



FINAL REPORT

August 18, 2010

City of Kitchener Cycling Master Plan for the 21st Century



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ACKNOWLEDGEMENTS

The City of Kitchener Cycling Master Plan was guided by a Steering Committee made up of City staff, a representative from the Regional Municipality of Waterloo, and members of the Kitchener Cycling Advisory Committee (KCAC). Many individuals contributed to the development of the master plan, including community stakeholders and members of the public. Their time and efforts are greatly appreciated by the City of Kitchener and the consulting team.

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EXECUTIVE SUMMARY

The Kitchener Cycling Master Plan presents both a network of bikeways to be implemented over time, policies to support making Kitchener a bicycle-friendly City, and related practices and programs to further those policies into action. Staff and elected officials at every level of government have recognized that cycle-friendly programs and infrastructure are key elements of public health, urban quality of life, and the efficient use of motor vehicle roadways.

From the network perspective the mandate of the cycling master plan is to create a more bicycle-friendly environment for cyclists for those who are already using the City's streets and trails. Equally important, it must address the perception of cycling safety and comfort through improvements to transportation infrastructure so that those residents and visitors who are interested in cycling but concerned about safety are encouraged to try it. Supportive policies and programming can then promote and encourage the use of the network so that current travel behaviours shift over time to a significant increase in people using the bicycle for more trips more often in Kitchener.

A Cycling Master Plan for the 21st Century

A new vision for cycling in Kitchener is proposed that confirms existing policy, updates the design approach and extends into behavioural change programming:

In recognizing the social, health, environmental and economic benefits of cycling, the City of Kitchener Cycling Master Plan for the 21st Century continues to support residents, employees and visitors in considering cycling. It further enhances the choice to cycle as a viable means of transportation and recreation through the provision of a safe, comfortable, and connected bikeway network on City streets and quality multi-use trails; and behavioural shift information and programming that promotes awareness and safe use. The outcome will be a dramatic increase in the number and variety of citizens choosing cycling as their preferred mode of transportation for commuting trips and a variety of day-to-day short trips within the City and to adjacent municipalities.

"Safe, comfortable, connected bikeway network on City streets" means appropriate accommodation of cyclists on all City streets based on 21st century design guidance connecting to the Regional bikeway network, and those in adjacent municipalities.

"Quality multi-use trails" means functional integration of trails with the on-street network and expansion within open spaces where impacts on the natural environment can be mitigated.



Community based social marketing utilizes City partnerships to provide information and skills training to target audiences, and to residents, employees and visitors to the City in general. Behavioural change programming must advance with network development so that comfortable routes to ride are available before people are encouraged to cycle or cycle more often.

Outcomes expected consist of more than **doubling the number of trips by bicycle** every three to five years.

Key objectives include:

Attract new cyclists—Plan and design for people who are not yet riding by developing safe and comfortable bikeways (such as bicycle boulevards, bike lanes, trails, intersection and crossing treatments) that reduce potential conflicts between people cycling and people driving

Strengthen bicycle policies—Adopt policy change and associated tools for enforcement (by-laws, complementary policies, design criteria, etc.) to make bicycling more attractive than driving for shorter trips

Create a bikeway network on City streets—Develop safe and comfortable bikeways on City streets that offer riders an array of route choices

Increase bicycle parking—Implement by-laws, strategies and programs to satisfy the growing demand for bike parking

Expand programs to support bicycling—Expand established programs, and develop new programs, to encourage and support bicycling passed with the bikeway network implementation

Increase funding for bicycle facilities—Pursue multiple strategies to increase funding for bicycle facilities

Create a sustainable culture of cycling development—Adopt an institutional structure and process to allow for the effective monitoring of implementation of the cycling network and policies

Policy Framework

The City of Kitchener's Cycling Master Plan takes direction from a number of Provincial, Regional and City strategies. These guiding policies and plans create a framework that requires a greater emphasis on cycling as part of active living and active transportation in response to desirable social, environmental and economic outcomes. Of particular significance is Ontario's Provincial Policy Statement (PPS). The PPS provides high-level policy direction on matters of provincial interest related to land-use planning and development. It validates cycling as an integral component of the "transportation system" and that "Healthy, active communities should be promoted by... planning



public streets... to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement”.

The City of Kitchener's own initiatives clearly support more people cycling as a means of transportation and recreation, including: *A Plan for A Healthy Kitchener*, *Strategic Directions for the Environment*, *Kitchener Growth Management Strategy*, the *Official Plan* currently being updated, the previous *Bikeway Study*, *Parks Master Plan*, and the *Transportation Master Plan and Community Trails Master Plan and Implementation Strategy* that are currently on-going. The benefits of supporting cycling are important to individuals, the community and the environment in the City.

Design Toolbox

The Cycling Master Plan includes references or descriptions of various design “tools” to create the cycling network including bikeway types, improved access and street crossings, network signage strategies, bicycle-friendly site design strategies, and bicycle end-of-trip facilities (parking, change rooms, etc.). The level to which a community can become bicycle-friendly depends on a number of factors. One is the infrastructure that is built and maintained for cyclists to improve their comfort and safety and accessibility in the community. Various types of bikeways provide various levels of comfort and safety, and require various levels of commitment to design, construction, maintenance and the associated financing of these elements. Conventional North American bikeway types and treatments are presented and already in use in Kitchener, such as bike lanes. Beyond these are more recent North American treatments such as bicycle priority streets, which are traffic-calmed local streets that are alternative corridors to busy arterial roadways. Innovative designs such as cycle tracks as seen in many western European countries such as the Netherlands, Germany and Denmark are presented. Further review and discussion of design criteria for implementing, maintaining and operating cycle tracks will be required to implement them within the context of the City of Kitchener.



Consultation

The Cycling Master Plan was directed by a Steering Committee of City staff and Kitchener Cycling Advisory Committee (KCAC) representatives. The development of the plan and recommendations were guided by consultation with the KCAC as a whole, stakeholders, and members of the public through a series of consultation events: a cycling tour and meeting with KCAC; a stakeholder workshop; public open houses in two locations; and a final public information session at City Hall.

Twenty-two stakeholders representing 17 diverse organizations from across the region attended the stakeholder workshop, reporting on cycling-related programs, potential partnerships and priorities. More than 100 people attended the first Open House, and 50 people signed the registration for the final public meeting. Their

My first general comment is that I am impressed with how organized and detailed the plan is...

I'm so pleased to hear that the City of Kitchener is working toward more support for cycling...

Having read the proposed cycling network and policies, I am impressed with the range of the bicycle plans thus far presented...

Emails from members of the public

input on where cycling improvements should be made, and the cycling network, policies and priorities for implementation were invaluable, and considered in the development of the Cycling Master Plan.

Supportive Policies

Existing policies were reviewed and new policies considered to enhance cycling as a viable means of transportation and recreation in the City of Kitchener. Below are recommended policies to be considered in the Official Plan, and proposed revisions to the road classification to be considered in the Transportation Master Plan. Additional cycling-specific policies and programs are summarized in the Implementation section of the Executive Summary.

RECOMMENDED REVISIONS TO THE OFFICIAL PLAN CYCLING POLICIES

The City shall *support residents, employees and visitors in considering cycling by:*¹

- Developing a **network** of on-street and off-street bike lanes, *local bicycle priority streets, signed routes to key destinations, and multi-use trails*
- *Requiring new, multi-unit residential, commercial, industrial, office and institutional developments to provide **secure bicycle parking** and *encouraging*, where appropriate, shower/change facilities for bike commuters*
- Raising **public awareness** of the convenience, health and economic benefits of cycling *by articulating that cyclists will be **consistently planned for** in municipal decisions and given priority in some cases; and*
- *Supporting **education programs** on safe and responsible cycling for cyclists, motorists and pedestrians*
- Providing **bicycle parking facilities** *at public facilities that should be accessible to cyclists*
- **Systematically coordinating, integrating, and improving cycling conditions within the City's transportation infrastructure, services and programs**

PROPOSED REVISIONS TO THE ROAD CLASSIFICATION

- Road classification criteria are recommended to **explicitly** consider the needs of cyclists within every classification.



¹ Modifications to existing policies are in *italics*.

- Cycling should be restricted only on freeways.
- On **local streets** and **minor collector roads** with lower volumes (5,000 vehicles a day or less) and lower posted speed limits (50 km/h or less), in most cases cyclists and motorists can share the roadway. Continuous traffic-calmed, local bicycle priority streets may also be provided on these roadways as alternative routes to higher speed or higher volume roads. Shared-use lane markings (“sharrows”) may be used to indicate the continuity of a route; or provide guidance to cyclists adjacent to on-street parking in order to avoid the “door zone” where day-time parking utilization and turn-over are higher than typical of predominantly single-family residential streets.
- On **major collector roadways**, which carry from 5,000 to 8,000 vehicles a day with a posted speed limit no greater than 50 km/hr, the preferred bikeway type is bike lanes.
- On **collector roadways with posted speeds greater than 50 km/h and arterial roadways**, which carry higher volume traffic including transit and truck traffic, bikeways should provide safe space for cyclists, with ample separation from vehicular traffic. The preferred bikeway type is cycle tracks, with bike lanes being the minimal requirement.
- **Boulevard multi-use trails** may only be considered when used as a link between bikeways or multi-use trails and no other practicable options exist. Boulevard multi-use trails may only be considered where the distance between driveways and intersections exceeds 300 m



Recommended Network and Signage Strategy

A long-term cycling network identifies potential routes or corridors where improvements for cyclists may occur over a period of time. Typically bikeway networks created within a master plan are implemented over a 10, 20 or 30-year period. Phasing of projects or improvements allow implementation to begin in the first year following approval of the master plan and continue over time. Thus, this cycling master plan identifies a bikeway network to be phased in over the next 20 years, more or less, depending on opportunities, support, resources, and funding.

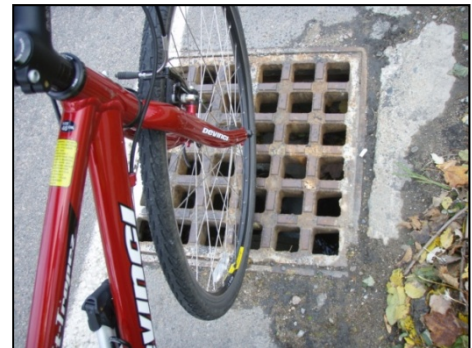
The bikeway network is not intended to be strictly prescriptive; it responds to existing and planned conditions within the City including priority routes, key destinations, planned land-use changes, and opportunities to implement improvements as they are viewed at the time the network is developed. The network should be considered flexible within the objectives of the master plan, with revisions being made as conditions under which it was developed change. That is, as the network is implemented, new opportunities or constraints may be identified and alternative routes sought to connect destinations, fill gaps and bridge barriers. As such, the recommended bikeway network is

somewhat of a living document that guides the actions and decisions of the City and allows a bike system to grow over time.

The development of the cycling network is based on a set of network guiding principles that will allow future changes to the cycling network, while maintaining the objectives and intent of individual routes and the overall network: Coherence, Safety, Directness, Comfort, and: Attractiveness. These principles are described further in Section 7.1.1 Approach, page 65.

The recommended cycling network is shown on Map 2. It consists of 45 km of existing bikeways plus 114 km of proposed bikeways for a total cycling network length of 159 km, including Regional cycling routes on City streets (as per the Regional Cycling Master Plan). An additional 120 km of existing trail and 60 km of proposed trails complement the bikeways. The trail network will be reviewed in detail in the City of Kitchener's Community Trails Master Plan and Implementation Strategy.

It is recommended that the City of Kitchener develop a signage strategy, in partnership with the Region of Waterloo and coordinated with adjacent municipalities, to sign the bikeways and trails in such a way that the network is more visible both to users and the public. The signs should communicate the network's connectedness, destinations, and distances or travel time. Consideration should be given to the types of bikeways needed to support relatively comfortable and safe cycling along individual routes before the route is signed. Downtown Kitchener to Fairview Park Mall is recommended as an initial route to test out a signage strategy. A recommended signage plan for this route is provided in Section 7.3 Signage Pilot Project, page 68.



Implementation Plan

PRIORITY AND LONG-TERM NETWORK

The implementation plan for the proposed cycling network is intended to guide decision making over the next 20 years. A **priority network** was identified that is intended to be implemented over the next few years. It consists of cycling improvements that are relatively easy to implement yet important in providing connections to key destinations, filling in important gaps in the network, and linking to existing facilities. The **long-term network** is intended to guide or inform annual planning for longer-term capital and development projects. As the network is implemented, new opportunities or constraints may be identified and alternative routes sought to connect destinations, fill gaps and bridge barriers. As such, the recommended bikeway network is somewhat of a living document that guides the actions and decisions of the City and allows a bike system to grow over time. The priority network to be implemented in the short term is illustrated on Map 3.

COSTS AND FUNDING

City of Kitchener staff will identify both annual capital and operation budget implications for Council's consideration as cycling projects move forward through implementation phases. It is anticipated that the priority network will cost the City about \$1.9 M to implement. Over 6 to 8 years, this is equivalent to \$250,000 to \$300,000 per year. The long-term network will require an additional \$4.2 M from the City to implement. This is equivalent to \$250,000 to \$300,000 per year for an additional 14 to 17 years. The 20 to 25-year plan is estimated to cost a total of \$6.1 M of City funding to implement. It is estimated that \$3.2 M will be invested by others, i.e. developers, Region's share of Regional routes on City streets, future development charges, and rapid transit corridor initiatives, to complete the network.

Potential funding sources for the priority and long-term cycling network are as follows:

- Bikeways along new roads within new subdivisions will be built and funded by development through subdivision agreements with the City
- Bikeways on existing arterial and collector roads in growth or intensification areas that are to be widened to accommodate growth will be partially or fully funded through future development charges. Development charges are premised on maintaining existing level of service. Bikeways will be included at such time that the level of service is defined.
- Bikeways on existing roads in established areas of the City will be funded through the Capital Works program
- Bikeways proposed in future rapid transit corridors will be funded in accordance with the Regional Cycling Master Plan and the Regional Transportation Capital Program.
- Other funds are available from Federal and Provincial programs and grants, such as the Federal Gas Tax Fund, Federal and Provincial infrastructure renewal programs, Transport Canada programs, Provincial grant programs from the Ministry of Transportation and Ministry of Health Promotion, foundations such as Ontario Trillium Foundation, the Heart and Stoke Foundation, and the Federation of Canadian Municipalities. The City will require resources to identify, respond and implement these opportunities that may be one-off, time-limited and / or budget-capped funding sources with specific qualifications for applicants.

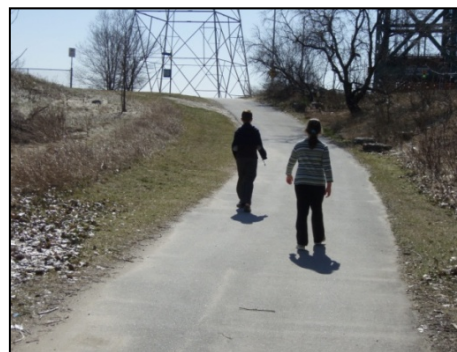


It is recommended that the City of Kitchener establish an annual Cycling Infrastructure Capital Budget to implement links in the network that are not part of a larger road capital project or development project. The outcomes of the implementation plan should be reviewed annually to

determine the appropriateness of this capital amount in achieving the vision and outcomes of the Cycling Master Plan within fiscal responsibilities of the City.

POLICY IMPLEMENTATION

The implementation of the recommended cycling-supportive policies is contingent on a staff leader charged with the responsibility for the cycling plan. Thus, the top policy priority is to establish a cycling co-ordinator. The position can be combined with the Transportation Demand Management (TDM) specialist position recommended in the City of Kitchener TDM Plan (draft, August 2008), consisting of 0.5 full-time equivalent (FTE) for the Cycling Master Plan responsibilities.



The implementation of policies requires both staff and funding resources. Some policies may require examining various options or programs. Specific funding sources and amounts, and staff and partnership resources should be determined as each policy moves through to implementation.

The timeframe for implementation of the Cycling Master Plan policies and potential partners are identified in Exhibit A.

Exhibit A: Policy Implementation Plan and Potential Partners²

Policy	Timeframe	Potential Partners
General leadership, co-ordination and implementation:		
Support a cycling co-ordinator to oversee the implementation of the plan policies and network, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public; consisting of 0.5 full-time equivalent (FTE)	Immediately	
Plan for bicycle-friendly communities within Kitchener:		
Update zoning by-laws to include bicycle parking for multi-family residential, commercial, office, institutional and industrial land uses including short-term visitor and longer-term, more secure resident and employee parking	Within 5 years	Region of Waterloo, Developers
Develop and communicate bicycle parking guidelines for interested property owners	Within 2 years	Region of Waterloo, Adjacent Municipalities, KCAC
Establish a program to assist property owners in retrofitting existing developments with appropriate bicycle parking	Within 5 years	Region of Waterloo
Implement and expand the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations	On-going	Developers, KCAC

² Specific costs associated with policy development and implementation (staff and programming resources) will be identified as each policy is defined / developed

Policy	Timeframe	Potential Partners
Ensure the building of bicycle-friendly developments through the development of design guidelines and the review of site plans including site organization, building placement, bicycle parking, and cycling access and routes	On-going	Developers, KCAC
Update the Road Classification to include comfortable, safer bikeways where appropriate based on the function of roadways	Up-coming Transportation Master Plan	
Establish a clear trail hierarchy system based on the following trail types: Type 1—Transportation (paved; maintained in the winter); Type 2—Recreation primary, secondary and tertiary (various surfaces; no winter maintenance)	Up-coming Community Trails Master Plan and Implementation Strategy	Region of Waterloo, Adjacent Municipalities, KCAC
Integrate cycling into municipal practices:		
Recognize and include preferred cycling infrastructure (based on Road Classification) in every new road and road reconstruction/resurfacing project, with exceptions justified transparently and approved by the General Manager	Immediately	Region of Waterloo, KCAC
Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management	On-going	KCAC
Work with the Traffic Coordinators Committee and collaborate with the Waterloo Regional Police to encourage and enforce safe cycling skills resulting in collision reduction and prevention	On-going	Traffic Coordinators Committee, Region of Waterloo
Encourage and collaborate with the Region of Waterloo in integrating cycling with Grand River Transit and future Rapid Transit including cycling route connectivity with transit stops and stations, bicycle parking at stations and stops, bicycles on vehicles, and bikeways along key transit corridors	On-going	Region of Waterloo, Grand River Transit
Actively encourage the Region of Waterloo and adjacent municipalities to consider the needs of cyclists in roadway planning, design, maintenance and operations that affect the cycling network.	On-going	Region of Waterloo, Adjacent Municipalities
Review and update roadway maintenance practises to better accommodate cycling	Within 5 years	Region of Waterloo, KCAC
Change winter maintenance of key Type 1—Transportation multi-use trails as per the trail hierarchy system to better support year-round cycling	Within 2 years	KCAC
Create a reporting system for cyclists to report poor roadway / bikeway / trail conditions	Within 2 years	KCAC

Policy	Timeframe	Potential Partners
Provide staff training on how to better accommodate cyclists in the City's decisions and responsibilities	immediately	Region of Waterloo, Adjacent Municipalities, KCAC, Professional Organizations
Promote and support cycling:		
Continue to partner with the Region of Waterloo Public Health on the delivery of cycling education programs and campaigns for youth and adults	On-going	Region of Waterloo
Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work	On-going	Region of Waterloo
Continue to partner with the Region of Waterloo and School Boards on Active and Safe Routes to School events, curriculum, school travel planning, and traffic and safety improvements in school catchment areas	On-going	Region of Waterloo, School Boards
Continue to partner with the Region of Waterloo on communicating the benefits of cycling, sharing the road education, and promoting cycling and the cycling network through information sharing on a web site or other networking medium	On-going	Region of Waterloo, Adjacent Municipalities
Tailor existing active living programs to better support cycling	Within 2 years	Ministry of Health Promotion, Region of Waterloo
Provide new programs to deal with gaps in the stages of changing behaviour	Within 5 years	Ministry of Health Promotion, Region of Waterloo
Develop a marketing program to promote cycling	Within 2 years	Region of Waterloo, KCAC, Universities, School Boards, Neighbourhood Associations
Provide support to events that promote cycling and encourage cycling as a means of getting to / from City events and festivals, including the provision of secure bicycle parking (self-park or valet)	Within 2 years	Region of Waterloo, KCAC, Universities, School Boards, Neighbourhood Associations
Support a co-ordinator to oversee the implementation of the plan, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public	immediately	

Policy	Timeframe	Potential Partners
Implement the cycling network:		
Implement the cycling network over time with regular and consistent funding	Immediately	Region of Waterloo, Developers, KCAC
Support the Kitchener Cycling Advisory Committee (KCAC) to vet implementation issues, assist in establishing priorities, assess performance measures and communicate progress on cycling plan implementation to politicians, staff and the public. Annual road construction and traffic calming projects will be brought forward to the KCAC for review and feedback.	Immediately	KCAC
Develop, implement and maintain a trail and cycling way-finding signage strategy and co-ordinate with the Region of Waterloo and adjacent municipalities	Within 2 years	Region of Waterloo, Adjacent Municipalities, KCAC
Establish an audit process of existing bikeways and implement a process for continual improvement	Within 5 years	KCAC
Future Development Charges Background Studies should consider the inclusion of funding to support the implementation of the Cycling Master Plan on existing arterial and collector roads in growth or intensification areas that are to be widened to accommodate growth.	Within 5 years	

PERFORMANCE MONITORING PROCESS

As documented in the *Kitchener Bikeway Study* (1998), it was observed in the early 1990s that bicycle-friendly communities had the following elements in common—the “three-legged stool” supporting a shift to a cycling culture: staff leaders, political champions, and public supporters. The short-comings to the three-legged stool model are that sometimes one or more of the legs are weak. An alternative to having the right “partners” or people resources championing, leading and supporting policy implementation is to have in place a “process” that monitors progress, evaluates deficiencies and strengths, and reports on actions. Report-based performance monitoring and evaluation processes have been in use by health organizations, water and wastewater providers, the recycling industry, aid agencies, etc. It is designed to help people who are trying to improve social conditions in our communities.

It is recommended that the City of Kitchener implement a performance monitoring process for the Cycling Master Plan within the City of Kitchener’s Transportation Master Plan’s overall transportation performance monitoring and evaluation process. Specific cycling outcomes can be defined as part of the overall transportation performance monitoring framework. The Cycling Advisory Committee could develop a “report card” with checklists associated with the Cycling Master Plan goals and outcomes, and remarks on the progress being made towards those goals.



1. INTRODUCTION

1.1 Purpose of the Study

The past decade has seen a dramatic increase in the knowledge and understanding of cycling policy and infrastructure development in Europe and North America, with many cities making significant commitments to innovative design and implementation of cycling infrastructure and programming. The impact of the built environment on health and active living has been realized and efforts to build on this symbiotic relationship to increase the quality of life and positively affect the environment is quickly becoming the priority for planners, transportation planners and public health officials alike. Staff and elected officials at every level of government have recognized that cycle-friendly programs and infrastructure are key elements of public health, urban quality of life, and the efficient use of motor vehicle roadways. Policies and development that enable and encourage cycling use where possible reduce pollution, but moreover reduce traffic congestion for vehicle trips that are unavoidable. A stated goal of the Government of Ontario's decision to exempt bicycles and bicycle helmets from the provincial sales tax, for example, was to encourage bicycle commuting and reduce congestion on the roads³.

A good cycling master plan provides a balance of "hard" facilities and "soft" programs. Soft and hard go together—like providing minor sports services. The administration and promotion of teams and leagues is as critical as supplying quality sports facilities. So it is with cycling; one needs attractive places to cycle in order to encourage people to do so, and programming to raise awareness of the viability.

The cycling network is the tangible aspect that municipal engineers and planners more easily relate to, while social marketing and programming that encourages the use of facilities is something that municipal recreation, culture and public health practitioners are more familiar with. Other non-governmental organizations can mobilize advocacy, help deliver safety and skills programs, building awareness or "care" among constituents. Creating awareness, encouraging behavioural changes and educating road and trail users will strengthen the ability of the network to attract more people to use it.

There are many barriers and challenges in achieving social change, even if the appropriate infrastructure is built to support such a change. Cycling already enjoys some popularity in the City of Kitchener, and existing, well used, amenities such as the Iron Horse Trail provide an environment conducive to recreational and utilitarian cycling. However, to more fully develop the use of cycling for a wider range of trips, the barriers to cycling, both within the built environment as well as the more subjective social factors need to be fully understood in order to effectively target behavioural change through various strategies.

Because of the wide range of relevant factors in the decision to engage in active transportation, the strategy to encourage residents and visitors to walk and cycle more will take more effort than the provision of infrastructure. The following eight categories are critical in promoting a cycling plan:

- **Infrastructure** that best suits the local context and takes into account financial limitations
- **Integration** with other forms of transportation, through inter-modality (particularly with transit) and the integration of the active transportation network, both in the planning and implementation, in the greater transportation network

³ <http://www.cbc.ca/canada/ottawa/story/2007/11/30/bike-helmets.html>

- Social marketing and **promotion** through wide reaching or specially targeted campaigns
- **Advocacy** through the support of local groups and stakeholders
- Provision of **education and information** through a variety of sources
- Achieving **sympathetic land uses** through policy and strategies of cooperation with land owners and developers

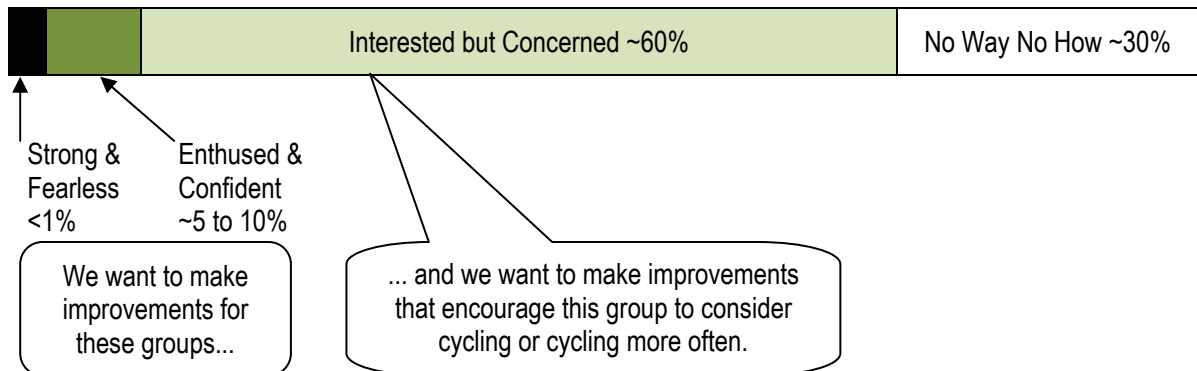
Thus, the Kitchener Cycling Master Plan presents both a network of bikeways to be implemented over time, policies to support making Kitchener a bicycle-friendly City, and related practices and programs to further those policies into action.

1.2 Who is it For?

Numerous surveys have found that the number one reason people do not cycle as a mode of transportation is because of their fear of sharing the roadway with automobiles. This has been documented and reported in transportation literature across the United States, Canada and Europe. Addressing concerns about personal safety, interaction with motorized vehicular traffic and comfort is the key to creating a City where cycling is recognized as both a mode of transportation and a recreational activity.

Generally, cyclists can be divided into four categories based on their comfort level while riding on a roadway with traffic as outlined below and illustrated in Exhibit 1. Some communities are using these cyclist types to describe the potential for people to choose cycling as a mode of transportation or recreational activity.

- **The Strong and the Fearless**—About one percent of the population is comfortable riding with traffic and will ride regardless of the condition of roadways.
- **The Enthused and the Confident**— Five to ten percent of the population is attracted to cycling as a result of improvements made to bikeway networks in their communities. They may be comfortable sharing the road with motorists, but appreciate bike lanes and other facilities designed specifically for them. They may choose to cycle more often as further improvements are made.
- **The Interested but Concerned**— Approximately 60% of the population. They may like riding a bicycle, but are afraid to ride with traffic. Few ride a bicycle regularly but would ride if they felt the roadways were safer and traffic traveled slower.
- **No Way No How**— One-third of the population is not interested in or capable of cycling at all. This group includes those who are not capable due to health or age related reasons.

Exhibit 1: Types of Cyclists⁴

The type of cyclists listed above illustrates the significant potential in changing bicycling habits with a large proportion of the population. With improvements to transportation infrastructure, the perception of cycling safety and comfort can be addressed and directly impact the bicycling habits with the interested but concerned population. The mandate of the cycling master plan must also create a more bicycle-friendly environment for experienced and confident cyclists.

There are many cities in modern, industrialized nations around the world with bicycle use as a significant mode of transportation. They have achieved these high levels of bicycling through promoting various policies and practices. One characteristic they share is an environment where the users lack the fear normally associated with bicycling in an urban environment. These communities have created transportation systems in which bicycling is often the most logical, enjoyable, and attainable choice for trips of a certain length. In North America, as illustrated in Exhibit 2, our approach to planning for cycling has evolved and so have the designs and strategies that go with it.

Exhibit 2: Bicycle Planning Evolution

Source: City of Portland, Oregon, Bicycle Master Plan (2009)

Different types of cyclists prefer different types of bikeways and the associated comfort and safety, real or perceived. It is the responsibility of the municipality to understand current and emerging design guidelines and their application, and both the perceived and real safety issues. For example, boulevard multi-use trails are perceived by some as much more comfortable to ride on being away from motorists. However, the lack of traffic control at intersections and driveways to give cyclists the right-of-way decreases their comfort. The fact that they are usually built on only one side of the street reduces their accessibility to residents and destinations on the opposite side of the

⁴ Roger Geller, Bicycle Coordinator, Portland Office of Transportation, *Four Types of Cyclists*, <http://www.portlandonline.com/transportation/index.cfm?c=50736&a=264746>, October 2009

street. The risk of the “wrong-way” cyclist going unnoticed by motorists turning in and out of side streets and driveways is a real safety concern particularly as the number of cyclists (exposure) increases. A community cannot become truly bicycle-friendly until it embraces a full range of facilities across their roadway network, from quieter or more leisurely facilities like signed routes and boulevard multi-use trails, to more direct and accessible facilities such as bike lanes and even European cycle tracks (segregated bike lanes).

1.3 Vision for a Cycling Master Plan for the 21st Century

A new vision for cycling in Kitchener is proposed that confirms existing policy, updates the design approach and extends into behavioural change programming:

In recognizing the social, health, environmental and economic benefits of cycling, the City of Kitchener Cycling Master Plan for the 21st Century continues to support residents, employees and visitors in considering cycling. It further enhances the choice to bicycle as a viable means of transportation and recreation through the provision of a safe, comfortable, and connected bikeway network on City streets and quality multi-use trails; and behavioural shift information and programming that promotes awareness and safe use. The outcome will be a dramatic increase in the number and variety of citizens choosing cycling as their preferred mode of transportation for commuting trips and a variety of day-to-day short trips within the City and to adjacent municipalities.

*“**Safe, comfortable, connected** bikeway network on City streets” means appropriate accommodation of cyclists on all City streets based on 21st century design guidance connecting to the Regional bikeway network, and those in adjacent municipalities.*

*“**Quality** multi-use trails” means functional integration of trails with the on-street network and expansion within open spaces where impacts on the natural environment can be mitigated.*

***Community based social marketing** utilizes City partnerships to provide information and skills training to target audiences, and to residents, employees and visitors to the City in general. Behavioural change programming must advance with network development so that comfortable routes to ride are available before people are encouraged to cycle or cycle more often.*

*Outcomes expected consist of more than **doubling the number of trips by bicycle** every three to five years.*

Key objectives include:

Attract new cyclists—Plan and design for people who are not yet riding by developing safe and comfortable bikeways (such as bicycle boulevards, bike lanes, trails, intersection and crossing treatments) that reduce potential conflicts between people cycling and people driving

Strengthen bicycle policies—Adopt policy change and associated tools for enforcement (by-laws, complementary policies, design criteria, etc.) to make bicycling more attractive than driving for shorter trips

Create a bikeway network on City streets—Develop safe and comfortable bikeways on City streets that offer riders an array of route choices

Increase bicycle parking—Implement by-laws, strategies and programs to satisfy the growing demand for bike parking

Expand programs to support bicycling—Expand established programs, and develop new programs, to encourage and support bicycling passed with the bikeway network implementation

Increase funding for bicycle facilities—Pursue multiple strategies to increase funding for bicycle facilities

Create a sustainable culture of cycling development—Adopt an institutional structure and process to allow for the effective monitoring of implementation of the cycling network and policies

1.4 Glossary of Terms

Please refer to Section 3, Best Practices, page 15 for additional information.

BICYCLE BOULEVARD or BICYCLE PRIORITY STREET or LOCAL BICYCLE STREET: Traffic-calmed, local streets that have been optimized for through bicycle traffic, but discourage other non-local traffic. Traffic controls (signals, stop signs and yield signs) are placed to control conflicts with motorists and give priority to cyclists. Stop signs are minimized or eliminated. Traffic controls or features are provided so cyclists can cross major streets easily.

BICYCLE FACILITIES: Any facility used by cyclists including bikeways, bicycle parking, bicycle racks on buses, etc.

BIKEWAYS: Any facility intended for travel by cyclists, i.e. signed route, bicycle priority street, bike lane, etc.

BIKE LANE: Travel lane on an urban roadway (with curbs and gutters) intended for use by cyclists only, marked by a white lane line, bicycle and diamond pavement marking symbols, and regulatory signs indicating their use reserved for cyclists.

BOULEVARD MULTI-USE TRAIL: A multi-use trail within the road right-of-way located in the boulevard and generally parallel to the road.

CAN-BIKE: A program of nationally-standardized cycling skills training courses.

MARKED SHARED-USE LANE: Lanes marked with a “Shared-Use Lane” marking or “Sharrows”.

MULTI-USE TRAIL: A trail intended for a variety of users constructed in open space, utility corridors, parks, or other lands separate from roadway corridors.

PAVED SHOULDER: Travel lane on a rural roadway (shoulders, no curb and gutter) intended for use by cyclists, marked by a white lane line, bicycle and diamond pavement marking symbols, and regulatory signs indicating their use reserved for cyclists. If the shoulder is used by other vehicles, such as slow-moving vehicles, and horses and buggies, then the diamond pavement marking symbols are omitted and the regulatory “reserved bicycle lane” signs are replaced by “bicycle route” signs.

SIGNED ROUTE: Typically a local street posted with a “bicycle route” sign to indicate that it is a link in a cycling network, connects to a key destination, or provides continuity for cyclists along local streets that connect trails

2. POLICY FRAMEWORK

The City of Kitchener's Cycling Master Plan takes direction from a number of Provincial, Regional and City strategies. These guiding policies and plans create a framework that requires a greater emphasis on cycling as part of active living and active transportation in response to desirable social, environmental and economic outcomes.

2.1 Provincial Guiding Policies

2.1.1 PROVINCIAL POLICY STATEMENT (2005)

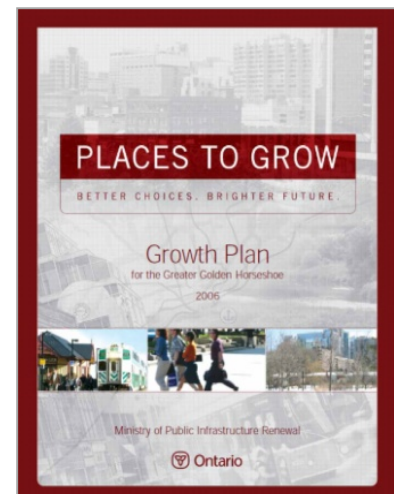
Ontario's Provincial Policy Statement (PPS) provides high-level policy direction on matters of provincial interest related to land use planning and development. The PPS asserts that long-term prosperity and social well being have been inextricably linked to the building and maintaining of strong communities, a clean and healthy environment and a strong economy.

The PPS validates cycling as an integral component of the "transportation system" and that "Healthy, active communities should be promoted by... planning public streets... to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement". Land use and development patterns, liveability, public health, public spaces and public streets as well as multi-modal transportation planning directives are found in Section One of the PPS directly support and promote active modes of transportation.

2.1.2 PLACES TO GROW: GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE

The Provincial Growth Plan seeks to create high quality of life and economic opportunity for its residents. However, without growth management, there will be increased traffic congestion, deteriorating air and water quality and the disappearance of natural resources. The growth plan guides decisions on transportation, infrastructure planning, land-use planning, urban form, housing, natural heritage and resource protection in order to promote economic development and strong communities:

Getting around will be easy. An integrated transportation network will allow people choices for easy travel both within and between urban centres throughout the region. Public transit will be fast convenient and affordable. Automobiles, while still a significant means of transport, will be only one of a variety of effective and well-used choices for transportation. Walking and cycling will be practical elements of our urban transportation systems.

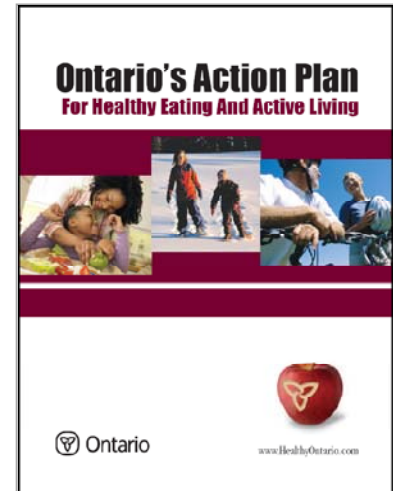


Sustainable modes of transportation – transit, walking and cycling – are integral drivers and outcomes identified in the Growth Plan. Implementing complete and compact communities, mixed land uses, transit, and increased density and intensification targets all support cycling. It is hoped that these objectives and impacts will be achieved through conforming regional and municipal official plans.

2.1.3 ONTARIO'S ACTION PLAN FOR HEALTHY EATING AND ACTIVE LIVING

This Action Plan is a Provincial policy that sets the framework for creating a healthier province of Ontario, addressing the potential future health costs associated with obesity and physical inactivity and creates a framework within which healthy and complete communities can be understood when these terms are used in the Provincial Policy Statement and Provincial Plans. Below, is a list of specific actions that support and promote cycling:

- Funding for Active and Safe Routes to School and Communities in Action (grants for physical activity, sport and healthy living projects reaching at-risk children and youth)
- Promoting healthy urban design through partnerships, supporting related provincial policies e.g., Growth Plan, hosting a series of active transportation and urban design forums for community planners, engineers, designers to share best practices on how to implement healthy urban design
- Building partnerships to influence public policies that support healthy eating and active living in key settings, including workplace wellness, school health, and active transportation and enabling communities



2.1.4 ACTIVE2010: ONTARIO'S SPORT AND PHYSICAL ACTIVITY STRATEGY

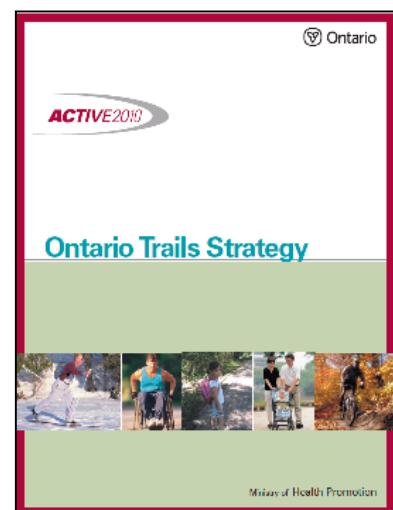
The Ministry of Health Promotion supports community-level changes to an “enabling” environment in order to increase participation in walking, jogging, cycling and other forms of activity,. Support includes:

- Developing and implementing the provincial trails strategy
- Supporting alternative transportation initiatives to encourage cycling and walking (and reduce automobile emissions)
- Researching and disseminating “Best Practices” in the area of alternative transportation and urban planning
- Supporting programs and campaigns that encourage walking or cycling to school



2.1.5 ONTARIO TRAILS STRATEGY

The Ontario Trails Strategy supports convenient, affordable and health-enhancing physical activity on Ontario's province-wide network of trails and bikeways, such as walking, hiking, jogging, rollerblading, cross-country skiing, cycling and other activities. The Trails Strategy is a long-term plan that establishes strategic directions for planning, managing, promoting and using trails in Ontario. It focuses on all single and shared-use outdoor designated trail networks in urban, rural and wilderness settings that are used for recreation, active living, utilitarian and tourism purposes including but not limited to:



- Trails with natural (e.g. hiking, cross-country skiing) or treated surfaces (e.g. bicycle greenways/paths/lanes)
- On-road bicycle routes
- Walkways, boardwalks and sidewalks
- Trails located on transportation and utility corridors
- Access roads (i.e. for forestry and mining) “designated” for trail use
- Trails that are integrated with public transit services
- Waterway routes (e.g. along designated Canadian heritage rivers including the Grand River) and portage routes

2.1.6 MINISTRY OF TRANSPORTATION

The Ministry of Transportation, Ontario (MTO), in collaboration with Ministry of Municipal Affairs and Housing (MMAH), will review municipal plans to ensure conformity with the PPS under the One Window Planning System, and in some cases, through the Municipal Plan Review process.

MTO developed a bicycle policy in 1992 after extensive consultation with municipalities and with key cycling stakeholders in the Province. The policy is grounded in the principle that the bicycle is a legitimate mode of transportation and a vehicle under Ontario's Highway Traffic Act. Municipalities that would like to construct cycling facilities that impact provincial highways, or which would require changes to provincial highway infrastructure, are invited to contact MTO's Regional Offices to discuss their plans. MTO reviews cycling proposals on a case by case basis and will allow changes to take place on provincial highway structure only after an analysis of the impact on safety and traffic operations. MTO does not currently provide funding support for new cycling infrastructure.⁵

2.2 Regional Policies

2.2.1 REGIONAL GROWTH MANAGEMENT STRATEGY

The Regional Growth Management Strategy (RGMS), is a long-term strategic framework that identifies where, when and how future residential and employment growth will be accommodated. The key components of the strategy are to provide a balanced transportation system that provides greater transportation choices for urban residents, as well as the development of a rapid transit system to help shape the urban environment and direct re-urbanization within targeted intensification corridors. The RGMS recognizes the importance of adopting transit-oriented land uses in order to achieve the goals of limiting sprawl and maintaining, enhancing and restoring the environmentally significant resources in the Region.



2.2.2 REGION OFFICIAL PLAN

The Regional Official Plan (ROP) is the Regional Municipality of Waterloo's guiding document for directing growth over the next 20 years. The ROP continues Waterloo Region's tradition of innovative planning by refining the Region's balanced approach to growth management.

⁵ <http://www.mto.gov.on.ca/english/engineering/management/corridor/municipal-guideline/planning.shtml>, June 7, 2010

General policies included in the ROP refer to frequent and collaborative updates to the RTMP. It states that the Regional transit system will be improved on an on-going basis through the addition of rapid transit service. The ROP includes development application / site plan conditions intended to support the development and operation of the regions transit system and/or regional roads. The ROP also includes policies regarding the Regional transit system; walking and cycling networks; the Region's international airport; road network, allowances, design and construction / operation; and the Region's rail network. The integration of transportation and land use can support more compact development which increases opportunities for active transportation, decreases trip lengths and shapes a more sustainable, vibrant community.



2.2.3 REGIONAL TRANSPORTATION MASTER PLAN

The Regional Transportation Master Plan—Moving Forward 2031 continues to place greater emphasis on the role of public transit to provide a more balanced transportation system. It is guided by the Ontario government's Places to Grow Growth Plan, the Regional Growth Management Strategy, the Regional Official Plan, and the Rapid Transit Plan. It also reflects the significant public interest for greater transportation choice, which was strongly reflected in consultation and survey efforts.



The study goals are as follows:

- **Optimize the Transportation System**—Make the most of what exists: preserve and maximize the use of facilities and services—avoid or defer the need for new infrastructure that does not support the other goals.
- **Promote Transportation Choice**—Provide and maintain a transportation system that offers competitive choices for moving people and goods in an integrated and seamless manner while minimizing single occupancy vehicle trips.
- **Foster a Strong Economy**—Provide a transportation system that supports the retention of existing businesses and attraction of sustainable economic activity.
- **Support Sustainable Development**—Provide and maintain a transportation system that supports sustainable growth in both urban and rural areas and reduces transportation contributions to climate change.

As part of supporting sustainable development, there was a recognition that the Region needs to review its current approach to identifying transportation priorities, particularly around future high density growth nodes and transit station areas.

Around future high density growth nodes and transit station areas, while it is recognized that local context will influence transportation design choices, the Region will give priority to modes in the following order: walking; cycling; public transit; carpooling and other smart commute strategies; and single occupant vehicles.

The RTMP recommends a significant increase in walking and cycling mode share, targeting from 8% of PM peak period trips today to 12% by 2031. The RTMP recognizes that achieving this increase will require a significant investment in active transportation infrastructure and will require a number of policy initiatives to encourage greater usage for non-recreational based trips. Policy recommendations included in the RTMP include:

Planning the System:

7.4.1 Broaden the Cycling Master Plan and Pedestrian Master Plan to provide an on-road and off-road active transportation network that incorporates the major recreational and utilitarian pedestrian routes in the Region and update this plan every 5 years

7.4.2 Develop a primary network of trails, sidewalks and bike lanes that will be maintained during the winter months to standards matching those for vehicle lanes

7.4.3 Increase funding for active transportation modes as a share of overall transportation funding to a level commensurate with the target of 12% mode share. The recent 2009 Development Charge Study had identified 7.7% of the total capital costs for pedestrian and cycling infrastructure.

7.4.4 Providing financial support and special programs to employers and other stakeholders including but not limited to: Region-wide Guaranteed Ride Home program, and Parking Cash Out programs.

Leading by Example

7.4.5 Use Travelwise to encourage employees to walk and cycle and provide comfortable pedestrian and cycling infrastructure at all municipal work sites

7.4.6 The Region and area municipalities should ensure that workplaces are designed to support those who walk and cycle to work and should develop an incentive program to encourage more employees to cycle or walk to work at least one day per week.

Making municipal facilities and services walking and cycling supportive

7.4.7 Make certain that all public facilities (particularly transit stations and community centres) are pedestrian and bicycle supportive

7.4.8 Encourage and fund implementation strategies that ensure the seamless integration of active transportation with other modes - such as the provision of bike racks on transit vehicles.

Undertaking an active role in marketing and education

7.4.9 Develop active transportation and TDM information packages available to developers, large employers, property owners and the general public, with information on the Region's and Area Municipal programs, tips to change travel behaviours, and initiatives that can be implemented at a small scale to promote active transportation

Developing supportive policies and master cycling and walking plans for new development areas

7.4.10 Review development standards and urban design guidelines and providing policies focused on improvements to active transportation facilities

7.4.11 Create a cash-in-lieu program so developers can chose to provide money to a municipal fund for active transportation infrastructure

7.4.12 Amend the Transportation Impact Study process for developments to consider walking, cycling, carpooling and transit components/assessments

7.4.14 Connections between local streets and neighbourhood parks, schools, natural corridors and other open space areas should be provided in all new subdivision development plans.

Develop / maintain design standards for pedestrian and cycling facilities

7.4.15 Exceed basic accessibility standards for walking and cycling facilities in urban areas

7.4.16 Continue to update cycling and pedestrian infrastructure guidelines to ensure maximum comfort and accessibility to the greatest number of users

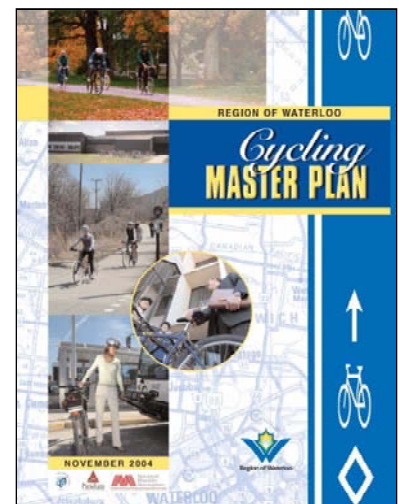
7.4.17 Develop an improved signage program for on-street and off-street paths and bike lanes, including pathway marker signs and routing signs to major destinations across the Region

The RTMP recommends that the Region of Waterloo initiate discussions with the Province of Ontario with respect to modifications to the Development Charges Act to ensure equitable consideration of transit, roadway and active transportation requirements.

2.2.4 REGIONAL CYCLING MASTER PLAN

The first Region of Waterloo Cycling Policy Master Plan was completed in 1994 and updated in 2004. The Cycling Master Plan includes a cycling network, design strategies, and policies and supporting initiatives. Policies are as follows:

1. Cycling will be viewed as a viable and desired mode of transportation.
2. On-road cycling is based on the principle of “vehicular cycling”.
3. The Regional Cycling Network will be phased in over time. The Core Network, which serves as a trunk system that connects many of the most significant destinations, will be implemented over the next 10 years. The Long Term Network, which improves network density and expands to areas where demand is less, will be built over the next 20 plus years.
4. Prevailing guidelines will be used in the design of facilities as recommended in the CMP or deemed acceptable within the industry in Canada. In certain situations, when practical application may be difficult to achieve, two options will be explored:
 - An examination of the viability of the route, including possible alternative routes, and/or;
 - Alternative design strategies that are considered reasonable.
5. The Region and Local Municipalities will work cooperatively in the planning, construction and maintenance of the Regional Cycling Network in order to minimize duplication and to implement Regional and Local cycling networks which feed each other. Construction and maintenance of cycling routes on Local roads will be based on shared funding with the Local Municipalities and other potential stakeholders, where financially viable and agreed upon by both parties.
6. A variety of supporting initiatives will be introduced through the co-operative efforts of the Region and other potential stakeholders.



7. The Region will maintain the Regional Cycling Advisory Committee (RCAC) whose role is to provide advice and assistance to staff regarding network implementation priorities and support programming.
8. Retired road and railway rights-of-way will be considered for their usefulness as part of the Regional Cycling Network before being sold.
9. As part of routine accommodation for cyclists, features such as bike-friendly grates, pothole repair and actuated traffic signals that detect the presence of a bicycle will be pursued on all Regional roads.

2.3 City Policies

2.3.1 STRATEGIC PLAN DIRECTION

The City of Kitchener has adopted a number of initiatives for improving the overall quality of life for residents and visitors. These initiatives link directly to supporting more people cycling in the City as a means of transportation or recreation. Specifically, the following documents articulate goals and objectives that fit with the promotion of cycling either through the provision of better cycling infrastructure, information or programs:

- **A Plan for a Healthy Kitchener** (2007 to 2027)—highlights public priorities: quality of life, leadership and community engagement, diversity, a dynamic downtown, continued development, and the environment
- **Strategic Directions for the Environment**—Strategies that strengthen the City's commitment to sustainable development and balance the needs of a growing City with the need to protect the natural environment
- **Kitchener Growth Management Strategy**—Undertaken to ensure that growth is managed effectively, that the City can achieve the required density and intensification targets while accomplishing their desired built form and function, and to help enhance the quality of life in Kitchener. The KGMS embodies the healthy community model within each of the strategy's six overall goals:
 - Goal 1: Enhance our Valued Natural and Cultural Heritage Resources
 - Goal 2: Create Vibrant Urban Places—*building communities where people want to live, invest and be creative*
 - Goal 3: Ensure Greater Transportation Choice
 - Goal 4: Strengthen Communities—*improving the social, cultural and recreational network*
 - Goal 5: Foster a Strong Economy
 - Goal 6: Manage Change in an Effective and Coordinated Manner

The above strategic plans are supported by Provincial and Regional policies on urban growth management, built form and associated transportation, specifically encouraging and supporting walking and cycling. For reference, these documents include Provincial Policy Statement (2005), Places to Grow Growth Plan (2006), and Region of Waterloo's Growth Management Strategy, Official Policies Plan, Transportation Master Plan, and Cycling Master Plan.

Partnership initiatives directly related to promoting cycling that reflect Provincial, Regional and City strategies include the Active and Safe Routes to School Workgroup and the Waterloo Region Partners for Clean Air.

2.3.2 OFFICIAL PLAN AND MASTER PLAN POLICIES

The City of Kitchener is currently updating their Official Plan to respond to the Growth Management Strategy and other strategic directives. The existing Official Plan (approved on May 25, 1995 and subsequent Municipal Plan Amendments) includes specific policies on cycling that recognize the need to plan for and support it as a mode of transportation:

- **Transportation:** A well-established transportation system consists of effective and efficient pedestrian, bicycle, transit and road system and where applicable associated parking
- **Cycling and Pedestrian Movement:** In recognition of the environmental and energy benefits associated with increasing the proportion of trips on foot and by bicycle, facilities and amenities to promote this mode of travel should be supported and pursued where practical and safe.
- **Cycling Policies:** The City shall implement programs and policies which facilitate and support greater and safer use of the bicycle as a mode of transport.
 - i) Developing a network of on-street and off-street bike lanes, routes and paths;
 - ii) Development of road design and maintenance standards which reduce the risk of accidents and injuries to cyclists;
 - iii) Encouraging major new developments to provide secure bicycle parking and, where appropriate, shower/change facilities for bike commuters;
 - iv) Raising public awareness of the convenience, health and economic benefits of commuter cycling;
 - v) Sponsoring education programs on safe and responsible cycling for cyclists, motorists and pedestrians; and
 - vi) Providing bicycle parking facilities at transit terminals and transit nodes to encourage bicycle transit trips.

The **City of Kitchener Bikeway Study** was the first cycling master plan undertaken by the City and was approved in 1998. The specific objectives are:

- To develop and implement a program which facilitates and encourages greater and safer use of the bicycle as a mode of transportation
- To develop a local City network of on-street and off-street bike lanes, routes and paths both for immediate and long-term implementation, linking the adopted Regional System to a local system, to present and future community trails, and to neighbouring communities
- To provide local street and intersection designs to accommodate bikeways
- To design bikeway facilities at transit terminals, nodes and City facilities to encourage bicycle transit trips and to also encourage major new and existing development to provide bicycle facilities for bike commuters

The City is currently completing a **Parks Master Plan**. One of six core themes is “Strengthening and Expanding the Community Trails Network”. Trails are defined as “linear corridors designated and designed for a range of recreational, aesthetic, active transportation or educational

opportunities to support a connected and physically active community". The provision of trails within the City is intended to meet the following objectives:

- Support healthy lifestyles, a clean environment and reduce demands on the road network
- Pedestrian and cycling linkages and convenience
- Access to natural areas, parks, community activities/destinations, transit
- Enhanced urban form

2.3.3 DESIGN GUIDELINES

The City of Kitchener supports a design-based approach to city planning. The City approved **Urban Design Guidelines** and **Urban Design Briefs** in 1999. They are intended to foster a high quality of urban design on a city-wide basis. It is a unique work that combines urban design guidelines and urban design standards into one document. It also contains a separate section for design briefs, intended to provide detailed design suggestions and requirements for a specific site or type of land use.

The Urban Design Guidelines provide specific design criteria related to cycling and trails:

- Bicycle parking—type of racks, layout, location, coverings, and number of spaces by land-use type
- Community trails—location, design criteria, construction, signage and roadway crossing details

The **Neighbourhood Design Guidelines**, a new section of the Urban Design Guidelines, was created to guide development located within the city's suburban neighbourhoods and was approved in 2007. Many of the primary design objectives (walkability, variety, place making, connectivity, transit supportive, safety, balance and liveability) enhance and support cycling in greenfield neighbourhood developments. Specific recommendations regarding street patterns that support these objectives are provided. Design guidance specific to bikeways includes:

- Collector Streets (18-28m ROW, <8,000 AADT)—Consider a variety of collector street hierarchies to accommodate bicycle lanes, on-street parking, shared bike/parking lanes, streetscape elements and transit... Encourage dedicated bicycle lanes (1.2-1.5m lanes) along primary collector roads, to streets providing access to major trails, employment and to regional bicycle lanes. Encourage existing or planned bicycle routes to be extended in future plans

2.4 Summary of Strategic Direction and Policy Support

The City of Kitchener has clearly adopted strategic directions that align with cycling becoming a viable transportation choice and means of recreation for residents, employees and visitors. Policies adopted more than a decade ago express clearly the direction in which the City intended to develop to support more and safer cycling. Making cycling a viable transportation choice and increasing the number of people who bicycle is a common goal within Provincial and Regional growth strategies and related policies.

This could be combined with communication strategies that raise the profile of cycling so that progress (or lack of progress) is given greater attention.

3. BEST PRACTICES

3.1 Bicycle Facilities Design Toolbox

The level to which a community can become bicycle-friendly depends on a number of factors. One is the infrastructure that can be built and maintained that is dedicated to cyclists, to improve their comfort and safety and accessibility in the community. Various types of bikeways provide various levels of comfort and safety, and require various levels of commitment to design, construction, maintenance and the associated financing of these elements. Because the City has jurisdiction over a wide variety of roadways in terms of classification and use, both conventional and innovative bikeway types and treatments are presented as a significant opportunity for functional and innovative design is available. Once the types of bikeways that can be supported by the City are understood, a network based on opportunities to implement the various supported bikeways can be identified.

Cycling master plans completed in Ontario since the early 1990s focused on creating a hierarchy of bikeways from quiet neighbourhood signed routes to busy roads with wide lanes or bike lanes. Lessons learned from implementation include:

- Signage strategies for neighbourhoods routes are rarely put in place
- Finding space for bike lanes requires examining travel lane widths
- Wide lanes increase vehicle speeds creating less comfortable routes for cyclists
- On-street parking can only be removed to make space for bike lanes under exceptional circumstances
- Bike lanes are sometimes not enough protection from motorists to encourage less skilled cyclists to ride on busy streets
- Shared lanes without markings do little to validate the use of a street by cyclists, do not encourage more people to ride, nor promote courtesy among users (cyclists and motorists)

Although the hierarchy of routes is still desirable, implementation strategies have evolved to create bikeways that encourage use by youth, new users, and people unsure of riding with traffic. “Road diets” provide opportunities to narrow travel lanes and apportion the pavement width differently among modes to better accommodate cyclists. Shared-use lane markings (“sharrows”) have developed for use adjacent to parked cars to improve safety (reduce “dooring”), and in locations to inform road users where to expect cyclists to be riding, and ultimately legitimize a cyclist’s presence on the roadway. Local streets are being connected and traffic calmed into “bicycle priority streets” as alternate routes to busy arterials.

Design details required to integrate multi-use trails into on-road bikeways systems, such as mid-block crossings, high-visibility crossings, refuge islands and signage, are being examined by communities through audits and upgrades. Thus the functionality of trails within the broader transportation system is being improved significantly.

There is really no need to sign short, on-street, local routes within neighbourhoods. Residents know how to get around their own neighbourhoods on foot or by bike. What is needed is signage of longer routes through neighbourhoods as alternatives to busy streets, and finding those access points to the trail system. Bicycle priority streets (“bicycle boulevards”) are taking hold in western North America by creating traffic-calmed streets that allow for crossings of major arterials and minimize stop signs for cyclists without increasing motor vehicle through traffic.

European cycle tracks (segregated bike lanes) are increasingly being used as an option in Vancouver, Richmond and Montreal where attention to design details results in the users of the cycle track being afforded the same rights-of-way as the motorists on the roadway over side street and driveway traffic. Designs incorporate features that create a comfortable cycling environment for the majority of users while protecting cyclists from turning traffic and other potential conflicts at busy intersections. Motorists cannot park or unload in these facilities. Cycle tracks go well beyond the quality of the cycling experience on side paths placed in roadway boulevards where cyclists are expected to behave like pedestrians. Side path users perceive that they are safe yet collisions occur at driveways and intersections where they are out of the view / out of mind of approaching motorists and no one knows if they have right-of-way. Add that cyclists can be fined for riding through crosswalks and encourage sidewalk riding in other locations, side paths just do not enable cycling as anticipated. However, cycle tracks, or segregated bike lanes, require a greater financial investment in design, construction, and maintenance compared to conventional bicycle lanes striped on roads.

All of these elements have changed the way cycling networks, in particular, are now being developed. In combination they are increasing the quality of the cycling experience and attract people who are interested in cycling but concerned about safety riding in traffic.

3.2 Bikeway Design Guidance

3.2.1 REFERENCES

Bikeway design should be based on the application of current bikeway planning and design guidelines and engineering judgement regarding context. Context includes such elements as available right-of-way and pavement width, horizontal and vertical alignment (curves and hills), sight lines, traffic volumes, truck volumes, transit provisions, traffic control, side street spacing, driveway types and spacing, etc. The following are recommended guidelines available in North America:

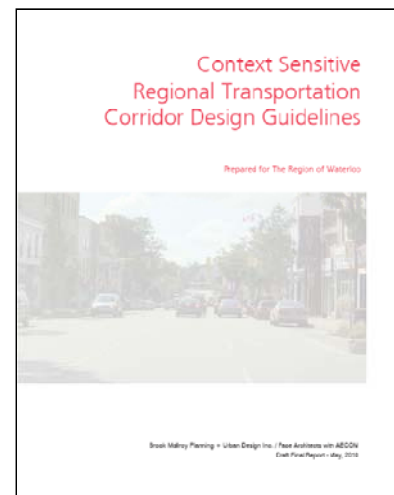
- Jolicoeur, Marc, *Planning and Design for Pedestrians and Cyclists: A Technical Guide*, Vélo Québec Association, Montreal, Québec, 2010, available from <http://www.velo.qc.ca/english/bikewaysdesign.php?page=handbook> (June 2010)
- AASHTO Task Force on Geometric Design, *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, Washington DC, 1999, available at http://safety.fhwa.dot.gov/ped_bike/docs/b_aashtobik.pdf (July 2009)—3rd edition will be published in 2010.
- *Bikeway Traffic Control Guidelines for Canada*, Transportation Association of Canada, Ottawa, Ontario, December 1998; available from <https://vws3.primus.ca/dev.tac-atc.ca/english/bookstore/products.cfm?catid=12&subcatid=21&prodid=63> (July 2009); update anticipated in 2010 based on *Guidelines for the Design and Application of Bikeway Pavement Markings—Final Report* (August 2007); *Bicycle Signage Recognition Testing* (March 2008); and *Coloured Bicycle Lanes Simulator Testing* (March 2008)
- Alta Planning + Design, *Fundamentals of Bicycle Boulevard Planning and Design*, Initiative for Bicycle & Pedestrian Innovation, Portland State University, Portland, Oregon, July 2009, available at <http://www.ibpi.usp.pdx.edu/guidebook.php> (July 2009)



- For cycle tracks (segregated bike lanes) refer to European cycling design manuals including:
 - CROW, *Design manual for bicycle traffic*, Record 25, The Netherlands, June 2007, available at <http://www.crow.nl/shop/productDetail.aspx?id=889&category=90> (January 2010)
 - Transport for London, *London Cycling Design Standards*, available at <http://www.tfl.gov.uk/businessandpartners/publications/2766.aspx> (January 2010)
 - Danish Road Directorate, *Collection of Cycle Concepts*, 2000, available at <http://www.vejdirektoratet.dk/pdf/cykelrapport/999Complete.pdf> (January 2010)

3.2.2 CONTEXT SENSITIVE REGIONAL TRANSPORTATION CORRIDOR DESIGN GUIDELINES

The Draft Region of Waterloo Transportation Corridor Design Guidelines provide design standards for planning and designing complete streets that include space for all modes of transportation. The draft guidelines state that “Cycling facilities include bike lanes, paved shoulders, shared bicycle/parking lanes, wide curb lanes, multi-use off-road trails and shared bicycle/other vehicle lanes. A cycling route may include any of these types of cycling facilities. The Cycling Master Plan is the guiding document in determining the need and location for cycling facilities. Cycling facilities on all road classifications, with the exception of the Community Connector roadway, is considered important in providing the Region with an efficient multi-modal transportation network. The Community Connector roadway is a higher speed high volume road and the mixing of on road cycling / vehicular traffic should only be considered after other options, such as off-road facilities or alternate parallel cycling routes are considered.”



The Regional Road Classifications indicate that “cycling provisions as required to implement Regional Cycling Master Plan. Cycling facilities are to be accommodated within the corridor.” Recommended plans and sections by road classification illustrate the following types of bikeways:

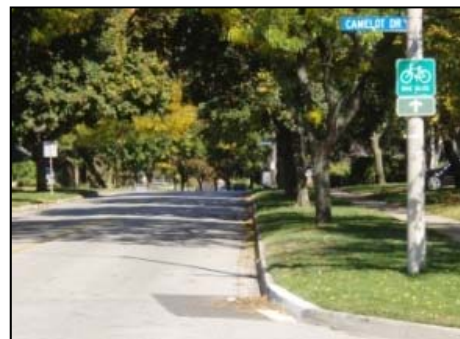
- **Community Connector:** 4.0 m wide curb lane with the painted lane line at 3.35 m (Note: the remaining 0.65 m is insufficient in width as a bikeway and wide curb lanes will not be recommended as a bikeway due to the higher motorists' speeds they induce).
- **Neighbourhood Connector:** 1.25 m wide bike lane
- **Main Street:** None
- **Residential Connector:** 1.25 m wide bike lane
- **Rural Connector:** 2.65 m wide shoulder with 1.0 m width paved
- **Rural Village (Main Street):** None

3.2.3 CONVENTIONAL NORTH AMERICAN BIKEWAYS

In North America, the following types of bikeways have been implemented over the last two decades or more as part of the roadway network:

3.2.3.1 Signed Routes

Signed routes are typically local streets posted with a “bicycle route” sign to indicate that they are a link in a cycling network, connect to a key destination, or provide a continuous or direct route for cyclists in a neighbourhood. Signing bicycle routes on local streets with no other features to improve the comfort, safety or coherence for cyclists is not recommended. However, way-finding / destination / distance signing on local streets as part of an overall signage strategy or as part of a bicycle boulevard / bicycle priority street (see below) is recommended.



Implementation Strategies: As part of an overall way-finding / destination / distance signing strategy. See also bicycle boulevards / bicycle priority streets.

Construction Cost⁶:

- Supply and install signs every 300 m plus both sides, plus extra at key intersections, say 10 signs per kilometre—\$2,000/km

3.2.3.2 Bike Lanes or Paved Shoulders

Bike lanes on urban roadways (with curb and gutter) and paved shoulders on rural roadways provide space for cyclists to ride in their own reserved lane, increasing their comfort particularly on higher speed and higher volume roads with truck and transit traffic. Bike lanes are applicable generally to collector and arterial roadways with volumes of traffic greater than 5,000 to 10,000 ADT. Paved shoulders have been demonstrated in the past to provide benefits in erosion control, pavement life, and collision reduction when traffic volumes exceed 3,000 vehicles per day (vpd).



Implementation strategies: New construction; reconstruction; retrofit (narrow existing lane widths and re-stripe with bike lanes); and reconfigurations (change lane configuration and re-stripe with bike lanes, i.e. four through lanes changed to two through lanes, a centre turn lane and bike lanes). Consider 100 mm wide rumble strips coincident with painted edge-lines when posted speed is greater than 50 km/h; drop rumble strip approaching and through driveways and intersections.



⁶ Opinion of cost of construction only in 2009/2010 dollars; does not include planning, design, maintenance, taxes

Construction Cost:

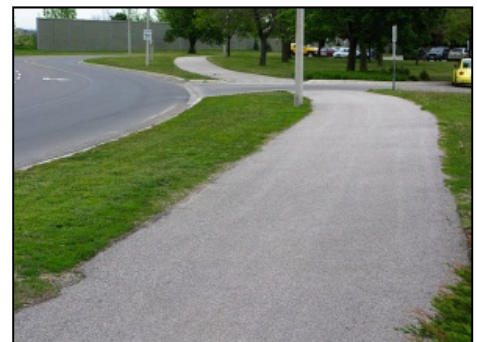
- New construction: Add pavement width (granular and asphalt); paint bike lane lines, bicycle symbol and diamond every 200 m; bike lane signage every 300 m; removals, curb & gutter, utility leads included in road portion of construction costs—\$200,000/km
- Retrofit or reconfigure: Remove existing lane lines and repaint with narrower lanes or fewer lanes; paint bike lane lines; bicycle symbol and diamond every 200 m; bike lane signage every 300 m (based on four lane roadway)—\$23,000/km
- Resurfacing / painting: On existing wide lanes or as part of road resurfacing project; paint bike lane lines; bicycle symbol and diamond every 200 m; bike lane signage every 300 m—\$10,000/km
- Add paved shoulders: additional grading, granular and asphalt as part of road reconstruction project; paint bike lane lines; bicycle symbol and diamond every 200 m; bike lane signage every 300 m; removals, grading, sub-drains included in road portion of construction costs—\$130,000/km
- Pave shoulders, road resurfacing: additional asphalt as part of road resurfacing project; paint bike lane lines; bicycle symbol and diamond every 200 m; bike lane signage every 300 m—\$55,000/km

3.2.3.3 Wide Curb Lanes

Wide lanes, 4.0 to 4.5 m wide, generally along the curb are implemented for cyclists to share with motorists with or without signage and pavement markings. These are NOT RECOMMENDED due to the higher motorists' speeds that they induce.

3.2.3.4 Boulevard Multi-use Trails

A multi-use trail within the road right-of-way located in the boulevard and generally parallel to the road. Consider using concrete with a longer life cycle than asphalt (expansion joints every 30 m, saw-cut contraction joints every 2.5 m with no trowelling); and so that it appears as a pedestrian way with associated regulations / rights-of-way at intersections and driveways. A grass or landscaped buffer between the trail and the roadway is preferred as opposed to a curb-faced trail. Due to safety issues with higher speed trail users and right-of-way at driveways and side streets, boulevard multi-use trails should only be implemented along roadways where driveways and side street intersections are spaced 300 m or more.

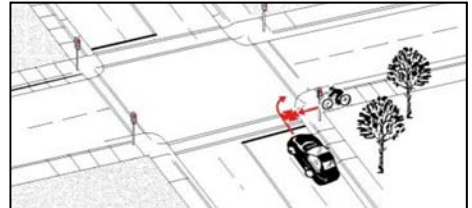
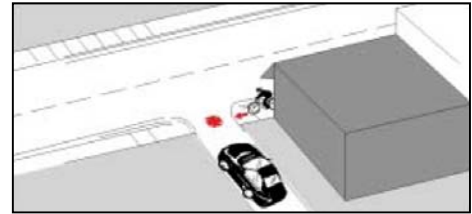


There are various elements of multi-use trails placed in roadway boulevards that reduce their function and safety:

- The lack of traffic control at intersections does not give cyclists the right-of-way and decreases their comfort and the directness or functionality of the path compared to on-road bikeways. On-road bikeways are governed by the intersection traffic control provided to motorists (or separate bicycle signals for some designs in some jurisdictions).
- The fact that the multi-use trails are usually built on only one side of the street reduces their accessibility to residents and destinations on the opposite side of the street. The idea of riding along the trails gives a sense of comfort. Trying to

access the trail or leave the trail from across the street is problematic, leading to mid-block crossings, and wrong-way riding on the road.

- The risk to the cyclist riding on the left-side of motorists and going unnoticed by motorists turning in and out of side streets and driveways is a real safety concern particularly as the number of cyclists (exposure) increases (similar safety concerns apply to bi-directional bike lanes on one side of a two-way street). For example, a motorists turning left or right out of a driveway or side street will notice the cyclists coming towards them on their left, but will generally not notice the cyclists approaching from the right (the motorists is generally looking forward or left to accept a gap in traffic). The motorist turning left from the main street into the side street or driveway is looking forward to accept a gap in traffic. As they accelerate to cross opposing traffic, motorists will not see cyclists on their left approaching from behind (the “wrong-way” cyclist). The speed at which the motorist is trying to cross opposing traffic and the lack of visibility of cyclists approaching from behind on their left combine to increase risk. This is further complicated by the lack of experience and understanding of the risk by the type of cyclists (less experienced) who choose to ride on these multi-use trails.



Implementation strategies: They can replace the sidewalk on one side of the road or both sides. Include in new construction, reconstruction or retrofit if the boulevard width is sufficient.

Construction costs:

- Asphalt multi-use trail: 4.0 m wide; normal site conditions; sign and distance tab every 300 m both sides and every 500 m at access points; does not included road crossing features—\$200,000/km
- Concrete multi-use path: 3.0 m wide; expansion joint every 30 m; contraction joint every 2.5 m (saw-cut only, not trowelled); normal site conditions; sign and distance tab every 300 m both sides and every 500 m at access points; does not included road crossing features—\$200,000/km

3.2.4 CURRENT NORTH AMERICAN BIKEWAYS

More recently, the following approaches to improving the comfort and safety of cyclists on roads have been used in North America:

3.2.4.1 Marked Shared-use Lanes

Lanes marked with a “shared-use lane” marking or “sharrow”. Recommended for low speed roadways (60 km/h or less) where there is insufficient pavement width for bike lanes. These may also be implemented as



part of a bicycle boulevard / bicycle priority street treatment (see below).

Implementation strategies: Apply markings (retrofit) where there is on-street parking to encourage cyclists to ride out from the “door zone”, where bike lanes are discontinuous because of roadway narrowings, and to mark wide lanes with moderate volumes, posted speed of 50 km/h or less, and too narrow to stripe bike lanes. New construction should not include wide lanes with “sharrows” because of the higher motorists’ speeds they induce.

Construction costs:

- Paint “sharrows” on existing lanes: Add shared lane markings to existing travel lanes; bicycle symbol and double chevrons every 75 m both sides, share the road signage every 300 m both sides—\$15,000/km

3.2.4.2 Bicycle Boulevard or Bicycle Priority Street

These are traffic-calmed, local streets that have been optimized for through bicycle traffic, but discourage other non-local traffic. Sometimes they are called “Local Bicycle Streets”. Traffic controls (signals, stop signs and yield signs) are placed to control conflicts with motorists and give priority to cyclists. Traffic control or features are provided so cyclists can cross major streets. They enhance neighbourhood liveability and traffic safety. For cyclists who do not want to cycle on busy roads, bicycle priority streets can route them through neighbourhoods to their destinations. Cities with a network of bicycle priority streets include Berkeley and Eugene CA, Albuquerque NM, Portland OR, and Vancouver BC. The design concept is illustrated in Exhibit 3

Implementation strategies: Apply a series and intensity of features from way-finding / destination / distance signage, pavement markings (“sharrows”), to traffic calming features, features and strategies to minimize stop signs along the route, and features to allow cyclists to cross arterial roads along the route, as illustrated in Exhibit 4. Include as part of neighbourhood improvement or traffic calming plans, implement as part of a signage strategy, or construct features as part of new construction, reconstruction, resurfacing or retrofit.

Construction Costs:

- Create bicycle boulevard / priority street: Traffic calming (curb extension, traffic circle, etc.) every 250 m; major roadway crossing (detection and bike box, median refuge, or signalization every 1.5 km); bicycle route sign with tabs (directions, destinations, distances, etc.) every 300 m—\$80,000/km



Exhibit 3: Bicycle Boulevard Concept

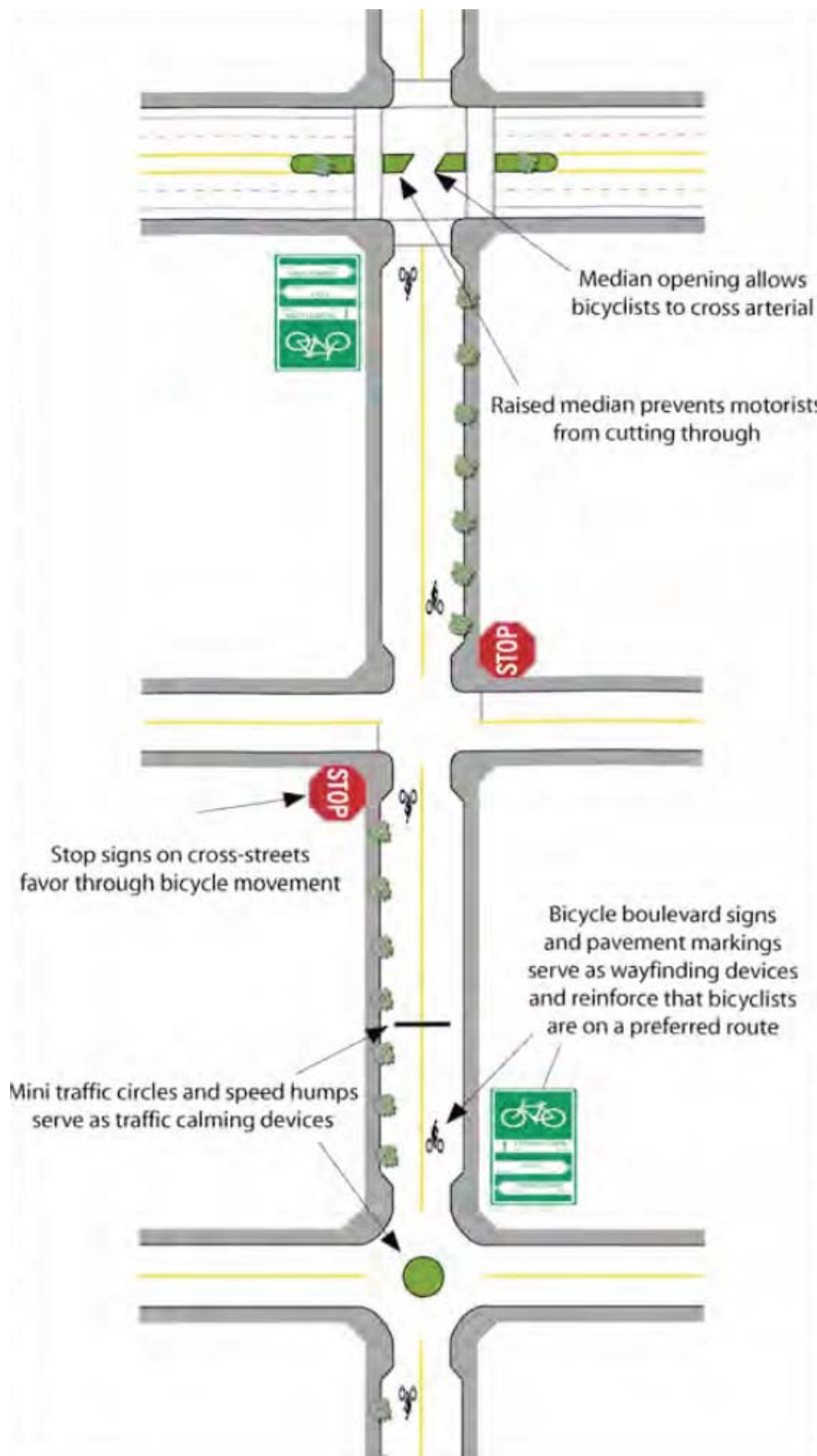
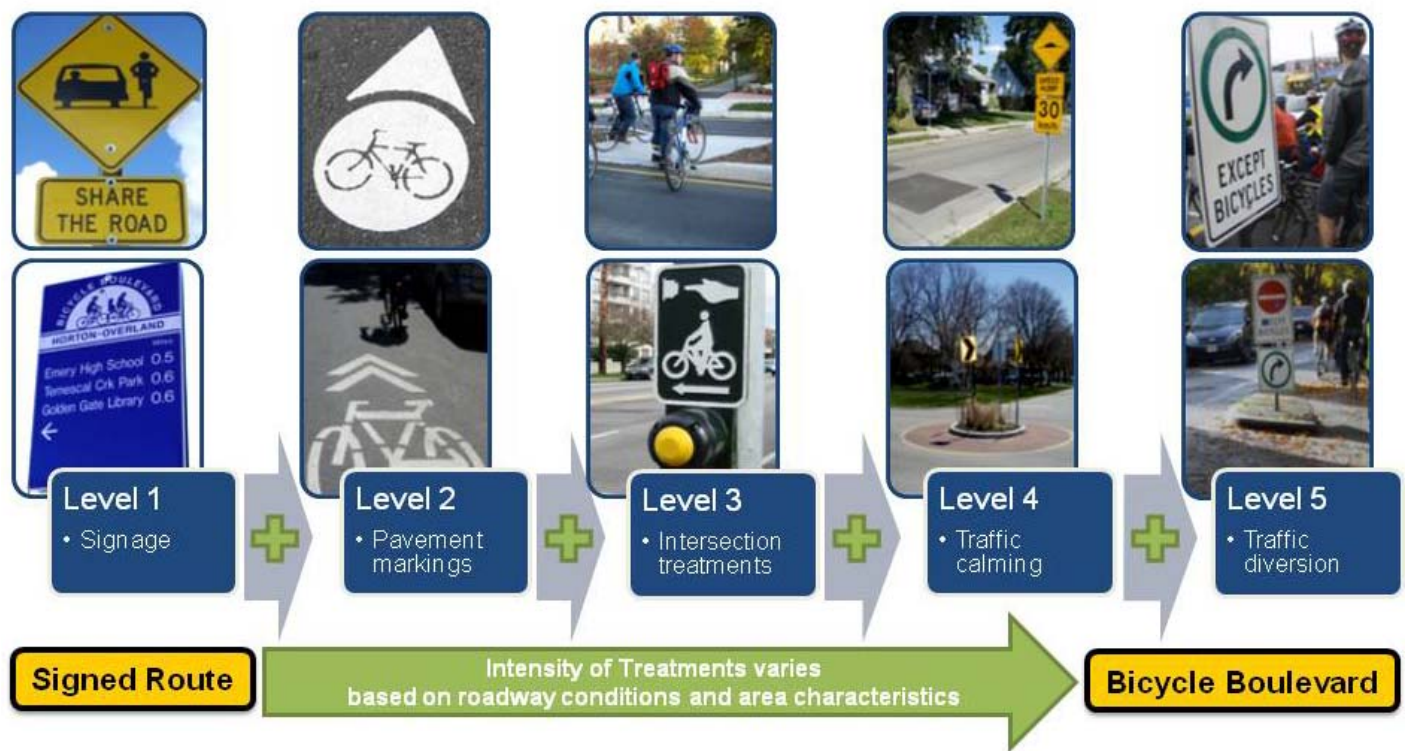


Exhibit 4: Bicycle Boulevard Implementation Strategies**3.2.5 EUROPEAN CYCLE TRACKS**

A few North America cities are implementing segregated bike lanes or “cycle tracks” based on European bikeway designs that provide some separation between cyclists and motorists. These are described below.

Bike lanes separated from travel lanes, parking lanes and sidewalks by pavement markings, pavement colouring, bollards, curbs, raised medians, or a combination of these elements. They are intended for use by cyclists only, not like multi-use trails, and generally operate in one-direction on both sides of the street, although they can operate in two-direction particularly on one-way streets. They differ from boulevard multi-use trails as follows:

- **Design quality**—The surface, width, drainage, traffic control, signage and overall layout are well thought-out. Main intersections often include traffic signals for cyclists, bike boxes, or other features to protect cyclists from motorists turning across their path. This requires a higher investment in design and construction than bike lanes or boulevard multi-use trails.
- **Maintenance quality**—Cycle tracks along busy



routes are afforded the level of summer and winter maintenance that permit them to be used 24 hours a day, 7 days a week, 365 days a year. Being segregated from the main roadway requires a higher investment in maintenance, i.e. cannot be maintained by the same equipment and at the same time as the adjacent travel lanes.

- Legislative environment**—Cycle tracks are defined as part of the main roadway and cyclists using the cycle track are provided with the same rights-of-way as motorists on the main roadway. Side street and driveway traffic must yield to cyclists in the cycle track. Cyclists that ride on sidewalks or boulevard multi-use trails in Ontario are expected to behave like pedestrians at side street crossings, dismounting to use crosswalks as per Ontario's *Highway Traffic Act*.



Design guidelines from various Northern European countries recommend segregated cycle tracks when motor vehicle traffic volumes and speeds are higher, as illustrated in the Danish example shown in Exhibit 5 and the London UK example in Exhibit 6. The London guidelines indicate that the two main options are either better mixed cycling conditions (on calmed roads with limited space and with low/slow flows) or better segregation (on highly trafficked/higher speed roads). These examples suggest that cycle tracks would be appropriate as traffic volumes rise above 10,000 vpd with speeds of 30 km/h, and above 5,000 vpd when speeds are at 55 km/h.

Implementation Strategies: Design guidelines from various Northern European countries suggest that cycle tracks would be appropriate as traffic volumes rise above 10,000 vpd with speeds of 30 km/h, and above 5,000 vpd when speeds are at 55 km/h or higher. These thresholds for separating cyclists from motorists would result in many collector and most arterial roadways in North America being recommended for cycle tracks. Implement as part of major reconstruction or new construction projects including rapid transit corridors. Retrofit by removing a travel lane, and adding barriers, curb or delineation. Further review and discussion of design criteria for implementing, maintaining and operating cycle tracks will be required to implement them within the context of the City of Kitchener

Construction Costs: Include a 20% contingency due to lack of historical design / construction data

- Construct cycle tracks adjacent existing roadway with bicycle signals: Construct 2.0 m wide with boulevard side barrier curb; travel lane delineation / curb, cycle track pavement; bicycle symbol and diamond every 200 m; bike lane signage every 300 m; major intersection bicycle signals every 600 m; minor side street / driveway modifications every 200 m—\$500,000 to \$1 M per km
- Construct cycle tracks adjacent existing roadway without separate bicycle signals: Integrate as bike lane into main roadways at traffic signals (separate bicycle signals not required); construct 2.0 m wide with boulevard side barrier curb; travel lane delineation / curb, cycle track pavement; bicycle symbol and diamond every 200 m; bike lane signage every 300 m; minor side street / driveway modifications every 200 m—\$90,000 to \$400,000 per km
- Retrofit without separate bicycle signals: Add travel lane delineation / curb; bicycle symbol and diamond every 200 m; bike lane signage every 300 m; minor side street / driveway modifications every 200 m—\$140,000/km

Exhibit 5: Danish Bikeway Type Selection Criteria from *Collection of Cycle Concepts* (2000)

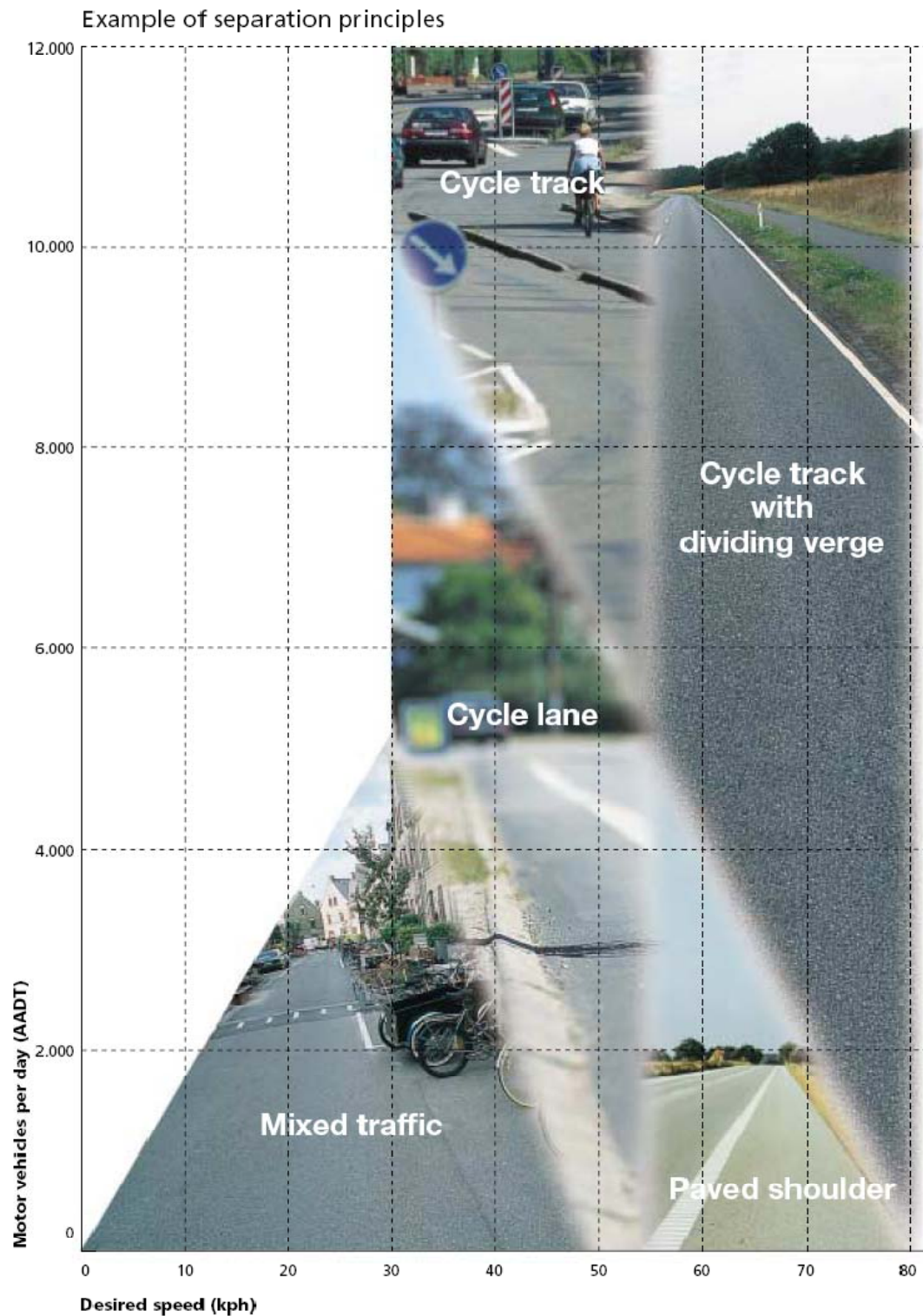
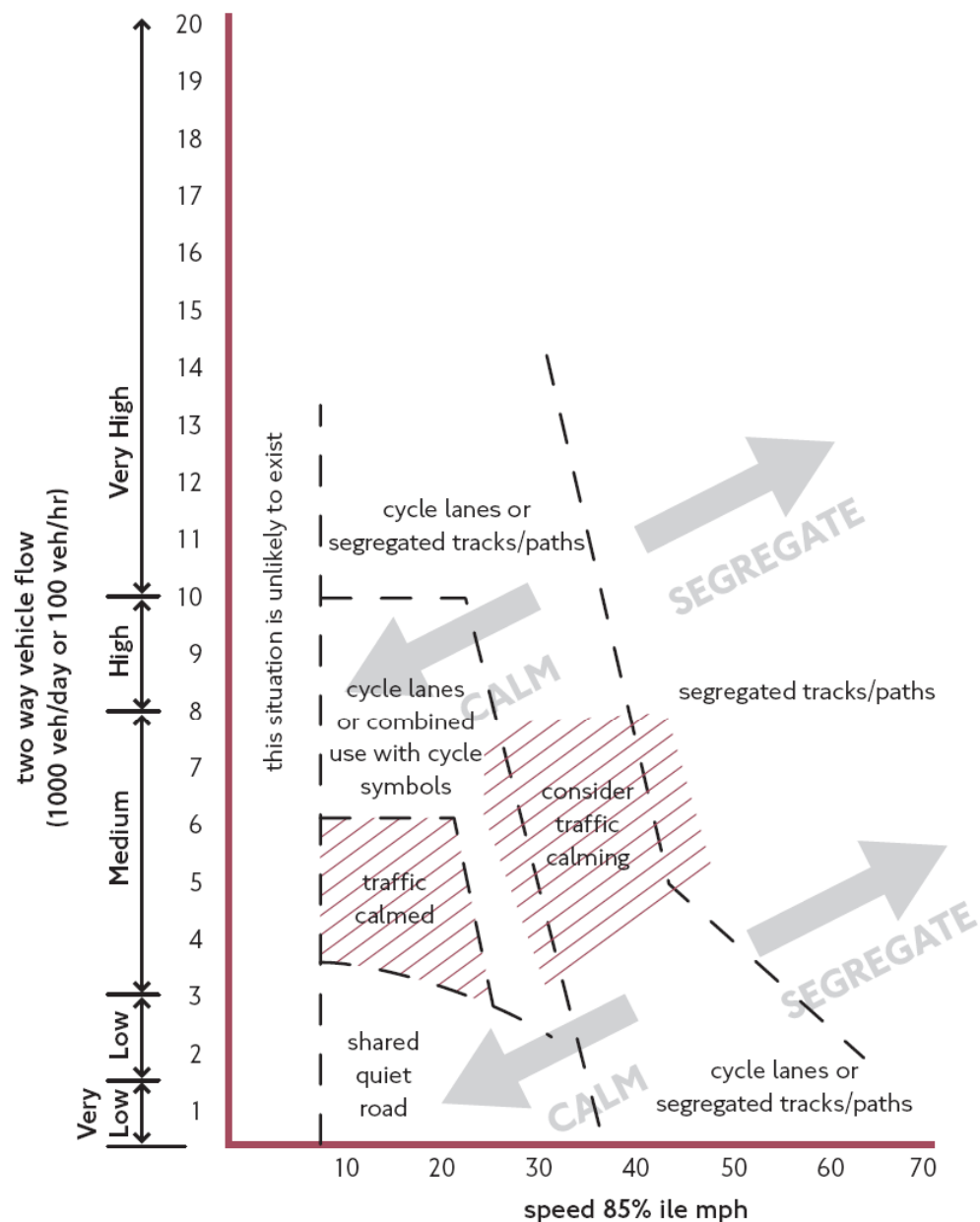
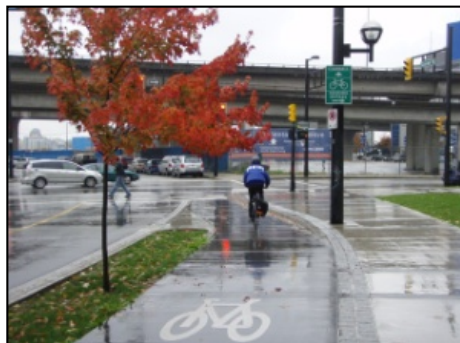


Exhibit 6: Transport for London Diagram of Cycle Facility Solutions based on Motor Traffic Volume and Speed from *London Cycling Design Standards***Notes:**

1. Each route will need to be judged in the light of its specific situation
2. Cycle lanes or tracks will not normally be required in traffic calmed areas
3. Congested traffic conditions may benefit from cycle lanes or tracks
4. Designs should tend to either calm traffic or segregate cyclists

Exhibit 7: Canadian Cycle Tracks (clockwise from upper left: Richmond, Montreal, Montreal, and Vancouver)



3.3 Summary of Bikeway Types

The bikeway types, implementation strategies and associated construction costs are summarized in Exhibit 8. Included are general comments on the level of municipal commitment, i.e. financing and staff, required for planning, design and maintenance of the various bikeway types. Planning and design efforts can reduce somewhat with time as planning and design of bikeways becomes routine or institutionalized into the responsibilities of departments and staff. There is a learning curve with the complexity of the bikeway types and corridors increase, i.e., bike lanes through complex intersections or interchanges, bicycle boulevard traffic calming and intersection treatments, cycle track applications, etc.

Exhibit 8: Summary Table of Bikeway Types and Implementation Strategies

Bikeway Type	Municipal Commitments: Staff Resources / Financing	Applicable Road Classification and Implementation Strategy	Construction Cost ⁷
Signed Routes	Planning and design—one-time, moderate Maintenance—moderate	Urban local and minor collectors	
		As part of an overall signing strategy or as part of bicycle boulevards / priority streets implementation	\$2,000/km
Bike Lanes	Planning and design—moderate Maintenance—low; integrate with roadway maintenance	Urban minor industrial collectors, major collectors and arterials	
		New construction	\$200,000/km
		Retrofit with narrower or reconfigure lanes	\$23,000/km
Paved Shoulders	Planning and design—low Installation—moderate Maintenance—low; integrate with roadway maintenance	Rural collectors and arterials (AADT >3,000 vpd)	
		Add paved shoulders	\$130,000/km
		Pave existing shoulders, road resurfacing	\$55,000/km
Boulevard Multi-use Trails	Planning and design—moderate Maintenance—high	Urban or rural major collectors and arterials where driveway and side street intersection spacing exceeds 300 m	
		Asphalt multi-use trail (4 m wide)	\$200,000/km
		Concrete multi-use path (3 m wide)	\$200,000/km
Marked Shared-use Lanes	Planning and design—low Maintenance—low	Urban local and minor collectors where speeds $\leq$ 50 km/h	
		Paint “sharrows” on existing lanes	\$15,000/km
Bicycle Boulevards or Priority Streets	Planning and design—moderate to high; may require neighbourhood input on traffic calming Maintenance—integrate with roadway maintenance (low)	Urban local and minor collectors	
		Traffic calming, major roadway crossings, signs	\$80,000/km
Cycle tracks or Segregated Bike Lanes Costs include a 20% contingency due to lack of historical design / construction data from Canada	Planning and design—moderate to high Maintenance—moderate to high	Urban major collectors and arterials	
		Construct adjacent existing roadway with bicycle signals at major intersections	\$500,000 to \$1M/km
		Construct cycle tracks adjacent existing roadway without separate bicycle signals, integrating as bike lanes at major intersections:	\$90,000 to 400,000/km
		Retrofit without separate bicycle signals, removing a travel lane	\$140,000/km

⁷ Opinion of cost of construction only in 2009/2010 dollars; does not include planning, design, maintenance, taxes

3.4 Access and Street Crossing Measures

The quality of the cycling network and integrated multi-use trails relies not only on the type of bikeway provided on the road, but also the quality of access and street crossings. A variety of treatments are being used throughout North America to improve access to bikeways at intersections, and improve safety and comfort where multi-use trails cross arterial or collector roadways. These features are illustrated in Exhibit 9.

Exhibit 9: Design Treatments that Improve Access and Street Crossings

Bicycle Detection at Traffic Signals

- Pavement markings—A symbol is put on the pavement to identify the most sensitive area of a detection loop where a bicycle will activate the traffic control signal
- Push Button—A push button that activates the traffic control signal is mounted where it is accessible to cyclists riding on the road
- Cost⁸: \$250 for pavement symbol to \$10,000 for new signal detection device

Bicycle Detection Pavement Marking, Vancouver →



Traffic Control Signal Push Button for Cyclists, Vancouver →



Photo credit: Richard Drdul

⁸ Opinion of cost of construction only in 2009/2010 dollars; does not include planning, design, maintenance, taxes

Bike Box

- An area just in front of the stop bar for motorists at a traffic signal for cyclists to wait in and, when the signal turns green, proceed ahead of motorists; when the traffic signal is green, cyclists proceed through the intersection conventionally without using the bike box
- Reduces conflicts with right-turning motorists; accommodates high left-turning cyclist volumes
- Cost: \$750 for pavement symbol to \$10,000 with new signal detection device

•
Bike Box, Victoria →



Photo credit: John Luton

Bicycle Only Traffic Signals

- Traffic control signals that allow cyclists to proceed through an intersection while motorists are stopped by a conventional red light on a separate traffic signal head
- Cost: \$25,000 for additional heads and more if current signal controller needs to be replaced

•
•
Bicycle Traffic Control Signals, Montreal →



Photo credit: Mooniker

Raised Trail Priority Crossings

- Where a trail crosses a roadway, a speed hump is installed to slow traffic and increase visibility of the crossing
- Traffic control can be installed to give priority to the trail traffic over the street traffic
- Cost: \$10,000 to \$20,000

•
Galloping Goose Trail Raised Priority Crossing, Saanich →



Photo credit: John Luton

Median Refuge

- Where a trail crosses a roadway, install a center median so trail users can cross one direction of traffic at a time
- The median must be of sufficient width to accommodate bicycles with trailers, etc.: minimum 3.0 m wide
- Cost: \$10,000 to \$50,000; depending if roadway widening is required
- Iron Horse Trail Median Refuge Crossing of Queen Street, Kitchener →

**Cyclists Left-turn Lane**

- Left-turn pocket provided in median on major roadway so cyclists can access side street or trail
- Cost: \$10,000 if roadway platform is of sufficient width to accommodate median and bicycle turn lane, and \$50,000 if roadway requires widening to accommodate median and bicycle turn lane
-
-
-
- Cyclist Left-turn Lane access for Galloping Goose Trail, Saanich →



Photo credit: John Lutton

Pedestrian Half Signal

- Pedestrian / cyclist-activated traffic control signals located midblock or at intersections that stop traffic on the main street to allow trail users to cross the road. Side street traffic is controlled by a stop sign.
- May or may not have a median refuge island
- Cost: \$80,000
-
- Centennial Trail crossing at Walker's Line, Burlington →

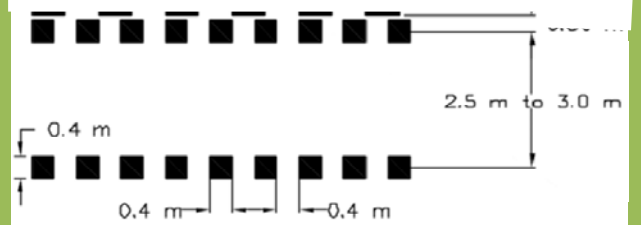


“Crossbike”

- Crossing area for cyclists adjacent a crosswalk. The Ontario Highway Traffic Act requires cyclists to dismount in pedestrian crosswalks; the “crossbike” provides a defined crossing area but without the requirement to dismount
- Cost: \$500 for pavement markings

Eglinton Avenue Bike Path “Crossbike” adjacent Crosswalk at Signalized Intersection, Toronto →

“Elephant’s feet” pavement marking proposed by the Transportation Association of Canada for marking the cyclists’ crossings area for off-road bike paths →

**Other Innovative Treatments**

Bike Lane Treatment across Narrow Bridge, London ON →



3.5 Cycling Network Signage Strategies

The Transportation Association of Canada’s (TAC) *Bikeway Traffic Control Guidelines for Canada* (December 1998) indicates that bikeway guide and informational signs convey information to cyclists for route selection, for locating off-road facilities, or for identifying geographical features or points of interests. These *Guidelines* indicate that on shared rights-of-way, separate signing for cyclists is not necessary; however, guide and informational signs are intended to help cyclists find their way in unfamiliar areas and provide insight into the coherence of a network of bikeway routes.

3.5.1 CYCLISTS' NEEDS

Street name signposting, and guide and informational signs for motorized traffic are not ideal from the cyclist's viewpoint, in terms of positioning and information:

- Some bikeways are designed to take advantage of low traffic speeds or volumes, or scenic routes and as such may not remain on any given street. The bike route will take turns and short-cuts not intended for motorists but of great advantage to cyclists. Separate signing of these routes is required for way-finding.
- Cyclists generally travel shorter distances than motorists and are more concerned with direct connections to destinations within those smaller areas. They may require information on the exact route to the frontage of the property or building that is bicycle-accessible. For example, circulating by bike around a shopping or transit centre to find bike parking or bicycle lockers could be very frustrating.
- Time and distance along bike routes to destinations can indicate to the traveling public that the trip is quite manageable by bicycle.
- Advance signing for a cyclist on a roadway or trail approaching a roadway with a bike lane, wide lane, or other type of bikeway on it is needed. The cyclist will not be aware that the bikeway exists until they pass through the intersection or they may not detect the bikeway at all. If they do detect it at the intersection, they may not be in a position that allows them to turn directly onto the bikeway, and then will have to expend additional personal energy to go out of their way to turn around.
- A coherent and consistent system of way-finding signs for cyclists is lacking in Canada. Some of the shortcomings of bicycle route signage programs include:
 - Signs are inconsistently implemented across a network such that some routes are well marked and others are not.
 - Useful information from a cyclist's perspective, such as destinations, directions, distances, amenities, is lacking or inconsistent across a network.
 - Signs are not maintained on an annual or as-needed basis with signs disappearing over time.
 - Initial implementation of bicycle route network signage is not continued as the network expands over time such that older sections are signed and newer sections are not. The reverse can also happen if older signs are not maintained but newer signs are installed as the network expands.
 - Sign placement is poor so that it is not easily visible to cyclists.
 - Signage types are lacking, i.e., route confirmation signs at regular intervals, change in route direction signs, intersection signs of two or more bicycle routes, advance or access signs from major roadways or trails to bicycle routes.



Bicycle route signage is important for integrating the on-road system with the multi-use pathway system, and City bikeways with Regional bikeways to form an overall co-ordinated

network. The signage should be easy to integrate into bicycle route maps, and address the features such as route confirmation, route intersections, connectivity, advance route signing, destinations, directions, distances (or time), and amenities. Such a signage plan would go beyond the basic guide and information signs recommended by TAC. Consistency with Provincial sign design principles is also recommended.

3.5.2 SIGNAGE EXAMPLES

Examples of bicycle route signage from North America and Europe are provided in Exhibit 10. These illustrate the basic bike route guide signing to more complex signing that provides useful information on destinations, distances and amenities.

Exhibit 10: Examples of Bikeway Signage

Basic bicycle route sign and directional arrow tab

➔ Not very useful without additional information about the bicycle route network.



Bicycle route marker sign with destinations

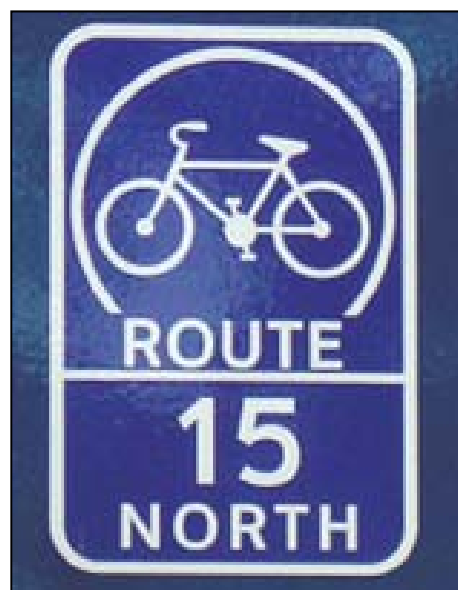
→ Destinations and direction at decision points in the bicycle route network.
Photo by Richard Drdul

→→ Additional information provided includes direction, distance and average time by bicycle at decision points in the bicycle route network.



Bicycle route marker sign with route number or name

→ Additional information provided includes cardinal direction.



Street name blade with bicycle logo

→ Identifies a street as a bikeway to cyclists and motorists.



Bicycle boulevard signage

Identify the street as a priority street for cyclists with a route name and includes destinations, travel time and directions.
Photo from City of Berkley, CA



European bicycle route signage

Includes region name, node number, destinations, directions, distances, and amenities.



3.6 Bicycle Friendly Site Development

Recent decades of urban development in North America have led to a general reliance on personal vehicles for commuting, recreational and other personal travel, which has had arguably improved mobility and accessibility— but not without negative impacts to natural, economic and social environments. Many jurisdictions and municipalities are actively responding to this undesirable situation through land-use planning, transit system improvements, pedestrian safety initiatives, bicycle system plans, transportation demand management (TDM) programs and smart growth initiatives. However, these strategies are generally aimed at transportation infrastructure, high-level land-use or funding issues. They tend to offer little guidance to development planning and review processes such as site design.

Recognizing this gap in consolidated information and guidelines relating to site design practices that promote sustainable transportation, the Canadian Institute of Transportation Engineers (CITE) created *Promoting Sustainable Transportation Through Site Design* (2004). This document was developed to provide planning authorities and the land development industry with site design practices and planning processes that help promote sustainable transportation.

Drawing on the CITE Guideline, for which IBI Group was the lead author, this section provides suggested practices that would be applicable in Kitchener for improving site design of non-residential developments for cycling.

3.6.1 SITE ORGANIZATION

Site organization is one of the first stages of site design and has a significant impact on elements that affect sustainable transportation. Typical decisions that are made at this stage include building location and placement, parking lot size and configuration (e.g. at grade, above grade or below grade) and entrance locations.

Some of the design considerations made at this initial stage of site design that would help to create better environments for cycling include:

- Ensure that the building is parallel to the street and at a consistent set back provides a well defined public edge
- Animate the public sidewalk with street front uses
- Locate ancillary uses (e.g. daycares, convenience stores, etc.) closest to potential users
- Locate the highest density uses close to intersections
- Provide building entrances close to street and transit stops in order to animate the street and minimize walking distances
- Construct mixed-use development to allow people to live near work
- Minimize parking supply to provide opportunities for other uses such as parks while discouraging auto use
- Locate surface parking to the rear of site, away from pedestrian activities

3.6.2 SITE LAYOUT

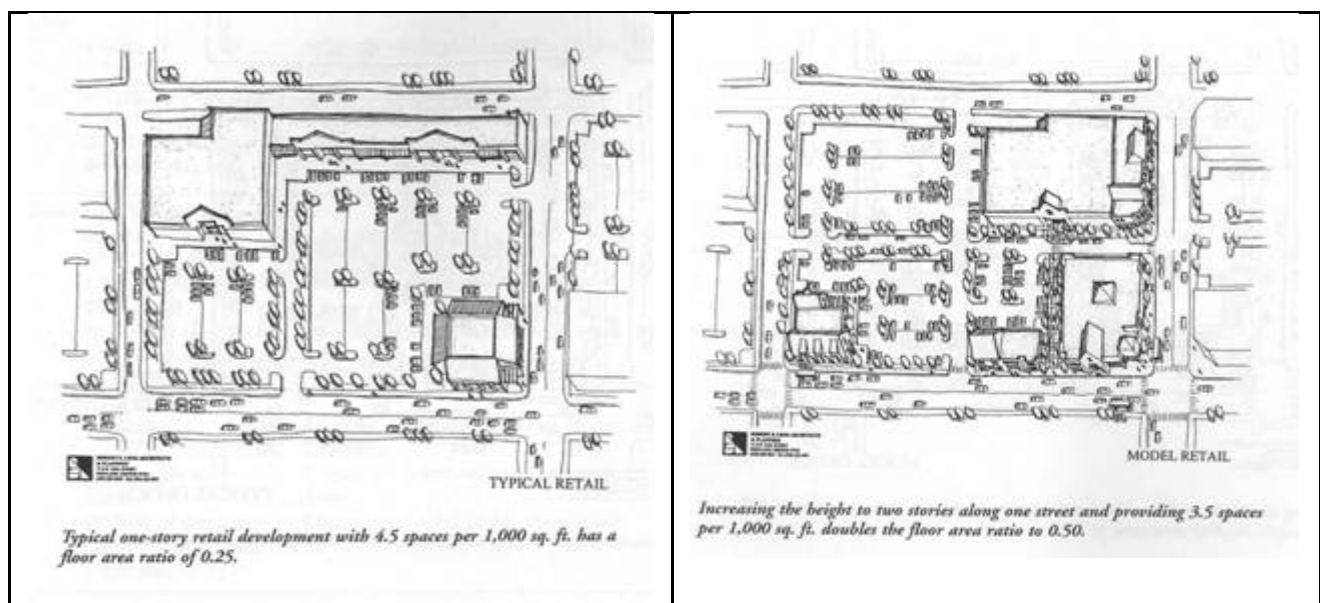
Site layout determines how pedestrians, cyclists, transit users, and motor vehicle drivers and passengers will arrive at the site and travel through the site. As a result, site layout has a significant impact on whether users of different modes can safely and comfortably co-exist. Major decisions at

this stage of the design process include determining the internal road configuration (where internal roads or driveways are required), parking layout and configuration, and the location of transit facilities, bicycle facilities and passenger pick-up and drop-off areas in relation to buildings and the internal and/or adjacent street network. Elements of site layout include:

- Pedestrian crossings, including mid-block crossings are well defined
- Pedestrian connections are possible through the site
- The number of driveways and mid-block access/egress is minimized
- Transit stops are provided close to main generators and key pedestrian routes
- Loading areas are underground in order to minimize visual impact and maximize safety
- Where loading is above ground, access does not interfere with pedestrians and cyclists
- Short-term bike parking is located in visible areas, protected from elements and near entrances to buildings
- On-street parking is factored into supply and provides a buffer between pedestrians on the sidewalk and the motor vehicles in adjacent travel lanes
- Parking lots are developed in modules and pedestrian routes are protected
- Preferred carpool/vanpool parking is provided closest to destinations
- Avoid drive-through windows, which tend to sever pedestrian movements through a site and add to vehicle emissions due to idling

Typical retail site layout versus model layout to better accommodate active transportation are illustrated in Exhibit 11. Contrasting examples showing the impacts of site layout are provided in Exhibit 12.

Exhibit 11: Typical versus Model Site Layout



Source: TRI MET, Planning and Designing for Transit Handbook

Exhibit 12: Contrasting Examples of Site Layout

	Poor Considerations for Active Transportation	Good Considerations for Active Transportation
Pedestrian-vehicle interaction		
Pedestrian routes		
Cycling Routes		
Transit Connections		

3.6.3 SITE INFRASTRUCTURE

Site Infrastructure is typically designed in greater detail once the general layout of buildings, parking, access and internal roads has been established. The design of site infrastructure, which includes decisions on road, bikeway and sidewalk widths, intersections, materials and treatments, can influence the “pedestrian-friendliness” and accessibility of a site.



3.6.4 SITE AMENITIES

Site amenities are generally considered later in the site design process, but are no less important for sustainable modes than other site design aspects. **The most important thing is that amenities for pedestrians, cyclists and transit riders be considered as part of the initial site design, rather than after a project is completed.** Factors such as landscaping, bicycle parking and change rooms can make the difference between a person choosing to walk, cycle or ride transit and taking their vehicle. While some of these features may involve extra upfront costs, the long term financial benefits can be covered by improved employee satisfaction, increases in site value and reduced need for auto facilities.



3.7 Bicycle End-of-Trip Facilities

Bicycle parking can encourage people to bike because they have a place to lock their bicycle at their destination. When people have their bicycle stolen, about two thirds ride less frequently and a quarter of them stop cycling altogether.

Designated bicycle parking installed properly in a good location is more orderly, prevents damage to trees, street furniture and prevents bikes from blocking the sidewalk or other pedestrian or vehicular paths. It also helps legitimize cycling as transportation and supports economic development.

Short-term bicycle parking for less than a few hours can consist of a simple rack designed to support the frame of the bicycle and allow locking of both the frame and the two wheels. They are usually provided for visitors and shoppers. Long-term bicycle parking for more than a few hours consists of racks or lockers, secured or enclosed, and sheltered or indoors. It is typically provided at multi-family residential development, workplaces and transit stations.

3.7.1 BICYCLE PARKING GUIDELINES

Good bicycle parking is an easy concept but often executed poorly with racks unusable, empty or damaged. Bicycle parking guidelines address:

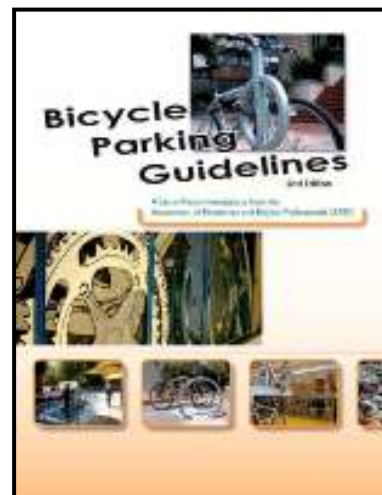
- Good parking racks versus poor racks for supporting and locking bicycles
- The location of racks generally on a site or along a public road
- The spacing of racks in relationship to each other and other obstacles or building walls to allow easy access by cyclists and room for multiple bicycles

Expanded guidelines can include information on bicycle shelters, enclosures, lockers, and related amenities such as clothing lockers or racks, wash basins, change rooms, showers, etc. The Association of Pedestrian and Bicycle Professionals (APBP) has published Bicycle Parking Guidelines that include a discussion of the rack element, combining multiple racks into a parking area, and the location of bicycle parking in relation to building entrances

(http://www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf, March 2010)

The **City of Toronto** has developed draft *Guidelines for the Design and Management of Bicycle Parking Facilities* (http://www.toronto.ca/planning/bicycle_parking_guide.htm, March 2010) intended to improve the quality of bicycle parking that is secured through the development approval process. The Guidelines provide planners, developers and property managers with information to support the design, construction and management of high quality bicycle parking facilities. Although aimed at new developments, the Bicycle Parking Guidelines can also be applied to existing developments looking to improve bicycle parking facilities.

The **City of Portland, OR**, provides a Bicycle Parking Facilities Guidelines on their web site (<http://www.portlandonline.com/transportation/index.cfm?c=34813&a=58409>, March 2010) that covers the basics of what is a good rack and a good location. The guide is intended to help property owners save money by installing bicycle parking facilities that work, whether they are required or volunteering to install bicycle parking. The guide suggests that "if you see bicycles locked to trees, posts or other stationary objects nearby, you probably need bicycle parking. If you have bicycle parking that is rarely used it may be poorly located or of a type that offers little security." Links on the same web page are provided for the City's bicycle parking maps, bike locker rental program, and Bike Central program providing access for a monthly fee to showers and change rooms.



3.7.2 ZONING BY-LAWS, DEVELOPMENT POLICIES AND PROGRAMS

Zoning by-laws should be revised and development policies, guidelines and programs should be developed in order to address the following end-of-trip facilities:

- Design guidelines for new and retrofit shorter-term bicycle parking (bicycle racks), long-term, more secure bicycle parking (enclosures, lockers, bicycle rooms, etc.) and shower / change rooms and amenities.
- For all land uses other than single family, bicycle parking by-laws including shorter-term bicycle parking for visitors and longer-term, more secure bicycle parking for residents or employees. If longer-term bicycle parking is required, expand the by-laws to include complimentary change rooms / showers and related amenities.
- End-of-trip facilities should be in place at all City-owned properties.
- Bicycle parking program within the City's road right-of-ways to address bicycle parking deficiencies at existing developments.

- Bicycle parking program to retrofit existing properties on site.

The **City of Toronto** installs hundreds of post and ring bicycle parking racks on City sidewalks and boulevards every year (<http://www.toronto.ca/cycling/postandring.htm>, March 2010). The stands are provided free of charge in response to requests received from businesses, residents and cyclists. The program is intended to provide public bicycle parking facilities at destinations that are regularly frequented by cyclists. Priority is given to locations where there are few suitable alternatives (parking meters, sign posts, etc.). Transportation Services staff perform site inspections at all requested locations. The **City of Portland, OR**, also installs free bicycle racks on the sidewalk in front of businesses as long as the location meets minimum requirements (<http://www.portlandonline.com/transport?c=34813&a=58384>, March 2010). Over 2000 have been installed to date.



The Boston **Metropolitan Area Planning Council** ME (MPAC) had a Regional Bike Parking Program that provides communities in MAPC's region with the opportunity to purchase bike racks through a discount purchase contract with three suppliers.



The City of Burlington and Whitehorse have programs that install bicycle racks as part of public art programs. The bicycle racks outside the Royal Ontario Museum reflect the museums themes.

The **City of Vancouver** has both bicycle parking and shower / change room by-laws (<http://vancouver.ca/commsvcs/bylaws/PARKING/sec06.pdf>, March 2010). This example demonstrates that bicycle parking and change room / shower by-laws can be comprehensive and specific to a wide range of land uses. Off-street bicycle parking is divided in two classes: Class A consists of a bicycle room, compound or bicycle lockers and Class B consists of bicycle racks. The land uses include dwellings with three or more units, institutional, cultural and recreational, office, retail and service, manufacturing, transportation & storage, utility & communication uses, wholesale and live-work use. The City of Vancouver by-law for change rooms and showers specifies the number of water closets, wash basins and showers required at a new building, based on the number of Class A bicycle parking spaces required. If facilities provided on-site as part of an employee fitness centre meet or exceed the requirements and are accessible to cyclists before and after work shifts, additional shower and change facilities for cyclists are not required. The City of Vancouver also has a design supplement to the bicycle space parking by-law to further guide the development of well-designed and located bicycle parking (<http://vancouver.ca/engsvcs/parking/enf/pdf/bpds.pdf>, March 2010).

On April 22, 2009, New York City approved a text amendment to the Zoning Resolution to require all new multi-family residential properties, community facilities, and commercial buildings to have secure bicycle parking. Most cases require enclosed bicycle parking. The zoning ordinance is applicable to all new buildings, enlargements of 50% or more, and conversions to residential uses, and requires the quantities for specific facilities as listed in Exhibit 13.

Exhibit 13: Bicycle Parking Requirements, New York City

Facility Type	Units or Square Footage (ft ²) per Space	Exemptions
Residential (multifamily)	2 units	10 units or less, separately calculated if attached houses with separate entrances
Commercial Offices	7,500 ft ²	Buildings requiring ≤ 3 spaces (<26,250 ft ²)
Retail and Other Commercial	10,000 ft ²	Buildings requiring 3 spaces or less (<70,000 ft ²)
Entertainment	20,000 ft ²	Buildings requiring 3 spaces or less (<70,000 ft ²)
Community	10,000 ft ²	Buildings requiring 3 spaces or less (<35,000 ft ²)
Universities/Colleges	5,000 ft ²	Half of the spaces may be unenclosed
Public Parking Garage	10 vehicle spaces	Garages with less than 35 car spaces

3.8 Criteria for Bicycle-friendly Communities

The League of American Bicyclists started a program in 1996 to recognize communities working towards becoming more bicycle-friendly. A Bicycle Friendly Community (BFC) welcomes cyclists by providing safe accommodation for cycling and encouraging people to bike for transportation and recreation. The BFC application provides a comprehensive picture of a community by asking questions across five categories often referred to as the Five Es. These are Engineering, Education, Encouragement, Enforcement, and Evaluation & Planning. A community must demonstrate achievements in each of the five categories in order to be considered for an award. Communities with more significant achievements in these areas receive superior awards.

The program requires an in-depth assessment of what's really going on in the community related to bicycling. The program enables communities to truly benchmark their progress against similar sized or comparable places. A renewal process has been built into the program to ensure no community is able to coast or rest on its laurels. And the four levels of award have provided a clear incentive to keep doing more. A simplified version of the criteria used to examine a community's efforts in becoming more bicycle-friendly is provided in Exhibit 14. It provides a starting point for understanding the wide variety sectors and initiatives that work together to the benefit of cyclists and the community as a whole.

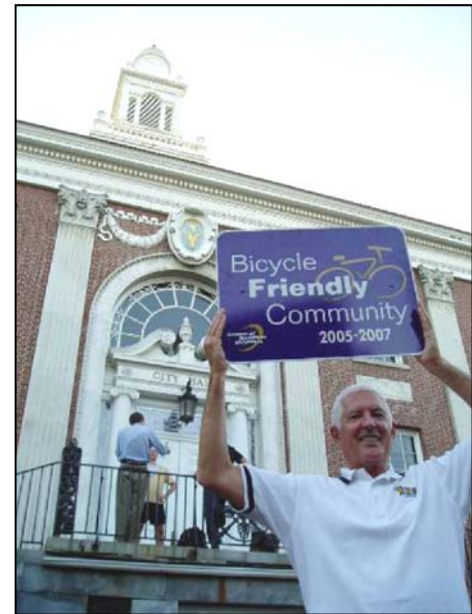


Exhibit 14: Criteria from the League of American Bicyclists Bicycle-friendly Communities Award Program

Engineering:	Encouragement:
Routinely accommodate cycling in roadway planning, design, construction and maintenance	Promote Bike Month
Train City engineers and planners on how to accommodate cyclists	Promote Bike to Work Day
Make bridges accessible to cyclists	Promote an annual bike tour or ride to the general public
Provide bike racks at places of employment, retail and community	Support community cycling clubs and advocacy organizations
Permit bikes on all public transit	Support Safe Routes to School programs
Provide bike lanes on major streets	Centre a youth recreation or intervention program around cycling
Provide multi-use pathways	Publish a bike map
Sign bike routes	Enforcement:
Maintain bikeways and routes	Support a police liaison with the cycling community
Provide showers/change rooms at places of employment	Train police regarding traffic laws as they apply to cyclists
Evaluation and Planning:	Target enforcement to encourage cyclists and motorists to share the road safely\
Know how many trips are by bicycle	Support on-bike public safety employees
Know how many cyclist/motor vehicle fatalities occurred in the last 5 years	Education:
Know how many cyclist/motor vehicle crashes occurred in the last 5 years	Campaign for motorists to share the road with cyclists
Provide a point of contact for cyclists to submit ideas/concerns	Provide adult cycling education
Update the City's comprehensive bicycle plan and provide funds to implement it	Provide bicycle safety programs for children in schools
Commit to implementing the bicycle plan	Make bicycle safety materials available to the public
Plan and implement an integrate cycling network of trails, bike lanes, and routes	Include bicycle safety education in local activities such as tax or parking fine payments, utility bill inserts, etc.
Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	

4. CONSULTATION

The Kitchener Cycling Master Plan was directed by a Steering Committee of City staff and Kitchener Cycling Advisory Committee representatives. The recommendations were guided by consultation with the Kitchener Cycling Advisory Committee, stakeholders, and members of the public through consultation events. Those events are documented below.

4.1 Kitchener Cycling Advisory Committee

Consultation with the Kitchener Cycling Advisory Committee (KCAC) was initiated early in the Cycling Master Plan study to incorporate their concerns about cycling in the City and discuss potential improvements and opportunities. The initial consultation consisted of a cycling tour followed by a presentation and discussion at a KCAC meeting.

4.1.1 CYCLING TOUR

The cycling tour was held on October 13, 2009. Ron Schirm, staff administrator of the KCAC and project lead for the study, had prepared a tour to experience a number of the existing facilities and view issues and opportunities.

Following the cycling tour, KCAC members were asked to identify opportunities (the “good”) and issues (the “bad”). These are presented in Section 5.1.1, page 48.



4.1.2 KCAC MEETING

The Cycling Master Plan was discussed further at the KCAC meeting on Tuesday, November 10, 2009. IBI group presented bikeway designs concepts. KCAC members then marked their ideas for improvements on maps. KCAC members were asked to consider the criteria that the League of American Bicyclists uses to designate bicycle-friendly communities and select what they think are their top five priorities for the City of Kitchener.

4.2 Stakeholder Workshop No. 1

Twenty-two people representing 17 diverse government, non-government and private organizations from across the region participated in a stakeholder workshop on November 10, 2009. A representative from the local media, the Waterloo Region Record also participated as a stakeholder. The purpose of the workshop was to:

- Describe the approach to the master plan
- Understand cycling-related activities undertaken by stakeholders/organizations, their effectiveness and any gaps
- Identify issues, opportunities and potential partnerships to be integrated into the cycling master plan
- Have stakeholders prioritize initiatives using the “Bicycle-friendly Communities” tool

A range of issues and opportunities were identified by stakeholders in order to inform the vision and priorities of the Cycling Master Plan. In addition, participants were asked what they thought were the top five priorities that the City of Kitchener should do to make it a more bicycle-friendly community. These perspectives are presented in relevant sections of this report.

4.2.1 CYCLING INITIATIVES IN KITCHENER

A multitude of activities are being undertaken in Kitchener, Cambridge and Waterloo that are helping to make cycling a safer, more comfortable and viable choice. Activities can generally be grouped into the following categories:

- a) *Education and safety training* – e.g., school-based and Can-Bike cycling courses, bike fitting and bike repair workshops
- b) *Communications and messaging* – e.g., “Share the Road” signs and “Take the lane” blog
- c) *Events* – e.g., car-free festival, films, children's rodeos and sponsoring Bikeapolooza
- d) *Infrastructure implementation* – e.g., installing bike racks at schools and installing bike lanes
- e) *Research, policy and planning* – e.g., publishing “Air Quality Report,” drafting Complete Streets Policy in Waterloo, City of Kitchener identifying alternative transportation since 1960s, developing urban design manual (including cycling infrastructure) and development guidelines supportive of cycling.

4.3 Open House No. 1

Open houses were held on Saturday, November 21, 2009 at the Kitchener Farmer's Market and the Activa Sportsplex to introduce the Kitchener Cycling Master Plan project and solicit feedback from the public on cycling policy, program and network priorities. Each open house consisted of registration, a municipal cycling survey, ten displays with information and exercises to obtain feedback, and four project representatives to explain and answer questions. A combined total of over 100 people are estimated to have participated in the open houses with 74 people registering at the Farmer's Market and 18 people at the Activa Sportsplex.

Participants were encouraged to provide information on maps available at the open house on where they live and cycle, where they believed improvements for cyclists should be made, and what, in their opinion, are the top five priorities that the City of Kitchener should undertake to make it a more bicycle-friendly community. The results of this exercise are presented in relevant sections throughout the body of this report.



4.4 Public Information Session No. 2

A final public information session was held on Wednesday, May 19, 2010 at Kitchener City Hall to introduce the draft recommendations of the Kitchener Cycling Master Plan and solicit feedback from the public. The session consisted of a registration, twelve displays, a presentation by IBI Group's Project Manager, Norma Moores, a question period, and opportunities for discussing the proposed network and policies with members of the study team or on a comment sheet. Fifty people signed the registration sheet.

Throughout the session, the public could review and comment on displays illustrating the purpose of the Cycling Master Plan, the recommended network on maps as well as recommended policies and programs for the City of Kitchener to undertake to improve and promote cycling. Participants were asked to select from the recommended policies their top five priorities for implementation. They also wrote their ideas about the draft network on maps and comment forms. The results of these exercises are presented in relevant sections throughout the body of this report.

The work done to date is exceptional. The development of a comprehensive and well-integrated cycling network is long overdue and is very much in need of the attention it is now receiving through your collective efforts.

Email from member of the public

5. CONTEXT

The cycling network was developed by mapping opportunities and barriers, reviewing aerial photography and field visits, considering City and Regional plans and public input. The following are considered:

- Existing bikeways and multi-use trails, both Regional and City facilities
- Planned bikeways and multi-use trails that have been approved in previous studies, such as the Doon South trail networks
- Origins and destinations in Kitchener that are important for residents and visitors to access by bicycle
- Physical barriers such as freeways, waterways and railways
- Opportunities to add bikeways to existing roadways through pavement reallocation and re-striping, reconstruction or resurfacing projects, and in new development areas
- Candidate routes based on suggestions from the Steering Committee, City staff, other stakeholders and members of the public

The existing trails and bikeways, existing and future land use, rapid transit corridor, key destinations, and barriers (freeways, railways, and watercourses) are illustrated on Map 1. Background information and studies that informed the map are outlined below.

5.1 Background Information, Studies and Stakeholder / Public Input

5.1.1 ISSUES AND OPPORTUNITIES

The Kitchener Cycling Advisory Committee (KCAC) identified issues and opportunities in Kitchener following a cycling tour of highlights in the City. These are summarized in Exhibit 15, where KCAC members were asked to identify opportunities (the “good”) and issues (the “bad”). The KCAC agreed that the successful implementation of the Cycling Master Plan requires champions, ownership, and a department lead.

Map 1: Existing Conditions, Key Destinations, Opportunities and Barriers

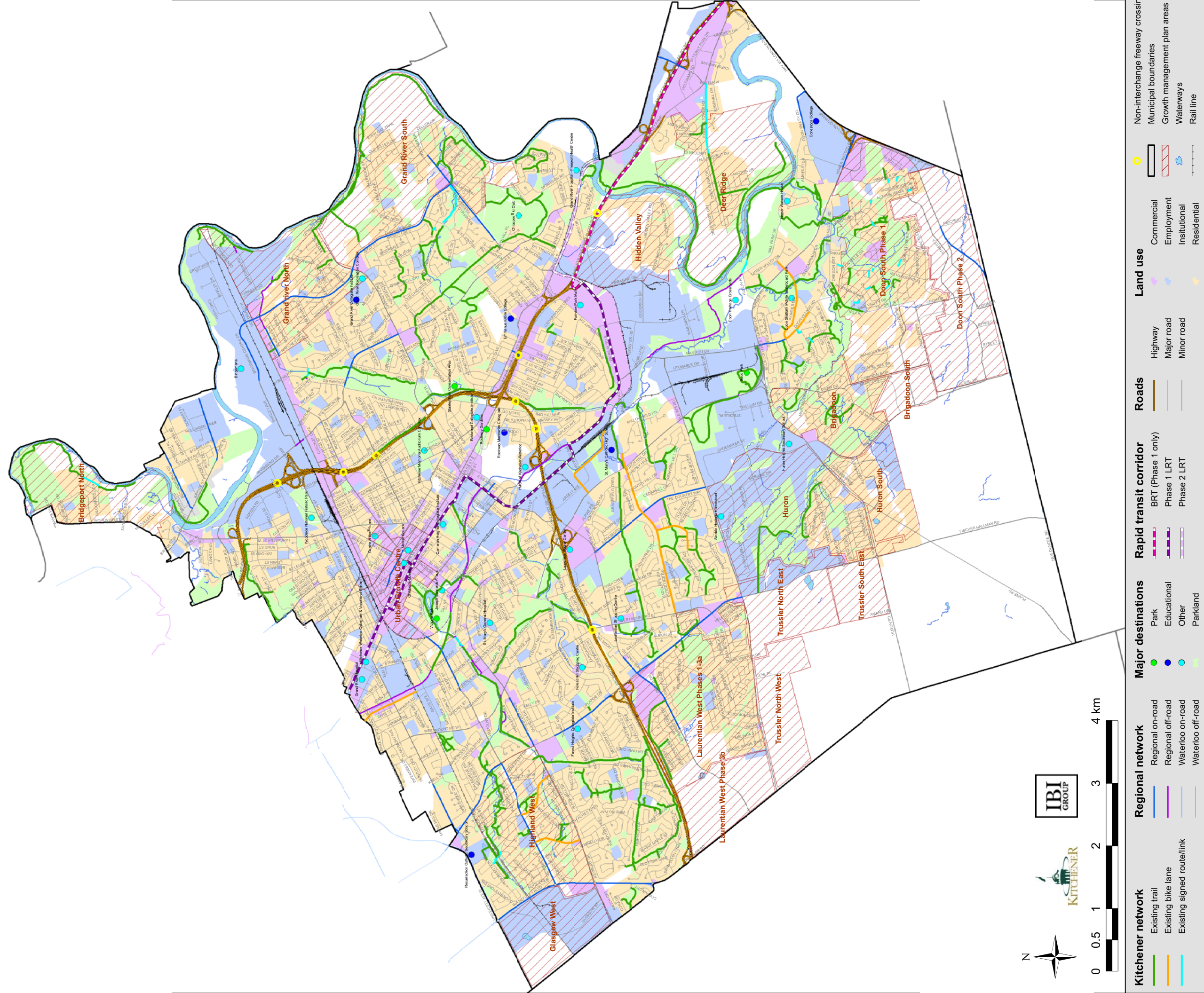


Exhibit 15: Summary of Opportunities and Issues Arising from KCAC Cycling Tour

Opportunities or the “good”	Issues or the “bad”
Specific Locations - Cherry Street trail access to the Iron Horse Trail - Queen Street crossing of the Iron Horse Trail - Sims Estate Trail behind homes along the Grand River (Chicopee area) - Walter Bean extension - Forest Heights has a well connected trail network - Grassy corridor between Krug and Frederick along Highway 85 is an opportunity to connect a trail segment from along highway 85 from Ottawa Street to Frederick Street - Spur line trail—proposed \$2M, 2.5 km long trail with rail; Region of Waterloo will co-ordinate ownership; Cities of Waterloo and Kitchener are being asked to address drainage, lighting and amenities - Freeway crossing needs: - Fairview Road - Hidden Valley bridge - Dual culvert at creek near Westmount and Ottawa connects trail to Laurentian - Pedestrian bridge needed at Forest Heights / Sunrise Centre following the hydro corridor - Fisher Hallman Road - Ottawa Street - Courtland Avenue—opportunity to formalize trail and connect with Block Line Road extension and link Trans Canada Trail	- Queen Street is a missed opportunity—it could have had curb inlets and other details for cyclists - Glasgow / Iron Horse Trail crossing needs a median refuge island - Victoria Street / Iron Horse Trail crossing needs to be improved - Forest Heights Trail along Conestoga Parkway—cannot get across the expressway to access Hydro Trail to Sunrise Centre - Stairs at the end of the Sims Estate Trail is a temporary fix—details need to be address
Trails and Bikeways - Open space and many trails can take you places - Some roads have space and some open space corridors provide a high degree of connectivity - On local streets, change stop signs to yield signs, traffic circles to make it less cumbersome for cyclists - Iron Horse Trail is a success and a model of best practice for transportation oriented trails. - Rapid Transit integration—bike racks on vehicles; bike racks at stations; bikeways along corridors is tricky due to constrained width, consider parallel routes like King, Victoria, Ottawa - Example of good maps: Whistler’s laminated descriptive maps	- Need to pay attention to the details - Why are cycling features so difficult to implement in reconstruction and redevelopment projects? - Need more functional transportation routes from home to work - Trail connections at roadways are inconsistent in design—curb cuts, crossings, signage, barriers, etc. - Create connectivity east-west and north-south - Lack of on-road and variety of on-road facilities - People have to feel safe and comfortable - Need the right facility in the right place - Need small signage or descriptions to address “where do I go?” - Need “public education” around shared lane markings (“sharrows”) for drivers, cyclists, students, adults and youth

Opportunities or the “good”	Issues or the “bad”
End-of-trip Facilities	
• Retrofitting possible through Region of Waterloo TDM program • Create a Bike Station in the core with the Rapid Transit Station or \$15 M parking garage • Parking requirements ensure that developers provide 10% of all parking as bike parking	• Bicycle and cyclists security is linked to location, location, location • Needed in many places to accommodate “door to door” transportation because “bikes can get right to the door” • More than just bike racks: lockers, showers; offer developers credit if they supply these
Safety and Promotion	
• “Ride with me” or “bike buddies” —expand program of pairing cyclists with those interested	• Safety is a concern—how to educate drivers; more signage and messages to drivers

At an initial workshop with stakeholders, a range of issues and opportunities were identified in order to inform the vision and priorities of the Cycling Master Plan. The following seven were repeatedly identified as priority issues:

- *Political will* - to address policies, costs, infrastructure needs and NIMBY (*Not In My Backyard*) public positioning
- *Regional-municipal partnerships* - education, messaging, developing a master plan consistent with initiatives of neighbouring municipalities and a uniform signage strategy
- *Signage strategy* - striving for regional consistency, including trails, ultimately enticing people to cycle
- *Connectivity* - linking to neighbouring municipalities, correcting “trails and bike lanes to nowhere” phenomenon/joining pieces, connect Cambridge to Kitchener downtown, address major barriers between Cambridge and Kitchener
- *Education* - of all road users and promoting attitude changes via driver education
- *Quality Designs* - ensuring proper installation of cycling infrastructure, installing more bike parking, including multiple cycling users in designs and enlarging support, adopting Bicycle-friendly Community approaches
- *Safety and comfort* - overarching and repeated issue, some stakeholders advocated that cycle network be kept separate from roads.

5.1.2 KEY ORIGINS AND DESTINATIONS IDENTIFIED BY THE PUBLIC

A large map of Kitchener-Waterloo and area was displayed at the first Open Houses and participants were asked the question “Where do you live and cycle?”. Participants placed a green “dot” where they lived and 5 yellow “dots” for where they wished to cycle on the map. A copy of the map is the Appendix. From this exercise, several key locations were revealed as places people wished to cycle (listed from most popular to least):

- Downtown Kitchener, including the large catchment area that surrounds the Downtown
- Uptown Waterloo
- Wilfrid Laurier University (main campus)
- University of Waterloo (main campus)
- Conestoga College (main campus)

- Several points along the Grand River
- A residential area adjacent to (east) the Stanley Park Conservation Area
- St. Jacobs
- Fairview Park
- The HRDC office at 409 Weber Street West
- Laurentian Power Centre
- Kiwanis Park
- A smattering of places in Kitchener, Waterloo, Petersburg, New Hamburg in residential areas, smaller recreation areas, on major arterials and on trails

Through this exercise, residential locations were also identified (shown from most popular to least):

- Residential areas adjacent to or near downtown Kitchener
- Uptown Waterloo
- South Kitchener near Fairview Park and Chicopee
- A limited distribution throughout Kitchener-Waterloo

5.1.3 AREAS FOR IMPROVEMENT IDENTIFIED BY THE PUBLIC

A large map of Kitchener-Waterloo and area was displayed at the first Open House and participants were asked the question “Where should improvements be made in Kitchener for cyclists?” Using a marker, participants marked the locations of importance to them – problems they encountered and suggestions. They could also write their comments directly on the map. An image of this map is provided in the Appendix.

5.1.4 GROWTH AREAS

Growth areas within the City of Kitchener based on the Kitchener Growth Management Plan were reviewed and included on the map as opportunities for future bikeways. These included: Urban Growth Centres, Mixed Use Corridors, Nodes (Mixed Use/Primary), Neighbourhood Mixed Use Centres, Bridgeport North, Grand River North, Grand River South, Hidden Valley, Deer Ridge, Doon South Phases 1 and 2, Brigadoon, Brigadoon South, Huron, Huron South, Trussler (Southeast, Northeast and Northwest) Laurentian West Phase 1-3A, 3B, Highland West, and Glasgow West.

The Doon South community is currently being developed in the southwest part of the City. Roadways that are candidates for bikeways were based on the Schedule B Amendment of the Kitchener Official Plan—Transportation. Those collectors not yet built were identified for bike lanes, and planned arterials for cycle tracks, along with multi-use trails using the heritage road network.

5.1.5 RAPID TRANSIT

The Region is proposing a rapid transit system within a 30 km Central Transit Corridor (CTC) that links together the urban centres of Cambridge, Kitchener, and Waterloo, and enhancements to conventional transit throughout the Region to provide residents with greater transportation choice, promote urban redevelopment and intensification, improve air quality and public health, provide a more balanced and integrated transportation system, and protect the rural countryside against future urban expansion. A Light Rail Transit (LRT) system subject to appropriate federal and provincial funding from Conestoga Mall in the City of Waterloo to the Ainslie Street Terminal in the

City of Cambridge provides the best long-term, environmentally sustainable solution to help manage our community's future. The Region will stage implementing a full LRT system with the first stage including LRT from Conestoga Mall in Waterloo to Fairview Park Mall in Kitchener; adapted Bus Rapid Transit (aBRT) from Fairview Park Mall in Kitchener to Ainslie Street Transit Terminal in downtown Cambridge; re-aligned Grand River Transit (GRT) bus service to provide an expanded level of service to the rapid transit stations along primary feeder corridors; express bus service, modeled after the current iXpress service, to high ridership centres throughout the Region (i.e. Conestoga College); and connections to intercity transit such as GO Bus, GO Train, Greyhound and VIA. The rapid transit corridor is an important destination to which bikeways should connect.

5.1.6 REGIONAL ROAD CLASSIFICATION

The Draft Region of Waterloo Transportation Corridor Design Guidelines provide design standards for planning and designing complete streets that include space for all modes of transportation. Cycling facilities are planned on all road classifications, with the exception of the Community Connector roadway. The Community Connector roadway is a higher speed, high volume road and the mixing of on road cycling / vehicular traffic should only be considered after other options, such as off-road facilities or alternate parallel cycling routes are considered. In Kitchener, the Community Connectors consist of:

- Ira Needles Boulevard north of Ottawa Street
- Homer Watson Boulevard south of Ottawa Street
- King Street from Sportsworld Drive to Highway 401
- Sportsworld Drive / Maple Grove Road east of King Street

5.1.7 NETWORK CHANGES IDENTIFIED BY THE PUBLIC

The draft recommended network and policies were presented to the public for feedback. A summary of comments marked on the maps at the meeting, and received on comment forms and by email is provided in Exhibit 16

Exhibit 16: Summary of Comments from the Public on the Draft Recommendations

Public Comments from Maps, Comment Forms and Emails
Bikeway Improvements
• People living in the new subdivision south of Pioneer Road are trapped; need more connections • Pedestrian/cycling bridge crossing the Grand River near Old Mill Road • Plains Road from Huron Road South should be a bike route • Weber Street should be made much more bike friendly • Belmont Ave West bike lanes are completely disconnected • Crossing signal needed at Ahrens at railway tracks • Continue with Belmont Avenue trail/link • Sydney Street South needs a bike lane • Need bike lane on Weber Street especially over Expressway • Fairway and Wilson Avenue intersection is dangerous – needs treatment • Modify one-way streets with two-way contra flow bicycle lanes • More crossings of the Conestoga Parkway are needed • Add multi-use trails on both sides of Homer Watson Boulevard • I very much appreciate the plans for "cycle tracks" paralleling roads

Public Comments from Maps, Comment Forms and Emails

- Legislation allowing the "Idaho Stop Sign" - cyclists treating stop signs as yield signs - would be much cheaper than replacing four-way stop intersections with mini-roundabouts

Trail Improvements

- Several comments about the danger crossing the rail tracks on the Iron Horse Trail, the gates, lack of lighting along the trail and the need for winter maintenance (these comments will be forwarded to City of Kitchener staff working on the Trails Master Plan)
- Walter Bean Trail section missing near Hesh Crescent
- The foot bridge on Riverbend Drive at the railway needs the addition of a narrow ramp to make walking bikes up/down stairs easier (3 comments)
- The median island on Queen Street at the Iron Horse Trail really helps for crossing the street
- Upgrade trail with active railway from Downtown to Uptown Waterloo
- Bridges needed at end of Centennial Road to connect with trail across river, at the end of railway tracks/Shirley Drive, and to connect from Yagur Road to Strasburg Road over Conestoga Parkway

Policies

- Avoid 'weasel words' such as "consider" and "routinely". If you want something to happen, you need to be clear, concise, and specific! To suggest that one should "consider updating the zoning-bylaws to including bicycle parking..." will effectively ensure that it never gets done. Plus, how do you measure and monitor such vague commitments?!?
- Add the words "well designed" and "easily accessible" to each of the policies that reference bicycle parking facilities. Bike racks are often located at public and other facilities, but many are cheap, poorly designed, and/or located in areas wherein they do not provide for easy access and monitoring. The concept of 'eyes on the street' should always apply to the placement of bicycle parking facilities to as to avoid vandalism and theft. The issue of maintenance also needs to be given thoughtful consideration. A number of the bike racks where I park my bike - including at the GRT Terminal in downtown Kitchener - contain rusty, twisted remnants of old bicycles, most missing their rims, seats, and everything else that could easily be removed, that were likely first parked there when dinosaurs walked the earth. To encourage new riders to use these parking facilities, they need to be well-maintained and inviting, not cluttered with rusty, old bicycle remnants from years gone by.
- If you want people to use bicycles more, get the roads fixed, repair numerous pot holes, keep existing bike lanes on City streets clean and free of gravel, and keep hammering into motorists to be friendly.
- I like the concept of performance monitoring process, but for it to be of any value, that which is being monitored needs to be both specific and measurable, which, in turn, requires that you set clear objectives and targets. Also, I think you need to assign/define accountability. "It is recommended that the City of Kitchener implement a performance monitoring system...", which "could be combined with communication strategies that raise the profile of cycling so that progress (or lack of progress) is given greater attention". Unfortunately, it is not specified by who? If such a process is to be anything more than just a marketing tool, accountability needs to be clearly defined.

Network Priorities

- King Street crossing King Street Off ramp—the draft plan takes cyclists 1 km away from King
- Highland Road West needs to be an improvement priority
- Mill Street should be a priority
- Highlight Regional Roads so north-south and other direct routes are made explicit (even if only to expose a gap in the network)
- More bicycle parking at the Kitchener Market
- If the priority is to reduce our collective environmental impact from transportation activities, then the priority should be to support inner-city commuter routes rather than routes that are primarily for recreational riding
- Those that follow arterial routes—people need to be able to get places
- More bike racks in the downtown core, Victoria Park, etc. (everywhere there's a municipal lot, why is

Public Comments from Maps, Comment Forms and Emails

there not a bike parking area?)

- More signed and lined bike lanes!
- The bikeways that I think should be constructed first are routes which help connect existing routes so that people are more likely to use cycling lanes and the public perception changes if they see bike lanes getting used.

Policy Priorities

- Winter maintenance of bike lanes
- Better signage (i.e., Vancouver), better signage on all trails, street signs on trails at intersections (3 comments), and replace signage on bike lanes
- A well thought-out and easy to navigate signage strategy needs to be developed. However, I worry about the extent to which such signage will simply get lost in the visual clutter of the streetscape. Ride down any urban street and you are literally bombarded with signage of every size, shape, and variety. For it to be effective, the signage needs to be prominent, CONSISTENT, simple and easy to follow. Some of the samples that were included will simply get lost in the current visual clutter of the streetscape.
- Cycling map for Waterloo Region
- Share the road and enforcement of sharing; keep hammering into motorists to be friendly (2 comments)
- Secure parking
- Expand the network as quickly and as systematically as possible
- Stop subsidizing employee parking; promote showers, and secure storage for City employees who cycle to work
- Discuss with the Region more active education and policing regarding bad motorist behaviour regarding bicyclists, and bad bicycling behaviour regarding motorists and pedestrians. Particularly: warnings for cyclists not following the rules of the road and those without bells and lights at night. I realize this is a Regional responsibility, but it impacts public perception regarding the needs for cyclists in the City.

6. SUPPORTIVE CYCLING POLICIES

6.1 Existing Policy Direction

The City of Kitchener has clearly adopted strategic directions that align with cycling becoming a viable transportation choice and means of recreation for residents, employees and visitors. Policies adopted more than a decade ago express clearly the direction in which the City intended to develop to support more and safer cycling. Despite these efforts, there were few on-road bikeways developed by the City over that decade and the number of trips by bicycle has not changed significantly.

Kitchener's current objectives and policies are still valid yet lack elements that allow the following:

- Policy, processes or institutional structure that would lead to actual implementation of approved objectives and policies
- Updated design concepts to reflect current knowledge and innovation
- Commitment to appropriate bikeway treatments on all roads (many quiet local streets may require no special treatments to be suitable for cycling)
- Approaches to retrofit existing roadways with appropriate bikeway treatments
- Recognition that key trails in the overall cycling network require attention to design treatments, signage and ongoing maintenance to improve their connectivity and function as quality cycling facilities
- An understanding of effective signage and way-finding strategies for cyclists
- Strengthened and effective partnerships and programs that focus on behavioural shift programs to encourage people to travel by bicycle
- Ongoing and predictable financial commitment for implementation and maintenance

Policies could be strengthened so that bigger picture objectives can be enforced, ultimately resulting in higher ridership. For example, bicycle parking and end-of-trip policies and guidelines can be incorporated into parking supply by-laws; design criteria can be updated to require bike lanes on all new collector roadways; traffic impact studies can be required to address the bikeway network in new communities; etc. Complementary policies that discourage auto use, such as auto parking maximums and road diets can be adopted.

6.2 Bicycle-friendly Communities

As described in Section 3.8, page 43, the League of American Bicyclists had developed criteria for rating communities on how bicycle-friendly they are. These criteria reflect community polices in the areas of engineering, evaluation and planning, encouragement, enforcement and education. At initial consultation events, various groups were asked to choose their top five criteria that they felt would make Kitchener more bicycle friendly. The results are shown in Exhibit 17.

Exhibit 17: Tally of Bicycle-friendly Communities Criteria Selected by the Public and Stakeholders for Kitchener to Improve On

	Public	Stakeholders		Public	Stakeholders
Engineering:			Encouragement:		
Routinely accommodate cycling in roadway planning, design, construction and maintenance	62	12	Promote Bike Month	2	1
Train City engineers and planners on how to accommodate cyclists	15	3	Promote Bike to Work Day	5	
Make bridges accessible to cyclists	7	1	Promote an annual bike tour or ride to the general public	6	1
Provide bike racks at places of employment, retail and community	14	2	Support community cycling clubs and advocacy organizations	9	3
Permit bikes on all public transit	5		Support Safe Routes to School programs	7	3
Provide bike lanes on major streets	36	1	Centre a youth recreation or intervention program around cycling	2	
Provide multi-use pathways	6	3	Publish a bike map	26	2
Sign bike routes	6	1	Enforcement:		
Maintain bikeways and routes	15	2	Support a police liaison with the cycling community	3	
Provide showers/change rooms at places of employment	3	1	Train police regarding traffic laws as they apply to cyclists		2
Evaluation and Planning:			Target enforcement to encourage cyclists and motorists to share the road safely		7
Know how many trips are by bicycle	1		Support on-bike public safety employees	2	
Know how many cyclist/motor vehicle fatalities occurred in the last 5 years	1		Education:		
Know how many cyclist/motor vehicle crashes occurred in the last 5 years	3		Campaign for motorists to share the road with cyclists	36	4
Provide a point of contact for cyclists to submit ideas/concerns	15	1	Provide adult cycling education	9	1
Update the City's comprehensive bicycle plan and provide funds to implement it	10	4	Provide bicycle safety programs for children in schools	12	5
Commit to implementing the bicycle plan	21	2	Make bicycle safety materials available to the public	2	
Plan and implement an integrated cycling network of trails, bike lanes, and routes	24	5	Include bicycle safety education in local activities such as tax or parking fine payments, utility bill inserts, etc.	5	2
Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	5	1	Other - Be a "Gold" Certified BFC	3	
			Other - Better education for motorists to be cyclist-aware & stiffer fines for motorists not yielding to cyclists	8	

Notes:

Approximately 100 members of the public and 22 stakeholders attended the events at which these criteria were presented for their review and selection of their 'top five criteria that the City of Kitchener could do better'.

Top criteria for each group are **highlighted in yellow**.

Bicycle-friendly Communities Criteria is based on the League of American Bicyclists Bicycle-friendly Communities Award Program

6.3 Recommended Policies

Below is a list of recommended policies to provide direction for the City to enhance cycling as a viable means of transportation and recreation. The policies include existing, approved policies from the Official Plan plus new policy recommendations within this master plan.

6.3.1 REVISED OFFICIAL PLAN CYCLING POLICIES

The City shall *support residents, employees and visitors in considering cycling by:*⁹

- Developing a **network** of on-street and off-street bike lanes, *local bicycle priority streets, signed routes to key destinations, and multi-use trails*
- *Requiring* new, multi-unit residential, commercial, industrial, office and institutional developments to provide **secure bicycle parking** and *encouraging*, where appropriate, shower/change facilities for bike commuters
- Raising **public awareness** of the convenience, health and economic benefits of cycling *by articulating that cyclists will be **consistently planned for** in municipal decisions and given priority in some cases;* and
- *Supporting* **education programs** on safe and responsible cycling for cyclists, motorists and pedestrians
- Providing **bicycle parking facilities** *at public facilities that should be accessible to cyclists*
- **Systematically coordinating, integrating, and improving cycling conditions** *within the City's transportation infrastructure, services and programs*

6.3.2 PROPOSED REVISIONS TO THE ROAD CLASSIFICATION

The City of Kitchener classifies roadways according to their function to assist in managing their planning, design, operation and maintenance. The roadway classes are defined in the City's Official Plan, as summarized in Exhibit 18.

Exhibit 18: Definition of Roadway Classes in the City of Kitchener Official Plan

Roadway Type	Definition
Trunk Roads	Expressways and highways under the jurisdiction of the Province of Ontario which generally provide interregional or provincial scale service. They are constructed to Provincial Highway standards and access to abutting lands is generally prohibited. Note: Cyclists are prohibited from using freeways
Primary Arterial Roads	Roads under the jurisdiction of the Regional Municipality of Waterloo. Generally, their function is to distribute large volumes of traffic between other Arterial Roads and Major Collector Roads. The primary purpose of such roads is to carry through traffic within and between municipalities. Access to abutting lands shall be regulated.

⁹ Modifications to existing policies are in *italics*.

Roadway Type	Definition
Secondary Arterial Roads	Their function is to distribute large volumes of traffic between other Arterial Roads and Major Collector Roads. The primary purpose of such roads is to carry through traffic within the municipality. Direct access to abutting properties may be permitted.
Major Collector Roads	Their function is to collect and distribute traffic between Local Streets, other Collector Roads and the Arterial Road system. The primary purpose of such roads is to carry through traffic between neighbourhoods. Direct access to abutting properties may be permitted.
Minor Collector Roads	Their function is to collect and distribute traffic between Local Streets and other Collector Roads. They are not generally intended to carry through traffic between neighbourhoods.
Connector Roads	They generally link existing Arterial Roads and/or Major Collector Roads where the Arterial Road system and/or the Major Collector Road system do not provide the required direct connections.
Local Streets	They generally serve only the abutting properties and are not intended to carry through traffic.
Scenic-Heritage Roads	Roads which, because of their unique structural, topographic and visual characteristics, as well as abutting vegetation, built environment and cultural landscape, historical significance or location within a Heritage Conservation District are intended to be conserved.

Below are recommended changes to the road classification policy and criteria.

- Road classification criteria are recommended to **explicitly** consider the needs of cyclists within every classification.
- Cycling should be restricted only on freeways.
- On **local streets** and **minor collector roads** with lower volumes (5,000 vehicles a day or less) and lower posted speed limits (50 km/h or less), in most cases cyclists and motorists can share the roadway. Continuous traffic-calmed, local bicycle priority streets may also be provided on these roadways as alternative routes to higher speed or higher volume roads. Shared-use lane markings ("sharrows") may be used to indicate the continuity of a route; or provide guidance to cyclists adjacent to on-street parking in order to avoid the "door zone" where day-time parking utilization and turn-over are higher than typical of predominantly single-family residential streets.
- On **major collector roadways**, which carry from 5,000 to 8,000 vehicles a day with a posted speed limit no greater than 50 km/hr, the preferred bikeway type is bike lanes.
- On **collector roadways with posted speeds greater than 50 km/h** and **arterial roadways**, which carry higher volume traffic including transit and truck traffic, bikeways should provide safe space for cyclists, with ample separation from vehicular traffic. The preferred bikeway type is cycle tracks, with bike lanes being the minimal requirement.
- **Boulevard multi-use trails** may only be considered when used as a link between bikeways or multi-use trails and no other practicable options exist.

Boulevard multi-use trails may only be considered where the distance between driveways and intersections exceeds 300 m

The roadway classification modified to explicitly consider the needs of cyclists is recommended to be reviewed and updated as part of the City of Kitchener Transportation Master Plan.

6.3.3 CYCLING MASTER PLAN POLICES

Additional policies within this master plan are recommended to provide further direction and specificity on the recommended Official Plan Policies. These policies are organized around four key themes: plan for bicycle-friendly communities within Kitchener, integrate cycling into municipal practices, promote and support cycling, and implement the cycling network.

General leadership, co-ordination and implementation:

- Support a cycling co-ordinator to oversee the implementation of the plan policies and network, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public. The position can be combined with the Transportation Demand Management (TDM) specialist position recommended in the City of Kitchener TDM Plan (draft, August 2008), consisting of 0.5 full-time equivalent (FTE) for the Cycling Master Plan responsibilities.

Plan for bicycle-friendly communities within Kitchener:

- Update zoning by-laws to include bicycle parking for multi-family residential, commercial, office, institutional and industrial land uses including short-term visitor and longer-term, more secure resident and employee parking
- Develop and communicate bicycle parking guidelines for interested property owners
- Establish a program to assist property owners in retrofitting existing developments with appropriate bicycle parking
- Implement and expand the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations
- Ensure the building of bicycle-friendly developments through the development of design guidelines and the review of site plans including site organization, building placement, bicycle parking, and cycling access and routes
- Update the Road Classification to include comfortable, safer bikeways where appropriate based on the function of roadways

Integrate cycling into municipal practices:

- Recognize and include preferred cycling infrastructure (based on Road Classification) in every new road and road reconstruction/resurfacing project, with exceptions justified transparently and approved by the General Manager

- Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management
- Work with the Traffic Coordinators Committee and collaborate with the Waterloo Regional Police to encourage and enforce safe cycling skills resulting in collision reduction and prevention
- Encourage and collaborate with the Region of Waterloo in integrating cycling with Grand River Transit and future Rapid Transit including cycling route connectivity with transit stops and stations, bicycle parking at stations and stops, bicycles on vehicles, and bikeways along key transit corridors
- Actively encourage the Region of Waterloo and adjacent municipalities to consider the needs of cyclists in roadway planning, design, maintenance and operations that affect the cycling network
- Review and update roadway maintenance practises to better accommodate cycling
- Change winter maintenance of key Type 1—Transportation multi-use trails as per the trail hierarchy system to better support year-round cycling
- Create a reporting system for cyclists to report poor roadway / bikeway / trail conditions
- Provide staff training on how to better accommodate cyclists in the City's decisions and responsibilities

Promote and support cycling:

- Continue to partner with the Region of Waterloo Public Health on the delivery of cycling education programs and campaigns for youth and adults
- Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work
- Continue to partner with the Region of Waterloo Public Health and School Boards on Active and Safe Routes to School events, curriculum, school travel planning, and traffic and safety improvements in school catchment areas
- Continue to partner with the Region of Waterloo on communicating the benefits of cycling, sharing the road education, and promoting cycling and the cycling network through information sharing on a web site or other networking medium
- Tailor existing active living programs to better support cycling
- Provide new programs to deal with gaps in the stages of changing behaviour
- Develop a marketing program to promote cycling
- Provide support to events that promote cycling and encourage cycling as a means of getting to / from City events and festivals, including the provision of secure bicycle parking (self-park or valet)

Implement the cycling network:

- Implement the cycling network over time with regular and consistent annual funding
- Support the Kitchener Cycling Advisory Committee (KCAC) to vet implementation issues, assist in establishing priorities, assess performance measures and communicate progress on cycling plan implementation to politicians, staff and the public. Annual road construction and traffic calming projects will be brought forward to the KCAC for review and feedback
- Establish an audit process of existing bikeways and implement a process for continual improvement
- Future Development Charges Background Studies should consider the inclusion of funding to support the implementation of the Cycling Master Plan on existing arterial and collector roads in growth or intensification areas that are to be widened to accommodate growth

6.4 Policy Implementation Strategies

All levels of government spend considerable time and effort to develop policies, to ensure that policies are in the best interests of the public and other stakeholders, and that they are achievable publically, politically, financially and institutionally. All policies require as a minimum budget allocation for staff to administer the policy, and many require additional resources to undertake actions to meet objectives, whether it is collecting data, communicating ideas, running programs, or building and maintaining infrastructure. Governments can underestimate or not dedicate resources needed to implement policies, to overcome implementation barriers, and to ensure that policy goals are met and public impacts are realized.

Decision-makers need tangible tools to support policy implementation—to move from ideas to execution and results. Such tools should assist in implementation, address obstacles as they come up, and allow adaptation as needed to changing circumstances while still meeting the policy goals

While the original Kitchener Bikeway Study (1998) provided a policy basis for cycling in Kitchener, a gap still exists between policy statements and intentions and implementation or actions to move towards the desired results of making the bicycle a viable means of transportation and recreation. A strategy is needed to shift from policy development and into policy implementation.

6.4.1 CONVENTIONAL INSTITUTIONAL STRUCTURE

As documented in the *Kitchener Bikeway Study* (1998), it was observed in the early 1990s that bicycle-friendly communities had the following elements in common—the “three-legged stool” supporting a shift to a cycling culture:

- **Staff leaders**—until the planning and design of bicycle-friendly communities is routine within a municipality, a strategy of dedicating resources to cycling initiatives is required. There are two ways to structure staff commitment: a part- or full-time cycling coordinator or senior staff with shared responsibilities for implementation.
- **Political champions**—taking political leadership and making fiscal commitments to implement recommendations of the master plan
- **Public supporters**—an active and effective cycling committee or independent advocacy group that can provide a link between the community and the City.

Each partner in this powerful and stable "three-legged stool" has its natural areas of strength, and these can be effectively leveraged by coordinating activities such as community outreach, media advocacy, government services, public funding, political support, legislation and so on. The short-comings to the three-legged stool model is that sometimes one of the legs is weak: staff responsibilities can shift or individuals change employers; political champions can get voted out perhaps on other issues; and public groups offer up ranting, sketchy web-surfing knowledge, or become sidetracked by the strengths and issues of one member.

Many communities have fostered and assembled the champions, leaders and supporters needed to create change and we see their success in Canada: Montreal, Toronto, Guelph, Saskatoon, Whitehorse, Kamloops, Vancouver, Victoria, and emerging in Cape Breton, Ajax, Minden, Edmonton and Winnipeg to name a few. Yet a stable and sustainable approach requires that cycle-friendly policies and attitudes be internalized throughout municipal institution and structures. The approach of depending on a few leaders and champions can be haphazard and unpredictable. Sound cycle-friendly policy is formal policy; sustainable cycle-friendly practice is standing practice."

6.4.2 PERFORMANCE MONITORING AND EVALUATION

An alternative to having the right "partners" or people resources championing, leading and supporting policy implementation is to have in place a "process" that monitors progress, evaluates deficiencies and strengths, and reports on actions. Report-based monitoring and evaluation processes have been in use by health organizations, water and wastewater providers, the recycling industry, aid agencies, etc. It is designed to help people who are trying to improve social conditions in our communities.

The Transportation Association of Canada's Briefing on *Strategies for Sustainable Transportation Planning* identifies "measure performance" as one of four key principles under the theme "the way ahead".

The Briefing explains that:

Most transportation plans start to become obsolete soon after they are approved: external conditions change, action plans are adjusted, costs rise or revenues fall, and early initiatives shift the playing field for later ones. Given this fact, one way to provide decision makers with continuously relevant guidance is to follow a rigorous performance measurement process. This process would focus on actions taken and progress made toward strategic objectives (both qualitative and quantitative), but could also identify changes in analytical assumptions, shifts in social or economic circumstances, and updated financial positions. The major elements of a thorough transportation plan performance measurement strategy include key targets and indicators to be monitored, data collection activities and schedules, reporting parameters and frequencies, and required resources.

From TAC Briefing: *Strategies for Sustainable Transportation Planning* (2004)

Reporting is a key aspect of performance measurement, because the knowledge generated by monitoring and analysis is only useful if decision makers and stakeholders are aware of it. Reports presenting readable information in a way that effectively communicates successes

Principle 11

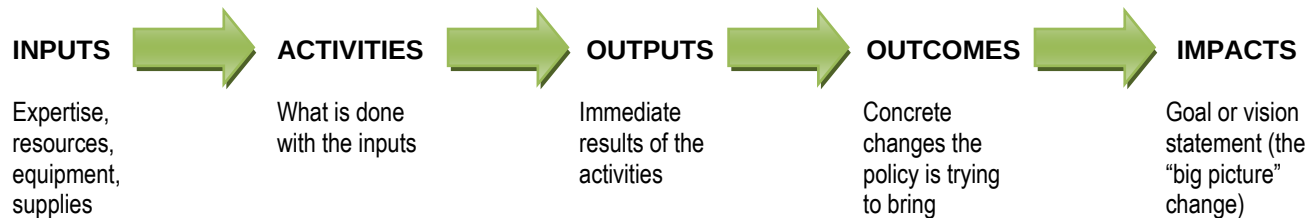
Measure performance

- Highlight the need for a performance measurement program to monitor progress toward planning goals.
- Identify a performance measurement framework that is tied to the plan's strategic framework and monitors outputs, outcomes and external influences.
- Identify a reporting strategy to effectively communicate performance measurement results.

and ongoing challenges can capture the attention of community groups and the media, helping to raise public awareness of results achieved and the need for continued action.

Performance measurement and evaluation entails developing a framework with a sequence of results that would be expected from the Cycling Master Plan policy goals. This “results chain” is usually expressed as a flowchart from inputs to outputs to outcomes to impacts, as illustrated in Exhibit 19.

Exhibit 19: Results Chain for Performance Monitoring



The cycling performance measurement framework is recommended to be considered in the City of Kitchener Transportation Master Plan's overall transportation performance monitoring and evaluation process. Specific cycling outcomes can be defined as a subset of the overall transportation outcomes.

6.4.3 OPTIONS FOR THE CITY OF KITCHENER

There are several options available to the City of Kitchener in terms of implementing a performance monitoring process:

- The City of Kitchener is already familiar with performance measures through the development of their business plan and monitoring through Compass Kitchener Committee. A similar framework and process could be put in place to be administered by City staff to specifically monitor and evaluate the implementation of the Cycling Master Plan.
- The Cycling Advisory Committee could develop a mini performance monitoring “report card” with checklists associated with Cycling Master Plan goals and remarks on the progress being made towards those goals.

Ideally, a performance monitoring process would be combined with strategies that raise the institutional and public profile of cycling so that progress (or lack of progress) is given greater attention. The ability to use any strategy, however, will depend on the readiness and capacities of the institution—within the bureaucracy and elected body.

Excerpt from City of Hamilton's *Water and Wastewater Sustainability Report Card*



7. THE CYCLING NETWORK

A long-term cycling network identifies potential routes or corridors where improvements for cyclists may occur over a period of time. Typically bikeway networks created within a master plan are implemented over a 10, 20 or 30-year period. Phasing of projects or improvements allow implementation to begin in the first year following approval of the master plan and continue over time. Thus, this cycling plan identifies a bikeway network to be phased in over the next 20 years, more or less, depending on opportunities, support, resources, and funding.

The bikeway network is not intended to be strictly prescriptive; it responds to existing and planned conditions within the City including priority routes, key destinations, planned land-use changes, and opportunities to implement improvements as they are viewed at the time the network is developed. The network should be considered flexible within the objectives of the master plan, with revisions being made as conditions under which it was developed change. That is, as the network is implemented, new opportunities or constraints may be identified and alternative routes sought to connect destinations, fill gaps and bridge barriers. As such, the recommended bikeway network is somewhat of a living document that guides the actions and decisions of the City and allows a bike system to grow over time.

7.1.1 APPROACH

The development of the cycling network is based on a set of network guiding principles. These principles will allow future changes to the cycling network, while maintaining the objectives and intent of individual routes and the overall network. A good cycling network should encourage people to cycle more often. The network development is based on the following principles:

- **Coherence:** The routes that make up the network are well connected with each other, with key destinations, and integrated with the Regional Cycling Network and networks of adjacent municipalities
- **Safety:** On-road bikeways must be planned to manage risk and create comfortable facilities that improve the users' safety. Both risk associated with interaction with traffic and personal or public safety are issues
- **Directness:** Cyclists, in particular, want to move on—stopping costs them energy and results in delays. There are many situations where cyclists take a high risk in road safety in order to save travel time. Routes and bikeway designs must respond to the idea of directness
- **Comfort:** Many elements of bikeways must be comfortable for the user, including road crossings, intersection treatments, surface and width, transitions from one facility to another, etc.
- **Attractiveness:** An attractive surrounding is desired along the route.

Most of all, people bicycle because they enjoy it, therefore, bikeways must not only meet their needs but make cycling fun.

In developing network and route options, assessment criteria are considered, complementing the network guiding principles, to determine the suitability of individual routes. These criteria are listed in Exhibit 20.

Exhibit 20: Route Assessment Considerations

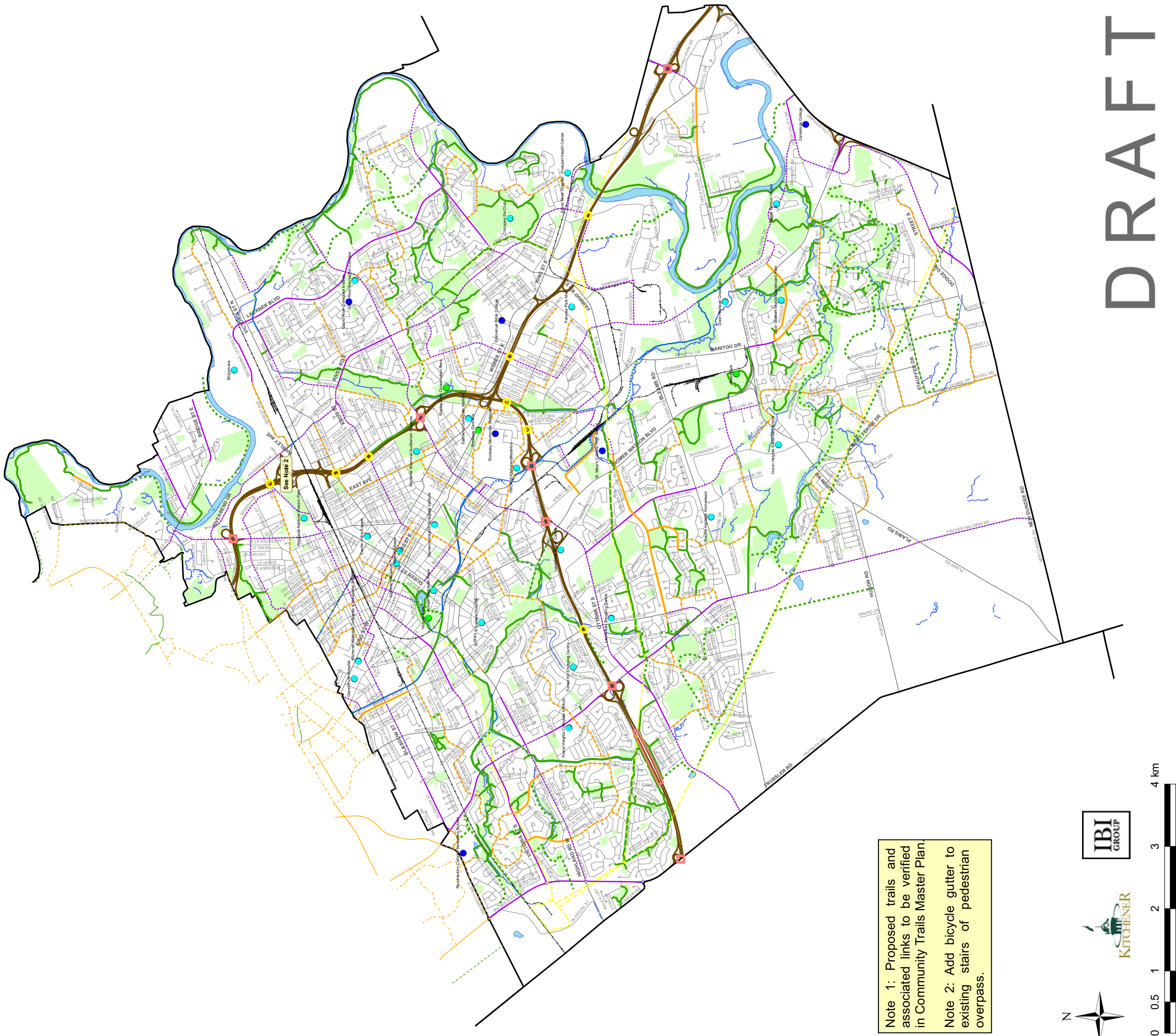
Context	Assessment Considerations
Roadway Conditions	What is the volume of traffic? What is the composition of the traffic (relative amounts heavy truck and bus traffic)? What is the posted or operating speed of the roadway? Are there numerous high-volume driveways, complex intersections, high-speed skewed railway crossings or narrow bridge crossings? Are there steep, long grades that can be avoided on alternate routes? Is parking permitted on one or both sides of the route? Is parking under-utilized (less than 10%)? Is there sufficient width for the bikeway without affecting parking?
Bikeway Potential	What is the proposed bikeway type for this route considering safety, directness, comfort and the type of cyclists that would use the route? Can the route accommodate the preferred bikeway type? If no to the above, is another bikeway type appropriate? Are improvements required and feasible (e.g. retrofit road)? Is there sufficient width for the bikeway without affecting parking?
Cost	Is the route the most cost-effective solution or is there an equivalent, parallel route that can be achieved at a lower cost? Is there the ability to reduce costs by combining route development with existing road works (reconstruction or resurfacing)?
Integration with Other Modes	Does the route provide access to transit stops / stations and benefit other user groups, such as pedestrians?

7.2 The Recommended Network

The recommended cycling network is shown on Map 2, and summarized by bikeway type in Exhibit 21. It consists of a total of 45 km of existing bikeways plus 114 km of proposed bikeways for a total cycling network length of 159 km.

The recommended cycling network illustrates about 120 km of existing trails and 60 km of proposed trails. The trail network will be reviewed and evaluated in detail in the City of Kitchener's Community Trails Master Plan and Implementation Strategy.

Map 2: Recommended Cycling Network



DRAFT

Exhibit 21: Recommended City Cycling Network by Type of Bikeway¹⁰
(includes Regional Cycling Routes on City Streets)

Bikeway Type ¹⁰	Existing Length	Proposed Length	
Signed route		5 km	
Local bicycle priority street		43 km	
Marked shared-use lane ("sharrow")		12 km	
Paved shoulder	13 km	10 km	
Wide curb / shared lane	4 km		
Bike lanes	28 km	Repaint existing roads	24 km
		Widen existing roads	2 km
		New roads	10 km
Cycle Track		8 km	
Total On-road Bikeways	45 km	114 km	
Grand Total (existing and proposed bikeways)			159 km

7.3 Signage Pilot Project

Bicycle route signage in Kitchener will be important for integrating the on-road cycling network with the multi-use trail network, as well as integrating the City bikeways with the Region's bikeways and those of adjacent municipalities to form a coordinated network. The signage should be easy to integrate into bicycle route maps and address features such as:

- Route confirmation
- Route intersections
- Advance route signing
- Destinations, directions and distances (or travel time)
- Amenities and attractions including geocaches

It is recommended that the City of Kitchener develop a strategy, in partnership with the Region of Waterloo and coordinated with adjacent municipalities, to sign the bikeways and trails in such a way

¹⁰ LOCAL BICYCLE PRIORITY STREET: Traffic-calmed, local streets that have been optimized for through bicycle traffic, but discourage other non-local traffic. Traffic controls (signals, stop signs and yield signs) are placed to control conflicts with motorists and give priority to cyclists. Stop signs are minimized or eliminated. Traffic controls or features are provided so cyclists can cross major streets easily.

BIKE LANE: Travel lane on an urban roadway (with curbs and gutters) intended for use by cyclists only, marked by a white lane line, bicycle and diamond pavement marking symbols, and regulatory signs indicating their use reserved for cyclists.

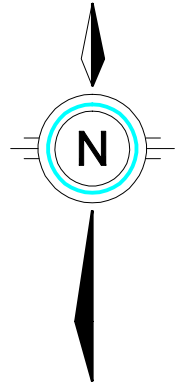
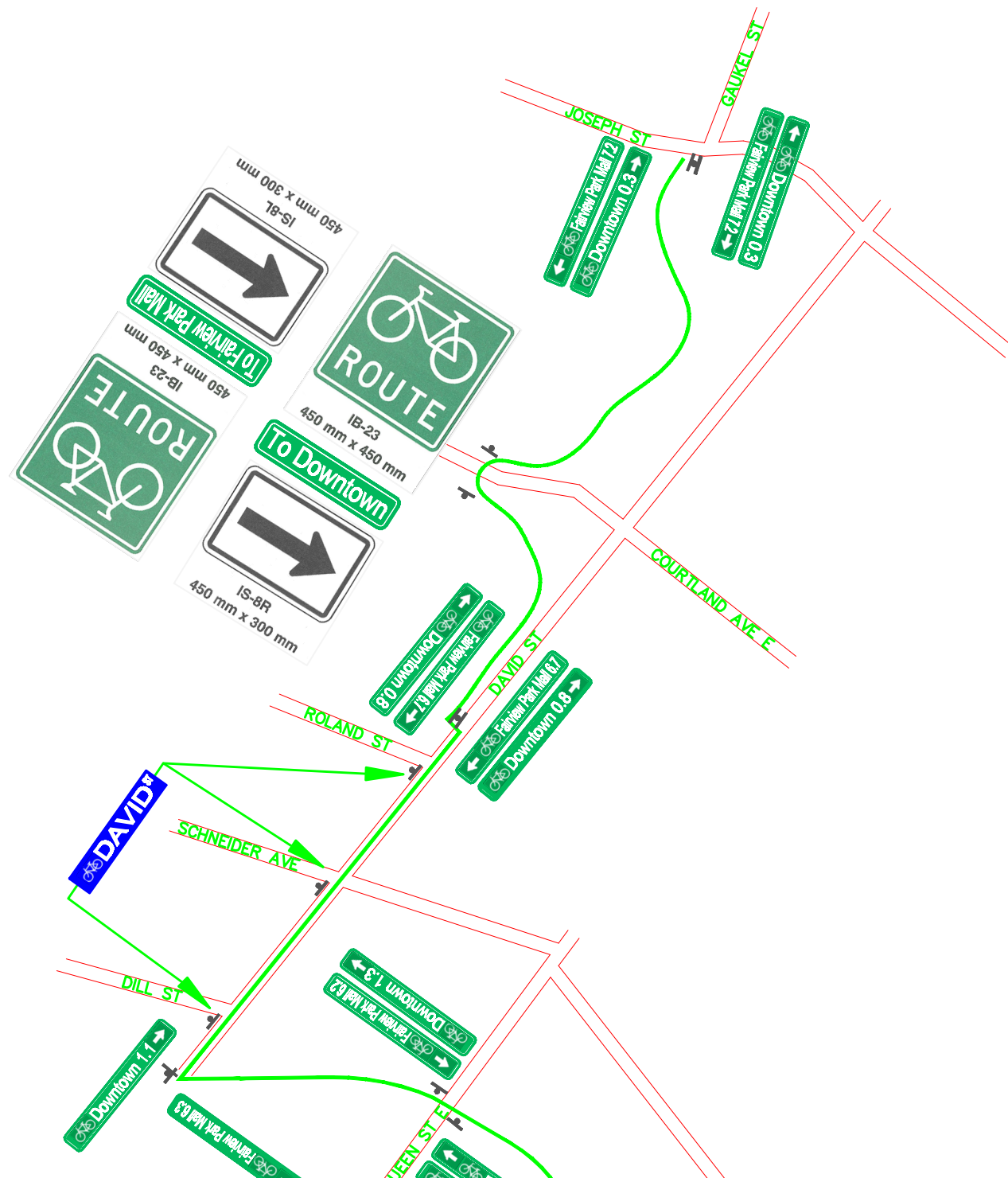
PAVED SHOULDER: Travel lane on a rural roadway (shoulders, no curb and gutter) intended for use by cyclists, marked by a white lane line, bicycle and diamond pavement marking symbols, and regulatory signs indicating their use reserved for cyclists. If the shoulder is used by other vehicles, such as slow-moving vehicles, and horses and buggies, then the diamond pavement marking symbols are omitted and the regulatory "reserved bicycle lane" signs are replaced by "bicycle route" signs.

MARKED SHARED-USE LANE: Lanes marked with a "Shared-Use Lane" marking or "Sharrow".

SIGNED ROUTE: Typically a local street posted with a "bicycle route" sign to indicate that it is a link in a cycling network, connects to a key destination, or provides continuity for cyclists along local streets that connect trails

that the network is more visible both to users and the public, and the signs communicate the network's connectedness, destinations, and distances or travel time. Consideration should be given to the types of bikeways needed to support relatively comfortable and safe cycling along individual routes before the route is signed.

The Iron Horse Trail currently provides a connection via Victoria Park to Downtown Kitchener. There is also a key crossing of Highway 7/8 that connects residential streets near Fairview Park Mall. Signing the connection between the Downtown and Fairview Park Mall was selected as an example for an initial cycling route signage plan, as illustrated in Exhibit 22. The signage plan was developed based on providing street name blades with bicycle logos, supplemented by destination/distance signage with a bicycle logo and bicycle route directional signage.



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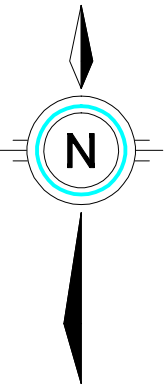
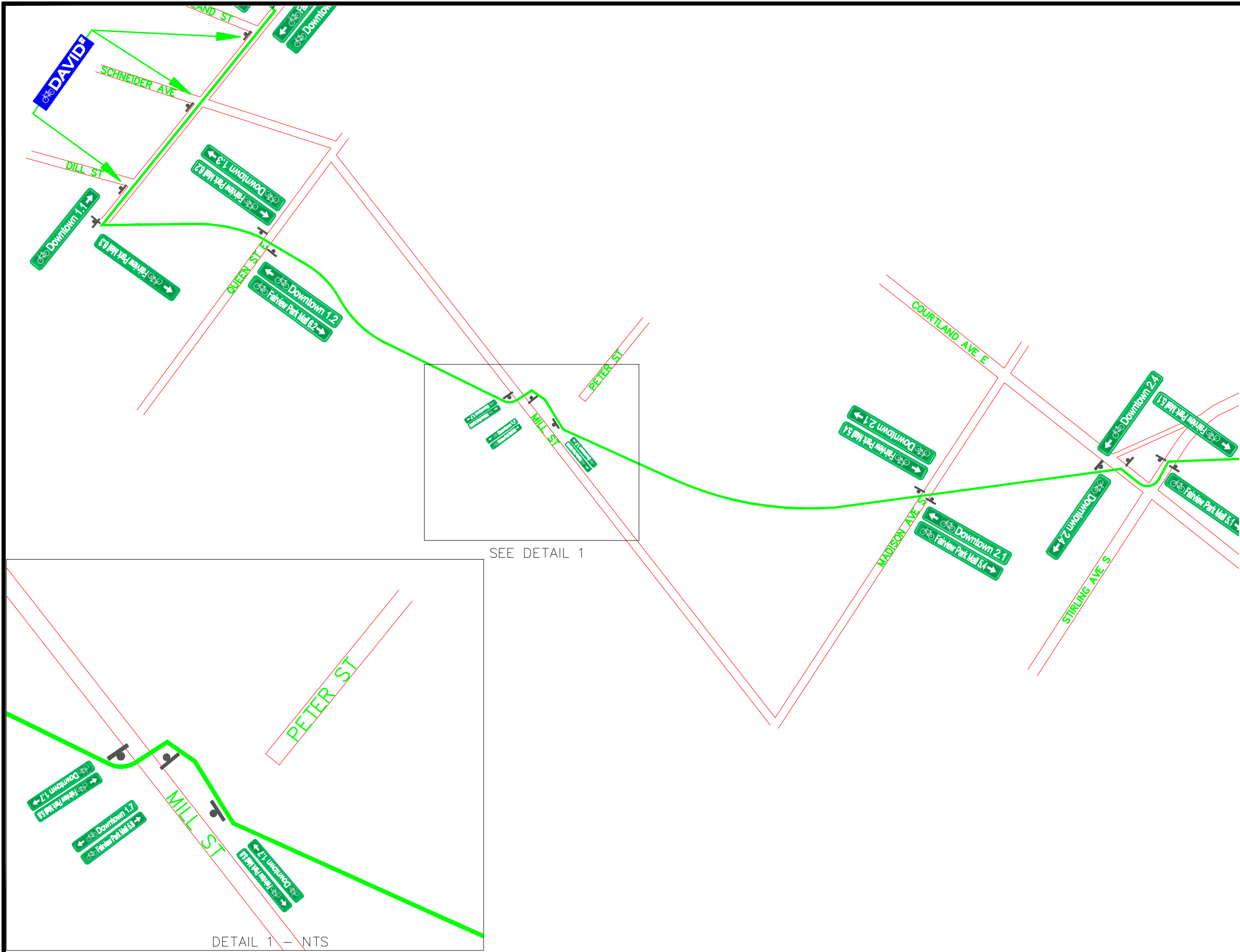
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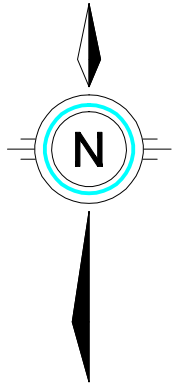
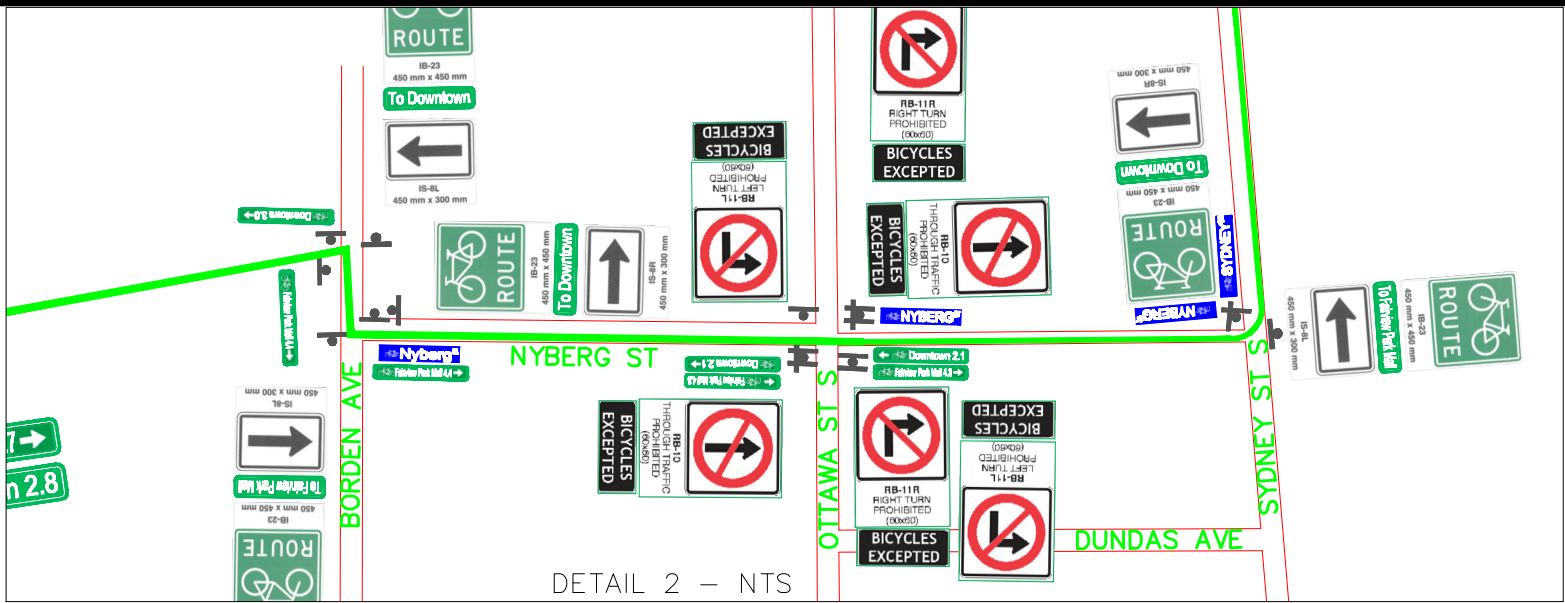
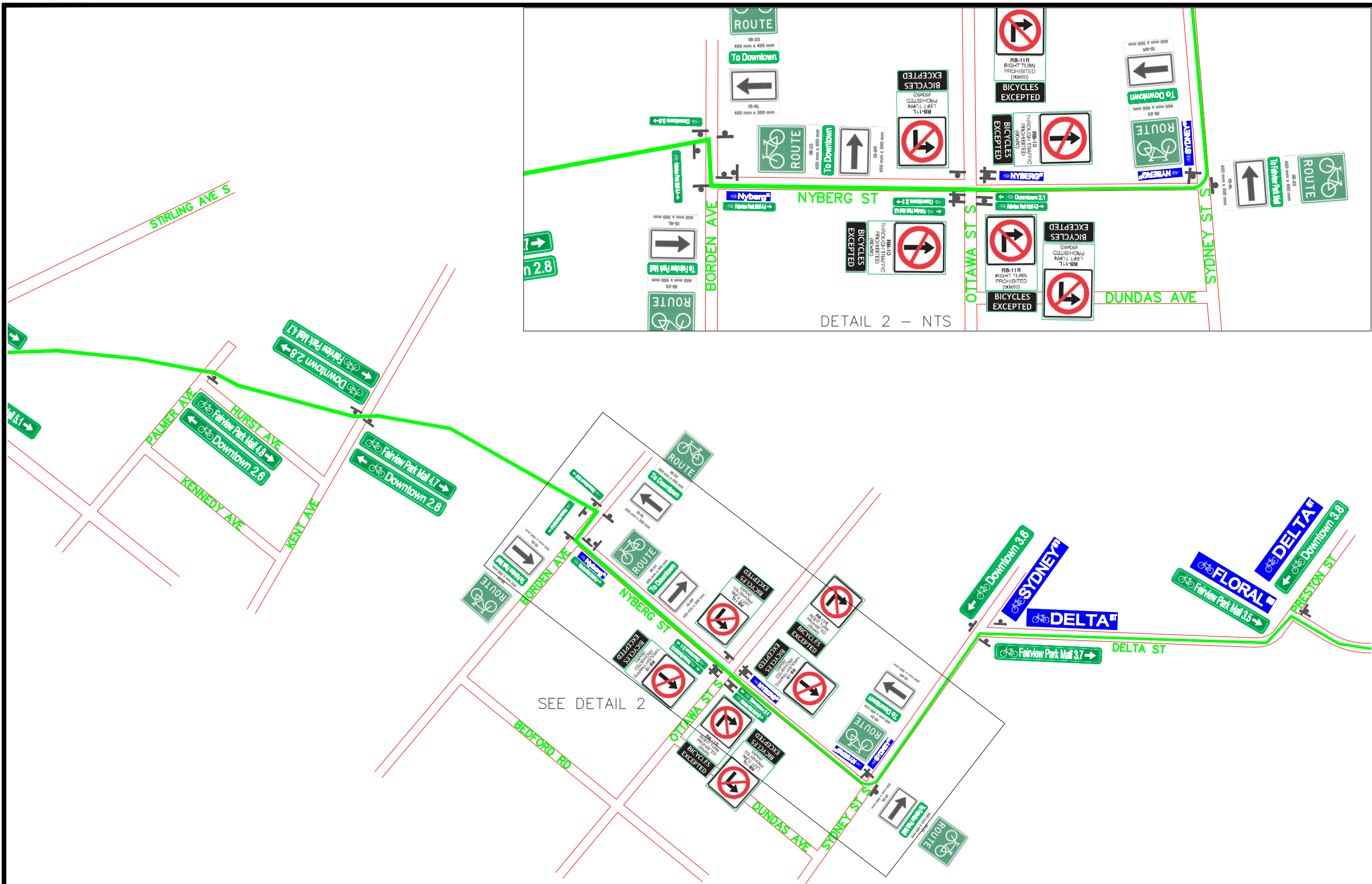
CYCLING MASTER PLAN

EXHIBIT 22: DOWNTOWN TO FAIRVIEW
PARK MALL DRAFT SIGNAGE PLAN

PAGE 1 OF 7



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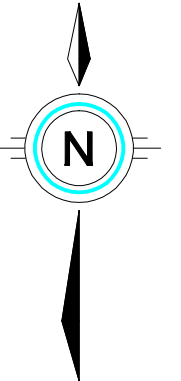
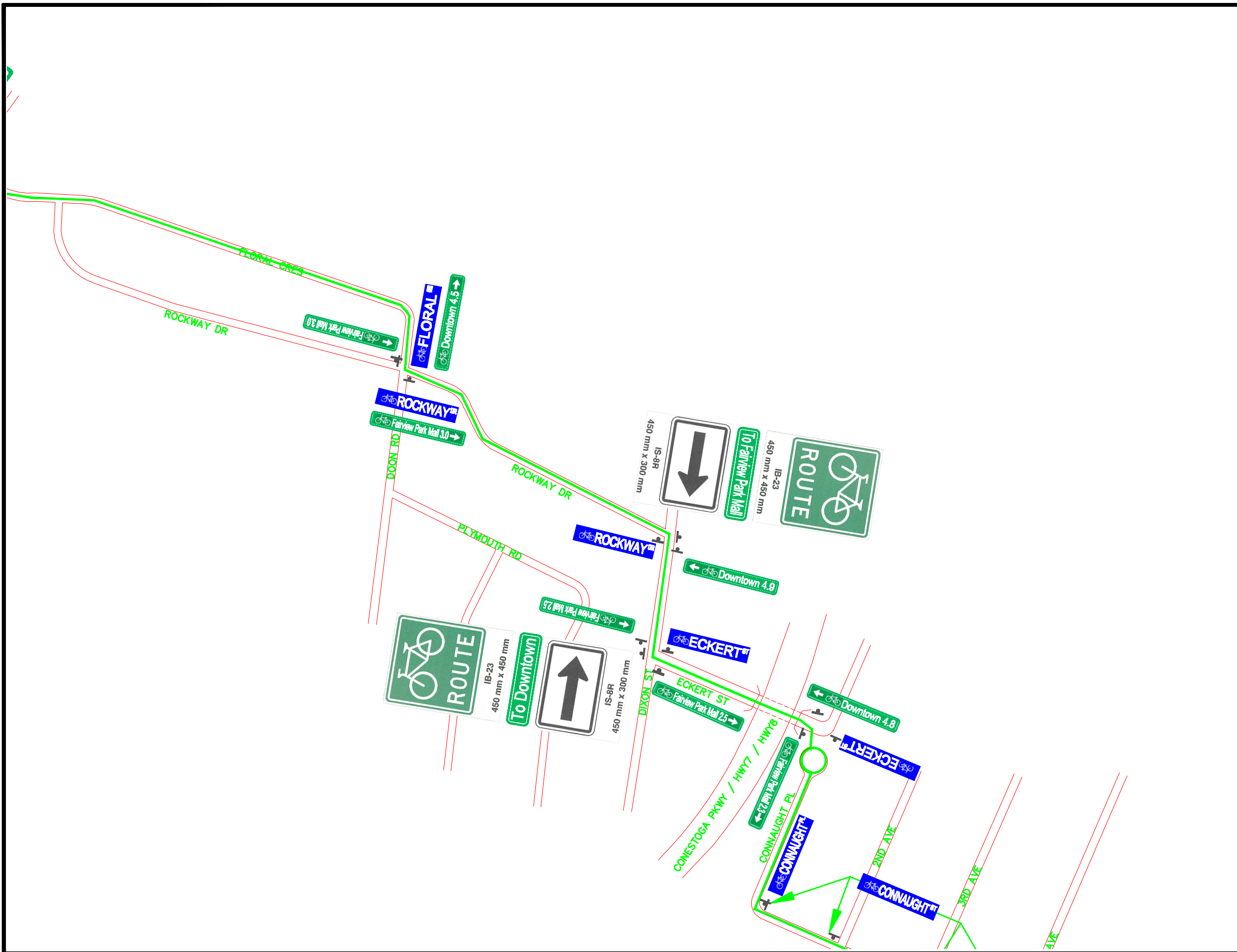
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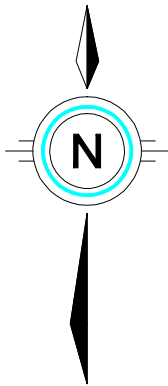
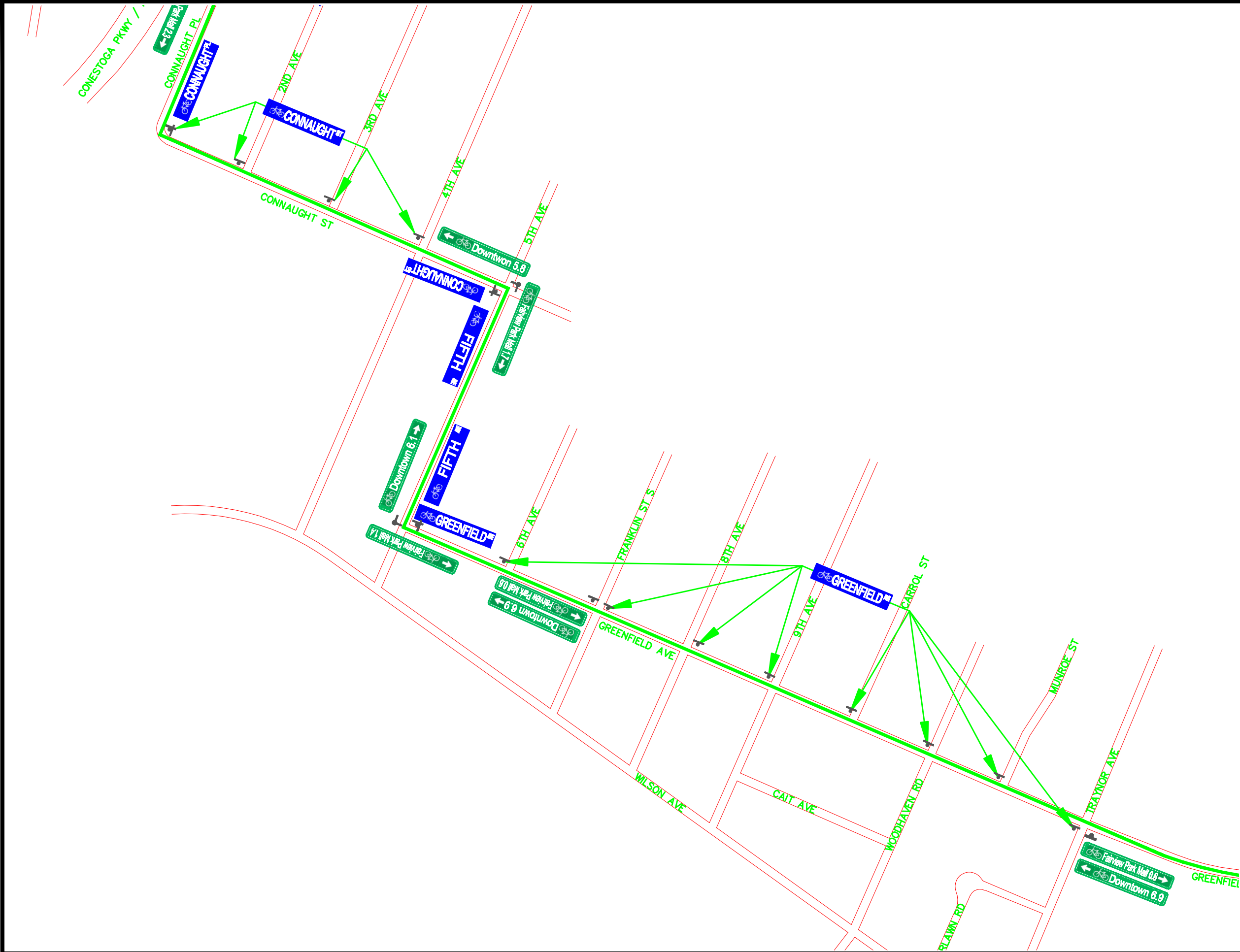
CYCLING MASTER PLAN

**EXHIBIT 22: DOWNTOWN TO FAIRVIEW
PARK MALL DRAFT SIGNAGE PLAN**

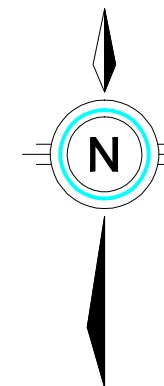
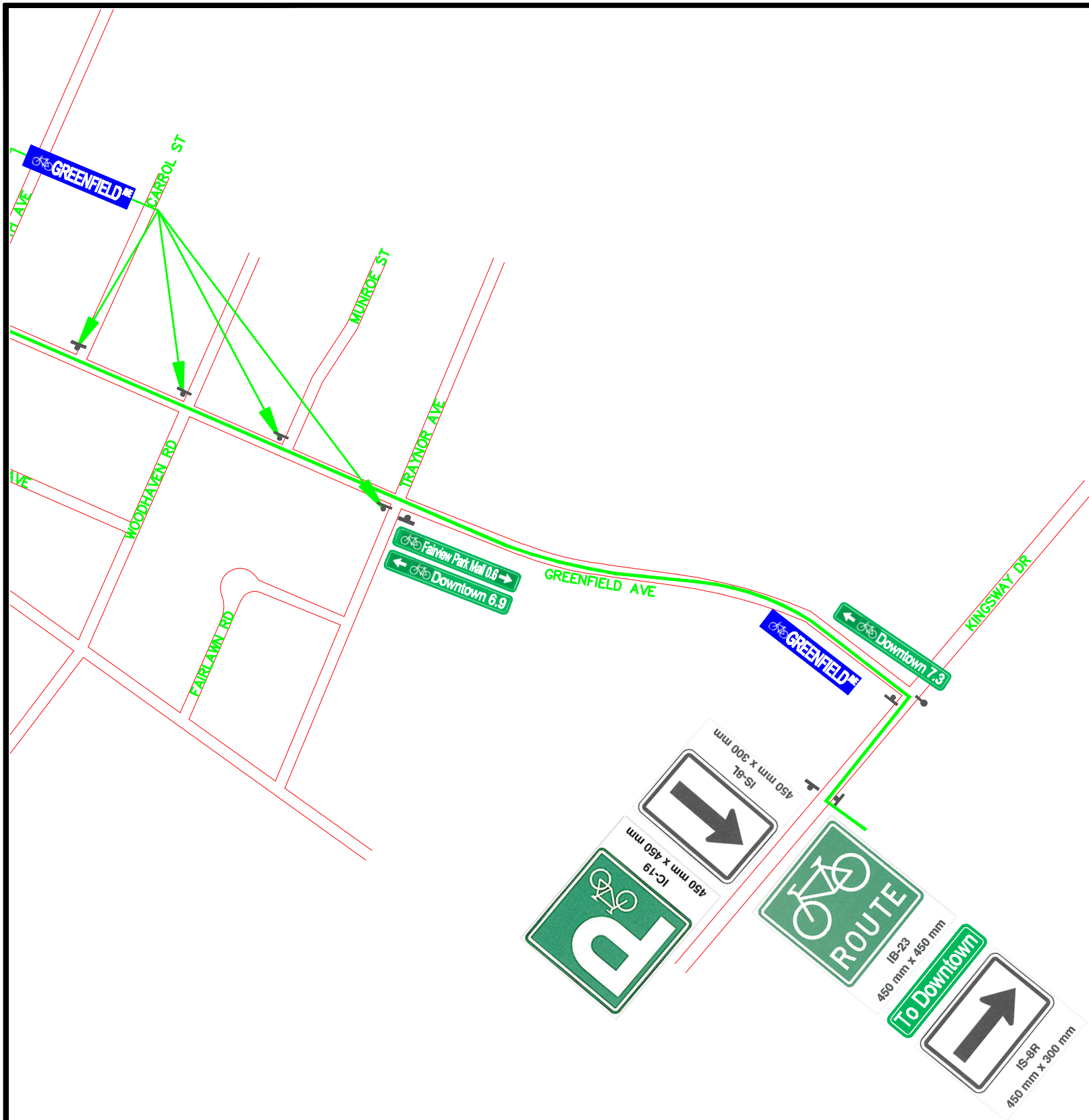
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PARK MALL DRAFT SIGNAGE PLAN

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IC-19
450 mm x 450 mm



IB-23
450 mm x 450 mm



RB-11L
LEFT TURN
PROHIBITED
(60x60)



RB-11R
RIGHT TURN
PROHIBITED
(60x60)

TOTAL REQUIRED

X 1

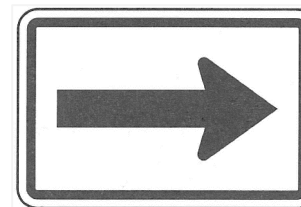
X 10

X 2

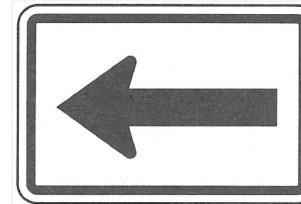
X 2



RB-10
THROUGH TRAFFIC
PROHIBITED
(60x60)



IS-8R
450 mm x 300 mm



IS-8L
450 mm x 300 mm



TOTAL REQUIRED

X 2

X 6

X 6

X 6

X 10

X 29

X 32

X 34



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EXHIBIT 22: DOWNTOWN TO FAIRVIEW
PARK MALL DRAFT SIGNAGE PLAN

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8. IMPLEMENTATION PLAN

The implementation plan for the proposed cycling network is intended to guide decision making over the next 20 years. It consists of two phases:

- **Priority Network** intended to be implemented over the next few years. It consists of cycling improvements that are relatively easy to implement yet important in providing connections to key destinations, filling in important gaps in the network, and linking to existing facilities
- **Long-term Network** to complete the development of the recommended cycling network. It is intended to guide or inform annual planning for longer-term capital and development projects. As the network is implemented, new opportunities or constraints may be identified and alternative routes sought to connect destinations, fill gaps and bridge barriers. As such, the recommended bikeway network is somewhat of a living document that guides the actions and decisions of the City and allows a bike system to grow over time.

8.1.1 GENERAL APPROACH

Strategies that may be used to establish priorities for the implementation of the various routes in the cycling network are as follows:

1. Where possible, take advantage of planned road reconstruction and resurfacing projects as well as on-going trail projects
2. Construct routes in new development areas as construction progresses
3. Consider suggestions regarding priorities that were provided by staff and the public at various stages throughout the study
4. Prioritize early projects where the highest demand is anticipated, targeting key corridors and/or key destinations
5. Develop connections to the more extensive sections of multi-use trail that either exist or will soon be implemented, and that also serve as good transportation connections by virtue of their location, their length or the continuity they add to the transportation network
6. Close gaps in the existing networks
7. Aim to provide an equitable distribution of routes/facilities throughout the City, and work to quickly connect across major physical barriers (primarily Highways 401, 7 / 8, and 85 and Regional community connectors)

Strategies 1 and 2 are also fundamental to cost-effective implementation and should be based on current known and/ or documented forecasts, which change from time to time and require annual Council approval. Strategies 3 to 5, provided they are done well, are generally effective means of helping municipalities establish early public interest in and support for continued expansion of the network, which can help to build sustained political support. Therefore, it is important that those responsible for monitoring and scheduling the network implementation re-confirm the City's capital forecasts on a regular basis.

The recommended cycling network by type of bikeway including bike lanes, marked shared lanes, bicycle priority streets, cycle tracks, trails, and crossing improvements is illustrated in Map 3.

8.1.2 PHASING

The priority network to be implemented in the short term is illustrated on Map 4. The location of recommended routes and crossing improvements may be subject to change through more detailed audits, technical studies, and community consultation, where warranted, prior to constructing individual routes. At the same time however, the extensive community effort that established the overall directions of this plan and the recommended network must be respected. Therefore, specific changes to the recommended cycling network should be evaluated in the context of such a decision's impact upon the overall network and accompanying vision for cycling in the City of Kitchener.

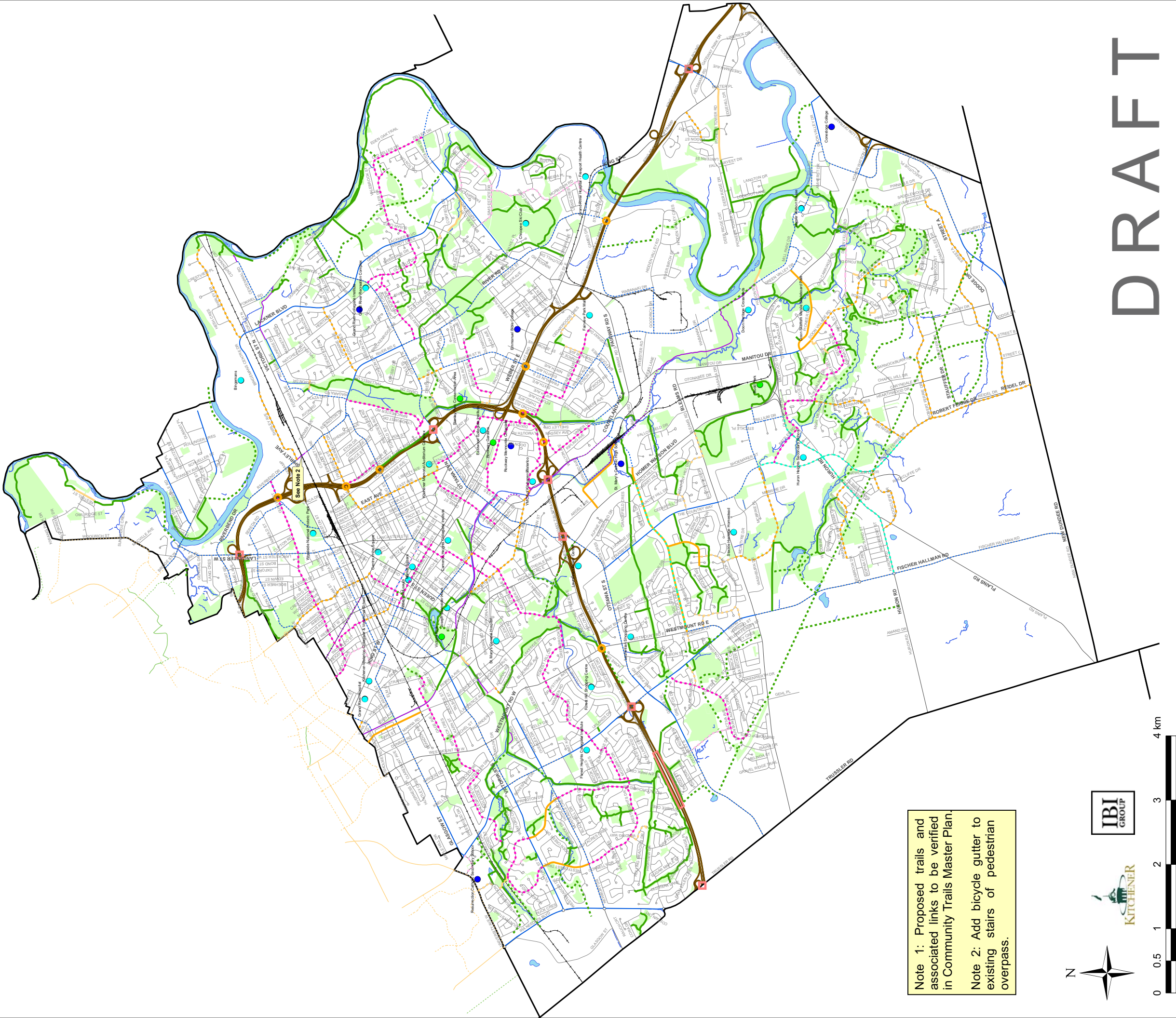
8.1.3 UNIT COSTS OF CONSTRUCTION

The unit costs used to estimate the overall network implementation costs is provided in Exhibit 23. These unit costs are based on the following assumptions:

- Cost estimates for on-street bikeways are for the linear kilometres of the route, i.e. both sides of the road for bike lanes
- Typical in-situ conditions for construction are assumed
- Estimates do not include the cost of design services, property acquisitions, or utility relocations
- Costs associated with major site-specific projects such as bridges, and more intense landscaping or streetscaping are not included in the estimate
- All applicable taxes are additional

The estimated unit costs for construction are based on averages obtained from recent construction projects in municipalities across southern Ontario. They should be used as guidelines only for establishing the scheduling for constructing the recommended bikeways.

Map 3: Recommended Bikeway Types



Note 1: Proposed trails and associated links to be verified in Community Trails Master Plan.

Note 2: Add bicycle gutter to existing stairs of pedestrian overpass.

Kitchener network		Regional network		Waterloo network		Major destinations		Roads			
Existing trail	Proposed cycle track	Existing on-road	Existing off-road	Park	Highway	Non-interchange freeway crossing					
Existing bike lane	Proposed bike lane	Existing off-road	Existing on-road	Educational	Major road	New/improved freeway crossing					
Existing signed route/link	Proposed signed route	Approved on-road	Proposed on-road	Other	Minor road	Waterways					
Proposed trail (see Note 1)	Proposed marked shared-use lane	Approved off-road	Proposed off-road	Parkland		Rail line					

Map 4: Priority Network and Funding Sources

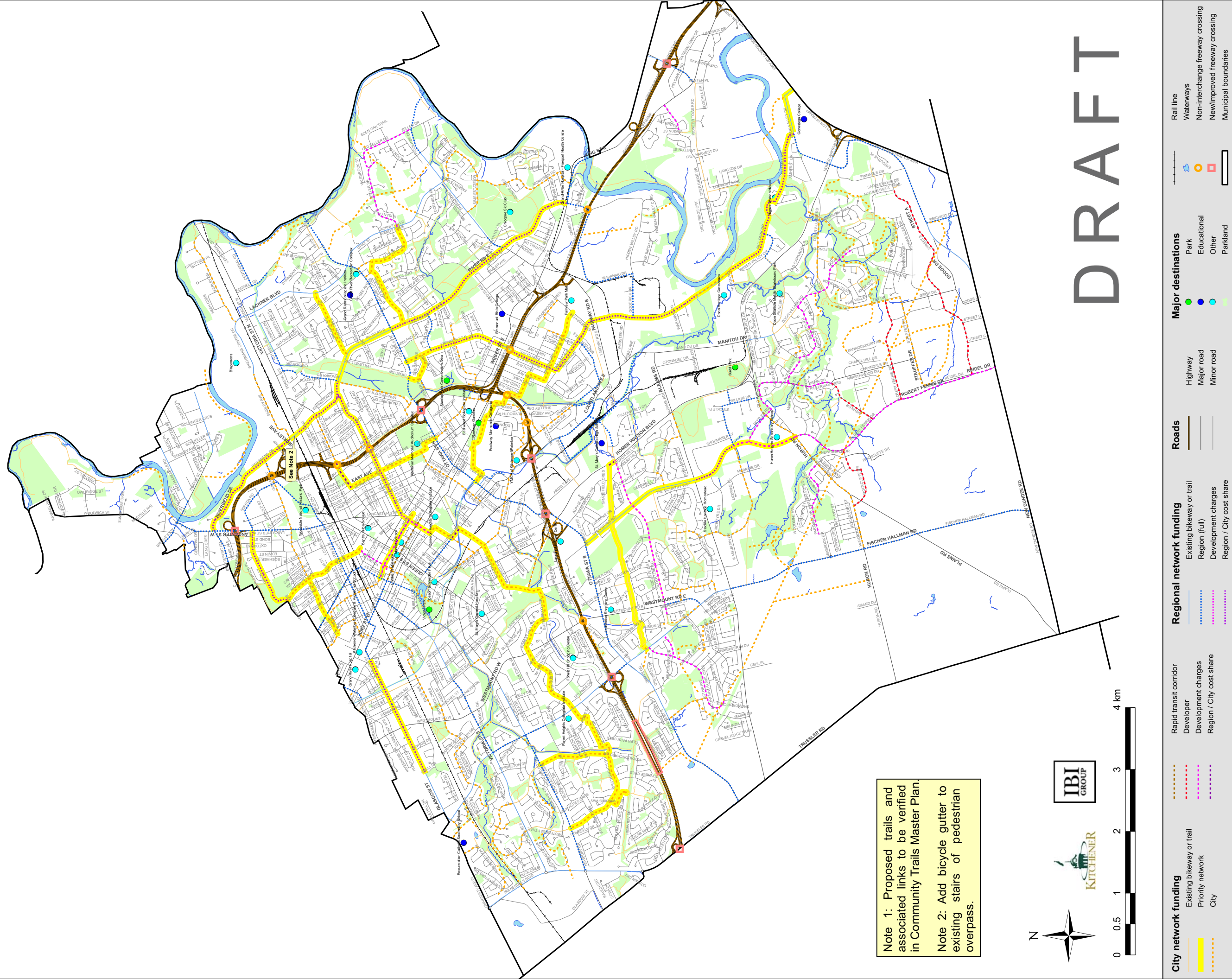


Exhibit 23: Estimated Unit Costs of Construction for Various Types of Bikeways¹¹

Bikeway Type	Implementation Strategy	Estimated Construction Cost
Signed Routes	As part of an overall signing strategy or as part of bicycle boulevards / priority streets implementation	\$2,000/km
Bike Lanes	New construction (Curb & gutter, catchbasins funded as part of road project, i.e. not included in bike lane construction cost))	\$200,000/km
	Retrofit with narrower lanes or reconfigure lanes (4 to 3 plus bike lanes)	\$23,000/km
	Resurfacing / painting	\$10,000/km
Paved Shoulders	Add paved shoulders	\$130,000/km
	Pave existing shoulders as part of road resurfacing project	\$55,000/km
Boulevard Multi-use Trails	Asphalt multi-use trail (4 m wide)	\$200,000/km
	Concrete multi-use path (3 m wide)	\$200,000/km
Marked Shared-use Lanes	Paint "sharrows" on existing lanes	\$15,000/km
Bicycle Priority Streets	Traffic calming, major roadway crossings, signs	\$80,000/km
Cycle tracks or Segregated Bike Lanes: Costs include a 20% contingency due to lack of historical design / construction data from Canada	Construct adjacent existing roadway with bicycle signals at major intersections	\$500,000 to \$1M/km
	Construct cycle tracks as part of road new construction / reconstruction / widening	\$320,000/km
	Construct cycle tracks adjacent existing roadway without separate bicycle signals, integrating as bike lanes at major intersections:	\$90,000 to 400,000/km
	Retrofit without separate bicycle signals, removing a travel lane	\$140,000/km

8.2 Probable Cost and Funding Sources

An opinion of probable construction cost to implement the priority network and long-term network, by facility type, is presented in Exhibit 24. City of Kitchener staff will identify both annual capital and operation budget implications for Council's consideration as cycling projects move forward through implementation phases. The recommended cycling network is estimated to cost a total of \$9.3 M to implement, of which \$6.1 M would be City funding. It is estimated that \$3.2 M will be invested by others, i.e. developers, Region's share of Regional routes on City streets, development charges and rapid transit corridor initiatives.

It is anticipated that the Priority Network will cost the City about \$1.9 M to implement. Over six to eight years, this is equivalent to \$250,000 to \$300,000 per year. The Long-term Network will

¹¹ Opinion of cost of construction only in 2010 dollars; does not include planning, design, maintenance, property, utility relocations and taxes

require an additional \$4.2 M from the City to implement. This is equivalent to \$250,000 to \$300,000 per year for an additional 14 to 17 years.

Exhibit 24: Probable Cost to Implement the Priority Network and Long-term Network

Proposed Bikeway Type ¹²	Cost/km	Length (km)	Probable Cost ¹³	Funding				Net Funding by City
				Region (50%)	Developers (100%)	Development Charges (60%)	Transit Corridor (100%)	
City Priority Network								
Bike lane (repaint)	\$23,000	12.8	\$294,000	\$100,000	\$0	\$0	\$0	\$194,000
Paved shoulder	\$55,000	9.7	\$534,000	\$267,000	\$0	\$0	\$0	\$267,000
Cycle track	\$320,000	1.0	\$334,000	\$0	\$0	\$198,000	\$0	\$136,000
Local bicycle priority street	\$80,000	16.3	\$1,307,000	\$0	\$0	\$18,000	\$0	\$1,289,000
Marked shared-use lane	\$15,000	4.5	\$68,000	\$29,000	\$0	\$0	\$20,000	\$19,000
Signed route	\$2,000	0.5	\$1,000	\$0	\$0	\$0	\$0	\$1,000
Subtotal Priority Bikeways		45 km	\$2,540,000	\$400,000	\$0	\$220,000	\$20,000	\$1,900,000
City Long-term Network								
Bike lane (new road)	\$200,000	9.5	\$1,905,000	\$0	\$1,214,000	\$264,000	\$0	\$427,000
Bike lane (repaint)	\$23,000	11.2	\$258,000	\$10,000	\$27,000	\$48,000	\$0	\$173,000
Bike lane (widen)	\$55,000	2.0	\$111,000	\$0	\$0	\$0	\$0	\$111,000
Cycle track	\$320,000	7.2	\$2,289,000	\$0	\$0	\$780,000	\$0	\$1,509,000
Local bicycle priority street	\$80,000	26.4	\$2,110,000	\$0	\$0	\$234,000	\$0	\$1,876,000
Marked shared-use lane	\$15,000	7.8	\$117,000	\$0	\$0	\$0	\$0	\$117,000
Signed route	\$2,000	4.7	\$9,000	\$0	\$0	\$600	\$0	\$8,400
Subtotal Long-term Network		69 km	\$6,800,000	\$10,000	\$1,240,000	\$1,330,000	\$0	\$4,220,000
Grand Total		114 km	\$9,340,000	\$410,000	\$1,240,000	\$1,550,000	\$20,000	\$6,120,000

Potential funding sources for the priority and long-term cycling network are as follows:

- Bikeways along new roads within new subdivisions will be built and funded by development through subdivision agreements with the City

¹² LOCAL BICYCLE PRIORITY STREET: Traffic-calmed, local streets that have been optimized for through bicycle traffic, but discourage other non-local traffic. Traffic controls (signals, stop signs and yield signs) are placed to control conflicts with motorists and give priority to cyclists. Stop signs are minimized or eliminated. Traffic controls or features are provided so cyclists can cross major streets easily.

BIKE LANE: Travel lane on an urban roadway (with curbs and gutters) intended for use by cyclists only, marked by a white lane line, bicycle and diamond pavement marking symbols, and regulatory signs indicating their use reserved for cyclists.

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MARKED SHARED-USE LANE: Lanes marked with a "Shared-Use Lane" marking or "Sharrow".

SIGNED ROUTE: Typically a local street posted with a "bicycle route" sign to indicate that it is a link in a cycling network, connects to a key destination, or provides continuity for cyclists along local streets that connect trails

¹³ Opinion of cost of construction only in 2010 dollars; does not include planning, design, maintenance, property, utility relocations and taxes

- Bikeways on existing arterial and collector roads in growth or intensification areas that are to be widened to accommodate growth will be partially or fully funded through future development charges. Development charges are premised on maintaining existing level of service. Bikeways will be included at such time that the level of service is defined.
- Bikeways on existing roads in established areas of the City will be funded through the Capital Works program
- Bikeways proposed in future rapid transit corridors will be funded by the transit program supported by Regional Cycling Master Plan
- Other funds are available from Federal and Provincial programs and grants. The Federal Gas Tax Fund has been a consistent source to support environmentally sustainable municipal infrastructure projects with the current agreement in Ontario starting in 2005 but terminating in 2015. Other programs are available often with specific mandates or priorities. The City will require resources to identify, respond and implement these opportunities. Programs that have been available recently or are currently available from governments and other foundations include:
 - Federal and Provincial infrastructure renewal programs such as the recent Canada's Economic Action Plan including Infrastructure Stimulus Fund, Recreational Infrastructure Canada Program and the National Recreational Trails Fund (through the National Trails Coalition).
 - Transport Canada's ecoMOBILITY Program and Moving On Sustainable Transportation (MOST) Program focused on sustainable transportation. Both programs are currently closed.
 - Ministry of Transportation, Ontario's Transportation Demand Management Municipal Grant Program can be used to encourage cycling, walking, transit, and trip reduction. The Cycling Master Plan received funding through this program.
 - Ministry of Health Promotion, Ontario's Trails for Life, Healthy Communities Fund and Communities In Action Fund provided funds to partnerships supporting active living. These programs are currently closed.
 - The Ontario Trillium Foundation supports the building of healthy and vibrant communities through community-based initiatives that strengthen the capacity of organizations in the arts and culture, environment, human and social services and sports and recreation sectors. Healthier and more physically active Ontarians is identified as a granting priority. The City of Kitchener would only be eligible as a partner with an eligible community organization.
 - The Heart and Stroke Foundation has identified obesity as a key area of research and strategic focus and has funded programs around healthy eating and active living encompassing schools, workplaces, the built environment and public policy.
 - The Federation of Canadian Municipalities' (FCM) Green Municipal Fund™ (GMF) provides below-market loans and grants, as well as education and training services to support municipal initiatives that improve air, water and soil quality, and protect the climate.

It is recommended that the City of Kitchener establish an annual Cycling Infrastructure Capital Budget to implement links in the network that are not part of a larger road capital project or development project. An annual capital budget of \$250,000 to \$300,000 would allow for implementation of the Priority Network within six to eight years; plus additional funds would be required for bicycle parking, a signage demonstration project and other ancillary projects as defined by City staff in consultation with the Kitchener Cycling Advisory Committee. The outcomes of the implementation plan should be reviewed annually to determine the appropriateness of this capital amount in achieving the vision and outcomes of the Cycling Master Plan within fiscal responsibilities of the City.

8.3 Policy Implementation

The implementation of the recommended cycling-supportive policies is contingent on a staff leader charged with the responsibility for the cycling plan. Thus, the top policy priority is to establish a cycling co-ordinator. The position can be combined with the Transportation Demand Management (TDM) specialist position recommended in the City of Kitchener TDM Plan (draft, August 2008), consisting of 0.5 full-time equivalent (FTE) for the Cycling Master Plan responsibilities.

The implementation of policies requires both staff and funding resources. Some policies may require examining various options or programs. Specific funding sources and amounts, and staff and partnership resources should be determined as each policy moves through to implementation.

Members of the public were asked to select their top five policies that they thought should be implemented first. The results of this exercise are summarized in Exhibit 25.

Exhibit 25: Summary of the Top Policy Priorities as Selected by Members of the Public¹⁴

Proposed Policy	No. of people who selected it as their top 5 priority
Develop, implement and maintain a trail and cycling way-finding signage strategy and co-ordinate with the Region of Waterloo and adjacent municipalities	20
Recognize and include appropriate cycling infrastructure in every new road and road reconstruction/resurfacing project, with exceptions justified and approved at a senior staff level	19
Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work	18
Implement the cycling network over time with regular and consistent funding	18
Consider the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations	15
Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management	14
Support a co-ordinator to oversee the implementation of the plan, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public	10

¹⁴ From Public Information Session No. 2 with 50 people in attendance

The timeframe for implementation of the Cycling Master Plan policies and potential partners are identified in Exhibit 26.

Exhibit 26: Policy Implementation Plan and Potential Partners¹⁵

Policy	Timeframe	Potential Partners
General leadership, co-ordination and implementation:		
Support a cycling co-ordinator to oversee the implementation of the plan policies and network, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public; consisting of 0.5 full-time equivalent (FTE)	Immediately	
Plan for bicycle-friendly communities within Kitchener:		
Update zoning by-laws to include bicycle parking for multi-family residential, commercial, office, institutional and industrial land uses including short-term visitor and longer-term, more secure resident and employee parking	Within 5 years	Region of Waterloo, Developers
Develop and communicate bicycle parking guidelines for interested property owners	Within 2 years	Region of Waterloo, Adjacent Municipalities, KCAC
Establish a program to assist property owners in retrofitting existing developments with appropriate bicycle parking	Within 5 years	Region of Waterloo
Implement and expand the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations	On-going	Developers, KCAC
Ensure the building of bicycle-friendly developments through the development of design guidelines and the review of site plans including site organization, building placement, bicycle parking, and cycling access and routes	On-going	Developers, KCAC
Update the Road Classification to include comfortable, safer bikeways where appropriate based on the function of roadways	Up-coming Transportation Master Plan	
Establish a clear trail hierarchy system based on the following trail types: Type 1—Transportation (paved; maintained in the winter); Type 2—Recreation primary, secondary and tertiary (various surfaces; no winter maintenance)	Up-coming Community Trails Master Plan and Implementation Strategy	Region of Waterloo, Adjacent Municipalities, KCAC
Integrate cycling into municipal practices:		
Recognize and include preferred cycling infrastructure (based on Road Classification) in every new road and road reconstruction/resurfacing project, with exceptions justified transparently and approved by the General Manager	Immediately	Region of Waterloo, KCAC

¹⁵ Specific costs associated with policy development and implementation (staff and programming resources) will be identified as each policy is defined / developed

Policy	Timeframe	Potential Partners
Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management	Immediately	KCAC
Work with the Traffic Coordinators Committee and collaborate with the Waterloo Regional Police to encourage and enforce safe cycling skills resulting in collision reduction and prevention	On-going	Traffic Coordinators Committee, Region of Waterloo
Encourage and collaborate with the Region of Waterloo in integrating cycling with Grand River Transit and future Rapid Transit including cycling route connectivity with transit stops and stations, bicycle parking at stations and stops, bicycles on vehicles, and bikeways along key transit corridors	On-going	Region of Waterloo, Grand River Transit
Actively encourage the Region of Waterloo and adjacent municipalities to consider the needs of cyclists in roadway planning, design, maintenance and operations that affect the cycling network.	On-going	Region of Waterloo, Adjacent Municipalities
Review and update roadway maintenance practises to better accommodate cycling	Within 5 years	Region of Waterloo, KCAC
Change winter maintenance of key Type 1—Transportation multi-use trails as per the trail hierarchy system to better support year-round cycling	Within 2 years	KCAC
Create a reporting system for cyclists to report poor roadway / bikeway / trail conditions	Within 2 years	KCAC
Provide staff training on how to better accommodate cyclists in the City's decisions and responsibilities	Immediately	Region of Waterloo, Adjacent Municipalities, KCAC, Professional Organizations
Promote and support cycling:		
Continue to partner with the Region of Waterloo Public Health on the delivery of cycling education programs and campaigns for youth and adults	On-going	Region of Waterloo
Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work	On-going	Region of Waterloo
Continue to partner with the Region of Waterloo and School Boards on Active and Safe Routes to School events, curriculum, school travel planning, and traffic and safety improvements in school catchment areas	On-going	Region of Waterloo, School Boards
Continue to partner with the Region of Waterloo on communicating the benefits of cycling, sharing the road education, and promoting cycling and the cycling network through information sharing on a web site or other networking medium	On-going	Region of Waterloo, Adjacent Municipalities

Policy	Timeframe	Potential Partners
Tailor existing active living programs to better support cycling	Within 2 years	Ministry of Health Promotion, Region of Waterloo
Provide new programs to deal with gaps in the stages of changing behaviour	Within 5 years	Ministry of Health Promotion, Region of Waterloo
Develop a marketing program to promote cycling	Within 2 years	Region of Waterloo, KCAC, Universities, School Boards, Neighbourhood Associations
Provide support to events that promote cycling and encourage cycling as a means of getting to / from City events and festivals, including the provision of secure bicycle parking (self-park or valet)	Within 2 years	Region of Waterloo, KCAC, Universities, School Boards, Neighbourhood Associations
Support a co-ordinator to oversee the implementation of the plan, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public	Immediately	
Implement the cycling network:		
Implement the cycling network over time with regular and consistent funding	On-going	Region of Waterloo, Developers, KCAC
Support the Kitchener Cycling Advisory Committee (KCAC) to vet implementation issues, assist in establishing priorities, assess performance measures and communicate progress on cycling plan implementation to politicians, staff and the public. Annual road construction and traffic calming projects will be brought forward to the KCAC for review and feedback.	On-going	KCAC
Develop, implement and maintain a trail and cycling way-finding signage strategy and co-ordinate with the Region of Waterloo and adjacent municipalities	Within 2 years	Region of Waterloo, Adjacent Municipalities, KCAC
Establish an audit process of existing bikeways and implement a process for continual improvement	Within 5 years	KCAC
Future Development Charges Background Studies should consider the inclusion of funding to support the implementation of the Cycling Master Plan on existing arterial and collector roads in growth or intensification areas that are to be widened to accommodate growth.	Within 5 years	

It is recommended that the City of Kitchener implement a **performance monitoring process** for the Cycling Master Plan within the City of Kitchener's Transportation Master Plan's overall transportation performance monitoring and evaluation process. The Cycling Advisory Committee could develop a mini "report card" with checklists associated with the Cycling Master Plan goals and outcomes, and remarks on the progress being made towards those goals. This could be combined

with communication strategies that raise the profile of cycling so that progress (or lack of progress) is given greater attention.

APPENDIX

SUMMARIES OF CONSULTATION EVENTS

PRIORITY NETWORK TABLE: STREETS, BIKEWAY TYPE, COST AND FUNDING SOURCE



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Summary of Stakeholder Workshop 1

To/Attention	File	Date	November 16, 2009
From	Neluka Leanage	Project No	26823
cc	Steering Committee	Steno	nl
Subject	Kitchener Cycling Master Plan—Stakeholder Workshop No. 1		

Introduction

A stakeholder workshop was held at the City of Kitchener on Tuesday, November 10, 2009 as part of the City of Kitchener's Cycling Master Plan. The agenda was as follows:

1:00 PM	Review Agenda
1:05 PM	Introductions
1:10 PM	Purpose of the Master Plan
1:20 PM	Report on you and your organization • What are you doing to make cycling safer, more comfortable and a viable choice to get around the City?
2:00 PM	Discuss a Vision for the Cycling Master Plan • Opportunities • Issues • Partnerships
2:50 PM	Summation
3:00 PM	Adjourn

Twenty-two people participated in the stakeholder meeting representing 17 different government, non-government and private organizations from across the region. A representative from the local media, the Kitchener Record also participated as a stakeholder. A list of stakeholder organizations is shown in Exhibit 1.

Purpose

The purpose of the workshop was to:

- Describe the approach to the master plan;
- Understand cycling-related activities undertaken by stakeholders/organizations, their effectiveness and any gaps;
- Identify issues, opportunities and potential partnerships to be integrated into the cycling master plan; and
- Have stakeholders prioritize initiatives using the "Bicycle-friendly Communities" tool.

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Exhibit 1: List of Stakeholder Organizations and Units

- | | |
|--|--------------------------------------|
| 1. Waterloo-Wellington-Dufferin Public School Board | 13. City of Waterloo |
| • Active and Safe Routes to School | • Transportation |
| • Planning | • Maintenance |
| 2. Regional Public Health | 14. City of Kitchener |
| • Lifestyle Resources Unit | • Environmental planning |
| 3. Kitchener Environmental Advisory Committee (KEAC) | • Planning |
| 4. Waterloo Public Interest Research Group (WPIRG) | • Transportation |
| 5. Transportation and Trails Advisory Committee (Waterloo) | • Community Services |
| 6. Kitchener Cycling Advisory Committee | 15. Club - Easy Riders (178 seniors) |
| 7. Regional Cycling Advisory Committee | 16. Resident (2) |
| 8. Cambridge On-Road Cycling Focus Group | 17. Bike Retailers |
| 10. Waterloo Wellington Dufferin Link Trails Committees | • Ziggy's |
| 11. City of Cambridge - Transportation | • McPhail's |
| 12. Media - Kitchener Record & "Take the lane" Blog | |

Report on Stakeholder's and Organization's Cycling-related Activities

A multitude of activities are being undertaken in Kitchener, Cambridge and Waterloo that help to make cycling safer, more comfortable and a viable choice in the City of Kitchener (a full list of activities can be found in Appendix A).. Activities could be grouped into the categories of:

- a) *Education and safety training* – e.g., school-based and Can-Bike cycling courses, bike fitting and bike repair workshops
- b) *Communications and messaging* – e.g., "Share the Road" signs and "Take the lane" blog
- c) *Events* – e.g., car-free festival, films, children's rodeos and sponsoring Bikeapoloosa
- d) *Infrastructure implementation* – e.g., installing bike racks at schools and installing bike lanes
- e) *Research, policy and planning* – e.g., publishing "Air Quality Report," drafting Complete Streets Policy in Waterloo, City of Kitchener identifying alternative transportation since 1960s, developing urban design manual (including cycling infrastructure) and development guidelines supportive of cycling

Issues, Opportunities and Potential Partnerships

A range of issues and opportunities were identified by stakeholders in order to inform the vision and priorities of the Cycling Master Plan. Seven of these were routinely stressed as having more importance or priority (the complete list of issues and opportunities can be found in Appendix B). The seven top results included:

- *Political will* re: to address policies, costs, infrastructure needs and NIMBY (*Not In My Backyard* public positioning)
- *Regional-municipal partnerships* re: education, messages, developing one master plan and consistent signage strategy

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- **Signage strategy** re: striving for regional consistency, including trails and enticing people to cycle
- **Connectivity** re: linking to neighbouring municipalities, correcting “trails and bike lanes to nowhere” phenomenon/joining pieces, connect Cambridge to Kitchener downtown, address major barriers between Cambridge and Kitchener
- **Education** re: of all road users and promoting attitude changes via driver education
- **Quality Designs** re: ensuring proper installation of cycling infrastructure, installing more bike parking, including multiple cycling users in designs and enlarging support, adopting Bicycle-friendly Community approaches
- **Safety and comfort** re: overarching and repeated issue, some stakeholders advocated that cycle network be kept separate from roads

Prioritizing “Bicycle-friendly Communities” Approaches for Kitchener

Stakeholders identified policies, practices and programs using the “Bicycle-friendly Communities” tool and “dotmacracy” technique (placed dots next to top five criteria that Kitchener could do better). illustrate the results from this exercise.

Exhibit 2: Prioritizing “Bicycle-friendly Communities” Approaches using “Dotmacracy” Technique

Bicycle-friendly Communities																															
A Bicycle Friendly Community encourages its residents to use bicycles for fun, fitness and transportation. What could be done better in the City of Kitchener? Place a “dot” next to the top 5 that you like.																															
Engineering: > Routinely accommodate cycling in roadway planning, design, construction and maintenance > Train City engineers and planners on how to accommodate cyclists > Make bridges accessible to cyclists > Provide bike racks at places of employment, retail and community > Permit bikes on all public transit > Provide bike lanes on major streets > Provide multi-use pathways > Sign bike routes > Maintain bikeways and routes > Provide showers/change rooms at places of employment	Encouragement: > Promote Bike Month > Promote Bike to Work Day > Promote an annual bike tour or ride to the general public > Support community cycling clubs and advocacy organizations > Support Safe Routes to School programs > Centre a youth recreation or intervention program around cycling > Publish a bike map																														
Evaluation and Planning: > Know how many trips are by bicycle > Know how many cyclist/motor vehicle fatalities occurred in the last 5 years > Know how many cyclist/motor vehicle crashes occurred in the last 5 years > Provide a point of contact for cyclists to submit ideas/concerns > Update the City's comprehensive bicycle plan and provide funds to implement it > Commit to implementing the bicycle plan > Plan and implement an integrate cycling network of trails, bike lanes, and routes > Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	Enforcement: > Support a police liaison with the cycling community > Train police regarding traffic laws as they apply to cyclists > Target enforcement to encourage cyclists and motorists to share the road safely > Support on-bike public safety employees																														
	Education: > Campaign for motorists to share the road with cyclists > Provide adult cycling education > Provide bicycle safety programs for children in schools > Make bicycle safety materials available to the public > Include bicycle safety education in local activities such as tax or parking fee payments, utility bill inserts, etc. > Other ideas?																														
League of American Bicyclists In the US, the following cities with populations from 100,000 to 200,000 have been designated bicycle-friendly communities: <table border="1"> <tr><td>Boulder, CO</td><td>GOLD</td></tr> <tr><td>Ann Arbor MI</td><td>SILVER</td></tr> <tr><td>Arlington VA</td><td>SILVER</td></tr> <tr><td>Eugene OR</td><td>SILVER</td></tr> <tr><td>Fort Collins CO</td><td>SILVER</td></tr> <tr><td>Gainesville FL</td><td>SILVER</td></tr> <tr><td>Tempe AZ</td><td>SILVER</td></tr> <tr><td>Cary NC</td><td>BRONZE</td></tr> <tr><td>Chandler AZ</td><td>BRONZE</td></tr> <tr><td>Chattanooga TN</td><td>BRONZE</td></tr> <tr><td>Gilbert AZ</td><td>BRONZE</td></tr> <tr><td>San Jose UT</td><td>BRONZE</td></tr> <tr><td>Santa Clara CA</td><td>BRONZE</td></tr> <tr><td>Sunnyvale CA</td><td>BRONZE</td></tr> <tr><td>Vancouver WA</td><td>BRONZE</td></tr> </table> What colour would Kitchener's designation be?		Boulder, CO	GOLD	Ann Arbor MI	SILVER	Arlington VA	SILVER	Eugene OR	SILVER	Fort Collins CO	SILVER	Gainesville FL	SILVER	Tempe AZ	SILVER	Cary NC	BRONZE	Chandler AZ	BRONZE	Chattanooga TN	BRONZE	Gilbert AZ	BRONZE	San Jose UT	BRONZE	Santa Clara CA	BRONZE	Sunnyvale CA	BRONZE	Vancouver WA	BRONZE
Boulder, CO	GOLD																														
Ann Arbor MI	SILVER																														
Arlington VA	SILVER																														
Eugene OR	SILVER																														
Fort Collins CO	SILVER																														
Gainesville FL	SILVER																														
Tempe AZ	SILVER																														
Cary NC	BRONZE																														
Chandler AZ	BRONZE																														
Chattanooga TN	BRONZE																														
Gilbert AZ	BRONZE																														
San Jose UT	BRONZE																														
Santa Clara CA	BRONZE																														
Sunnyvale CA	BRONZE																														
Vancouver WA	BRONZE																														

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Exhibit 3: Tally of all “Bicycle-friendly Communities” Approaches

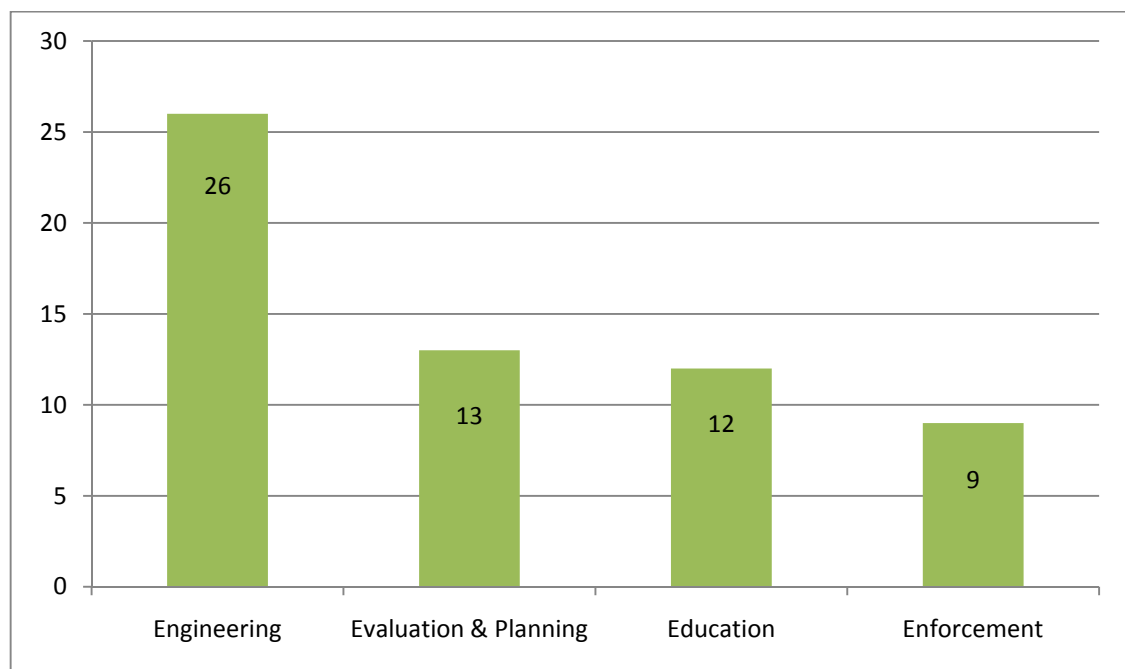
Engineering:		Encouragement:	
Routinely accommodate cycling in roadway planning, design, construction and maintenance	12	Promote Bike Month	1
Train City engineers and planners on how to accommodate cyclists	3	Promote Bike to Work Day	
Make bridges accessible to cyclists	1	Promote an annual bike tour or ride to the general public	1
Provide bike racks at places of employment, retail and community	2	Support community cycling clubs and advocacy organizations	3
Permit bikes on all public transit		Support Safe Routes to School programs	3
Provide bike lanes on major streets	1	Centre a youth recreation or intervention program around cycling	
Provide multi-use pathways	3	Publish a bike map	2
Sign bike routes	1	Enforcement:	
Maintain bikeways and routes	2	Support a police liaison with the cycling community	
Provide showers/change rooms at places of employment	1	Train police regarding traffic laws as they apply to cyclists	2
Evaluation and Planning:		Target enforcement to encourage cyclists and motorists to share the road safely	7
Know how many trips are by bicycle		Support on-bike public safety employees	
Know how many cyclist/motor vehicle fatalities occurred in the last 5 years		Education:	
Know how many cyclist/motor vehicle crashes occurred in the last 5 years		Campaign for motorists to share the road with cyclists	4
Provide a point of contact for cyclists to submit ideas/concerns	1	Provide adult cycling education	1
Update the City's comprehensive bicycle plan and provide funds to implement it	4	Provide bicycle safety programs for children in schools	5
Commit to implementing the bicycle plan	2	Make bicycle safety materials available to the public	
Plan and implement an integrate cycling network of trails, bike lanes, and routes	5	Include bicycle safety education in local activities such as tax or parking fine payments, utility bill inserts, etc.	2
Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	1	Other ideas?	

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The top ranked priorities are:

- Routinely accommodate cycling in roadway planning, design, construction and maintenance (12)
- Target enforcement to encourage cyclists and motorists to share the road safely (7)
- Plan and implement an integrate cycling network of trails, bike lanes, and routes (5)
- Provide bicycle safety programs for children in schools (5)

Exhibit 4: Comparison of Top Ranked “Bicycle-Friendly Communities” Approaches



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Appendix A: List of Activities being undertaken by Stakeholders in and surrounding Kitchener

Activity Category	Activity
Education and Safety Training	• School-based cycling courses • Adult learn to ride • Cycling courses at summer Y camps • Bike repair workshops • Bike fitting at retailers • School travel planning (including national level pilot) • Using participant testimonies to spread the word • Delivering Can-Bike training with families as well as to individuals of all ages • Regular senior's cycling tours • Safe Routes to School
Communications and Messaging	• "Share the road" signs in some locations • Responding to current events • Directing cyclists to resources re: maintenance and injuries • "Take the lane" blog • Kitchener Record sponsors MS Bike Ride, Bikeapalooza and other events
Events	• Car-free festival • Hosting film nights • Hosting speakers • Rodeos for children • MS Bike Ride, Bikeapalooza
Infrastructure Implementation	• Installing bike racks at schools • Installing bike lanes and other infrastructure in Cambridge, Waterloo and Kitchener
Research, Policy and Planning	• Researching and publishing the Air Quality Report with "5 best bets" • Setting vision for land use and policy in Official Plan • Including alternative transportation since 1960s (Kitchener) • Urban design manual includes cycling infrastructure • Neighbourhood development guidelines promoting mixed use, higher densities • Growth management strategy ensuring greater transportation choice and identifying cycling routes as priorities in installation plan • Draft Complete Streets policy in Waterloo

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Appendix B: List of all Issues, Opportunities and Partnerships

Issue, Opportunity or Partnership	Description
Political will	To address policies, costs, infrastructure needs and NIMBY
Confirm community commitment	To install infrastructure, for interim treatments, the ROW required on-road vs. Off-road
Map	- Showing citizens where facilities are, off-road connections – OR – how to relate to the existing map - Map-based promotional website
Signage strategy	- Striving for regional consistency, - Including trails and enticing people to cycle
Secure bike parking and indoor bike station	
Regional-municipal partnerships	- Education - Messages, - Developing one master plan and - Consistent signage strategy
Connectivity	401 and Grand River major barriers to Kitchener from Cambridge - Need bridge/access route from Cambridge to Kitchener downtown - Linking to neighbouring municipalities - Correcting “trails and bike lanes to nowhere” phenomenon/joining pieces
Education	- Of all road users - Promoting attitude changes via driver education
Space on road	Need more space
Cycling ambassadors	- Who help to promote cycling and change the “terror of riding on roads” - Start by working with seniors - Bike buddy program, could start with Police
Quality designs	- Ensuring proper installation of cycling infrastructure - Installing more bike parking - Including multiple cycling users in designs and enlarging support - Adopting Bicycle-friendly Community approaches
Safety and comfort	- Overarching and repeated issue - Some stakeholders advocated that cycle network be kept separate from roads
Data	- Obtaining data to develop baseline - Identify destinations cycled to the most
Maintenance	Leaf and snow clearing needed year round

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Additional issues submitted following the meeting from Mr. B. Sloan, City of Kitchener, Planning Department:

1. What destinations (non-recreational land uses) are cycled to the most?
 - A. From where?
 - B. What is needed in order to make it identifiable, easy and safe?
 - C. What facilities are needed at the destination?
2. Identify future cycling routes/connections so that they can be incorporated into new subdivision designs, streetscape improvement projects, other
3. On road vs off road preference for cycling lanes:
 - A. If on road cycling lanes:
 - What type of street
 - What is the width of lane
 - Considering everything else required what is resultant required ROW, specifically for collector streets?
(refer to design guidelines 37, 39, 47 of the Community Design Guidelines in the Urban Design Manual and 2.2.29 on page A-13 of the Design Brief for Suburban Development)
 - B. If off road, what is the preferred surface material?
4. How does a City Cycling Master Plan / route map fit with Region plan?
5. To help satisfy the Council approved Kitchener Growth Management Plan Goal 3 – Action 2A, ensure that the Cycling Master Plan has clear recommendations for how/when any proposed routes will be installed.
6. How does this fit with trail planning?
7. Is there a target for cycling as a % of transportation modal split?
8. How do we/others pay for cycling route installation, way-finding/signage, etc?
9. What recommendations would this plan have for any changes to, or new, policies that we could include in our new Official Plan that is under preparation?



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Summary of Initial KCAC Consultation

To/Attention	file	Date	November 16, 2009
From	Norma Moores	Project No	26823
cc	Steering Committee	Steno	nvm
Subject	City of Kitchener—Consultation with the Cycling Advisory Committee		

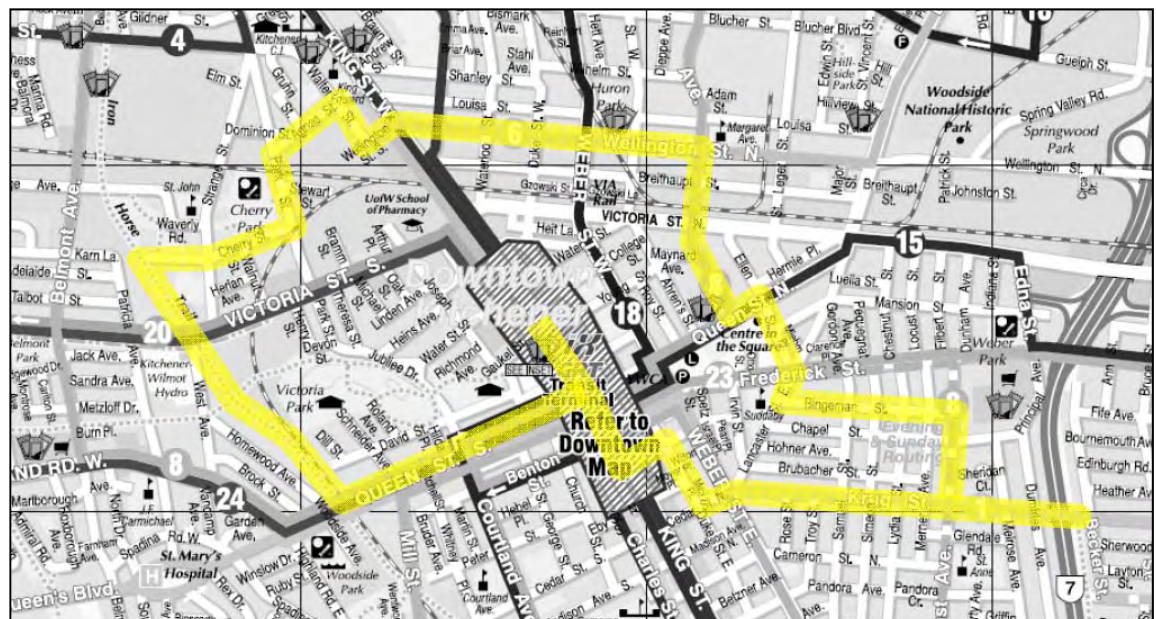
Introduction

Consultation with the Kitchener Cycling Advisory Committee (KCAC) was initiated early in the Cycling Master Plan study to incorporate their concerns about cycling in the City and discuss potential improvements and opportunities. The initial consultation consisted of a cycling tour followed by a presentation and discussion at a KCAC meeting.

KCAC Cycling Tour

The cycling tour was held on Tuesday, October 13, 2009 from 4 to 6 PM. Ron Schirm, staff representative on the KCAC and project lead for the study, had prepared a tour to experience a number of the existing facilities and view issues and opportunities. The tour route is illustrated in Exhibit 1. Photos from the tour are provided in Exhibit 2.

Exhibit 1: KCAC Cycling Tour Route



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Exhibit 2: Photos from the Cycling Tour with KCAC, October 13, 2009



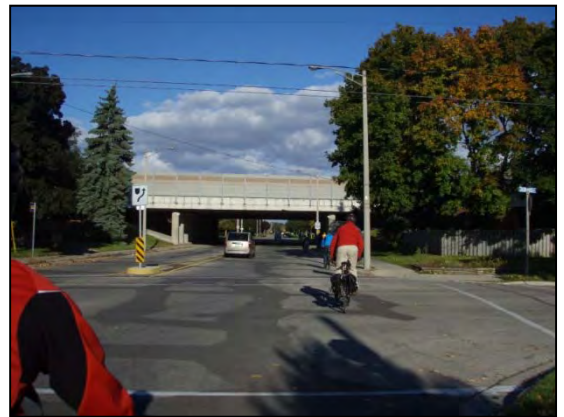
Southbound on King Street—recently reconstructed to improve streetscape; shared lane markings (“sharrows”) could be added



Southbound on Duke Street—Lower traffic volumes and speeds make this street easier to share than King Street



Eastbound on Krug Street—a wide street when there are no parked cars present



Eastbound on Krug Street crossing under Highway 7 / 85—one of the few crossings of the freeway without interchange ramps



No curb cut on Krug Street at “Becker Street” Community Trail



“Becker Street” Community Trail looking northbound from Krug Street—runs parallel to Highway 85 / 7

file – November 16, 2009



Looking north from the “Becker Street” Community Trail at Krug Street—could the trail be continued?



Northbound on East Avenue turning left onto Bingeman Street—could East Avenue be re-striped from four lanes to three with bike lanes?



Westbound on Bingeman Street—the quieter streets in the grid network could become “bicycle boulevards” if stop signs and arterial road crossings are addressed



Northbound on Margaret Avenue near Victoria Street—sharing the road with transit vehicles



Active rail line at Wellington Street—the Region of Waterloo is proposing a trail with active rail



Wellington Street rail crossing—rough tracks

file – November 16, 2009



Iron Horse Trail at Victoria Street—the sign says “Please Cross at Signalized Intersection”



Looking east on Victoria Road at the westbound bike lane



Iron Horse Trail crossing of the rail line near Victoria Park—attention to detail would improve the safety and convenience of this crossing



Construction near David Street—temporary conditions are hazardous for cyclists on the Iron Horse Trail



Iron Horse Trail crossing at Queen Street—new median refuge allows crossing one direction of traffic at a time with enough room on median to wait with a bicycle



New bicycle parking locked compound for employees at City Hall accessed with employee swipe card

file – November 16, 2009

Following the cycling tour, KCAC members were asked to identify opportunities (the “good”) and issues (the “bad”). These are summarised in Exhibit 3.

Exhibit 3: Summary of Opportunities and Issues Discussed Following KCAC Cycling Tour

Opportunities or the “good”	Issues or the “bad”
Specific Locations	
- Cherry Street trail - Queen Street crossing of the Iron Horse Trail - Sims Estate Trail behind homes along the Grand River (Chicopee area) - Walter Bean extension - Forest Heights has nice trails - Grassy corridor between Krug and Frederick along Highway 85 - Spur line trail—proposed \$2M, 2.5 km long trail with rail; Region of Waterloo will co-ordinate ownership; City will address drainage, lighting and amenities - Freeway crossing needs: - Fairview Road - Hidden Valley bridge - Dual culvert at creek near Westmount and Ottawa connects trail to Laurentian - Pedestrian bridge needed at Forest Heights / Sunrise Centre following the hydro corridor - Ottawa Street - Courtland Avenue—opportunity to formalize trail and connect with Block Line extension	- Queen Street is a missed opportunity—it could have had curb inlets and other details for cyclists - Glasgow / Iron Horse Trail crossing needs a median refuge island - Victoria Street / Iron Horse Trail crossing needs to be improved - Forest Heights Trail along Conestoga Parkway—cannot get across the expressway to access Hydro Trail to Stanley Park - Stairs at the end of the Sims Estate Trail is a temporary fix—details need to be address
Trails and Bikeways	
- Open space and many trails can take you places - Some roads have space and some open space corridors provide a high degree of connectivity - On local streets, change stop signs to make it work for cyclists: yield signs, traffic circles - Iron Horse Trail is an example of how it can work - Rapid Transit integration—bike racks on vehicles; bike racks at stations; bikeways along corridors is tricky due to constrained width, consider parallel routes like King, Victoria, Ottawa - Example of good maps: Whistler’s laminated descriptive maps	- Need to pay attention to the details - Why are cycling features so difficult to implement in reconstruction and redevelopment projects? - Need more functional transportation routes from home to work - Trail connections at roadways are inconsistent in design—curb cuts, crossings, signage, barriers, etc. - Create connectivity east-west and north-south - Lack of on-road and variety of on-road facilities - People have to feel safe and comfortable - Need the right facility in the right place - Need small signage or descriptions to address “where do I go?” - Need “public education” around shared lane markings (“sharrows”) for drivers, cyclists, students, adults and youth

file – November 16, 2009

Opportunities or the “good”	Issues or the “bad”
End-of-trip Facilities	
• Retrofitting possible through Region of Waterloo TDM program • Create a Bike Station in the core with the Rapid Transit Station or \$15 M parking garage • Parking by-law requires developers to provide 10% as bike parking	• Bicycle and cyclists security is linked to location, location, location • Needed in many places to accommodate “door to door” transportation because “bikes can get to the door” • More than just bike racks: lockers, showers; offer developers credit if they supply these
Safety and Promotion	
• “Ride with me” or “bike buddies” —expand program of pairing cyclists with those interested	• Safety is a concern—how to educate drivers; more signage and messages to drivers

Additional issues are documented in KCAC Minutes and their discussion of the Work Plan for the Cycling Master Plan (Spring 2009) as input to the study Terms of Reference

KCAC agreed that successful implementation of the Cycling Master Plan requires champions, ownership, and a department lead.

KCAC Meeting

The Cycling Master Plan was discussed further at the KCAC meeting on Tuesday, November 10, 2009. IBI group presented bikeway designs; a copy is attached. KCAC members then marked their ideas for improvements on maps, as shown in Exhibit 4 to Exhibit 6.

KCAC members were asked to consider the criteria that the League of American Bicyclists uses to designate bicycle-friendly communities (see attached) and select what they think are their top five priorities for the City of Kitchener. This information will be discussed at a subsequent meeting.

file – November 16, 2009

Exhibit 4: KCAC Map 1 Ideas for Cycling Improvements



file – November 16, 2009

Exhibit 5: KCAC Map 2 Ideas for Cycling Improvements



file – November 16, 2009

Exhibit 6: KCAC Map 3 Ideas for Cycling Improvements



file – November 16, 2009

Notes for Map 3:

1. Connect hydro corridor from Kingswood to Courtland
2. Make extension of Block Line to Courtland with bike corridor to Courtland (missing link)
3. Connect Iron Horse Trail
4. Trail (off-road) at Manitou = steep hill – needs addressing
5. Need cycling route along Manitou, connected to Homer Watson and along Homer Watson
6. College to Iron Horse Trail or continue trail through Don Heritage Pioneer village (requires Regional approval)
7. Connecting eastern neighbourhoods to downtown using Ottawa or alternative to Ottawa, Krug @ Becker to East to Frederick or Red-lined alternative to Krug
8. Link missing south of Victoria @ East to river trail to River Road (Bingeman River Trail)
9. Ensure bridge is built for cyclists across Hwy 8 off River Road
10. Markings on Bleams to Goodridge to Hidden Valley Road over Expressway (see “?”)
11. Ensure bike treatment on bridge on Ottawa Street South (planning in progress)
12. Need to connect to Fairview Mall via bicycle priority street to link 2 trails and Mall
13. Barrier to cross Fairview Road to Fairview Mall



Cycling Master Plan



Cycling Advisory Committee
November 10, 2009

The Bikeway System

- Trails
- Bike lanes, shared-use lanes
- Traffic calmed bicycle boulevards
- Cycle tracks
- Bridges / tunnels
- Intersections, interchanges and street crossings
- End-of-trip facilities
- Signage



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Bikeway Types

Bike lanes:

- Min. 1.2 m wide
- 1.5 m preferred

Retrofit with narrower lanes



New construction



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Bikeway Types

Bike lanes:

- Min. 1.2 m wide
- 1.5 m preferred

Change lane configuration:
Before



After



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Bikeway Types

Paved shoulders:

- Rural roads with AADT >2,500
- Controls erosion, extends pavement life, reduces run-off-the-road collisions, provides space for disabled vehicles, reduces gravel spoilage at driveways; provides space for cyclists
- 1.5 m preferred
- Provide 100 mm wide rumble strip at edgeline to discourage use of shoulder by motorists



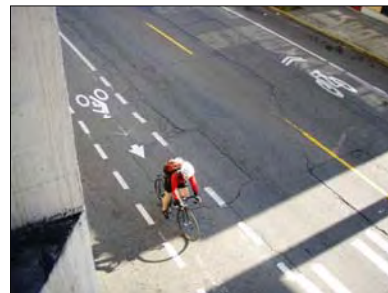
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November 10, 2009

Bikeway Types

Shared lanes:

- Wide lanes side-by-side
- Cycling adjacent parked cars
- Narrow lanes single file



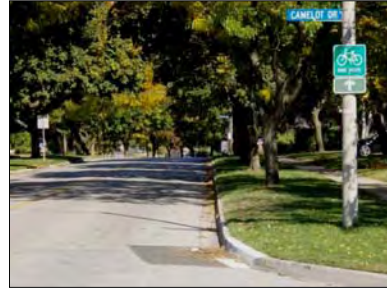
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Bikeway Types

Shared space:

- Local streets with low volumes and speeds
- Signed routes?



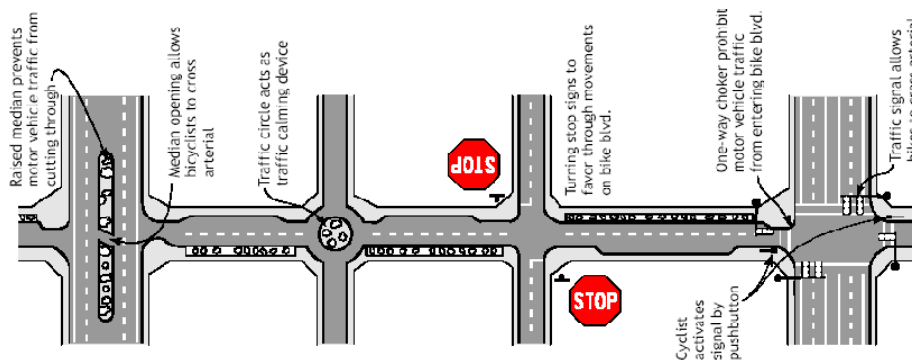
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November 10, 2009

Bikeway Types

Shared space:

- Bicycle boulevards or bicycle priority streets
- Traffic calmed local streets as alternatives to busy roads



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November 10, 2009

Bikeway Types

Bicycle Boulevard:

- Increasing intensity of treatments



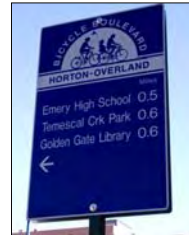
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November 10, 2009

Bikeway Types

Bicycle Boulevard:

- Signage
- Traffic calming
- Intersection treatments
- Prioritize bicycle travel
- Traffic reduction



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November 10, 2009

Intersections and Access Improvements

Detection at signals

- Marked “sweet spot” in loop detectors
- Accessible push button
- Video detection



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November 10, 2009

Intersections and Access Improvements

Improved crossings:

- IPS
- Median refuge
- For multi-use trails and local streets / bicycle boulevards



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Intersections and Access Improvements

Improved crossings:

- Raised trail crossing
- Left-turn pocket
- “Crossbike” ■■■■■■■■■■

0.4 m
■■■■■■■■■■



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Intersections and Access Improvements

Improved intersections:

- Bike box
- Bicycle signals
- Marked conflict areas



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Multi-use Trails in Road ROWs

Boulevard Trails:

- In Ontario, cyclists on boulevard bikeways must behave like pedestrians at street crossings / driveways
- Risks include conflicts with turning motorists who do not look for cyclists; “wrong-way” riding is risky
- Driveway and side street spacing min. 300 m



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

European Cycle Tracks

- Segregated bike lanes
- **Separated** from travel lanes, parking lanes and sidewalks by pavement markings, pavement colouring, bollards, curbs, raised medians, or a combination of these elements
- For use by **cyclists only**



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Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

European Cycle Tracks

Design quality:

- Typically operate one-way
- Surface, width, drainage, traffic control, signage and overall layout are well thought-out
- Main intersections include traffic signals for cyclists, bike boxes, or other features to protect cyclists from motorists turning across their path



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Cycling Master Plan



Cycling Advisory Committee
November 10, 2009

European Cycle Tracks

Maintenance quality:

- Provide the level of summer and winter maintenance to permit them to be used 24 hours a day, 7 days a week, 365 days a year



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Cycling Master Plan



Cycling Advisory Committee
November 10, 2009

European Cycle Tracks

Legislative Environment:

- In the Netherlands, defined as part of the main roadway with same rights-of-way
- Side street and driveway traffic must yield to cyclists
- Cyclists that ride on sidewalks or boulevard pathways in Ontario are “pedestrians” at side street crossings and driveways; expected to dismount to use crosswalks as per Ontario's HTA



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November 10, 2009

Cycle tracks – mid-block crossings



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Cycle tracks – signals for cyclists



Cycle tracks – driveways and side streets



Cycle tracks – bike boxes



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Cycle tracks – transit corridors



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Cycle Tracks in North America

- 9th Avenue, NYC
- Road 3, Richmond BC
- Carral Street, Vancouver BC
- Vasser Street, Cambridge MA
- Boulevard de Maisonneuve, Montréal PQ

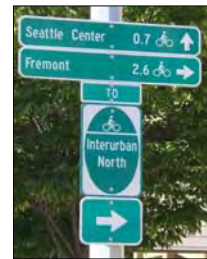


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City of Kitchener
Cycling Master Plan

August 12, 2009

Signage

- Easy to integrate into bicycle route maps
- Address route confirmation, route intersections, advance route signing, destinations, directions, distances (or time), and amenities.



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City of Kitchener
Cycling Master Plan

Cycling Advisory Committee
November 10, 2009

Bicycle-friendly Communities



A Bicycle Friendly Community encourages its residents to use bicycles for fun, fitness and transportation.

What could be done better in the City of Kitchener? Place a “dot” next to the top 5 that you like.

Engineering:	Encouragement:
> Routinely accommodate cycling in roadway planning, design, construction and maintenance	> Promote Bike Month
> Train City engineers and planners on how to accommodate cyclists	> Promote Bike to Work Day
> Make bridges accessible to cyclists	> Promote an annual bike tour or ride to the general public
> Provide bike racks at places of employment, retail and community	> Support community cycling clubs and advocacy organizations
> Permit bikes on all public transit	> Support Safe Routes to School programs
> Provide bike lanes on major streets	> Centre a youth recreation or intervention program around cycling
> Provide multi-use pathways	> Publish a bike map
> Sign bike routes	Enforcement:
> Maintain bikeways and routes	> Support a police liaison with the cycling community
> Provide showers/change rooms at places of employment	> Train police regarding traffic laws as they apply to cyclists
Evaluation and Planning:	> Target enforcement to encourage cyclists and motorists to share the road safely!
> Know how many trips are by bicycle	> Support on-bike public safety employees
> Know how many cyclist/motor vehicle fatalities occurred in the last 5 years	Education:
> Know how many cyclist/motor vehicle crashes occurred in the last 5 years	> Campaign for motorists to share the road with cyclists
> Provide a point of contact for cyclists to submit ideas/concerns	> Provide adult cycling education
> Update the City's comprehensive bicycle plan and provide funds to implement it	> Provide bicycle safety programs for children in schools
> Commit to implementing the bicycle plan	> Make bicycle safety materials available to the public
> Plan and implement an integrate cycling network of trails, bike lanes, and routes	> Include bicycle safety education in local activities such as tax or parking fine payments, utility bill inserts, etc.
> Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	> Other ideas?



In the US, the following cities with populations from 100,000 to 200,000 have been designated bicycle-friendly communities:

Boulder, CO
GOLD
 Ann Arbor MI
 Arlington VA
 Eugene OR
 Fort Collins CO
 Gainesville FL
 Tempe AZ
 Cary NC
 Chandler AZ
 Chattanooga TN
 Gilbert AZ
 San Jose UT
 Santa Clarita CA
 Sunnyvale CA
 Vancouver WA

What colour would Kitchener's designation be?





IBI Group
200 East Wing--360 James Street North
Hamilton ON L8L 1H5 Canada
tel 905 546 1010
fax 905 546 1011

Summary of Public Information Session 1

To/Attention	Ron Schirm, City of Kitchener	Date	December 1, 2009
From	Neluka Leanage, IBI Group	Project No	26823
cc	Study Advisory Committee Norma Moores, IBI Group Dylan Passmore, IBI Group	Steno	nl
Subject	Summary of Public Information Sessions, November 21, 2009		

A public information session was held on Saturday, November 21, 2009 in Kitchener to introduce the Kitchener Cycling Master Plan project and solicit feedback from the public on cycling policy, program and network improvements. The session, held in tow locations, consisted of registration, a municipal cycling survey, ten displays with information and exercises to obtain feedback, and four project representatives to explain and answer questions. The project representatives were:

- Ron Schirm, City of Kitchener
- Norma Moores, IBI Group
- Neluka Leanage, IBI Group

Members of the Kitchener Advisory Committee also assisted.

The first session was at the Kitchener Farmer's Market from 10:30 AM to 12:30 PM, extended by half an hour to meet the overwhelming public interest. The second session was held at the Activa Sportsplex from 2:00 PM to 4:00 PM.

Seventy-four (74) people registered at the Farmer's Market and 18 people at the Activa Sportsplex. Of these, approximately 10 people were from Waterloo, one from St. Jacobs and the balance from Kitchener. It is estimated that well over 100 people were engaged at the sessions in total since some did not sign the registration.

The following displays were set up at the information sessions:

- What is the cycling master plan and study goals
- Why promote cycling
- The cycling system: Types of bikeways and improving access; Bicycle priority streets; European cycle tracks
- Bicycle friendly communities
- Where do you live and cycle?
- We want to hear from you / next steps

Ron Schirm, City of Kitchener – December 1, 2009

Copies of the displays are attached.

Response to Display “Where do you live and cycle?”

The GRT transit and cycling map of Kitchener-Waterloo and area was displayed and attendees were asked to place a green “dot” where they lived and 5 yellow “dots” for where they wished to cycle on the map, as shown in Exhibit 1.

From this exercise, several key locations were revealed as places people wished to cycle (listed from most popular to least):

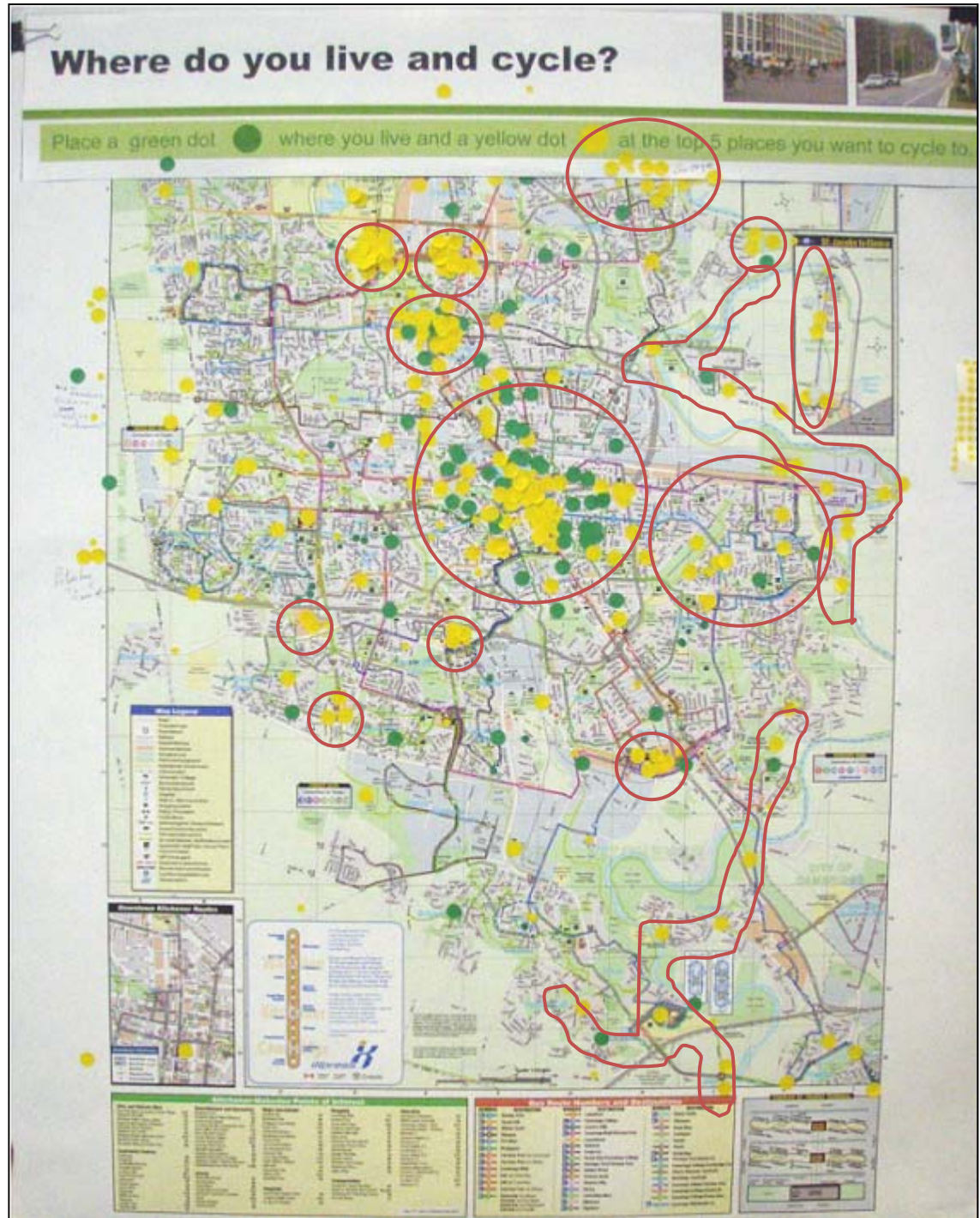
- Large catchment area around downtown Kitchener
- Uptown Waterloo
- Wilfrid Laurier University
- University of Waterloo
- Conestoga College
- Several points along the Grand River
- A residential area adjacent to (east) the Stanley Park Conservation Area
- St. Jacobs
- Fairview Park
- Generally around the Unemployment Insurance Office
- Laurentian Power Centre
- Kiwanis Park
- A smattering of places in Kitchener, Waterloo, Petersburg, New Hamburg in residential areas, smaller recreation areas, on major arterials and on trails

Through this exercise, residential locations were also identified (shown from most popular to least):

- Large catchment area around downtown Kitchener
- Uptown Waterloo
- South Kitchener near Fairview Park and Chicopee
- A limited distribution throughout Kitchener-Waterloo

Ron Schirm, City of Kitchener – December 1, 2009

Exhibit 1: Response to "Where do you live and cycle?"

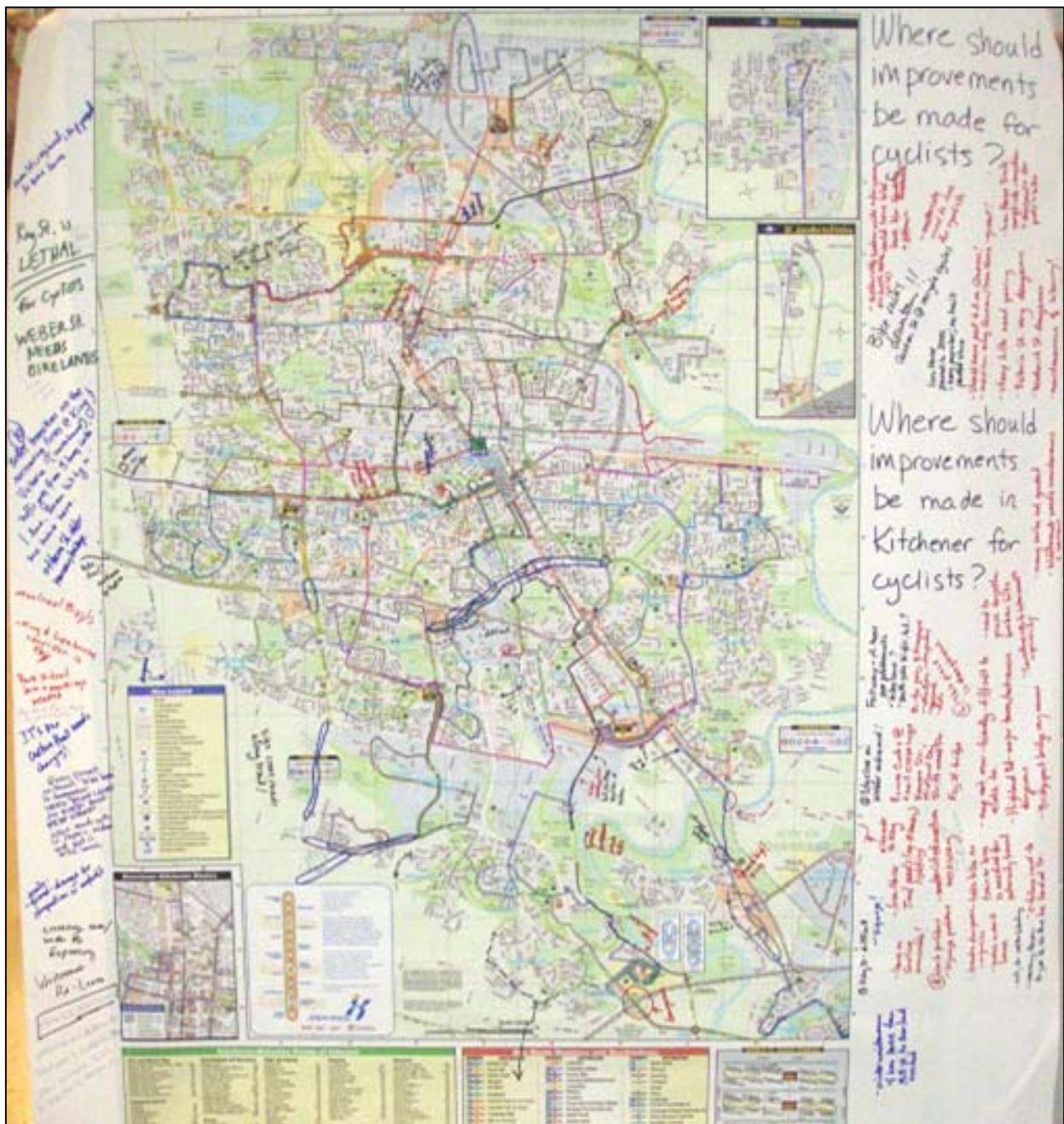


Ron Schirm, City of Kitchener – December 1, 2009

Response to Display “Where should improvements be made in Kitchener for cyclists?”

The GRT transit and cycling map of Kitchener-Waterloo and area was displayed and participants marked the locations of importance to them: problems they encountered and suggestions for improvements. They could also write their comments directly on the map. An image of this map is shown in Exhibit 2.

Exhibit 2: Locations of Cycling Improvements Needed in Kitchener

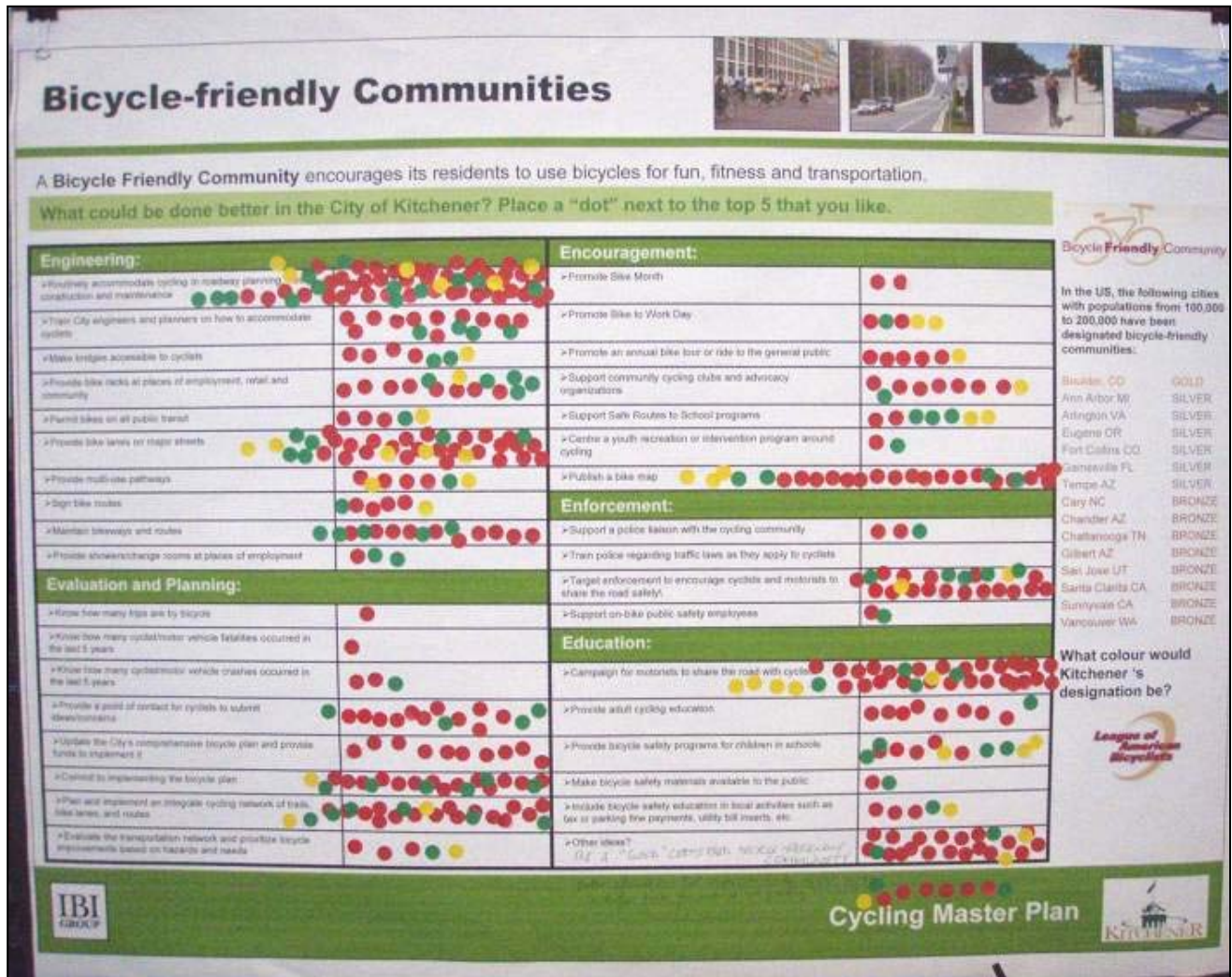


Ron Schirm, City of Kitchener – December 1, 2009

Response to Bicycle-friendly Communities Criteria.

A large display illustrating the League of American Bicyclists criteria for creating bicycle-friendly communities through policy, planning, engineering, promotion, education and enforcement was shown. Participants placed 5 "dots" next to their top priorities and the results are shown in Exhibit 3. A summary of the priorities are shown in Exhibits 4 and 5.

Exhibit 3: Priorities for Bicycle-friendly Communities Criteria in Kitchener



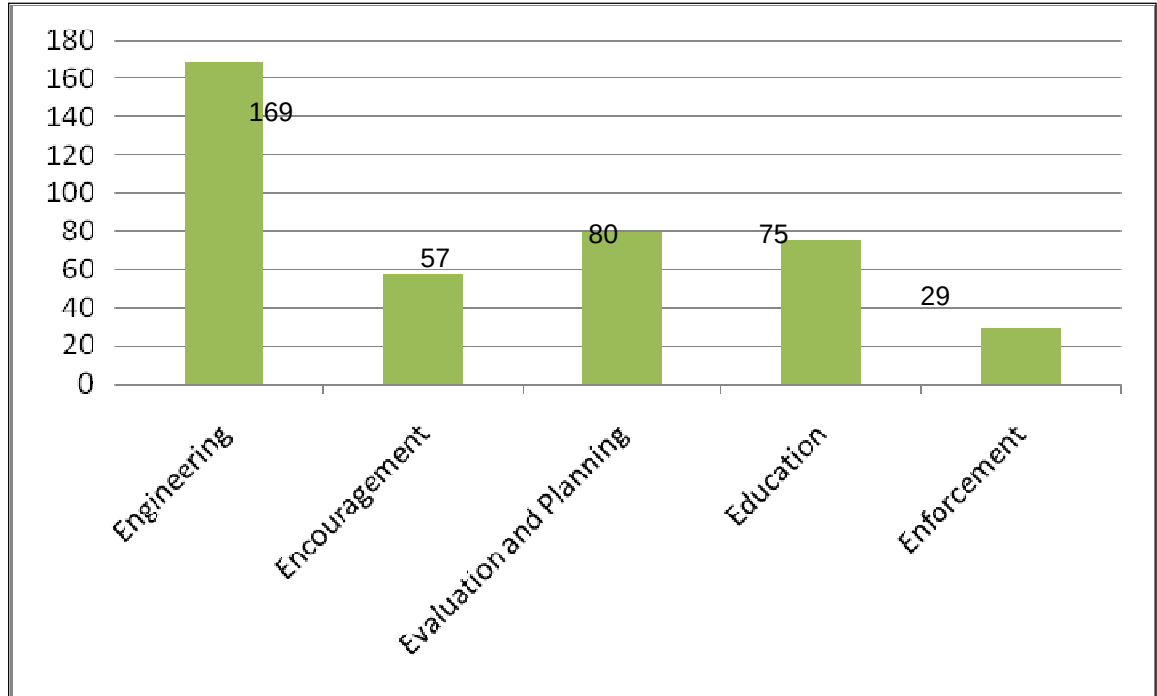
Ron Schirm, City of Kitchener – December 1, 2009

**Exhibit 4 : Tally of Priorities for Kitchener Bicycle-friendly Communities
Criteria**

Engineering:		Encouragement:	
Routinely accommodate cycling in roadway planning, design, construction and maintenance	★ 62	Promote Bike Month	2
Train City engineers and planners on how to accommodate cyclists	15	Promote Bike to Work Day	5
Make bridges accessible to cyclists	7	Promote an annual bike tour or ride to the general public	6
Provide bike racks at places of employment, retail and community	14	Support community cycling clubs and advocacy organizations	9
Permit bikes on all public transit	5	Support Safe Routes to School programs	7
Provide bike lanes on major streets	★ 36	Centre a youth recreation or intervention program around cycling	2
Provide multi-use pathways	6	Publish a bike map	★ 26
Sign bike routes	6	Enforcement:	
Maintain bikeways and routes	15	Support a police liaison with the cycling community	3
Provide showers/change rooms at places of employment	3	Train police regarding traffic laws as they apply to cyclists	0
Evaluation and Planning:		Target enforcement to encourage cyclists and motorists to share the road safely\	★ 24
Know how many trips are by bicycle	1	Support on-bike public safety employees	2
Know how many cyclist/motor vehicle fatalities occurred in the last 5 years	1	Education:	
Know how many cyclist/motor vehicle crashes occurred in the last 5 years	3	Campaign for motorists to share the road with cyclists	★ 36
Provide a point of contact for cyclists to submit ideas/concerns	15	Provide adult cycling education	9
Update the City's comprehensive bicycle plan and provide funds to implement it	10	Provide bicycle safety programs for children in schools	12
Commit to implementing the bicycle plan	★ 21	Make bicycle safety materials available to the public	2
Plan and implement an integrate cycling network of trails, bike lanes, and routes	★ 24	Include bicycle safety education in local activities such as tax or parking fine payments, utility bill inserts, etc.	5
Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	5	Other - Be a "Gold" Certified BFC	3
		Other - Better education for motorists to be cyclist-aware & stiffer fines for motorists not yielding to cyclists	8

Ron Schirm, City of Kitchener – December 1, 2009

Exhibit 5: Total Ranking by Major Theme





Cycling Master Plan for the City of Kitchener

What is the Cycling Master Plan Study?

This study is being undertaken by the City to provide the necessary **policy and guidance** to Council, staff and the Cycling Advisory Committee to support and promote both recreational and utilitarian cycling so as to **significantly increase the number of people cycling in the City**.



Study Goals:

- Establish a **cycling network** that is buildable, prioritized, well-connected facilities on and off-road, and integrated with the Region's Cycling Policy Master Plan
- **Classify trails** for recreational and utilitarian use, considering their routing, connectivity, design and maintenance qualities
- Develop a **signage strategy** that considers way-finding and distances to destinations
- Establish **bikeway designs** for existing and new roads
- Establish **supportive policies, programs and partnerships** for end-of-trip facilities (bicycle parking, change rooms, showers, etc.), events and workshops, a web site and other programs that support and promote more cycling
- Identify an **implementation plan** for putting the recommendations in place, including priorities and funding



Cycling Master Plan



Why Promote Cycling?



Benefits of Cycling:

Helping People and Communities:

- Improved health and well-being
- Improved quality of life
- Increased accessibility
- Promotion of secure and livable communities
- Reduced travel costs

Helping to Improve our Environment

- Reduced air pollution
- Reduced greenhouse gas emissions
- Reduced surface area dedicated to roads and car parking

Helping the Economy

- Happier, healthier people are more productive at work and school
- Increased land values
- More efficient use of existing infrastructure
- Increased tourism potential
- Revitalized urban centres

And cycling is fun creating a sense of *joie de vivre*!



The Canadian Fitness and Lifestyle Research Institute reports that less than half of Ontarians are physically active on a regular basis, costing Ontario's health care system an estimated \$1.8 billion a year (\$156/capita). Health Canada recommends that cycling 30 mins. a day can result in significant health benefits.

Based on a poll undertaken for the Region of Waterloo (Ipsos Reid, Public Affairs, January 2008), residents agree that people should be using their cars less often, recognizing the impact driving has on the environment and personal health, and 46% think this is achievable.

Statistics Canada reported that the average annual expenditure per household on transportation is about \$7,800, second only to what is consumed by shelter at about \$10,900.



Cycling Master Plan



The Cycling System



Types of Bikeways

- Signed routes
- Bike lanes
- Shared lanes
- Paved shoulders
- Multi-use trails
- Boulevard multi-use trails



Improve Access

- Median refuges to cross busy streets



- Traffic signals to cross busy streets



- Raised crossings to give trails priority on local streets



- Bicycle detection at traffic signals



- Cyclist pushbuttons to activate traffic signals



- Bike box waiting area on red signal so cyclists proceed first when green



- Bicycle traffic signals



- "Crossbike" adjacent crosswalk



- Neighbourhood Traffic circle to replace stop signs



Cycling Master Plan



The Cycling System



Bicycle Priority Streets

- Traffic-calmed, local streets that have been optimized for through bicycle traffic, but discourage other non-local traffic
- Sometimes called "Bicycle Boulevards" or "Local Bicycle Streets"
- Traffic controls (signals, stop signs and yield signs) are placed to control conflicts with motorists and give priority to cyclists
- Traffic control or features are provided so cyclists can cross major streets
- Enhance neighborhood livability and traffic safety



Most people know how to get around their own neighbourhood so signed bicycle routes are not really needed.

For cyclists who do not want to cycle on busy roads, signed bicycle priority streets on local streets can route them through neighbourhoods to their destinations. Cities with a network of bicycle priority streets include Berkeley and Eugene CA, Albuquerque NM, Portland OR, and Vancouver BC.



Cycling Master Plan



Cycle Tracks in Kitchener?



European Cycle Tracks

Bike lanes separated from travel lanes, parking lanes and sidewalks by pavement markings, pavement colouring, bollards, curbs, raised medians, or a combination of these elements. For use by cyclists only.

Dutch cycle tracks

Are there places in Kitchener where cycle tracks could work?



How do they differ from the boulevard trails built along Ira Needles Boulevard and Fischer-Hallman Road?

Design quality—Typically operate one-way with traffic. The surface, width, drainage, traffic control, signage and overall layout are well thought-out. Main intersections often include traffic signals for cyclists, bike boxes, or other features to protect cyclists from motorists turning across their path.

Maintenance quality—Cycle tracks along busy routes are afforded the level of summer and winter maintenance that permit them to be used 24 hours a day, 7 days a week, 365 days a year.

Legislative environment—Cycle tracks are defined as part of the main roadway and cyclists using the cycle track are provided with the same rights-of-way as motorists on the main roadway. Side street and driveway traffic must yield to cyclists in the cycle track. Cyclists that ride on sidewalks or boulevard pathways in Ontario are expected to behave like pedestrians at side street crossings, dismounting to use crosswalks as per Ontario's *Highway Traffic Act*.

Cycle Tracks in Vancouver, Richmond, Montreal



Cycling Master Plan



Bicycle-friendly Communities



A **Bicycle Friendly Community** encourages its residents to use bicycles for fun, fitness and transportation.

What could be done better in the City of Kitchener? Place a "dot" next to the top 5 that you like.

Engineering:	Encouragement:
> Routinely accommodate cycling in roadway planning, design, construction and maintenance	> Promote Bike Month
> Train City engineers and planners on how to accommodate cyclists	> Promote Bike to Work Day
> Make bridges accessible to cyclists	> Promote an annual bike tour or ride to the general public
> Provide bike racks at places of employment, retail and community	> Support community cycling clubs and advocacy organizations
> Permit bikes on all public transit	> Support Safe Routes to School programs
> Provide bike lanes on major streets	> Centre a youth recreation or intervention program around cycling
> Provide multi-use pathways	> Publish a bike map
> Sign bike routes	Enforcement:
> Maintain bikeways and routes	> Support a police liaison with the cycling community
> Provide showers/change rooms at places of employment	> Train police regarding traffic laws as they apply to cyclists
Evaluation and Planning:	> Target enforcement to encourage cyclists and motorists to share the road safely
> Know how many trips are by bicycle	> Support on-bike public safety employees
> Know how many cyclist/motor vehicle fatalities occurred in the last 5 years	Education:
> Know how many cyclist/motor vehicle crashes occurred in the last 5 years	> Campaign for motorists to share the road with cyclists
> Provide a point of contact for cyclists to submit ideas/concerns	> Provide adult cycling education
> Update the City's comprehensive bicycle plan and provide funds to implement it	> Provide bicycle safety programs for children in schools
> Commit to implementing the bicycle plan	> Make bicycle safety materials available to the public
> Plan and implement an integrate cycling network of trails, bike lanes, and routes	> Include bicycle safety education in local activities such as tax or parking fine payments, utility bill inserts, etc.
> Evaluate the transportation network and prioritize bicycle improvements based on hazards and needs	> Other ideas?



In the US, the following cities with populations from 100,000 to 200,000 have been designated bicycle-friendly communities:

Boulder, CO	GOLD
Ann Arbor MI	SILVER
Arlington VA	SILVER
Eugene OR	SILVER
Fort Collins CO	SILVER
Gainesville FL	SILVER
Tempe AZ	SILVER
Cary NC	BRONZE
Chandler AZ	BRONZE
Chattanooga TN	BRONZE
Gilbert AZ	BRONZE
San Jose UT	BRONZE
Santa Clarita CA	BRONZE
Sunnyvale CA	BRONZE
Vancouver WA	BRONZE

What colour would Kitchener's designation be?



Cycling Master Plan



We want to hear from you!

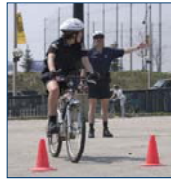


We would like your ideas for the City of Kitchener Cycling Master Plan!

Next Steps

A Public Workshop will be held in February 2010 to present the draft recommendations for public input and feedback.

Thank you for your interest.



There are several ways to participate:

- Speak to a representative today
- Complete one of our comment forms here today or mail it to us within the next two weeks
- Send your comments to:

Ron Schirm

Transportation Planning
City of Kitchener
(519) 741-2232
ronald.schirm@kitchener.ca

or

Norma Moores

Project Manager
IBI Group
(905) 546-1010 ext. 2106
Norma.Moores@IBIGroup.com



Cycling Master Plan





IBI Group
200 East Wing--360 James Street North
Hamilton ON L8L 1H5 Canada

tel 905 546 1010
fax 905 546 1011

Summary of Public Information Session 2

To/Attention	Steering Committee	Date	May 31, 2010
From	Neluka Leanage, IBI Group	Project No	26823
cc	Brian Hollingworth, IBI Group Norma Moores, IBI Group	Steno	nl
Subject	Summary of Public Information Session, May 19, 2010		

The final public information session was held on Wednesday, May 19, 2010 from 4:30 to 8:00 PM at Kitchener City Hall to present the recommendations of the Kitchener Cycling Master Plan (KCMP) and solicit feedback from the public. The session consisted of an open house and a presentation at 6:30 PM followed by a question period. Before and following the presentation, attendees could discuss the KCMP with members of the study team. They could also review and comment on displays illustrating components of the draft KCMP, and fill in a comment form.

Fifty people signed the registration sheet. Project representatives in attendance included:

- Ron Schirm, City of Kitchener
- Peter Wetherup, City of Kitchener, Community Services
- William Sleeth, City of Kitchener, Community Services
- Norma Moores, IBI Group
- Neluka Leanage, IBI Group
- Members of the Kitchener Cycling Advisory Committee

The following displays were set up at this session. Copies of the displays are attached.

- Welcome and Agenda
- Cycling Master Plan: What is the Cycling Master Plan Study?
- Why Promote Cycling?
- The Cycling System: Types of Bikeways
 Bicycle Priority Streets
 European Cycle Tracks
- Signage Strategy
- Proposed revisions to Official Plan Policies and Road Classification Criteria
- Proposed Cycling Master Plan Policies (2 displays)
- Policy Implementation
- Network Implementation

Steering Committee – May 31, 2010

- “We want to hear from you!” and Next Steps
- Three maps: Existing Conditions, Key Destinations, Opportunities and Barriers
Recommended Bikeway Network
Priority Bikeways and Bikeway Types

Public Priorities for the Cycling Master Plan Policies

Two displays identified recommended cycling policies. Attendees were asked to place five “dots” next to their top priorities. A tally of all the priorities is shown in Exhibit 1 and a summary of the top policy priorities are in Exhibit 2.

Exhibit 1: Tally of all the Policy Priorities

Proposed Policy	No. of “dots” placed attendees
Plan for bicycle-friendly communities within Kitchener	
Consider updating zoning by-laws to include bicycle parking for multi-family residential, commercial, office, institutional and industrial land uses including short-term visitor and longer-term, more secure resident and employee parking	6
Develop and communicate bicycle parking guidelines for interested property owners	0
Establish a program to assist property owners in retrofitting existing developments with appropriate bicycle parking	2
Consider the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations	15
Ensure the building of bicycle-friendly developments through the development of design guidelines and the review of site plans including site organization, building placement, bicycle parking, and cycling access and routes	2
Update the Road Classification to include comfortable, safer bikeways where appropriate based on the function of roadways	9
Integrate cycling into municipal practices	
Recognize and include appropriate cycling infrastructure in every new road and road reconstruction/resurfacing project, with exceptions justified and approved at a senior staff level	19
Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management	14
Review and update roadway maintenance practises to better accommodate cycling	7
Consider changes to winter maintenance of key multi-use trails to better support year-round cycling	9
Create a reporting system for cyclists to report poor roadway / bikeway / trail conditions	6
Provide staff training on how to better accommodate cyclists in the City’s decisions and responsibilities	3

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Proposed Policy	No. of “dots” placed attendees
Promote and support cycling	
Continue to partner with the Region of Waterloo Public Health on the delivery of cycling education programs and campaigns for youth and adults	3
Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work	18
Continue to partner with the Region of Waterloo and School Boards on Active and Safe Routes to School events, curriculum, school travel planning, and traffic and safety improvements in school catchment areas	2
Continue to partner with the Region of Waterloo on communicating the benefits of cycling, sharing the road education, and promoting cycling and the cycling network through information sharing on a web site or other networking medium	3
Tailor existing active living programs to better support cycling	0
Provide new programs to deal with gaps in the stages of changing behaviour	4
Develop a marketing program to promote cycling	5
Provide support to events that promote cycling and encourage cycling as a means of getting to / from City events and festivals, including the provision of secure bicycle parking (self-park or valet)	8
Support a co-ordinator to oversee the implementation of the plan, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public	10
Implement the cycling network	
Implement the cycling network over time with regular and consistent funding	18
Support a Cycling Advisory Committee to vet implementation issues, assist in establishing priorities, assess performance measures and communicate progress on cycling plan implementation to politicians, staff and the public	8
Develop, implement and maintain a Trail and cycling way-finding signage strategy and co-ordinate the with the Region of Waterloo and adjacent municipalities	20
Establish an audit process of existing bikeways and implement a process for continual improvement	7

Steering Committee – May 31, 2010

Exhibit 2: Summary of the Top Policy Priorities

Proposed Policy	No. of “dots” placed attendees
Develop, implement and maintain a Trail and cycling way-finding signage strategy and co-ordinate the with the Region of Waterloo and adjacent municipalities	20
Recognize and include appropriate cycling infrastructure in every new road and road reconstruction/resurfacing project, with exceptions justified and approved at a senior staff level	19
Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work	18
Implement the cycling network over time with regular and consistent funding	18
Consider the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations	15
Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management	14

Comments on the Proposed Cycling Network

Maps identifying the draft cycling network were on display. Attendees marked their comments on the maps and the following is a summary.

- We need much better signage (like Vancouver) and a cycling map of KW or Waterloo Region
- Several comments about the danger crossing the rail tracks on the Iron Horse Trail, the gates, lack of lighting along the trail and the need for winter maintenance (these comments will be forwarded to City of Kitchener staff working on the Trails Master Plan)
- Don't allow parking on the bike route (Bloomingdale Road)
- Walter Bean Trail section missing near Hesh Crescent
- Two comments on the foot bridge needing the addition of a narrow ramp to make walking bikes up/down stairs easier (Riverbend Drive at railway)
- Why not make King Street crossing King Street Off ramp a route priority? The current plan takes cyclists 1 km away from King
- People living in the new subdivision (south of Pioneer Road) are trapped; need more connections for them
- Need a pedestrian/cycling bridge crossing the Grand River near Old Mill Road
- Plains Road from Huron Road South should be a bike route
- Weber Street should be made much more bike friendly
- Highland Road West needs to be an improvement priority

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- Belmont Avenue West bike lane is completely disconnected
- Island on Queen Street really helps the crossing of the Iron Horse Trail
- Mill Street should be a priority
- Waterloo has made the section of Margaret Street more stressful and difficult to maintain in winter by the addition of a traffic island. The bike lanes are essentially meaningless in the winter – beware of competing interests
- Highlight Regional roads so north-south and other direct routes are made explicit (even if only to expose a gap in the network)
- Crossing signal needed at Ahrens at the railway
- Bridge needed at end of Centennial Road to connect with trail across river
- Bridge needed at end of railway/Shirley Drive
- Stop sign at Wilson Avenue and Webster Road ignored – needs attention
- Continue with Belmont Avenue trail/link
- Pedestrian/cycling bridge needed to connect from Yagur Road to Strausburg Road over Conestoga Parkway
- Sidney Street South needs a bike lane
- Need bike lanes on Weber Street especially over Expressway
- Fairway Street and Wilson Avenue intersection is dangerous – needs treatment

Comments submitted on the comment form include the following:

Additional bikeways to consider:

- The pedestrian bridge over the railway tracks that connects Riverbend to River Street is not bike-friendly, but could be with addition of a narrow ramp to roll bikes when walking—diamond plate could be good
- Many one-way streets in the area could be modified to welcome 2-way cycle lanes
- More crossings of the Conestoga Parkway are needed
- Homer Watson should be flanked by multi-use trails

Bikeways that should be removed:

- Absolutely none

Bikeways to construct first:

- Along the railway tracks from Downtown towards Uptown. Many people already walk and ride, but it is bad gravel in parts, so it is hard to use as a continuous route to Waterloo—plenty of room for tracks and bike path
- If the point is to reduce our collective environmental impact from transportation activities then the first priority should be to support inner-city commuter routes rather than routes that are primarily for recreational riding

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- Anywhere the city is doing construction / repairing of roads, consideration of cycling should be part of the plan
- Those that follow major arterial routes. People need to be able to get places

Additional policies to consider or remove:

- Make sure paved roads are in good condition—not crumbly, pot-holed or with lots of broken glass
- More bicycle parking at the Kitchener market
- Signage is important on trails—many pedestrians are “space cadets” and making paths wider will only add to their feeling if “I can walk anywhere”, “we can all walk / jog side by side”, etc.
- Street signs—cross streets
- No parking in bike lanes (preferably no stopping): See photo of Glasgow Street on the display “Why promote cycling”
- Name the trail system to encourage people to use it. It is hard to give people directions when only one trail in the city has a formal name

Most important policies to implement

- Winter maintenance needs to take bike lanes into account
- Signage on road for bike lanes needs to be renewed more often
- Share the road and enforcement of sharing
- Secure parking
- No parking in bike lanes
- Expand the network as quickly and as systematically as possible
- Stop subsidizing employee parking
- Provide showers and secure parking for city employees

Other:

- There was a plan in the late 90s, now this study / plan. When can we expect to see movement on implementation?

Emails Received from the Public

Sent: Thursday, May 20, 2010 9:45 AM

Subject: Cycling master plan

Good morning Ronald,

I'm so pleased to hear that the city of Kitchener is working toward more support for cycling in the area. Hopefully other parts of the region will follow suit. I cycle to work (in Waterloo) from my home in Baden as often as I can (1-3 times per week), and I look forward to learning more about

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the ways that this plan will facilitate my commute – especially through some of the more treacherous parts of my travels.

I look forward to being able to more easily cycle elsewhere in Kitchener as well – kudos on this initiative.

Sent: Monday, May 24, 2010 9:20 PM

Subject: Cycling Master Plan

Dear Sir,

My name is _____ and I am an avid cyclist. One of those who you might see on city streets and regional roads pushing pedals on road bikes wearing tights and colourful jerseys. I spend a lot of time on my bike as a hobby and mainly, really mainly to stay in good shape as I am too old to do any racing now. Allow me to make few comments regarding the Cycling Master Pan.

If you hope that you will get people out of cars and ride bicycles as a replacement for a car my view is, it will never happen. There are exceptions of course and there are several groups of people who you might see on bikes on the road. Cyclists like me and similar riders who do it for fitness and enjoiment like joggers and runners. It becomes a life style. I might ride to a corner store, but otherwise I am married to my car and you would not see me on the road in freezing weather in the middle of winter sloshing in the road salt. I ride inside on stationary trainer in winter and to do my bit for the environment I walk to the store as much as possible. You will find out that majority of rider in this group do it that way. I had never rode to get to work as it was a long distance and I had to travel 401. There are people who ride in the winter to commute to work every day and would be doing it regardless Cycling Master Plan and network of bike lanes and trails unless some lead conveniently where he or she wants to go. They are probably lucky to have some facilities at work to clean up after the ride.

Second group are older people(men and women) who ride comfortable upright bikes close to their homes strictly for fitness and fresh air and younger people usually parents with kids on their small bikes riding on sidewalks. You do not see them in winter or in the inclement weather.

Third group are students who are not 16 yet and have to get to school and parents do no want to drive them. They just wait to get a licence and they do not want to see a bike any more unless they get hooked somehow on competitive riding and they fall into the first group.

Last group are people who do not have cars and have no other choice but to use a bike. It is a small group and I am convinced that if or when they manage to get a car you would not see them on a bicycle.

The last section of my observation. Roads. If you want for people to use bicycles more, get the roads fixed, repair numerous pot holes, keep existing bike lanes on city street clean and free of gravel and keep hammering into motorists to be friendly, not like that moron who gave me a finger yesterday because he had to slowdown to pass me on a narrow street with oncoming traffic. And on a positive note. I have noticed very improved attitude of vast majority of motorists regarding passing me in last few days. They staid way left. I guess that article in the paper about the cyclists killed in Montreal made them finally think.

Sent: Friday, May 28, 2010 12:14 PM

Subject: Cycling Master Plan for the 21st Century

A few short comments:

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My first general comment is that I am impressed with how organized and detailed the plan is, this is why I do not have many comments. The bikeways that I think should be constructed first are routes which help connect existing routes so that people are more likely to use cycling lanes and the public's perception changes if they see bike lanes getting used. I would like to receive updates via e-mail from the city

Sent: Thursday, June 03, 2010 9:31 AM

Subject: City of Kitchener - Cycling Master Plan

Good morning, Ron/Norma...

I'm writing in response to the information you presented/distributed at the Public Information Session for the Cycling Master Plan for the City of Kitchener. If I understand correctly, you had requested feedback within two weeks, which I believe was yesterday, no? Hopefully I've not left things too late!

In short, I think the work you've done to date is exceptional. The development of a comprehensive and well integrated cycling network is long-overdue and is very much in need of the attention it is now receiving through your collective efforts. I likewise agree with and support a number of the other initiatives that are also being pursued as part of this exercise, including the development of a signage strategy.

Having said this, I do have a few comments on the material that was presented. As you'll see from the bullet list below, most of my comments are fairly minor. However, I do have one fairly substantive concern, with respect to implementation, which I have summarized at the end of my email. As your work continues, I would very much like to receive updates, including details on when the various documents and recommendations are expected to go forward to Committee and Council for consideration.

Comments/Feedback:

* I like the concept of Bicycle Priority Streets, but I feel this concept fails to capitalize on one of the greatest benefits of cycling for utilitarian purposes, which is the speed and ease with which you can often get to your destinations. By traveling on designated bikeways and trails that cut-through or circumvent the road network, it is often possible to get to destinations much faster than you might otherwise by car. By placing an emphasis on bicycle priority streets, instead of the creation/expansion of destination-oriented bikeways and trails, you are effectively forcing cyclists to use the same routes as cars, thereby undermining what I believe to be one of the greatest benefits of and draws of cycling, namely, the speed and ease you can get to key destinations. To increase the number of people cycling in the City, it needs to be made faster, easier, and more convenient than just getting in the car and commuting on the same streets as everyone else.

* I agree that a well thought-out and easy to navigate signage strategy needs to be developed. However, I worry about the extent to which such signage will simply get lost in the visual clutter of the streetscape. Ride down any urban street and you are literally bombarded with signage of every size, shape, and variety. For it to be effective, I feel the signage needs to be prominent, CONSISTENT, simple and easy to follow. Some of the samples that were included in the PowerPoint slide deck, I fear, will simply get lost in the current visual clutter of the streetscape.

* With respect to the OP policies, I would add the words "well designed" and "easily accessible" to each of the policies that reference bicycle parking facilities. Bike racks are often located at public and other facilities, but many are cheap, poorly designed, and/or located in areas wherein they do not provide for easy access and monitoring. The concept of 'eyes on the

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street' should always apply to the siting of bicycle parking facilities to as to avoid vandalism and theft. The issue of maintenance also needs to be given thoughtful consideration. A number of the bike racks wherein I park my bike - including at the GRT Terminal in downtown Kitchener - contain rusty, twisted remnants of old bicycles, most missing their rims, seats, and everything else that could easily be removed, that were likely first parked there when dinosaurs walked the earth. To encourage new riders to use these parking facilities, they need to be well-maintained and inviting, not cluttered with rusty, old bicycle remnants from years gone by.

* Concerning the proposed Cycling Master Plan Policies, avoid 'weasel words' such as "consider" and "routinely". If you want something to happen, you need to be clear, concise, and specific! To suggest that one should "consider updating the zoning-bylaws to including bicycle parking..." will effectively ensure that it never gets done. Plus, how do you measure and monitor such vague commitments?!?

* Further to the above point, I like the concept of performance monitoring process, but for it to be of any value, that which is being monitored needs to be both specific and measurable, which, in turn, requires that you set clear objectives and targets. Also, I think you need to assign/define accountability. In the PowerPoint slide, you indicate that "it is recommended that the City of Kitchener implement a performance monitoring system...", which "could be combined with communication strategies that raise the profile of cycling so that progress (or lack of progress) is given given greater attention". Unfortunately, you've not specified by who? If such a process is to be anything more than just a marketing tool, accountability needs to be clearly defined.

* My last point, and my greatest concern, has to do with the lack of specificity over the City's funding commitment to see this Plan implemented. The two of you have done great work to get the document to this stage, but to ensure the Plan actually gets implemented, there needs to be a clear commitment from Council in terms of funding. To suggest that it will be implemented over time, as funding becomes available, which is what I thought I heard at the Information Session, causes me real concern as there will always be competing demands for any such funding. Plus, if you're looking for a commitment from partners, including, potentially, senior levels of government, I think the City needs to clearly articulate, up front, what it is prepared to contribute over the short, medium, and long-term, to see this document, and there good work therein contained, implemented.

Hopefully this feedback is of some value. Keep up the good work!

Sent: Friday, June 11, 2010 9:14 PM

Subject: Bicycle Master Plan

Dear Mr. Schirm,

I fear that my comments will arrive too late to be useful for the Bicycle Master Plan council presentation in June, but I will send them with the hope they are still useful.

Having read the proposed cycling network and policies I am impressed with the range of the bicycle plans thus far presented; there appear to be some changes since I last gave feedback at the presentation in Kitchener Market last November. I look forward (hopefully soon?) to see a report with numbers and rough timelines.

To bring up a point I've not seen in the proposals, I wonder what the planners think about the "Idaho Stop Sign" - cyclists treating stop signs as yield signs - which would be much cheaper than replacing four-way-intersections with mini-roundabouts.

If I were to prioritize first steps:

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1) discussions with region about more active education and policing regarding bad motorist behaviour regarding bicyclists, and bad bicycling behaviour regarding motorists and pedestrians. Particularly: warnings for cyclists not following the rules of the road and those without bells and lights at night. I realize this is a regional responsibility, but it impacts public perception regarding the needs for cyclists in the City.

2) more bike racks in the downtown core, Victoria Park, etc. (everywhere there's a municipal lot, why is there not a bike parking area?)

3) more signed and lined bike lanes!

I very much appreciate the plans for "cycle tracks" paralleling roads, and I appreciate that the "choose your priorities" lists in the plan are further focused from where they were in November.

I hope these comments are useful, and look forward to seeing next steps.



Cycling Master Plan for the 21st Century



Public Information Session
May 19, 2010

Welcome!



City of Kitchener Cycling Master Plan for the 21st Century

Public Information Session

May 19, 2010, 4:30 PM to 8:00 PM

- 4:30 PM** Open House: sign in, review displays, fill in a comment form, and speak with study representatives
- 6:30 PM** Presentation
- 7:00 PM** Questions and answers
- 7:15 PM** Open House
- 8:00 PM** Adjournment



Cycling Master Plan





Cycling Master Plan for the City of Kitchener

What is the Cycling Master Plan Study?

This study is being undertaken by the City to provide the necessary **policy and guidance** to Council, staff and the Cycling Advisory Committee to support and promote both recreational and utilitarian cycling so as to **significantly increase the number of people cycling in the City**.



Study Goals:

- Establish a **cycling network** that is buildable, prioritized, well-connected facilities on and off-road, and integrated with the Region's Cycling Policy Master Plan
- **Classify trails** for recreational and utilitarian use, considering their routing, connectivity, design and maintenance qualities
- Develop a **signage strategy** that considers way-finding and distances to destinations
- Establish **bikeway designs** for existing and new roads
- Establish **supportive policies, programs and partnerships** for end-of-trip facilities (bicycle parking, change rooms, showers, etc.), events and workshops, a web site and other programs that support and promote more cycling
- Identify an **implementation plan** for putting the recommendations in place, including priorities and funding



Why Promote Cycling?



Benefits of Cycling:

Helping People and Communities:

- Improved health and well-being
- Improved quality of life
- Increased accessibility
- Promotion of secure and livable communities
- Reduced travel costs

Helping to Improve our Environment

- Reduced air pollution
- Reduced greenhouse gas emissions
- Reduced surface area dedicated to roads and car parking

Helping the Economy

- Happier, healthier people are more productive at work and school
- Increased land values
- More efficient use of existing infrastructure
- Increased tourism potential
- Revitalized urban centres

And cycling is fun creating a sense of *joie de vivre*!



The Canadian Fitness and Lifestyle Research Institute reports that less than half of Ontarians are physically active on a regular basis, costing Ontario's health care system an estimated \$1.8 billion a year (\$158/capita). Health Canada recommends that cycling 30 mins. a day can result in significant health benefits.

Based on a poll undertaken for the Region of Waterloo (Ipsos Reid, Public Affairs, January 2008), residents agree that people should be using their cars less often, recognizing the impact driving has on the environment and personal health, and 46% think this is achievable.

Statistics Canada reported that the average annual expenditure per household on transportation is about \$7,800, second only to what is consumed by shelter at about \$10,900.



The Cycling System



Types of Bikeways

- Signed routes
- Bike lanes
- Shared lanes
- Paved shoulders
- Multi-use trails
- Boulevard multi-use trails



Improve Access

- Median refuges to cross busy streets



- Traffic signals to cross busy streets



- Raised crossings to give trails priority on local streets



- Bicycle detection at traffic signals



- Cyclist pushbuttons to activate traffic signals



- Bike box waiting area on red signal so cyclists proceed first when green



- Bicycle traffic signals



- "Crossbike" adjacent crosswalk



- Neighbourhood Traffic circle to replace stop signs



Cycling Master Plan



The Cycling System



Bicycle Priority Streets

- Traffic-calmed, local streets that have been optimized for through bicycle traffic, but discourage other non-local traffic
- Sometimes called "Bicycle Boulevards" or "Local Bicycle Streets"
- Traffic controls (signals, stop signs and yield signs) are placed to control conflicts with motorists and give priority to cyclists
- Traffic control or features are provided so cyclists can cross major streets
- Enhance neighborhood livability and traffic safety



Most people know how to get around their own neighbourhood so signed bicycle routes are not really needed.

For cyclists who do not want to cycle on busy roads, signed bicycle priority streets on local streets can route them through neighbourhoods to their destinations. Cities with a network of bicycle priority streets include Berkeley and Eugene CA, Albuquerque NM, Portland OR, and Vancouver BC.



Cycling Master Plan



The Cycling System



European Cycle Tracks

Bike lanes separated from travel lanes, parking lanes and sidewalks by pavement markings, pavement colouring, bollards, curbs, raised medians, or a combination of these elements. For use by cyclists only.

Dutch cycle tracks



How do they differ from the boulevard trails built along Ira Needles Boulevard and Fischer-Hallman Road?

Design quality—Typically operate one-way with traffic. The surface, width, drainage, traffic control, signage and overall layout are well thought-out. Main intersections often include traffic signals for cyclists, bike boxes, or other features to protect cyclists from motorists turning across their path.

Maintenance quality—Cycle tracks along busy routes are afforded the level of summer and winter maintenance that permit them to be used 24 hours a day, 7 days a week, 365 days a year.

Legislative environment—Cycle tracks are defined as part of the main roadway and cyclists using the cycle track are provided with the same rights-of-way as motorists on the main roadway. Side street and driveway traffic must yield to cyclists in the cycle track. Cyclists that ride on sidewalks or boulevard pathways in Ontario are expected to behave like pedestrians at side street crossings, dismounting to use crosswalks as per Ontario's *Highway Traffic Act*.

Cycle Tracks in Vancouver, Richmond, Montreal



Cycling Master Plan



Signage Strategy



Network Signage

Cyclists and trail users need way-finding signage for:

- Route confirmation along the route
- At route intersections
- For changes in route direction
- In advance of routes to help find them
- For key destinations and distances
- To find amenities such as bicycle parking
- To reflect mapping

Network signage in Kitchener will be important for integrating the cycling network with the multi-use trail network, and the City's network with those of the Region of Waterloo and neighbouring municipalities. The City will need to examine which signage strategy will work within the resources available to implement and maintain the signs. A key principle will be to minimize sign clutter when possible.



It is recommended that the City of Kitchener develop a way-finding signage strategy in partnership with the Region of Waterloo and co-ordinated with adjacent municipalities to sign the cycling and multi-use trail network so that they are more visible to users and the traveling public, and the signs communicate the network's connectedness, destinations and distances.

Examples



Cycling Master Plan



Proposed Official Plan Policies



Proposed revisions to Official Plan policies:

The City shall support residents, employees and visitors in considering cycling by:

Developing a **network** of on-street and off-street bike lanes, local bicycle streets, signed routes to key destinations, and multi-use trails

Requiring new, multi-unit residential, commercial, industrial, office and institutional developments to provide **secure bicycle parking** and encouraging, where appropriate, shower/change facilities for bike commuters;

Raising **public awareness** of the convenience, health and economic benefits of cycling by articulating that cyclists will be **consistently planned for** in municipal decisions and given priority in some cases; and

Supporting **education programs** on safe and responsible cycling for cyclists, motorists and pedestrians;

Providing **bicycle parking facilities** at public facilities that should be accessible to cyclists;

Systematically coordinating, integrating, and improving cycling conditions within the City's transportation infrastructure, services and programs

The City shall support residents, employees and visitors in considering cycling

Proposed revisions to the Road Classification:

- Road classification criteria are recommended to **explicitly** consider the needs of cyclists within every classification.
- Cycling should be restricted only on freeways.
- On **arterial roadways**, which feature higher speed or higher volume traffic, bikeways should provide safe space for cyclists, with ample separation from vehicular traffic. The preferred bikeway type is cycle tracks, with bike lanes being the minimal requirement.
- On **major collector roadways**, which carry from 5,000 to 8,000 vehicles a day with a posted speed limit no greater than 50 km/hr, the preferred bikeway type is bike lanes.
- On **minor collectors** and other **local roadways** with lower volumes (5,000 vehicles a day or less) and lower speeds (50 km/h or less), in most cases cyclists and motorists can share the roadway. Continuous traffic-calmed local bicycle priority streets may also be provided on these roadways as alternative routes to higher speed or higher volume roads.
- **Boulevard multi-use trails** may only be considered when used as a link between bikeways or multi-use trails and no other practicable options exist. Boulevard multi-use trails may only be considered where the distance between driveways and intersections exceeds 300 m



Cycling Master Plan



Proposed Cycling Master Plan Policies

1 of 2

Place a "dot" beside your top priorities!



Plan for bicycle-friendly communities within Kitchener

Consider updating zoning by-laws to include bicycle parking for multi-family residential, commercial, office, institutional and industrial land uses including short-term visitor and longer-term, more secure resident and employee parking

Develop and communicate bicycle parking guidelines for interested property owners

Establish a program to assist property owners in retrofitting existing developments with appropriate bicycle parking

Consider the cycling network in all Community Plans and plans of subdivision to create comfortable and direct bikeways within and through these communities to key destinations

Ensure the building of bicycle-friendly developments through the development of design guidelines and the review of site plans including site organization, building placement, bicycle parking, and cycling access and routes

Update the Road Classification to include comfortable, safer bikeways where appropriate based on the function of roadways

Integrate cycling into municipal practices

Recognize and include appropriate cycling infrastructure in every new road and road reconstruction/resurfacing project, with exceptions justified and approved at a senior staff level

Routinely consider the needs of cyclists in transportation projects and services, including planning, design, traffic data collection, traffic calming programs, safety audits and construction / traffic management

Review and update roadway maintenance practices to better accommodate cycling

Consider changes to winter maintenance of key multi-use trails to better support year-round cycling

Create a reporting system for cyclists to report poor roadway / bikeway / trail conditions

Provide staff training on how to better accommodate cyclists in the City's decisions and responsibilities



Cycling Master Plan



Proposed Cycling Master Plan Policies

2 of 2

Place a "dot" beside your top priorities!



Promote and support cycling

Continue to partner with the Region of Waterloo Public Health on the delivery of cycling education programs and campaigns for youth and adults

Continue to partner with the Region of Waterloo on Transportation Demand Management programs to promote cycling as viable transportation to places of work

Continue to partner with the Region of Waterloo and School Boards on Active and Safe Routes to School events, curriculum, school travel planning, and traffic and safety improvements in school catchment areas

Continue to partner with the Region of Waterloo on communicating the benefits of cycling, sharing the road education, and promoting cycling and the cycling network through information sharing on a web site or other networking medium

Tailor existing active living programs to better support cycling

Provide new programs to deal with gaps in the stages of changing behaviour

Develop a marketing program to promote cycling

Provide support to events that promote cycling and encourage cycling as a means of getting to / from City events and festivals, including the provision of secure bicycle parking (self-park or valet)

Support a co-ordinator to oversee the implementation of the plan, co-ordinate across departments, collaborate with the Region of Waterloo and area municipalities, and communicate with the public

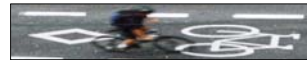
Implement the cycling network

Implement the cycling network over time with regular and consistent funding

Support a Cycling Advisory Committee to vet implementation issues, assist in establishing priorities, assess performance measures and communicate progress on cycling plan implementation to politicians, staff and the public

Develop, implement and maintain a Trail and cycling way-finding signage strategy and co-ordinate the with the Region of Waterloo and adjacent municipalities

Establish an audit process of existing bikeways and implement a process for continual improvement



Cycling Master Plan



Policy Implementation



"Sound bicycle-friendly policy is formal policy; sustainable bicycle-friendly practice is standing practice."

As documented in the *Kitchener Bikeway Study* (1998), it was observed in the early 1990s that bicycle-friendly communities had the following elements in common—the "three-legged stool" supporting a shift to a cycling culture:

- Staff leaders
- Political champions
- Public supporters

Many communities have fostered and assembled the champions, leaders and supporters needed to create change. However, a stable and sustainable approach requires that cycle-friendly policies and attitudes be internalized throughout municipal institution and structures.

A strategy to put policy into action!

An alternative to having the right people championing, leading and supporting policy implementation is to have in place a "process" that monitors progress, evaluates deficiencies and strengths, and reports on actions. Report-based monitoring and evaluation processes have been in use by health organizations, water and wastewater providers, the recycling industry, aid agencies, etc. It is designed to help people who are trying to improve social conditions in our communities.



It is recommended that the City of Kitchener implement a **performance monitoring process** for the Cycling Master Plan. The Cycling Advisory Committee could develop a mini "report card" with checklists associated with the Cycling Master Plan goals, and remarks on the progress being made towards those goals. This could be combined with communication strategies that raise the profile of cycling so that progress (or lack of progress) is given greater attention.

INPUTS
Expertise, resources, equipment, supplies



ACTIVITIES
What is done with the inputs



OUTPUTS
Immediate results of the activities



OUTCOMES
Concrete changes the policy is trying to bring



IMPACTS
Goal or vision statement (the "big picture" change)

Results Chain for Performance Monitoring



Cycling Master Plan



Network Implementation



Summary of the Draft Cycling Network

Short, mid and long-term phases of implementation will be developed and included in the Final Report.



What do you think the City should implement first?

Potential funding:

- Bikeways along new roads within new subdivisions will be built and funded by development through subdivision agreements with the City
- Bikeways on existing arterial and collector roads in growth or intensification areas that are to be widened to accommodate growth will be partially or fully funded through development charges
- Bikeways on existing roads in established areas of the City will be funded through the Capital Works program
- Bikeways proposed in future rapid transit corridors will be funded by the transit program supported by the City, Region and Province
- Other funds are available from Provincial and Federal programs and grants, such as the Gas Tax transfers, Ministry of Transportation's TDM funding, and infrastructure renewal programs

Total Cost of Implementation approximately \$6 M over 20 years (not including bridges / structures)

The draft cycling network illustrates about 120 km of existing trails and 60 km of proposed trails. The City of Kitchener will be undertaking a *Community Trails Master Plan and Implementation Strategy* in 2010 / 2011 that will consider the trails that are illustrated on the cycling network.

Bikeway Type	Length (km)		
	Existing	Proposed	
Signed route		5 km	
Local bicycle street		39 km	
Marked shared-use lane		8 km	
Paved shoulder	13 km		
Wide curb / shared lane	4 km		
Bike lanes	28 km	Repaint existing roads	4 km
		Widen existing roads	13 km
		New roads	11 km
Total On-road Bikeways	45 km	80 km	
Grand Total (existing and proposed)			125 km



Cycling Master Plan



We want to hear from you!

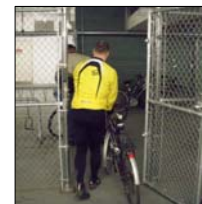
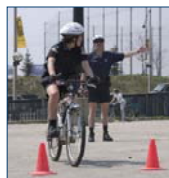


We would like your views on the City of Kitchener Cycling Master Plan!

Next Steps

Your comments will be considered in the draft Cycling Master Plan report to be presented to City Council in June 2010.

Thank you for your interest.



There are several ways to participate:

- Speak to a representative today
- Complete one of our comment forms here today or email / mail it to us within the next two weeks
- Send your comments to:

Ron Schirm
Transportation Planning
City of Kitchener
(519) 741-2232
ronald.schirm@kitchener.ca

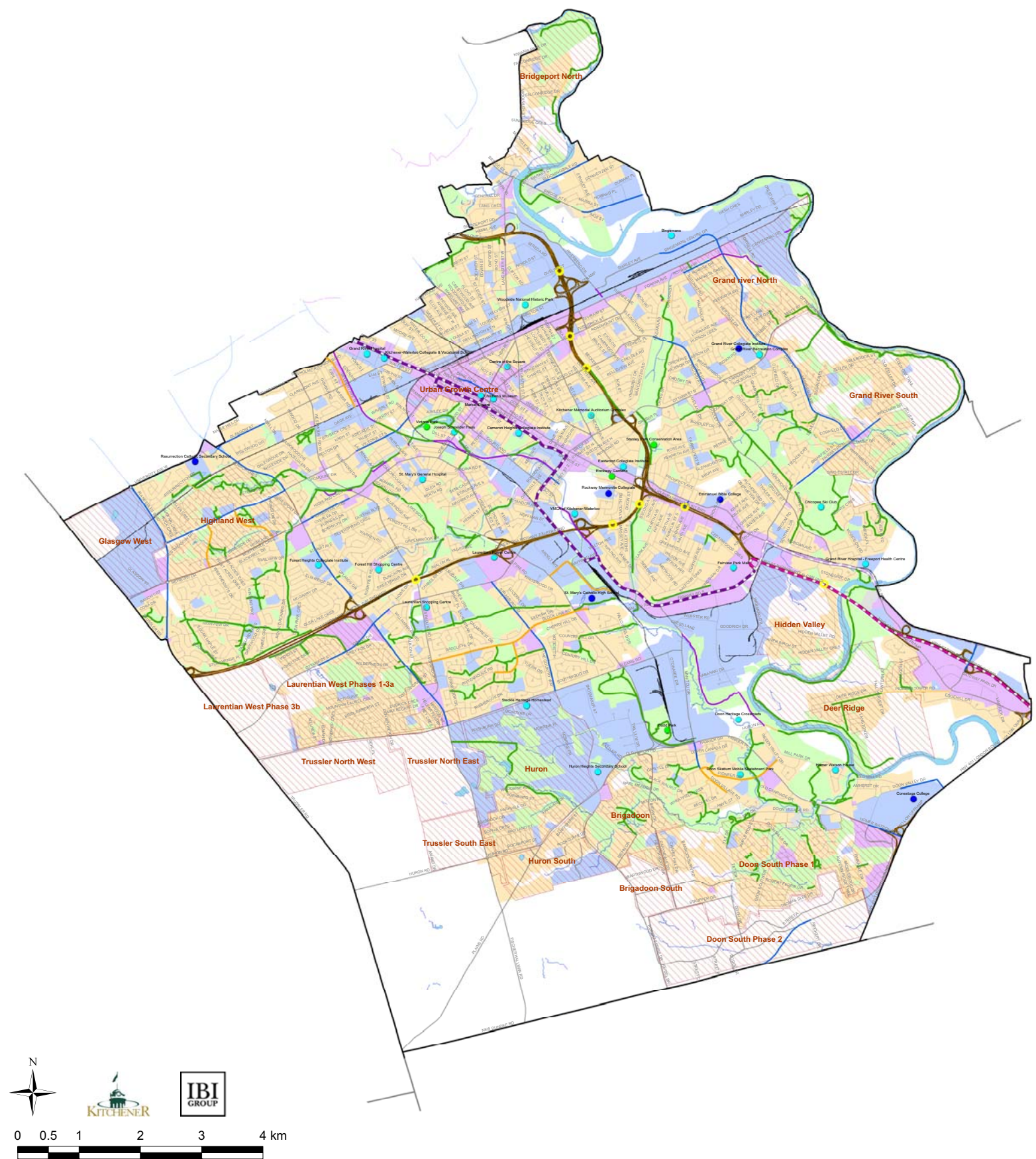
or
Norma Moores, P.Eng.
Project Manager
IBI Group
(905) 546-1010 ext. 2106
Norma.Moores@IBIGroup.com



Cycling Master Plan

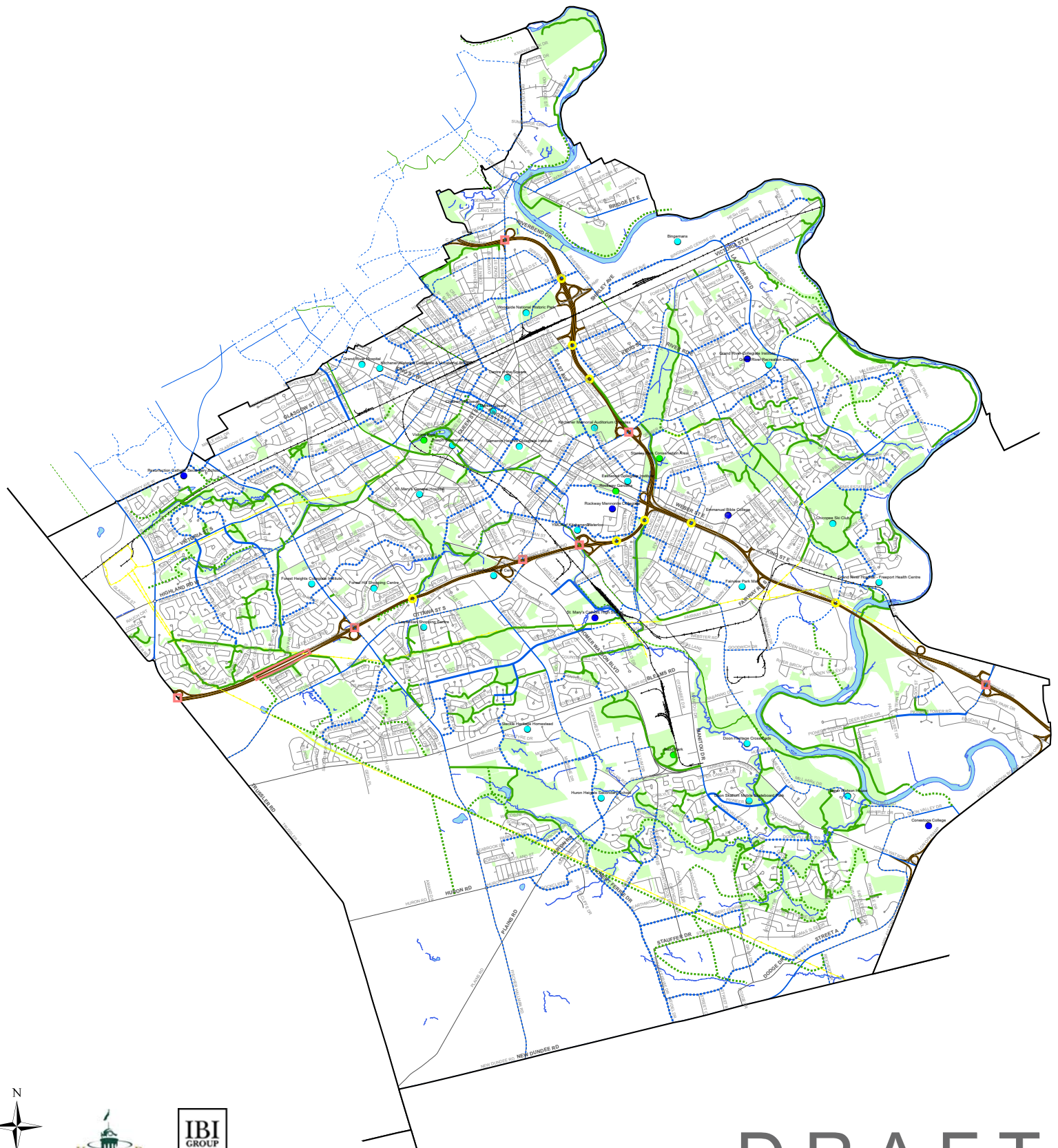


Existing Conditions, Key Destinations, Opportunities and Barriers



Kitchener network		Non-city network		Major destinations		Rapid transit corridor		Roads		Land use		Other	
	Existing trail		Regional on-road		Park		BRT (Phase 1 only)		Highway		commercial		Non-interchange freeway crossing
	Existing bike lane		Regional off-road		Educational		Phase 1 LRT		Major road		employment		Municipal boundaries
	Existing signed route/link		Waterloo on-road		Other		Phase 2 LRT		Minor road		institutional		Growth management plan areas
			Waterloo off-road		Parkland						residential		Waterways
													Rail line

Recommended Bikeway Network



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Kitchener network		Regional network		Waterloo network		Major destinations		Roads			
	Existing trail/link		Existing trail/link		Existing trail/link		Park		Highway		Non-interchange freeway crossing
	Existing on-road bikeway		Existing on-road bikeway		Existing on-road bikeway		Educational		Major road		New/improved freeway crossing
	Proposed trail/link		Proposed trail/link		Proposed trail/link		Other		Minor road		Municipal boundaries
	Proposed on-road bikeway		Proposed on-road bikeway		Proposed on-road bikeway		Parkland				Waterways
											Rail line

Priority Bikeways



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Kitchener network

- Existing trail
- Existing bike lane
- Existing signed route/link
- Proposed trail

Regional network

- Proposed bike lane
- Proposed signed route
- Proposed bicycle priority street
- Proposed marked shared-use
- Network priorities

Waterloo network

- Existing on-road
- Existing off-road
- Approved on-road
- Approved off-road

Major destinations

- Park
- Educational
- Other
- Parkland

Roads

- Highway
- Major road
- Minor road

Other

- Non-interchange freeway crossing
- New/improved freeway crossing
- Waterways
- Rail line
- Municipal boundaries