby parallel routes on City Roads should be closely examined to determine their suitability. This would help to ensure that an opportunity to implement a designated pedestrian or cycling route would not be lost.

Furthermore, all roadway Class EA's undertaken in the future should take into account and where possible conform to this Plan. If a new road is constructed in the future that is not identified in the Vaughan Pedestrian and Bicycle Master Plan, which provides an

opportunity for a pedestrian or cycling route, these roads should be made “pedestrian and/or cycling-friendly”. The roadway geometry, such as right-of-way width and AADT's, should be reviewed to determine the preferred facility type that could be installed (**Refer to Technical Appendix – Planning and Design Guidelines, Section 5.2 Retrofitting City Roads, Tables 5.1 and 5.2**).

If a preferred facility, such as a bike lane, cannot be accommodated along a particular segment due to geometric constraints, other limitations or funding constraints, consideration should be given to installing a wide curb lane or signed-only route for the segment.

Phase III: Detailed Design, Tender and Implementation

Once approval has been obtained to implement a pedestrian or cycling route and the preferred facility type selected, the necessary detailed design should be completed. This step is typically done in parallel with the detailed design for the primary capital works project, such as a road widening. This third phase of the process should also include confirming details with regard to partners (if any) and cost sharing. The project should then be scheduled into the City's Capital Works Program and suitable budget allocated. The final step involves tendering the project (if not undertaken by the City in-house) and then construction / implementation.

Phase IV: Network Monitoring

Once network facilities have been constructed, their design and use should be monitored to ensure that they function in the manner intended. When necessary, facilities should be



upgraded and maintained to ensure continued safe use by all user groups. Monitoring should ensure that the routes design guidelines and standards are current. This phase will involve collecting data to assist in the monitoring task.

Phase V: Update the Vaughan Pedestrian and Bicycle Master Plan

The fifth phase of the implementation process includes updating the Vaughan Pedestrian and Bicycle Master Plan as new segments of the network are implemented. The network map identified in this Plan should be updated on a semi-annual basis to reflect all network changes. Updating the network will be facilitated through the use of GIS.

7.3.2 A NETWORK MANAGEMENT ASSET TOOL

The proposed network for the Vaughan Pedestrian and Bicycle Master Plan was developed using the City's Geographic Information System (GIS) base. This digital GIS based network map provided to the City as part of this Master Plan can be used as a network facility management tool. A database is associated with the map information and includes a number of different attributes. For example, the network has been divided into segments, each specifying a length of the segment and the facility type proposed, as well as whether the segment is recommended as a short-term or long-term priority.

During the implementation process over the next 20 years, City staff can refer to and use this tool to assist in confirming the feasibility of a network route and facility-type and its proposed schedule (short or long-term) for implementation. The GIS Tool can also be used

to track and document new segments as they are implemented. Updating the facilities component of the Plan on a regular basis will significantly reduce the effort and cost to update the Master Plan, recommended every five years. If the City chooses, this GIS information could also, with some modifications, be posted on the City's website in an interactive map format. This would be useful to the public and developers and would also serve as a 'quick reference' for City staff that does not have direct access to the City's GIS database.

7.4 OBJECTIVE 7B: DETERMINE THE ESTIMATED COST FOR THE PLAN AND ESTABLISH POTENTIAL SOURCES OF FUNDING

Strategies

7.4.1 FUNDING THE PLAN (NETWORK AND PROGRAMS)

To successfully implement the Vaughan Pedestrian and Bicycle Master Plan, City Council should be asked to commit to annual funding for this Plan and its supporting implementation strategy. The City should also seek out other sources of revenue or cost sharing opportunities from the development industry, local partners as well as the Provincial and Federal Governments, such as gas tax funds.

The Vaughan Pedestrian and Bicycle Master Plan is an integrated body of components, and as such requires a strategic approach for implementation and a funding commitment. Focusing efforts on individual elements of the Plan in isolation of the others will not result in the level of success that this Plan has been



designed to achieve. For example, funding new paved shoulder cycling routes in the short-term but not the development and delivery of programming or promotional campaigns, is not an efficient or recommended strategy.

The public input received throughout the development of the Vaughan Pedestrian and Bicycle Master Plan at public open houses and information sessions, clearly indicate that both residents and visitors to the City of Vaughan support improving pedestrian and cycling facilities and programs to promote cycling in the City. The time is right for the City of Vaughan to invest in its future and commit the necessary long-term funding to implement the Pedestrian and Bicycle Master Plan. City Council’s leadership through this action will directly improve the liveability of the City, and further establish Vaughan as a leader in creating a community-oriented and people-first City.

7.4.2 SEEK ALTERNATIVE FUNDING SOURCES

The annual implementation budget for the Plan should be identified in the next review of the Long Range Financial and Capital Works Plans and budgets, and should be based on the implementation objectives and opportunities for the coming year. It is expected that the majority of Vaughan Pedestrian and Bicycle Master Plan capital costs related to proposed on-road facilities will be identified and included as component costs within planned roadway reconstruction or resurfacing projects, or other public works projects.

The network component of the Plan is expected to be funded in the following ways:

- On-road facilities or boulevard pathways on *new roads* (perhaps in place of a sidewalk on one side of the road) could be built by developers and included as part of subdivision agreements with the City.
- On-road facilities on *existing arterial and collector roads in growth areas* that are to be widened to accommodate growth could be funded partially through development charges.
- On-road facilities on existing roads in *established areas* of the City will need to come from City tax revenues and from Federal and Provincial funding sources, including gas taxes.
- Developers of *new residential and commercial subdivisions* should be encouraged to construct new off-road pathways and connections to the proposed network.
- Pathways and on-road cycling facilities proposed in *existing or future transit corridors* should be funded by the City as part of the larger transit infrastructure improvement budgets.
- Costs associated with *network signing* are not currently eligible for DC funding and will need to be financed from general revenues.

To assist in reducing taxpayer costs, the City of Vaughan should also pursue outside funding opportunities. It is the experience of the consulting team that funding sources made available over the last few years for walking, cycling and pathway related projects is at or near an all time high, likely due to the enormous popularity of on and off-road cycling routes and



pathways today. It is expected that this trend will continue.

In 1991, the U.S. Congress spent \$1 million to complete the National Bicycling and Walking Study in the United States. The specific goal of this study was to double the percentage of total trips made by bicycle and walking, while decreasing the number of cyclists and pedestrians killed or injured in traffic accidents, over a ten-year period. In 2004 a U.S. study found that the significant investment by State and Federal governments since 2001 had resulted in a measurable increase in the number of people who cycle and walk in that country.¹ This goal is similar to those proposed for the Vaughan Pedestrian and Bicycle Master Plan and the City should look to the provincial and federal government for possible sources of funding, such as the gas tax.

Examples of potential funding sources include:

- Federal and Provincial gas taxes;
- The Canada-Ontario Infrastructure Program;
- The Federal Government's Transportation Showcase Program;
- Ontario Trillium Foundation that was recently expanded in response to the money collected throughout the Province by the Ontario Lottery and Gaming Commission;
- Corporate Environmental Funds such as Shell and Mountain Equipment Co-op and others that in the past have funded small, labour-intensive projects where materials or logistical support is required;

¹ National Bicycling and Walking Study, Ten-Year Status Report, October 2004, FHWA.

- Corporate Donations may consist of money or services in-kind, and have been contributed by a number of large and small corporations over the years;
- Go For Green;
- Smart Commute; and
- Moving On Sustainable Transportation (M.O.S.T), Transport Canada.

The City of Vaughan should investigate these and other public and private sector funding programs to assist in implementing the Vaughan Pedestrian and Bicycle Master Plan.

7.5 OBJECTIVE 7C: IMPLEMENT AND MONITOR THE PLAN

Strategies

7.5.1 REVIEW PEDESTRIAN AND CYCLING PLANNING AND DESIGN GUIDELINES

When implementing designated on and off-road pedestrian and cycling facilities, the Planning and Design Guidelines in the Technical Appendix, should be referred to for guidelines on implementation procedures and practices. The Planning and Design Guidelines document was prepared to assist the City in the development and implementation of the Vaughan Pedestrian and Bicycle Master Plan. It contains recommended planning and design guidelines as well as cycling facility implementation solutions. The guidelines are intended to provide technical guidance to the City and other partners in the expansion,



implementation and maintenance of a City-wide pedestrian and cycling network.

These guidelines are intended as a general reference for cycling network planners and designers in Vaughan. They are a compilation of guidelines from a variety of accepted sources, and are believed to represent the “state of the art” in pedestrian and bicycle route and facility planning and design in Canada and the United States. They contain general information about pedestrians and cyclists, their abilities and their needs from a pedestrian / cycling network planning and design point of view. The guidelines are not meant to be inclusive of all design considerations and standards. Rather, they are a carefully selected set of currently accepted design practices in North America and should be treated as a reference to be consulted during the development and construction of the network. These guidelines should not over-ride good engineering and fiscal judgement by the City’s Professional staff. In addition, they should be reviewed at least every five years.

7.5.2 MONITOR THE PLAN

Implementation of the Vaughan Pedestrian and Cycling Master Plan is expected to begin in 2007. Implementation of the City-wide pedestrian and cycling network infrastructure should be phased on an annual basis in accordance with available capital funding, and as authorized by City Council.

Collecting data to monitor the different and changing aspects of cycling behaviour will assist in evaluating the effectiveness, performance and overall contribution of various activities to achieve the stated goals and objectives of this Plan.

This data collection should begin in 2007 and build upon previous pedestrian and cycling initiatives undertaken by the City, including the User / Public Attitude and Travel-Mode Surveys.

On-going public consultation should also continue following the adoption of the Vaughan Pedestrian and Bicycle Plan and as the network is constructed in the upcoming years.

The City should consider conducting similar surveys to monitor network-use and the public’s attitude towards the network as a whole as it is implemented. Over time, the monitoring system should identify changes in route preference to assist in determining where to implement changes to network infrastructure.

The results of this assessment may be used to determine the success of implementing various types of network facilities. However, caution must be used in relying on an immediate response to a given improvement. An extended timeframe should be established to ensure that awareness initiatives are in place to assist in changing travel patterns and habits.

Assessing the impact and costs of a pedestrian or cycling program should be based on information such as:

- origin / destination counts;
- screenline counts on a finer scale that are appropriate to walking and cycling travel patterns; and
- intersection counts to coincide with routes on which improvements are proposed, and also on parallel routes.

This information should be collected at least every five years. Appropriate Advisory



Committee's and Community Groups may also have a role in the collection and / or review of the pedestrian and cycling related data.

Data collected through monitoring programs along with information collected through on-going public consultation exercises, such as user surveys and public attitude surveys conducted every five years, will inform and thus assist in the preparation of the list of annual priorities.

The City's Public Advisory Committee that addresses pedestrian and cycling issues will play an important role in this ongoing review of the Vaughan Pedestrian and Bicycle Master Plan and can help City staff identify priorities for the coming year. The resources necessary to implement the annual work plan will need to be determined and scheduled, and their budget requirements understood and documented.

The implementation strategy set out in this chapter has been designed specifically for the City of Vaughan. Although it is based on the study team's understanding of the City's current structure and practices, modifications may need to be considered to ensure the process is feasible and can work within the City's existing administrative structure. It is proposed that the first annual progress report should also identify any changes to the implementation process set out in this report.

7.6 NEXT STEPS

There are a number of immediate steps that should be taken in 2007 / 2008 to advance the Vaughan Pedestrian and Bicycle Master Plan. These actions include the following:

- City staff should report to Council indicating any comments regarding the recommended

plan and identifying any areas of suggested further study. The staff report should include a request to Council to provide funding for the Plan.

- The Engineering, Public Works and Community Services Departments should review the budget for the 2007 / 2008 year and compare it to the budget proposed for the Vaughan Pedestrian and Bicycle Master Plan and request additional funding if required.
- The Vaughan Pedestrian and Bicycle Master Plan report should be posted in digital format on the City's website so that it can be viewed and downloaded by the public.
- The City of Vaughan should issue a media release announcing that the completed Plan is posted on the City's website and to announce the date when the Plan is to be presented to City Council for their consideration.
- The Engineering, Public Works and Community Services Departments should review short-term priorities and identify roads and parks that are part of the recommended network, and review the proposed alignment and facility type.
- As capital works projects move forward through the EA design process, staff of the Engineering, Public Works Department and other related departments should work to undertake the Route Feasibility Assessment to confirm the appropriateness of the recommended facility and to incorporate it into the detailed design. This step is crucial in order to avoid missing an opportunity to implement a segment of the network during capital works projects that are currently underway.



- Engineering, Public Works and Community Services Departments should review with others the recommendations in the Outreach chapter and initiate discussions with City partners and other relevant groups to review Vaughan Pedestrian and Bicycle Master Plan recommendations, schedule and priorities.

The Vaughan Pedestrian and Bicycle Master Plan is intended to guide the City over the next 20 years as it implements a comprehensive City-wide network of both on and off-road pedestrian and cycling facilities. The proposed network identified in this plan, along with the supporting objectives and strategies are intended to encourage, promote and increase the opportunities for safe walking and cycling in the City of Vaughan. This Plan is meant to assist the City in achieving the goal of making the City of Vaughan an environmentally-conscious City, with the benefit of improving the overall health of its residents and the liveability of the City also being realized. Although a crucial component of this Plan is to create an integrated City-wide network of designated pedestrian and cycling facilities, the network must be supported by policies and programs to ensure the Plan is properly implemented, monitored, maintained and managed. The recommended strategies outlined in this report should be established to ensure that the implementation of the Plan is organized and structured over the next two decades.



The City of Vaughan Pedestrian and Bicycle Master Plan is for everyone and will help to define the City of Vaughan as a Community-Oriented City

Funding for the Plan is vital. Without appropriate funding for programs and infrastructure, the goals of the Plan will not be realized.

The City of Vaughan Pedestrian and Bicycle Master Plan, documented in this report, is designed to reduce auto dependency, improve the health and quality of life of the residents Vaughan and establish the City as an active and environmentally-conscious place to live. But the Plan has to be implemented if these benefits and goals for walking and cycling in Vaughan are to be realized.