



# CYCLING MASTER PLAN

FINAL

February 2012





# i Executive Summary

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The Cycling Master Plan is a transportation planning document intended to guide the development of a cycling network throughout Guelph. The City of Guelph is committed to encouraging sustainable transportation options including cycling as a means of reducing traffic congestion and related emissions. Cycling and walking are also active modes that positively contribute to individual and community health.

The new Official Plan directs the Cycling Master Plan through the strategic goal of developing “a safe, efficient, convenient and sustainable transportation system that provides for all forms of travel including cycling and walking.” The OP states that the city “will ensure that pedestrian and bicycle networks are integrated into transportation planning to: i) provide safe, comfortable travel for pedestrians and cyclists within existing communities and new development; and ii) provide linkages between intensification areas, adjacent neighbourhoods and transit stations, including dedicated bike lane space for cyclists on the major street network where feasible.”

To meet these policy objectives, the City launched the Bicycle Friendly Guelph Initiative, which proposes improvements to Guelph’s cycling infrastructure and culture. This program has the objective of tripling the city-wide cycling modal share of daily travel by improving the cycling network, enhancing road safety, fostering a better understanding among cyclists and motorists about sharing the road<sup>1</sup>.

## Vision

Guelph has a vision to become one of Canada’s most bicycle-friendly communities by providing a safe, attractive and practical cycling environment. The City of Guelph vision includes:

1. **More people cycling:** tripling the number of daily trips by bicycle city-wide in ten years
2. **Safer and more connected network:** fewer accidents, better cycling and driving practices
3. **Strong culture of cycling:** events and rewards for cycling, general satisfaction with cycling provisions
4. **Measured improvements:** monitoring and tracking progress in achieving the City’s cycling targets

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<sup>1</sup> This city-wide average takes into consideration that some areas of the city will have a higher number of daily cycling trips than others. For example, the University and Downtown neighbourhoods have historically higher numbers of cyclists than some of the residential neighbourhoods at the city’s extremities.

## The Cycling Master Plan

The Cycling Master Plan is the 'operationalization' of the Bicycle-Friendly Guelph Initiative. The process of developing the Cycling Master Plan included four separate avenues: a review of best practices; a public survey of cyclists in Guelph; input received from the Guelph Cycling Advisory committee; and public consultation as part of the study process, culminating in a focus group discussion in September and an open house in November 2012. The information from public consultation has helped to inform specific components of the plan, including perceptions of cycling in Guelph, cyclist travel behaviour patterns, challenges and barriers to cycling, and cycling opportunities.

The following seven principles were developed to guide the Cycling Master Plan:

1. Cycling and safety are not mutually exclusive.
2. Cycling is an essential transportation mode for Guelph.
3. Every street is a cycling street and bicycles are vehicles.
4. Bicycles are unlike other vehicles that share the road.
5. Cycling is for everyone to enjoy.
6. A successful cycling network is a product of a well-integrated transportation network.
7. Transportation choices create opportunities for everyone to get to their destination.

The Cycling Master Plan provides a strategy to attain the vision of Bicycle-Friendly Guelph by considering both physical and social infrastructure needs. Within these two categories, the Plan addresses the Five E's of a Bicycle-Friendly Community: Engineering, Education and Encouragement, Enforcement and Evaluation:

<b>Physical Infrastructure</b>	<b>Engineering</b> efforts provide for safe and continuous on-street and off-street cycling infrastructure throughout the City.
<b>Social Infrastructure</b>	<b>Education</b> and <b>Encouragement</b> initiatives will provide events, activities and communication programs needed to achieve greater use of cycling. <b>Enforcement</b> and <b>Education</b> efforts will promote a culture of safety amongst both cyclists and drivers. <b>Evaluation</b> will be undertaken on a regular basis to monitor progress in achieving the goals and targets of the Cycling Master Plan.

The Cycling Master Plan incorporates 22 recommended objectives to achieve a bicycle-friendly city, summarized in Table 1, below.

Table 1 - Summary of the Cycling Master Plan's recommended actions.

Physical Infrastructure		Social Infrastructure		
1. ENGINEERING: Enhance the Bikeway Network	2. EDUCATION & ENCOURAGEMENT: Promote a bicycle-friendly city	3. ENFORCEMENT: Protect a cycling-friendly environment	4. EVALUATION: Monitor progress in achieving targets and goals	5. IMPLEMENTATION: Successfully implement the Cycling Master Plan
1.1 Give priority to providing a comprehensive cycling network	2.1 Form partnerships and support advocacy groups to enhance cycling	3.1 Create a cycling enforcement strategy	4.1 Establish a comprehensive monitoring plan	5.1 Coordinate the implementation of the Cycling Master Plan through capital projects.
1.2 Maximize cycling connections and reduce barriers to cycling	2.2 Enhance the recognition and influence of the Bicycle-Friendly Guelph brand	3.2 Enhance enforcement opportunities	4.2 Collect baseline performance data	5.2 Be project-ready to make use of new funding opportunities for infrastructure initiation
1.3 Develop a strategy to address end-of-trip facilities throughout the City of Guelph	2.3 Collaborate with partners to reinforce safer share-the-road practices	3.3 Improve safety records	4.3 Provide regular evaluation of cycling accomplishments	5.3 Conduct on-going public engagement
1.4 Update Guelph's cycling maps regularly	2.4 Support safe cycling education and promotion	3.4 Review and suggest changes to municipal cycling laws and regulations		5.4 Seek additional funding sources and partnerships
1.5 Review and suggest changes to road and intersection design practices to improve cycling and bicycle facility design	2.5 Develop an employer cycling recognition program			5.5 Review and suggest improvements to maintenance of cycling infrastructure



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# Part A: Context

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## 1.0 Introduction to the Cycling Master Plan

The City of Guelph's Transportation Demand Management (TDM) strategy includes the Bicycle-Friendly Guelph program, launched in 2008 to promote the use of cycling in the City. This program has the objective of achieving a transportation cycling mode share of 3% of total daily trips by 2022, and of promoting cycling as a practical mode of transportation and recreation throughout the city. To do this, Bicycle-Friendly Guelph aims to deliver a variety of programs, events, marketing, educational, and infrastructure opportunities to encourage more people to cycle through the provision of a safe and convenient environment. The City of Guelph's Cycling Master Plan is a transportation planning document that provides the implementation strategy through a series of objectives and recommended actions to guide staff and stakeholders toward meeting these objectives.

### Process

**Best Practice Review:** City staff began the drafting of the Cycling Master Plan by commissioning a best practices review in 2007. The review considered twenty leading bicycle-friendly cities in North America and Europe, including two Ontario cities with population sizes comparable to Guelph. Municipal and regional governments were found to be applying cycling initiatives through five central approaches, known as the Five E's: Engineering, Encouragement and Education, Enforcement and Evaluation. This approach guides the decisions of the top cycling cities to develop, implement and manage their bicycle plans.

**Guelph Cycling Survey:** In April of 2009, City staff commissioned a telephone survey of 400 Guelph residents who reported having cycled in the week of the survey. The survey measured perceptions, travel patterns and behaviours, factors that affect cycling behaviour, and communication regarding cycling.

**Data collection:** Staff collected additional data from the 2006 Transportation Tomorrow Survey (TTS), which is the City's principal source of transportation statistics used to model transportation scenarios for the future. Additional information was obtained from the City's periodical traffic counts on city roads and intersections, and the Annual Collision Report that summarizes the statistics associated with traffic collisions that occur within the city.

**EcoMobility Grant:** In 2008, the City of Guelph was awarded the EcoMobility Grant by Transport Canada to support the studies and research for the Cycling Master Plan, including the Guelph Cycling Survey, the development of design guidelines and criteria for the cycling network, and the Guelph Cycling Advisory Committee.



## 2.0 Why Cycle?

As part of a multi-modal transportation network, building capacity for cycling in Guelph will contribute to greater transportation choice, reduced traffic congestion, cleaner air, a more sustainable economic environment, a healthy lifestyle and a higher quality of life for residents.

**Positively Healthy:** The increased physical activity that cycling offers can reduce the costs of medical care as well as the risk of diseases such as obesity in children and heart disease in adults. By cycling regularly, residents can meet Canada's Physical Activity Guidelines of 150 minutes of moderate-to-vigorous intensity physical activity per week in order to achieve health benefits. Children need to accumulate at least 60 minutes of moderate-to-vigorous physical activity daily (Davison *et al.*, 2008).

**Environmentally Sustainable:** Cycling is the most energy efficient mode of transportation. Using a bicycle generates no pollution, greenhouse gas emissions or harmful particulates. Eliminating just four short trips a week of 1 kilometre each can reduce emissions of up to 100kg of carbon dioxide per year (Ontario Ministry of Health and Long-Term Care, 2011).

**Speediness:** In dense urban areas, cycling is often the fastest mode of transportation from door to door for short distances (U.S. Dept. Of Transportation, 2010). Cyclists are often spared from traffic delays, and bicycle parking is usually located directly at a building's entrance for free, making it more convenient and cheaper than car parking lots.

**Flexibility:** Providing an environment that makes cycling a safe, comfortable and convenient travel option can increase a community's flexibility in travel choices and costs. Having alternative transportation options, such as walking, cycling and transit, present travellers with a choice of travel modes in the face of rising automotive costs and congestion delays.

**Economically Positive:** Increased cycling use in a community has measurable economic benefits. For individuals, transportation costs average only \$120 a year to own and operate a bicycle, compared to an average of over \$8000 a year to own and operate an automobile (Canadian Automobile Association 2012). Cycling can be economically beneficial to employers because cycling helps increase punctuality and productivity.<sup>2</sup> Municipalities also benefit from cost savings. Cycling lanes can accommodate the same capacity<sup>3</sup> of trips per hour for 10 to 20 times less than the cost of roadways for automobiles (Ontario Ministry of Transportation, 1996). Reducing the demand for

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<sup>2</sup> According to Transport for London's report, *Cycling for Business*, "cyclists can be relied on to be more alert and productive than their less active counterparts. In the USA, workplace physical activity programmes have been shown to reduce short-term sick leave by between six and 32 per cent. Other research suggests that cyclists live, on average, two years longer than non-cyclists and take 15 per cent fewer days off work through illness (<http://www.tfl.gov.uk/assets/downloads/Cycling-to-work.pdf>).

<sup>3</sup> "Capacity" is defined as the maximum traffic flow obtainable on a given roadway using all available lanes; usually expressed in vehicles per hour or vehicles per day

downtown parking and replacing some of it with bicycle parking can yield significant cost savings. For example, the construction of one parking spot in downtown Guelph is estimated to cost \$40,000.

**Affordable & Equitable Mobility:** Travellers that choose to cycle or, due to personal constraints, need to cycle, are positioned well to save money on transportation. Investments in cycling infrastructure also help to enhance mobility options for those who cannot travel by car. Particularly, travellers not yet licensed to drive and the aged who have retired their licences are disadvantaged by prioritizing infrastructure spending heavily towards automobiles. Providing quality cycling infrastructure that is safe, attractive and convenient can establish practical travel options for these travellers and help provide a socially-equitable transportation network.

**Reduced Congestion:** Shifting automotive trips to cycling can reduce congestion delays by taking cars off the road. This is especially prevalent in urban areas where between 10% and 30% of automobile traffic consists of short trips. In Guelph, over 40% of daily trips by car (as driver and as passenger) are 3 km or less (TTS 2006). These short trips are excellent candidates for non-motorized travel (NHTS, 2009). When linked with intermodal opportunities such as buses fitted with bike racks, the opportunity to shift automotive users to active/transit modes increases further.

### 3.0 Vision

Developed around feedback from cyclists and based on best practices in cycling-friendly communities, the City of Guelph developed a vision for the Bicycle-Friendly Guelph Initiative that guides the objectives and actions of this Plan. The vision is as follows.

#### The City of Guelph envisions:

A **well-connected network** of on- and off-road cycling facilities  
Cyclists who feel **safe and confident** riding their bicycles  
Cycling will be perceived as an **efficient and enjoyable** mode  
**Visitors and residents** can easily cycle around Guelph  
Injuries and fatalities will be **reduced** to a minimum  
Cyclists and cycle-friendly partners will be **rewarded**

#### The City of Guelph aims to:

Provide a **safe, attractive, and practical** cycling environment  
**Triple the number of daily trips by 2018.**  
Integrate **the 5Es**: Engineering, Education, Encouragement, Enforcement, and Evaluation  
**Work collaboratively, cooperatively and constructively** with the community & partners.  
Monitor and **measure progress** on a regular basis.  
Become one of **Canada's most bicycle-friendly communities**

## 4.0 Current Cycling Patterns in Guelph

### 4.1 Cycling Infrastructure and Network

Guelph’s cycling network is comprised of a number of multi-use trails and pathways, and on-road cycle tracks and lanes. In the past 10 years, the City has substantially expanded the cycling network by adding more dedicated on-road bike lanes, and investing in multi-use trails. This expansion has grown to include approximately 58 kilometres of city-owned off-road trails, 52 km of third-party-owned trails, and 101 lane-kilometres of bike lanes (i.e. 50.5 kilometers of roadway with bike lanes on both sides).

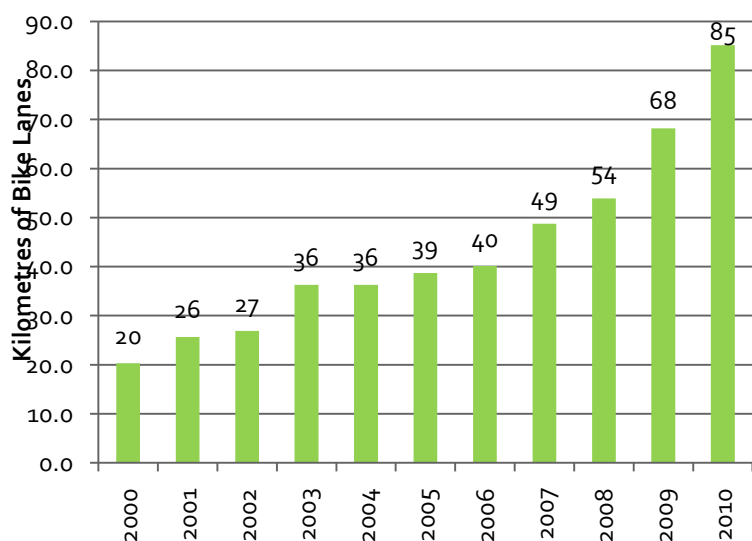


Figure 1 – Total Kilometers of Bike Lanes in Guelph.  
Note: The TDM program was initiated in 2006.

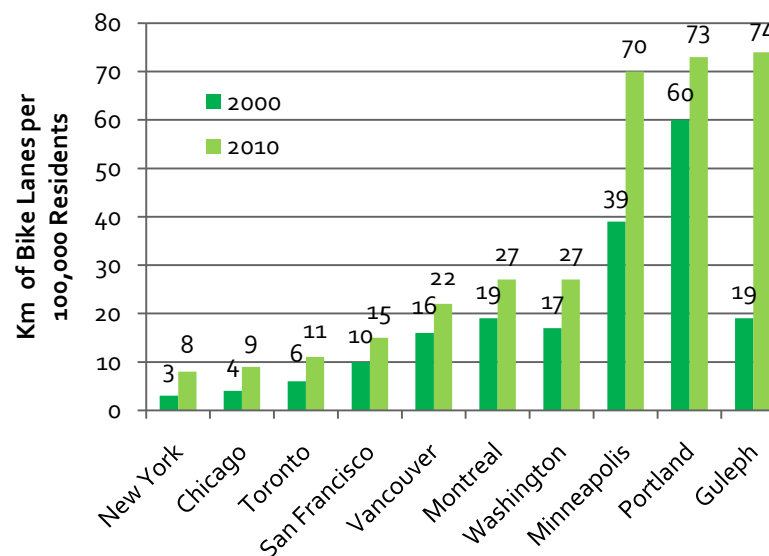


Figure 2 – Comparison of Bike Lanes per 100,000 Population between Guelph and Nine North American Cities. Source: Pucher et al., 2011.

When compared to large North American cities, Guelph’s cycling infrastructure rivals that of cities with cycling-friendly reputations such as Vancouver, British Columbia and Portland, Oregon. When plotted against these cities’ populations, the investment Guelph has made in cycling lanes stands above the rest (Figures 1 and 2). This plan proposes an additional 110 kilometres of proposed on-road bike lanes and 5.6 kilometres of multi-use boulevard

trails through the City's Bicycle Network Plan. When completed, the City's on-road Bicycle Network will proudly comprise of 167 kilometres of bike routes.

End of trip facilities, which includes bicycle racks, shelters, and shower facilities, have not been fully assessed at the time of writing this plan. This represents an opportunity to assess the distribution and availability of end-of-trip facilities throughout the city. Presently, the City of Guelph is responsible for providing bicycle racks throughout the Downtown upon request or as part of renewing the street furniture. For private property throughout the city, staff require bicycle racks as part of new developments.

#### 4.2 Travel Patterns and Behaviours

Bicycle trips in Guelph constitute approximately 1% (2,240) of daily person trips (TTS, 2006). Generally, half of all cyclists in the city cycle for utilitarian purposes, with most daily trips being commuter-based between the home and workplace (1000, 44.8%). Home-to-school commutes are also common (515, 23%). Over 90% of cycling trips are 5.0 kilometres or less in distance (2,014), with cyclists averaging a trip distance of 2.3 kilometres (TTS 2006, Guelph Cycling Survey 2009). The average bike trip in Guelph is only half of a kilometre shorter than the average car trip (Figure 3; Guelph Cycling Survey 2009).

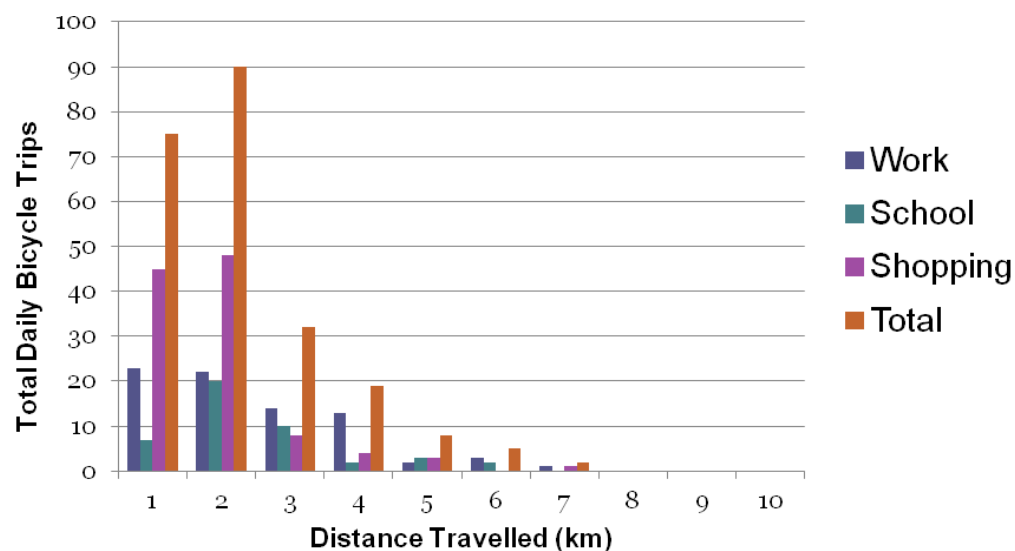


Figure 3 - Cycling Trips distance by trip purpose. Source: Guelph Cycling Survey, 2009.

All municipal buses are equipped with Guelph Transit's *Rack Ride 'n' Roll* bike racks. These racks make cycling in Guelph a multi-modal experience, allowing cyclists to comfortably travel longer distances year-round. During the summer of 2011, more than 950 trips took advantage of these bike racks each month, representing 0.25% of total monthly transit trips, and more than 400 trips each month during the winter (Figure 4).

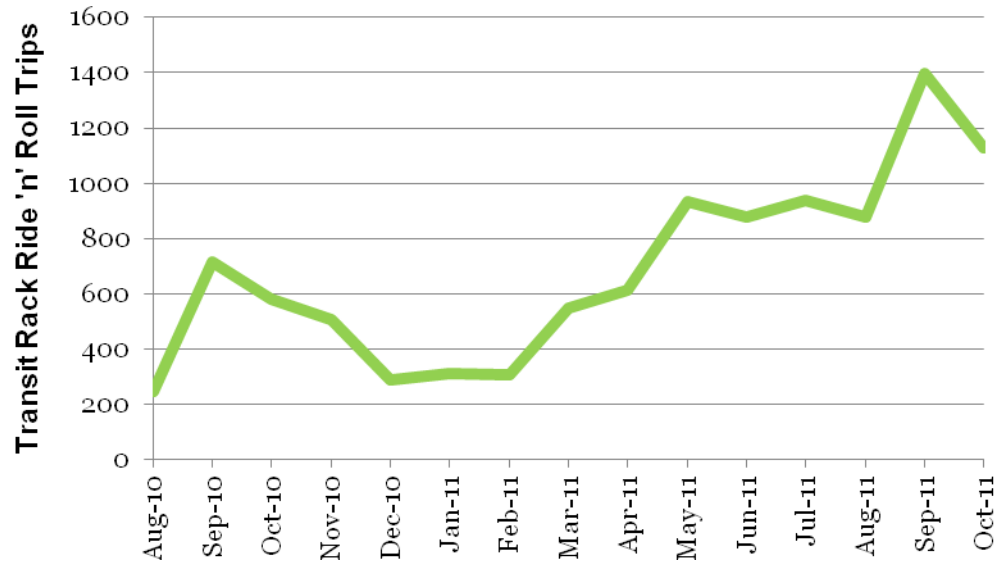


Figure 4 - Monthly transit trips using bus bike racks. Source: Guelph Transit, 2011.

Most cycling trips in Guelph occur along a general North-South direction, with cyclists' destinations being concentrated on the downtown core, the University of Guelph and along Stone Road. This is mostly due to the large employment and student populations generated by the University of Guelph and the businesses located in the downtown core (Figure 5).



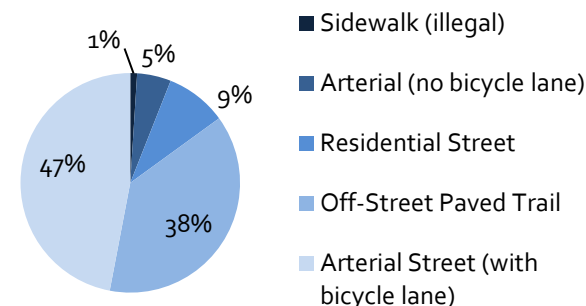


### 4.3 User Travel Preferences and Perceptions

The Cycling Survey identified the existing cycling challenges and opportunities:

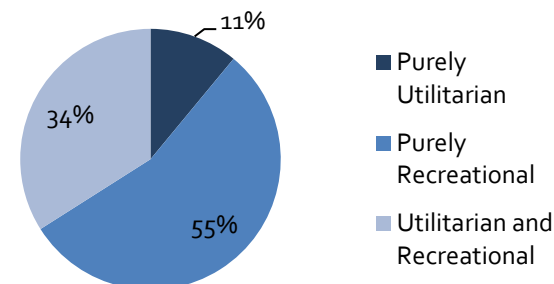
- 56% of respondents cycled at least once a week or more; 20% reported cycling daily
- Of those who cycled at least once a week, 56% travel a route that combines on- and off-road facilities, 38% exclusively use on-road, and 3% use off-road exclusively (Figure 6)
- 55% of cyclists reported cycling purely for recreation, 34% for both recreational and utilitarian purposes, and 11% for only utilitarian purposes (Figure 7)
- 54% of cyclists said they were much more likely to cycle if their route included bike lanes on major roads. 42% said they would be more likely to cycle if there was an off-road alternative for at least part of their trip.
- Utilitarian cyclists tend to be under 25 years old, are of a lower income, are transit riders and use mostly on-street facilities. Recreational cyclists who cycle at least once a week tend to be car drivers between the ages of 25 and 54, are college educated, of a higher income and use both off-road facilities and bike lanes
- Bike lanes, wide curb lanes, off-road alternatives, end-of-trip facilities, and short (less than 5km) flat distances are prevalent motivators that increase the likelihood of cycling more often
- An unsafe cycling environment and dangers of sharing the road were common barriers to cycling for utilitarian purposes with respondents citing specifics such as closely passing cars, poor driver behaviour, unfavourable road conditions, and surprise door openings.

**Bikeway Type Preferences in Guelph**



**Figure 6 - Cyclists Route Preference.**  
Source: Guelph Cycling Survey 2009.

**Purposes for Cycling in Guelph**



**Figure 7 - Purposes for cycling in Guelph.**  
Source: Guelph Cycling Survey 2009.

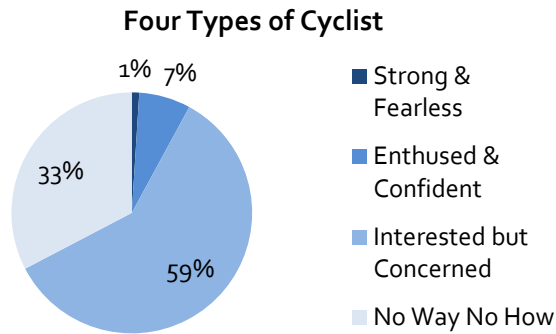


Figure 8 - Four Types of Cyclists by Proportion of Population. Source: City of Portland Bicycle Master Plan, 1998.

Similar studies in other communities have shown that approximately 59% of a community's population are interested but concerned about cycling, while 33% express no-way, no-how attitudes (Figure 8).

Additionally studies have illustrated that cyclists prefer to make trips on arterial streets with bicycle lanes (47%) followed closely by paved-off road trails (38%).

#### 4.4 The Safety of Cycling

Cycling in Guelph is a safe, fun, healthy and convenient way to travel. However, fear of an unsafe cycling environment is commonly cited as a major barrier to cycling in the City. Many fears include being closely passed by cars, poor driver behaviours, and unfavourable road conditions.

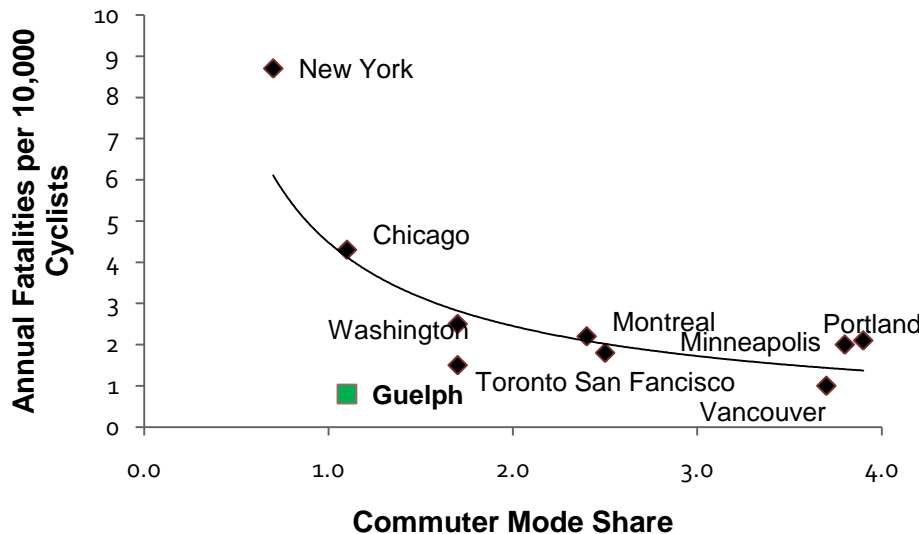


Figure 9 - Fatal Cyclists Collisions as a Function of Mode Share. Source: Pucher et al., 2011; Guelph Collision Report, 2010.

According to Guelph Police Service reports, total collisions involving cyclists occur at a rate of 0.1 per day, or 32 collisions per 100,000 residents per year. These are dramatically smaller rates when compared to car collisions that average 3.25 per day, or 997 collisions per 100,000 residents per year. However, cyclists are 3% of collisions even though they only represent 1% of trips, indicating a need to address cycling safety in Guelph.

Research shows that cycling safety is consistent with the principle of safety in numbers (Pucher et al. 2011; Figure 9). The mechanisms driving that observation are not completely understood; however it is believed that the more likely drivers encounter cyclists while driving, the more likely they are to look out for them. Cities with the highest bike mode share have the safest cycling record, and cities with the lowest bike mode share have the worst record. When compared to major cities across

### At-Fault Breakdown of Collisions Involving Cyclists

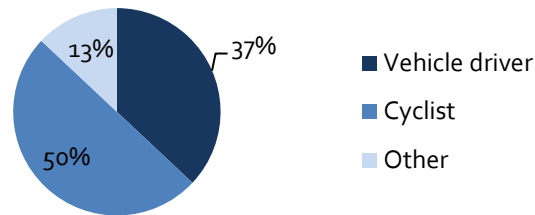


Figure 10 - At-Fault Breakdown of 2010 Collisions Involving Cyclists.  
Source: Guelph Collision Report, 2010

North America, the safety of cycling in Guelph is equal to or safer than cities with significantly higher mode shares. From this it can be expected that as Guelph's cycling mode share increases towards 3%, cycling safety will also increase.

As with automobiles, collisions involving cyclists are an unfortunate reality. However, nearly half of all cycling-related collisions are cyclist-at-fault collisions where the majority of cyclist's actions causing the collisions include illegally riding on the sidewalk or cycling through a pedestrian crosswalk (Figure 10).

#### 4.4 Challenges Facing Cycling

As the minority mode of transportation, cycling faces challenges such as continuity of infrastructure design and provision as well as sharing the road with automobiles.

Particularly, cyclists are fearful of an unsafe cycling environment and unfavourable road conditions. However, cycling network facilities such as bike lanes or off-road alternatives are required to promote cycling and provide for safe cycling.

## 5.0 Existing Policy Context

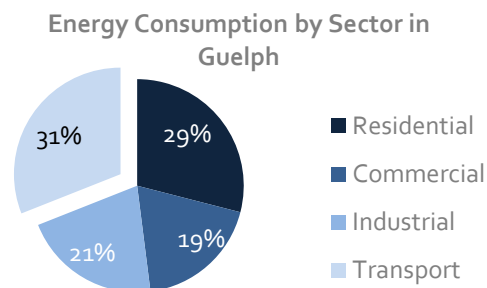
Policy decisions affecting transportation are guided by a framework comprising the Places to Grow Act, the Official Plan and Secondary Plans, the Transportation master Plan, the Trails Master Plan and the Community Energy Plan. This framework and policies are summarized below:

### 1a) Places to Grow Act: Growth Plan for the Greater Golden Horseshoe (2006)

The Province of Ontario has defined growth management guidelines, measures and goals to guide decisions shaping the way cities such as Guelph will grow. Specifically, Places to Grow emphasizes the need to “provide balanced transportation choices that promote walking, cycling and public transit”. The Plan asks that municipalities ensure that pedestrian and bicycle networks are integrated into transportation planning to:

- provide safe, comfortable travel for pedestrians and bicyclists within existing communities and new developments, and;
- provide linkages between intensification areas, adjacent neighbourhoods, and transit stations, including dedicated lane space for bicyclists on major street networks where feasible.

### 1b) Community Energy Initiative (2007)



Guided by the Community Energy Plan, the Community Energy Initiative outlines how the City will meet its energy and water needs through 2031. Its energy goal is to reduce total energy consumption from 2005 levels by nine per cent (9%) despite a projected increase of 54,000 people and 32,000 jobs by 2031.

The Community Energy Initiative identifies significant reductions in energy use for transportation, which is currently responsible for one-third of energy use in the City and an even larger share of Greenhouse Gas (GHG) emissions. This will require an energy reduction of 25%, representing a 69% reduction in kilometres travelled per person by car from ‘business as usual’ in 2031. The Community Energy Initiative proposes three primary reduction strategies, first of which is to shift people’s choice of transportation mode.

## 2) Official Plan (2012)

(NB: Official Plan Amendment 48 (OPA 48), adopted by Council in June 2012, is the third and final phase of a comprehensive Official Plan update that implements, among other things, the Guelph-Wellington Transportation Study, the Guelph Trails Master Plan and emerging directions of the Bicycle-Friendly Guelph Initiative. OPA 48 further enhances cycling policies and objectives. The proposed cycling network of the Cycling Master Plan will be incorporated in the Official plan through a subsequent Official Plan Amendment.)

The Official Plan (OP) is a statement of goals, objectives and policies intended to guide future land use, development, growth and change within the City of Guelph. One of the OP strategic goals is “to develop a safe, efficient, convenient and sustainable transportation system that provides for all modes of travel including cycling and walking to support sustainable land use patterns.”

The Official Plan outlines particular cycling-supportive guidelines in section 2.1.13 to provide safe, comfortable travel for cyclists in new and existing developments, and to provide linkages between various destinations in the city. Section 5 provides policy guidelines for transportation in Guelph, including cycling. The OP notes that additional bicycle connections may be provided as part of regularly scheduled road resurfacing and reconstruction projects, and where private development proposals are being considered.

## 3a) Transportation Strategy Update (2001)

The 2001 Transportation Strategy Update provides a framework that recognizes the necessity to accommodate active modes of travel. The strategy focuses on using education and promotion programs as primary steps to encourage alternative modes of travel. Particular to cycling, the study outlined that the City will adopt and carry out bicycle network expansion and improvement, design standards for bike lanes and facilities, support transit integration, and to support that commuter bicycle routes be favoured towards on-road bike lanes.

## 3b) Guelph-Wellington Transportation Study (2005)

The 2005 Guelph-Wellington Transportation Study defines TDM as a tool for City policy development and practices to reduce single-occupant vehicle usage. Part of this definition is to encourage the use and promotion of sustainable transportation alternatives, including cycling.

## 3c) Bicycle Policy (2009)

In July 2009, Guelph City Council received the Bicycle Policy report that supports demarcated bike lanes instead of bike routes as part of reconstruction of arterial roadways that are not identified in the 2001 Official Plan as having either bike lanes or bike routes. The Bike Policy also outlines that roadways not scheduled



for reconstruction in the near term be retrofitted to include bike lanes. This allows cycling lanes to be identified and designed in the near-term in an effort to provide greater cycling connectivity throughout the City. The report coincided with federal infrastructure funding which made it possible to invest in additional unscheduled roadwork between 2009 and 2011.

#### **4) Downtown Secondary Plan (2012)**

The Downtown Secondary Plan was adopted by Council in April 2012 in order to guide and regulate development in the Downtown Guelph Urban Growth centre. The Downtown Secondary Plan emphasizes the need to accommodate all modes of transportation, and its policies encourage cycling through:

- i) The use of Transportation Demand Management (TDM) measures to promote attractive alternatives including measures that promote the use of cycling,
- ii) Accommodating dedicated bicycle lanes on primary streets, as defined in the Downtown Secondary Plan, Chapter 4.2.2,
- iii) Providing dedicated bike facilities on Macdonell Street and Wyndham Street where necessary depending on the function of the roadway,
- iv) Providing direction to establish minimum requirements for bicycle parking through the zoning by-law. End of trip facilities such as showers are to be encouraged in major offices.

#### **5) Guelph Trail Master Plan (2005)**

In 2005, the City adopted the Guelph Trail Master Plan (GTMP) to guide the development of a cohesive city-wide trail network that connects people and places through a primarily off-road system of trails, supported by on-road connections where necessary. The GTMP is a result of extensive study and analysis of Guelph's parks and open space, topography, user needs and preferences and best practices. The GTMP proposed trail network has been refined for inclusion in the Official Plan as Schedule 7. Many of the Schedule 7 off-road trails are open to cyclists; however some prohibit cycling in order to preserve sensitive environmental habitats.

## Part B: Recommendations

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This section is intended to guide city staff, stakeholders and residents to achieving the vision set out at the beginning of this plan by providing actionable recommendations to be undertaken over the next 10 years. The actions recommended in this section will address the on-road cycling network infrastructure, as well as the social infrastructure to make Guelph a Bicycle-Friendly community.

The recommendations for the Master Plan are organized according to the Five Es, beginning with the engineering and physical infrastructure recommendations, and followed by social infrastructure elements that include education and encouragement, enforcement and evaluation.

1. **Engineering** is the planning and provision of a safe and continuous network of cycling infrastructure that accommodates all cycling requirements. The engineering objectives include design criteria, geometric standards of bikeway designs and end-of-trip facilities.
2. **Encouragement** uses targeted initiatives, incentive programs and events to support a culture of cycling in Guelph. Encouragement also provides an opportunity for an engaged public dialogue through media outlets including conventional media, individualized marketing, literature pieces and public consultations.
3. **Education** provides the tools to inform and support the community about sustaining a safe cycling environment. Education is applied through media, workshops, community events and training sessions. The intention of education is to create a deliberate public conscience of what it means to be a safe cyclist and a safe driver in Guelph.
4. **Enforcement** positively enhances the physical cycling environment in the City through a variety of measures to inform, support, and obligate all users of the City's transportation network to adhere to transportation laws.
5. **Evaluation** lists performance indicators that monitor the progress towards achieving the comprehensive goals of the Cycling Master Plan.

The Master Plan also provides for implementation, including a cost estimate.

## 1.0 Engineering: Safe and Continuous Cycling Infrastructure

### 1.1 Engineering Principles

Providing a continuous cycling network involves both on-street and off-street facilities. Ensuring cycling safety in on-street facilities in mixed traffic conditions presents specific challenges. Cycling infrastructure practices have developed two principle factors affecting cycling safety, namely vehicular volumes and vehicle speeds. This is demonstrated in the infrastructure practices developed in Denmark and the Netherlands.

As illustrated in the Danish and Australian examples, there are “grey” areas of speed or volume thresholds where engineering judgement and local context will influence the type of bikeway selected. In addition, setting upper or lower limits for when different bikeway types are needed can be restrictive (Figures 11 and 12). One defining element to consider is whether traffic conditions can support motorists and cyclists sharing the same space, or if separate spaces are needed for these two modes. The higher the traffic speeds and volumes, the greater the need for separating cyclists from vehicles.



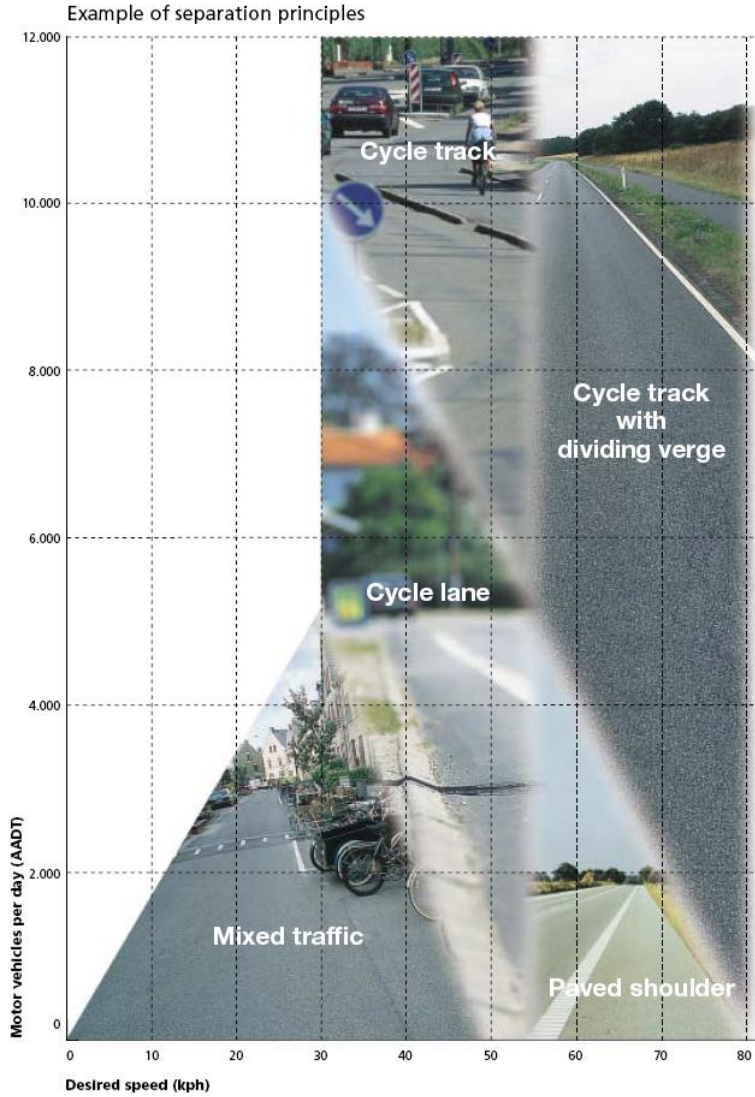


Figure 11 – Danish bikeway selection criteria. Example from *Collection of Cycle Concepts*, Danish Road Directorate, 2000.

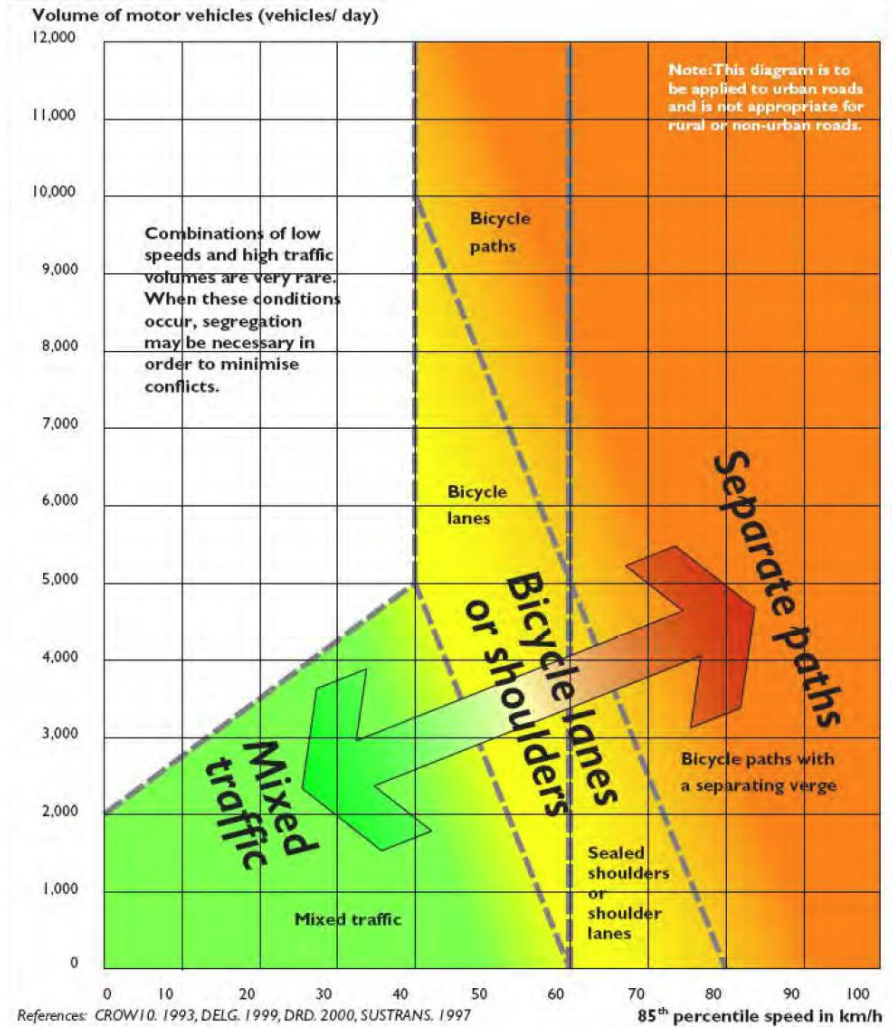
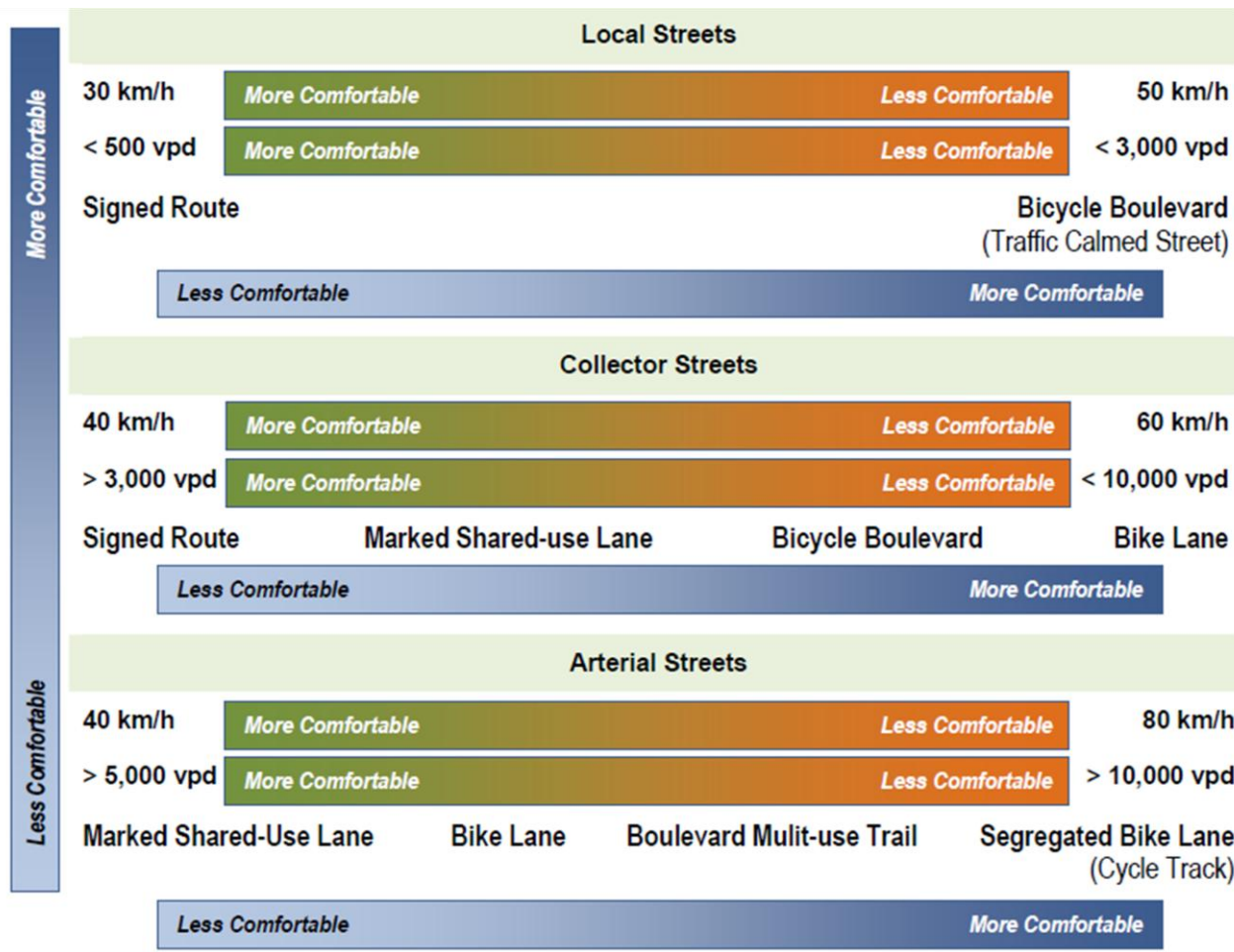


Figure 12 – Australian bikeway selection criteria: Example from *Cycling Aspects of Austroads Guides*, 2011.



Roadway classification has been used in North America to define design criteria for other elements of the roadway and can help provide guidance on the appropriate type of cycling facility. Figure 13 illustrates the combination of road classification, associated speeds and traffic volumes. These are partnered with bikeway types ranging from shared space to separate space to segregated space.

Figure 13 Bikeway Type by Road Classification and Increasing Level of Comfort for Cyclists.

## 1.2 Recommended On-Street Bikeway Treatments

A range of bikeway treatments has been identified based on best practices and industry thresholds and requirements. Each type of treatment and underlying criteria are summarized below. For each bikeway treatment type, primary selection criteria are listed in darker green, and secondary criteria or guidance are in lighter green.

*It is an objective of the City of Guelph to provide on-road bicycle treatments to and around schools to support safe and active travel to school. This is supportive of the Wellington-Dufferin-Guelph Active and Safe Routes to School Committee's school travel planning initiatives in collaboration with the school boards.*

### 1.2.1 Signed Routes



Source: liveablenorwalk.org

Signed routes are local streets 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 through a neighbourhood. The lower the traffic speed and volume, the easier it is for cyclists and motorists to co-exist.

#### Local Streets with motor vehicle operating speeds 50 km/h or less and less than 5,000 Average Annual Daily Traffic (AADT)/day

For one-way streets with one traffic lane and on-street parking on both sides:

- < 8.0 m wide – Cyclists and motorists should travel in single file
- 8 to 9 m – AVOID, it is wide enough that drivers may try to pass cyclists, but such roadways are not wide enough
- 9 to 10 m – Motorists and cyclists can travel side-by-side
- > 10 m – AVOID, motorists will tend to travel side-by-side, thus leaving no room for cyclists

For two-way streets with two traffic lanes and on-street parking on both sides:

- < 10.5 m - cyclists and motorists generally operate in single file and motorists must encroach on opposing lane to pass; motorists travelling in opposing direction must yield to each other
- 10.5 to 13.5 m – Motorists must encroach on the opposing lane to pass cyclists
- 13.5 to 14.0 m – Motorists can pass cyclists within the same lane
- 14.0 to 17.0 m – AVOID, motorists in same direction can travel side-by-side, thus leaving no room for cyclists. Bike lanes or cycle tracks should be used instead
- >17.0 m – AVOID, such roadways are better dealt with by using bike lanes or cycle tracks, or by narrowing the roadway with a median

Signed Routes that will be included as part of the cycling network include:

- Massey Rd
- Royal Rd
- Burns Dr – Nicklin Rd – Bailey Ave – Kathleen St
- Inverness Dr – Wilton Rd
- Woodlawn Rd E
- Rochelle Dr – Stephanie Dr
- Guelph St – Alma St – St Arnaud St
- London Rd
- Yorkshire St- Bristol St – McCrae Blvd
- McCrae Blvd – James St W – Forest Hill Dr – Forest St – Talbot St – University Ave- Caledonia St
- Dean Ave
- Delhi St – Spring St- Pearl St
- Arthur St N
- Cassino Ave – Hadati Rd – Leacock Ave – Auden Rd – Chestnut Ln
- Woodland Glen Dr
- Niska Rd
- Ironwood Rd – Harvard Rd
- Kortright Rd E

- Chancellors Wy – Research Ln – Grierson Dr– Harvard Rd – Rickson Ave
- Colborn St – Monticello Crsc – Dimson Ave
- Clairfields Drive West – Dawn Avenue to future trail connection
- Jensen Blvd – Summerfield Dr
- Southgate Drive to future trail connection

### 1.2.2 Bicycle Boulevards

Bicycle boulevards are traffic-calmed, local streets that have been optimized for bicycle through-traffic, but discourage other non-local traffic. This is done through design elements such as signage, pavement markings, intersection treatments, traffic calming, and traffic diversion features. The intensity of the application of these elements depends on the local conditions. Limiting the number of stop-controlled intersections using yield control or traffic circles, and minimizing delay to cyclists to cross major streets are key to the operation of the streets for cyclists. These design elements can also be phased in over time as funding and acceptance grow, as illustrated in Figure 11. These streets not only create a comfortable space for cyclists but also improve the street environment for pedestrians and residents.

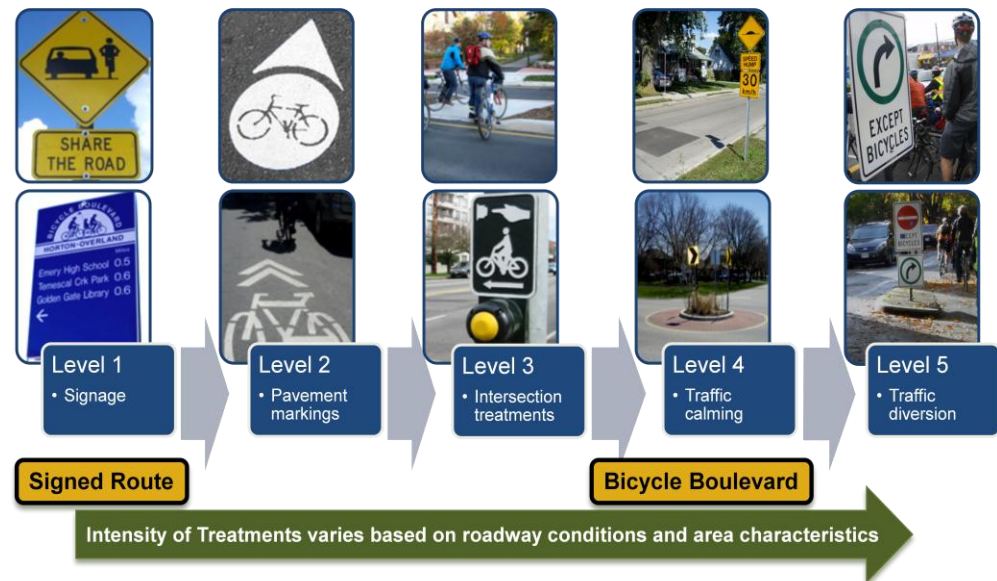


Figure 14 – Phased approach to implementing bicycle boulevards. Source: IBI Consulting Group.

**Local Streets with motor vehicle operating speeds 50 km/h or less and less than 5,000 AADT/day**

Logical, direct and continuous routes that provide convenient access to desired destinations

Bicycle Boulevards may be implemented as an alternative to signed routes where traffic calming has been prescribed.

### 1.2.3 Shared-Use Lanes (Sharrows)



Source: [calmstreetsboston.blogspot.com](http://calmstreetsboston.blogspot.com)

Shared-use lanes are recommended for retrofitting low-speed roadways (operating speeds of 50 km/h or less) where there is insufficient pavement width for bike lanes. These may also be implemented as part of a traffic-calmed local bicycle street / bicycle boulevards (see above). These lanes are marked with a “shared–use” marking or a “sharrow.”

The pavement markings are intended to raise the awareness for both cyclists and motorists of the correct position to ride in the lane, as well as showing that the street is part of a larger cycling network. This application can be used to encourage cyclists to ride out from the “door zone” of on-street parked cars to avoid hitting the door if it is swung open.

In wide lanes, this application also encourages cyclists to ride a safe distance away from the curb and drainage grates at the edge of the travel lane, while encouraging motorists to pass cyclists by encroaching slightly on the adjacent lane. In narrow lanes, sharrows can encourage cyclists to ride in the centre of the lane while encouraging motorists to change lanes to pass. They may also be used where a bike lane is dropped because the road narrows, such as at a narrow bridge or intersection, to indicate the correct position of cyclists through the area.

**Local streets or multi-lane collectors or arterials with motor vehicle operating speeds 50 km/h or less.**

**New construction should not include wide lanes with “sharrows” because of the higher motorists’ speeds they induce. Provide bike lanes or cycle tracks instead.**

Apply sharrow pavement markings (retrofit) where there is/are:

- On-street parking to encourage cyclists to ride out from the “door zone” - centre the sharrow marking 3.4 m from inside edge of parking lane.
- Bike lanes following roadways with posted speed limits of 50 km/h or less and are discontinuous because of roadway narrowing – centre the sharrow marking in the middle of the travel lane if it is less than 3.5 m wide
- Wide lanes (4.0 to 4.5 m) too narrow to stripe bike lanes, but with moderate volumes and a posted speed limit of 50 km/h or less – centre the sharrow marking 0.75 m from inside edge of wide travel lane

Local streets that will be included as part of the cycling network include:

- Westwood
- Willow Rd
- Paisley Rd
- Macdonnel St
- Edinburgh Rd S
- Scottsdale

#### 1.2.4 Advisory or Suggested Lanes



Source: bikewalkmove.org

Yet to exist in Ontario, 'advisory' or 'suggestion' lanes are bike lanes indicated by a broken lane line on streets that provide space for cyclists. However, motorists are permitted to encroach temporarily on the lanes when there are no cyclists present. On-street parking is typically banned or provided in a parking lane. The travel way between the suggestion lanes may not be wide enough for two cars to pass, but speeds and volumes are low enough that they can yield to the cyclists in the suggestion lane then encroach upon it once the cyclists have cleared in order to pass. Cyclists' volumes must be high enough that the suggestion lane is respected by motorists, and motorists volumes low enough that they are not continually coming into conflict with cyclists and on-coming motorists. The suggestion lane can also visually narrow the roadway resulting in lower motorized vehicle operating speeds.

**Local Streets with motor vehicle operating speeds 40 km/h or less and less than 5,000 AADT/day**

**On-street parking is banned or provided in a marked parking lane**

No streets in Guelph have been identified as candidates for advisory lanes at this time, however this option will remain available for future consideration.

### 1.2.5 Bike Lanes and Paved Shoulders



Figure 2 – Source:  
[sierraclub.typepad.com/greenlife/work/](http://sierraclub.typepad.com/greenlife/work/)

Bike lanes 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. Regulations, signs and accompanying by-laws are used to reserve the lane for exclusive use by bicycles. Motorists travelling, parking and stopping in the lane should be strongly discouraged, with the exception of emergency vehicles and authorized maintenance vehicles.

Paved shoulders are a practical alternative to bicycle lanes on rural roads. Beyond providing room for cyclists, paved shoulders have been demonstrated in North America to provide benefits in erosion control, pavement life, and collision reduction when traffic volumes exceed 3,000 vehicles per day. Signage and pavement markings omit the “diamond” reserve symbol for paved shoulders that are used by farm vehicles or other slow-moving vehicles in rural areas.

*On-street parking and Bike Lanes:* In order to have sufficient space to construct a safe bike lane, the City may at times have to consider the removal of a lane of traffic or parking. The following roads are identified for proposed bike lanes in Guelph due to the connections they make with schools, neighbourhoods or to important destinations (shopping or employment centres, parks). These roads also currently have on-street parking which limits the ability to implement the bike lane. These roads will be reviewed to identify the most appropriate solution to accommodate parking needs and cycling network connectivity. Roads with on-street parking that are recommended for bike lanes include Grange Road, Starwood, Woolwich, and Wyndham.



**Bike Lanes: Collector or Arterial Urban Streets with motor vehicle operating speeds 60 km/h or less and more than 5,000 AADT/day**

**Paved Shoulders: Collector or Arterial Rural Roads with more than 3,000 AADT/day**

- Retrofit to existing roadways by narrowing general purpose travel lane widths to not less than 3.25 m
- Retrofit to existing 4-lane roadways with less than 20,000 AADT/day by changing to 2 general purpose travel lanes, 1 centre two-way left-turn lane, and 2 bikes lanes. This strategy may apply to higher volume roadways depending on local context.

*No on-street parking:*

- Bike lane minimum width of 1.5 m; for speeds greater than 50 km/h, desirable width of 1.8 m

*On-street parking permitted:*

- Bike lane minimum width of 1.6 m adjacent to 2.4 - 2.5 m wide parking lane
- Consider a painted buffer >0.5 m wide to separate cyclists from high-turnover on-street parking, or high volume, mix of traffic in the adjacent travel lane
- Where residential on-street parking exists, efforts will be made to retain parking and add bicycle facilities. If there is insufficient road width space (cross section) to do so, City Staff will engage residents to determine if there are alternative solutions.

*Paved shoulder:*

- For speeds less than 50 km/h, minimum width of 1.0 m; for speeds 50 to 70 km/h, minimum width of 1.5 m; for speeds more than 70 km/h, minimum width of 1.75 m

Local streets that will be scheduled for bicycle lanes as part of the cycling network include:

- Woodlawn Rd E
- Speedvale Ave W
- Willow Rd
- Paisley Rd
- Fife Rd
- Stone Rd W
- Kortright Rd W
- Clair Rd W
- Eastview Rd
- Grange Rd
- Woolwich St
- Elizabeth St
- York Rd
- College Ave E and W
- Maltby Rd E and W (Paved Shoulder)
- Imperial Rd
- Silvercreek Pky
- Edinburgh Rd N and S
- Wyndham St
- Stevenson St
- Victoria Rd
- Starwood Dr
- Watson Pky N and S
- Downey Rd (paved shoulder)



### 1.2.6 Multi-Use Boulevard Trails



Figure 15 - Multi-use 'trail' in France. The bike path is adjacent to the sidewalk.  
Source: Google Streetview.

These are routes reserved for non-motorized users such as pedestrians, in-line skaters, joggers, skateboarders, and a wide range of cyclists including children, youth, adults and seniors. A multi-use boulevard trail is located within the boulevard of a roadway and generally aligned parallel to the road. A grass or landscaped buffer between the trail and the roadway is preferred as opposed to a curb-faced trail. Consider using concrete, which will have a longer life cycle than asphalt (including expansion joints every 30 m and saw-cut contraction joints every 2.5 m with no trowelling).

There are various elements to consider carefully when placing multi-use trails in roadway boulevards, which reduce their function and safety (Figure 15):

- The lack of traffic control at intersections does not give cyclists the right-of-way and decreases their comfort and the directness 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).
- 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. Trying to access the trail or leave the trail from across the street is problematic, leading to mid-block crossings, cycling the wrong way on the road, and cycling on the sidewalk.
- The risk to the cyclist going unnoticed by motorists turning in and out of side streets and driveways is a 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). A motorist turning left or right out of a driveway or side street may notice the cyclist coming towards them on their left, but will generally not notice the cyclist approaching from the right (the motorist is generally looking forward or left to find 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 opposing traffic. As they accelerate to cross opposing traffic, motorist will not see cyclist, particularly ones on their left approaching from behind. The speed at which the motorist is trying to cross opposing traffic increases risk. This is further complicated by the lack of experience and understanding of the risk by less experienced cyclists who choose to ride on these multi-use trails.
- The beginning and end of the trail needs to be designed to allow users to transition to other bikeways and pedestrian facilities such that cyclists do not end up riding on sidewalks or riding the wrong-way on the road against traffic.

**(A)** Left-turning motorist is focused on gap selection. Accelerating through the turn, the driver is then faced with the unexpected trail crossing. While the driver was waiting to make the turn, a fast-moving right-to-left cyclist outside the driver's field of view may

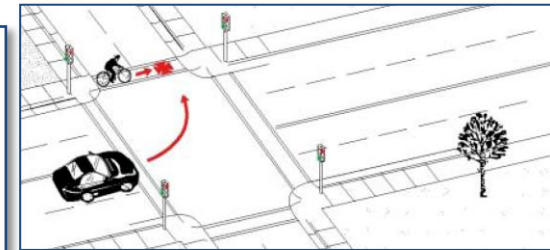
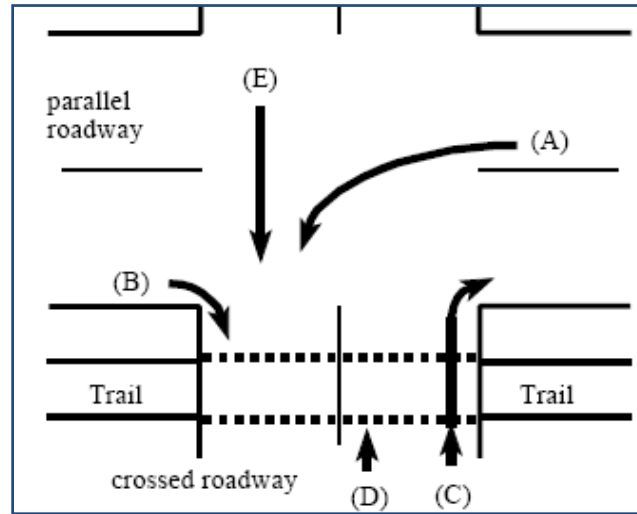
overtake arriving in the crossing. Slowing or stopping for trail users, this left turning motorist may interfere with through traffic on the parallel roadway.

**(B)** Left-to-right trail users are out of the field of view of higher speed right-turning motorists

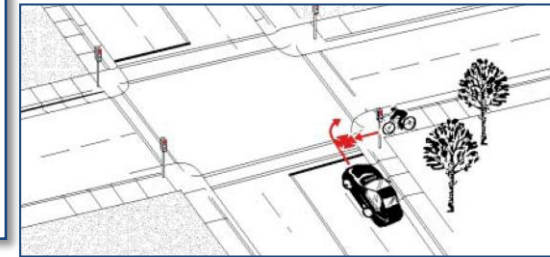
**(C)** Right-turning motorists are looking left while turning right; right-to-left trail users are out of their field of view. They may also obstruct the trail crossing.

**(D)** Through motorists may obstruct the trail crossing or obscure the view of right-turning motorists and of left-to-right trail users.

**(E)** Motorists crossing the road at a signal need a clearance interval that is long enough to allow them to cross the trail before the signal changes providing the trail right-of-way.



(A) Above; (B) Below



#### Collector or Arterial Streets with not more than one driveway or intersection every 300 m

- Maximum of 12 residential driveways, or 6 commercial driveways/minor streets per kilometre
- Minimum width of 3.0 m, or a desirable width of 4.0 m for a two-way operation
- At intersections: use pavement markings in the road crossings to highlight the presence of the path ("elephant's feet" and / or green colour); restrict left turns from the parallel main road at traffic signals to a protected signal phase only or eliminate left-turns altogether; eliminate parking near the intersection / driveways to improve sightlines; incorporate protected traffic signal phasing for trail users to cross major intersections; design the intersection for low-speed right-turns; eliminate right-turn only lanes if volumes do not warrant them; provide setback stop lines on the side streets / driveways so traffic does not block the trail crossing.
- To accommodate the minimum standard for an in-boulevard multi-use trail, there should be at least 6 m of available right-of-way beyond the edge of the road/back of curb to accommodate a minimum 1.5m setback from the edge of road/back of curb.

Local streets that will be recommended for multi-use boulevard trails include:

- Woodlawn Rd W
- Edinburgh Rd N and S

### 1.2.7 Cycle Tracks/Physically-Separated Bike Lanes



**Figure 16 - Physically separated two-way bike lane in Montreal, Qc.**  
Photo credit: <http://bikefriendlywindsor.com/2011/02/25/study-shows-separated-lanes-a-lower-risk/>

Cycle tracks that separate cyclists from vehicular traffic encourage non-cyclists or less-skilled cyclists to ride because they increase a cyclist's sense of comfort. They can also reduce the stress of cyclists generally when riding in traffic and negotiating for space with motorists. Research in North America shows that the overwhelming majority of people who would like to cycle but are afraid to do so on urban streets, as well as many current cyclists, would prefer to be separated from vehicular traffic. The provision of segregated bicycle lanes can therefore remove an important barrier to bicycle use, especially for less experienced cyclists. If designed properly, cycle tracks can also increase cyclists' safety and convenience.

Cycle tracks can take two forms: (1) As a raised bicycle lane elevated several centimetres above the adjacent traffic lanes, preferably at a different level than adjacent sidewalk so pedestrians do not use it, or (2) as an on-street bicycle lane separated from other traffic lanes by a physical barrier such as a median, a curb,

or parked cars.

Separation and barriers increase the level of comfort, security from traffic, and also reduces the possibility of vehicles encroaching into or parking in the bikeway. For cycling facilities without physical barriers, this type of encroachment is frequent on busy commercial streets or high-rise residential areas. Simpler barriers, such as flexible delineators or raised cycle tracks, will limit illegal stopping and parking, while stronger physical separators can completely eliminate it. Stronger barriers, however, will require more space for the barrier itself and to allow for cyclists to pass one another and avoid sudden obstacles as they will no longer be able to easily ride across the margins of the cycle track. They may also introduce complications with drainage and access at intersections.

The effectiveness of separation from encroachment depends on the type of separation used:

- **A painted median with delineator posts** is the least effective, because cars and small trucks can sneak between posts.
- **Separation by on-street parking** is very effective provided that the parking is well used.
- **A concrete median or mountable curb** can be effective but cars and trucks can still park with two wheels on top of the median, while they are unlikely to straddle it.
- **A higher barrier or planters** completely prevent encroachment into the path.

## Separator / Barrier Design

The design of the separator or barrier must take into account local conditions or needs for:

- Transit stops and passenger boarding and alighting, including those with mobility devices. The separator must permit transit vehicles to cross it to the curb-side waiting area.
- Street cleaning and winter control equipment and practices.

Local streets that will include cycle tracks as part of the cycling network include Stone Rd W.

### 1.3 Intersection Treatments

Intersections should take into account the many different possible movements of cyclists. Those going straight should generally have priority of turning cars. Cyclists turning right may have to wait for pedestrians. With a 2.0 m wide path, other cyclists can pass them while they wait, but with a narrower path other cyclists will be forced to queue.

#### General Intersection Design Guidelines

Problem: Visibility is a key concern as intersections present a higher probability of conflict between cyclists, motorists and pedestrians.

- Include intersection treatments that give cyclists greater visibility and/or draw attention to the conflict area, such as bike boxes, tightly spaced sharrows, textured pavements or pavement colourings highlighting cyclist's presence and continuity through the intersection
- Ensure that lane markings, signage and other intersections draw attention to the shifts, movements, priority and visibility of drivers to cyclists;
- Continue to undertake signage and pavement markings for bike routes following the Transportation Install appropriate signage to encourage right-turning vehicles to yield to cyclists.
- Association of Canada (TAC) guidelines. The City of Guelph Public Works Department will use the most recent edition of TAC guidelines for signage and pavement markings

#### Accommodating Left Turns

Problem: Cyclists cannot move into a left-turn lane in advance of the intersection (e.g. bike lanes separated from traffic with curbs or bollards).

- Prohibit parking between the bikeway and adjacent traffic lanes at intersections to assure good visibility.
- Any barriers and planters between the bicycle path and traffic lanes should be less than 75 cm tall so that lights on bicycles remain visible at night. The use of higher vegetation should be restricted to mid-block areas and avoided for at least 30 m before an intersection or driveway entrance (Vélo Quebec design manual).

#### Signalized Intersection

Accommodating left-turning cyclists at signalized intersections can be done in one of two ways: (1) Provide a separate traffic signal phase that protects left-turning cyclists, or (2) provide a two-stage left bike box so that cyclists cross to the far-side of the intersection during the main street green signal phase, wait in the designated area (bike box), and then cross to the side street during the side street green signal phase. This is also known as the Copenhagen Left. It is strongly

recommended that on-street separation be maintained right up to the stop bar if cyclists' left turns can be accommodated as noted above.

***Unsignalized Intersection***

Cycle tracks should be built wide enough to allow cyclists to pass left-turning cyclists.

Intersections that will require additional consideration for cyclists include:

- All instances where two arterial roads intersect
- All intersections along Stone Rd where the cycle track has been constructed
- All intersections with multi-use boulevard trails

## 1.4 Cycling Network Plan

The cycling network plan, based on the different bikeway treatment guidelines above, is illustrated on page 42.

Given that the objective of Bicycle-Friendly Guelph is to increase daily trips by bicycle by 3%, the priority of this plan is to address connections that support commuter or utilitarian trips.

The Cycling Network Plan is a living document that will evolve as conditions change in future, such as traffic patterns or volume, and as funding becomes available. It will be updated regularly and will serve to guide future cycling infrastructure projects.

A table of the recommended construction method is provided in Appendix B.



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### 1.5 End-of-Trip Facilities Recommendations

The provision of bicycle parking is an essential component to the cycling network. Making a trip by bike can be made more comfortable, accessible and secure when complemented with other end of trip facilities such as showers, change rooms and equipment lockers. Proper bike parking minimizes the need to park bicycles against trees, fences or street furniture and by also minimizes obstacles to pedestrians along walkways. Artistic bicycle parking can further enhance the streetscape by providing functional public art.

The City of Guelph currently provides bicycle parking for the Downtown only, on an as-needed basis. Outside of downtown, bicycle parking is the responsibility of the private landowner or property manager. The City of Guelph requires a minimum number of bicycle parking spaces as part of Site Plan Approval Procedures and Guidelines for new developments. The Zoning By-law currently makes no reference to bicycle parking.

The City of Thunder Bay has developed a two-tiered classification of bicycle parking facilities. These are summarized below in Table B8 and serve as good guidelines for end-of-trip provisions in Guelph.

**Table B2 –Comparison of Class One and Class Two Bicycle Parking (Adapted with permission from the City of Thunder Bay’s Guidelines for Bicycle Parking Facilities, 2011):**

	Class One (long-term)	Class Two (short-term)
<b>Length of Parking Time</b>	More than 2 hours or to provide longer term security	Less than 2 hours
<b>Parking Type</b>	Lockers or bicycle racks in an enclosed area	Exposed bicycle racks
<b>Weather Protection</b>	Increased weather protection / sheltering	Minimal weather protection
<b>Security</b>	Active surveillance (on-site staff, guards, and/or cameras)	Passive surveillance (high public visibility)
<b>Security and Locking</b>	User-only access (eg. most lockers) User shares access with other users with or without an option of locking the bicycle within the secured area (eg. bicycle cages and rooms)	User provides bicycle lock
<b>Type of Cyclist Served</b>	Employees, commuters	Visitors, tourists, shoppers,
<b>Typical Development Types</b>	Residences, workplaces, schools, transit centres	Commercial, retail, healthcare, parks, recreation areas, community centres

**Short-Term Bike Racks:** Bike racks are typically unsheltered and are also the least expensive form of bicycle parking to build and install. Bike racks for short-term use should meet the following criteria:

- Is the preferred level of bicycle parking provided for short term parking;
- Is sturdy, durable, affixed to the ground and of a secure design that allows at least two points of contact with a bike, and allows locking of the frame and at least one wheel;
- Has parking supports spaced sufficiently wide enough to ensure easy use;
- Is installed in a location within the view of the cyclists or general public but where its location does not encourage cycling on sidewalks or impede the pedestrian environment, and;
- Is located close to, and visible from, main entrances or access to buildings, sites, etc.

**Long-Term Bicycle Parking:** Used to provide increased and secured bicycle parking facilities, long-term parking can also provide greater protection during inclement weather. Bike storage for long-term use should meet the following criteria:

- Be installed where long-term, secure bicycle parking is demanded (eg: intermodal facilities) or unique destinations with high bicycle traffic;
- Be made of durable, secure material with integral floors that are anchored to secured surfaces, and;
- Be provided as either sheltered bicycle parking (for example, in a car parking structure, or as separate bicycle shelters) or bicycle lockers as demand requires.



Figure 17 – Artistic Bicycle Parking at an Optometrist Office in Guelph.

**Artistic Bicycle Parking:** Creatively designed bicycle parking can enhance the public realm and streetscapes, inspire creativity and create a sense of place. “Artistic” bike parking installations are bike racks that are interesting, aesthetically pleasing, creative, and are intentionally assigned as pieces of usable public artwork. Artistic bicycle parking shall be preferred for installation when:

- When the use of artistic bike racks is considered appropriate and the area has high pedestrian and cycling traffic;
- The artistic facility meets the same sturdiness, durability, design and affixing guidelines of short term bike racks (Appendix B Section 5.1.1), and;
- The design and location of the racks can help to add value to existing infrastructure in the public realm.

### 1.5.1 Bicycle Parking Provision, Dimension and Installation Requirements

As cycling in Guelph grows, the demand for bicycle parking will increase. The supply and type of bicycle parking varies according to the use of buildings and their location. Bicycle parking can be required as part of automobile parking requirements in the Zoning By-Law and Site Plan Approval Guidelines and Procedures. Although this method of provision can be useful, it can be insufficient. For example, existing downtown buildings may not have any associated or designated parking. Currently, the City's Bicycle Parking Requirements for Site Plan Approval outlines minimum requirements for new developments.

As a means to increase the supply and distribution of bicycle parking, Table 3 and 4 provide enhanced guidelines in reviewing development applications.

Table 3 - Residential, Cultural and Institutional Bicycle Parking Requirements\*

Type of Activity	Long-term Bicycle Parking Requirement (where applicable)	Short-term Bicycle Parking Requirement
<b>Residential, multiple dwellings (containing 3 or more units)</b>	Minimum 6 spaces for developments >20 units.	1 per dwelling unit plus 2 visitor spaces per 20 units**.
<b>Cultural services (eg. libraries, community centers, government buildings)</b>	1 space per 10 employees. Minimum requirement is 2 spaces.	1 space for each 200 m <sup>2</sup> of floor area. Minimum requirement is 2 spaces.
<b>Assembly-based cultural services (eg. theaters, churches, stadiums)</b>	N/A	10% of required automobile parking.
<b>Health-related (medical clinics, hospitals)</b>	1 space per 20 employees; minimum 2 spaces.	Consider on a case by case basis; minimum 2 spaces per public entrance.
<b>Primary or Secondary Schools</b>	1 space per 20 m <sup>2</sup> of classroom plus 1 space per 800 m <sup>2</sup> of office space.	1 space for each 500 m <sup>2</sup> of floor area or minimum of 6 spaces.
<b>Junior high and high schools</b>	1 space per 40 m <sup>2</sup> of classroom plus 1 space per 1000 m <sup>2</sup> of office space.	1 space for each 500 m <sup>2</sup> of floor area or minimum of 6 spaces.
<b>Parks</b>	N/A	20% of parking spaces

Table 4 - Commercial and Industrial Bicycle Parking Requirements

Commercial Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Grocery stores and food retail	1 space per 500 m <sup>2</sup> of floor area; minimum 2 spaces.	1 space for each 300 m <sup>2</sup> of floor area; minimum 2 spaces.
Convenience Store	N/A	No less than 6 spaces.
General retail	1 space per 500 m <sup>2</sup> of floor area or 5% of required automobile parking.	1 space per 300 m <sup>2</sup> of floor area; minimum 2 spaces.
Hotel / Motel	1 space per 20 rooms.	5% of required automobile parking**
Restaurants	5% of required automobile parking.	1 space per 300 m <sup>2</sup> of floor area or 5% required automobile parking.
Restaurants (take-out)	N/A	1 space for every 100 m <sup>2</sup> gross floor area or minimum of 6 spaces.
Office	1 space per 500 m <sup>2</sup> of floor area or 4% of require automobile parking.	1 space for each 500 m <sup>2</sup> of floor area or minimum of 6 spaces.
Manufacturing and production	4% of required automobile parking.	4% of required automobile parking**

\*Adapted with permission from the City of Thunder Bay’s Guidelines for Bicycle Parking Facilities, 2011.

\*\* Existing City of Guelph criteria in Site Plan Approval Procedures and Guidelines

Table 5 - General Spacing Requirements for Bicycle Racks\*

Spacing Type:	Distance in Meters:	Corresponding Letter (Fig 26 & 27)
Between racks which are parallel	0.6	A
Between racks which are end to end	1.8	B
Between rack and obstacle (eg. wall) parallel to rack	0.9	C
Between rack and obstacle (eg. wall) perpendicular to rack	1.2**	D
Between rack and obstacle (eg. wall) perpendicular to rack, to allow double-sided access	2.5	E
Aisle width from rack to rack	3.9	F

\*Adapted with permission from the City of Thunder Bay’s Guidelines for Bicycle Parking Facilities, 2011.

Table 6 - Rack Spacking on the Public Right-of-Way\*

Spacing Type:	Distance in Meters	Corresponding Letter (Fig 28)
Minimum sidewalk width from edge of pavement to building	2.7	G
Distance between building and rack	2.1	H
Distance between edge of pavement and rack	0.6	I
Distance between fire hydrant and rack	3	J
Distance between entrance or driveway and rack	1.5	K
Distance between other street furniture and rack	1.5	L



The design and location of bicycle parking installations should consider the spacing and surroundings of racks to maximize their utilization by cyclists. As a means to guide the Zoning By-Law amendment regarding bicycle parking, Tables 3-6 and Figures 18-20 outline supply requirements and spacing recommendations for racks that stand alone as short-term parking. Long-term parking requirements should follow the spacing for short-term parking to guide the installation of racks in bicycle shelters, cages, rooms etc.

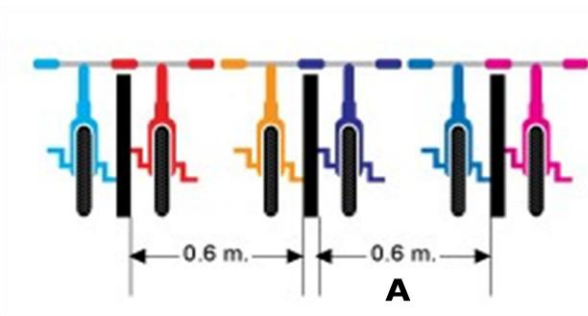


Figure 18 – \*Rack Spacing.

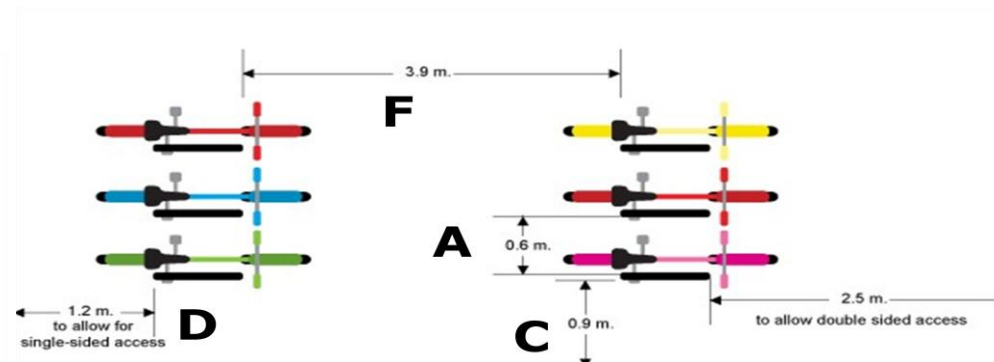


Figure 19 –General Spacing Requirement for Bicycle Racks.

\* Reproduced with permission from the City of Thunder Bay’s Guidelines for Bicycle Parking Facilities, 2011.

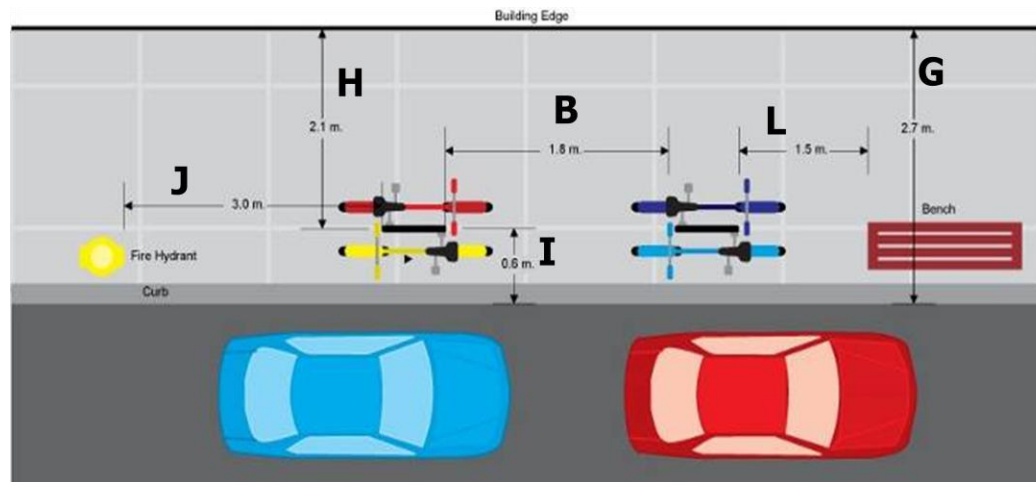


Figure 20 – Rack Spacing on the Public Right of Way.

## 1.7 Recommended Actions for Engineering the Bikeway Network

Recommended Action	Priority (years)	
	0-5	6-10+
<b>Objective 1 : Give priority to providing a comprehensive cycling network</b>		
1.1 Prioritize on-road bicycle facilities as per the cycling network plan on page 41	X	X
1.2 Develop and implement a wayfinding strategy on streets that have been identified in the Cycling Network Plan for a signed route.		X
1.3 When designing traffic calming interventions for residential neighbourhoods, consider cycling routes in choosing appropriate design and signage.	X	X
1.4 Review and suggest changes to road and intersection design practices to improve cycling and bicycle facility design. This may include consideration of cyclist-activated signal changes, configuration of bike lanes at and through intersections, and signage.	X	X
<b>Objective 2: Maximize cycling connections and minimize barriers to cycling</b>		
1.5 Give priority to bicycle lanes over on-street parking where the bike lane provides an important connection in the city.	X	X
1.6 Where residential on-street parking currently exists, City Staff will make an effort to retain parking and add bicycle facilities. If there is insufficient space in the road cross-section, City Staff will engage residents to determine if there are alternative solutions.	X	X
1.7 Address physical obstructions or missing connections in the cycling network, including curb cuts at trail crossings, removal of fences or obstructions, and prioritization of trail connections along primary off-road cycling routes.		
<b>Objective 3: Develop a strategy to address end-of-trip facilities throughout the City of Guelph</b>		
1.8 End-of-trip facilities on City-managed properties will be encouraged.	X	X
1.9 End-of-trip facilities in new private developments will be achieved through the development approval process.	X	X
1.10 Where appropriate, end-of-trip facilities in existing developments will be achieved in collaboration with property owners.	X	X
1.11 Update the Zoning By-Law and the Site Plan Approval Procedures and Guidelines to include provisions for bicycle parking as per the guidelines recommended in this Plan.	X	
1.12 Increasing the number and quality of end-of-trip facilities at schools will be encouraged in collaboration with the school boards.		
<b>Objective 4: Update Guelph's cycling maps regularly</b>		
1.13 Develop and maintain a GIS-based inventory of bicycling infrastructure, shared amongst appropriate City departments, that		

includes network changes and facilities (e.g. bicycle parking).

x



## 2.0 Education and Encouragement: Promote a Bicycle-Friendly City

As an essential transportation mode for the City, positively supporting the benefits, use and safety of cycling is necessary to create a bicycle-friendly environment. To achieve this, the Cycling Master Plan aims to complement the safe cycling environment of the Bike Network through encouragement and education. City staff have recognized the complementary nature of the education and encouragement components. These elements will be considered together as one component of the Cycling Master Plan.

### 2.1 Recommendations to Promote a Bicycle-Friendly City

Recommended Action	Priority (years)	
	0-5	6-10 +
<b>Objective 1: Form partnerships and support advocacy groups to enhance cycling:</b>		
2.1 Explore how to support bicycle-friendly businesses and employers that encourage or promote cycling in Guelph.	x	x
2.2 Work with employers, institutions, businesses, developers, service agencies and advisory groups to prioritise cycling encouragement and build capacity for cycling in their respective activities.		x
2.3 Establish and participate in partnerships with the community to aid in the delivery of cycling events.	x	x
<b>Objective 2: Enhance the recognition and influence of the Bicycle-Friendly Guelph brand:</b>		
2.4 Develop a marketing strategy and regular activities through the city-branded Bicycle-Friendly Guelph Initiative.	x	x
2.5 Coordinate and collaborate on Bicycle-Friendly events, including Commuter Challenge and Bike to Work week.	x	
2.6 Develop, distribute and update cycling literature through City publications, online resources, way-finding pieces and event promotion items.	x	



<b>Objective 3: Collaborate with partners to reinforce driver awareness of share-the-road practices:</b>			
2.7	Work with driver education enterprises, high schools, Guelph Police Services and other stakeholders to promote share-the-road driving practices.	x	x
2.8	Produce and deliver information to motorists and cyclists when introducing new infrastructure or traffic controls (e.g. bike boxes, separated cycle tracks).		
<b>Objective 4: Support safe cycling education and promotion</b>			
2.9	Establish a CAN-Bike trained Cycling Ambassador program with staff and community leaders to promote safe cycling practices.	x	
2.10	Strengthen partnerships with Active and Safe Routes to School and CAN-bike to coordinate safe cycling clinics for children and youth.	x	x
2.11	Work with partners to produce and deliver educational material and programs on safe cycling practices.	x	x
2.12	Develop a guide that informs cyclists of their rights and responsibilities and educates motorists on how to safely share the road in the presence of cyclists.	x	
<b>Objective 5: Coordinate programs for local employers who encourage employees and customers to cycle</b>			
2.13	Develop and deliver programs to publicly recognized employers who promote and encourage cycling opportunities for staff and customers, such as a Bicycle-friendly business awards program	x	x
2.14	Continue to promote employers' participation in the annual National Commuter Challenge.	x	x



### 3.0 Enforcement: Protect a Cycling-Friendly Environment

An essential component for any transportation network is safety. Principally used as a means to reduce incidents that cause injury, property damage and death, enforcement can also help serve as a front-line education tool for both drivers and cyclists. As cycling becomes a more frequent choice for travel in Guelph, enhanced enforcement criteria of a cycling-friendly environment will be required.

#### 3.1 Existing Conditions

Guelph Police Services and City of Guelph Bylaw Officers include bicycle patrol teams that are specially trained in enforcement by bicycle. Both teams undertake training through the International Police Mountain Bike Association (IPMBA), which equips officers to effectively police by bicycle. The Guelph Police Services bike patrol unit is primarily an enforcement unit, but attends and participates in occasional bicycle safety initiatives. These have included positive reinforcement ‘ticket blitzes’ where cyclists demonstrating safe practices are stopped and ‘ticketed’ with a reward such as Tim Horton’s gift certificates.

Guelph’s Bylaw Officers regularly patrol roadways, parks and trails throughout the city during the summer months to enforce municipal bylaws. These include prohibiting cycling on sidewalks and certain trails in the city, enforcing traffic restrictions, and informing cyclists of safe cycling practices.

#### 3.2 Recommendations for Improving Safe Cycling and Sharing the Road in Guelph

Recommended Actions	Priority (years)	
	0-5	6-10+
<b>Objective 1: Create a cycling enforcement strategy</b>		
3.1 Develop an enforcement strategy designed to reach the identified goals of reducing collisions and traffic infractions in consultation with Guelph Police Services, and the City’s Bylaw Compliance and Security Department.	x	
<b>Objective 2: Enhance enforcement opportunities</b>		
3.2 Continue to support Guelph Police Service’s education and enforcement activities in partnership with Bicycle-Friendly Guelph, focusing on positive reinforcement campaigns to reward good cycling behaviour.	x	x
3.3 Increase the number of bicycle patrols on roads and trails.	x	x

<b>Objective 3: Improve safety records</b>			
3.4	Enhance data-sharing on cycling safety, enforcement and collision statistics amongst City staff and Guelph Police Services.	x	x
3.5	Increase the detail of cycling-specific collision data in annual collision reports to include metrics outlining cyclist age, action, location of cyclists, time of day and top cycling collision intersections.	x	
<b>Objective 4: Review and suggest changes to municipal cycling laws and regulations</b>			
3.6	Review and suggest changes to clarify City By-Laws on the use of electric motorized bicycles in bicycle lanes, multi-use boulevard trails, and off-road trails	x	



## 4.0 Evaluation: Monitor Progress in Achieving Targets and Goals

Understanding the use and safety of cycling is vital to guide future transportation planning and policy decisions. The adoption of meaningful performance indicators to monitor changes in cycling conditions over time will be required to determine the effectiveness of cycling investments.

### 4.1 Current Practice

Bicycle-Friendly Guelph collects cycling-related transportation data from two primary sources: the Transportation Tomorrow Survey, conducted every five years, and Statistics Canada data, also conducted every five years. These two surveys have extremely low sample sizes of cyclists and thus their cycling-specific data is not reliable. In 2009, staff commissioned a telephone survey of cyclists to provide supplemental information on cycling patterns, perceptions, behaviours and preferences of Guelph cyclists. This survey was funded externally and the city does not currently have additional resources to conduct a survey of this scale on a regular basis.

In addition, Traffic Services undertakes traffic counts at specific locations on an as-needed basis. These counts can occasionally be requested to count cyclists on particular sections of road way or at particular intersections. Collision data is also collected locally by Traffic Services and the Guelph Police Services collision reports on an annual basis, providing statistics on accidents involving cyclists.

### 4.2 Recommendations for Monitoring and Measuring Success

Recommended Actions		Priority (years)	
		0-5	6-10 +
<b>Objective 1: Establish a comprehensive monitoring plan</b>			
4.1	Identify appropriate performance indicators that support the goals of the Cycling Master Plan and the TDM program (See <a href="#">Appendix A</a> for a preliminary list of indicators).	x	
4.2	Expand routine traffic, vehicular and cordon counts to include monitoring activities of cycling-specific infrastructure such as bike lanes and trails.	x	
4.3	Create GIS tools founded on baseline performance indicators developed to monitor safety, infrastructure and cycling activity geospatially.	x	
4.4	Regularly update the City's cycling GIS files to reflect, track and document both current and planned facilities.	x	x

<b>Objective 2: Collect and establish baseline performance measurement data</b>		
4.5	Gather and coordinate baseline data from City staff involved with cycling planning and safety (Engineering, Planning, Operations and Traffic) and Guelph Police Services, as well as other appropriate community partners (e.g. WDG Public Health).	x
4.6	Assemble and maintain centralized lists on cycling programs.	x x
<b>Objective 3: Provide regular evaluation and reporting of cycling accomplishments</b>		
4.7	Provide a report every 2 years on progress in implementing the Bicycle-Friendly Guelph Cycling Master Plan.	x x
4.8	Regularly update the Bicycle-Friendly Guelph web page to demonstrate progress on implementing the Cycling Master Plan.	x x



## 5.0 Implementation: Getting to Success

The implementation of the Master Plan will be achieved through (a) providing funding for on-street cycling infrastructure as part of roadway capital projects and operational budget, which are subject to council approval; (b) the development process for end-of-use facilities in new developments; and (c) engaging the public, stakeholders and partners in regard to education, encouragement and enforcement.

### 5.1 Recommended Actions for Successfully Implementing the Cycling Master Plan

Recommended Action	Priority (years)	
	0-5	6-10 +
<b>Objective 1: Coordinate implementation through capital projects under DC and Traffic Operations through council approval</b>		
5.1 The different components of the on-street cycling infrastructure will be included in the appropriate roadway capital / operating budgets for implementation.	x	
<b>Objective 2: Be project-ready to make use of new funding opportunities for infrastructure initiation</b>		
5.2 Ensure infrastructure projects that require additional funding (e.g. physically-separated cycle tracks) be identified and studied in the event that new funding opportunities are made available.	x	x
<b>Objective 3: Conduct on-going public engagement</b>		
5.3 Conduct ongoing consultation and outreach through establishing an Active Transportation Advisory Group	x	x
5.4 Obtain input from the Advisory Group and other stakeholders where implementing cycling infrastructure components that are new to Guelph.		
5.5 Conduct promotional events and activities in consultation with the Advisory Group.		
5.6 Host opportunities for public feedback on the implementation of the Cycling Master Plan ever 1-2 years;		
<b>Objective 4: Review and suggest improvements to maintenance of cycling facilities</b>		
5.7 Conduct a regular review of physical infrastructure conditions (quality, level of degradation, cleanliness) with input from users, and report to the appropriate Council Committees and staff departments with suggestions for improving on-going maintenance and repairs of the cycling network.	x	x

# Appendices

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## Appendix A – Preliminary Performance Indicators

Table A1 – Preliminary Performance Indicators

Performance Measure	Indicator		Data Source	Location of Monitoring Activity	Frequency of Measurement	Baseline	Target
	Definition	Measurement					
<b>Engineering</b>							
Use	Cycling Mode Share	% of all trips AADT bicyclists for key corridors	TTS data; Traffic Counts	City-wide High-volume corridors	Annual	1% (2006) of all trips	3% by 2022
Provisions	Network expansion	Km cycling facilities added to network  # signed bicycle routes	GIS database	City-wide	Ongoing during design process Annual reporting	50.5 km of bike lanes (2012) 110 Km Off-road multi-use trails None	Add 127 km of on-road cycling facilities (lanes, shared-use lanes, and signed routes) x km of proposed off-road connections At least 10 routes
	End-of-trip facilities	# of bike rack spaces per 100,000 people # of long-term bicycle parking facilities	GIS database; On-site survey	City-wide	Ongoing inventory Annual reporting	TBD with GIS network monitoring development None	4-6k /100k pop.; distributed throughout city  Up to 10 city-wide (both city-owned and privately-owned, not including U of G existing shelters)
Comfort & Convenience	Winter ploughing along pathways & bike lanes.	% bike network ploughed	Public Works monitoring (internal survey)	City-wide	Winter snow events	TBD	Requires further consultation with city staff
<b>Education and Encouragement</b>							
Partnerships & Recognition	Supporting Bicycle-Friendly businesses and events	# of Bicycle-Friendly Businesses # sports/events BFG engages in			Biannual	0 Average 4 sports/events per year	10 in 10 years 5 per year
	External recognition	Bicycle-Friendly City Status				Bronze in 2012	Gold Status in 10 years
Outreach & Provision	Cycling literature provided	# maps distributed  Creation of educational material for distribution to public			Biannual	7000 Maps distributed between '08-'11 3 (maps, bike box literature, MTO cycling skills handbook)	7000 updated maps between '13-'16  Increase to 6 (e.g. sharrows, multi-use boulevard trails, student route planning documents)
Public Engagement	Opportunities for public involvement, input, comments, feedback	# of public engagement opportunities			Yearly	NA	Minimum 3 opportunities for public engagement biannually.
	Educational programs implemented	# of education or training opportunities			i) Biannual ii) Biannual	N/A	2 youth training and 2 adult training opportunities per year; # of people trained
	BFG presence in local media	# media coverage of cycling initiatives linked to the Cycling Master Plan			i) Ongoing	Avg 20 per yr (2009-2010)	Maintain 20 per year
	BFG website views	# online BFG website hits	Communications Department		Ongoing	2000 page views (09/10 season)	at least 2000 page views



			statistics on web traffic				
Enforcement							
Safety	Safety of Cyclists	# of reported cyclist collisions, injuries & fatalities # of fatalities per 10,000 cyclists	Traffic Services and Guelph Police Services annual report	City-wide Corridor / Intersections	Annual Collision Reports 5 years	38 collisions per year (average between 2007-2010)	10% reduction per year per capita-cyclist No fatalities.
Citations & Ticketing	Police Services Cycling Citations/Tickets	# Positive reinforcement tickets distributed Sidewalk cycling tickets Drivers ticketed for unsafe share-the-road practices (e.g. obstructing bike lane, not passing safely)	Guelph Police Services	City-wide	Annual program wrap-up Annual police reports	1253 (2011) 37 (2008) N/A	at least 1000 Fewer TBD
Policy Targets							
Air Quality	Greenhouse Gas & Air Contaminants	Tons GHG reduced from Auto use Tons GHG reduced per capita	Calculated using TTS and traffic count data and known GHG emission factors	City-wide	Biannual	43,000 tons (2006) 0.366 tons	Reduced by 780 tons per year in 10 years 0.007 tons per capita per year
Energy	Energy Use	Automotive Gigawatt Hours Use	Community Energy Initiative data for conversion factors	City-Wide	5-year reporting	1743 GWhe (2006)	1126 GWhe by 2031

## Appendix B - Road Treatment for Arterial and Collector Streets

East-West	Existing Connectivity	Required Connectivity		Recommended Facility Type	Engineering Method	Priority
		From	To			
Woodlawn	No lanes	Elmira	Woolwich	Multi-use Boulevard Trail	New Construction	5+
		Woolwich	Victoria	Bike Lanes	Road Diet	5+
		Victoria	City Limits	Signed Route	Wayfinding signage	5+
Speedvale	Incomplete	Elmira	Woolwich	Bike Lanes	Road Reconstruction	5+
		Woolwich	Stevenson	Bike Lanes	Road Reconstruction	1-4
		Stevenson	Victoria	Bike Lanes	Road Reconstruction	0
		Eramosa	City Limits	Paved Shoulder	Pave 1 m shoulder	5+
Willow	Incomplete	Imperial	Silvercreek	Shared-Use Lane	Add Sharrow Markings	5+
		Silvercreek	Edinburgh	Bike Lane	Restripe with narrow lanes	1-4
Paisley	Incomplete	Glasgow	Dublin	Shared-Use Lane	Add Sharrow Markings	1-4
		Edinburgh	Rosewood	Shared-Use Lane	Add Sharrow Markings	1-4
		Rosewood	Silvercreek	Bike Lanes	Restripe with Narrow Lanes	1-4
		Silvercreek	CN Railways	Bike Lanes	Road Reconstruction	5+
		CN Railways	Elmira	Bike Lanes	Restripe with Narrow Lanes	1-4
Wellington	Incomplete	Waterloo	Edinburgh	Off-road trail	complete trail	
College	Incomplete	Hanlon	Edinburgh	Bike Lanes	Road Reconstruction	5+
		Dundas Lane	Victoria	Bike Lanes	Road Reconstruction	5+
Stone	Incomplete	Woodland Glen	Scottsdale	Bike Lanes	Road Reconstruction	5+
		Scottsdale	Edinburgh	Cycle Track	Road Reconstruction	5+
		Gordon	Victoria	Bike Lanes	Road Reconstruction	1-4
Kortright	No lanes	Teal & Downey	Hanlon	Direct off-road	Wayfinding signage	1-4
		Hanlon	Edinburgh	Bike Lanes	Restripe with narrow lanes	1-4
		Edinburgh	Gordon	Bike Lanes	Road Reconstruction	>5
		Gordon	CityLimits	Signed Route	Wayfinding signage	>5
Laird/Clair	Incomplete	Hanlon	Clairfields	Bike Lanes	Road reconstruction	1-4
Eastview	Incomplete	Victoria	Starwood	Bike Lanes	Road reconstruction	1-4
		Summit Ridge	Watson Pkwy	Bike Lanes	Road Reconstruction	1-4
Macdonnel	No Lanes	Norfolk	Arthur	Shared-use lanes	Add Sharrow Markings	5+
Elizabeth	Incomplete	Victoria	York	Bike Lanes	Road Reconstruction	5+
Grange	No Lanes	Victoria	Watson Pkwy	Bike Lanes	Restripe with Narrow Lanes	5+
York	No Lanes	Wyndham	Victoria	Bike Lanes	Road Reconstruction	
		Victoria	Watson Pkwy	Bike Lanes	Road Reconstruction	5+
Fife	No Lanes	Whitelaw	CN Railway	Bike Lanes	Road Diet	0
Maltby	No Lanes	City Limits	City Limits	Paved Shoulder	Pave 1m Shoulder	5+

North-South	Existing Connectivity	Required Connectivity		Recommended Facility Type	Engineering Method	Priority
		From	To			
Elmira	Incomplete	Speedvale	Woodlawn	Bike Lanes	Road Diet	0
Imperial	Incomplete	Willow	Zehrs Driveway	Bike Lanes	Road Diet	1-4
		Zehrs Driveway	Paisley	Shared Use Lane	Add Sharrow Markings	1-4
Silvercreek	No Lanes	Woodlawn	Speedvale	Bike Lanes	Road Reconstruction	5+
		Speedvale	Willow	Bike Lanes	Road Diet	0
		Willow	Paisley	Bike Lanes	Road Reconstruction	1-4
		Paisley	Waterloo	Bike Lanes	Road Reconstruction	1-4
Westwood	No Lanes	Imperial	Silvercreek	Shared Use Lane	Add Sharrow Markings	5+
Westmount	No Lanes	Speedvale	Trail Crossing	Bike Lanes	Restripe	1-4
Edinburgh	Incomplete	Woodlawn	Speedvale	Bike Lanes	Road Reconstruction	5+
		Speedvale	Willow	Multi-use Blvd Trail	New Construction	5+
		Suffolk	Paisley	Bike Lanes	Restripe with Narrow Lanes	5+
		Paisley	Waterloo	Shared Use Lane	Add Sharrow Markings	5+
		Waterloo	Bristol	Bike Lanes	Restripe with Narrow Lanes	5+
		Bristol	Speed River	Shared Use Lane	Add Sharrow Markings	5+
		Speed River	College	Bike Lanes	Road Diet	5+
		College	Chancellor's Way	Multi-Use Blvd Trail	New Construction	5+
		Chancellor's Way	Stone	Shared Use Lane	Add Sharrow Markings	5+
		Stone	Ironwood	Shared Use Lane	Add Sharrow Markings	5+
		Kortright	Carrington	Shared Use Lane	Add Sharrow Markings	1-4
		Carrington	Gordon	Bike Lanes	Restripe with Narrow Lanes	1-4
Scottsdale	No Lanes	College	Stone	Bike Lanes	Restripe with Narrow Lanes	1-4
		Stone	Kortright	Shared Use Lane	Add Sharrow Markings	5+
Wyndham	Incomplete	Carden Street	Woolwich	Bike Lanes	Road Reconstruction	5+
Woolwich	Incomplete	MacDonnell	5-Points	Bike Lanes	Road Reconstruction	5+
Stevenson	Incomplete	Speedvale	Eramosa	Bike Lanes	Road Reconstruction	1-4
		Eramosa	Elizabeth	Bike Lanes	Restripe with Narrow Lanes	1-4
Victoria	Incomplete	Woodlawn	Speedvale	Bike Lanes	Road Reconstruction	1-4
		Eastview	York	Bike Lanes	Road Reconstruction	5+
		Eramosa River	MacAlister	Bike Lanes	Road Reconstruction	5+
		MacAlister	Arkell	Bike Lanes	Road Reconstruction	0
		Clair	City Limits	Paved Shoulder	Pave 1 m shoulder	5+
Watson	No Lanes	City Limits	City Limits	Bike Lanes	Restripe with Narrow Lanes	5+
Starwood	No Lanes	Grange	Watson Pkwy	Bike Lanes	Road Diet	5+
Downey	Incomplete	Hanlon Creek Blvd	City Limits	Paved Shoulder	Pave 1 m Shoulder	5+

## Appendix C – Guelph Cycling Survey Questionnaire

### Guelph Cycling Survey Questionnaire

Environics Research Group - April 8, 2009

#### Introduction

Good afternoon/evening. My name is \_\_\_\_\_ and I am calling on behalf of the City of Guelph, from Environics Research Group, a public opinion research company. We are conducting a survey of residents of Guelph about cycling.

Please be assured that we are not selling or soliciting anything. This survey is registered with the national survey registration system.

IF ASKED: The registration system has been created by the Canadian survey research industry to allow the public to verify that a survey is legitimate, get information about the survey industry or register a complaint. The registration systems toll-free telephone number is 1-800-554-9996.

Your responses to this survey will be confidential. Your individual responses will not be provided to the City of Guelph, but will be grouped with the responses of others and cannot be traced back to you.

The survey will take about 10 minutes to complete.

May I continue?

Could we speak to the person in the household 16 years of age or older.

#### IF NO ONE IN HOUSEHOLD AGE 16 OR OLDER AVAILABLE, ARRANGE FOR CALL-BACK

##### A. Which statement best describes how often you cycle?

- 01 – Everyday
- 02 – At least once a week
- 03 – At least once a month
- 04 – At least once a year

05 – Never [Is there anyone else in your household aged 16 years and older who rides a bicycle? IF YES: ASK TO SPEAK TO THAT PERSON AND ASK QA (IF NOT AVAILABLE ARRANGE CALLBACK) IF NO: **THANK AND TERMINATE**

VOLUNTEERED

98 – Other (Please Specify)

99 – DK/NA

#### CYCLING BEHAVIOUR

##### ASK THOSE WHO SAID CYCLE “EVERYDAY” OR “AT LEAST ONCE A WEEK” AT QA

Q1a. What kind of route do you use for your daily trip? **READ**

01 – On-road route [INTERVIEWER: IF ASKED: **ON-ROAD ROUTE IS A REGULAR PAVED ROAD, AND MAY INCLUDE A BIKE LANE**

02 – Off-road route [INTERVIEWER: IF ASKED: **OFF-ROAD ROUTE IS A ROUTE THROUGH A PARK OR A TRAIL (GENERALLY UNPAVED)**

03 – A combination of on-road and off-road [INTERVIEWER: IF ASKED: **ON-ROAD ROUTE IS A REGULAR PAVED ROAD, AND MAY INCLUDE A BIKE LANE AND AN OFF-ROAD ROUTE IS A ROUTE THROUGH A PARK OR A TRAIL (GENERALLY UNPAVED)**

99 – DK/NA

**ASK THOSE WHO SAID ON-ROAD ROUTE IN Q1a:**

Q1b. What TWO main roads do you use for your daily trip?

01 – Specify \_\_\_\_\_

99 – DK/NA

**ASK THOSE WHO SAID OFF-ROAD ROUTE IN Q1a:**

Q1c. What MAIN park or trail do you use for your daily trip?

01 – Specify \_\_\_\_\_

99 – DK/NA

**ASK THOSE WHO SAID A COMBINATION IN Q1a:**

Q1d. What MAIN road and what MAIN park/trail do you use for your daily trip? **RECORD BOTH ROAD AND PARK/TRAIL**

01 – Specify ROAD \_\_\_\_\_

02 – Specify PARK/TRAIL \_\_\_\_\_

99 – DK/NA

Q2. Do you do the following by bicycle? **READ - CHECK ALL THAT APPLY**

01 – Travel to/from school

02 – Travel to/from work

03 – Shopping/running errands

04 – Recreation

05 – Fitness

**FOR THOSE WHO TRAVEL TO SCHOOL OR WORK BY BICYCLE IN Q2 ASK Q3a FOR EACH RESPONSE IN Q2**

Q3a. Thinking of the cycling trips you make to [ INSERT RESPONSE FROM Q.2], what is the main intersection you travel to? **[IF DO NOT KNOW MAIN INTERSECTION, ASK FOR ADDRESS. IF NECESSARY ASK FOR MAJOR BUILDING OR LANDMARK NEARBY]**

01 – Record (main intersection, address, or major building/landmark) \_\_\_\_\_

99 – DK/NA

**FOR THOSE WHO USE A BICYCLE FOR SHOPPING/RUNNING ERRANDS IN Q2. ASK Q3b**

Q3b. Thinking of the cycling trips you make for [INSERT RESPONSE FROM Q.2], what is the main intersection you travel to most frequently? **[IF DO NOT KNOW MAIN INTERSECTION, ASK FOR ADDRESS. IF NECESSARY ASK FOR MAJOR BUILDING OR LANDMARK NEARBY]**

01 – Record (main intersection, address, or major building/landmark) \_\_\_\_\_

99 – DK/NA

Q4. In a typical week, which of the following types of transportation other than a bicycle do you use? **READ – CODE ALL THAT APPLY**

01– Car as driver

02 – Car as passenger

03 – Transit

04 – Walking

VOLUNTEERED

98 – Other (Please Specify)

99 – DK/NA

**BARRIERS/MOTIVATIONS**

Q5 Please rate on a scale of 1 to 5, where 1 means much less likely and 5 means much more likely and 3 means no influence on your decision, how each of the following would motivate you to use a bicycle to go to work/school, or for shopping/running errands?

- a) Bike lanes on the major roads to your destination.
- b) Off-road alternatives for all or part of your trip.
- c) Extra-wide curb lanes (or shared lanes) for all or part of your trip.
- d) Outdoor bike racks
- e) Bike lockers or indoor or covered bike racks
- f) Shower facilities at work or school
- g) A place to change and store your clothes
- h) Bike racks or bike lockers at bus and train stations/stops/terminals
- i) Racks on the buses to carry bikes

Much less likely		No influence		Much more likely	DK/NA
1	2	3	4	5	99

Q6 Would each of the following make you much less likely or less likely to use a bicycle to go to work/school, or for doing shopping/running errands or have no influence on your decision?

- a) Vehicles speeding and careless driving habits
- b) Vehicles passing too closely to cyclists
- c) Being harassed/yelled at by drivers
- d) Being cut-off by vehicles
- e) On-street parking that creates a risk of being hit by a car door
- f) The presence of off-leash dogs on trails
- g) Sewer grates

h) Poor road conditions, such as potholes, debris, or un-cleared snow

- 01 – Much less likely
- 02 – Less likely
- 03 – No influence on your decision
- 99 – DK/NA

Q7 Please rate on a scale of 1 to 5, where 1 means much less likely and 5 means much more likely and 3 means no influence on your decision, how each of the following would motivate you to use a bicycle to go to work/school, or for shopping/running errands?

- a) The distance of your destination is less than 5 km
- b) The distance of your destination is 5 km to 10 km
- c) The distance of your destination is over 10 km
- d) Cycling is the fastest way to get there
- e) The route is flat
- f) The route has a few small hills
- g) The route has long steep sections
- h) A trip that involves cargo or a passenger

Much less likely		No influence		Much more likely	DK/NA
1	2	3	4	5	99

**COMMUNICATIONS**

**ASK ALL**

Q8a The City of Guelph is planning to communicate to the public, which ways would you use to get information about cycling, such as trip planning, facilities and services, in the City of Guelph? **DO NOT READ - CODE ALL THAT APPLY**



01 – Internet/web **PROMPT:** Is that the City of Guelph website – guelph.ca?, Is that social networking sites, such as Facebook, MySpace and Twitter? **PLEASE ALSO RECORD OTHER RESPONSE**

02 – Radio ads

03 – Ads inside and outside of buses or bus shelters

04 – Brochure in the mail

05 – Brochure at community centres or other public places

06 – In the Guelph Mercury or other newspapers

97 – None of the above

98 – Other (Please Specify)

99 – DK/NA

#### **ASK THOSE WHO SAID INTERNET/WEB IN Q8a**

Q8b What websites do you use to get this information? **DO NOT READ - CODE ALL THAT APPLY**

01 – City of Guelph website – guelph.ca

02 – Social networking sites, such as Facebook, MySpace and Twitter

03 – Search engines, such as Google, Yahoo

04 – Websites of bicycle organizations

98 – Other (Please Specify)

99 – DK/NA

Q9 What is the MAIN way you learned cycling safety? **READ – CODE ONE ONLY**

01– Drivers' education courses

02 – School courses or class

03 – Workshop offered through an organization or through Guelph Parks and Recreation

04 – Reading (a book or online resource)

05 – Taught by family member/friend

#### **VOLUNTEERED**

06 – Did not get taught safety and rules of the road

98 – Other (Please Specify)

99 – DK/NA

#### **DEMOGRAPHICS**

*To finish up, I would like to ask you a few questions about you and your household for statistical purposes only. Please be assured that your answers will remain completely confidential.*

D1. In which of the following age categories do you belong? **READ – CODE ONE ONLY**

01 – 16-18

02 – 19-24

03 – 25-34

04 – 35-44

05 – 45-54

06 – 55-64

07 – 65 and older

D2 What is the highest level of education that you have completed?

#### **DO NOT READ – CODE ONE ONLY**

01 – Some high school or less

02 – Graduated high school

- 03 – Vocational/college/technical
- 04 – Some university
- 05 – Graduated university
- 06 – Other/depends/dk/na/refused

- 98 - Other (Please Specify)
- 09 – Refused
- 99 – DK/NA

D3. What is your current employment status? **READ – CODE ONE ONLY**

- 01 – Working for pay full-time (30 hours+)
- 02 – Working for pay part-time (less than 30 hours)
- 03 – Student
- 04 – Retired
- 05 – Homemaker
- 06 – Unemployed or looking for a job
- 07 – Self-employed
- 98 – Other (Please Specify)
- 99 – DK/NA/refused

**ASK ALL**

D5. For statistical purposes only, we need information about your income. All individual responses will be kept confidential. Please tell me which category applies to your total household income before taxes for 2008.

- 01 – Less than \$30,000
- 02 – \$30,000 to \$59,999
- 03 – \$60,000 to \$89,999
- 04 – \$90,000 or more
- 05 – Other/depends/dk/na/refused

D6. May I have your 6-digit postal code?

IF RESPONDENT REFUSES, ASK FOR FIRST THREE DIGITS ONLY

\_\_\_\_ \_

**ASK THOSE WHO WORK FULL-TIME OR PART-TIME IN QD3**

D4. How would you describe your principal type of occupation?  
**(SPECIFY THE TYPE OF OCCUPATION) DO NOT READ**

- 01 - Professionals
- 02 - Administrators and owners of big business
- 03 - Technicians, semi-professionals
- 04 - Administrators and owners of small business
- 05 - Office workers (white collar), services, sales
- 06 - Tradesmen, skilled, semi-skilled, workers
- 07 - Unskilled workers
- 08 - Farmers and fishermen

**RECORD**

- D7. Gender
- 01 – Male
  - 02 – Female

**RECORD WARD**

And to verify that I have dialed correctly is this:

- 01 – Yes





02 – No If incorrect, please input correct phone number

If we have any further questions, may we call you back?

01 – Yes

02 – No

This completes the survey. In case my supervisor would like to verify that I conducted this interview, may I please have your first name?

On behalf of City of Guelph, thank you very much for your time and assistance.

Is there another non-family member in your household age 16 and older who rides a bicycle? IF YES: ASK TO SPEAK TO THAT PERSON AND ASK QA (IF NOT AVAILABLE ARRANGE CALLBACK) IF NO: **THANK AND TERMINATE**



## Appendix D – References

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