



2021

Ride & Stride: City of Markham Active Transportation Master Plan



ACKNOWLEDGEMENTS

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The project team is grateful to the input received from the technical advisory committee, including representatives from the following organizations:

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City of Pickering
City of Richmond Hill
City of Toronto
Durham Region
Markham Cycles
Ontario Trails
Parks Canada
Smart Commute Markham, Richmond Hill
The Centre for Active Transportation
Toronto Region Conservation Authority
York Region Transit
York Region Public Health
York Region Transportation Services
York Region Cycling Coalition

Special thanks to the City of Markham Cycling & Pedestrian Advisory Committee for their on-going involvement in the plan development and review.

KEY DEFINITIONS & ABBREVIATIONS

- **AAA:** All Ages & Abilities
- **AODA:** Accessibility for Ontarians with Disabilities Act, 2005
- **APS:** Audible pedestrian signals
- **AT:** Active Transportation
- **ATMP:** Active Transportation Master Plan
- **CPAC:** Cycling and Pedestrian Advisory Committee
- **CPSAP:** Cycling and Pedestrian Safety and Awareness Program
- **CSZ:** Community Safety Zones
- **FCM:** Federation of Canadian Municipalities
- **FDW:** Flashing Don't Walk
- **PIC:** Public Information Centre
- **LPI:** Leading Pedestrian Interval
- **NACTO:** National Association of City Transportation Officials
- **OTM:** Ontario Traffic Manual
- **RTOR:** Right Turn on Red
- **STP:** School Travel Planning
- **TAC:** Technical Advisory Committee
- **TAF:** The Atmospheric Fund
- **TDM:** Transportation Demand Management
- **TTS:** Transportation Tomorrow Survey
- **YRT:** York Region Transit

Active Transportation: any mode of travel that relies primarily on human power to move people for a variety of trip purposes

All Ages & Abilities: Best practices for active transportation facility and network design to ensure the development of safe, accessible and equitable transportation systems for all

Bicycle Boulevards / Quiet Street Routes: Bikeways on streets with low speeds that are specifically designed to enhance cyclist safety and comfort

Complete Community: a term used to describe an ideal community which considers the needs of all community members

End-of-Trip Facilities: Facilities and/or spaces designed for active transportation users that provide safe and secure places to rest and/or store equipment (e.g. bike racks)

First-Last Kilometre Solutions: Design approaches to help improve connectivity and reduce distances between transit stations/stops and other key destinations for transit users

Micromobility: Small, lower-speed, personal transportation devices, either powered or self-propelled, typically intended for shorter trips

Mode Share: The share of all trips taken, usually shown as a percentage

Open Street Event: An event where a pre-selected street is closed to vehicles and reserved for active transportation users

Pedestrian Priority Area: Areas identified for targeted investment in pedestrian improvements beyond improvements identified at the City-wide level based on a variety of factors: pedestrian collisions, walking mode share, access to major transit, existing sidewalk gaps and income

Pedestrian Crossover: A pedestrian crossing where pedestrians have the right-of-way and vehicles must stop and allow pedestrians to cross

Placemaking: An urban planning term to describe giving a space a sense of identity to enhance community well-being, increase opportunities for social interaction, and encourage healthy lifestyles for all community members

Priority Cycling & Trails Network: A network of primarily quiet street routes, multi-use paths and protected bike lanes that is intended to be delivered largely within a short-term horizon to provide connectivity across the City

Public Information Centre: A public consultation event where a study team presents a project to members of the public and provides opportunities for people to provide feedback and ask questions

Right-of-Way: The right of one transportation user to proceed before another transportation user in a particular situation

Road Diet: A re-organization of the existing road space without significant civil works, which reduces the overall cost and schedule needed to implement cycling facilities (e.g. narrowing lanes or reducing the number of travel lanes)

Streetscaping: Improvements implemented along streets to attract more active transportation users and provide more enjoyable spaces for community members (e.g. benches, planters, etc.)

Tactical Urbanism: A way to improve the quality of the public realm by implementing creative ideas into public spaces which help to encourage walking and cycling

Tactile Walking Surface Indicators: A tool placed on a sidewalk at an intersection, used to warn people with low or no vision of an upcoming crossing

Traffic Calming: Strategies and tools used to manage traffic volumes, reduce speeding and unsafe driving, and increase safety on roadways (e.g. speed bumps)

Transportation Demand Management: Strategies and policies used to reduce congestion and increase the use of more sustainable modes of transportation

Vehicle Exclusion Zones: Areas where vehicles are prohibited to increase safety

Wayfinding & Signage: Transportation network tools used to help people navigate transportation routes and find transportation facilities effectively

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FOREWORD

Investment in active transportation has numerous community benefits – it helps to create healthier, happier populations, it improves the environmental outcomes of our transportation system, and it has economic benefits such as contributing to local business areas. The benefits of creating an active-transportation supportive community are well-documented and compelling. Despite these clear community benefits, investment in active transportation has sometimes been dismissed as superfluous or non-essential. During the development of this plan, major events have reinforced the need for a safe, comfortable and well-connected active transportation network in Markham.

The COVID-19 pandemic hit across Canada and the globe as this report was being prepared. The pandemic has disrupted traditional travel patterns and behaviours across Canada, including Markham and York Region, and may be the catalyst for long-term structural changes to the way people think about and move within cities. An early response to the pandemic in many cities has been to rapidly increase the quantity and quality of cycling infrastructure in order to promote cycling as an alternative and safe means of travel. Concurrently, bike shops across Ontario have reported being busier than ever and at risk of running out of bicycle inventory. The pandemic has accelerated the on-going shift towards embracing walking and cycling as credible ways to move about Canada's cities.

At the same time, the City has been investigating the safety outcomes of our transportation systems through a road safety audit, which is anticipated to lead to the development of a Road Safety Plan. The importance of the road safety audit has been punctuated by the death or serious injury of several people walking or riding bicycles in Markham over the last several months. Action is needed now more than ever to provide the infrastructure, programs and policies that are required to ensure safe mobility options are available for all residents and to grow the walking and cycling culture in Markham. Accelerating a program of investment in high-quality, all ages and abilities infrastructure, improved intersection treatments, more frequent pedestrian crossings, continuous sidewalks and trails, and education and programming campaigns is an important step in pursuing a safer transportation system.

The Markham Active Transportation Master Plan outlines the priorities, projects, policies and steps that need to be undertaken to achieve the goals of the City of Markham and respond to the pressing issues of safety and mobility facing our community.







1.0

Project Overview

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



1.1. WHAT IS AN ACTIVE TRANSPORTATION PLAN?

Active transportation (AT) is considered any mode of travel that relies primarily on human power to move people for a variety of trip purposes. Cycling, walking and using a wheelchair or mobility device are the most common forms of active transportation, but the term can also encompass activities like rollerblading, running and jogging, skateboarding and scootering, skiing, and snowshoeing.

An Active Transportation Master Plan (ATMP) is a long-term strategic plan prepared to identify strategies and recommendations to improve conditions for walking, wheeling and cycling. The ATMP includes infrastructure recommendations, a prioritization and phasing framework, an implementation plan, and policies and strategies that will support active transportation as a mobility option for people of all ages and abilities.

This report follows from two previous studies: City of Markham's Cycling Master Plan (2010), and City of Markham's Pathways & Trails Master Plan (2009). It is intended that the ATMP will reflect the objectives outlined in these plans to ensure the development and implementation of a well-integrated and connected active transportation network.



1.2. BUILDING MARKHAM'S FUTURE TOGETHER: THE ROLE OF ACTIVE TRANSPORTATION

In imagining and building the transportation system of the future, active transportation has an important role to play. The transportation system of the future must be responsive and adaptive, green and clean, inclusive and empowering. Active transportation delivers these functions and plays an integral role as part of the overall mobility network. Investment solely in transit or vehicular modes will not achieve the transportation objectives of the City.

Active transportation also provides numerous benefits for residents, including:

- Economic benefits such as lowering the cost of transportation for individuals, contributing to vibrant local business areas, and reducing externalized societal costs;
- Health benefits such as decreasing the risk of obesity, reducing incidences of chronic diseases, enabling incorporation of physical activity into daily routines, and improving mental health;
- Community benefits such as providing more equitable transportation options for residents, increasing social interaction and improving quality of life; and
- Environmental benefits such as reducing greenhouse gas emissions, providing more efficient forms of transportation, reducing air pollution and reducing energy consumption.

Investment in active transportation is tied to many local policies & objectives. The City of Markham developed a Strategic Plan for the period of 2020-2023 to help guide decision-making for Markham's future entitled **Building Markham's Future Together**. The Plan is structured around the following goals:

- | | |
|---|--|
| 1 Exceptional Services by Exceptional People | 3 Safe, Sustainable, and Complete Community |
| 2 Engaged, Diverse, Thriving, and Vibrant City | 4 Stewardship of Money and Resources |

In addition to these goals, the plan provides a number of objectives to guide achievement of the study vision. Many of these objectives are both directly and indirectly supported by the Active Transportation Master Plan process and recommendations. Exhibit 11 provides a summary of relevant goals and objectives from the Strategic Plan and describes the relationship with the Active Transportation Master Plan.

Exhibit 1.1: Building Markham’s Future Together & Active Transportation Master Plan Relationship

GOAL	OBJECTIVE	RELATIONSHIP WITH THE ATMP
<p>EXCEPTIONAL SERVICES BY EXCEPTIONAL PEOPLE</p>	<p>Deepen our understanding of what our community and stakeholders value and need to inform municipal leadership and continuous improvement of our services</p>	<ul style="list-style-type: none"> • The ATMP undertook extensive two-way consultation in-person and online through the Your Voice Markham platform. The vision and recommendations in this plan are directly informed by public input • Support for AT is evidenced by on-going community engagement. For example, as part of the City’s 2019 Winter Maintenance survey, six in ten residents said they strongly or somewhat support the idea of a City program to plow pathways and trails, at the cost of \$6 in tax increase
	<p>Leverage leading technologies to enable city building and the evolution and transformation of our services</p>	<ul style="list-style-type: none"> • AT improvements support the growth of micromobility options (i.e. bike share, e-scooters) • Monitoring pedestrian and cycling traffic via automatic counters or similar technology enables on-going learning
	<p>Attract and retain the right talent and invest in and empower our people to drive innovation and service excellence</p>	<ul style="list-style-type: none"> • Increasing in mobility options, such as safe and comfortable active transportation infrastructure, has been a factor in attracting and retaining younger populations • More youth and younger adults are delaying obtaining a driver’s license¹ and choosing multi-modal options more often²

¹ Sivak, Michael, and Brandon Schoettle. Recent decreases in the proportion of persons with a driver’s license across all age groups. No. UMTRI-2016-4. 2016.

² Lee, Yongsung, Giovanni Circella, Patricia L. Mokhtarian, and Subhrajit Guhathakurta. Are Millenials More Multimodal? A Latent-Class Analysis with Attitudes and Preferences. No. 18-03162. 2018.

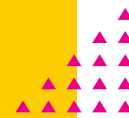
GOAL	OBJECTIVE	RELATIONSHIP WITH THE ATMP
ENGAGED, DIVERSE, THRIVING & VIBRANT CITY	Enhance community cohesion and inclusion by creating strong neighbourhoods that are connected to the broader community	<ul style="list-style-type: none"> Walking and cycling for transportation or recreation allows for increased and spontaneous interaction with neighbours Traveling by walking or cycling allows people to develop a stronger, more intimate bond with their neighbourhood and the community
	Support arts, culture, recreation and sport to enrich the fabric of our communities	<ul style="list-style-type: none"> Connections to community, cultural and recreational facilities were important considerations in developing the long-term walking and cycling networks
	Build Markham as the best place to live, invest, work and experience rich diversity	<ul style="list-style-type: none"> Improving active transportation options has a positive correlation with healthy and vibrant communities
SAFE, SUSTAINABLE & COMPLETE COMMUNITY	Accelerate the delivery of an enhanced comprehensive transportation network in partnership with other levels of government and the private sector	<ul style="list-style-type: none"> The ATMP provides the road map for accelerating the implementation of the comprehensive walking and cycling networks
	Build complete communities that offer a range of housing and employment opportunities, transportation options and outstanding community amenities	<ul style="list-style-type: none"> Active transportation infrastructure is an integral component in the development of complete communities, providing a realistic alternative transportation option for many trips, and access to economic and social opportunities
	Ensure business continuity of our services and infrastructure and enable community resiliency and community safety	<ul style="list-style-type: none"> A central objective of the ATMP is to improve safety for all road users through expanded infrastructure, improved design and targeted outreach
	Protect and enhance our natural environment and built form	<ul style="list-style-type: none"> Increased uptake of active transportation, as a zero-emission form of travel, provides environmental benefits such as decreased emissions and improved air quality Active transportation infrastructure uses relatively little space, allowing for a more compact and enhanced built form

GOAL	OBJECTIVE	RELATIONSHIP WITH THE ATMP
STEWARDSHIP OF MONEY & RESOURCES	Proactively manage our assets to maximize the return (financial, social, environmental and cultural) on taxpayer investment	<ul style="list-style-type: none"> Investing in active transportation infrastructure provides opportunities for a high returns and benefits at relatively low cost, with appropriate consideration for asset management, operation and maintenance cost. For example, replacing a car trip with a walking or cycling trip can save individuals & society \$1.70/km³
	Increase transparency and accountability of our stewardship of services, policies, processes, money and resources	<ul style="list-style-type: none"> The ATMP provides a transparent process for identifying and prioritizing new and upgraded active transportation infrastructure

1.3. STUDY OBJECTIVES

The following five objectives were identified at the outset of the study:

1. To create education and outreach opportunities in order to raise awareness of active transportation in the City of Markham by engaging and consulting with stakeholders and members of the community in an open and transparent process during the development of the ATMP.
2. To identify improvement needs and design a high quality on-road and off-road active transportation network that is accessible and connects people to where they work, play and live.
3. To develop an active transportation strategy that looks beyond the network/infrastructure needs and provides guidance on gaining public and political support, shifting behavioural change to foster complete communities and strengthen active transportation culture in the City of Markham.
4. To provide high quality connections between the local and regional active transportation network and ensure strong collaboration in the delivery and implementation of active transportation strategies.
5. To develop a feasible phasing plan for the implementation of a city-wide active transportation network and execute a strategic plan with careful consideration of resources and financial requirements.

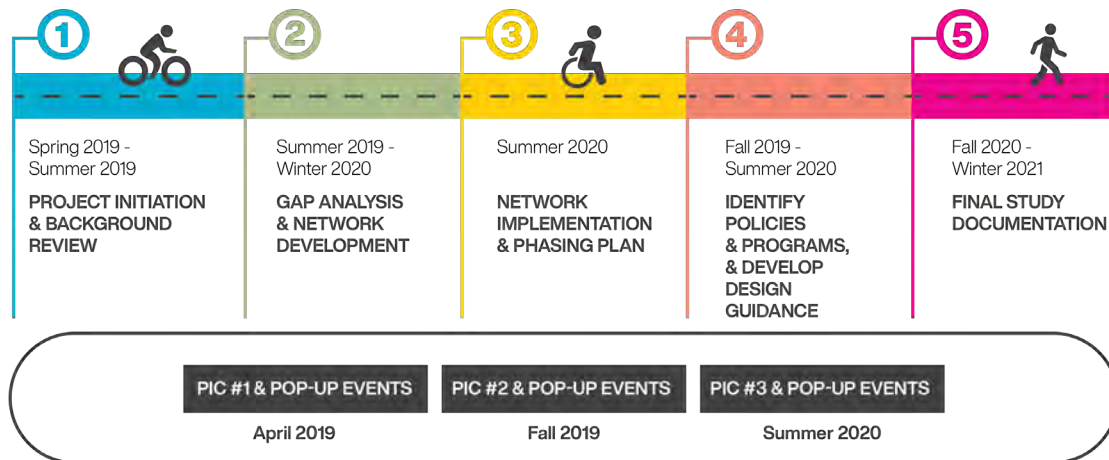


³ Litman, Todd. *Transportation Cost and Benefit Analysis*. Victoria, BC: Victoria Transport Policy Institute, 2007.

1.4. STUDY PROCESS

The Markham Active Transportation Master Plan was undertaken in a five-phase process, as outlined in Exhibit 1.2 and detailed below. In parallel with this process, **public and stakeholder consultation was undertaken throughout the study**. Further details on public and stakeholder consultation can be found in Chapter 4.0.

Exhibit 1.2: Markham ATMP Study Process



Phase 1: Project Initiation and Background Review

The first step was developing the study's foundation. This included reviewing existing plans, policies and programs, analysing transportation data and key trends, assessing existing and planned active transportation infrastructure, reviewing existing outreach programs and summarizing emerging best practices and design guidance.

Phase 2: Gap Analysis and Network Development

The next step involved developing the recommended walking and cycling networks for Markham. This involved an iterative, multi-step process for on-road and off-road cycling facilities, trails and sidewalks, assessing the potential impacts of various corridors and determining priorities.

Phase 3: Network Implementation and Phasing Plan

Working from the recommended networks, implementation plan, and phasing plans were

developed next. This involved determining appropriate and feasible facility types for cycling infrastructure and prioritizing walking and cycling projects based on relative need, overall impacts and ease of implementation. Network projects were then organized into multi-year phases based on priority and cost estimates.

Phase 4: Identify Policies and Programs and Develop Design Guidance

Building on the review completed in Phase 1, policy and program gaps were identified. Supporting policies, education and marketing programs, and outreach strategies were developed in order to complement and maximize the return on infrastructure investment. Active transportation design drawings and facility selection, cross-sections, and intersection treatments were developed and updated to reflect the latest best practices and all ages and abilities design.

Phase 5: Final Study Documentation

The final step in the study process was the preparation of this document and the accompanying maps and appendices.

1.5. WHAT'S INSIDE

The Markham Active Transportation Master Plan has been structured around the following sections:

- **Chapters 1 through 3** provide the foundation for the study. These chapters provide an overview of the project, detail the development of the vision and key themes and provide analysis of the baseline context and emerging travel trends.
- **Chapter 4** summarizes the consultation and engagement activities undertaken throughout the study.
- **Chapters 5 through 8** provide the network and infrastructure recommendations, as well as supporting policies, programs and strategies. The recommendations are structured around the following four key themes, which are introduced in Chapter 2:
 - Pursuing Pedestrian Network Improvements
 - Connecting & Enhancing the Cycling Network
 - Encouraging & Engaging our Community
 - Evolving Design & Maintenance
- **Chapter 9** presents the implementation plan. This chapter outlines the steps required to achieve the ATMP vision. In this chapter, infrastructure projects are costed, prioritized and phased, an action plan is presented, and steps to monitor the plan are outlined.







2.0

Vision for Active Transportation in Markham

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



2.1. VISION STATEMENT

A vision presents an aspirational, desirable future state that drives the development of a study and outcomes. Each action and infrastructure improvement recommended in the ATMP is intended to move Markham one step closer to achieving this vision.

To determine what this future state should look like, input was solicited from a variety of sources. The vision statement, first and foremost, was crafted by Markham residents and stakeholders. During consultation events, participants were asked the following questions:

- How would you like to feel when you walk or bicycle in Markham?
- What factors should the walking and cycling networks consider to achieve this?
- What categories of interventions will help to achieve this?

Input from these questions was used as a way of building consensus on what the vision should be. “Safe” was by far the most important phrase noted through consultation, along with “sense of community”, “encouraged”, “accessibility” and “key destinations” and “convenience and connectivity”.

Building upon answers to these questions, these keywords and actions were shaped by the project team into an aspirational, yet achievable, statement about the future of active transportation in Markham:

“People walking and cycling in the City of Markham feel safe, encouraged and have a sense of community. Networks are comfortable, accessible, safe, convenient and connected, and provide access to key destinations and transit. Through an on-going culture shift and investment, active transportation is a healthy and effective mode of transportation and a competitive alternative to driving for short trips.”

This vision has guided the development of the walking and cycling networks as well as the recommendations for policies, programs and strategies contained within the ATMP.

2.2. THE IMPORTANCE OF INVESTING IN ACTIVE TRANSPORTATION

Investment in active transportation has numerous community benefits – it helps to create healthier, happier populations, it improves the environmental outcomes of our transportation system, and it has economic benefits such as contributing to local business areas.

During the development of this plan, major events have reinforced the need for a safe, comfortable and well-connected active transportation network in Markham. The COVID-19 pandemic, which hit across Canada and the globe as this report was being prepared, has disrupted traditional travel patterns and behaviours. It has accelerated the use of walking and cycling as viable ways to travel. At the same time, the City has been investigating the safety outcomes of the City street network through a road safety audit and is planning to develop a comprehensive road safety plan.

In addition to the pandemic and safety challenges, the issues of climate change and long-term traffic congestion in Markham emphasize the importance of active transportation. The City's "Getting to Zero: Markham's Municipal Energy Plan" assumes that as part of future scenarios 50% of trips with a length between 1 and 5 km shift to cycling by 2040, and 50% of the potential walking trips that were less than 2 km and were not supporting the travel of another passenger were shifted to walking by 2050. Both goals require a major increase in active transportation infrastructure and programs.

Action is needed now more than ever to provide the infrastructure, programs and policies that are required to ensure safe mobility options are available for all residents, and grow the walking and cycling culture in Markham.

The Markham Active Transportation Master Plan outlines the policies, directions, steps and projects that need to be undertaken to achieve the goals of the City of Markham and respond to the pressing issues of safety and mobility facing our community.



Linking Active Transportation and Public Health in York Region

Chronic diseases are the main cause of illness and death in York Region. Physical inactivity contributes to the incidence of many chronic diseases in York Region such as diabetes, hypertension and coronary heart disease. Each year, an estimated 1,700 new cases of diabetes, 1,490 cases of hypertension and 1,000 cases of coronary artery diseases occur in York Region and are attributable to physical inactivity. Active transportation integrates physical activity into daily life and supports a more active population that can reduce the annual number of cases of chronic disease in York Region including diabetes, hypertension and coronary heart disease.

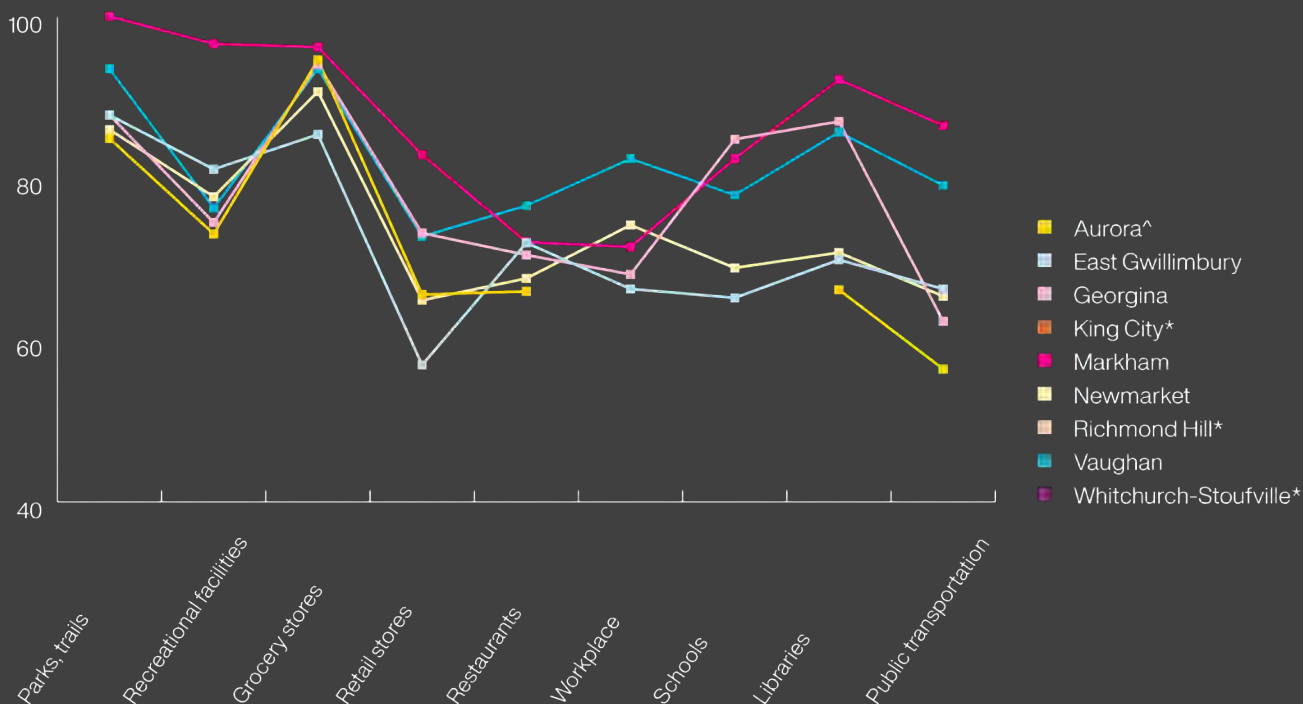
Rapid Risk Factor Surveillance System - York Region

The Rapid Risk Factor Surveillance System (RRFSS) is a telephone survey that occurs in various public health units areas across Ontario. RRFSS is an ongoing telephone survey used to collect information on attitudes, behaviours, knowledge and awareness of issues related to health. All information reported from this survey is for the complete survey year (January to December), unless otherwise specified. The telephone survey is conducted by the Institute for Social Research (ISR) at York University on behalf of all participating health units, including York Region.

Importance of walking distance from home (January to April 2018 – 1 cycle)

In the first cycle of the 2018 RRFSS questionnaire, participants from York Region were asked about the importance to have different amenities within 10 minutes' walk or 1 km from their home. The results are reported as percentage in Exhibit 2.1. The answers range between 57 to 100%, with trails included in the highest category within the City of Markham.

Exhibit 2.1: Importance of walking distance from home by municipalities, 2018



^ Some destinations results are not releasable

* Not releasable (n<30)

Source: York Region Public Health (2020)



2.3. KEY THEMES OF ACTIVE TRANSPORTATION MASTER PLAN

Stemming directly from the vision, findings of the consultation, and through a recognition of a multi-pronged effort to enhance the safety and comfort of pedestrians and cyclists, recommendations of the ATMP are grouped into the following key themes.



Pursuing Pedestrian Network Improvements

Pedestrians make up a significant portion of active transportation users in Markham. It is critical that active transportation infrastructure meets the needs of pedestrians to provide accessible, safe, and comfortable environments. The ATMP aims to address existing issues in active transportation networks that are barriers for pedestrians.

The recommendations in Chapter 5 are provided to enhance pedestrian safety, provide better connections for those travelling on foot, and promote walking as a more attractive transportation option in Markham. This theme supports objectives outlined in Markham’s Strategic Plan, Building Markham’s Future Together (2020-2023), including building safe and sustainable communities as well as developing a thriving and vibrant city.



Connecting & Enhancing the Cycling Network

Cycling is an important component of Markham’s overall active transportation network. Although the City’s Cycling Master Plan (2010) and Pathways and Trails Master Plan (2009) have led to significant cycling infrastructure improvements in Markham, it is necessary to continue to pursue further network improvements and expansions to meet the City’s strategic objectives defined in the Official Plan and Building Markham’s Future Together. Chapter 6 examines areas of concern related to the cycling network and aims to overcome them through core recommendations related to network improvements and supporting infrastructure.

Similarly, this theme reflects the goals of Markham’s Strategic Plan by increasing mobility options for people and promoting a larger cycling mode share. Cycling infrastructure improvements will help Markham achieve its goals of being a safe and sustainable community as these improvements will lead to better infrastructure and facility design, “first and last kilometre solutions”, and more opportunities for growth in areas with existing infrastructure.





Encouraging & Engaging our Community

Coupled with investment in infrastructure, it is critical to grow a culture that is supportive of walking and cycling. A major aspect of encouraging the community is providing community outreach activities and educational programs that support and engage residents on the benefits and opportunities associated with active transportation. Core recommendations in these areas are described in Chapter 7.0.

Overall, these strategies are focused on promoting a shift in travel behaviour towards active modes of transportation. These programs and activities support Markham’s Strategic Plan by enhancing community cohesion and providing more opportunities for social interaction between community members. In addition, these actions will improve quality of life in Markham and encourage effective partnerships between governments and the private sector as they support and invest in active transportation.



Evolving Design & Maintenance

Proper maintenance and design considerations are critical components of achieving the long-term objectives of an active transportation network. In addition to capital works, cycling and pedestrian systems should ideally be operated and maintained year-round to provide adequate and safe mobility options for all users throughout the year. Recommendations related to design and maintenance are included in Chapter 8.0.

Evolving design and maintenance is also an important component of meeting the objectives of Markham’s Strategic Plan. The Strategic Plan clearly emphasizes the need to expand road safety programs and protect urban infrastructure in the case of extreme weather or other emergencies. Investing in adaptive design and year-round maintenance provides a safer and more comfortable network for users and therefore leads to healthier and more sustainable communities.



3.0

Existing Context & Emerging Trends

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



3.1. POLICY & PLANNING CONTEXT

3.1.1. Policy Support for Active Transportation

Policy documents from various levels of government emphasize the need to support and grow the use of active transportation. The ATMP is an extension of these plans and policies, as it strives to help the City of Markham achieve stated provincial, regional, and City objectives relating to safety, sustainability, and health. A description of pertinent plans and policies is provided below along with key excerpts and policy statements to provide a snapshot of the support these plans and policies provide for active transportation.

PROVINCIAL POLICY STATEMENT (2020)

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development and provides guidance for planning transportation infrastructure.

“

1.5.1 Healthy, active communities should be promoted by:

- a. planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and **facilitate active transportation** and community connectivity;

1.8.1 Planning authorities shall support energy conservation and efficiency, improved air quality, reduced greenhouse gas emissions, and preparing for the impacts of a changing climate through land use and development patterns which:

- b. **promote the use of active transportation** and transit in and between residential, employment (including commercial and industrial) and institutional uses and other areas.

PLACES TO GROW: GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE (2017)

The Growth Plan for the Greater Golden Horseshoe (GGH) provides the framework establishing where and how the GGH region will grow. The plan outlines strategies to improve the ways in which cities, suburbs, towns, and villages grow over the long-term.

“

Excerpt from the Vision for the GGH: Transit and active transportation will be practical elements of our urban transportation systems.

Municipalities will ensure that active transportation networks are comprehensive and integrated into transportation planning to provide:

- a. safe, comfortable travel for pedestrians, bicyclists, and other users of active transportation; and
- b. continuous linkages between strategic growth areas, adjacent neighbourhoods, major trip generators, and transit stations, including dedicated lane space for bicyclists on the major street network, or other safe and convenient alternatives.

#CYCLEON – ONTARIO’S CYCLING STRATEGY (2013), ACTION PLAN 1.0 (2014) & ACTION PLAN 2.0 (2018)

#CycleON is the Province’s long-term strategy to promote cycling to people of all ages and abilities, with the aim of promoting cycling as a viable mode of transportation. The Action Plans released outline the steps the Province is to take in five-year increments. In 2018, a Province-wide Cycling Network was published as part of the #CycleON strategy and is discussed in section 3.1.2.



Vision 2033: Cycling in Ontario is recognized, respected, and valued as a **core mode of transportation** that provides individuals and communities with health, economic, environmental, social and other benefits.

Action Plan 2.0: 2.5 – Develop a program to **support municipal implementation of the province-wide cycling network** – MTO

Explore options to help municipalities build and maintain portions of the province-wide cycling network that fall under municipal jurisdiction.

METROLINX 2041 REGIONAL TRANSPORTATION PLAN (2016)

The 2041 Regional Transportation Plan (RTP), an update to The Big Move (2008), is a “blueprint for creating an integrated, multi-modal transportation system that will serve the needs of residents, businesses, and institutions”. It outlines a strategy to achieve an integrated transportation system across the Greater Toronto and Hamilton Area. A Regional Cycling Network was developed as part of this study and is discussed in section 3.1.2.



The 2041 RTP builds on The Big Move by putting the needs of travellers at the core of transportation planning and operations. It aims to build a truly integrated transportation system for the GTHA—one that is comprehensive, connected, accessible, sustainable and focused on people—and one that **supports safe streets, active transportation and healthy communities**.

Without significant changes to community design practices, new transit services will not grow ridership, and **active transportation** will remain inconvenient, unsafe and uncomfortable.

METROLINX GO RAIL STATION ACCESS PLAN (2016)

The GO Rail Station Access Plan was developed in response to the provincial commitment to Regional Express Rail (RER), which will significantly increase demand along the GO rail corridor. The Plan outlines how to support ridership by providing alternative means of access to each GO station. Six GO rail stations are located fully or partially within or directly adjacent to Markham (i.e. they will draw ridership from Markham) and will need strategies and facilities that support and promote walking and cycling. These stations are Langstaff (partially in Markham) on the Richmond Hill Line and Milliken (directly adjacent), Unionville, Centennial, Markham, and Mount Joy on the Stouffville Line.



Excerpt from the Vision: Access improvements will be targeted to maximize returns on investment, support a shift to transit and **active transportation**, promote the development of more walkable, higher density communities surrounding GO stations, and implement Provincial policy objectives.

YORK REGION VISION 2051: STRONG, CARING, SAFE COMMUNITIES

Vision 2051 establishes York Region's long-range planning objectives and provides direction on how to achieve them.



Goal Area: **Interconnected Systems for Mobility**

In 2051, a seamless network for mobility provides access to all destinations using **diverse transportation options** for people in all communities, **promotes active healthy living** and safely and efficiently moves people and goods.

Prioritize Alternative Modes of Travel for **Active Transportation**

- Providing convenient and reliable alternative modes of travel and **prioritizing walking, cycling**, public transit and carpooling.
- Implementing a **comprehensive pedestrian** system and programs that **encourage walking, cycling** and transit use.
- **Facilitating an on and off-road cycling network** that connects municipal cycling networks and trail systems and creates a Regional spine that will **facilitate transportation by bicycle** and support the use of public transit.

YORK REGION OFFICIAL PLAN (2016)

York Region's Official Plan is a long-term planning document which provides direction relating to growth management, land-use and infrastructure planning, and policy for the Region.



York Region is **committed to implementing a comprehensive, active transportation network**. The Region's approach to transportation planning is focused on trip reduction, providing transportation choices and a **shift to more sustainable modes** of transportation such as **walking, cycling** and transit.

It is the policy of Council:

7.2.4: To **develop an integrated Regional cycling network** connecting people to places of recreation, services and employment and transit.

7.2.5: To provide **safe, comfortable and accessible** pedestrian and cycling facilities that meet the needs of York Region's residents and workers, including children, youth, seniors and people with disabilities.

YORK REGION TRANSPORTATION MASTER PLAN (2016)

The York Region TMP informs the Region's long-term investment plan that will enable the Region to keep up with the pace of growth in a manner that is sustainable and responsible. The TMP provides a 25-year outlook and provides progressive policy and network recommendations in order to respond to the challenge of creating an advanced interconnected system of mobility. The York TMP included an update of the Region's cycling network plan, which is discussed in section 3.1.2.



Objective 3: Integrate Active Transportation in Urban Areas

The TMP aims to make **active transportation more comfortable, safe and convenient**, and to help residents **choose walking and cycling more frequently** to meet their daily travel needs.

6.4.1 Policies

The Region will:

P25: Collaborate with local municipalities as they **develop and implement their own plans to improve active transportation**.

P29: Collaborate with local municipalities to **identify missing links and substandard elements in the sidewalk network** along transit routes and within Regional Centres and Corridors and to develop a shared strategy for correcting deficiencies.

CITY OF MARKHAM OFFICIAL PLAN (2014)

Markham's Official Plan establishes land use policy direction relating to growth management and outlines a policy framework for land use and the provision of municipal services, which includes transportation.



7.1 Transportation System

The overall objective is to develop a transportation system that **increases mobility options for all users, including pedestrians, cyclists** and transit riders and, in the process, begins to redress the past imbalance created by focusing on accommodating the automobile.

It is the policy of Council :

7.1.4.2: To **support walking and cycling throughout Markham as competitive mobility choices** for everyday activities such as work, school, shopping, business and leisure by:

- a. creating a more **pedestrian-friendly environment** that is interconnected by a network of safe, direct, comfortable and convenient pedestrian routes that are suitable for year-round walking;
- b. designing, constructing and integrating new streets and retrofitting existing streets, where appropriate, to **focus on the needs of pedestrians, cyclists and persons with disabilities** and ensuring safety, accessibility, convenience, and comfort of all street users are considered;
- e. promoting a **safe and comprehensive network of signed bike routes, bike lanes, cycling trails and multi-use paths for cyclists of all ages and abilities** generally as identified in Appendix D – Cycling Facilities based on the Markham and York Region Cycling Master Plans; and
- f. implementing **segregated bicycle lanes and/or off-road bicycle paths** along arterial roads and major and minor collector roads where cycling safety is a foremost concern.

BUILDING MARKHAM'S FUTURE TOGETHER: STRATEGIC PLAN (2020-2023)

The Strategic Plan outlines the City's Mission, Vision and Values. It's the blueprint for how City Council and Senior Staff will make thoughtful decisions about the City's future to ensure its success.



Accelerate the delivery of an **enhanced comprehensive transportation network** in partnership with other levels of government and the private sector

- Implement an **Active Transportation Master Plan**, and first and last mile solutions (biking, walking and transit)
- Expand the Road Safety Program

GREENPRINT COMMUNITY SUSTAINABILITY PLAN (2011)

Greenprint is a 50- to 100-year plan which aims to achieve environmental sustainability while remaining an economically, socially and culturally vibrant community.

“

Traffic consistently ranks as the number one issue for Markham residents in surveys and consultations. Markham can promote access and mobility by **shifting the focus from moving vehicles to moving people and goods**. Markham can build and support routes and facilities that would make alternatives to the private vehicle fast, convenient, safe, and reliable. Walking, cycling and transit are more affordable options than owning and operating a car and reduce per capita emissions from fossil fuels used for transportation. **Walking and cycling positively affect individual health and social well-being.**

Objective: Create a **culture of walking, cycling** and transit usage

Markham can create policies to ensure that new development and redevelopment focus on the **prioritization of pedestrian needs** and the viability of multi-modal transportation networks. Funding and partnerships will be needed to implement transportation demand management strategies. Markham can investigate local or regional pricing policies **that encourage transit use and active transportation**. Making network connections between key destinations and **integrating transit and cycling facilities** are strategies that Markham can use to support alternative transportation and reduce vehicle dependency.

CORNELL ROUGE NATIONAL URBAN PARK GATEWAY STUDY (2019)

The Cornell Rouge National Urban Park Gateway Study was developed to prepare a streetscape concept plan and implementation framework to create a highly articulated public realm that functions as a gateway connecting the Cornell community with the Rouge National Urban Park.

“

A primary intent of the streetscape design for Highway 7 is to create a functional, safe and beautiful street that **supports** both vehicular movement and **an active transportation network** that allows for all modes of movement.

Support for active transportation can be found in these policy statements and planning directions across all levels of government. The prominence and strength of the support vary with the context of the specific plan or policy, but the need for expanding active transportation is always present as an underlying theme. The excerpts outlined above strengthen the case for investing in active transportation in Markham.

3.1.2. Active Transportation Network Plans

The development of the active transportation network for Markham's ATMP builds from previous network studies at all levels of government. The following sections provide a summary of plans that were considered in the development of Markham's active transportation network.



#CYCLEON – PROVINCE-WIDE CYCLING NETWORK STUDY (2018)

Building on the #CycleON Cycling Strategy (2013) and Action Plans 1.0 and 2.0 (2014 and 2018), the province-wide cycling network study identifies a network of on and off-road cycling routes to provide a wide range of cyclists with the facilities necessary to explore Ontario by bike.



METROLINX REGIONAL CYCLING NETWORK STRATEGY (2017)

The Regional Cycling Network Strategy highlights opportunities to cycle for utilitarian or commuter (rather than recreational) transportation, with a focus on identifying where the need is. This includes identifying areas of high cycling potential, significant cross-boundary facilities that serve multiple jurisdictions, and improved integration between cycling facilities and GO transit stations.



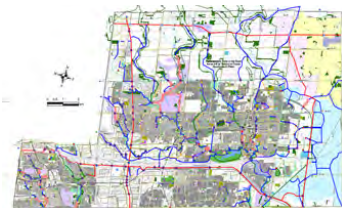
YORK REGION TRANSPORTATION MASTER PLAN (2016)

The 2041 Cycling Network focuses on building Regional networks, improving connections within Regional centres and to major destinations, improving access to public transit services and encouraging consistency among Regional road corridors.



MARKHAM CYCLING MASTER PLAN (2010)

The 2010 Cycling Master Plan developed a Town-wide on and off-road cycling network, with the main objective of building a more comprehensive on and off-road cycling network that connects the urban and rural areas of Markham and connecting to adjacent municipalities.



PATHWAYS AND TRAILS MASTER PLAN (2009)

This Pathways and Trails Master Plan sets out to improve and grow Markham's trail system in the short-term and long-term planning horizons. The Plan recommended 91 km of trails within the first 10 years and an additional 74 km beyond that horizon.



TORONTO AND REGION CONSERVATION AUTHORITY TRAIL STRATEGY (2019)

The Toronto and Region Conservation Authority (TRCA) has developed a strategy to create a comprehensive regional trail system, connecting communities across the GTA. It proposes nearly 480 kilometres of new trails in addition to the 520 kilometres of existing regional trails.

YORK REGION 10-YEAR ROADS & TRANSIT CAPITAL CONSTRUCTION PROGRAM

The Capital Construction Program (2020) defines the capital work to be completed in the short term and medium term on Regional roads and transit infrastructure. A number of corridors and intersections within the City of Markham are identified in the Capital Construction Program and are relevant to the ATMP.

These network plans, along with network plans outlined in the City's various secondary plans, have directly informed the network development for the ATMP. For example, wherever possible, we have directly captured planned or proposed infrastructure in our network (i.e. TRCA Trail Network, #CycleON & Regional Cycling Network Plans), while the updated network builds on previous network studies and refines them to reflect emerging design guidance and network principles.



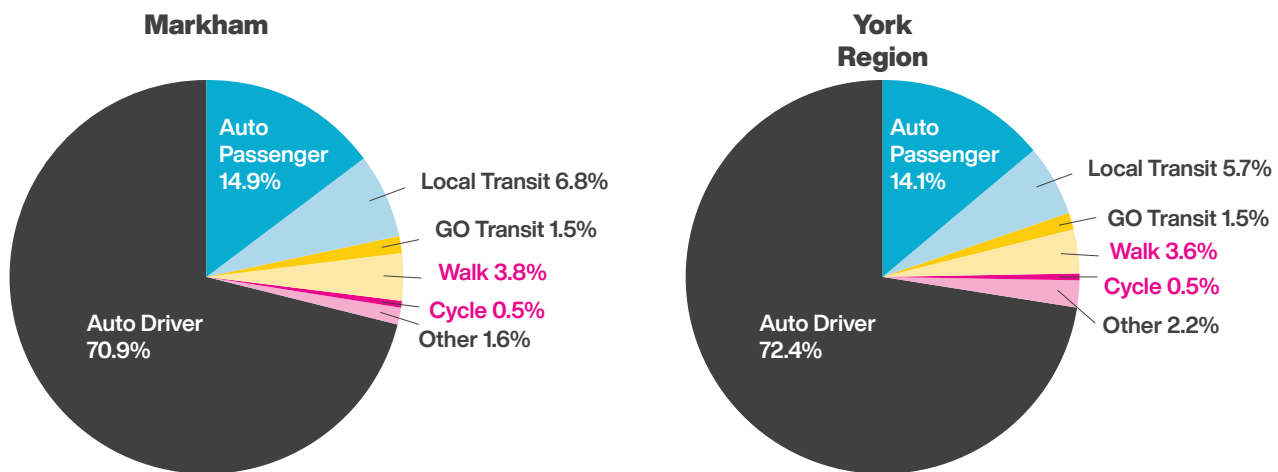
3.2. HISTORICAL & CURRENT TRAVEL TRENDS

It is important to understand historical trends in transportation when developing strategies to modify behaviour. The ATMP analyses travel trends for active transportation and more broadly on transportation behaviours in Markham and York Region, drawing on data from the Transportation Tomorrow Survey.

3.2.1. Daily Weekday Mode Share in Markham and York Region

The automobile is the dominant mode of transportation in Markham (Exhibit 3.1). In 2016, 85% of all trips to, from, and within Markham and 86% of trips to, from, and within York Region were taken by automobile. Since 2001, transit use, cycling, and walking have all been increasing in both Markham and York Region .

Exhibit 3.1: Mode Share for All Trips To, From and Within Markham and York



Source: Transportation Tomorrow Survey (TTS), 2016

Markham’s mode shares were compared to other similarly-sized peer cities, including Vaughan, Kitchener, Brampton, and Hamilton. In comparison to these peer cities, Markham performs similarly in terms of walking and cycling mode share, as illustrated in Exhibit 3.2.

Exhibit 3.2: Mode Share Trends for Markham and Comparative Peer Cities

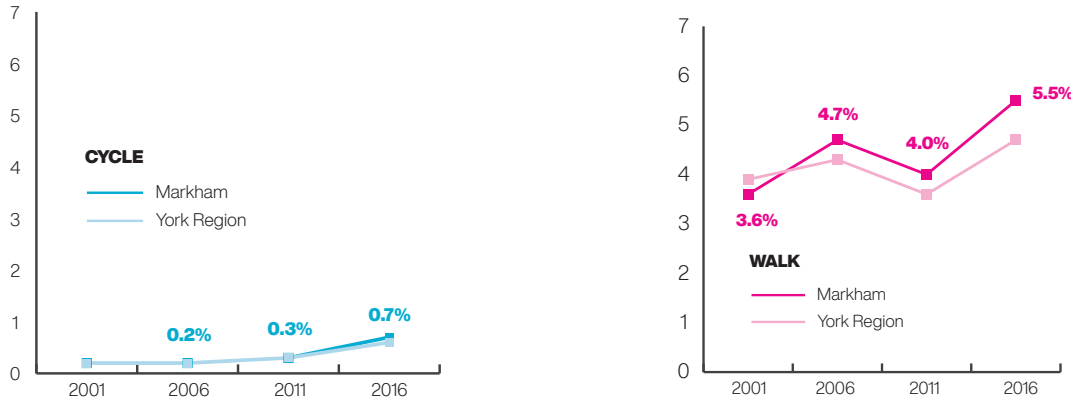
Municipality	Population (2016)	Trips less than 2km		All Trips	
		Walk	Cycle	Walk	Cycle
Markham	328,966	29.1%	2.3%	5.5%	0.7%
Vaughan	306,233	21.4%	0.9%	4.1%	0.4%
Kitchener	233,222	24.6%	2.1%	5.4%	1.2%
Brampton	593,638	28.5%	1.3%	6.1%	0.5%
Hamilton	536,917	26.0%	3.1%	5.6%	1.3%

Source: Transportation Tomorrow Survey (TTS), 2016

Markham has the highest combined walking and cycling mode share for shorter trips, and the highest walk mode share of the comparative cities.

Exhibit 3.3 illustrates Markham and York Region’s historical cycling and walking mode share.

Exhibit 3.3: Mode Share Trends for All Trips from and within Markham and York

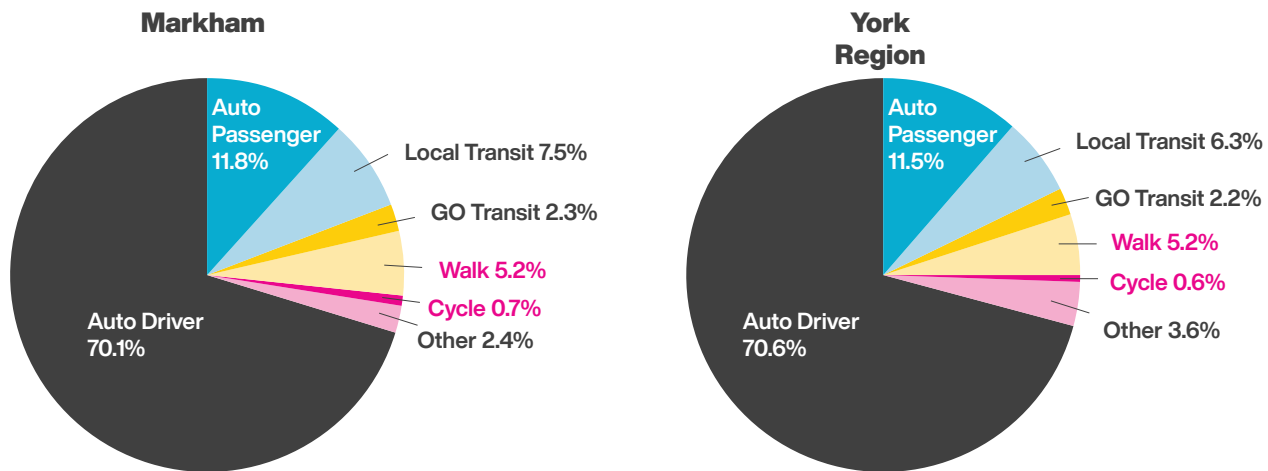


Source: Transportation Tomorrow Survey (TTS), 2016

3.2.2. How Markham and York Region Moves (AM Peak Period: 6:30 – 9:30 AM)

The automobile is less dominant during the morning peak period (6:30 a.m. to 9:30 a.m.) than throughout the rest of the day. As expected, GO Transit, walking and cycling show small increases compared to all-day mode share, but walking and cycling mode share still represent a small portion of travellers (Exhibit 3.4).

Exhibit 3.4: Mode Share during Morning Peak Period



Source: Transportation Tomorrow Survey (TTS), All Trips To, from, and Within Markham & York Region between 6:30 a.m. and 9:30 a.m., 2016

3.2.3. Mode Share by Trip Distance

Short trips represent the greatest opportunity to be converted to active modes. Trips under 2 km are walked relatively easily, and trips under 5 km can be biked relatively easily. A connected network of safe walking and cycling infrastructure can entice people to walk or bike these distances more frequently.

For trips to, from and within Markham, 12% are 2 km or shorter and 28% are 5 km or shorter. Considering trips originating in Markham only, the percentage of trips 5 km or shorter grows to 33% of all trips. Comparatively, 13.5% of trips to, from and within York Region are 2 km or shorter, while 30% are 5 km or shorter.

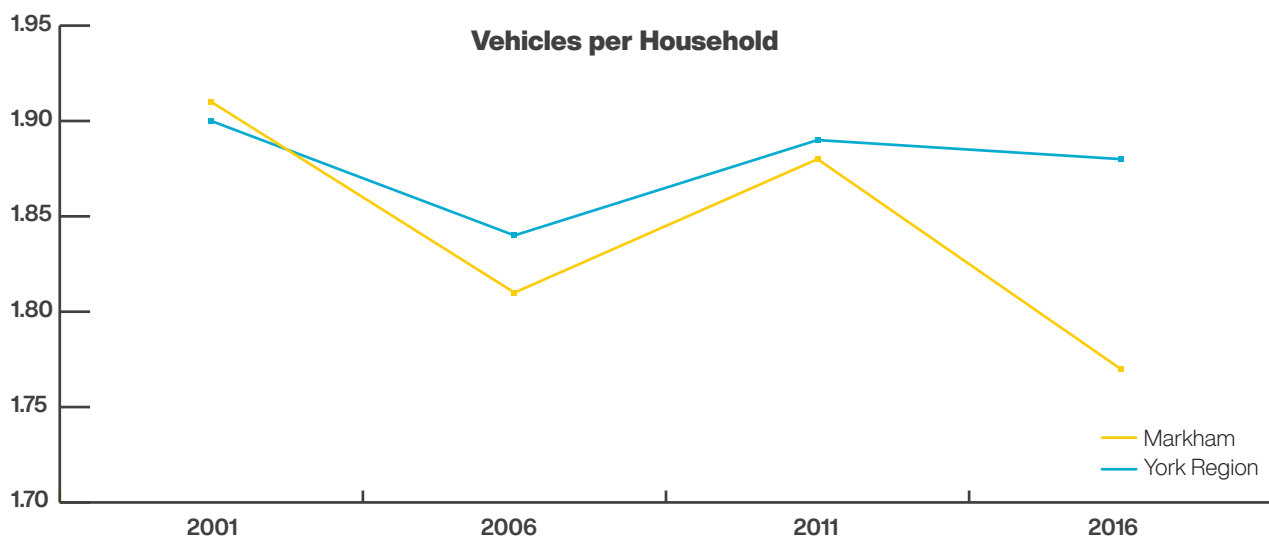
In 2016, two-thirds of all trips in Markham that were 2 km or shorter were taken by automobile (driver or passenger), rather than 28% made on foot, and 2% made by bicycle. These short trips currently completed by automobile modes represent a key target market for walking and cycling trips.

3.2.4. Household Vehicle Ownership

As demonstrated in Exhibit 3.5, vehicle ownership in both Markham and York Region has been decreasing since 2001. In 2016, Markham households had access to an average of 1.77 vehicles. The average number of vehicles per household in York Region, comparatively, was 1.88. The share of households who have access to zero cars has also been growing in both Markham and York Region.

Providing access to a high-quality active transportation network is particularly important for residents and households without access to a car to provide viable transportation alternatives.

Exhibit 3.5: Trends in Vehicles per Household in Markham and York



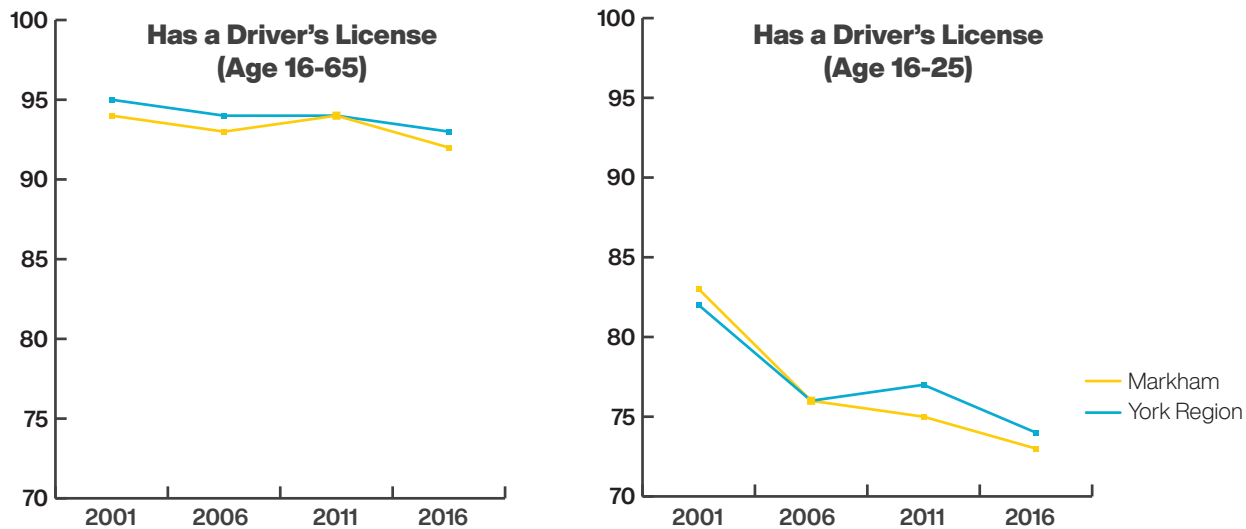
Source: Transportation Tomorrow Survey (TTS), 2001-2016

3.2.5. Driver's Licenses

Young residents are increasingly more likely to prefer alternative modes of travel and are taking advantage of new mobility options such as ride hailing and making use of recent investments in active transportation and transit to facilitate a car-free lifestyle. This is demonstrated in Exhibit 3.6, which shows the share of young adults who do not have their driver's licenses is continuing to grow in both Markham and York Region .

Meanwhile, the proportion of young adults (aged 15 to 34) has been dropping in Markham, falling from 27.4% in 2006 to 25.5% in 2016. Responding to the demand for improving multimodal options can help retain and attract young adults.

Exhibit 3.6: Share of Residents Holding a Driver's License, for Markham and York



Source: Transportation Tomorrow Survey (TTS), Share of Residents Holding a Driver's License, Ages 16-25 and 16-65 in Markham & York Region, 2001-2016

3.2.6. Trip Purposes

The TTS provides data on trip purposes to indicate where people are travelling during non-recreational trips in Markham. The data shows that between 2001 and 2016, the majority of trips in Markham were to work or school. The following four exhibits illustrate historical trip purposes in Markham from 2001 to 2016.

Exhibit 3.7: Trip Purpose in Markham, 2001

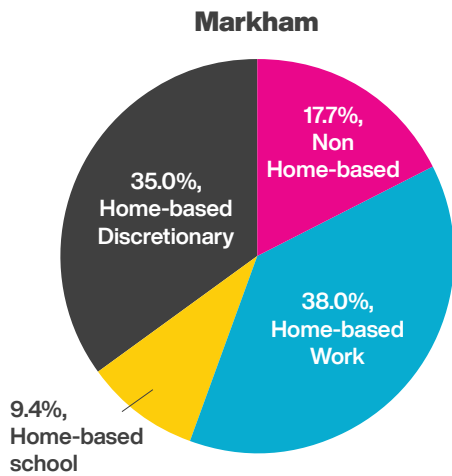


Exhibit 3.8: Trip Purpose in Markham, 2006

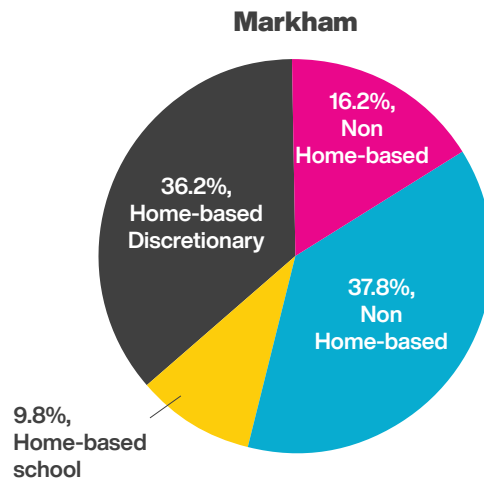


Exhibit 3.9: Trip Purpose in Markham, 2011

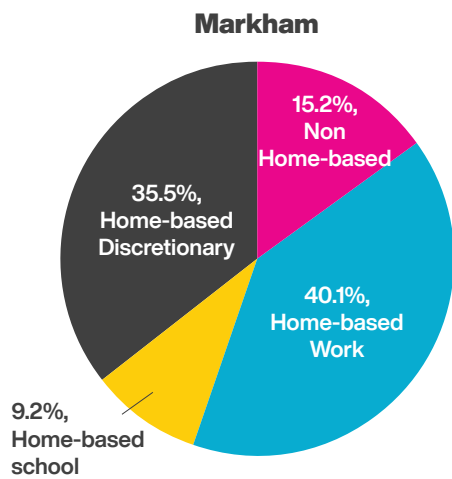
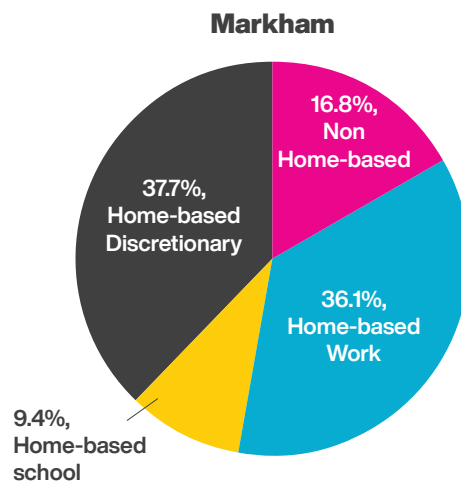


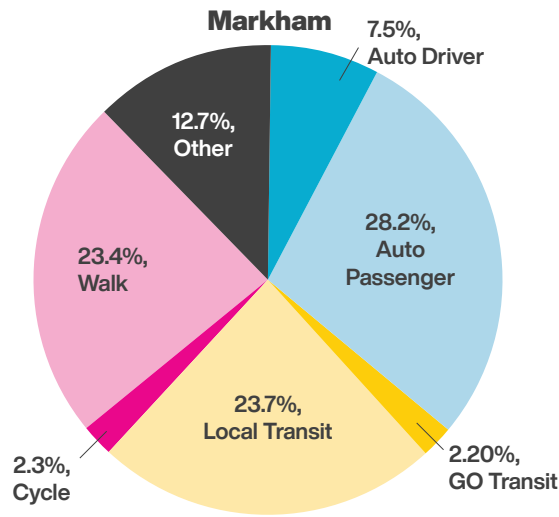
Exhibit 3.10: Trip Purpose in Markham, 2016



Source: Transportation Tomorrow Survey (TTS), All Trip Purposes for Trips To and From Markham, 2001-2016

When specifically analyzing trips to school in 2016, the TTS data illustrates that travelling as an auto passenger, using local transit, and walking were the most common ways to travel. Exhibit 3.11 demonstrates the various methods of transportation used to get to school in 2016 in Markham.

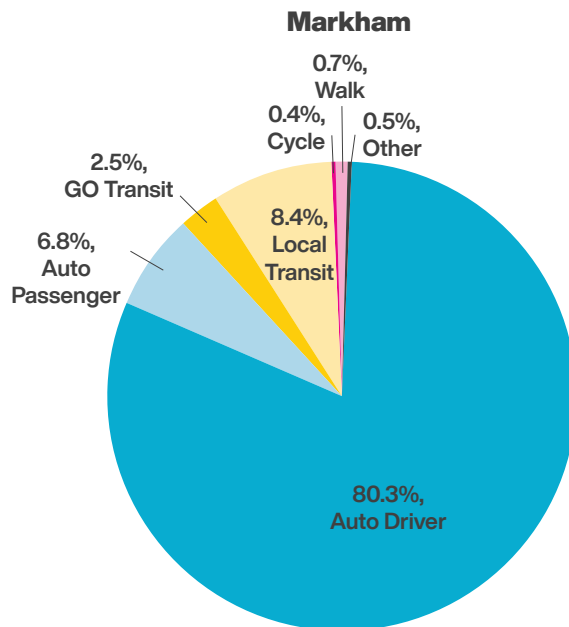
Exhibit 3.11: Mode Share for Trips to School in Markham, 2016



Source: Transportation Tomorrow Survey (TTS), Mode Share for School Trips To, From, and Within Markham, 2016

The data also indicates that a significant portion (80%) of trips to work in 2016 were made by driving a vehicle. About 8% of people used local transit to get to work, while 7% were a passenger in a vehicle, and 3% used GO Transit. A very small portion of the people that travelled to work in 2016 chose to walk or cycle. Exhibit 3.12 illustrates the mode share for trips to work in 2016 in Markham.

Exhibit 3.12: Mode Share for Trips to Work in Markham, 2016



Source: Transportation Tomorrow Survey (TTS), Mode Share for Work Trips To, From, and Within Markham, 2016

3.2.7. Summary of Travel Trends

The following key takeaways are noted from the review of travel trends:

- Markham compares favourably to peer cities
- Cycling mode share is small, but growing
- Walking mode share is growing
- There are many short trips that have the potential to be converted to active transportation – two thirds of trips under 2 km are car trips
- Vehicle ownership per household is decreasing, and there are fewer vehicles per household than throughout York Region
- The share of young adults without a driver's license is growing as young adults are increasingly opting for other mobility options such as ride sharing, walking, cycling, and transit.



3.3. EMERGING TRENDS & KEY CONSIDERATIONS

3.3.1. Equity

Historical approaches to transportation planning have resulted in decisions that disproportionately disadvantaged members of our communities based on physical or cognitive ability, age, race, income, gender, language spoken etc. The growing recognition of, and need to overcome, these inequities informs transportation planning practice today. Equity in transportation planning is about acknowledging barriers and people's differences, especially those of vulnerable residents, and identifying strategies to provide access that reflects these differences. This approach stands in contrast to a traditional perspective of equality, which presumes that giving everyone the same services in the same way will work equally as well for all (refer to Exhibit 3.13). Consideration of equity and inclusion within transportation planning aims to help create a transportation system where people have access to benefits of the system in a way that serves their needs.

Exhibit 3.13: Equity vs. Equality



Source: Robert Wood Johnson Foundation

Measuring equity can be challenging because many factors contribute to uneven access including physical or cognitive ability, age, race, income, gender, educational attainment, language spoken etc. Some municipalities opt for a composite index that includes a variety of factors overlaid with other metrics such as travel time, the availability of cycling infrastructure, and the availability of other transportation options. Others look at metrics individually. However, quantitative measures are only part of the story. Qualitative factors that focus on experience, such as whether or not people feel safe and welcome when travelling in the city are also important. While harder to measure on a broad scale, these factors are increasingly considered on a project level basis through community engagement.

Through this plan, equity has been incorporated in the following ways:

- By providing a consultation and engagement program with a variety of formats and venues (including pop-ups in community destinations such as senior's centres, malls and recreation centres to improve the ease of access to the study);

- By explicitly considering factors such as income, access to community destinations and senior/ youth populations in network analysis and review and focusing on creating all ages and abilities network that serve a variety of residents; and
- By tying key recommendations to considerations for specific vulnerable populations such as new immigrants, minority populations and children and youth.

While there is much more work to be done, this plan takes steps towards explicitly considering a diverse set of needs. High quality active transportation infrastructure plays an important role in expanding opportunities for mobility. When infrastructure is spread throughout the city, the benefits of active transportation including health benefits and the cost savings of not having to rely on a car for all or most trips are available to more people. The benefits of active transportation infrastructure can be particularly pronounced in transportation-disadvantaged neighbourhoods, as car centric design tends to disproportionately impact people who do not have access to a vehicle. Specific equity factors and recommendations framed around vulnerable populations are included in Section 5.0 through Section 8.0 of this report.

3.3.2. All Ages & Abilities

There is an increasing emphasis in planning and design on providing a network that is attractive to all ages and abilities (AAA). An all ages and abilities approach targets the interested but concerned proportion of the population – people that are interested and open to active transportation but require the provision of safe, comfortable and equitable network infrastructure to support them. The “All Ages & Abilities” user may include children, seniors, women, people of colour, low-income riders, people with disabilities, and people moving goods or cargo. Each user group has different requirements, but a high-comfort network can help to serve many of these groups.

The ATMP aims to promote the development of a core network of AAA cycling facilities, primarily made up of quiet street routes, multi-use paths and protected bike lanes/cycle tracks. In some cases, network improvements are proposed which provide an incremental benefit and are appropriate for the roadway context but do not yet meet the AAA threshold. NACTO’s **Designing for All Ages & Abilities** provides support for these incremental improvements towards a future AAA network, noting: “in some cases, a bicycle facility may fall short of the All Ages & Abilities criteria but still substantively reduce traffic stress. Jurisdictions should not use an inability to meet the All Ages & Abilities criteria as reason to avoid implementing a bikeway, and should not prohibit the construction of facilities that do not meet the criteria.”

3.3.3. Micromobility

Cities have been embracing micromobility options on an increasing scale over the last several years. Micromobility refers to small, lower-speed, personal transportation devices, either powered or self-propelled, typically intended for shorter trips. The most common forms of micromobility in cities today are bicycles, e-bicycles and kick e-scooters. These are often promoted as Mobility-as-a-Service solutions, such as bicycle sharing and e-scooter sharing systems.

Though micromobility is not the focus of this study, improvements to the walking and cycling networks can support the implementation of micromobility options within the City of Markham. Conversely, an increase in the popularity of micromobility options can provide support and rationale for improving and expanding walking and cycling facilities. Micromobility has also been identified as a solution to the first kilometre-last kilometre problem, which is a theme addressed in this study, focusing on cycling and walking access to rapid transit stations.



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4.0

Study Consultation & Engagement

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



4.1. OVERVIEW

The first objective of the ATMP study was to engage and consult with stakeholders and members of the community in an open, transparent and engaging process during the development of the ATMP. Developing a thorough understanding of the community's needs and desires was paramount to creating walking and cycling networks that will work for residents and stakeholders.

The study team interacted with residents and stakeholders over the course of the study in various ways, through numerous points of contact and through multiple channels. Engagement initiatives were structured to promote two-way conversation about the issues, needs and solutions for active transportation in Markham.

The consultation program consisted of formal public information centres, pop-up events at popular community centres, City's events and other gathering places, film screenings, presentations and panel discussions, online consultation and an external technical advisory group.

These activities are outlined in Exhibit 4.1 and further discussed below.

Exhibit 4.1: Timeline of Consultation and Engagement Activities



4.1.1. Public Information Centres

Two formal public information centres were held, one in April 2019 (Round 1) and the second in October 2019 (Round 2) with pop-up events for a third round held in August 2020.



4.1.2. PIC #1 (ROUND 1)

The first public information centre was held on Thursday, April 25th, 2019 at the Markham Civic Centre from 5:30-8:30 p.m. The event was set up as a drop-in, open house format. Interactive components of the event included voting on active transportation priorities, identifying whether concrete or asphalt paths are preferred, and placing dots on the existing active transportation network map denoting where attendees like to walk or cycle or where they would want to walk or cycle but improvements are needed.

There were three screenings of the “Why We Cycle” documentary film: one hour-long full screening and two fifteen-minute condensed screenings. After viewing the movie, attendees were asked to use sticky notes to answer questions about why they cycled, which ideas from the film they would like to see included in the ATMP, and which ideas from the film were the most compelling for Markham.



4.1.3. PIC #2 (ROUND 2)

The second public information centre was held on Monday, October 28th, 2019 at the Markham Pan-Am Centre from 5:30-8:30 p.m. The event was set up as a drop-in, open house format. Interactive components included dot activities to help build the study’s vision and to identify the most popular potential programs or initiatives. Additionally, attendees were able to view and provide recommendations on the draft cycling network map and pedestrian analysis map.

A speaker panel was also held on the topic of creating a culture of walking and cycling. Presentations were given by Yvonne Verlinden from Markham Cycles, a project manager for The Centre for Active Transportation, David Chernushenko, a sustainability consultant, and Robin Mazumder, an urban neuroscientist who focuses on creating healthier cities. Following the presentations, a panel discussion was held and questions from the audience were taken.



4.1.4. Pop-Up Events – PIC #1, PIC #2, and PIC #3

A total of ten pop-up events were held throughout the study, four as part of round one of consultation, four as part of round two and two as part of round three. The pop-up sessions were smaller in scale compared to the public information centre but had a similar purpose – to raise community awareness and collect community feedback. The pop-ups were held at various community centres throughout Markham, Markville Mall, the Unionville Festival, Markham Cycling Day and in conjunction with the Building Markham’s Future Together open house.



4.1.5. Public Opinion Survey

Throughout the course of the study, a public opinion survey was hosted on the City’s online engagement platform, Your Voice Markham. The survey asked questions about current cycling conditions throughout Markham, what types of facilities may

attract more cycling, how scarce resources should be prioritized in building the cycling network and the relative importance of various network principles. Similar questions about the existing walking (including using mobility devices) conditions in Markham were also asked. Additional information is provided in Section 4.2.

4.1.6. Cycling & Pedestrian Advisory Committee

Markham has a Cycling and Pedestrian Advisory Committee (CPAC), made up of members of the public, City Councillors and other organizations. CPAC is mandated to:

- Advise staff and Council on the design, development and delivery of cycling and pedestrian policies, programs and facilities to promote and enhance cycling and walking in Markham;
- Work with local neighbourhoods to collect and distribute information related to cycling and walking and to increase public awareness of cycling and walking as environmentally friendly forms of transportation; and
- Assist in integrating bicycle and pedestrian facilities into significant development proposals.

Two workshops were held with CPAC and on-going consultation over the course of the ATMP development to solicit their input to inform study recommendations.

4.1.7. Technical Advisory Committee

A Technical Advisory Committee (TAC) was assembled to provide input into the study. This group included stakeholders from neighbouring municipalities, York Region, including York Region Transit & York-Region Public Health, Parks Canada, Toronto and Region Conservation Authority, Markham Cycles, York Region Cycling Coalition, The Centre for Active Transportation, Smart Commute Markham-Richmond Hill and stakeholders from various

departments at the City of Markham. Three stakeholder meetings were held over the course of the study. The first two were held in parallel with public consultation events, while the third was held to present and review the core recommendations of the study.

4.2. WHAT WE HEARD FROM RESIDENTS

The public consultation process provided a number of consistent themes and takeaways related to Markham’s active transportation network, programs and policies. The following sections outline key findings from the engagement process:

4.2.1. PIC #1 & Pop-Up Sessions (Round 1)



The first round of consultation provided an excellent foundation for understanding community needs. Community members highlighted several important components of the plan such as network connectivity, infrastructure and facility improvements, and safety concerns.

Based on comments, there is a clear desire from residents to **improve the connectivity** of the active transportation network by **connecting routes to key destinations** such as schools, shopping centres, and community centres. This feedback informed the Gap Analysis and Network Development components of the ATMP.

Participants also indicated a need for **active transportation improvements along major routes**. Specific corridors, like McCowan Road, Kennedy Road and Highway 7 were highlighted multiple times by respondents as areas that require improvements. This feedback was used to develop the Network Implementation and Phasing Plan of the ATMP and will be coordinated with improvements made to York Region’s active transportation network.

Feedback gained during this round of consultation emphasized the desire for a **strong focus on safety, especially concerning year-round maintenance** of active transportation infrastructure. Additional safety concerns that were highlighted include the use of bicycles on sidewalks, and ensuring there are safe crossing points, especially along major streets. The ATMP considers this feedback in the development of policies, programs, and recommendations to improve the overall safety of the network.

“Intimidating to walk and cycle at Highway 7 Interchange”

“I don’t feel safe on the roadway so I bike on the sidewalk”

4.2.2. PIC #2 & Pop-up Sessions (Round 2)



The second round of consultation was held to gain feedback regarding the overall vision of the study, cycling and pedestrian facility design, draft network, and identify active transportation programming initiatives.

Public input suggested the study vision should emphasize the need to help walkers and cyclists feel safe, encouraged and to be part of a community by providing a connected, convenient and accessible network which provides access to key destinations. Participants believe that in addition to infrastructure, maintenance and education will play an important role in achieving these outcomes.

Participants also emphasized support for the implementation of various **programming activities and initiatives**, including:

- Markham Cycles Hub
- Open Streets Event
- Active School Travel Planning and Programming
- Bike Share Systems
- Education Campaigns
- App Against Bike Theft

Many participants concluded that **the following “big moves” would improve Markham’s active transportation network:**

- Overcome major barriers through new active transportation connections across watercourses, freeways or rail lines;
- Address first-last kilometre needs to GO stations and future subway stations; and
- Identify a priority network of all ages and abilities (AAA) cycling facilities

When asked to provide insight on pedestrian and cycling networks, many participants suggested that **the ATMP focus on the following priorities:**

- GO Station connections, particularly in the vicinity of Unionville GO Station and Mount Joy GO Station;
- Emphasize network supporting strategies such as wayfinding signage, particularly for major trail systems;
- More protected and off-road cycling facilities for children and families; and
- Addressing sidewalk gaps and urbanizing roads particularly in the vicinity of schools and senior’s communities

“Mandatory cycling education in schools”

“North-south connections to GO stations”

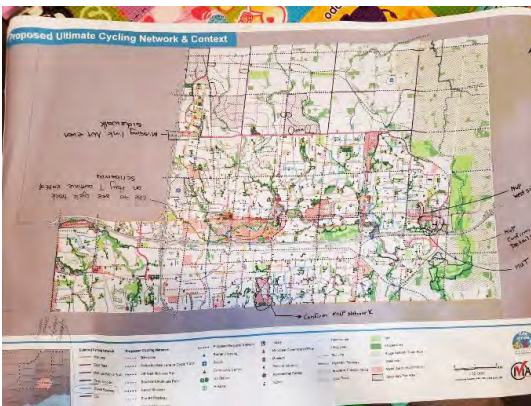
4.2.3. PIC #3 Pop-up Sessions (Round 3)



During the third round of consultation, the study team presented the refined draft vision statement and draft ATMP recommendations under the four key themes. There was also an opportunity for participants to provide input on the draft cycling and pedestrian network maps.

Some of the key findings from the Round 3 pop-up sessions are summarized below.

- Specific input on cycling improvements, for example: would like to see cycle tracks on Highway 7 continue east of Scriberras;
- Emphasis on addressing missing links in the active transportation network, particularly around Highways where there is not even a side walk; and
- Minor formatting clean-up comments related to the final draft network maps.

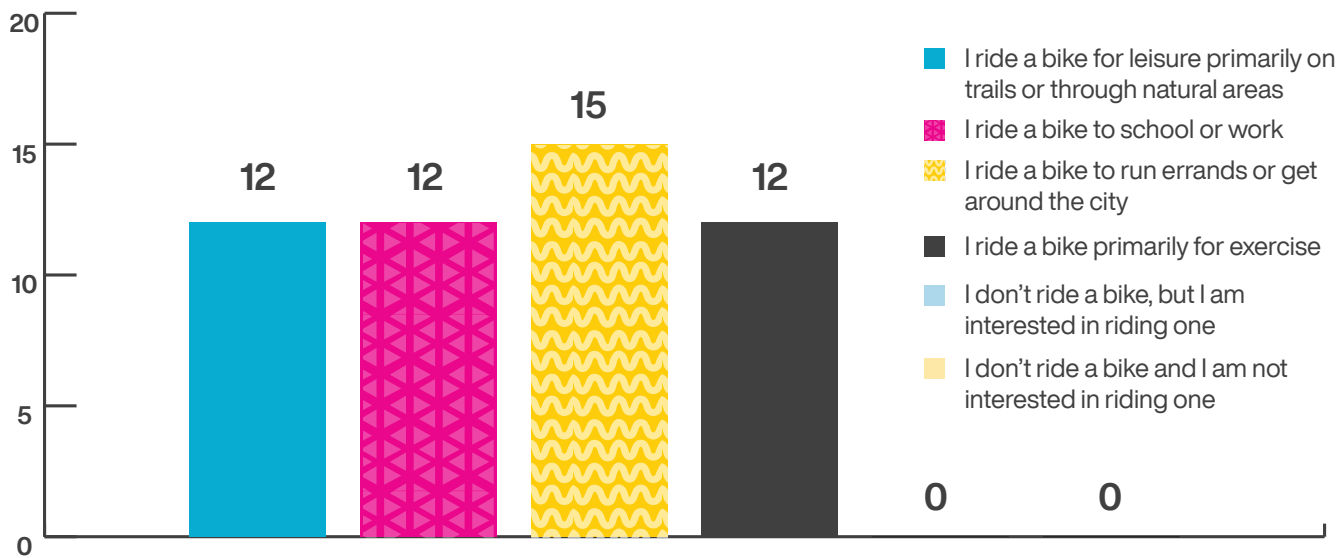


4.2.4. Online Survey

An online survey was conducted to solicit feedback on Markham's existing active transportation network and to help indicate support for future improvements. About 100 people provided feedback through the online survey. Participants were given the opportunity to provide feedback on the cycling network, the pedestrian network, or the active transportation network as a whole. The following section outlines some of the key findings of the survey.

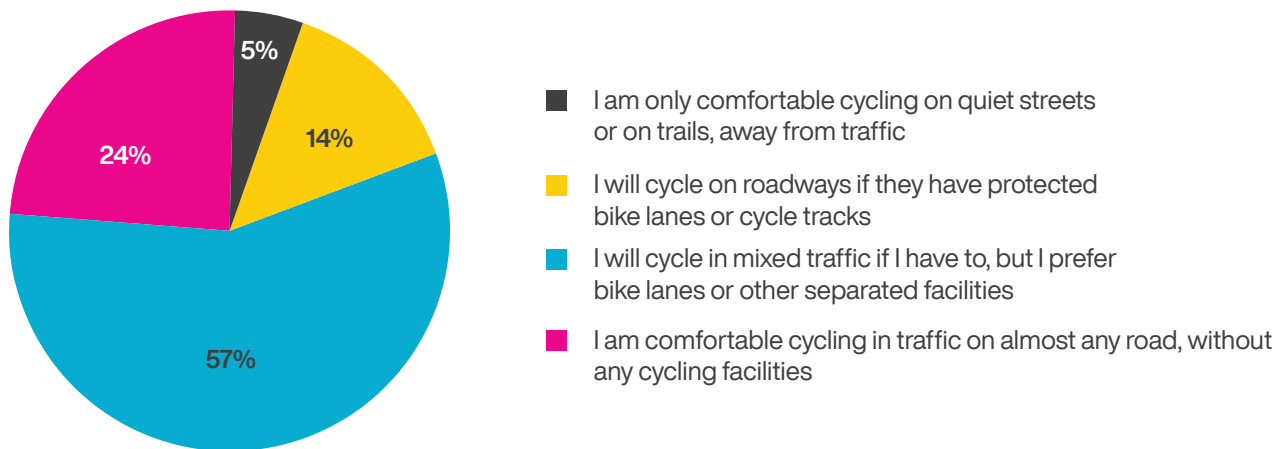
When asked what type of cyclist participants would describe themselves as, most people indicated that they typically ride a bike for leisure on trails or through natural areas (Exhibit 4.2).

Exhibit 4.2: Type of Cyclist



When asked about comfort levels, most participants indicated that they prefer bike lanes or separated facilities when cycling along roadways (Exhibit 4.3).

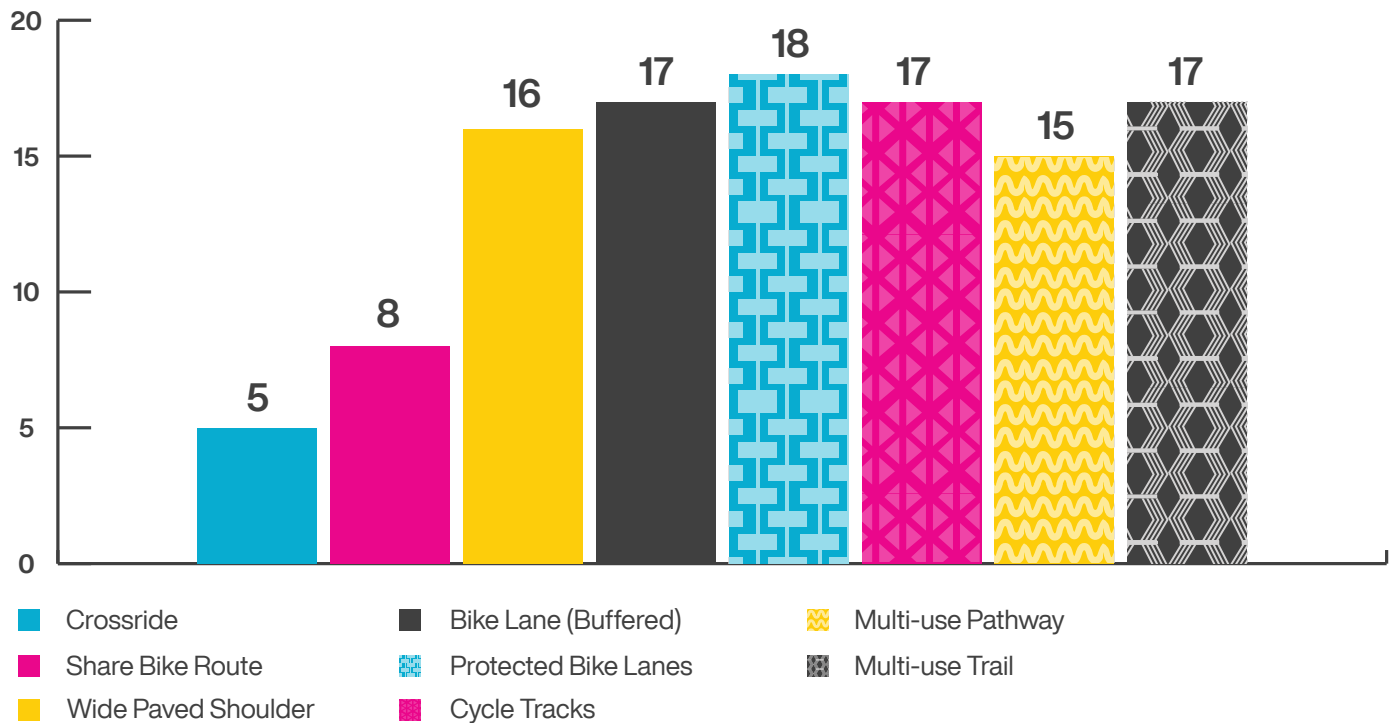
Exhibit 4.3: Comfort with Different Cycling Facility Types



Participants were asked to indicate what facilities might encourage them to cycle more. Most participants voted for protected bike lanes, buffered bike lanes, cycle tracks, and multi-use trails (Exhibit 4.4). Refer to Exhibit 6.1 for a summary of cycling and shared-use facilities.

Participants also indicated that connectivity in the network, addressing areas of high collisions or safety concerns and overcoming and crossing major barriers are important factors in encouraging them to cycle more often in Markham.

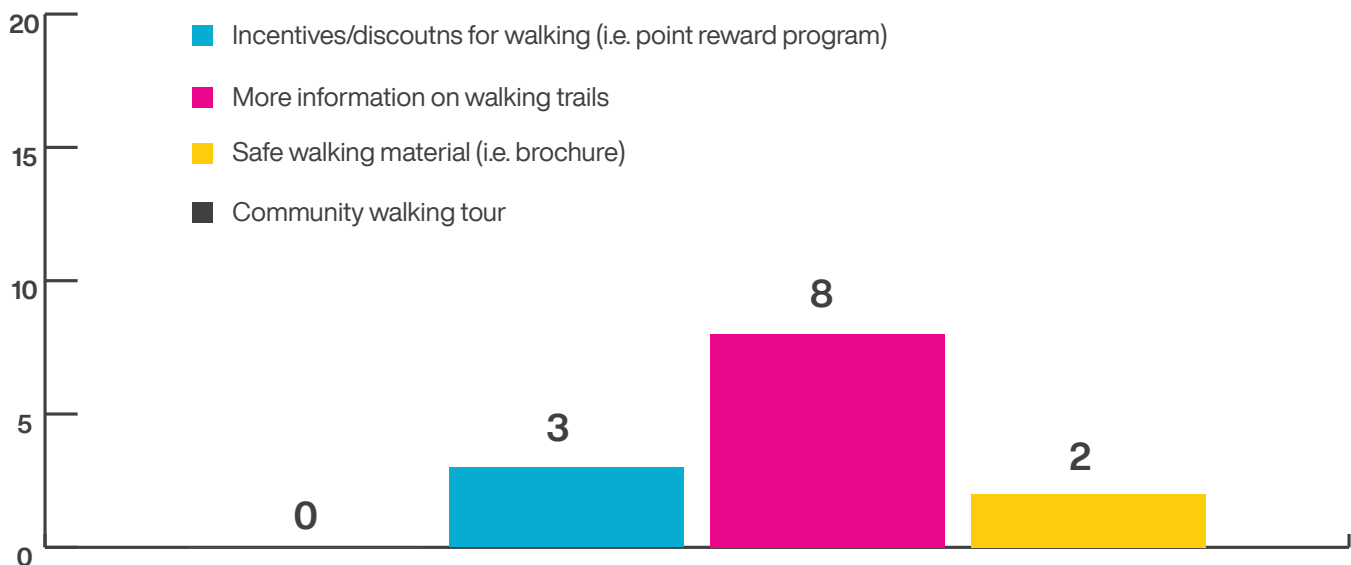
Exhibit 4.4: What Types of Facilities Would Attract You to Cycle More Often and for More Types of Trips?



Most participants indicated that they walk or use a mobility aid often (1-4 days per week), or every day (5-7 days per week).

When asked what programs or initiatives would encourage people to walk, wheel or use a mobility aid more, most participants voted for more information on walking trails, followed by incentives and discounts for walking and safe walking material (i.e. brochure), as illustrated in Exhibit 4.5.

Exhibit 4.5: Would Any of These Programs/Initiatives Encourage You to Walk/Wheel/Use Mobility Aid More Often?





5.0

Theme 1: Pursuing Pedestrian Network Improvements

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



5.1. CURRENT PRACTICE & CHALLENGES

A pedestrian network is made up of facilities along roads and through open spaces (made up of sidewalks, multi-use paths, multi-use trails) as well as safe, convenient crossings and intersections to facilitate connections. Beyond basic infrastructure, the overall quality of the pedestrian environment is influenced by factors like the presence of street trees and streetscaping features, benches and network amenities, the adjacent land use context, maintenance practices and policies and the impact of the adjacent vehicular environment on the boulevard environment (noise, pollution, etc. from the adjacent roadway).

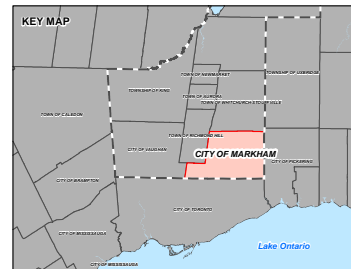
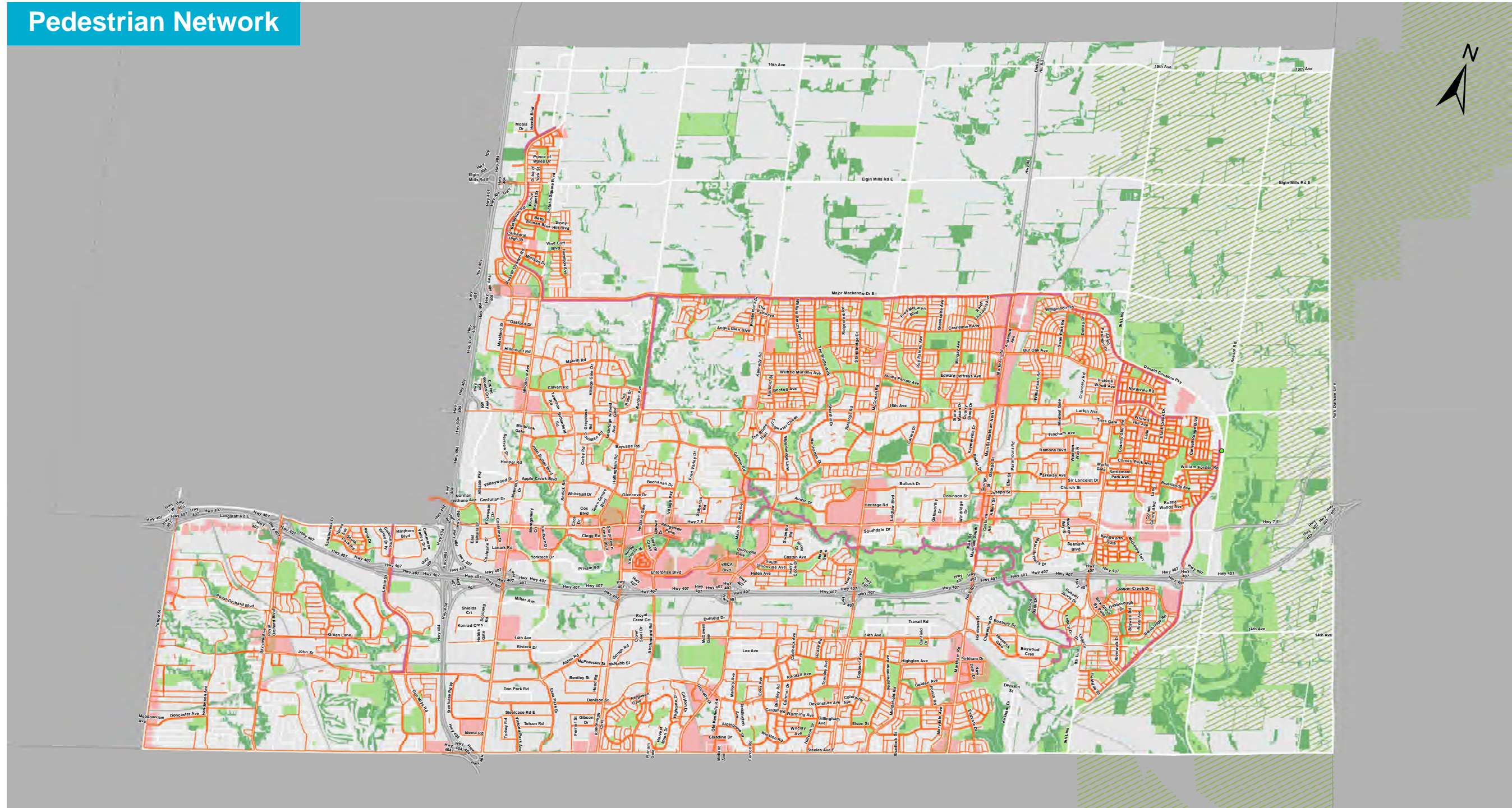
Overall, current sidewalk and pathway coverage along streets in the City of Markham is high, with all new urban developments and many existing neighbourhoods having appropriate facilities to separate pedestrians from traffic. However, within Markham's urban areas, 20% of collector roads, 17% of arterial roads, and over 50% of local roads are without sidewalks. While many of the recently developed neighbourhoods of Markham include sidewalks, there are many older areas that lack a safe and connected network of sidewalks on both sides of the street.

The existing pedestrian network in the City of Markham is shown in **Exhibit 5.1**.

Current programs and initiatives to improve the pedestrian network within the City of Markham include:

- The Sidewalk Network Completion Program (2019-2028) to fill sidewalk gaps on arterial and collector roads;
- A multi-year AODA upgrade program for signalized intersections under City jurisdiction;
- Installing pedestrian crossovers across the City where warranted (as of August 2021, the City has 13 PXOs in place);
- Pedestrian or full intersection traffic control signals where warranted;
- A Winter Maintenance App which shows the progress of sidewalk plows after snowfall;
- A School Crossing Guard Program (93 supervised school crossings);
- A School Zone Centreline Sign Program to improve driver awareness near school sites; and
- A Speed Management Program that includes the deployment of radar speed signs, with priority given to school zones.

Exhibit 5.1: Existing Pedestrian Network



- | | | |
|---------------------------|----------------------------|--------------------------------|
| Pedestrian Network | Watercourse | Park |
| Sidewalk | Utility Line | Wooded Area |
| Multi-Use Path or Trail | Rail Line | Rouge National Urban Park |
| | Highway / Freeway | Waterbody |
| | Arterial or Collector Road | Mixed use and commercial areas |
| | Local Road | |

0 1 2 KM
1:30,000
Coordinate System: NAD 1983 UTM Zone 17N



5.2. STRATEGIES & RECOMMENDATIONS

Considering these on-going initiatives within the City of Markham, along with challenges identified through consultation and engagement, the strategies and recommendations in this section are grouped into four key action areas:

- Addressing city-wide sidewalk gaps;
- Enhancing Pedestrian Priority Areas;
- Facilitating safe crossings;
- Improving accessibility & safety at intersections; and
- Connecting school sites.

Note that recommendations related to programming and education strategies for encouraging walking are included in Section 7.0.

5.2.1. Address City-wide Sidewalk Gaps

Sidewalk gaps, even minor, disrupt the continuity and connectivity of a pedestrian network and affect the safety and convenience of walking. They present challenges particularly along major collector and arterial corridors, and especially at major intersections. The nature of these spaces—high traffic volumes and speeds—are not ideal environments for pedestrians and may be perceived as unsafe by the travelling public. This speaks to the need to improve connectivity within and between neighbourhoods without relying on the Regional road network.

In 2017-2018, sidewalk gaps along collector and arterial roads were reviewed at the network level. The City has since initiated a Sidewalk Network Completion Program to fill the gaps in the sidewalk network on all arterial and collector streets.

At the end of 2019, there were 108 km of sidewalk gaps on arterial and collector roads, of which 65 km have been programmed into a 10-year capital plan to be filled by the City from 2019 to 2028. The remainder are:

- Deferred due to constructability issues (7.7 km);
- Deferred as they are outside the urban boundary (13.9 km); or
- Incorporated into larger capital projects (21.1 km).

As these gaps are programmed within a fiscal year, each gap will undergo a feasibility study and detailed design at least one year before construction. This is a critical initiative to continue to provide high-quality pedestrian facilities along major roads.

P1. Continue to fill sidewalk gaps along collector and arterial roads at an accelerated rate through the established Sidewalk Network Completion Program.

5.2.2. Enhance Pedestrian Priority Areas

In addition to a concerted City-wide effort to address sidewalk gaps, targeted investment in key neighbourhoods can help to serve high-priority areas. To assist with prioritization and implementation, seven Pedestrian Priority Areas have been identified as major focus for pedestrian network improvements using the following criteria:

- Existing walking activity to target areas with high numbers of existing walking trips;
- Areas with more sidewalk gaps along arterial and collector roads, recognizing the importance of the pedestrian network along local roads within these neighbourhoods;
- Income distribution, recognizing the need to invest more heavily in areas of lower income residents;
- Intersection and midblock pedestrian collisions recognizing the safety benefits of providing sidewalks; and
- Presence of major transit hubs, reflecting the first-last kilometre potential within these neighbourhoods.

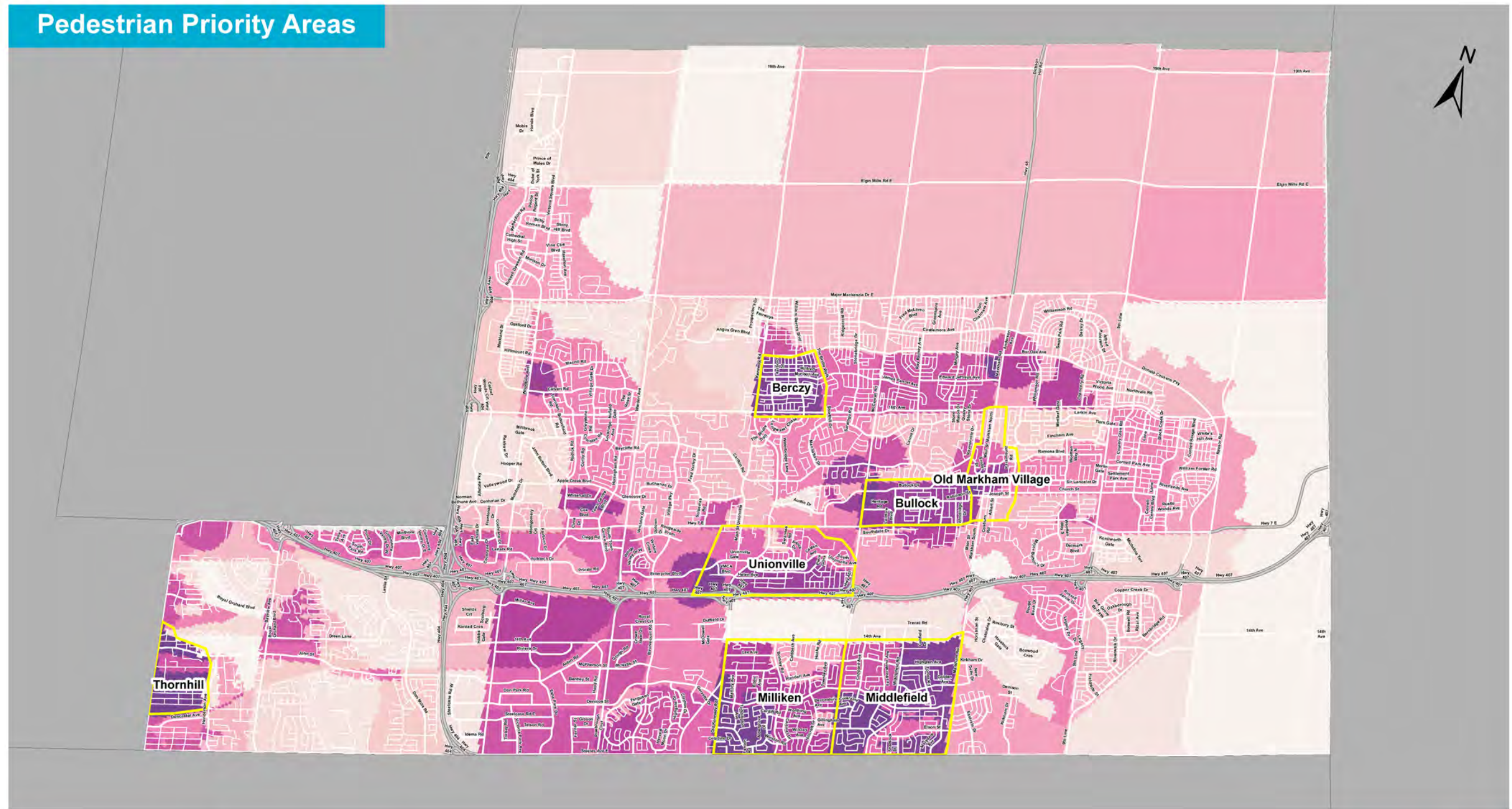
Considering the factors noted above, the Pedestrian Priority Areas selected for further review are shown in Exhibit 5.2, and include the neighbourhoods of Middlefield, Milliken, Thornhill, Unionville, Bullock, Old Markham Village and Berczy Village. It is anticipated that these areas may be reviewed and updated in concert with future ATMP updates (every 5 years).

Once identified, the areas were assessed for potential improvements. The recommended improvements for each area along with a neighbourhood profile are detailed in **Appendix A**. Improvements can be summarized into the following four action areas:

- **Addressing high-priority local road sidewalk gaps.** While the City's current Sidewalk Network Completion Program targets collector and arterials roads, local roads can also play an important role in pedestrian connectivity. In identifying key local sidewalk gaps to be filled, priority was given to sidewalk segments that serve major community destinations such as schools, community centres, major transit stations, and trail network connections. The review also considered midblock pedestrian collisions to identify corridors to be prioritized. The feasibility of filling each priority local sidewalk gap was assessed based on factors such as road width, the presence of mature trees, and other landscaping or infrastructure that would be affected. Prior to implementation, each gap would undergo a feasibility study and detailed design at least one year before construction. It is noted that in some cases, local sidewalk gaps will be difficult to fill due to insufficient right-of-way width or impacts on mature trees, recognizing the role of street trees in enhancing the overall urban environment and street environment. In these cases, alternative strategies such as traffic calming to reduce operating speeds may be considered (refer to Section 8.2.2 for additional discussion on traffic calming).
- **Targeting safety and accessibility upgrades to intersections.** Key signalized intersections that have a history of pedestrian collisions or that have not been upgraded to meet AODA standards (such as installing tactile walking surface indicators) are identified, with priority given to intersections that connect to schools, major transit stops, or other important community destinations.
- **Investigating mid-block crossings at key locations.** Where there is no nearby controlled crosswalk in the vicinity of school entrances, major community destinations, or places where multi-use trails intersect the road network, the need for potential mid-block crossings are identified for further review.
- **Considering opportunities for streetscape improvements.** Along major corridors, especially where high-frequency transit service is provided, streetscape improvements such as benches, planters, and additional lighting are recommended in order to attract more pedestrians to nearby businesses or transit.

To support the implementation of targeted improvements within the pedestrian priority areas, it is recommended that the City establish a funding and design program to review and implement key recommendations within the pedestrian priority areas.

Exhibit 5.2: Pedestrian Priority Areas




- Priority Review Score**
- High
 - Low
- Pedestrian Priority Area
- Watercourse
 - Utility Line
 - Rail Line
 - Highway / Freeway
 - Arterial or Collector Road
 - Local Road




MARKHAM
ACTIVE TRANSPORTATION
MULTIPLAN





1:30,000

Coordinate System: NAD 1983 UTM Zone 17N



P2. Implement a program to address Pedestrian Priority Area recommendations on an on-going basis.

5.2.3. Facilitate Safe Crossings

“

There is a modest increasing trend in the number of pedestrian collisions. The average number of pedestrian injury collisions is 41 per year. The highest concentration of pedestrian collisions occurs at the Denison Street Corridor, which travels through the Middlefield and Milliken Pedestrian Priority Areas, as illustrated in Appendix A.

City of Markham Traffic Safety Audit, 2014-2018

One of the key issues raised by the community and stakeholders over the course of the ATMP is the need for safe pedestrian crossings, particularly at midblock locations along multi-lane roads. In many cases, the distances between formal traffic control devices (i.e. signalized intersections or all-way stops) exceeds a kilometre.

Pedestrians are more sensitive to out-of-the-way travel than motorists. If midblock crossings are not formally designed where needed, they may choose to cross at random or informal locations, which can increase the risk of midblock pedestrian collisions. Thus, accommodating pedestrians at midblock locations where there is demand with well-designed crossings is preferable to overlooking their needs and assuming they will divert to an out-of-the-way signalized intersection.

The risk to pedestrian crossings midblock without formalized crossings is higher along multi-lane roads, where multiple lanes of traffic can create a “double-threat scenario” in which visibility of pedestrians is obscured by vehicles in the adjacent lanes. Therefore a strategy to address midblock crossing demand along multi-lane roads is proposed through the ATMP.

Assuming typical volumes along collector roads within the City in the range of 5000-8000 cars/day with operating speeds less than or equal to 50 km/hr, appropriate midblock crossing treatments are generally anticipated to include the following treatments:



- **For high-pedestrian volume crossing locations:** midblock pedestrian signals may be warranted along multi-lane collector roads with pedestrian volumes in the range of 400-500 pedestrians over an 8-hour period i.e. in the vicinity of a school or major transit station, community centre etc.
- **For lower pedestrian volume crossing locations:** two possible types of pedestrian crossovers may be applicable, depending on the geometry of the crossing:
 - ✓ **Four lane roads with refuge islands:** Type II Pedestrian Crossover Type D is most likely to be warranted. Wherever possible, locations without refuge islands should be reviewed to consider the addition of refuge islands.

- ✔ **Four lane road without refuge islands:** Type II Pedestrian Crossover Type B is most likely to be warranted

The application of midblock crossings should follow OTM Book 15 processes and warranting processes, and midblock crossing treatments must have sufficient spacing from adjacent traffic control devices (200m minimum from another traffic control device, at least 215m from another traffic signal if a Midblock Pedestrian Signal is proposed).

The process to identify and target the implementation of new midblock crossings along multi-lane collector roads should take a network-wide approach to ensure high-need locations are prioritized for investment. Through the City's upcoming Road Safety Plan, it is recommended to prepare a network wide-screening process to identify candidate locations for formalized midblock crossings consisting of factors such as:

- Midblock pedestrian collisions
- Major attractions / destinations (such as major transit hub, commercial development or community / recreational facility) located <250m from nearest traffic control device
- Multi-use path or trail crossings midblock where grade separated options (i.e. tunnel, overpass) are not feasible due to cost or design constraints
- Public requests and inquiries
- Spacing between traffic control devices

The implementation of new midblock crossings should be paired with a review of existing streetlighting levels to ensure visibility at new crossing points, and AODA requirements must be incorporated into new crossing designs.

The network screening process and rate of implementation of new midblock crossings should be reviewed in concert with the ATMP update, every 5 years, or as new crossing tools become available.

P3. Undertake a network screening process to identify priority locations for midblock pedestrian crossings along multi-lane collector roads with the intent of implementing two new or upgraded crossings annually.

There is an increasing trend in the number of injury collisions at mid-block locations. The average number of mid-block collisions is 78 per year. 12% of collisions occur on 2-lane, 50 km/h posted roads, yet these road segments comprise only 3% of the City's road network.

City of Markham Traffic Safety Audit, 2014-2018



Between 2014-2018, 50% of all intersection collisions occurred at signalized intersections, which comprise only 5% of all City intersections.

City of Markham Traffic Safety Audit, 2014-2018

5.2.4. Improve Accessibility & Safety at Intersections

The City of Markham is currently engaged in a seven-phase AODA upgrade program at City-owned signalized intersections. These upgrades include retrofit intersection upgrades, modifying sidewalk locations, installing tactile plates, modifying/adjusting lighting poles, and enhancing crosswalks. Larger modifications such as tightening corner radii or narrowing crossings are not included in the scope of the project.

Of the 94 City-owned signalized intersections across the City of Markham, 84 have been upgraded to meet AODA standards already; 5 are planned to be completed by the end of 2021. An additional 5 locations will be completed through development and/or capital projects, to be completed by 2025. Any new construction of signalized intersections within the City of Markham also adheres to AODA standards.

Although all 94 intersections located on City of Markham roads will be upgraded to meet AODA standards in the near future, there are many unsignalized intersections within the City boundaries that do not yet meet AODA standards. Upgrading to meet AODA requirements at unsignalized intersections is typically less costly than upgrades at signalized intersections but are still critical to ensuring access for residents with disabilities. It is therefore recommended that the City carries over the annual funding for AODA upgrades to include unsignalized intersections. To prioritize unsignalized intersection upgrades, various factors to be considered may include: proximity to school sites, proximity to community destinations, proximity to major employment or commercial centres, proximity to seniors housing and community health facilities, proximity to major transit and targeting interventions in neighbourhoods with concentrations of vulnerable populations such as youth, seniors, low-income residents, residents of aboriginal identity, and new immigrants. Maps illustrating the City-wide distribution of various vulnerable populations are included for reference in **Appendix B**.

P4. Continue to implement AODA upgrades at unsignalized intersections once all City signalized intersection upgrades are complete.

In addition to AODA upgrades, there are several pedestrian countermeasures that can be implemented to improve safety at signalized intersections. These countermeasures include strategies such as:

- Providing a pedestrian walk phase every cycle at high pedestrian volume locations;
- Leading pedestrian intervals (LPI);
- Right-Turn-on-Red (RTOR) restrictions; and
- Increased walking time for pedestrian phases.

These countermeasures are described in further detail below and should be considered at signalized intersections with heavy pedestrian volumes, a history of pedestrian collisions, or anticipated use by vulnerable populations such as children, seniors, low income residents, new immigrants and/or aboriginal residents. Maps illustrating the City-wide distribution of various vulnerable populations are included for reference in **Appendix B**.

LEADING PEDESTRIAN INTERVALS

A leading pedestrian interval (LPI) provides crossing pedestrians an advance phase to enter the crosswalk before adjacent vehicles are given a green phase. By allowing pedestrians 5-10 seconds of exclusive green time to enter the crosswalk, it reinforces the pedestrian right of way (ROW), increases pedestrian visibility to drivers, and reduces potential conflicts between pedestrians and turning vehicles.

Several North American cities have implemented LPI with significant successes; research has shown that LPIs have resulted in a 46% or greater reduction in pedestrian collisions⁴.

To effectively implement LPIs, audible pedestrian signals (APS) must be present at the intersection. Without APS, many vision-impaired pedestrians rely on the sound of adjacent traffic to know when to begin walking and therefore may begin crossing late into the pedestrian phase, which can lead to inadequate time to complete the crossing.

RIGHT-TURN-ON-RED RESTRICTIONS

RTOR movements at signalized intersections can pose safety issues for crossing pedestrians; drivers often do not come to a complete stop, may not see pedestrians while searching for gaps in the conflicting traffic stream, and may block the crosswalk itself while waiting to turn.

Key considerations in the implementation of RTOR restrictions include the following:

- RTOR restrictions are often more effective when paired with LPIs, as they may increase the number of right-turn-on-green conflicts during concurrent phases;
- Specific time-of-day restrictions may be appropriate to avoid drivers waiting at a red light when there are low pedestrian and traffic volumes; and
- Education/awareness and enforcement may be required in the implementation of RTOR restrictions.

INCREASED WALKING TIME

At most signalized intersections, pedestrian crossing times allow for a walking speed of 1.2 metres/second. This speed is considered to be the typical walking speed of an average able-bodied adult. The City of Markham Traffic Signal Design and Installation Standards indicate that the required walk timing is seven seconds minimum, plus a Flashing Don't Walk (FDW) time based on crossing distance and a 1.0 m/s walking speed.

Although the City considers a reduced walking speed of 1.0m/s, this walking speed may not be sufficient for elderly pedestrians, children, or those with mobility devices; research has shown that the 15th percentile and average walking speeds for older pedestrians (more than 65 years old) were 0.88 m/s, and 1.14 m/s, respectively⁵. To ensure that all pedestrians have sufficient time to safely cross the intersection, locations with significant volumes of these user groups (such as near schools, senior's centres and community facilities) should consider using a walking speed of 0.8-0.9 m/s to determine the FDW interval.

⁴ A.C. Fayish and Frank Gross, "Safety effectiveness of leading pedestrian intervals evaluated by a before-after study with comparison groups," *Transportation Research Record No. 2198* (2010): 15-22.

⁵ Montufar, Arango, Porter, and Nakagawa, "Pedestrians' Normal Walking Speed and Speed When Crossing a Street". *Transportation Research Record No. 2002* (2007): 90-97.

It is noted that these four countermeasures can provide improved pedestrian safety at the consequence of having a reduced level of service for vehicular traffic. Recent Council decisions have directed staff to prioritize road safety over the expeditious movements of motorized vehicles, however improvements are subject to further review and study prior to implementation. It is recommended that the City evaluate the systematic application of these features across priority intersections through the Road Safety Plan.

P5. Develop a warranting and review program to implement pedestrian safety countermeasures at signalized intersections.

5.2.5. Connect School Sites

Connecting school sites to the pedestrian network is a critical component of improving active transportation mode shares in the City of Markham. In addition to directly making children and parents more active, research shows that children who walk to school are less likely to become automobile dependent throughout their lives.

In 2017, York Region released a set of design guidelines for school sites and the surrounding neighbourhoods to encourage active transportation to and from schools (Exhibit 5.3). These guidelines provide a comprehensive active transportation toolbox for the planning and retrofitting of communities and schools.

Exhibit 5.3: York Region School Sites Design Guidelines



One of the key factors in parents' and children's decisions to walk to school is the safety or perceived safety of routes to school. The City of Markham currently has several programs in place to improve safety around school sites. In addition to 40 km/h speed zones and crossing guards, City of Markham school safety initiatives include the School Zone Centreline Sign Program, in place at a total of 37 school zones in Markham. Flexible posts are installed directly on the pavement on either end of the school zone, improving driver awareness and reducing speeds. Radar speed signs are also deployed through the City's Speed Management Program at 96 locations each year, wherein school zones are given priority.

Where safety concerns connected to high traffic speeds and volumes arise in the School Travel Planning process (see **Theme 3: Encouraging & Engaging our Community**), a variety of additional traffic calming measures can be considered.

A variety of different measures and interventions are described in detail in the York Region School Site Design Guidelines. Further discussion on the role of traffic calming in supporting walking and cycling is included in Chapter 8.0.

In addition to calming measures along streets surrounding schools, vehicle exclusion zones can be implemented to create a safer and friendlier environment for cyclists and pedestrians. In some cases, cars are prohibited from parking or stopping along the roads fronting the school during school hours; in others, those streets are partially or completely closed.

P6. Consider traffic calming measures and vehicle exclusion zones as tools in the School Travel Planning process.

Inclement weather and maintenance is another key consideration near school sites, as snowy or icy conditions are possible over the majority of the school year. The City of Markham currently prioritizes sidewalks in its plowing and sanding process, and all sidewalks are plowed within 24 hours of the end of a snowfall (where accumulation reaches 5 cm or more).

A significant barrier for students walking to school, however, is that many pedestrian paths connecting to school sites from surrounding communities are not maintained year-round. During periods of snow or ice coverage, students are discouraged from walking by the inconvenience of taking a longer route to school via sidewalks or the hazard of navigating pathways that have not been plowed or salted. While maintaining all trails and pathways year-round may not be feasible, key links can be identified through the School Travel Planning process for additional municipal maintenance practices. Once key links are identified, next steps will include identifying any necessary maintenance easements and identifying funding implications of maintaining the pathways.

P7. Work with School Travel Planning partners to identify candidate pathways for year-round municipal maintenance as a pilot at 5-10 school sites.





6.0

Theme 2: Connecting & Enhancing the Cycling Network




**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**








6.1. CURRENT PRACTICE & CHALLENGES

The existing cycling and trails network in Markham consists of just about 275 kilometres of infrastructure including paved shoulders, shared roadways, bike lanes, cycle tracks, and multi-use paths (refer to an overview of cycling facilities types in Exhibit 6.1 and a map of the existing network in Exhibit 6.2). The majority of the cycling network along City roads consists of signed routes and urban shoulders. Bike lanes are primarily found on minor and major collectors, while paved shoulders are located in rural parts of North Markham. There are also a few sections of existing cycle track along Highway 7 and on Village Parkway.

Exhibit 6.1: Summary of Cycling & Shared-Use Facilities

FACILITY TYPE	DESCRIPTION	EXAMPLE
<p>Signed Routes</p> 	<p>Along low volume and low speed roadways, signed bicycle routes can provide comfortable neighbourhood connections. Facilities are identified through bicycle route signage and may incorporate sharrow markings and/or edgelines (defined below).</p>	<ul style="list-style-type: none"> Landmark Court, Sablewood Park to Village Parkway
<p>Advisory Bike Lanes</p>  <p>Source: Town of Newmarket</p>	<p>Along low volume and low speed roadways, advisory bike lanes provide space for cyclists on corridors that are too narrow to accommodate bike lanes and vehicular travel lanes. Advisory bike lanes consist of a dashed edge line with optional pavement markings. Advisory bike lanes require vehicles to operate two-way within a single travel lane by merging into the bike lane to pass oncoming vehicles. These facilities are subject to pilot evaluation within the City of Markham before they are expanded / adopted across the City.</p>	<ul style="list-style-type: none"> No current applications in Markham, subject to pilot evaluation
<p>Bicycle Lanes</p> 	<p>Bike lanes are travel lanes dedicated exclusively for use by cyclists through a combination of pavement markings and signage. Parking is not permitted in bike lanes.</p>	<ul style="list-style-type: none"> Copper Creek, Box Grove Bypass to Donald Cousens Parkway

FACILITY TYPE	DESCRIPTION	EXAMPLE
<p>Buffered Bicycle Lanes & Protected Bicycle Lanes</p> 	<p>Buffered bike lanes are similar to conventional bike lanes but incorporate a painted buffer. Additional physical elements like bollards or rubber curbing may be added to improve the comfort of the facility along busier roads and create protected bike lanes.</p>	<ul style="list-style-type: none"> Highway 7, west of Town Centre Boulevard
<p>Cycle Tracks</p> 	<p>Cycle tracks are enhanced cycling facilities that provide some form of permanent barrier protection between cyclists and moving cars – typically a bevelled, rolled or barrier curb.</p>	<ul style="list-style-type: none"> Highway 7, east of Town Centre Boulevard
<p>Multi-use Paths</p> 	<p>Boulevard multi-use paths are located alongside a roadway, separated from the road by a vertical curb and street buffer. Both pedestrians and cyclists can use these facilities. In Markham, these facilities are conventionally constructed out of concrete.</p>	<ul style="list-style-type: none"> Markham Road, Major Mackenzie to north of 16th Avenue (West side)
<p>Off-Road Trails</p> 	<p>Off-road trails are shared use facilities typically passing through parklands or open space. Depending on trail context, there are different surface materials, widths and design characteristics which support various users (i.e. pedestrian-only, multi-use, etc.). Greenway trails are a special low-impact trail type within the City's greenway corridors. Refer to the City's Design Guidelines for Separated Cycling Facilities, Multi-use Paths & Trails for additional details.</p>	<ul style="list-style-type: none"> Rouge Valley Trail

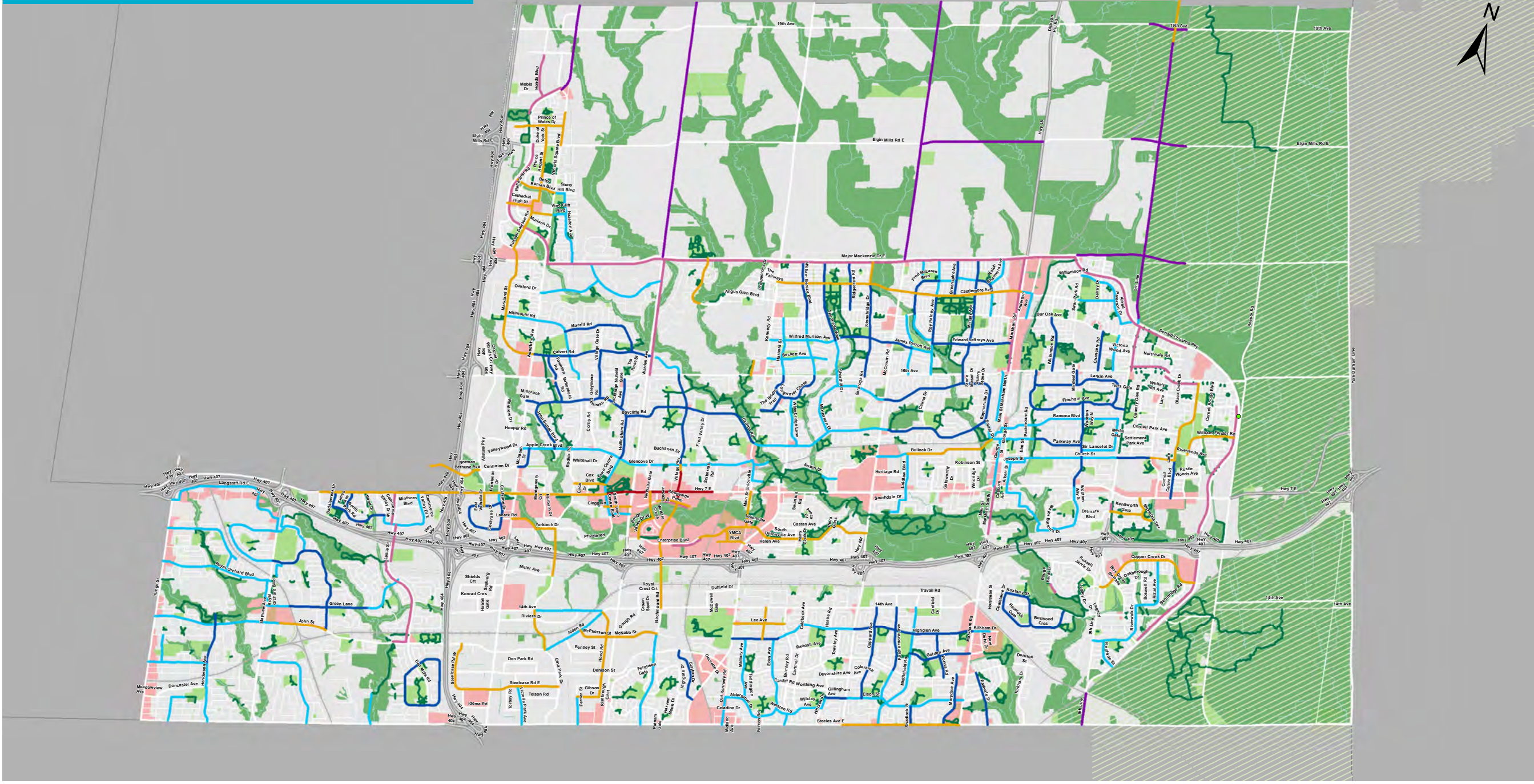
FACILITY TYPE	DESCRIPTION	EXAMPLE
<p>Paved Shoulders</p> 	<p>Along roads with a rural cross-section, a paved shoulder may be designated for use by cyclists (similarly to a bicycle lane on an urban roadway).</p>	<ul style="list-style-type: none"> Major Mackenzie, East of Donald Cousens Parkway
OTHER FACILITIES	DESCRIPTION	
<p>Edgelines / Urban Shoulders</p>	<p>Urban shoulders are painted lines, or “edge lines” applied primarily to calm traffic and slow speeds along two-lane residential roads. Since parking is permitted within these facilities, they are not considered cycling facilities, but may be used by cyclists when not occupied by parked cars.</p>	

Markham has several physical barriers that restrict the active transportation network, including 400-series highways, rail corridors, and various watercourses. Markham’s existing active transportation network provides access over most major barriers using a variety of facility types, but some gaps remain in the network that can make travelling using active transportation difficult.

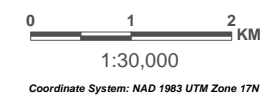
The following provides a summary of recent and on-going improvements to the network to enhance connectivity and overcome these barriers:

- **John Street Multi-use Path** – a proposed connection from Leslie Street to Rodick Road which involves replacing the sidewalk on the North side of John Street with a new multi-use path, providing a crossing of Highway 404 is under construction. The connection to Bayview Street will be reviewed in future;
- **Markham Centre Trail** – trail network through Markham Centre Greenland; smaller sections of trail connected are under construction. The Environmental Assessment process began in 2020 and detailed design and construction will begin in the following years;
- **Copper Creek Drive Road Diet** – A lane reconfiguration to provide buffered bike lanes and a centre turning lane was completed in 2021. A new pedestrian crossover (PXO) was also added. Two additional crossovers on Copper Creek are currently being designed and will be implemented by end of 2022.; and
- **Rouge Valley Trail** – the five-phase project involves building 10km of off-road trail from 16th Avenue and Kennedy Road to Bob Hunter Memorial Park. The majority of the trail is completed. The remaining section, Phase 4B, is anticipated to start design in 2022.

Existing Cycling & Trails Network



- Existing Cycling Network**
- Bike Lane
 - Cycle Track
 - Multi-Use Path or Trail
 - Paved Shoulder
 - Shared Roadway with Urban Shoulder
 - Shared Roadway
 - Trail
 - Watercourse
 - - - Utility Line
 - + + + Rail Line
 - Highway / Freeway
 - Arterial or Collector Road
 - - - Local Road
 - Park
 - ▨ Rouge National Urban Park
 - Greenway System
 - Waterbody
 - Mixed Use and Commercial Areas



6.2. STRATEGIES & RECOMMENDATIONS

Several strategies and recommendations have been developed to help prioritize and guide improvements to Markham's cycling and trails network. These strategies are intended to enhance the existing cycling network, help create a connected network in the short-term, and work towards a long-term network with City-wide connectivity.

These strategies are described in more detail in the subsequent sections. Note that recommendations related to programming and education strategies for encouraging cycling are included in Section 7.0.

6.2.1. Upgrade the Existing Network

In order to ensure a consistent, high-quality network, a number of upgrades need to be made to Markham's existing active transportation facilities. This includes improvements to existing recreational trails, multi-use paths, on- and off-road cycling facilities, and intersections and crossings. These upgrades consist primarily of low-cost solutions which will significantly improve the network once implemented. In some cases, upgrades are more significant and may require a phased approach. These upgrades can be loosely categorized into improvements along corridors and improvements at intersections.

CORRIDOR IMPROVEMENTS

A number of opportunities to upgrade the existing network along corridors have been identified such as improving wayfinding and signage, providing additional cycling facilities throughout the cycling network, and introducing traffic control measures. In some cases, the existing cycling facility does not reflect the roadway context and so a new implementation strategy to provide cycling facilities has been identified.

More detailed descriptions of strategies identified to improve the existing network are provided in Exhibit 6.3 below.

Exhibit 6.3: Summary of Existing Network Upgrade Categories

EXISTING FACILITY CLASS	UPGRADE STRATEGY	DESCRIPTION & RATIONALE	ANTICIPATED IMPLEMENTATION TIMEFRAME
Shared Roadway	Upgrade Existing Shared Roadway with Improved Pavement Markings & Signage	Along corridors where a shared roadway is appropriate given the speed and volume of traffic, inexpensive upgrades can still provide an enhanced cycling facility such as providing wayfinding sharrows and signage and/or investigating advisory bike lanes.	Short-term
Shared Roadway	Upgrade Existing Shared Roadway with Edgelines to Bike Lanes	Along corridors with existing urban shoulders or edgelines, formalizing the edgeline specifically for use by bicycles (i.e. restricting parking) can be an important step in formalizing and improving consistency throughout a network. Additional discussion on edgeline upgrades follows this table.	Phased Implementation Short & Medium Term
Shared Roadway	Add Bike Lanes / Buffered Bike Lanes to Existing Shared Roadway	Along corridors where a shared roadway is inappropriate given the speed and volume of traffic, or where space along the roadway allows for higher-order cycling facilities, an inexpensive upgrade is retrofitting bike lanes along these corridors.	Short-Term
Shared Roadway	Undertake Road Diet Along a Multi- Lane Road to Provide Conventional, Buffered or Protected Bike Lanes	Along multi-lane corridors where a shared roadway is inappropriate given the speed and volume of traffic, the implementation of road diets can be a short-term and cost-effective strategy to help create a network of protected bike lanes. Consideration has been given to the feasibility of road diets along the corridors identified based on thresholds and guidance in the FHWA Road Diet Informational Guide, although more detailed traffic operational review would be anticipated prior to implementation.	Short-Term / Medium-Term

EXISTING FACILITY CLASS	UPGRADE STRATEGY	DESCRIPTION & RATIONALE	ANTICIPATED IMPLEMENTATION TIMEFRAME
Shared Roadway	Replace Existing Shared Roadway with Separated Cycling Facility (In-Boulevard)	Along corridors where a shared roadway is inappropriate given the speed and volume of traffic but traffic volumes are not supportive of road diets, the construction of cycle tracks or multi-use paths is necessary to create a high-quality facility.	Medium-Long Term
Designated Cycling Facility	Upgrade Existing Bike Lanes to Buffered or Protected Bike Lanes	In some cases, existing corridors with bike lanes can be upgraded with the addition of painted buffers and/or bollards, planters or parking stops to create protected bike lanes just by narrowing existing travel lanes or by implementing road diets.	Short-Term
Separated Cycling Facility	Add Multi-Use Path on the Opposite Side of the Street	Along corridors with existing multi-use paths on one side of the street and destinations on both sides, it is desirable to investigate opportunities to add additional cycling and pedestrian facilities on the opposite of street (either a multi-use path or cycle track and sidewalk depending on the land use context).	Medium-Long Term



One of the more challenging upgrade strategies noted in this review involves the conversion of existing “edgelines” or “urban shoulders” to formalized bike lanes. Urban shoulders are existing painted edgelines along roads that are not formally designated or restricted for use by cyclists. As an interim strategy, urban shoulders help to calm traffic by narrowing travel lanes to help moderate travel speeds. Allocating space for urban shoulders provides opportunities to designate bike lanes on these sections of roadway as a future upgrade. These facilities largely exist along urban collector or local roadways in residential areas, where access to on-street parking may or may not be in high demand, based on the characteristics of the neighbourhood. For the upgrade and conversions of edgelines, it is recommended that a strategic approach be followed, considering priority links within the cycling network. A framework for a potential review process for the conversion of edgelines has been developed (refer to Exhibit 6.4) and will be further refined by City staff.

Exhibit 6.4: Draft Framework for Upgrading Edgelines to Bike Lanes along Key Corridors

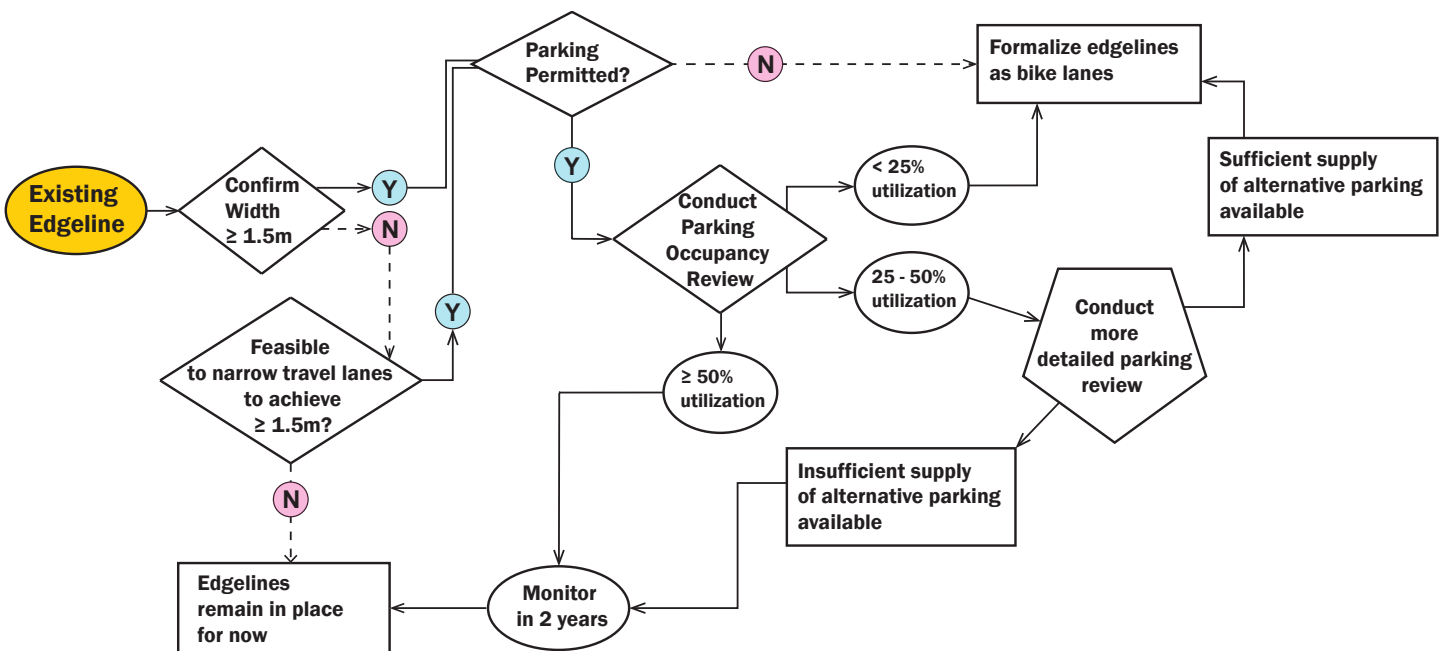
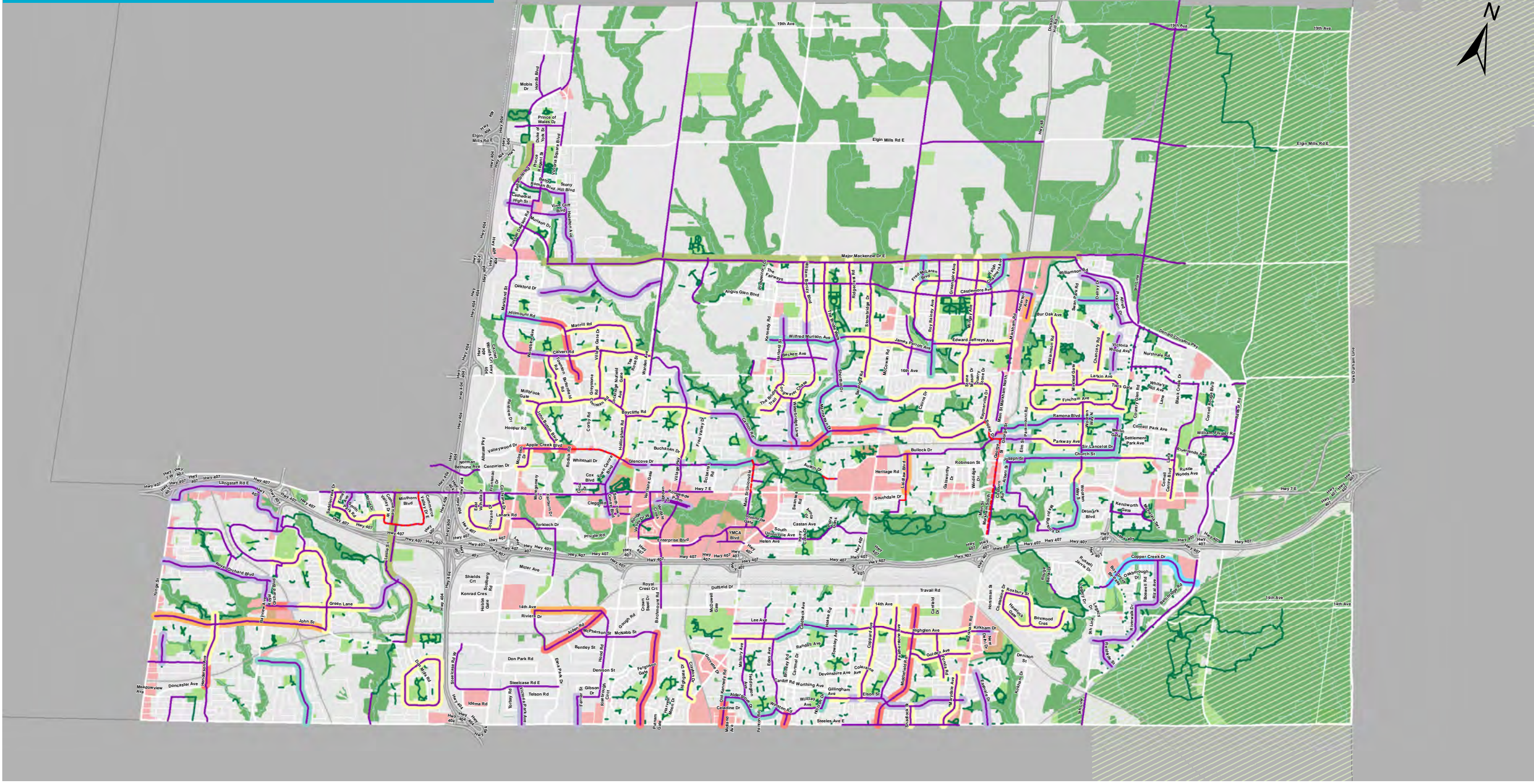


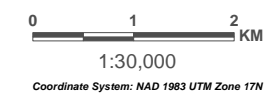
Exhibit 6.5 highlights the various locations and types of network upgrades that were identified above along specific network corridors.

C1. Implement linear upgrades to existing cycling facilities to enhance pavement markings, signage and overall comfort.

Existing Cycling Network Upgrades



- | | | |
|---|--|--|
| <p>Existing Cycling Network</p> <ul style="list-style-type: none"> — Existing Cycling Network — Trail | <p>Proposed Cycling Network</p> <ul style="list-style-type: none"> — Upgrade Existing Shared Roadway with Improved Pavement Markings & Signage — Upgrade Existing Shared Roadway with Edgelines to Bike Lanes — Add Bike Lanes / Buffered Bike Lanes to Existing Shared Roadway — Undertake Road Diet Along a Multi-Lane Road to Provide Conventional, Buffered or Protected Bike Lanes — Replace Existing Shared Roadway with Separated Cycling Facility (In-Boulevard) - - - Desired Connection - No Upgrades Possible at this Time · · · Add Multi-Use Path on the Opposite Side of the Street · · · Upgrade Existing Bike Lanes to Buffered or Protected Bike Lanes | <ul style="list-style-type: none"> — Watercourse - - - Utility Line - - - Rail Line - - - Highway / Freeway - - - Arterial or Collector Road - - - Local Road ■ Park ■ Rouge National Urban Park ■ Greenway System ■ Waterbody ■ Mixed Use and Commercial Areas |
|---|--|--|

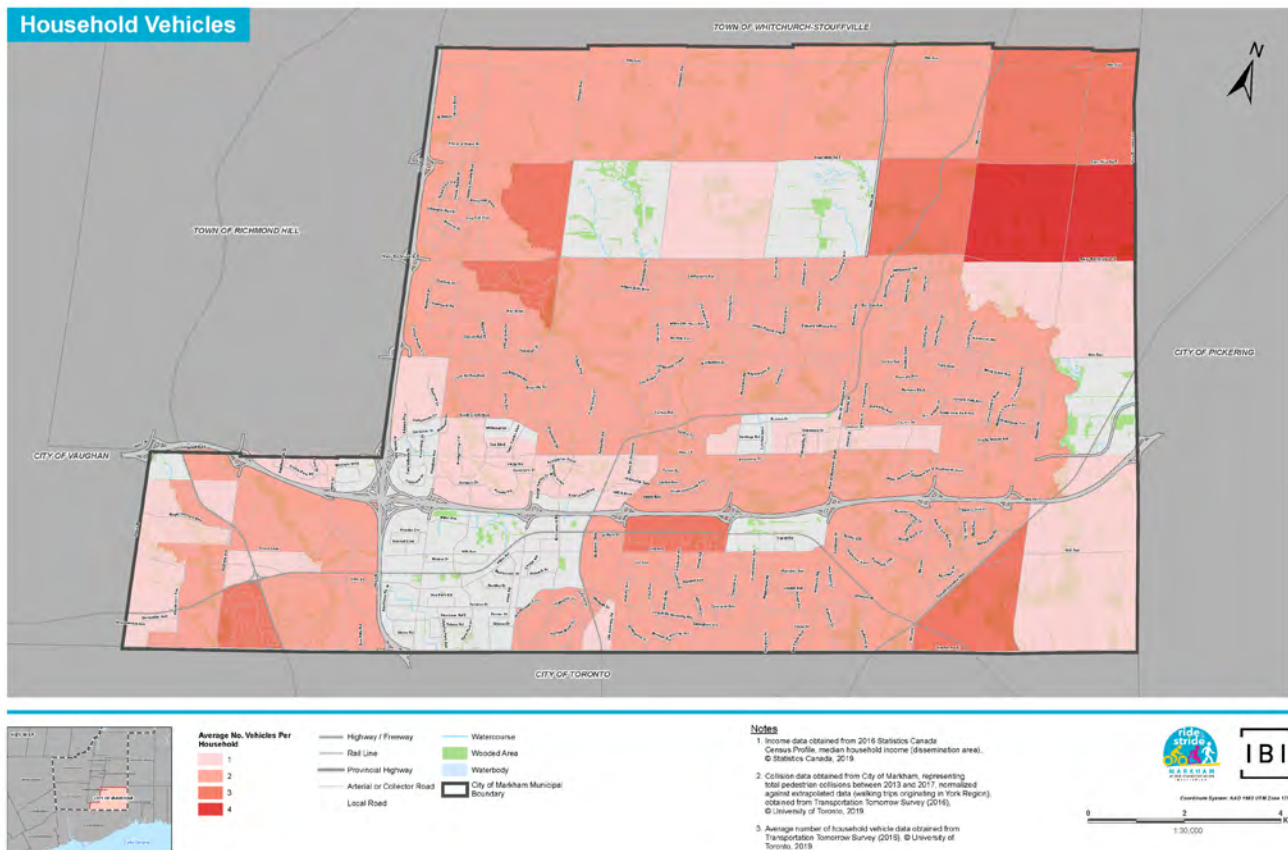


Balancing Parking Demand and Cycling Facilities

Exhibit 6.6 illustrates average household car ownership by neighbourhood. Many of the cycling corridor upgrades identified along local or minor collector roads involve converting established edge lines to designated bicycle lanes, requiring the restriction of parking.

While the need for on-street parking will be reviewed on a corridor basis prior to implementation, it is important to consider parking demand and parking supply at a City-wide level. With average car ownership at 1.77 cars / households, vehicle ownership in both Markham and York Region decreasing since 2001, and many neighbourhoods consisting of single family homes with double driveways, demand for on-street parking must be carefully evaluated against the safety and comfort of cyclists.

Exhibit 6.6: Household Car Ownership by Neighbourhood





Since 2015, there is a decreasing trend in the number of cyclist collisions. The average number of cyclist injury collisions is 23 per year, with the highest concentration of collisions occurring on the Denison Street Corridor. 45% of cyclist collisions occur at signalized intersections with most occurring in the summer and fall months during the AM peak period.

City of Markham Traffic Safety Audit, 2014-2018

In addition to improvements along corridors, many existing cycling facilities include gaps at or on approaches to intersections. Many municipalities, including the City of Markham, retrofit on-street bike lanes or “urban shoulders” (edgelines) onto existing roads but end up with gaps in the facilities usually about 50 metres or thereabouts in the approach to “major” intersections due to the need to accommodate turn lanes. Examples of these types of gaps exist City-wide, including at: Ninth Line and Donald Cousens Parkway - north leg, Hwy 7 and Birchmount Rd - south leg and Hwy 7 and Main St. Unionville - south leg.

Unfortunately, the approaches to intersections and the crossing of the same intersections are where cyclists (and pedestrians) are most vulnerable to vehicular traffic.

Through the City’s on-going Road Safety Audit and upcoming Road Safety Plan, these gaps should be identified and documented with a corresponding strategy to address these gaps.

Such strategies may include:

- Narrowing lane widths to accommodate cycling facility;
- Removing turn lanes to accommodate cycling facility;
- Implementing localized widening to accommodate the cycling facility; or
- Implementing localized widening to accommodate the cycling facilities and providing a higher quality intersection treatment such as protected intersections (refer to Section 8.2).

C2. Review and identify intersection upgrades to existing cycling facilities to enhance pavement markings & signage, provide continuity through intersections and improve the ease of crossings.

6.2.2. Create a Short-Term Priority Network

To help prioritize and guide the short-term development of the cycling network, a core network of cycling facilities has been identified (see Exhibit 6.7). This network includes existing and proposed multi-use paths as well as low-stress on-road connections consisting primarily of quiet streets and traffic-calmed quiet streets as well as buffered and protected bike lanes.

The priority network also includes Regional roads with proposed separated cycling facilities that are identified for implementation within the 5-year timeframe per the Region's current capital plan. On-going coordination will be needed with the Region as the capital plan is subject to change on an annual basis.

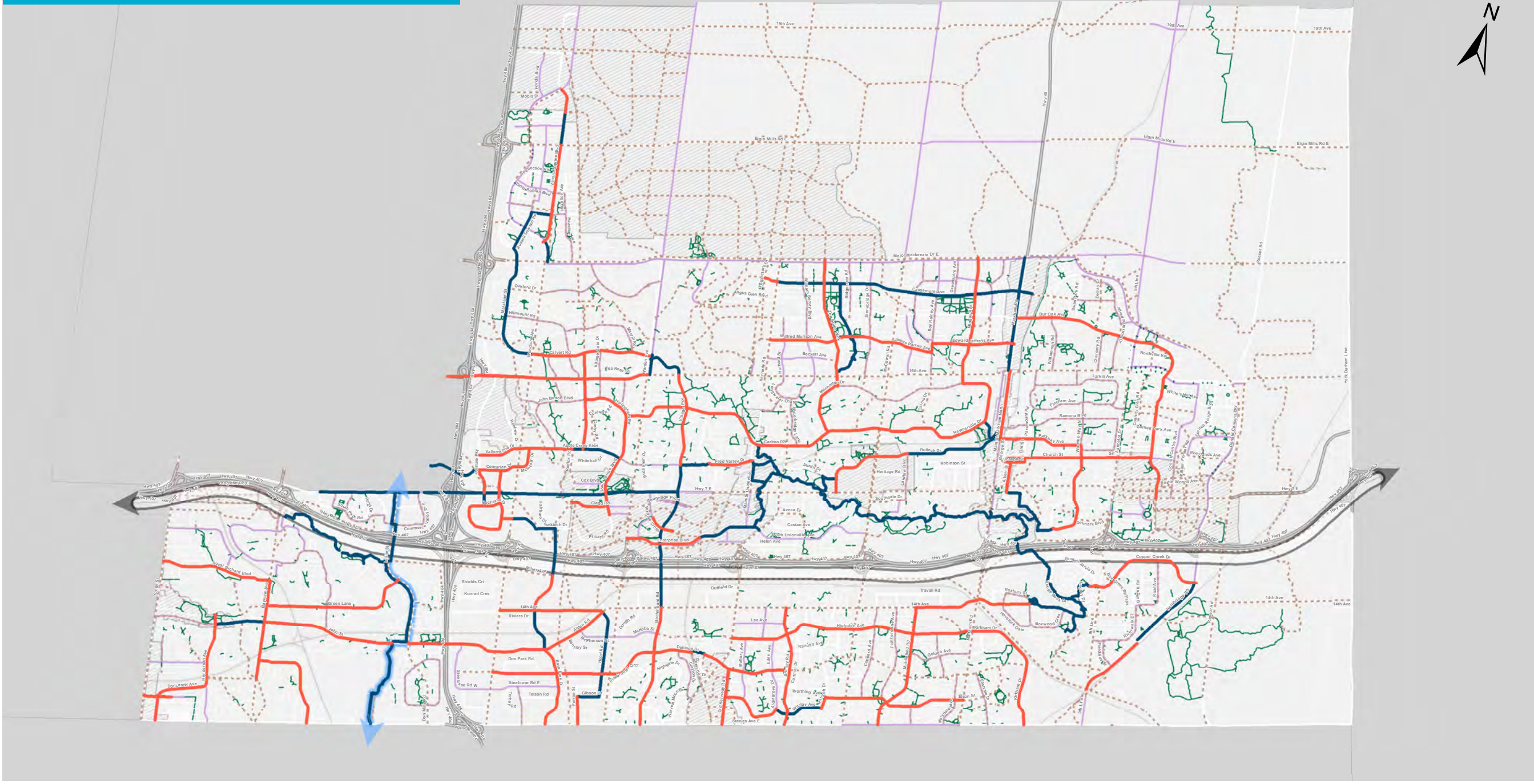
It is intended that this priority network is largely implemented within the next 5-years to significantly improve the connectivity and appeal of the cycling network over the short-term horizon. In some cases, segments may not be achieved within the short-term time frames due to constraints emerging as the project progresses from the planning through design stages. In these cases, a network review should be completed to identify any alternative route or corridor to supplement the link, as a core tenet of the priority network is ensuring City-wide continuity.

Additional information on the proposed implementation strategy along each segment of the priority network is included in the Short-Term Implementation Plan.

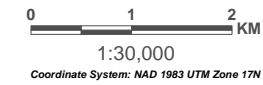
C3. Implement cycling facilities along the priority network within a 5-year horizon to significantly improve the connectivity and appeal of the cycling network over the short-term horizon.



Priority Cycling & Trails Network



- Proposed Priority Network
- Existing Priority Network
- Existing Cycling Network
- Proposed Cycling Network
- Existing Trail
- Lake to Lake Route
- Proposed South York Greenway Cycling & Pedestrian Corridor
- Highway / Freeway
- Arterial or Collector Road
- Local Road
- Watercourse
- Rail Line
- Waterbody
- Details of Cycling Network Subject to Secondary Plans



Road diets are an important implementation strategy in improving multi-modal community benefits and are broadly defined as a re-organization of the existing road space without significant civil works, which reduces the overall cost and schedule needed to implement cycling facilities. Road diets can include narrowing lanes or reducing the number of travel lanes to promote complete streets which prioritize active modes of transportation like cycling and ensure safer roadways for all users.

The most common road diet is the transformation of a four-lane street (with two vehicular lanes in each direction) to a three lane street (with one vehicular lane in each direction and a shared centre two-way left turning lane). It is also possible to maintain the existing number of lanes on a street through a narrowing of the driving lanes in order to add other uses and increase the multi-mobility of the street.

The benefits of road diets for active transportation are clear as they provide an easy, low-cost way to provide cycling facilities (including protected bike lanes). However, road diets have benefits for all road users, including drivers:

- ✔ A traditional four lane to three lane road diet can potentially improve traffic flow, particularly where there are a high number of driveways and left turns are common. The two-way centre turn lane enables left turning drivers to move out of the way of through traffic when completing a left turn. Real world case studies have shown that travel time increases have been minimal on streets that meet the criteria for road diets. Side street delays at unsignalized intersections can also be reduced due to the shorter crossing distance.
- ✔ The same case studies also showed decreased rates of collisions and decreased collision severity. Safety improvements are a key benefit of road diets. The two-way centre turn lane eliminates the need for through traffic to change lanes to avoid left turning traffic (a potential conflict point) and reduces the number of vehicle lanes that left-turning vehicles must cross. These improvements are in addition to the benefits of separating cycling and vehicular traffic.



6.2.3. Pursue a Long-Term Network Vision

Creating a vision for Markham’s ultimate cycling and trails network is important in guiding the long-term capital planning process and ensuring that any development meets the objectives of the ATMP and the long-term network. The ATMP envisions a welcoming, safe, and connected cycling network which includes multi-use trails, separated bike lanes and shared routes. The ultimate cycling network will prioritize comfort and accessibility and promote users of all ages and abilities to shift to more active modes of transportation, like cycling.

C4. Advance projects towards completion of the ultimate cycling network plan, including the bundling of cycling facilities with new development, capital projects and standalone interventions.

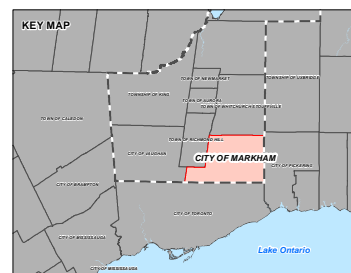
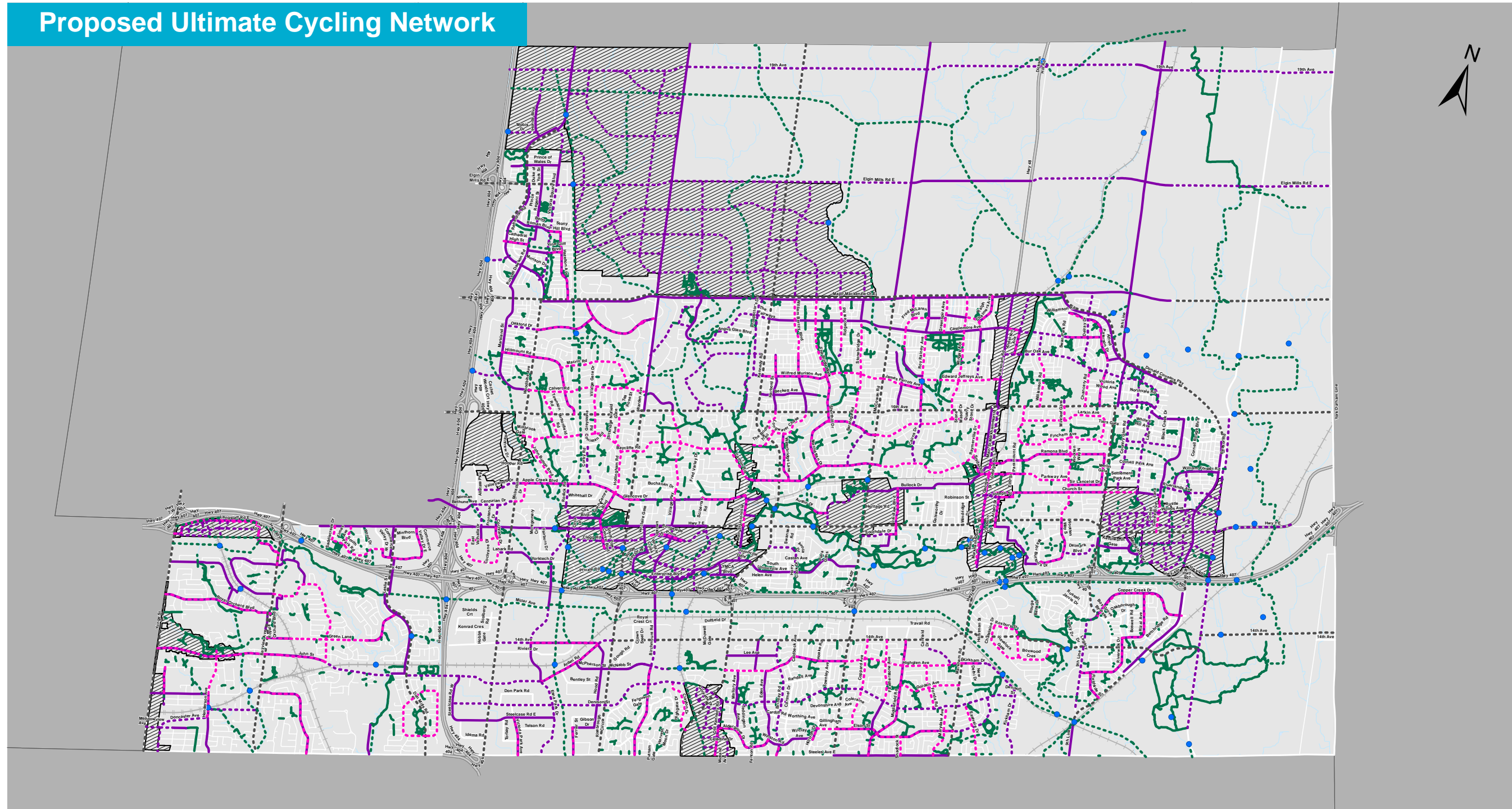
Various cycling facilities are envisioned for the ultimate cycling facility, with an increasing emphasis on separated cycling infrastructure such as cycle tracks and protected bike lanes. Exhibit 6 8 provides a summary of the ultimate cycling network lengths by facility type, including links along Regional roads. Exhibit 6 9 illustrates the ultimate cycling network by facility type.

Note that these facility types may evolve as projects move into feasibility and design phases. For off-road trails, it is important that a corresponding trail class is reviewed and assigned to drive the corresponding design criteria. Refer to the City’s **Design Guidelines for Separated Cycling Facilities, Multi-use Paths & Trails** for additional details on the various classes of off-road trails including primary, secondary and greenway trails. A preliminary trail hierarchy map has been prepared as shown in Exhibit 6 10.

Exhibit 6 8: Summary of Proposed Ultimate Cycling Network by Facility Type

FACILITY TYPE	CITY FACILITIES (KM)	REGIONAL FACILITIES (KM)	TOTAL (KM)
Shared Roadway	18.0	-	18.0
Bike Lane or Buffered Bike Lane	18.5	-	18.5
Paved Shoulder	20.4	-	20.4
Protected Bike Lane or Cycle Track	48.3	93.01	141.3
Boulevard Multi-Use Path	48.4	5.8	54.2
Off-road Trail	171.9	-	171.9
Total	325.5	98.8	424.3

¹Cycle track or multi-use paths (TBD)

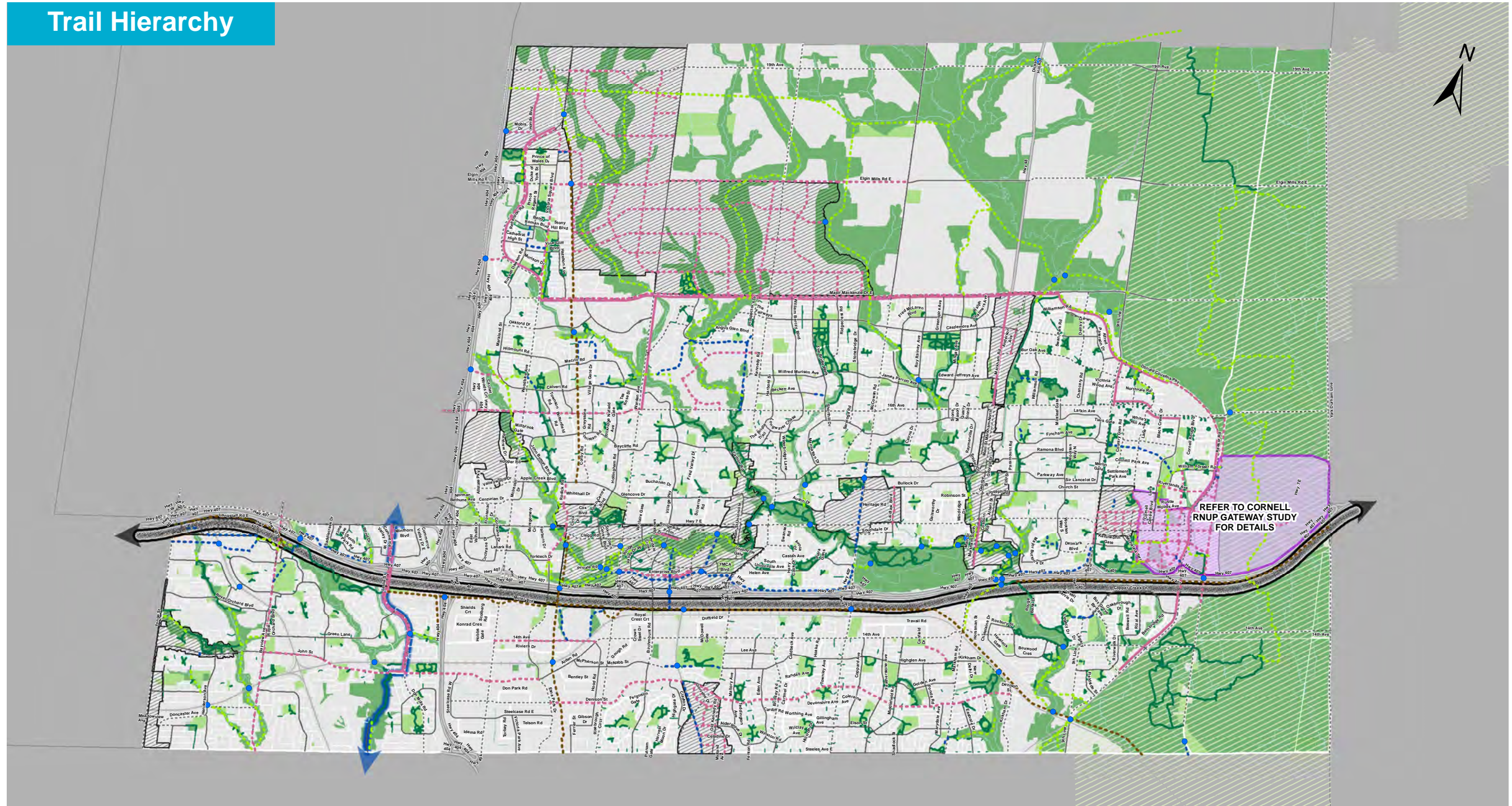


- | Existing Cycling Network | | Proposed Cycling Network | | | |
|--------------------------|---------------------------|--------------------------|---------------------------|--|--|
| | Existing Cycling Facility | | Cycling Facility | | Watercourse |
| | Trail | | Off-road Trail | | Rail Line |
| | | | Desired Connection | | Highway / Freeway |
| | | | Upgrade Existing Facility | | Arterial or Collector Road |
| | | | Proposed Regional Network | | Local Road |
| | | | | | Waterbody |
| | | | | | Details of Cycling Network
Subject to Secondary Plans |

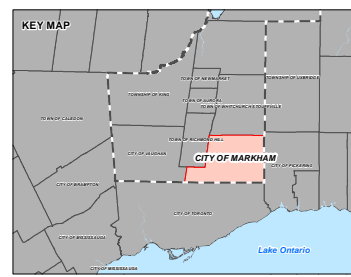
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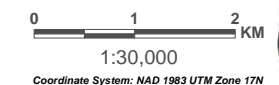
Exhibit 6.10: Trail Hierarchy Map



REFER TO CORNELL
RNUP GATEWAY STUDY
FOR DETAILS

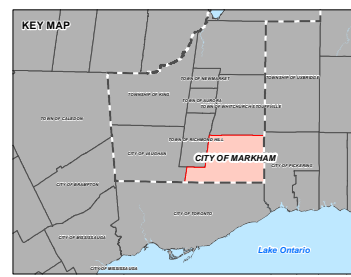
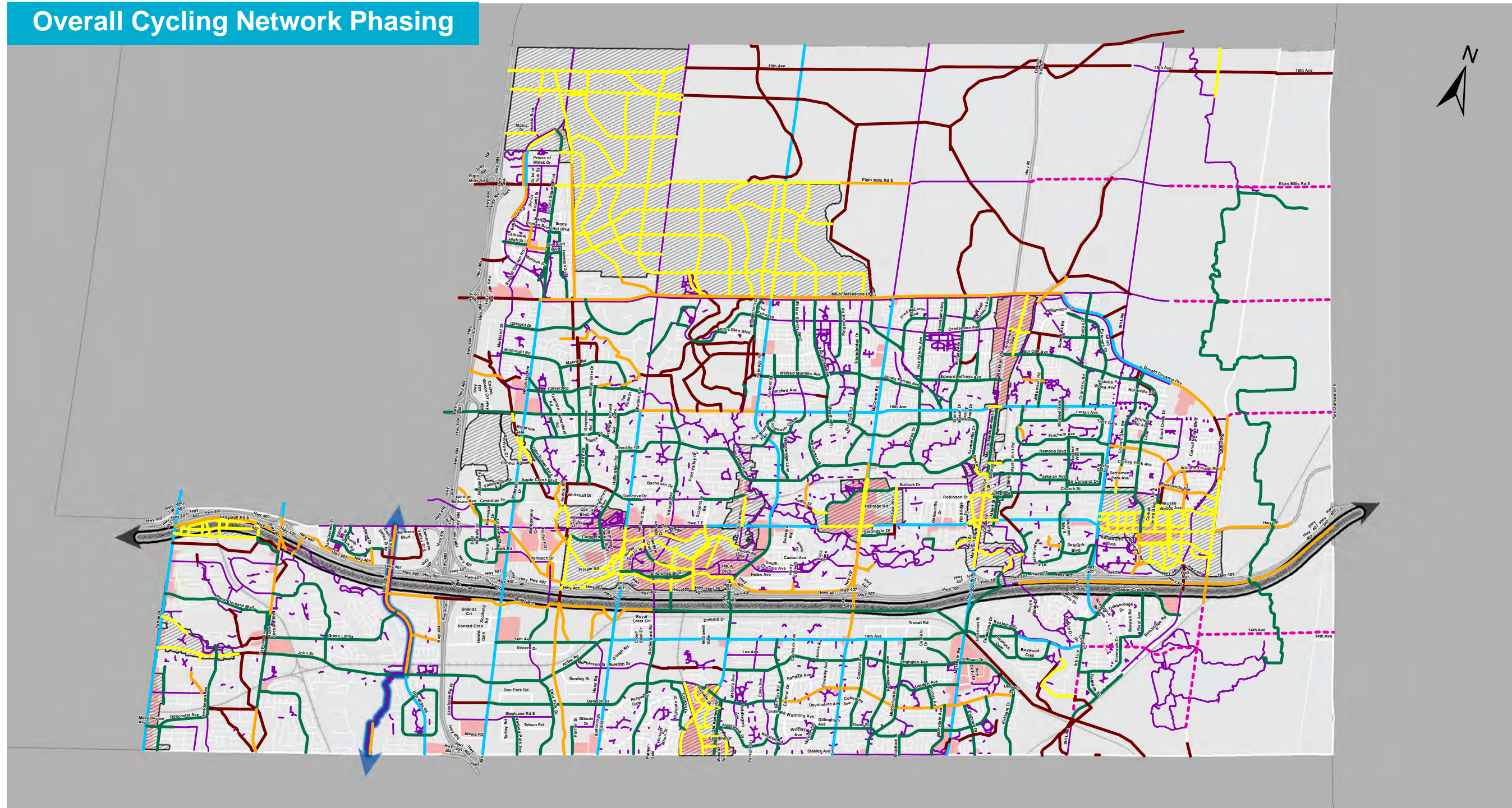


- | | | | | |
|--|---|--|--|---|
| <p>Existing Trail Network</p> <ul style="list-style-type: none"> — Trail — Walkway — Multi-Use Path or Trail — Cycling Facility Along | <p>Proposed Trail Network</p> <ul style="list-style-type: none"> Greenway System Trail Primary Trail Secondary Trail Multi-Use Path Cycling Facility Along | <p>Regionally Significant Routes</p> <ul style="list-style-type: none"> ■ Lake to Lake Route Proposed South York Greenway Cycling & Pedestrian Corridor | <ul style="list-style-type: none"> ● Barrier Crossing — Watercourse — Utility Line — Rail Line — Highway / Freeway Arterial or Collector Road Local Road | <ul style="list-style-type: none"> Cornell Rouge National Urban Park Gateway Study Area Park Rouge National Urban Park Greenway System Waterbody Details of Cycling Network Subject to Secondary Plans |
|--|---|--|--|---|

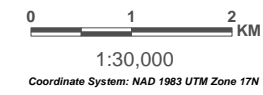


A phasing plan was developed to establish short-, medium-, and long-term development priorities, and highlight existing and potential future network facilities. The phasing plan includes most major arterial roads through Markham and provides important connections to neighbouring municipalities. Preliminary phasing for the cycling network is shown in Exhibit 6 11. The phasing plan is likely to evolve as timing for development and capital projects are refined over time.





Overall Network Phasing	Regionally Significant Routes	Highway / Freeway
— Proposed Short Term Network	■ Lake to Lake Route	 Arterial or Collector Road
— Proposed Medium Term Network	■ Proposed South York Greenway Cycling & Pedestrian Corridor	 Local Road
— Proposed Long Term Network	— Watercourse	 Waterbody
— Timing Driven By Development / Other	— Utility Line	 Mixed Use and Commercial Areas
 Timing Driven By Resurfacing	— Rail Line	 Details of Cycling Network Subject to Secondary Plans
— Regional Timing To Be Determined		
— Existing Network		



6.2.4. Support the Network



In addition to corridor upgrades, various strategies can supplement the infrastructure upgrades along corridors by more broadly creating welcoming environments for cyclists.

Bicycle parking is a critical component of a well-connected and welcoming cycling network. Bicycle parking should be provided at destinations to ensure users have safe and convenient places to secure their bicycle between trips. A summary of important considerations for bicycle parking is provided below.

- Establish long-term and short-term bicycle parking needs to help select the appropriate type of parking or bike storage needs;
- Consider spacing between racks (and other streetscape features) and the public-right-of-way to ensure suitable placement of bicycle parking facilities;
- Provide an appropriate number of spaces based on surrounding development types; and
- Consider additional end-of-trip cycling facilities such as bike repair stands, change and shower facilities, lockers, etc.

While many of these practices are currently followed by the City at their own facilities, a partnership program with businesses can help to expand the adoption of these principles and installation of end-of-trip facilities to commercial destinations. The partnership program may include in-kind support (installation guides, rack supplier recommendations) and/or financial contributions (purchase of racks by the City or installation of the racks by City forces).

Many of the factors noted above (locations for bike parking, spacing of racks etc.) will be considered in a forthcoming **Markham Centre Streetscape Standards for an Enhanced Public Realm**.

C5. Launch a bicycle parking business partnership program, providing support for businesses wishing to provide and install bike parking .

Just as the City of Markham conducts regular traffic counts on roadways, there is a need to regularly measure the volume of cyclists capitalizing on the investment in the cycling network. Bundling the delivery of automatic cycling counters with major capital projects provides an efficient way to improve the data collection capabilities of the City and help provide a full understanding of the usage of individual cycling routes. Higher profile routes could include an informational totem that displays the number of cyclists that day or the volume of cyclists year-to-date.

C6. Bundle the delivery of automatic cycling counters with major capital projects including cycling infrastructure.



7.0

Theme 3: Encouraging & Engaging our Community

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



7.1. CURRENT PRACTICE & CHALLENGES

The City of Markham recognizes the importance of promoting active transportation through outreach programs, special events, and building partnerships with various agencies and organizations. Outreach programs are used to promote and encourage residents to cycle or walk for a larger frequency of trips. Education is a priority of these programs and events to help improve attitudes towards cycling and walking, produce safer conditions for all road users, as well as increase public awareness about the multitude of benefits of active transportation. The City also actively works to develop and maintain partnerships with organizations engaged in similar initiatives.

Some current events and initiatives held in Markham include:



- **Markham Cycling Day:** As York Region’s largest public cycling event, Markham Cycling Day features the Tour de Markham and cycling races for children aged 3 to 10. Hosted annually in September, the Tour de Markham includes three community routes to accommodate different cyclists.



- **Jane’s Walk:** Organized by the Markham Cycling and Pedestrian Advisory Committee, Jane’s Walks offer free, citizen-led walking tours that explore different heritage areas within Markham. This is hosted annually in May.

-
- **Transportation Demand Management:** The City of Markham participates in transportation demand management activities that aim to reduce the number of trips made by single occupancy vehicle. Markham works with Smart Commute Markham-Richmond Hill to encourage staff employed by the City and businesses within Markham to walk, cycle, take transit and carpool.
 - **Active & Sustainable School Travel Planning:** School Travel Planning (STP) is a community-based approach that aims to increase the number of students and adults choosing active and sustainable transportation to get to and from school. A STP pilot program has been initiated at several schools in Markham, with the involvement and support of the City.
 - **Walking & Cycling Materials:** The City has a dedicated section on its website that includes extensive information on walking and cycling, as well as producing and distributing a Trail & Cycling Map every two years.

7.2. STRATEGIES AND RECOMMENDATIONS

A series of actions related to existing, expanded and new programs have been identified and are presented in this chapter in the following service areas:

- Support Active School Travel
- Building a Sense of Community
- Inform, Educate, Engage, Encourage

7.2.1. Support Active School Travel

Investment in encouraging active school travel can reduce the number of cars on the road during peak hours and increase physical activity levels and social interaction for children and their families. The following section outlines programs which the City currently invests in to support active school travel, with recommendations for continuing or expanding these programs.

EXISTING AND EXPANDING PROGRAMS

Active Travel to School

School Travel Planning (STP) is a community-based approach which promotes students and adults to use active and sustainable modes of transportation to get to and from school. Markham has been supportive of this program by actively working with local schools. However, the results from the Metrolinx Report on School Travel in York Region (2018) suggested that additional efforts are necessary to encourage more students to walk or bike to and from schools.

Started in 2018, the City and York Region School Boards have jointly initiated an Active Travel to School Pilot Program with nine participating elementary schools, with support from the provincial government. Early results and encouragement from the students, teachers, parents and local communities indicate broad support for and effectiveness of the pilot.

E1. Expand the Active Travel to School Pilot program to other school locations throughout Markham.



Traffic Garden

A traffic garden is a child-size street model which allows children to experience and learn the rules of the road using a variety of transportation modes and infrastructure such as cars, scooters, bikes, buses, and sidewalks. Traffic gardens are a safe and low-cost intervention which offers children an interactive opportunity to see the road from a number of different modal perspectives, and emphasizes the importance of safety in the transportation system. The Bruce's Mill Safety village in York Region is an excellent community amenity to promote traffic education and encourage active transportation in children and can be leveraged to improve education around road safety for vulnerable road users.

E2. Coordinate with the Bruce's Mill safety village to promote traffic education and encourage active transportation in children.

7.2.2. Build a Sense of Community

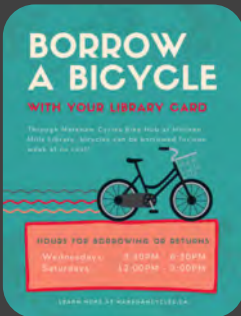
Programs that are focused on community-building help to establish a strong culture of active transportation and help normalize walking and cycling for everyday trips. The following sections identify existing programs, expanded and new programs to help build a sense of community.

EXISTING AND EXPANDING PROGRAMS

Markham Cycles Bike Hub

Markham Cycles is the first community cycling hub in York Region. Initiated in 2019, it offers services, programs, and workshops aimed at establishing a stronger cycling culture in Markham. Some of these services include:

- **Bike Rescue Program** – Provides open lessons in bicycle mechanics by refurbishing donated bicycles that are later given back to the community in working order. The program also offers workshops which cover more specific mechanical issues.
- **Drop-in Bike Repair** – Volunteers guide residents in repairing their own bicycles while providing tools, space, and resources. This free of charge service can help to ensure active transportation modes are affordable for all community members.



- **Group Rides** – Markham Cycles organizes weekly group rides to help build an open and accessible community of active cyclists. Helmets are provided for riders without their own to encourage a variety of participants from all backgrounds and communities.
- **Count Your Carbon** – Teaches participants how to track their transportation behaviour, calculate their production of greenhouse gas emissions, and explore changes that would reduce their impact in order to increase awareness and promote behavioural change.
- **Bike Host** – Newcomers to Canada are matched with a mentor who can help introduce them to the city's cycling culture and events and make them feel more comfortable cycling. Participants are loaned a bike, helmet, and lock for the summer.
- **Bicycle Library** – In partnership with the Markham Public Library, Markham Cycles has developed a bicycle library which allows residents to borrow a bicycle for up to one week using their library card. Tandem, cargo, and electric bikes are currently available to test ride, but are not yet available to take out.
- **Learn to Ride Class** – Bicycle training courses for both children and adults which focus on developing one's sense of comfort and confidence on a bicycle.

Through public consultation over the course of the ATMP, support for the work of Markham Cycles was strong. As a community facility located in a community of high cycling potential (Milliken), there is significant potential to grow the role of Markham Cycles in delivering existing programs and expanding their involvement in other programming initiatives identified within this chapter by providing dedicated municipal funding to this initiative on an on-going basis.

E3. Support and expand the role of Markham Cycles Hub.

Transportation Demand Management Programs

Markham participates in several Transportation Demand Management activities that aim to reduce the number of trips made by single occupancy vehicles. Markham is a funding partner of Smart Commute Markham-Richmond Hill which focusses on working with businesses and employers to encourage active and sustainable commuting to work. Also, the City requests that Transportation Demand Management strategies are implemented for all development applications. Markham also has a full-time Transportation Demand Management Coordinator that oversees programming and initiatives. These initiatives should be continued on an on-going basis.

E4. Continue to support Transportation Demand Management initiatives.

Annual Bike Initiatives

Markham has held bike to work week/day, organized by Smart Commute Markham-Richmond Hill, for the past 12 years. The purpose of bike to work week/day is to promote cycling as both a recreational activity and a viable travel option for commuting to work. It also provides an opportunity for the City to implement additional safety measures, pilot new projects, and encourage employer participation. This is part of a larger Bike Month program, intended to keep a focus on cycling throughout a full month (typically June).

E5. Continue to support the growth of annual bike initiatives.

Jane's Walk

Jane's Walk is an annual global festival in which local organizations co-ordinate citizen-led walking tours throughout their communities focused on observing, reflecting, sharing, and questioning the spaces in which 'everyday life' takes place. It is meant to highlight recreational and utilitarian walking routes and help create a sense of community cohesion and civic leadership.

E6. Expand Markham's support for Jane's walk through facilitating the organization of more walks and promotional materials.

Markham Cycling Day

Markham Cycling Day is an annual day-long event which offers a safe, fun, and educational environment for residents of all ages and abilities to get out and be active on a bicycle. It includes a variety of events for children and adults of all skill-levels and provides an opportunity for the community to come together to support Markham's growing cycling community. As York Region's largest cycling event, there is potential to continue the momentum of Markham Cycling Day and consider a weekly or seasonal Open Streets Program.

E7. Continue to support the growth of Markham Cycling Day and explore the expansion of Markham Cycling Day into a broader open streets program .

NEW PROGRAMS



E8. Explore the creation of a tactical urbanism materials lab and supportive programming such as Park(ing) day and design workshops. In addition, develop a process that facilitates the safe implementation of tactical urbanism installations by residents.

Tactical Urbanism Program

Tactical urbanism is a way to improve the quality of the public realm by implementing creative ideas into public spaces which help to encourage walking and cycling. This is a typical grassroots approach, driven by direct involvement and engagement of community members, but can also be institutionalized. Tactical urbanism programs can be supported through programming such as co-ordinating a Park(ing) Day or providing workshops, as well as providing a materials library which offers basic resources and tools for community members to safely implement their ideas. This can provide an excellent opportunity to engage residents in the city-building process and promote active transportation.

Ongoing Lecture Series

Creating discussion surrounding active transportation is an important aspect of establishing a strong active transportation culture. Walking, cycling, and urbanism themed lecture series, movie nights, and events can be an excellent way to raise awareness and educate communities about the local and international shift towards active transportation. It also provides a welcoming platform for residents to become familiar with existing programming, and may inspire residents to develop their own initiatives.

E9. Support the development of an active transportation lecture/webinar series.

7.2.3. Inform, Educate, Engage, Encourage

Investing in programs which help to educate, engage, and encourage community members to use active methods of transportation are important for reaching audiences who may be unfamiliar with existing facilities, programs and services, and traffic rules and regulations. These programs ensure that all community members are aware of the active transportation facilities and services that are available to them. Investing in these programs are critical in gaining support for active transportation and ensuring that individuals feel safe and comfortable using the City's active transportation facilities, regardless of age and ability. A summary of existing programs which focus on education, engagement, and encouragement are listed below.

EXISTING AND EXPANDING PROGRAMS



Trail & Cycling Map and App

The City provides information on walking and cycling on their website, and updates and distributes a cycling map every two years. The City's cycling map supplements materials provided at the Regional level including a York Region Trail Guide, York Region Cycling Map, and York Region Cycling Handbook. The City also provides promotional items at public events and programs which support residents who currently use or would like to use active transportation. The City should continue to ensure maps are updated frequently and work with the Region to further enhance access to bike maps by developing an app-based map which can be used alongside the physical copy.

E10. Continue to support the delivery of cycling maps and explore the development of an app-based map. Coordinate with third party trip planning apps (e.g. Google) to ensure up to date route information.

Bike 'n Ride Service

Combining cycling and public transit is a great way to encourage residents to incorporate active transportation into longer distance trips. YRT/Viva and GO Transit currently run Bike 'n Ride programs where cyclists may mount their bikes on front-loading bus racks while they ride to their next destination. However, it is important to recognize that loading a bicycle onto a bus can be a daunting task for many people. One strategy to reduce this barrier is to include demo racks at bus stations to provide an opportunity for people to get comfortable mounting their bike without any added pressure. The City could also provide times where staff are present to help instruct people and answer any questions. The Bike 'n Ride program may also be expanded to include free rides for cyclists looking to safely cross pre-identified challenging stretches of high stress roadways. For example, a “Highway Hopper” program, modelled after the City of Hamilton’s Mountain Climber program, would offer free rides for cyclists at the stop on either side of the major highways running throughout the City so that cyclists are not required to bike across stressful highway on-ramps and off-ramps.

E11. Continue to support the Bike n’ Ride service, coordinate with VIVA to deliver practice opportunities for residents, and explore the provision of a free barrier crossing service.

Anti-Bike Theft App

York Region already works to respond to and prevent bike theft. However in recent years, several app-based bike registry services have become available, such as 529 Garage, which focus on preventing bike theft by working with local law enforcement and the public to crowd source bicycle registration and recovery. Users are provided with a “shield” sticker to put on their bike which helps to deter theft and provides an increased sense of safety and comfort for cyclists. Partnering with these apps also allows the City to respond efficiently and reduce barriers to cycling.

E12. Support York Regional Police in exploring the expansion of their online bike registry program to include an app-based approach.

Cycling and Pedestrian Safety and Awareness Program (CPSAP)

The City currently offers a variety of information related to pedestrian and cycling safety. However, establishing a formalized Cycling and Pedestrian Safety and Awareness Program (CPSAP) would allow the City to match policy with Markham’s vision for the future. A CPSAP program would provide a comprehensive set of resources, including communication strategies, programs and webinars, workshops, training etc. related to safe walking and cycling, driver education related to vulnerable road user safety and new infrastructure interventions (for example, pedestrian crossovers). The program can also address interactions between pathway users and pathway etiquette, including proper behaviours for those on new mobility forms such as e-scooters and e-bikes, as these are introduced more regularly to the City’s network. This program should create a foundation for further

development of pedestrian and cycling policy, expanded investment in active transportation infrastructure, and increased awareness of walking and cycling as important modes of transportation in Markham.

E13. Establish a Cycling and Pedestrian Safety and Awareness Program (CPSAP).

NEW PROGRAMS



Bicycle Account / State of Conditions Report

Developing a State of Conditions Report is an excellent way for the City measure and report on meeting its active transportation goals. It also provides an opportunity for the public to provide feedback on existing conditions and highlights gaps in existing infrastructure and policy which can help guide future decision-making. The Report may include information such as mode share, funding, travel time, facility conditions, collision data, and public survey results. Another important indicator is injuries and deaths of vulnerable users which can be explored and reported within this report. One of the key challenges with a state of cycling report is that there are currently limited procedures in place to collect cycling related data in Markham. Accordingly, it is recommended that the City develop a cycling data collection program to be able to produce a state of cycling report on a five-year basis. As part of the State of Cycling Report, consideration should be given to completing a bicycle level-of-traffic stress analysis which investigates the existing cycling network based on comfort of different cyclist profiles.



E14. Develop a cycling data collection program to support a “State of Cycling Report”.

Wayfinding Strategy

Wayfinding assists cyclists and pedestrians by navigating users along trails, walkways, or bikeways to points of interest and between destinations. In addition to providing information, wayfinding strategies can also support placemaking and enrich the public realm. The City of Markham should adopt the Sustainable Mobility Wayfinding Guidelines from York Region, incorporate any modifications to reflect local context, and apply them to future walking and cycling improvement projects.

The framework of the York Region strategy is designed to supplement, rather than replace, existing wayfinding programs such as those for the Rouge National Urban Park trail network or the Villages and Valley Walking and Cycling Loop. The wayfinding strategy will strive to

create a cohesive active transportation signage network with a consistent way finding approach, taking into account and building upon existing wayfinding in the City.

E15. Adopt the York Region Sustainable Mobility Wayfinding Guidelines and identify pilot projects for wayfinding implementation.

Active Transportation Project Communications Strategy

The ATMP includes a significant emphasis on implementing lane reconfigurations and road diets to provide improved pedestrian and cycling amenities. Educational and engagement materials should be developed to illustrate community benefits of road diets and highlight their typical minimal impact on overall traffic operations. Some of the benefits of road diets that should be highlighted include reducing operating speeds within residential neighbourhoods, improving ease of midblock crossings, providing additional space for greenery in planters, and improving space and amenities for pedestrians and cyclists.



One study found that streets without sidewalks had 2.6 times more pedestrian and automobile collisions than expected based on exposure, while streets with sidewalks on only one side had 1.2 times more pedestrian crashes.

The ATMP also includes a significant emphasis on filling sidewalk gaps along major roadways and along local roads within Pedestrian Priority neighbourhoods. Similarly, it is important that educational materials are prepared to help residents understand the significant safety and community benefits associated with adding sidewalks. The City has developed a sidewalk communication program as part of the sidewalk completion program to help educate and inform community members. Despite the challenges and inconveniences of the construction of new sidewalks, addressing sidewalk gaps is critical to improving safety.

Considering the diverse cross-section of residents in the City of Markham, consideration should be given to education and marketing materials available in a range of formats and languages.

E16. Develop a communications strategy to build resident awareness of complete streets projects, and safety benefits of road diets and infill sidewalk construction.



Bicycle Valet

A Bicycle Valet service allows cyclists to ‘check-in’ their bicycles at a given location where it will be secured until they return to ‘check-out’, similar to a coat-check service. This service is particularly useful at busier events where high volumes of pedestrians and cyclists are expected. These events also provide opportunities for educating residents on the benefits of cycling for more practical

purposes and can help to reduce parking demand by advertising the valet service ahead of time. Since Markham no longer has a bicycle valet service provider, City staff should explore service providers for Markham to acquire its own Bicycle Valet program.

E17. Explore expanding the bicycle parking program to include bike valet services at major events.

Shared Micromobility System

Building upon the findings of York Region’s Evaluation of **Bike Share Program Potential report**, the City should investigate the feasibility of a bike share and/or scooter share system within high-potential areas identified such as Unionville, Mount Joy, and Milliken. A successful bike share system can promote cycling as an efficient way to travel, especially for shorter trips, and can provide connections to transit for first-last kilometre.

Bike share systems can incorporate both traditional pedal bicycles and electric-assist bicycles. The latter launched in Toronto in 2020 as a pilot project within the existing bike share system. Portland’s bike share system went to a 100% e-assist bike fleet, also in 2020. E-assist bikes provide an additional boost of power only while riders are pedalling. This allows for a lower level of effort to be expended and makes it much easier to travel longer distances and up large hills.

The City should consider its rapidly changing landscape when identifying the most appropriate structure for a shared mobility system in Markham, including consideration for the following parameters for a micromobility system. One important consideration is the ownership and operation of the system. The City of Markham would be able to exert a greater deal of control over operations, the placement of stations, and quality of service if it directly owned the program or had a non-profit control it as an intermediary. In many markets where a private owned operation simply would not be sustainable, a subsidized public or non-profit system is the only feasible way to run bike share.

E-scooters are also an important part of a micromobility system. In 2019, 56% of shared micromobility trips in North America were made by e-scooters. E-scooters provide an alternative to the pedal bicycle. Cities typically enter into permit-based arrangements with one or more e-scooter service providers who supply the vehicles and operate the system. This can be operated in parallel with a traditional bike share system.

Benefits of micromobility are numerous. In 2019, 36% of micromobility trips in North America⁶ replaced trips that would have been made by car, either as driver, passenger or using a taxi or ride share service. Micromobility may also act as a gateway to more active transportation for people looking to try cycling for the first time and may allow more casual riders to take select trips by bike or e-scooter without having to buy their own vehicle. Each of the above can contribute to healthier residents and reduced greenhouse gas emissions. Shared micromobility tends to help increase the share of the pie made by active transportation (including e-scooters and e-bikes), enabling a bigger return for the investments made in the active transportation network by the City.

From a user perspective, micromobility enables one-way trips and increased multi-modal flexibility, removes concern over theft or damage to a personal bicycle or e-scooter and the need for secure storage at home, among other conveniences.

It will be important to ensure that any new micromobility systems also incorporate strategies to educate users about proper safety and etiquette when riding e-bikes and e-scooters (see additional discussion under recommendation E14).

E18. Explore Markham's contribution to a local or regional shared micromobility program.

⁶ North American Bikeshare Association Shared Micromobility State of the Industry Report, 2019.





8.0

Theme 4: Evolving Design & Maintenance

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**



8.1. CURRENT PRACTICE & CHALLENGES

The City of Markham regularly considers the needs of pedestrians and cyclists through road reconstruction projects and within new development areas. Several active transportation-specific design guidelines have been developed by the City to date to ensure the high-quality design of active transportation facilities and intersections as well as signage and pavement markings. The following summarizes the City's current active transportation-specific design guidelines:

- Accessibility Design Guidelines (2011)
- Bicycle Facility Selection Guide (2012)
- Multi-use Path Signage and Pavement Marking Guidelines (2016)
- Signage and Pavement Marking Guidelines for On-Road Cycling Facilities (2019)

These design guidelines are supplemented by specific design drawings and standards for active transportation facilities such as the City's standard drawings covering multi-use trails and sidewalks, as well as work in new development areas to identify comprehensive active transportation networks. Despite the existing guidance and practices for implementing cycling facilities, the availability of separated cycling facilities is relatively low City-wide. With significant input from the public and stakeholders about the importance of separated cycling facilities in attracting and encouraging a wide cross-section of users, an emphasis on growing the rate of design and construction for these types of facilities is an important consideration.

York Region also provides many design guidelines which focus on active transportation and inform design implementation with the City of Markham. These guidelines provide insight on facility design, signage and wayfinding, and streetscaping. Their purpose is to promote accessibility, safety, and continuity within active transportation networks. A list of these guidelines is summarized below:

- York Region Pedestrian & Cycling Planning & Design Guidelines (2018)
- Designing for Active Transportation: School Sites Design Guidelines (2017)
- Active Transportation Wayfinding Guidelines (2018)
- Streetscape Policy and Design Guidelines (Various)

As most Regional guidance focuses on separated and off-road cycling facilities from the perspective of Regional roads, many of the design concepts can be adapted and considered for major City roads.

Current maintenance practices within Markham for active transportation are summarized as follows:

- The City maintains walking and cycling facilities within the boulevard along City and Regional roads, and on-road cycling facilities along City roads (as part of normal roadway-clearing operations), while York Region maintains on-road cycling facilities located along Regional roads;

- All sidewalks are plowed within 24 hours of the end of a snowfall when accumulations reach 5cm or more. Priority service is provided according to the adjacent road classification, beginning with sidewalks along arterial and primary roads, followed by secondary and residential sidewalks. Special attention is given to sidewalks near schools and bus stops. Plowing and sanding may take approximately 14 hours to complete;
- York Region Transit is responsible for maintaining all bus stop shelters;
- Markham's Winter Maintenance App will show the progress of road and sidewalk plows in Markham. Residents can watch as snow clearing efforts start with primary roads and then move to secondary roads, local roads, and sidewalks to help keep Markham moving.

Throughout the course of the ATMP, many comments related to maintenance were provided, including a particular emphasis on winter maintenance of pathways and trails. Public support has historically been shown to be high in support of pathway maintenance, with 58% of surveyed residents supportive of a tax increase to plow pathways according to a 2019 public opinion survey.

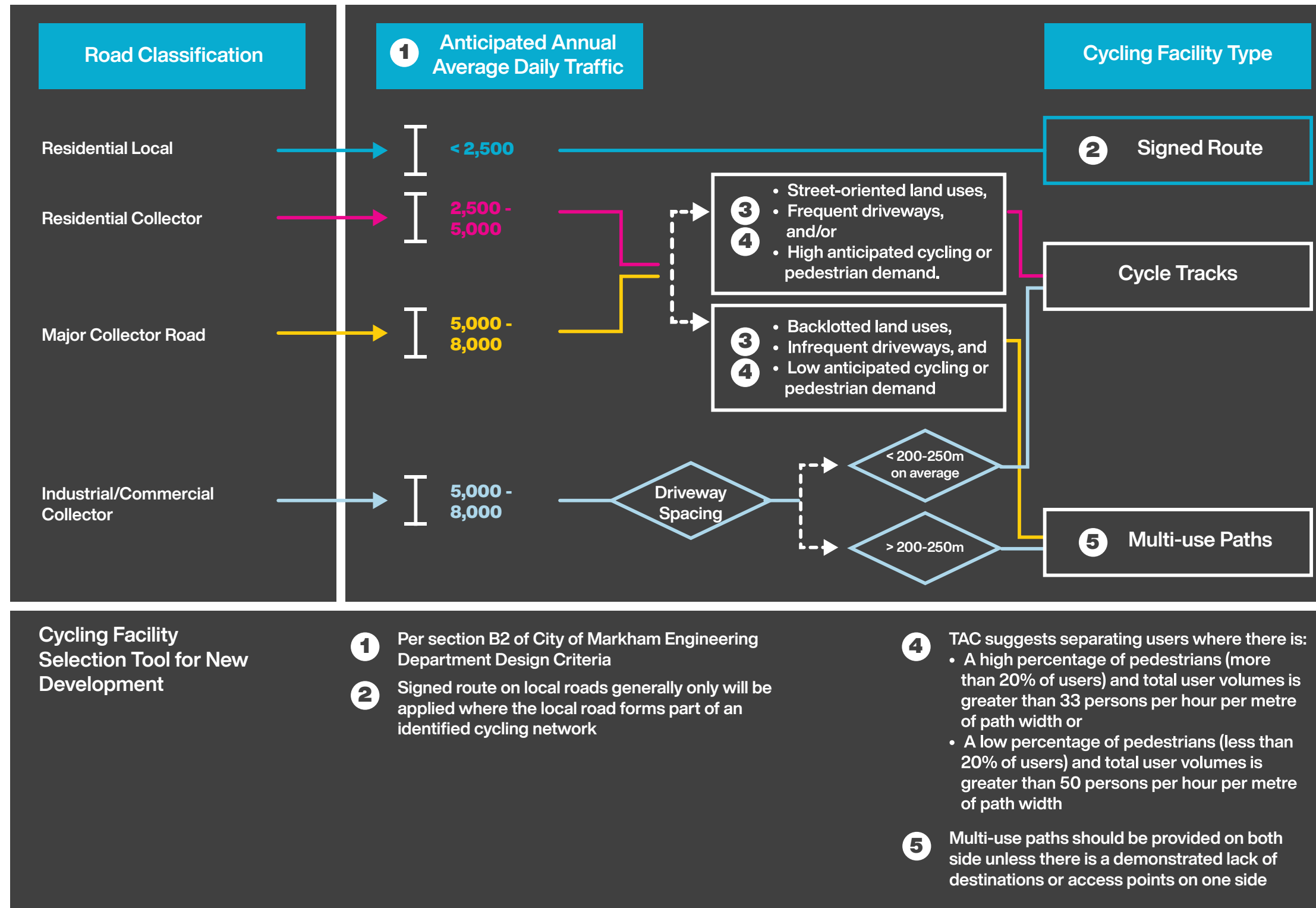
8.2. STRATEGIES & RECOMMENDATIONS

8.2.1. Evolve Facility Selection & Design Practices

Best practices in active transportation infrastructure design are continuously evolving. Higher-order facilities are becoming more commonplace as the focus in cycling facility selection and design shifts towards emphasizing safe mobility for people of all ages and abilities.

The construction of new roads and communities provides an opportunity to build high-quality pedestrian and cycling infrastructure from the outset, avoiding the need for future retrofit projects. The ATMP provides a cycling facility selection tool to guide new development areas in pursuing high-quality cycling facilities (refer to Exhibit 8.1), with a focus on the higher-order infrastructure envisioned in this plan. The tool should be used by developers and enforced through municipal planning processes.

Exhibit 8.1: Proposed Cycling Facility Selection Tool for New Development



It is a recommendation of the study that this facility selection tool be adopted, but we recognize that additional operating and maintenance costs will be incurred at the time of project implementation. It is anticipated this tool would be reviewed and updated as design standards best practices evolve over time, in keeping with future updates of the ATMP every 5 years.

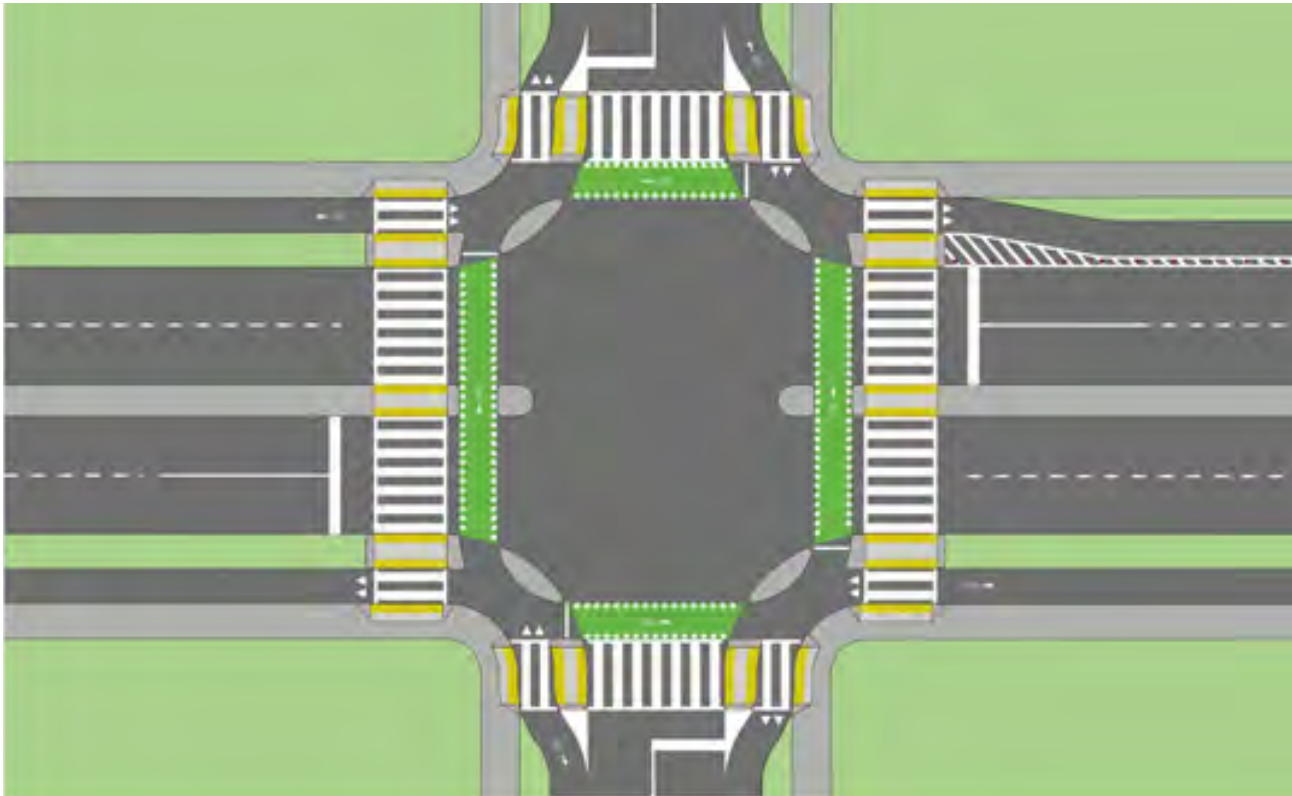
D1: Adopt updated cycling facility selection guidance for new developments.

As noted above, higher-order facilities provide an all ages and abilities approach to active transportation infrastructure. As such, this plan emphasizes the implementation of separated cycling facilities. Updated standard cross-sections have been produced to guide the design and integration of facilities such as cycle tracks, protected bike lanes and multi-use trails and can be adopted for use with the construction of new roads.

D2: Adopt updated standard cross-sections for new development including various cycling facilities such as cycle tracks, protected bike lanes and multi-use paths.

As part of the development of this Active Transportation Master Plan, new design guidelines focused on separated cycling facilities are under development for the City. These guidelines highlight midblock, intersection and facility transition treatments for cycle tracks and multi-use paths. At intersections, the guidelines focus on protected intersection treatments which provide dedicated waiting space for pedestrians and cyclists within intersection corners, and provide safety enhancements such as a corner refuge island to slow turning vehicles and median refuge islands.

Exhibit 8.2: Protected Intersection Concept



Recognizing the role that cycle tracks and multi-use paths can play in attracting new cyclists to the network, the expanded application of these facilities across Markham, along with attention to design at key conflict points such as intersections and driveways, can play an important role in elevating the quality and comfort of the cycling facility. Towards this end, it is recommended that the Separated Bike Lane & Multi-use Path Planning & Design Guidelines be incorporated into standard planning & capital project design and delivery practices.

This recommendation should be considered both along corridors (for example, where a roadway undergoes reconstruction), or through intersection improvements (for example, an intersection is upgraded as a standalone intervention), even when the network may not be fully completed within the scope of that project. A recognition that each capital project can be leveraged to incrementally improve the network over time is important to advance the development of cycling facilities.

D3: Incorporate emerging design practices and guidance for separated cycling facilities and intersection treatments into future design and delivery projects.

8.2.2. Support Walking & Cycling through Urban Street Design & Traffic Calming Practices

The way urban streets are designed has a significant impact on how vulnerable road users experience the space. Roadways designed from the perspective of accommodating motor vehicles and traffic flow are often hostile spaces for cyclists and pedestrians. In particular, the speed of automobile traffic plays an important role in both safety and comfort of vulnerable road users. To create more attractive spaces for active transportation, urban street design must recognize and affirm the safety and comfort of people travelling on bicycles or on foot.

General principles of urban street design that are active transportation-supportive include:

- Designing roadways for a target speed = posted speed = design speed;
- Implementing lane widths that are as narrow as practicable as a speed reduction strategy;
- Implementing corner radii that are as small as practicable as a speed control strategy; and
- Reducing crossing distances wherever feasible through the introduction of curb extensions at intersections;

While the City's current design guidelines are generally progressive, it is recommended that they be reviewed through the specific lens of enhancing safety for vulnerable road users. Examples of potential modifications for further review are noted below. These examples would be subject to life-cycle impact analysis and include:

- Considering reducing design speeds for collector roadways to match (rather than exceed) posted speeds (see Table 2 in Section B2 of the City's Engineering Design Criteria);
- Consider a policy to cap design and posted speeds within the urban area to 50km/hr rather than 60 km/hr (see Table 2 in Section B2 of the City's Engineering Design Criteria);
- Consider narrowing the minimum lane width for right turn and left turn lanes from 3.3m to 3.0m, except where YRT will make use of the auxiliary turn lane (see Table 2 in Section B2 of the City's Engineering Design Criteria);
- Consider reducing the minimum curb radius for local roads from 7.5m to 4.0-7.0m, and considering the effective corner radius when determining minimum curb radius (see Table 3 in Section B2 of the City's Engineering Design Criteria) where feasible based on anticipated truck turning / emergency vehicle requirements; and
- Consider increasing the standard width of sidewalks in new development areas to 1.8m rather than 1.5m. 1.8m allows two people in wheelchairs to pass, and is considered an important minimum design threshold in the accessibility community. Note that areas designated as Intensification Areas are already required to have 2 m sidewalks. This update would be subject to life-cycle impact analysis of the additional width prior to policy changes.

D4: Review current design criteria and standard engineering drawings for new development to ensure AT-supportive design.

Traffic calming can also play an important role in enhancing the comfort and safety of cycling facilities, particularly in retrofit scenarios. As noted, vehicular speed is directly linked with the safety of vulnerable road users, so traffic calming features that help to control and reduce vehicular operating speeds are important as a tool for improving and enhancing cyclists and pedestrian safety and comfort in retrofit conditions. Many of the proposed cycling and pedestrian facilities contained within Sections 5.0 and 6.0 would be enhanced and supplemented through the introduction of traffic calming features in conjunction with the implementation of the proposed active transportation improvements.

Examples of possible traffic calming features that may be routinely considered and implemented in conjunction with proposed facilities are summarized in Exhibit 8 3.

Exhibit 8 3: Potential Integration of traffic calming with active transportation network improvements

ACTIVE TRANSPORTATION FACILITY	POTENTIAL SUPPLEMENTARY TRAFFIC CALMING FEATURES
Midblock Crossings for Pedestrians	<ul style="list-style-type: none"> • Incorporate curb extensions, chokers or median refuge islands wherever possible to reduce crossing distances and exposure.
Sidewalk Facilities	<ul style="list-style-type: none"> • Incorporate curb extensions at side streets with the construction of new sidewalk segments wherever feasible.
Shared Cycling Facilities	<ul style="list-style-type: none"> • Incorporate comprehensive speed and volume management strategies with new shared cycling facilities to ensure vehicular operating speeds are less than or equal to 30 km/hr including high-intensity traffic calming features such as diagonal diverters, partial lane closures, traffic circles and mini-roundabouts, right-in and right-out diverters, chicanes, etc. as appropriate.

Considering the compatibility and mutual-benefit of traffic calming features, it is recommended that the City take a holistic approach to the installation of new cycling and pedestrian facilities, evaluating opportunities to add traffic calming features through the design and implementation process.

Note that wherever traffic calming features are proposed along existing or planned cycling facilities, consideration must be given to “cyclist-friendly” designs that do not require unnecessary detours or encourage weaving. It is also important that during the planning and design of traffic calming features, operations should be consulted to identify and mitigate impacts to snow plowing and winter maintenance activities.

D5: Routinely consider opportunities to implement traffic calming features to further enhance pedestrian & cyclist projects as they are planned & designed.

Traffic calming will be considered as part of the safety toolbox during the development of the City's road safety plan. While traffic calming has conventionally been perceived as a tool to manage traffic infiltration and mitigate speeding concerns, as discussed above, traffic calming can play a significant role in facilitating and enhancing the delivery of walking and cycling network improvements. For example, the implementation of horizontal traffic calming features such as chokers or curb extensions may be paired with new midblock pedestrian crossings to reduce pedestrian crossing distances and improve pedestrian safety while also fulfilling a speed reduction function. Similarly, many corridors on the existing and proposed cycling network would be enhanced by reduced operating speeds through targeted application of traffic calming features.

Community safety zones should also be explored as a possible improvement to be considered during the road safety plan. Community safety zones are easily identifiable and heightens motorists' level of awareness when driving. The development of a community safety zone program may also be informed by the results of the Road Safety Audit, which could improve road safety around identified collision clusters near schools, community centres, senior's facilities, parks, and GO stations.

Through the upcoming road safety plan, it is therefore important that the plan explicitly review and consider the perspective of pedestrian and cycling safety as part of the traffic calming warranting and toolbox update, including opportunities to bundle the delivery of proposed pedestrian and cycling network improvements with traffic calming interventions.

D6: Explicitly incorporate the perspective of pedestrian and cycling safety and connectivity as part of the traffic calming warrant and toolbox update.

8.2.3. Evaluate a Year-Round Cycling Network

Despite harsher winter conditions, Ontario cyclists have proven resilient. With the right clothing and gear, winter cycling can be a viable mobility option for many Markham residents. However, it is imperative that predictable, routing plowing and maintenance be undertaken by the City to provide the consistency needed to entice winter cyclists.

An important step in growing winter cycling is the designation of a winter cycling network. This network should be comprised of a connected grid of higher-order facilities that are prioritized to receive the highest level of service for winter maintenance such as plowing, salting and de-icing. A winter cycling network provides a predictable, safe network for cyclists, as they know they will be cleared of snow with the highest priority.

As a starting point, a pilot project identifying and prioritizing a winter spine network should be identified for enhanced winter maintenance. The pilot would evaluate the cost, effectiveness and uptake and could be expanded over time as the winter cycling culture and ridership builds. As a starting point, considering a subset of the priority cycling & trails network as a winter spine would be a reasonable starting point.

D7: Implement a pilot project to provide winter maintenance of a cycling spine network to evaluate costs and uptake.

8.2.4. Review Sidewalk Winter Maintenance Prioritization Process

As discussed in Section 8.1, sidewalks along City & Regional roads are maintained by the City. All sidewalks are plowed within 24 hours of the end of a snowfall when accumulations reach 5cm or more, with priority service considering road classification, but also taking into account the surrounding context, transit/bus stops and overall intensification.

As the City of Markham is growing & intensifying, pedestrian needs and usage patterns are changing with development and societal needs. It is important that over time, the sidewalk winter maintenance prioritization is periodically reviewed and updated to reflect those changing needs. For example, one consideration in prioritizing which sidewalks should be cleared first may be the presence of vulnerable populations within those neighbourhood. Therefore, a periodic review of sidewalk maintenance prioritization strategies should be led through the City's operations group.

D8: Review sidewalk winter maintenance prioritization processes periodically to capture changes in pedestrian needs and usage patterns.



9.0

Implementation

**RIDE & STRIDE: MARKHAM ACTIVE
TRANSPORTATION MASTER PLAN**

Marpleham Cycles



The strength of a plan depends on the ability to implement and advance core recommendations. To support with on-going implementation, the following chapter summarizes monitoring strategies and key study recommendations with anticipated financial impacts of these recommendations. A standalone **Short-Term Implementation Plan** has been prepared to provide additional detail on the financial and staff resources needed to deliver proposed short-term network improvements and programs.

9.1. MONITORING AND EVALUATION

9.1.1. Monitoring Plan

A monitoring program will allow the City of Markham to evaluate both the progress in implementing the plan and the impact it is having on achieving the study’s vision of making active transportation more attractive for more trips. Tracking the progress of this plan will help keep it on track and help maintain the momentum built by initiatives leading up to this study and the public and stakeholder outreach undertaken throughout the study. Regular monitoring helps ensure accountability and transparency in implementing the plan.

In developing a monitoring program, key performance indicators were considered that can be measured from existing data streams and can provide an objective assessment of ongoing progress, including prior to the development of this plan. Two main streams of performance measures are recommended for the ATMP.

One stream tracks the implementation of the actions and recommendations contained within the ATMP. This includes an assessment of the progress of implementing the walking and cycling infrastructure recommended in this plan.

The second stream relies primarily on data from the Transportation Tomorrow Survey, which is undertaken every five years. With a base case of 2016, the success of the plan can be measured through a variety of measures including mode share and vehicle ownership rates.

INDICATOR	DATA SOURCE	FREQUENCY
Percent of sidewalk gaps filled along arterial & collector roads	GIS Network Mapping	Annually
Percent of priority cycling network implemented	GIS Network Mapping	Annually
Kilometrage of new separated cycling facilities (multi-use path, protected bike lanes or cycle tracks)	GIS Network Mapping	Annually
Mode share – all trips to, from and within Markham, all times	TTS	Every five years
Mode share – all trips to, from and within Markham, all times, < 2 km	TTS	Every five years
Mode share – all trips to, from and within Markham, all times, < 5 km	TTS	Every five years

INDICATOR	DATA SOURCE	FREQUENCY
Mode share – all trips to, from and within Markham, 6:30 am to 9:30 am	TTS	Every five years
Mode share – all school-based trips to, from and within Markham	TTS	Every five years
Vehicles owned per household and number of zero- or one-vehicle households	TTS	Every five years
Number and severity of collisions involving pedestrians or cyclists	York Region Police	Annually

I1: Annually track key performance indicators and develop a “State of Cycling Report”

9.1.2. Plan Review and Updates

The Markham ATMP is a living document intended to inform infrastructure, policy and programming decisions over more than a twenty-year period. Over this period, the City might change in ways not yet contemplated by this report. Therefore, it is recommended that on a regular basis (i.e. every five years), the underlying assumptions of this ATMP be reviewed to ensure they still apply. The recurring review provides a mechanism to identify if a formal update is required.

I2: Review the Active Transportation Master Plan and key recommendations regularly (every 5 years at a minimum)

9.2. ACTION AREAS & FUNDING IMPLICATIONS

9.2.1. Summary of Study Recommendations

A summary table of core study recommendations is presented in Exhibit 9.1.

Exhibit 9.1: Summary of ATMP Recommendations

ACTION	SHORT-TERM (2021-2026)	MEDIUM-TERM (2026-2036)	LONG-TERM (BEYOND 2036)	PROGRAM STATUS
PURSuing PEDESTRIAN NETWORK IMPROVEMENTS				
P1. Continue to fill sidewalk gaps along collector and arterial roads at an accelerated rate through the established Sidewalk Network Completion Program.	Continue	Complete	–	Existing
P2. Implement a program to address Pedestrian Priority Area recommendations on an on-going basis.	Initiate	Review Areas & Continue	Continue	New
P3. Undertake a network screening process to identify priority locations for midblock pedestrian crossings along multi-lane collector roads with the intent of implementing two new or upgraded crossings annually.	Expand	Continue	Continue	Expanded
P4. Continue to implement AODA upgrades at unsignalized intersections once all City signalized intersection upgrades are complete.	Transition from signalized to unsignalized	Continue	Continue	New
P5. Develop a warranting and review program to implement pedestrian safety countermeasures at signalized intersections.	Initiate	Continue	Continue	New
P6. Consider traffic calming measures and vehicle exclusion zones as tools in the School Travel Planning process.	Expand	Continue	Continue	Expanded
P7. Work with School Travel Planning partners to identify candidate pathways for year-round municipal maintenance as a pilot at 5-10 school sites.	Initiate	Continue	Continue	New
CONNECTING & ENHANCING THE CYCLING NETWORK				
C1. Implement linear upgrades to existing cycling facilities to enhance pavement markings, signage and overall comfort.	Initiate	Continue	Continue	New
C2. Review and identify intersection upgrades to existing cycling facilities to enhance pavement markings & signage, provide continuity through intersections and improve the ease of crossings.	Initiate	Continue	Continue	New
C3. Implement cycling facilities along the priority network within a 5-year horizon to significantly improve the connectivity and appeal of the cycling network over the short-term horizon.	Expand & Continue	–	–	Expanded
C4. Advance projects towards completion of the ultimate cycling network plan, including the bundling of cycling facilities with new development, capital projects and standalone interventions.	Expand	Continue	Continue	Expanded
C5. Launch a bicycle parking business partnership program, providing support for businesses wishing to provide and install bike parking.	Expand	Continue	Continue	Expanded
C6. Bundle the delivery of automatic cycling counters with major capital projects including cycling infrastructure.	Initiate	Continue	Continue	New

ACTION	SHORT-TERM (2021-2026)	MEDIUM-TERM (2026-2036)	LONG-TERM (BEYOND 2036)	PROGRAM STATUS
ENCOURAGING OUR COMMUNITY				
E1. Expand the Active Travel to School Pilot program to other school locations throughout Markham.	Expand	Continue	Continue	Expanded
E2. Coordinate with the Bruce's Mill safety village to promote traffic education and encourage active transportation in children.	Expand	Continue	Continue	Expanded
E3. Support and expand the role of Markham Cycles Bike Hub.	Expand	Continue	Continue	Expanded
E4. Continue to support Transportation Demand Management initiatives.	Expand	Continue	Continue	Expanded
E5. Continue to support the growth of annual bike initiatives.	Expand	Continue	Continue	Expanded
E6. Expand Markham's support for Jane's walk through facilitating the organization of more walks and promotional materials.	Expand	Continue	Continue	Expanded
E7. Continue to support the growth of Markham Cycling Day and explore the expansion of Markham Cycling Day into a broader open streets program.	Expand	Continue	Continue	Expanded
E8. Explore the creation of a tactical urbanism materials lab and supportive programming such as Park(ing) day and design workshops. In addition, develop a process that facilitates the safe implementation of tactical urbanism installations by residents.	Initiate	Continue	Continue	New
E9. Support the development of an active transportation lecture/webinar series.	Initiate	Continue	Continue	New
E10. Continue to support the delivery of cycling maps and explore the development of an app-based map. Coordinate with third party trip planning apps (e.g. google) to ensure up to date route information.	Expand	Continue	Continue	Expanded
E11. Continue to support the Bike n' Ride service, coordinate with VIVA to deliver practice opportunities for residents, and explore the provision of a free barrier crossing service.	Expand	Continue	Continue	Expanded
E12. Support York Regional Police in exploring the expansion of their online bike registry program to include an app-based approach.	Expand	Continue	Continue	Expanded
E13. Establish a Cycling and Pedestrian Safety and Awareness Program (CPSAP).	Expand	Continue	Continue	Expanded
E14. Develop a cycling data collection program to support a "State of Cycling Report".	Initiate	Continue	Continue	New
E15. Adopt the York Region Sustainable Mobility Wayfinding Guidelines and identify pilot projects for wayfinding implementation.	Expand	Continue	Continue	Expanded
E16. Develop a communications strategy to build resident awareness of complete streets projects, and safety benefits of road diets and infill sidewalk construction.	Initiate	Continue	Continue	New
E17. Explore expanding the bicycle parking program to include bike valet services at major events.	Expand	Continue	Continue	Expanded
E18. Explore Markham's contribution to a local or regional shared micromobility program.	Initiate	Continue	Continue	New

ACTION	SHORT-TERM (2021-2026)	MEDIUM-TERM (2026-2036)	LONG-TERM (BEYOND 2036)	PROGRAM STATUS
EVOLVING DESIGN & MAINTENANCE				
D1: Adopt updated cycling facility selection guidance for new developments.	Expand	Continue	Continue	Expanded
D2: Adopt updated standard cross-sections for new development including various cycling facilities such as cycle tracks, protected bike lanes and multi-use paths.	Expand	Continue	Continue	Expanded
D3: Incorporate emerging design practices and guidance for separated cycling facilities and intersection treatments into future design and delivery projects.	Expand	Continue	Continue	Expanded
D4: Review current design criteria and standard engineering drawings for new development to ensure AT-supportive design.	Initiate	Continue	Continue	New
D5: Routinely consider opportunities to implement traffic calming features to further enhance pedestrian & cyclist projects as they are planned & designed.	Expand	Continue	Continue	Expanded
D6: Explicitly incorporate the perspective of pedestrian and cycling safety and connectivity as part of the traffic calming warrant and toolbox update.	Expand	Continue	Continue	Expanded
D7: Implement a pilot project to provide winter maintenance of a cycling spine network to evaluate costs and uptake.	Initiate	Review	Review	New
D8: Review sidewalk winter maintenance prioritization processes periodically to capture changes in pedestrian needs and usage patterns.	Review	Review	Review	Expanded
IMPLEMENTATION				
I1: Annually track key performance indicators and develop a “State of Cycling Report.”	Expand	Continue	Continue	Expanded
I2: Review the Active Transportation Master Plan and key recommendations regularly (every 5 years at a minimum).	–	Review	Review	Existing

Overall funding envelopes by recommendation theme are shown in Exhibit Exhibit 9 2. Funding requirements will be subject to annual budget review processes and may evolve over time.

Exhibit 9 2: Summary of Funding Envelopes by Theme

THEME	PROGRAMMING COST (ANNUAL)	SHORT-TERM INFRASTRUCTURE COSTS	ULTIMATE INFRASTRUCTURE COSTS
Pursuing Pedestrian Network Improvements	\$ 35,000.00	\$ 13,050,000.00*	\$ 28,250,000.00*
Connecting & Enhancing the Cycling Network	\$10,000.00	\$ 35,000,000.00	\$ 293,000,000.00
Encouraging Our Community	\$ 307,000.00	\$ -	\$ -
Evolving Design & Maintenance	\$ 50,000.00	Reflected in infrastructure costs	

*TBC - all improvements may not be delivered within a 25-year year horizon

9.2.2. Alternative Funding Sources

Many organizations and government bodies at varying levels provide financial support for active transportation programs and network improvements. These alternative funding sources can be pursued to supplement municipal funding in order to accelerate delivery of the ATMP. A summary of some of these funding sources is provided in Exhibit 9.3.

Exhibit 9.3: Potential Funding Sources for Active Transportation Implementation and Expansion

ORGANIZATION / FUND	GEOGRAPHIC EIGIBILITY	ACTIVE TRANSPORTATION REQUIREMENTS	FUNDING / APPLICATION TIMELINES
York Region Pedestrian & Cycling Municipal Partnership Program	Municipalities within York Region	<ul style="list-style-type: none"> • Purpose of the Pedestrian and Cycling Municipal Partnerships Program is to encourage walking and cycling by accelerating the implementation of pedestrian and cycling infrastructure throughout York Region. • The Partnership Program will assist local municipalities and key stakeholder groups in expanding their network by funding up to 50% of eligible capital work. • The partnership program is funded in the amount of \$500,000 per year and will be based on approved submissions for a particular budget year. 	<ul style="list-style-type: none"> • Phase 1A (Preliminary Phase) – Eligibility Screening (prior to June 1st). • Phase 1B – Funding Commitment/ Formal Application (By June 1st). • Phase 2 – Tender Ready Project Submission (by September 15th).

ORGANIZATION / FUND	GEOGRAPHIC EIGIBILITY	ACTIVE TRANSPORTATION REQUIREMENTS	FUNDING / APPLICATION TIMELINES
<p>Federation of Canadian Municipalities (FCM)</p>	<p>Canadian Municipal Governments and their project partners, including:</p> <ul style="list-style-type: none"> • Private sector entities • Indigenous communities • Municipally-owned corporations • A regional, provincial or territorial organization delivering municipal services • Non-governmental organizations • Not-for-profit organizations • Research institutes 	<ul style="list-style-type: none"> • The FCM funds pilot projects that reduce pollution by improving transportation networks or promoting people to switch to less polluting transportation options. • The program offers a combined loan and grant funding for capital projects. • Regular loans and grants: low-interest loan of up to \$5 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs. • High-ranking project loans and grants: low-interest loan of up to \$10 million and a grant worth up to 15% of the loan; cover up to 80% of eligible costs. 	<ul style="list-style-type: none"> • Stage 1 – An Initial Review Form can be completed and accepted year-round. • Stage 2 – Projects move to a continuous application process in the spring. Potential applicants may submit initial review forms at any time, but application forms will be provided to eligible recipients April 1st.

ORGANIZATION / FUND	GEOGRAPHIC EIGIBILITY	ACTIVE TRANSPORTATION REQUIREMENTS	FUNDING / APPLICATION TIMELINES
<p>The Atmospheric Fund (TAF)</p>	<ul style="list-style-type: none"> • Registered Charities • Not-for-profit organizations • Municipalities in the GTHA 	<ul style="list-style-type: none"> • TAF grant program focuses on reducing carbon emissions in the building and transportation sector. • Funding is provided to projects at different stages; Standard applications are for fully-developed projects. • Concept development applications are for early-stage ideas to help demonstrate feasibility; these grants tend to be smaller (\$10,000 - \$20,000). • The Grants and Programs Committee reviews each application and makes a funding recommendation to the Board of Directors, who then make a final decision on the proposal. 	<ul style="list-style-type: none"> • The next grant intake deadline is August 28th.



