



1.0 PHASE 2 OVERVIEW

Since November 2018, WSP in partnership with Share the Road Cycling Coalition and The Centre for Active Transportation has been working with the Town of Halton Hills to prepare a blueprint for the future of active transportation Town-wide in the form of an active transportation master plan.

An active transportation master plan is a functional master plan that is developed by municipalities to provide additional detail on the planning, design and implementation of on and off-road walking, cycling and self-propelled forms of transportation. It clarifies the vision and objectives of **the Town's Official Plan and provides specific infrastructure recommendations that support the realization of Town and Regional priorities.**

This is the second of three reports which are being developed over the course of the ATMP development process. Each of the papers documents the process, assumptions and outcomes of three of the four project phases. Phase two of the ATMP focused on the identification, selection, and confirmation of preferred on and off-road active transportation routes and facilities; a connected and continuous system of on and off-road active transportation connections that is considered realistic for staff and Council to implement while also providing safe, comfortable and well-designed routes and facilities that encourage greater active transportation and recreation by residents and visitors of the Town.

The purpose of Technical Memo #2 is to provide an overview of the steps taken to identify the potential active transportation (AT) system including the identification and documentation of the existing on and off-road facilities and conditions, the system development process, the design of context specific facilities and conditions along and adjacent to the routes that help to encourage and enhance the overall active transportation and recreation experience.

The contents of this technical memo are meant to capture the current active transportation and recreation planning and design perspective and approach that has been adopted by the Town of Halton Hills, the Region of Halton and the Province of Ontario. We acknowledge that things change and what design and implementation are based on the context and conditions within which they are being implemented. It is not meant to reflect a one size fits all approach and should embody the emerging planning and design principles adopted by the Town as part of the first phase of the project.

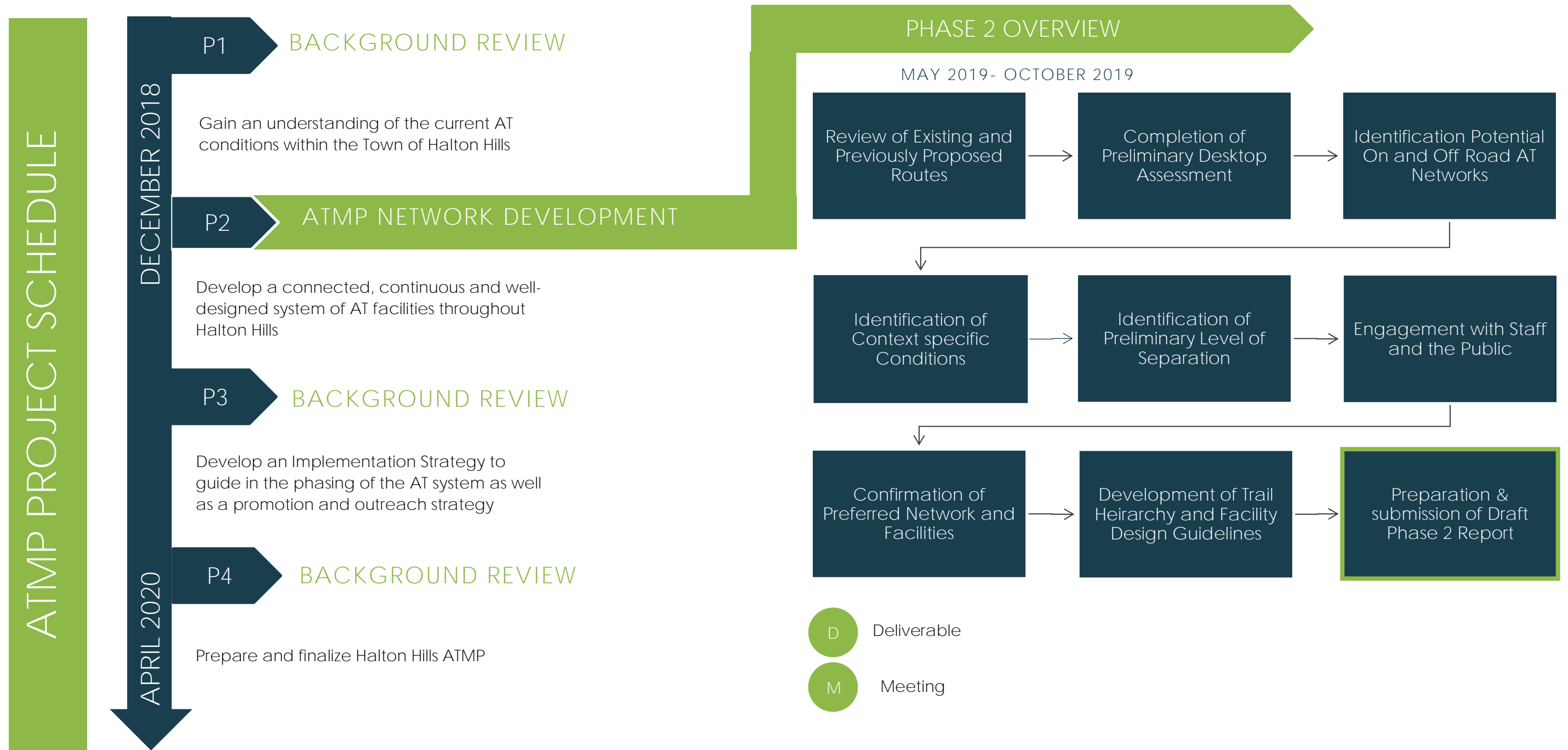
Phase 2 of the Halton Hills ATMP was completed between May 2019 and October 2019. This report marks the completion of Phase 2 of the Halton Hills ATMP. It includes the following contents:

- 1 An overview of the tasks and milestones that were undertaken as part of the second phase of the active transportation master plan process;
- 2 An overview of the consultation and engagement program that was undertaken between June and November 2019 and the input that was received through those activities;
- 3 An overview of the AT system development assumptions including infrastructure assumptions adopted by the Region, province and Town as well as principles and objectives;
- 4 An overview of the process that was used to identify the proposed AT system with on and off-road network considerations and milestones;
- 5 A summary of the proposed route lengths and facility lengths as identified in the active transportation system as well as the pedestrian approach and considerations;
- 6 An overview of active transportation facility design guidelines consistent with current guidelines, standards and best practices as well as a trail hierarchy for consideration by the Town;
- 7 A set of additional design considerations for frequently occurring conditions found throughout an active transportation network; and
- 8 An overview of next steps including a summary of the tasks and topics that will be discussed prior to the development of the active transportation master plan.



1.1 OVERVIEW OF STEPS

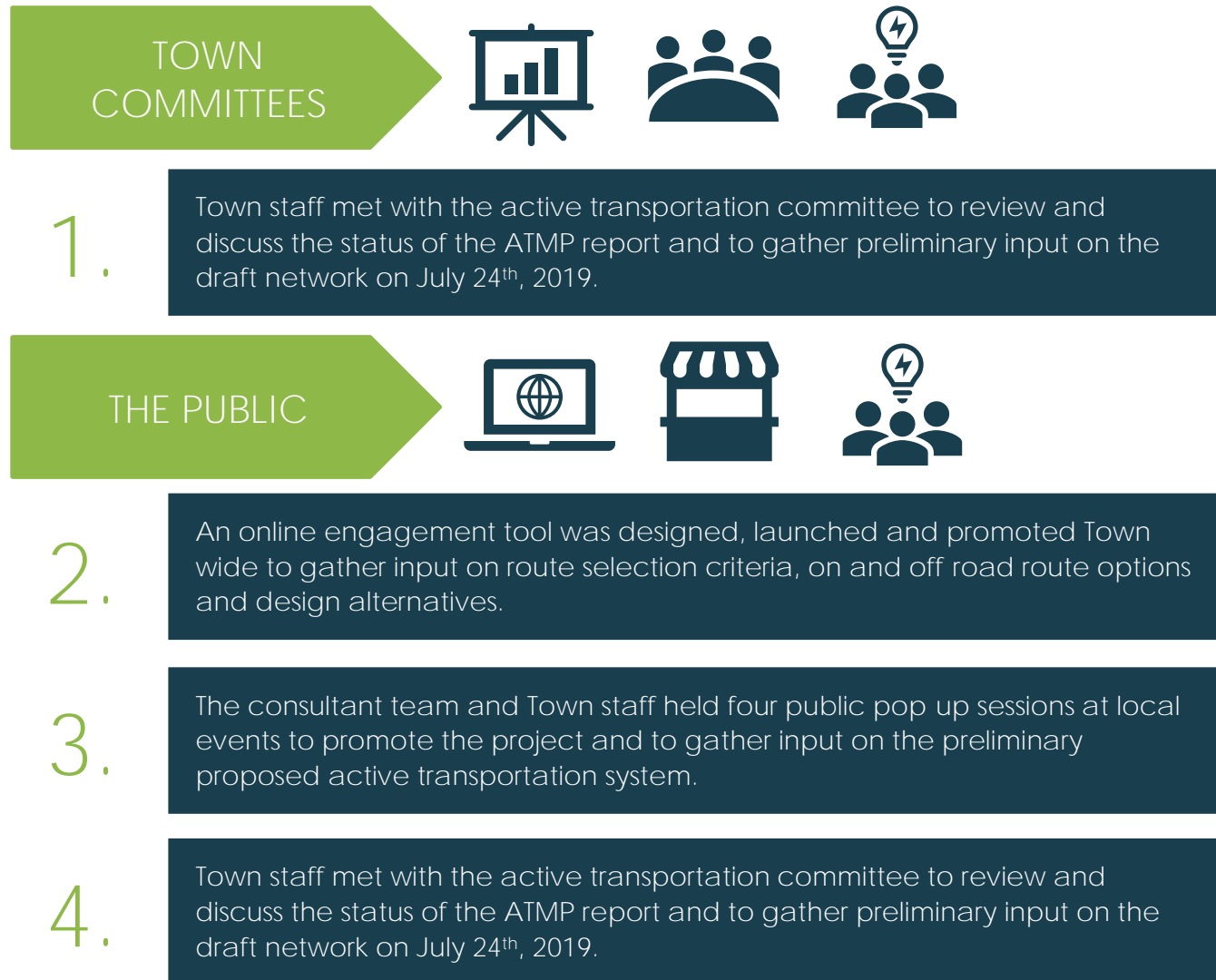
Phase 2 of the Halton Hills ATMP focused on the developing a strategic system of connected, continuous and comfortable on and off-road active transportation and recreation routes and facilities. The active transportation system was developed using an iterative process, heavily informed by the overall project objectives, current trends and practices, consultation with Town staff, stakeholders, and the public, as well as planning and engineering best practices. The process is illustrated below along with a more detailed overview of the tasks that formed the work plan.



1.2 CONSULTATION & ENGAGEMENT

As noted above, the process used to identify the recommended routes and facilities that make up the proposed active transportation system development process was based on the staff, public and stakeholder information that was gathered both prior to and during phase 2 of the work plan. Within the Phase 1 report, an overview of the consultation and engagement program was provided including target audiences as well as engagement and consultation milestones.

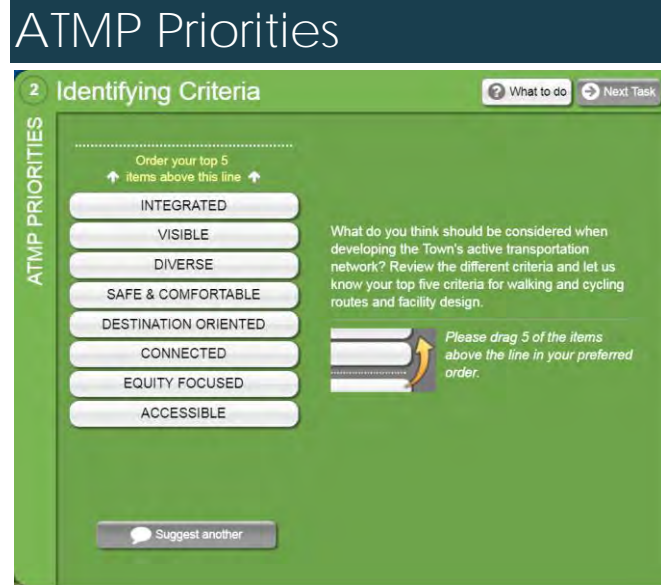
Phase two of the project included engagement with town staff, the active transportation committee and members of the public including specific outreach with local students. The following pages contain a high-level summary of some of the input that was received as part of the online interactive engagement tool, as well as at the in-person engagement events.





The first opportunity for engagement was presented through an interactive online engagement platform which was developed using MetroQuest and was hosted on the Town's Let's Talk Halton Hills page. Metroquest presents opportunities to gather input using three interactive activities which makes providing input fun and informative. The online engagement tool was hosted from June 2019 until September 2019 and gathered information from 73 respondents. The information on the bottom of this page provides an overview of the four activities that made up the online engagement tool, the objectives of the activity, and the number of responses that were gathered. On the following page, a high-level summary of input received has been prepared.

Activity #1:



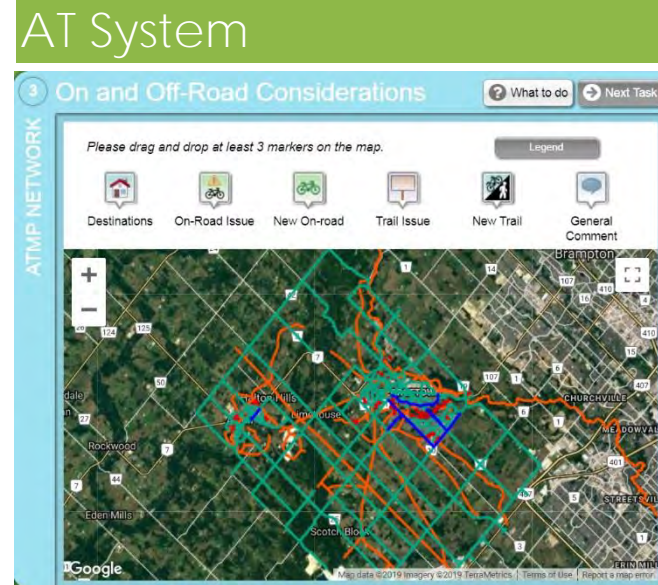
Objectives:

To gather input on the criteria that was used to identify and select preferred active transportation routes including the prioritization of criteria to understand community values and interests to help shape alignment and design.

240 rankings

8 comments

Activity #2:



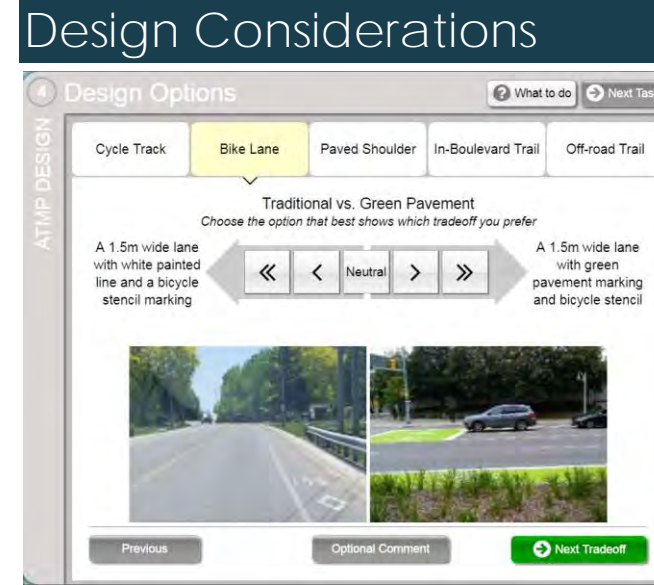
Objectives:

To identify opportunities and challenges which were considered when identifying the proposed on and off-road networks for the AT system as well as their place or origin for AT trips and general comments.

146 markers

101 comments

Activity #3:



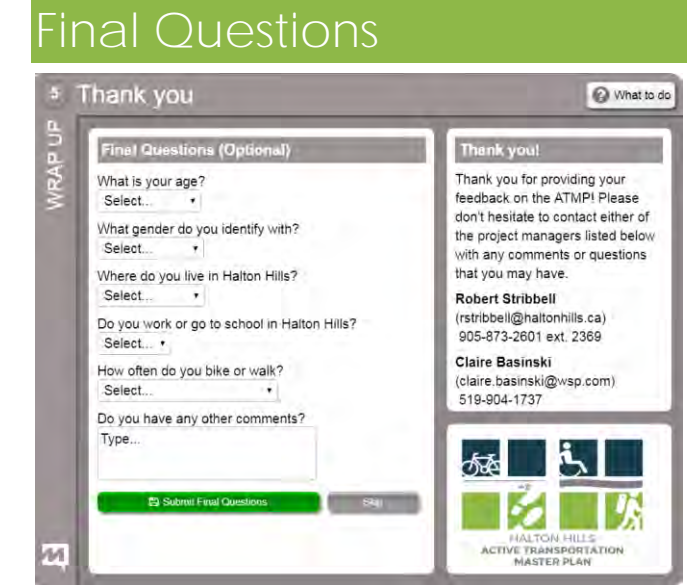
Objectives:

To evaluate and rank opportunities for the design of on and off-road cycling infrastructure gauge level of interest and acceptance from the community.

252 ratings

18 comments

Activity #4:



Objectives:

To provide additional insight and input on personal preferences related to transportation within the Town of Halton Hills as well as socio-demographic background.

232 responses

22 comments

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Proposed Off-Road Facility Types

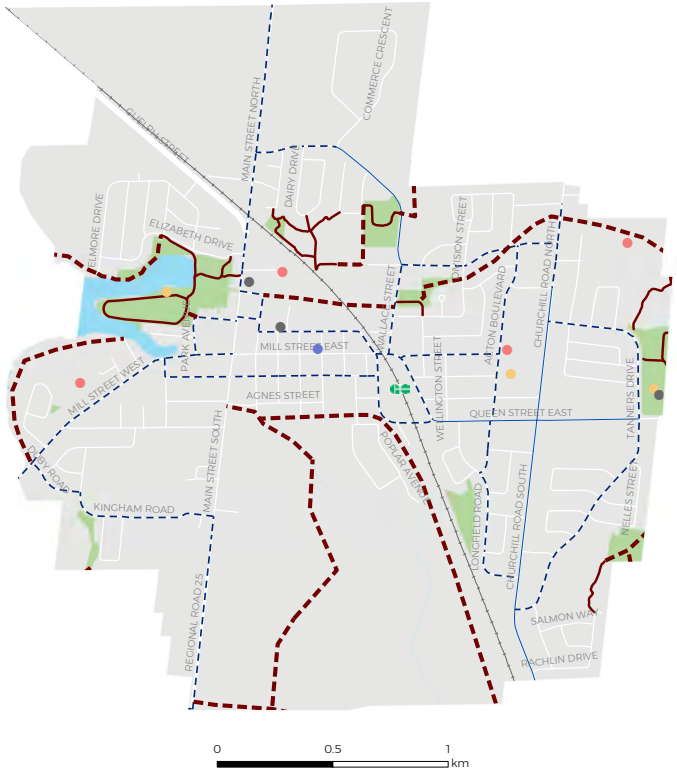


HALTON HILLS ACTIVE TRANSPORTATION MASTER PLAN

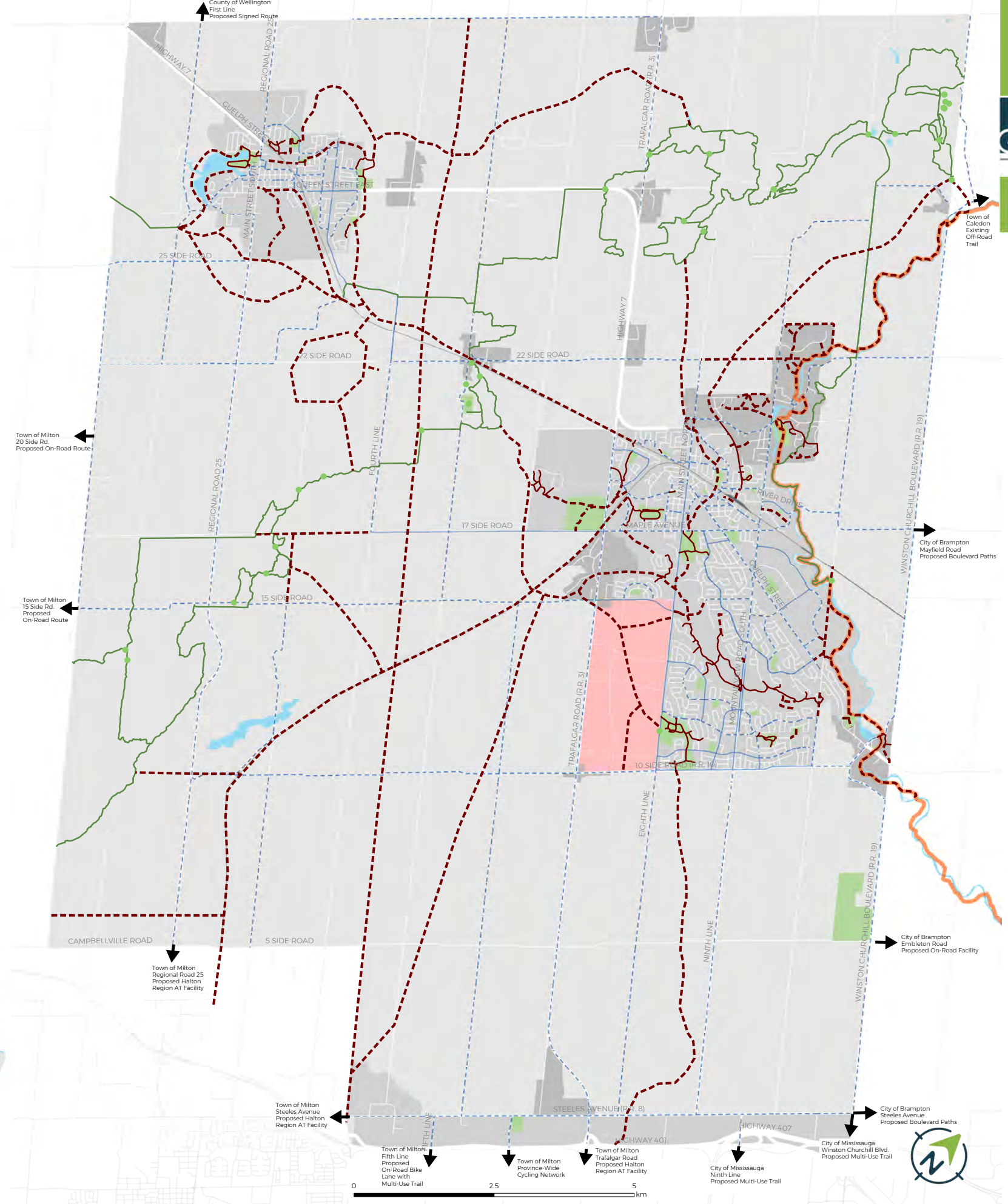
Legend

- Existing (solid line) / Proposed (dashed line) Off-Road Facility
- Existing (solid line) / Proposed (dashed line) On-Road Facility
- Bruce Trail (green line)
- Credit Valley Trail (orange line)
- Trail Access Point (green dot)
- Community Centre (yellow dot)
- Hospital (blue dot)
- Municipal Building (black dot)
- School (red dot)
- Park (green area)
- Urban Area (grey area)
- Hamlet / Rural Cluster (light grey area)
- Vision Georgetown Secondary Plan Area (pink area)
- Connection to Surrounding Municipality (black arrow)

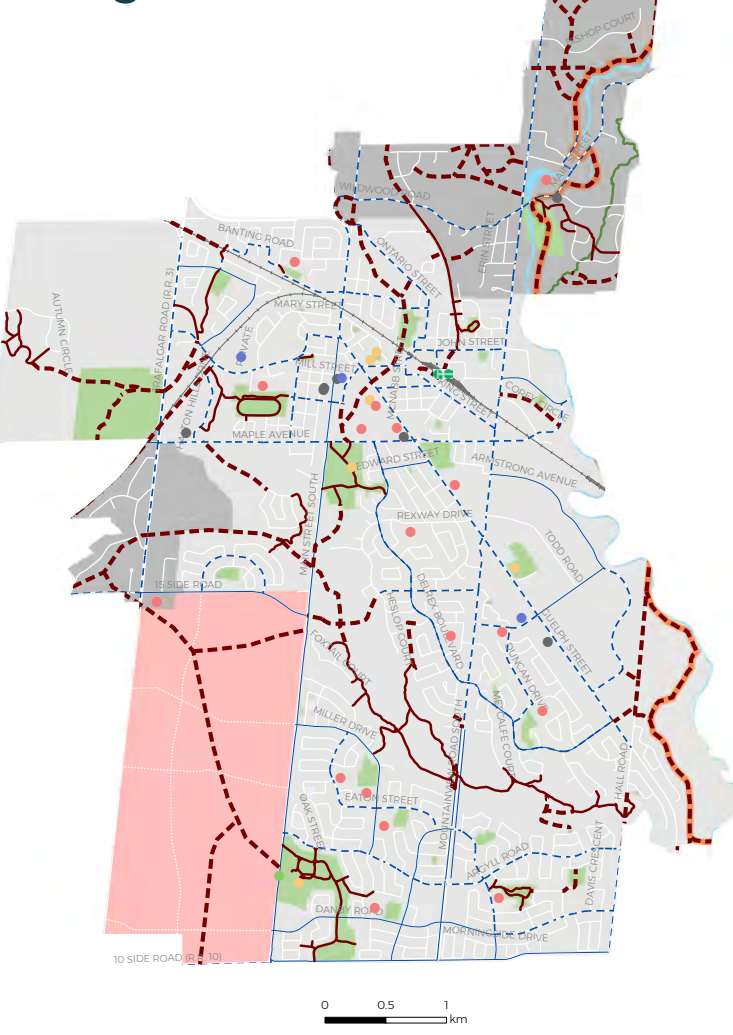
Acton



Town of Halton Hills



Georgetown



2.3 WHAT ABOUT PEDESTRIANS?

An active transportation master plan aims to provide a continuous and connected system of infrastructure that accommodates all self-propelled forms of transportation. While bicycles are considered a vehicle under the highway traffic act an need additional design consideration and space to function pedestrians can sometimes get “lost” in the mix. As the most vulnerable mode of transportation and road user as well as the most frequently used for of transportation there should be a more strategic and intentional approach to pedestrian network planning as it relates to missing links, overall connectivity and accessibility.

Pedestrian-friendly municipalities promote active transportation over inactive transportation through urban design and the built form. A municipality such as Halton Hills can be classified as walkable if it has a high number of destinations within walking distance, a continuous and connected street network, and a mix of land uses. Walkability can be used to indicate the success of a community through the implementation of an active transportation system which specifically addresses pedestrian movements. Designing walkable neighbourhoods creates health, social, environment, and economic benefits which have been well documented. Through thoughtful design, communities can be developed to fit the needs of all users and provide convenient, accessible, and safe methods of transportation to various destinations. Tools such as walk-score and other walkability assessments can be used to gain a better understanding of the status of the municipality to determine what may need to be done to improve or enhance the overall walking experience of existing and future users.

Pedestrian movements are typically accommodated by four types of facilities.

Sidewalks

- Dedicated facilities for pedestrians
- Bicycles not permitted on sidewalks, except for small children
- Provided in urban and suburban areas



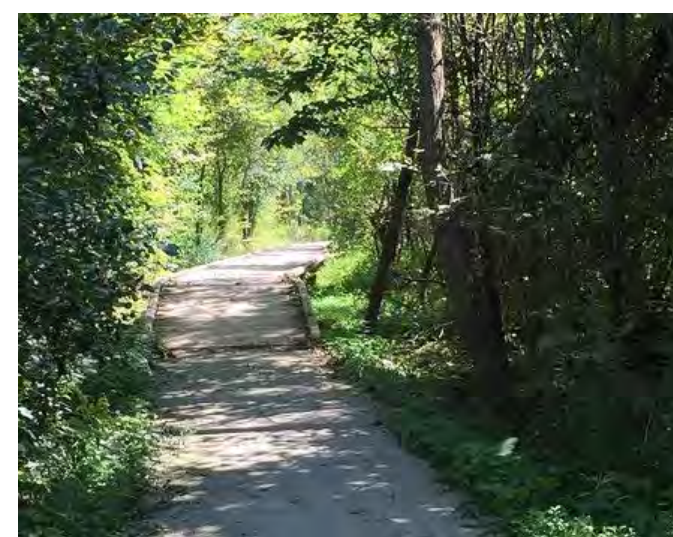
Pathways

- Used to connect sidewalks between two streets or to an existing off-road trail
- Improve walkability within neighbourhoods by reduced travel distances
- Provided in urban and suburban areas



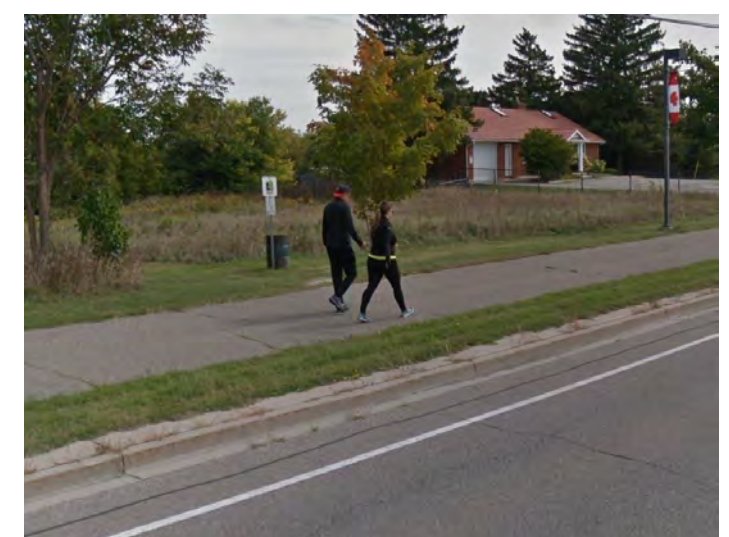
Off-Road Trails

- Used by different user groups (pedestrians, cyclists)
- Designed with various surface types and at different widths based on environment and use
- Typically provided in natural areas and parks but are also accommodated in utility corridors



In-Boulevard Multi-Use Path

- Used by different user groups (pedestrians, cyclists, people on scooters, skateboards, etc.)
- Typically located along busy corridors where greater separation is needed for motorists
- Provides connections to existing trails or as an alternate to on-road cycling



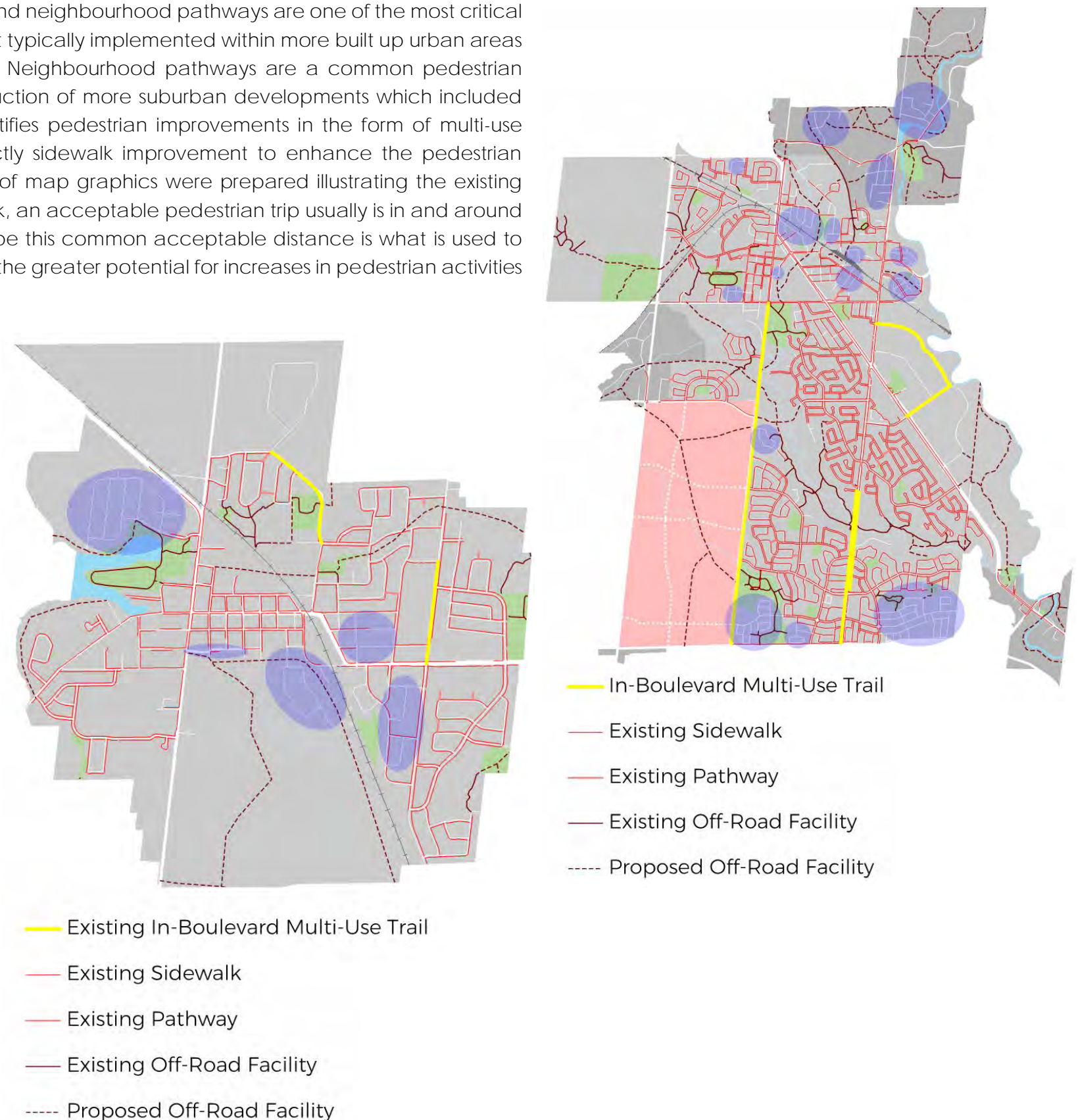


Though there are several “facility type” options available for pedestrian use, sidewalks and neighbourhood pathways are one of the most critical and visible components of any pedestrian network. As noted above, sidewalks are most typically implemented within more built up urban areas where there is an “urban cross section” meaning that there are curbs on the road. Neighbourhood pathways are a common pedestrian connection treatment which began their implementation with the design and construction of more suburban developments which included culs-de-sacs and other curvilinear street types. Though the proposed AT system identifies pedestrian improvements in the form of multi-use pathways and off-road trails; the reality is that most residents tend to focus on strictly sidewalk improvement to enhance the pedestrian experience. Beyond the AT system mapping that has already been presented, a set of map graphics were prepared illustrating the existing pedestrian network found within the Town. Based on research and anecdotal feedback, an acceptable pedestrian trip usually is in and around 1-2km in length. While this can vary depending on the trip type and the pedestrian type this common acceptable distance is what is used to assess the functionality of existing pedestrian networks. It also means that the areas with the greater potential for increases in pedestrian activities are the major communities i.e. “urban areas” within the Town of Halton Hills.

The two maps to the right depict the pedestrian network – including sidewalks, pathways, multi-use pathways and off-road trails (both existing and proposed) in Acton and Georgetown. When looking at these maps it is evident that the town has done an exceptional job building their pedestrian network as part of the design and construction of both new and old neighbourhoods and community destinations.

There are few missing links that cause significant gaps and a lack of connectivity in either of these areas. That said, there are still some areas within each of the communities that seem to have limited or no pedestrian accommodation except for linkages into the neighbourhoods. Areas highlighted in purple represent sections of the built-up areas that through an assessment of missing links (based on available data from the Town) lack the necessary infrastructure to accommodate pedestrian travel. One exception to this assessment – though identified - is the south end of Georgetown, parts of which are still under construction and will likely have sidewalks implemented later.

Considering the robust network that the Town is currently working with, the pedestrian network exercise is less about identifying a full “network” of pedestrian facilities but more so about providing the Town with the necessary tools to support the future prioritization of pedestrian infrastructure within existing neighbourhoods and policy to reinforce pedestrian consideration through land use planning and design. In addition, a more pedestrian friendly community is not only achieved through infrastructure implementation. It will also require consideration for community based social marketing activities to help with overall behaviour change to encourage walking as a “go to” mode for day to day activities within a reasonable distance. These elements of implementation and prioritization as well as education and promotion will be addressed through the final stages of the master plan development.



3.0 AT FACILITY DESIGN GUIDELINES

The AT system was developed using the most relevant and up to date design guidelines and standards for the purposes of identifying context-sensitive facility types. The AT system relied on information contained in international, national and provincial guidelines and standards, with the provincial guidelines being most applicable to this plan. Relevant provincial guidelines include but are not limited to Ontario Traffic Manual Book 18: Cycling Facilities, Ontario Traffic Manual Book 15: Pedestrian Facilities, Ministry of Transportation Ontario Bikeways Design Guidelines, Accessibility for Ontarians with Disabilities Act, Transportation Association of Canada Geometric Design Guide for Canadian Roads, Transportation Association of Canada Bikeway Traffic Control Guidelines for Canada, National Association of City Transportation Officials Urban Bikeways Design Guide and the American Association of State Highway and Transportation Officials.

Since the development of the 2010 cycling master plan there are several new design guidelines which have been developed and adopted for municipal use. In some cases, these documents are tailored specifically to the Ontario context while others speak more generally about the best practices associated with active transportation facility design. There have also been a few changes in the overall approach that is used to address facility design. A couple of these changes are illustrated in the figure to the left.



Change in Cycling Facility Best Practices

A number of changes have taken place with respect to active transportation facilities, with a greater emphasis on increased levels of separation between motor vehicles and active transportation users.



#CycleON: Ontario's Cycling Strategy Was Developed

#CycleON: Ontario's Cycling Strategy was developed in April 2014 (Action Plan 1.0) and 2018 (Action Plan 2.0). #CycleON is a 20-year vision to have cycling recognized as a respected and valued mode of transportation within Ontario.



MTO Bikeway Design Manual Was Updated

The MTO Bikeway Design Manual was updated and published in March of 2014. The manual contains a set of guidelines that are to be applied to the design of on- and off-road bicycle facilities located within provincial highway rights-of-way.



OTM Book 18 – Cycling Facilities Was Published

Ontario Traffic Manual (OTM) Book 18 – Cycling Facilities was published in December of 2013 and provides practical guidance on the planning, design, and operation of cycling facilities in Ontario. It applies to on- and off-road cycling facilities primarily within the road right-of-way as well as providing guidance for key conflict points and amenities. The document is currently being reviewed and updated and is anticipated to be completed in 2020.



OTM Book 15 – Pedestrian Crossing Facilities Was Updated

Ontario Traffic Manual (OTM) Book 15 – Pedestrian Crossing Facilities was updated and published in June of 2016. The design manual provides practical guidance and application information on the planning, design, and operation of pedestrian roadway crossing treatments for transportation practitioners and to promote uniformity in the application of these treatments across Ontario.



While the provincial guidelines and standards and the most applicable and should be the primary resource for any active transportation related design discussions and decision making it is important to note that the province's guidelines have been developed to take into consideration national and international guidelines and best practices. The following is a brief overview of the intent and purpose of each of the guideline documents.

	GUIDELINE	OVERVIEW
INTERNATIONAL	NACTO Urban Bikeways Design Guide	The NACTO Urban Bikeways Design Guide is meant to provide cities with state-of-the-practice solutions that can create complete streets that are safe and enjoyable for bicyclists.
	NACTO Urban Street Design Guide	The NACTO urban Street Design Guide provides cities with a toolbox and tactics to make streets safer, more liveable, and more economically vibrant. The Guide outlines a clear vision for complete streets and a basic road map for how to bring them to fruition.
	AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities (2012)	The AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities provides information on how to accommodate bicycle travel and operation in most riding environments. It is intended to present sound guidelines that result in facilities that meet the needs of bicyclists and other highway users.
NATIONAL	TAC Geometric Design Guide for Canadian Roads	The TAC Geometric Design Guide for Canadian Roads provides guidance to planners and designers in developing design solutions that meet the needs of a range of road users while addressing the context of policy decisions and the surrounding environment.
	TAC Bikeway Traffic Control Guideline for Canada (2012)	The TAC Bikeway Traffic Control Guidelines for Canada outlines the appropriate traffic control for the installation of signs and pavement markings on bikeways and contains diagrams of typical installations.
PROVINCIAL	OTM Book 15: Pedestrian Crossing Treatments (2016)	OTM Book 15 – Pedestrian Crossing Treatments provides practical guidance and application information on the planning, design, and operation of pedestrian roadway crossing treatments for transportation practitioners and to promote uniformity of approaches across Ontario.
	OTM Book 18: Cycling Facilities (2013)	OTM Book 18 – Cycling Facilities provides practical guidance on the planning, design, and operation of cycling facilities in Ontario. It applies to on- and off-road facilities within the road right-of-way, however off-road trails through parks, ravines, hydro corridors or open space are outside of its scope.
	MTO Bikeways Design Manual (2014)	The MTO Bikeways Design Manual contains a set of guidelines that are to be applied to the design of on- and off-road bicycle facilities location within provincial highway rights-of-way.
	AODA Built Environment Standards (Illustrated Technical Guide to the Accessibility Standard for the Design of Public Spaces)	The Illustrated Technical Guide to the Accessibility Standard for the Design of Public Spaces is a guide to the Accessibility Standard for the Design of Public Spaces, which is part of Ontario Regulation 191-11 under the Accessibility for Ontarians with Disabilities Act, 2005 (AODA). The illustrated guide will help design professionals develop public spaces that are open and welcoming to everyone, including people with diverse abilities. The guide will provide designers with the technical information they need to design public spaces that meet the requirements of the Accessibility Standard for the Design of Public Spaces (the Standard) and illustrate the many opportunities that inclusive design provides to create innovative public spaces.

3.1 OVERVIEW OF FACILITY TYPES

There are several facilities that have been identified as part of the AT system which are currently found within the Town of Halton Hills. There are others that are being recommended that do not currently exist in the Town. As such, it is important to define some of the key design consideration for each of the facilities. While the Town should refer to the specific design guidelines and standards noted above, the applicable design guidelines have been summarized in the following sections.

ON-ROAD FACILITY DESIGN

		O – outside of road right of way W – within road right of way	SIGNED BICYCLE ROUTE	PAVED SHOULDER	URBAN SHOULDER	BUFFERED PAVED SHOULDER	BICYCLE LANE	CYCLE TRACK
DESCRIPTION			Share the Road Sign or in	The route is signed as a	The route is signed as a bicycle route and could	rural areas, a buffer may		be uni- or bi-directional.
				Share Space				
LOCATION								
CONTEXT								
VOLUME			LOW	MODERATE	MODERATE			
SPEED			LOW		MODERATE	HIGH		
MINIMUM WIDTH			N/A		1.5m	1.5m + buffer 0.5m+		
SIGNAGE								
PAVEMENT MARKINGS								



As noted in the network development process, one of the key system development considerations is a focus on designated as well as separated facilities to create a greater sense of comfort and safety for existing and potential active transportation users. The inclusion of a physical or spatial barrier to create that separation comes in many different forms. It is not a one size fits all approach and like “general” facility design the implementation of a specific type of buffer should consider the function of the roadway, the intended use of the facility, the target audience / user group and the context and conditions of the surrounding land uses.

Where a buffered bike lane or cycle track is identified as part of the on-road network, the Town should review the following separation types to determine which will be the most appropriate as the project moves forward to conceptual and detailed design and ultimately construction.

ROLL CURB / MOUNTABLE CURB

- + : bicycle movement and turning movement, durability, greater flexibility for maintenance and minimal collision
- : may be less effective at deterring motor vehicle parking, may be expensive to install

CONVENTIONAL BOLLARDS (FLEX)

- + : high visibility through seasons, bollard spacing may accommodate bicycle maneuverability, waste collection, driveways, etc.
- : potential safety risk to cyclists, may not always discourage parking

PLANTERS

- + : aesthetic appeal, flexible spacing, high visibility
- : may reduce visibility, requires high maintenance, may need to be removed and stored in winter

CONCRETE BARRIER

- + : very effective at preventing encroachment, low cost to maintain, high visibility, mounted planters increase aesthetics
- : may have negative impact on drainage, may reduce visibility of cyclists

FLEX BOLLARDS

- + : high visibility, may accommodate bicycle movement, waste collection, driveways, etc. comparatively easy to install, minimal safety risk
- : not as durable, may not always discourage encroachment, minimal aesthetic appeal

BUFFER ZONE

- + : inexpensive to implement, can be combined with strategic plants and / or flex bollards
- : need to update markings, no physical separation

SMALL SCALE CONCRETE BARRIER

- + : very effective at preventing encroachment, low cost to maintain, does not reduce cyclist visibility
- : may have negative impacts on drainage, bicycle maneuverability, waste collection and transit

RUBBER DELINEATOR

- + : may be used in conjunction with bollards to add extra separation in specific locations
- : less durable than concrete requiring more maintenance and may have greater exposure to damage from clearing

OFF-ROAD FACILITY DESIGN

The off-road trails network in Halton Hills is extensive. The following are the full descriptions and the key considerations of the off-road facility design which are consistent with OTM Book 18 for each of the proposed facilities. Within the off-road trails category there are typically two types of “facilities”, the multi-use trail and the multi-use pathway. A high-level description is provided to the right and the following elements should be considered:

- Generally used to provide a recreational opportunity and may also be appropriate to provide a direct cycling commuter route in corridors not served directly by on-road facilities.
- Surface may vary, may be granular in rural areas and asphalt in urban areas to accommodate a wider range of users.
- Designers must consider the specific users when determining the operating and design characteristics of the off-road facility.
- Signage and/or painted centrelines can be utilized to identify separate lanes for opposing directions of travel and encourage the practice of keeping to the right side of the trail.

Typically located outside the road right-of-way through a park, public open space corridor, along a utility corridor, or other linear facilities such as within an abandoned railway corridor; multi-use trail provide for the widest range of user ability and are considered an integral part of the AT system. In some cases, these types of facilities may be most appropriate or best suited along a boulevard outside of the road right-of-way if the speed of volume of the roadway is high enough creating a multi-use pathway. Multi-use pathways should be considered where there is high active transportation demand and a large proportion of the users are youth or seniors with a low to moderate level of experience and where there are few intersections/conflict points per kilometre. There are a range of treatment types which could be considered for this type of facility including a cycling facility adjacent to a sidewalk, a bi-directional multi-use trail adjacent to a sidewalk or a multi-use trail in place of a sidewalk. While these two off-road “facilities” are considered appropriate for the Town of Halton Hills it became clear that the Town may benefit from some additional guidance related to multi-use trail design. Due to the location and nature of off-road multi-use trails there can be many design nuances and considerations. Adopting and applying consistent guidelines and standards for trail design can help to overcome barriers related to design, construction, communication, education, conflict and safe use year-round. The following is a proposed trail hierarchy that has been identified for the Town of Halton Hills. If adopted, the intent would be to integrate them into day to day decision making for future trail design as well as potential trail retrofitting.

		O – outside of road right of way	W – within road right of way
		MULTI-USE TRAIL	MULTI-USE PATHWAY
DESCRIPTION		A separated space that accommodates pedestrians and cyclists. The surface type can range from natural surface to asphalt depending on the location.	A separated space found within the boulevard of the roadway – in place of a sidewalk – which accommodates both pedestrians and cyclists in a shared space. Can be uni- or bi-directional.
PEDESTRIANS		both accommodated within this space	Pedestrians and cyclists are both accommodated within this space
LOCATION	O*		
	W*		
CONTEXT	URBAN		
	SUBURBAN		
	RURAL		
VOLUME		N/A	N/A
SPEED		N/A	
MINIMUM WIDTH		3.0m (unless in constrained corridors)	3.0m
SIGNAGE	BIKE ROUTE		
	BIKE LANE		
	SHARE THE ROAD		
	MULTI-USE PATH		
PAVEMENT MARKINGS	BIKE STENCIL		
	PAINTED LINE		
	CHEVRON		



PRIMARY (TYPE 1)

SECONDARY (TYPE 2)

TERTIARY (TYPE 3)

GENERAL FUNCTION			
GENERAL FUNCTION	Recreation, leisure and active transportation commuting functions, providing access to key destinations such as community centres, parks key commercial areas, schools etc. Includes loops in neighbourhood parks and access to park facilities (e.g. playgrounds)	Primarily recreation and leisure. Although active transportation is not a key function, Secondary trails provide connections to active transportation routes	Recreation and leisure providing opportunities to 'escape' the urban environment and experience natural settings within Town limits.
LOCATION (1)			
LOCATION (1)	Utility Corridors in the Urban Area and Urban Parkland	Open Space / Natural Areas	Open Space / Natural Areas
USER / USER EXPERIENCE			
ANTICIPATED LEVEL OF USE			
ANTICIPATED LEVEL OF USE	High	Moderate	Low to moderate
USER / USER GROUP			
USER / USER GROUP	<ul style="list-style-type: none"> Accommodates all user groups, all users and ability, families Pedestrian and other human propelled forms of transportation Suitable for users with little to no trail experience	<ul style="list-style-type: none"> Some experience / stamina required, families, experienced hikers and cyclists Pedestrians and other human propelled forms of transportation Some used may be restricted / prohibited Suitable for users with some trail experience	<ul style="list-style-type: none"> Experience/stamina required, experienced hikers Pedestrian, but may include special use trails (e.g. catering to hiking only, etc.) Suitable for users with moderate to high level or trail experience
ACCESSIBILITY			
ACCESSIBILITY	Meets or exceeds minimum accessibility requirements where feasible	Meets accessibility requirements where feasible. Maintaining natural heritage values takes precedence.	Maintaining natural heritage values takes precedence over accessibility
WAYFINDING / SIGNAGE			
WAYFINDING / SIGNAGE	<ul style="list-style-type: none"> High frequency, at trail entry points, trail intersections, key decision points. At regular intervals where there are long distances between intersections. Designed to meet AODA requirements at trail entrances. 	<ul style="list-style-type: none"> Moderate frequency, at all trail entry points, trail intersections and key decision points. Occasional markers where there are long distances between trail intersections. Designed to meet AODA requirements at trail and entrances. 	<ul style="list-style-type: none"> Low frequency, at trail entry points and key decision points. May include occasional markers along long stretches between trail intersections (may include simple trail blazes). Designed to meet AODA requirements at trail and entrances.

	PRIMARY (TYPE 1)	SECONDARY (TYPE 2)	TERTIARY (TYPE 3)
LIGHTING	Lighting may be considered where use/demand is high		
AMENITIES	<ul style="list-style-type: none"> Benches at key locations, trash receptacles located to be easily accessed for service vehicles. 	<ul style="list-style-type: none"> Moderate frequency of amenities. Trash receptacles at trail entry points, seating opportunities at key locations. Seating opportunities include benches and natural materials (e.g. flat 	<ul style="list-style-type: none"> Low frequency of amenities. Trash receptacles at trail entry points. Seating opportunities at key locations (e.g. top of long
TECHNICAL			
WIDTH	(may be narrower in constrained locations-i.e. limited	(typical - may be narrower in constrained locations such as limited property/parcel width, topographic and	1.0-2.0m (may be narrower in constrained locations such as limited property/parcel width, topographic and environmental constraints)
CORNER RADII	<ul style="list-style-type: none"> 5% maximum longitudinal / running slope (where Provide rest area (e.g. level area) every 30m for longitudinal slopes between 5% and 8%, every 9m trails that are designed to be accessible) 2% cross slope where feasible Note: the sum of longitudinal slope and cross slope not to exceed 15% for accessible trails 	<ul style="list-style-type: none"> Longitudinal slope exceeds 5% depending on location/context. Maximum slope 10% over short distances Note: longitudinal slopes over 12% may be subject to ongoing erosion if runoff is not diverted off trail at regular intervals 	<ul style="list-style-type: none"> Responds to surrounding topography – longitudinal slopes may exceed 20% for short distances (i.e. 20-30m) Consider an alternate trail route where longitudinal slope exceeds 20%, or a structure (e.g. stairs) where an alternate route is not available
SCLOPE	Determined based on design speed for trail. Minimum 15m for design speed of 30km/hr. Minimum 1.5m to accommodate wheelchair turning movements	Determined based on design speed for trail. Minimum 15m for design speed of 30km/hr.	Determined based on design speed for trail. Minimum 15m for design speed of 30km/hr. Smaller radii should be used to control speed where cycling is a permitted use



	PRIMARY (TYPE 1)	SECONDARY (TYPE 2)	TERTIARY (TYPE 3)
SURFACE			
VERTICAL CLEAR ZONE			
HORIZONTAL CLEAR ZONE	3.0m minimum	3.0m minimum	2.1m minimum
BASE DEPTH	1.5m, may be reduced to 0.6m in constrained areas	1.5m, may be reduced to 0.6m in constrained locations	0.3m -1.5m
SETBACK FOR LANDSCAPING ⁽²⁾	3.0m	Not applicable	Not applicable

	PRIMARY (TYPE 1)	SECONDARY (TYPE 2)	TERTIARY (TYPE 3)
RISK MITIGATION	<ul style="list-style-type: none"> High level of service in 3-seasons, and moderate frequency of maintenance (e.g. twice per month during spring, summer, fall; and/or as required for emergencies during 4 seasons). Trail segments identified as key commuter routes are candidates for winter maintenance. Mowing and trimming as per surrounding park maintenance practices and schedule. High maintenance cost (i.e. range \$2,500/km to \$4,000/km for 3 seasons) Some sections may be candidates for winter maintenance, an additional \$6,750 to \$12,500/km annually for winter maintenance. 	<ul style="list-style-type: none"> Moderate level of service in 3 seasons and moderate-low frequency of maintenance (e.g. seasonally or as required for emergencies) Includes topping up of granular surface as necessary, keeping trail envelope free from obstacles (e.g. pruning to maintain clear zone). May include seasonal/annual mowing along trail edges in open areas to stop vegetation encroachment. Moderate maintenance cost (i.e. range \$1,250/km to \$1,500/km annually) No winter maintenance. 	<ul style="list-style-type: none"> Lowest level of service (e.g. to remediate significant erosion, remove obstacles on trailbed) Lowest frequency of maintenance (e.g. annually or as required for emergencies) Lowest maintenance cost (i.e. range \$750/km to \$1,000/km annually) No winter maintenance.
MAINTENANCE ⁽³⁾	Moderate to high effort to mitigate risk	Moderate effort to mitigate risk	Lowest effort to mitigate risk (i.e. recognizes that users of Type 3 trails have a higher level of experience, skill, endurance and mobility, and some risk is part of the experience)

- Notes:
- (1) Multi-use trails found within the road rights-of-way (i.e. In-boulevard pathways) are not part of the Trail Classification; refer to the On-road Active Transportation Network for further information regarding In-boulevard Trails.
 - (2) The classification applies to new trail construction and existing trails at the time they are reconstructed,
 - (3) Setbacks for Landscaping refers to trees, shrubs and planting beds that are deliberately designed and planted. Setbacks for Landscaping does not apply to trees or shrubs in open space and natural areas.



4.0 OTHER DESIGN CONSIDERATIONS

A safe, connected and comfortable system is not only achieved through the implementation of routes and facilities. Additional design considerations need to be addressed which target challenging areas or conflict points through the implementation of site specific design solutions.

Through our experience and investigation of best practices there are typically four conditions along an active transportation network that require additional design consideration. They include:

- **TRANSITIONS** between on and off-road facilities as well as between the three levels of separation for on-road routes;
- **CROSSINGS** of busy roads at intersections as well as mid-block locations as well as other transportation features such as railway crossings or major highways and natural features;
- **END-OF-TRIP FACILITIES** and **STAGING AREAS** which provide amenities at a start or end of an active transportation route to accommodate safe storage or rest points for users; and
- **SIGNAGE** and **WAYFINDING** to establish a better understanding of the on- and off-road route network by designing and implementing.

Included in this chapter is an overview of these four typical conditions, the challenges that are usually experienced, the conditions when identifying potential solutions as well as the solutions that could be considered – based on best practices and standards / guidelines.

There will be numerous locations where these scenarios or conditions occur throughout the network. It is recommended that as new active transportation routes are implemented that the Town review the linkages and surrounding context to determine whether any of these conditions needs to be addressed and that they identify a potential design solution to reduce potential conflict or confusion for active transportation users as well as other road users.

As part of the next steps of the project, a set of priority improvement areas will be identified throughout the network and will be costed. As roads are identified for reconstruction or should additional budget become available the Town could explore the implementation of these additional design solutions.

TRANSITIONS

A transition is the point where a route moves from one facility type to another. In locations where space is not available in the right of way or where there is a physical barrier, changes between different facility types allow designers to provide connectivity. A transition is needed to provide a continuous linkage for pedestrians, cyclists and other AT users through these changes in facilities. A continuous facility may be difficult to implement through intersections or where the right of way width changes. e.g. narrow cross-section, on-street parking, distribution of travel lanes, etc. A user's route selection is typically based on level of comfort and experience using specific facility types. On roads where the facility type transitions from one to another, AT users could be deterred from using the route if a seamless and smooth transition between facilities is not provided. Some AT users may be unable to accept certain facility types due to mobility limitations or skill. Where a user begins a trip on facility type, they do not anticipate a change in facility type in the route. A continuous facility is also important to achieve a roadway environment that is considered safe and accessible for all modes of travel. Transitions between different facility types should not impact a motorist's visibility of pedestrians, cyclists or other AT users. Potential solutions include:

1. **Pavement markings** provide visual guidance for users transitioning between different facility types. Pavement markings also help increase a motorist's awareness of AT users by identifying the space and placement of cyclists and pedestrians on a road or in an intersection. Pavement markings can include painted or durable lines to designate the space, stencils of pedestrians and cyclists or sharrows.
2. **Advanced notice** should be given where a facility type may impede travel by certain users. For instance, an MUP transitioning to an on-road facility should give enough advance warning to users for them to choose an alternate route. Similarly, small-wheeled vehicles (umbrella strollers, skateboards, walkers) need adequate warning of an uneven surface to choose an alternate route.
3. **Signage** can be used to mark the beginning and end of a facility. Regulatory signage such as the Reserved Bike Lane sign (OTM sign Rb-84) and supplementary Reserved Lane Begins and Ends tab signs (OTM sign Rb-84t and Rb-85t) should be used to indicate to cyclists and motorists the location of the facility. Regulatory signage can also be used to instruct road users on what they should do under a given set of circumstances. For example, the Turning Vehicles Yield to Bicycles sign (TAC sign RB-37) may be used at conflict zones to remind motorists to yield when crossing a cyclist's line of travel.

CROSSINGS

A well-connected and accessible AT system typically includes routes that cross over physical barriers such as highways, railways and watercourses. The implementation of crossings or design features to help pedestrians, cyclists and other AT users cross from one side of a road to another can help achieve overall connectivity within AT system. Route crossings at intersections should also be designed in a way to minimize potential conflicts among all roadway users and to clearly show the path of AT users through the intersection. Designing a continuous facility at crossings can be difficult due to the available right-of-way, existing environmental features, grade / slope, traffic volumes and motor vehicle operating speeds. Pedestrians, cyclists and other AT users could be deterred from using an entire segment of a route in locations where a crossing is not available at a physical barrier or where a route ends abruptly at an intersection. Pedestrians, cyclists and other AT users could also be deterred from using a route that crosses over a major barrier, particularly if they do not feel comfortable or safe travelling along the route e.g. the route crossing is not well maintained or not easily accessible for users. Potential solutions could include:

1. **Midblock Crossings** can be implemented in locations where a route crosses between two intersections. Mid-block crossings can include pedestrian refuge islands, pavement markings, signage and / or signals to help users cross the roadway.
2. **Intersection Crossings** enhancements can also be implemented including pavement markings and signs to reinforce the position and presence of pedestrians, cyclists and other AT users. Crossing enhancements can include bike boxes, two-stage left-turn queue box, coloured pavement markings, cross-rides and bicycle signals or physical enhancements to create a more protected intersection. The current update to OTM Book 18 will include guidance on protected intersections. In addition, the approach to the intersection is a critical design point and requires consideration for all potential users.
3. **Grade separated crossings** may be implemented in locations where there is a physical barrier such as a watercourse, railway or highway to cross. Grade separated crossings provide a continuous connection along a route and allows users to continue using a route without having to mix with motor vehicle traffic. Principles of Crime Prevention Through Environmental Design (CPTED) can also be applied when planning and designing grade departed crossings to address safety and comfort concerns along the route.

When designing mid-block or grade separated crossings, there should be clear and documented consideration of AODA requirements as it relates to the application of tactile plates. The AODA requirements only requires the application of tactile plates for exterior paths of travel which include sidewalk linkages but do not include trails.

STAGING AREAS/END OF TRIP FACILITIES

End-of-trip facilities include bicycle parking, showers, change rooms, benches and other facilities for pedestrians and cyclists. They can be a determining factor in someone's decision to walk or cycle. End-of-trip facilities are particularly important for users looking to engage in active travel for commuting purposes e.g. going to work and school.

In addition to implementing end-of-trip facilities and staging areas, supportive amenities should be properly designed and located to maximize potential use. Pedestrians, cyclists and other AT users could be deterred from using end-of-trip facilities if they do not feel comfortable or safe doing so.

1. **Bicycle Parking:** When planning and designing bicycle parking, practitioners should consider the following factors to address concerns of safety: type of bike racks provided, location of bike parking, visibility and security, weather protection and clearance consideration. It is recommended that bicycle racks be provided for short-term parking and bike lockers or cage-style facilities be provided for long-term parking;
2. **Storage Areas:** Storage areas should be installed in areas with a large volume of commuter traffic and along major AT corridors. Secure facilities should allow commuters to safely store equipment or belongings for extended periods of time. These types of facilities should be embraced by new developments, major employment centres and in public gathering spaces such as major parks and open spaces, etc.;
3. **Repair Stations:** Repair Stations should be strategically located along popular routes where trips are usually of longer duration or at popular locations such as regional routes, trail access points or key destinations. Repair stations should be easy to find and properly equipped to be useful to AT users; and
4. **Waste Receptacles:** In areas where demand is high such as along popular urban trails or waterfront promenades, waste receptacles should be closely spaced. They can be placed along with rest areas to prevent littering and provide a long-term aesthetically pleasing environment.

AT amenities can be implemented individually or as a group of amenities commonly referred to as a staging area. They meet a critical need for AT users, and can be integrated with existing park spaces and popular destinations, or along arterial rural routes to encourage longer trips. Should the Town select to move forward with the selection and design of future staging areas, a standardized approach should be used.



SIGNAGE & WAYFINDING

Connected AT system requires signage and wayfinding so pedestrians, cyclists and other users know where to go and what facilities to use. When planning, designing and implementing an AT system, effort should be made to incorporate a 'family' of signs and symbols that are easily recognized by a user. A 'family' includes different signs for various purposes which collectively form part of the Town's AT identity. Signs can be complimented by pavement markings which indicate a wayfinding message or other message and reassure users that they are on track to their destination.

Pedestrians, cyclists and other AT users may be deterred from using an AT route if they do not know where to go, how to use the facility, how routes connect, or where they are along a route. The strategic placement of signs provides route information and encourages use of the AT system. In addition to the location of signs, a cohesive design / identity should be incorporated into all signs. Without a unified look, users may have difficulty identifying a sign or interpreting the information presented on it.

The following are typical signs included in a 'family of signs':

1. **Directional Signage** informs users of the direction and distance to a nearby destination. They should be installed at intersections, path breaks, uninterrupted trail sections and where additional directional guidance is of benefit;
2. **Trail Entry Signage** is installed at entrances and junctions for off-road segments of the AT system to inform users of the level of difficulty, trail name, trail map and trail length. These signs should orient users upon arrival and provide a landmark for the route entrance;
3. **Information Signage** is installed on off-road segments of the AT system to inform users of restricted activities (per municipal by-laws) and 'rules of the trail'. This sign should be installed adjacent to a trail entry sign or at secondary access points;
4. **Route Marker Signage** is installed at regular intervals or in locations where additional guidance may be needed e.g. change in direction on a trail. The sign is intended to inform users of their distance travelled along a trail; and
5. **Pavement Markings** can enhance a user's experience by complimenting the wayfinding provided by signage. Common AT pavement markings can include trail logos, winter maintenance icons, route icons, and trail names. These markings direct AT users and have the added benefit of increasing driver awareness of other users on the road.

As noted in section 3.0, touring loops have been identified by the bike it committee which are intended to be promoted as safe and comfortable cycling routes within Acton and Georgetown. Halton Region has expressed an interest in developing a region-wide tourism based signage strategy with a focus on cycling. The Town has implemented urban wayfinding and signage that would fall into the directional signage category.

Consistency will be critical moving forward. The Town should explore opportunities to work with the committee as well as the Region to ensure that the signage that is implemented has a cohesive and consistent message and look and feel and that local community destinations are integrated into the communication, outreach and promotional tools that are developed to support the strategy.



5.0 NEXT STEPS

Phase 2 of the Halton Hills ATMP focuses on one of the core foundations of any active transportation master plan – the process, routes, facilities and design considerations that need to be considered to develop a continuous and connected active transportation system. Through the tasks completed, a recommended AT system has been developed through the integration of **previously adopted regional and provincial networks as well as the town's trails network, refinements to the previously adopted cycling master plan** as well as consideration and alignment with touring loops identified by local stakeholders. The AT system is made up of on and off-road network that individually provide a range of opportunities for different active transportation users for various trip types and together establish a wide-reaching system of active transportation and recreation opportunities linking major destinations within and around the Town.

The AT system has been reviewed and revised by Town staff and vetted by residents, and stakeholder groups, ensuring that the opinions and interest of the community and those responsible for **the system's implementation have been heard and integrated into the recommendations**. With the completion of Phase 2, the Town and consultant team will be moving forward with Phase 3 of the ATMP project process which will include:

- The identification of system phasing and costing;
- The identification of system priorities and an action plan;
- Collaboration with Town staff to finalize the AT system, including context specific design considerations and treatments;
- The development of active transportation supportive policies for other municipal planning documents;
- The identification of an encouragement and outreach strategy;
- The development of monitoring and evaluation targets and measures; and
- Consultation and engagement with community residents, visitors and stakeholders to gather input on the proposed system and to help identify potential priorities.

WSP is committed to working with Town staff and stakeholders to collaboratively develop the ATMP in a manner that addresses the goals and objectives set out and produces a document that is provides value to the Town and its residents.