



4.0 IMPLEMENTATION

The Markham Cycling Master Plan is both comprehensive and strategic in nature, and is proposed to be implemented efficiently through an incremental process over a 15-year period, with each step or action building upon previous ones. The Plan is designed to be flexible so that the Town can adapt to changes, constraints and opportunities as they arise. The 15-year horizon for the Plan is based on the assumption that Council is willing and able to fund the plan as proposed. However, it is for Council to balance funding priorities for all Town initiatives. As a result, the proposed 15-year Plan implementation horizon may need to be reviewed when the Plan is next updated.

This chapter outlines the objectives of the implementation element of the Cycling Master Plan and lists a series of objectives and supporting strategies to achieve them. This chapter also defines a recommended process, management structure and set of steps considered necessary to implement the Cycling Master Plan.

The key objectives for implementing the Markham Cycling Master Plan are as follows:

- 4a: Develop a short-term and long-term implementation strategy;
- 4b: Define network priorities to guide the phasing of implementation;
- 4c: Provide a methodology for implementation of the Plan;
- 4d: Prescribe steps to be taken in order to monitor the Plan; and
- 4e: Determine the estimated cost for the Plan and establish potential sources of funding.

The success of the Markham Cycling Master Plan will be measured in part by the ease with which it can be implemented. Ease of implementation can be measured by five criteria:

1. *The quality and clarity of the plan* in terms of its vision, principles and goals that guide it, and the set of recommendations that provide the strategy to achieve the plan;

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2. *A practical implementation strategy* that identifies and sets out a recommended approach to implement the Plan, and also addresses priorities and phasing;
3. *An administrative structure* or organization responsible for implementing all components of the Plan, as well as for coordinating multi-departmental resources, including funding commitments;
4. *Funding* by Council for the entire Plan within a specified timeframe (15 years); and
5. *Monitoring* of the Plan to assess implementation results and to serve as feedback to refine on-going implementation of the Plan.

Chapters 1 to 3 establish a concise Cycling Master Plan that is based on a clear vision, principles and goals, plus a set of supporting recommendations. The following sections provide the implementing actions, administrative structure, funding and monitoring elements that are recommended to successfully implement the Plan.

4.1 The Implementation Strategy

The implementation of the Cycling Master Plan will be accomplished through both short and long-term actions. Short-term action is for CPAC and Town Council to adopt the Plan, and incorporate it into the next update of the Town's Official Plan. It will also be important for the Town to designate a person responsible for implementation of the Plan, both to ensure that the required steps are taken as implementation progresses, and to demonstrate the Town's commitment to the vision and goals enshrined in the Plan.

Long-term action is to commit annual funding to:

-  Construct the cycling network generally in keeping with the phasing illustrated on Figure 4-1;
-  Implement the education, promotion and enforcement recommendations identified in Chapter 3; and
-  Provide operational support, such as staff resources, management and administrative functions.

The implementation of the Cycling Master Plan will be accomplished through both short and long-term actions.





Recommendations:

- That Council adopt the Cycling Master Plan and incorporate it as a schedule in the next update to the Town’s Official Plan.
- That the Town of Markham provide annual funding to:
 - Implement the education, promotion and enforcement recommendations as identified in Chapter 3; and
 - Construct the cycling network generally in keeping with the phasing illustrated on Figure 4-1.
- That the Town, during road resurfacing or rehabilitation projects, consider the Cycling Master Plan recommendations prior to proceeding.
- That the Town appoint a “Cycling Coordinator” to oversee the implementation of the Cycling Master Plan and to coordinate implementation with the Region of York and other partners.



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4.2 Network Priorities

Implementation of the proposed cycling network beyond the Phase I initiative (2006/2007) was divided into two stages:

-  Stage 1: Short term (2007 – 2012)
-  Stage 2: Long term (2013 – 2022)

The approach used to prioritize the proposed network involved applying the network development approach set out in Chapter 2. In addition, consideration was given to the following strategic actions:

-  Connecting existing cycling facilities;
-  Scheduling implementation with already planned or scheduled capital roadway and servicing projects. For example, where platform width is sufficient but existing pavement width is inadequate, consider including the work within the planned road resurfacing schedule; and

- 🚲 All roads proposed for signed-only routes should be implemented in Stage 1.

Figure 4-1 depicts existing facilities, short-term (Stage 1: 2007 to 2012) and long-term (Stage 2: 2013 to 2022) implementation priorities for the Town of Markham Cycling Master Plan network. Each of the phases is distinguished according to colour. The ultimate network (following build-out) would be represented by the combination of all of the colours.

A number of route segments and related facility types proposed for implementation in Stage 1 may not prove to be feasible because of other circumstances (e.g. funding constraints, outcome of Environmental Assessment or detailed design). In these situations, an interim solution may be possible and should be investigated by Town staff.

For some of these roads, the current roadway characteristics, such as the average annual daily traffic volume (AADT) and commercial vehicle percentage (see **Technical Appendix - Planning and Design Guidelines, Section 4.6 Retrofitting Town Roads, Tables 4-2 and 4-3**) may not exceed the suggested maximum threshold for a signed-only route for at least 7 to 10 years. In these situations, a great opportunity exists for Markham to provide more of the cycling network sooner, and at a moderate cost through the installation of signing only. In time, as these same roads are reconstructed or resurfaced, the Town could then upgrade the signed-only route to the desired cycling facility type and relocate the route signing. There will not be any throwaway cost in applying this approach.

4.3 The Network Management Tool











Using GIS files provided by the Town for the road infrastructure and cycling network as outlined in the MCMP, a database was created which can be used by staff as a management tool for further refining priorities, tracking costs, collecting and reviewing important information related to roads in the cycling network. As such, it is anticipated that staff will update the database on an ongoing basis.

The database is organized on a route segment-by-segment basis according to like road characteristics. It is quite extensive, and as such should be read in conjunction with any mapping describing routes and/or route implementation

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priorities. The database describes a number of attributes for each segment including:

-  A unique segment identification number (Segment ID) that is linked to the ArcView file, which can be used to display route line work;
-  A road name for the segment, which includes a start and end point;
-  The segment length;
-  Space (columns) for entering and updating data regarding traffic characteristics including AADT, posted speed and truck volume;
-  The segment status in the current approved BMP (i.e. part of BMP or recommended for addition or deletion based on this study);
-  The current road cross section measurements and additional notes regarding the current conditions;
-  The recommended facility type;
-  The recommended staging/phasing for implementation (i.e. medium or long term);
-  An estimated cost for implementation based on unit prices reviewed and endorsed by Town staff, multiplied by the segment length; and
-  Additional comments/notes for consideration regarding implementation.

Updating the facilities component of the MCMP database on an ongoing basis will significantly reduce the effort and cost to update the MCMP in the future (i.e. every five years).

In addition, photos of existing conditions for the majority of the proposed routes have been hyperlinked to the database. These may be useful in providing staff with a quick reference regarding the character of the segment.

Updating the facilities component of the MCMP database on an ongoing basis will significantly reduce the effort and cost to update the MCMP in the future (i.e. every five years). If the Town chooses to do so, the GIS information could, with some modification, be posted on the Town's website in an interactive map format, potentially making it useful to the public, developers and as a 'quick reference' for Town staff who do not have direct access to the Town's GIS database.

4.4 The Implementation Process Tool

It is recognized that the complete cycling network and priorities recommended in this Plan will evolve through the environmental assessment, planning and capital budget processes. It is recommended that the Town adopt the cycling network implementation process outlined in **Figure 4-2** to implement, guide and refine the recommended cycling network.

The four-phase cycling network implementation process provides a formal mechanism to confirm the validity of each route recommended in this report.

a) Phase I: Define Need

When a project involves a proposed cycling route identified in the Cycling Master Plan, or the opportunity to establish a new route not identified in the Cycling Master Plan, the Traffic Engineering Department and Cycling Coordinator should be notified. Staff can then confirm that the route is still valid based on a review of the Cycling Master Plan and other relevant information.

If the route is still valid, staff should confirm whether or not a feasibility study is required to implement the route. It is recognized that certain routes, such as those through existing parks, may not require a detailed feasibility analysis. If the proposed route is on-road and is tied to a road widening, then feasibility would be addressed through a roadway Class Environmental Assessment or detailed design exercise. Where a separate feasibility study is required, terms of reference for the study should be prepared and if necessary, adopted by Council.

b) Phase II: Determine Feasibility

When a feasibility study is required, it is intended that it be developed through a process similar to a Class Environmental Assessment. This entails the collection and analysis of relevant information, the identification and evaluation of alternative design solutions, public consultation and the selection of a preferred alternative. Consultation with outside agencies, such as the Region of York and the Ontario Ministry of Transportation, should be included in this Phase as required.

The four-phase cycling network implementation process provides a formal mechanism to confirm the validity of each route recommended in this report.






Once cycling facilities are constructed, their use and design should be monitored to ensure that they function as intended.

Whenever alternative design solutions or detailed designs are prepared, they should be developed in accordance with recognized and accepted design guidelines. Where necessary, Council may be asked by staff to confirm by resolution the preferred design solution or the detailed design.

It should also be noted that in situations where there is a clear community demand for a cycling facility, but site specific circumstances or funding constraints prevent it from being constructed, other nearby parallel routes should also be closely examined for their suitability.

c) Phase III: Development

The development of cycling facilities involves:

-  Confirming the detailed design and associated costs for the facility;
-  Council's commitment of funding; and
-  Tender and construction.

d) Phase IV: Monitoring

Once cycling facilities are constructed, their use and design should be monitored to ensure that they function as intended. When necessary, facilities should also be upgraded and maintained to ensure continued safe use by cyclists.

Recommendations:

- *That the Town adopt a cycling network implementation process similar to that outlined in Figure 4-2.*
- *That an annual progress report to Council be prepared that summarizes initiatives completed or underway in the current year and proposes a work plan and budget for the upcoming year.*

4.5 Funding the Plan

To successfully implement the Markham Cycling Master Plan, Town Council should be asked to commit to annual funding for this Plan and its supporting implementation strategy. The Town should also seek out other sources of revenue or cost sharing opportunities from its local partners including the Region of York, Markham Board of Trade, as well as the Provincial and Federal Governments.

The Markham Cycling Master Plan is an integrated body of components, and requires a strategic approach for implementation and a funding commitment. Focusing efforts on individual elements of the Plan in isolation of the others will not result in the level of success that this Plan has been designed to achieve. For example, funding new paved shoulder cycling routes in the short-term but not the development and delivery of programming or promotional campaigns, is not an efficient or recommended strategy.

Input received throughout the development of the Markham Cycling Master Plan from the public and CPAC indicate that residents of the Town of Markham support improving cycling facilities and programs to promote cycling. The time is right for the Town of Markham to invest in its future and commit the necessary long-term funding to implement the Markham Cycling Master Plan. Town Council's leadership through this action will directly improve the liveability of the Town, and help create a cycling-friendly environment, consistent with current sustainable planning objectives of the Town of Markham.

4.5.1 How Much Will It Cost?

The Markham Cycling Master Plan is both an infrastructure and an operations Plan. Therefore, it requires infrastructure, program development and operations funding to ensure its successful implementation.

Infrastructure improvements account for the majority of the Plan's estimated cost, and include signage and pavement markings, the construction of bike lanes and multi-use trails, and improvements to roadway paved shoulders. A significant component of the network plan falls on Regional Roads and therefore has been assumed to be a Regional cost. These Regional links form part of the Region of York's draft Pedestrian and Cycling Master Plan. Some of the routes outlined in

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the Plan, especially on-road signed-only or paved-shoulder cycling routes, require little if any improvement beyond a change in pavement markings and signing.

The estimated costs for the cycling network infrastructure are shown below in **Table 4-1**. Infrastructure improvements should be included in the Town’s Long-Range Financial and Capital Works Plans.

A portion of the costs for infrastructure is expected to be borne by York Region as part of its “Toward Great Regional Streets” initiative, which is comprised of “a comprehensive series of policies that are geared towards making our Regional arterial roads more accommodating for all modes of transportation, including cyclists and pedestrians”. Under these policies, certain roadway improvement projects to widen regional roads to six- and seven-lane cross-sections will provide “on-street bike paths”. The Region’s 2007 Capital Budget refers specifically to this initiative, and includes several of the subject roadway improvement programs in its 10-year capital works plan. Since these policies apply almost exclusively to Regional roads (with the only exception being the segment of Highway 7 that is under local jurisdiction), the impact on network costs for the Town of Markham is minor. **Table 4-2** shows the estimated costs offset by the “Great Regional Streets” initiative to which York Region has committed. These costs *have not* been subtracted from the totals shown in Table 4-1.

Operations costs include on-going funding related to implementing the Plan, preparing annual progress reports, delivering safety, educational and promotional programs, and performing network and infrastructure maintenance. These costs also include staff resources, management and administration.

It is estimated that the total cost to implement the proposed network and associated support facilities and outreach programs will be approximately **\$18.8 million over the next 15 years. This cost consists of approximately \$16.9 million for the cycling network, including \$6.4 for the Town of Markham, \$7.5 million for the Region of York, and \$3.0 million for the Province of Ontario. The balance of \$1.9 million will go to program development and operations.**






The Network cost of \$16.9 million is considered a conservative estimate, and as implementation proceeds, will likely be reduced. The unit prices used to estimate the construction cost of the various on-road facility types are blended unit prices. These prices are illustrated in the **Unit Cost Schedule** located in **Appendix B**. It

should be noted that on-road components of the network will typically be included as part of the same tender for a road resurfacing or reconstruction project. Therefore, through economies of scale, the construction cost charged to the Town by a contractor should be less than if the cycling facility was constructed separately. This Plan does not recommend implementing on-road segments that require road improvements until the road is scheduled for resurfacing, widening or rehabilitation.

4.5.2 Funding Strategies

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

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

-  On-road facilities or boulevard trails on *new roads* (perhaps in place of a sidewalk on one side of the road) could be built by developers and included as part of subdivision agreements with the Town.
-  On-road facilities on *existing arterial and collector roads in growth areas* that are to be widened to accommodate growth could be funded partially through development charges.
-  On-road facilities on existing roads in *established areas* of the Town will need to be funded from Markham's general tax revenues and from Federal and Provincial funding sources, including a portion of gas taxes.
-  Developers of *new residential and commercial subdivisions* should be encouraged to construct new off-road pathways and on-road connections to the proposed network.
-  Pathways and on-road cycling facilities proposed in *existing or future transit corridors* should be funded by the Region or Province as part of the larger transit infrastructure improvement budgets.









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To assist in reducing taxpayer costs, the Town of Markham should also pursue outside funding opportunities. It is the experience of the consulting team that funding sources made available over the last decade for walking, cycling and pathway related projects is at or near an all-time high, likely due to the enormous popularity of on and off-road cycling routes and pathways today. This trend is expected to continue.

In 1991, the U.S. Congress appropriated \$1 million to complete the National Bicycling and Walking Study in the United States. The specific goal of the study was to double the percentage of total trips made by bicycle and walking, while decreasing the number of cyclists and pedestrians killed or injured in traffic collisions, over a ten-year period. In 2004, another U.S. study found that the significant investment by State and Federal governments since 2001 has resulted in a measurable increase in the number of people who cycle and walk in that country.¹ These goals are similar to those proposed for the Markham Cycling Master Plan, and the Town should look to the provincial and federal governments for possible sources of funding. Examples of potential funding sources include:

-  Federal and Provincial gas taxes;
-  The Canada-Ontario Infrastructure Program;
-  Federation of Canadian Municipalities “Green Municipal Fund”;
-  Ministry of Health Promotion;
-  Ministry of Public Infrastructure Renewal Ontario;
-  The Federal Government’s Urban Transportation Showcase Program;
-  Ontario Trillium Foundation that was recently expanded in response to the money collected throughout the Province by the Ontario Lottery and Gaming Commission;
-  Corporate Environmental Funds such as Shell and Mountain Equipment Co-op and others that in the past have funded small, labour-intensive projects where materials or logistical support is required; and

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

- 🚲 Corporate donations, which may consist of money or services in-kind, and have been contributed by a number of large and small corporations over the years.

Recommendations:

- *That the Town incorporate funding mechanisms for the implementation of the various elements of the Plan into the development review process and development charges policy, in addition to funding from local, regional, provincial and federal government sources.*
- *That the Town investigate public and private sector funding opportunities to assist in implementing the Markham Cycling Master Plan.*

4.6 Monitoring

Implementation of Phase I of the Markham Cycling Master Plan was completed in early 2007. Phase II implementation is expected to begin in 2008, with implementation of the Town-wide cycling network infrastructure being phased on an annual basis in accordance with capital funding and the short- and long-term phasing detailed in this plan. In addition, other road improvements will be completed in keeping with the design guidelines and standards set out in this Plan.





Collecting data to monitor the different aspects of cycling behaviour will assist in evaluating the effectiveness and overall contribution of various aspects of the Plan to achieve its stated goals. This data collection should begin in 2008, and include such elements as:

- 🚲 User surveys;
- 🚲 Public attitude surveys;
- 🚲 Origin/destination counts;
- 🚲 Screenline counts on a finer scale that are appropriate to cycling travel patterns; and
- 🚲 Intersection counts to coincide with routes on which improvements are proposed, and also on parallel routes.



Information should be collected in each of the next five years and in alternating years after that. The information must be collected during the cycling season.

Early data will establish a benchmark for the purposes of comparison to future data as implementation proceeds. As subsequent years' data is collected, trends can be identified and statistical analyses performed to:

-  Confirm the overall direction and implementation of the Plan;
-  Confirm statistics on the number and type of cyclists;
-  Verify the route selection process; and
-  Identify the supply and demand for bicycle parking.

Over time, the monitoring system should identify changes in route preference to assist in determining where to implement changes to cycling infrastructure.

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






The Engineering Department, through the Cycling Coordinator, should also prepare an Annual Progress Report to Town Council and CPAC. This report should outline the progress made towards achieving the primary goals of the plan, identify changes in direction or priorities for the upcoming year, and confirm budget requirements.

Recommendations:

- *That the Town, through the Engineering Department, establish a cycling data collection program.*
- *That the Engineering Department, through the Cycling Coordinator, report annually to Town Council and CPAC on the Plan's implementation progress and priorities for the upcoming year.*

4.7 Conclusion

The Markham Cycling Master Plan presents a strategy with short and long-term elements that provide the tools necessary to implement the Plan. These tools include:

-  The Implementation Process Tool, which provides a bikeway facility review and approval process that assigns responsibility and incorporates a checklist to guide staff, and also includes mechanisms to ensure input from various departments and outside agencies;
-  An ongoing monitoring and evaluation process so that the Plan can evolve over time and be flexible in its implementation;
-  A bikeway network implementation schedule, including route locations, implementation costs and network priorities;
-  The outline of an outreach program to address promotion, education and enforcement issues; and
-  A GIS based cycling network and facility management tool.

These tools, applied as outlined in the Plan, can be used to guide the Town in developing a comprehensive and connected network of clearly signed cycling facilities throughout Markham, as well as supporting outreach strategies and programming. Together, they will provide the infrastructure and supportive programming to encourage more people to cycle more often in the Town of Markham.

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