Made in Pelham

Town of Pelham
Active Transportation (AT) Plan & Implementation Strategy

Final Report | November 2016

Pelham NIAGARA

MMM GROUP

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1.0 CONTEXT

Pelham, ON is considered an active and healthy community. It is the first rural municipality in Ontario to be designated as a bike friendly community (silver) and walk friendly community (bronze). These changes did not happen overnight and are due to the significant efforts of the local Active Transportation Advisory Committee (PATC), the commitment of Council, municipal staff and residents. Becoming an active community in Pelham has been a successful grass roots community shift. People understand the importance of a higher quality of life and the value of creating change together.

Though significant walkability and bikeability has been improved, there has never been a clear strategy or plan to guide planning, design and implementation of walking and cycling routes and facilities. In December 2015, the Town of Pelham started a project to complete the Town's first Active Transportation Plan and Implementation Strategy. The plan was developed in **collaboration** with the PATC, local stakeholders and interested residents and a consultant team led by AT and trail specialists from WSP | MMM Group.

What's in this section?

1.1	The information needed to understand aspects of the Town that influence active transportation and an overview of the work done to date.
1.2	An overview of the business case for improving active transportation in Pelham including environmental, social, health and related benefits.
1.3	An overview of the things that need to be improved related to active transportation in Pelham and the opportunities available to improve it.
1.4	The foundation of the plan in the form of the long-term, town-wide vision for active transportation as well as the objectives that the plan aims to achieve.
1.5	The intended uses of the plan and the assumptions used to shape the content of the plan report, recommendations and strategic actions.

Did you know that…
The PATC has led the Town's active transportation initiatives since 2008 leading many successes such as the Town's International Charter for Walking, community outreach and education?

1.1 How was the plan developed?

The Pelham Active Transportation Master Plan (PATMP) was developed as a blueprint for staff, stakeholders and the public. It was led by Staff from the Town's Public Works department and developed in collaboration with the PATC. The project started in December 2015 when a team of active transportation experts from WSP | MMM Group was hired by the Town. The group worked together between December 2015 and August 2016 to develop the plan. **Figure 1** illustrates the key steps used to develop the plan.

Consulting and engaging with Town residents and stakeholders was one of the core elements of the work plan. At the time the project was launched, the team developed an online questionnaire and interactive mapping tool which were used to gather input over the course of the study. These tools, combined with other promotion and education initiatives were used to gather input from individuals throughout the community. More details on the consultation program and input received is presented in **section 2.0**.

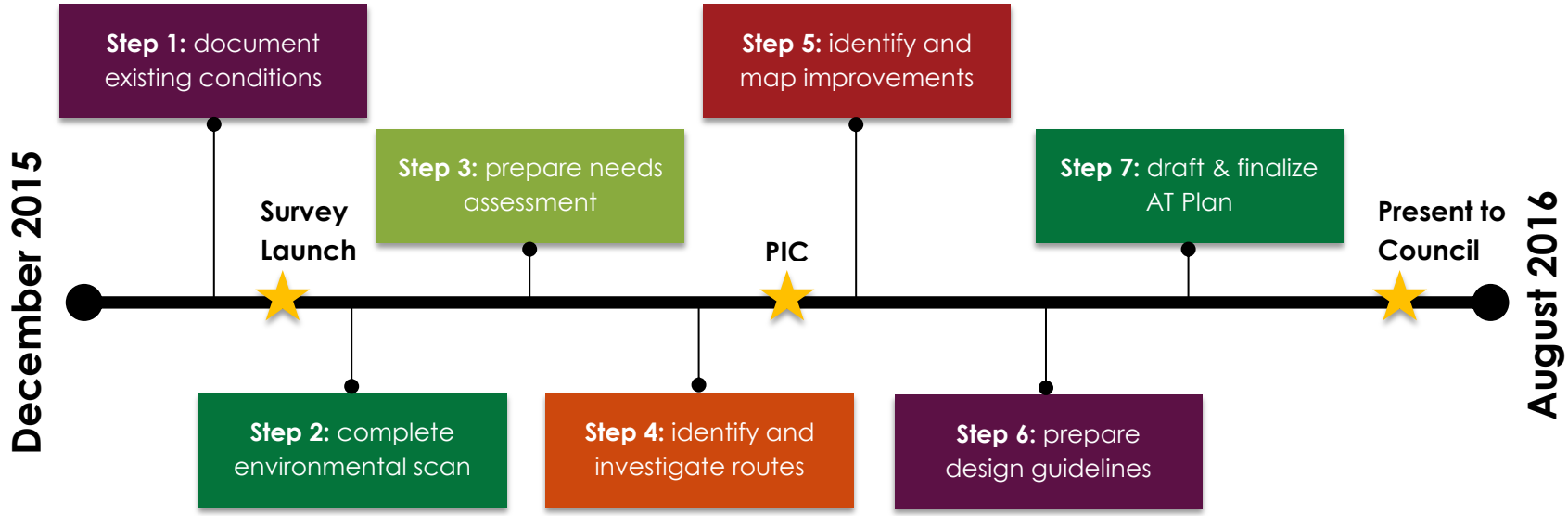
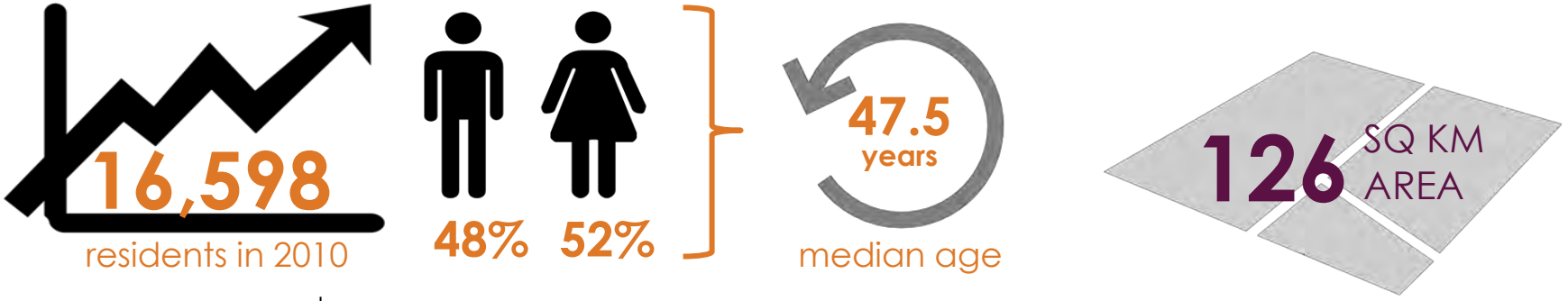


Figure 1 - Pelham Active Transportation (AT) Plan Development Process

1.2 *Pelham: What do we look like now?*

The Pelham Profile

It is important to understand the socio-demographic information of a community in order to establish a typical "profile". This profile helps to shape the project goals, objectives, outcomes and recommendations. The following infographic illustrates the profile developed for Pelham based on information gathered from the 2011 Census Data as well as information gathered by the Regional Municipality of Niagara.



WALK.BIKE.ROLL.HIKE. LET'S MAKE PELHAM ACTIVE

Did you know that…
Pelham is the first community within the Niagara Region to have developed and adopted their own active transportation plan?

Policies »

Active Transportation in Pelham: A Snap-shot

The plan is not meant to "reinvent the wheel". It is meant to build on the successes of the Town and to identify a **comprehensive** plan for the future. In order to do this the team needed to complete Step 1 of the process – document existing conditions. The plan not only addresses active transportation – walking and cycling - infrastructure. It is also meant to provide recommendations and direction on how to promote, educate and encourage people to be more active as well as ways to integrate active transportation into day to day decision making. The following sections provide an overview of the active transportation policies, initiatives and facilities currently found within the Town.

There are three levels of government and policies which impact how active transportation is planned, designed, constructed, operated and maintained. As part of this exercise, the team reviewed applicable policies at the provincial, regional and local municipal levels. The exercise allowed the team to better understand the strategic directions at each government level and helped to shape the vision, objectives and recommendations found within this plan. **Figure 2** illustrates the different policies which were reviewed by the project team. A more detailed summary of policies can be found in **Technical Appendix A**.

Province of Ontario	Region of Niagara	Town of Pelham
• Provincial Policy Statement • Municipal Act • Places to Grow Act • #CycleON • Ontario Climate Change Strategy • Greenbelt Plan • The Big Move	• Consolidate Official Plan • Transportation Strategy Update • Complete Streets Model Policy Handbook • Bikeways Master Plan	• Official Plan • Strategic Plan 2015 and 2011 • Cultural Master Plan 2013 • Downtown Master Plan • 2009 Community Improvement Plan

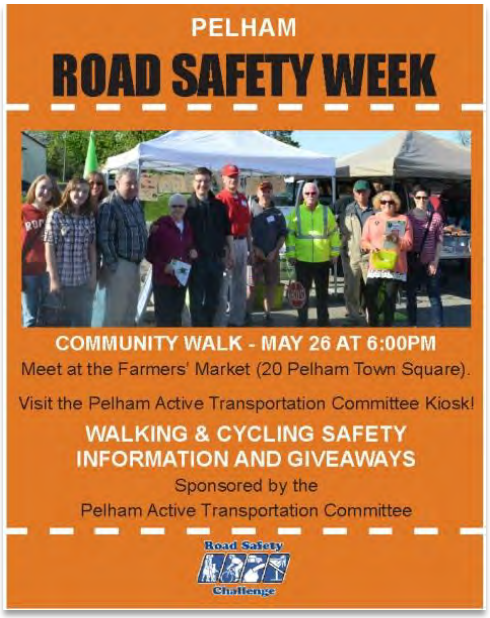
Figure 2 – Overview of Background Policies Reviewed

« Initiatives

AT initiatives include programs and promotional tools that have been launched by the Town, committee or other stakeholder groups that encourage residents and visitors to become more active, get involved and generally become more educated about safe and enjoyable walking and cycling within the community. A number of AT initiatives have been launched within Pelham. Much of this is attributed to the efforts of community partners. The following are some of the initiatives which have helped to encourage and promote AT in Pelham.

- **Share the Road:** Since Pelham was identified as a silver bicycle friendly community, Share the Road has been a key partner in promoting and encouraging walking and cycling in the Town.
- **Mayor's Walk:** This annual event is organized by the PATC. It launches the opening of the Pelham Market and is meant to raise awareness and interest.
- **Community Walk – Road Safety Week**: Pelham's AT committee holds an annual community walk to raise awareness about how to walk and cycle safely throughout the Town. Awareness is not just for pedestrians and cyclists but also for motorists.
- **Bicycle Touring Rides**: Touring rides are coordinated by the Niagara Freewheelers Bicycle Touring Club. The group is a non-competitive group that offers more than 400 rides throughout Niagara including the Town of Pelham. Specific rides in Pelham include Harold Black Park in Fonthill and Rockway Community Centre – north of Pelham.
- **Walking Groups**: The Town's Walking Club encourages local residents to be healthy and social. The walking club meets every Tuesday night to walk throughout the Town using different trails and walking routes.
- **Bike Valet at Public Events**: At local events such as the Supper Market and Summer Fest, complementary bicycle parking is provided to incentivize people to leave their cars at home and either walk or cycle to the venue.
- **Mapping & Promotion**: The "Come Cycle in Pelham" flyer was recently developed to help promote cycling throughout the Town. In addition, the Town has developed bike maps of the Steve Bauer Trail and continues to promote the use of the Region's bicycle map.

Did you know that…
Summerfest is one of the top 100 Festivals within Ontario to attend? There's a bike corral and other ways to stay active and involved in the community.



Facilities

The Town of Pelham has an existing system of on and off-road walking and cycling routes that form a spine of AT facilities. In the past, the Region of Niagara has provided Pelham with funding which has allowed for the implementation of facilities along some of the major regional roads. The existing routes do not form a connected and continuous system of walking and cycling facilities. There are missing links which make it more difficult to access major community destinations by bike or foot i.e. schools. Cycling facilities can be categorized by the level of separation from motor vehicle traffic. There are three common "levels of separation". These include:

- **Shared Facilities:** where the cyclist shares the roadway with motorists.
- **Designated Facilities:** where cyclists are provided their own "designated" space delineated by a painted line.
- **Separated Facilities:** where cyclists are provided either physical or spatial separation from motorists and other road users.

There are a total of **98 kilometres** of **existing walking** and **cycling facilities** within the Town of Pelham. **Figure 3** illustrates the walking and cycling facilities categorized based on their level of separation. Also included within this calculation are the ~71 kilometres of sidewalks that provide pedestrians with separation from motor vehicle traffic. Based on the Town's current by-law, sidewalks are only to be used by pedestrians and not cyclists – a restriction that is supported by the consultant team. And should continue to be promoted and enforced. The existing routes are presented on **Map 1** and **2**. The colours used to border the photos correspond to the colours used on the mapping.

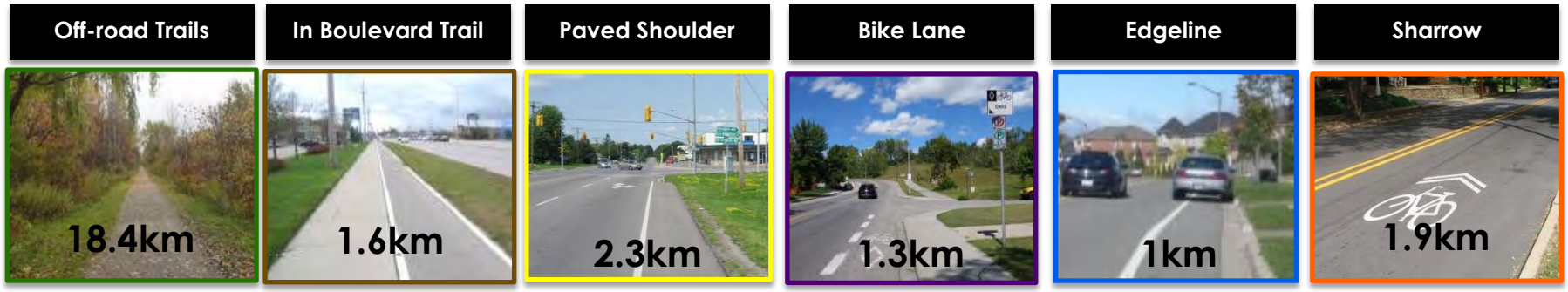


Figure 3 – Overview of Existing Walking and Cycling Facilities in Pelham

1.2 The Business Case

Most individuals understand that leading a more active lifestyle has many benefits. However, some question the rationale for investments in AT compared to other competing infrastructure priorities. Establishing a business case which demonstrates the benefits and value of investment can help influence future commitments and priorities.

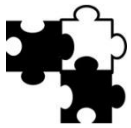
Did you know that…
In 2013 the Niagara Region Public Health developed a number of fact sheets outlining the benefits of AT?

Health: People who are inactive are at significant risk of cardiovascular disease, diabetes, cancer, hypertension, bone and joint disease and depression. Cycling and walking to destinations can provide the recommended daily physical activity while decreasing the risk of developing or the progression of chronic diseases.

Environment: One litre of gas emits about 2.3kg of carbon dioxide when burned. These Green House Gases (GHG) are one of the primary contributors to climate change. Transportation is a major contributor accounting for approximately one third of Ontario's GHG emissions.

Tourism: Cycling tourism is growing in Ontario at a fast rate. Research completed in 2010 indicates that over two million visitors went cycling while on their trip and spent approximately $391 Million; an 18% increase in cycling tourism spending over the past year.

Safety: Research shows that as there are more cyclists on the road, motorists become more aware of how to interact with them. Cyclists tend to feel more comfortable if there are other cyclists on the road which make them more likely to cycle.



Social: Cycling and walking brings people together. It can not only be a group activity but it also has been shown to establish community good-will and involvement. It builds strong families and communities by generating a common goal.

Economic: There are also a number of economic benefits such as increased home values, lower personal transportation costs, return investment and employment. The capital cost to implement most AT infrastructure is far less than widening a road and more trips can be accommodated in less space.

1.3 Establishing Key Principles

The Vision & Objectives

A strategic plan must be founded on a vision that is supported by the community and a set of objectives that reflect the Town's priorities to guide future decision making. One of the first steps was working with the PATC and members of the public to develop a common vision and set of objectives that the plan aims to achieve.

In simple terms, the **vision** of the AT Plan and many of the Town's other strategic planning documents is **to enhance the quality of life in the Town of Pelham**. However, a more active transportation specific vision has also been developed:

"Enhance the quality of life for residents and visitors in the Town of Pelham by providing a connected, attractive and convenient active transportation system that offers a high degree of comfort and safety, expands recreation options and encourages sustainable modes of transportation, respects the natural scenic character and supports economic development."

Understanding and defining what this means for AT helps to shape the recommendations and actions identified in the Plan. This is done by identifying a set of core objectives that the Plan aims to achieve. There are a total of eight (8) long-term AT objectives for Pelham:

#1 

Design a continuous and convenient system of AT facilities by identifying routes and facilities that accommodate and are considered comfortable by a wide range of users e.g. pedestrians, cyclists and hikers;

#2 Improve accessibility and equity throughout the community by accommodating the needs of various users;

#3 Provide recreational, commuting and touring opportunities within the Town of Pelham and to surrounding areas to increase the quality of life of local residents;

#4 Preserve Pelham's natural and cultural heritage and enhance local assets to ensure the Town's unique character is reflected in future AT initiatives;

#5 Engage the citizens and stakeholders of the Town of Pelham to shape master plan recommendations and lay the foundation for future engagement and collaboration;

#6 Support the development of a complete community by promoting and building healthy, active and multi-modal transportation alternatives;

#7 Identify actionable recommendations that guide the Town's next steps and future investments; and

#8 Provide the Town with tools and strategies to guide implementation in the short, medium and long-term.

AT Plan Themes

A successful master plan not only addresses and recommends the implementation of walking and cycling routes and facilities. A successful plan must also provide direction on how to prioritize the work that needs to be done, plan for transportation and plan-use planning improvements, coordinate internal process to facilitate implementation and promote and encourage people to become more active. With this in mind, Pelham's AT Plan has been organized and developed based on four key themes.

1

Priorities

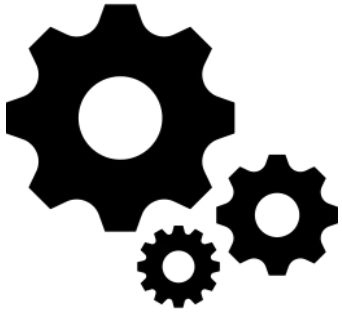
Specific infrastructure improvements which address the physical concerns and needs of the community including but not limited to types and locations of walking and cycling facilities.

2

Planning

Planning practices and trends which, when integrated into policy documents can help to influence resident behaviours and help to achieve complete communities.

3



Process

Suggested internal and external practices which when integrated into day to day practice will help to guide implementation of the plan.

4

Promotion

Tools, programs and initiatives that are intended to complement the infrastructure to promote a change in behavior and increased interest / participation in AT.

1.4 Needs & Opportunities

The needs of the residents and stakeholders within Pelham were identified and used to shape the actions and recommendations outlined within the plan. For each need there is an opportunity to address it through this plan report.

Table 1summarizes the needs that were identified over the course of the project. These needs emerged as a result of past consultations completed by the PATC, consultations which were completed to develop the plan, one on one discussions with committee members and staff as well as policy and strategic plan guidance. They are not presented in any particular order and do not represent a level of priority. The needs are organized into the four high-level themes: priorities; planning; process; and promotion which are known to be necessary components to a successful master plan.

Did you know that…
The PATC is at the Town's Farmer's Market every Saturday on an annual basis with information about how to stay involved and be active?

Table 1 – Summary of AT needs and opportunities in Pelham

The needs…	The opportunities…
PRIORITIES	
Major spine connections	• Continue partnership with the Region to implement facilities along major regional roads; • Identify linkages to existing trail systems; and • Recommend linkages to surrounding municipalities and major community destinations.
Downtown improvements	• Revisit the design of the pedestrian and cycling realm within the Town Square; • Identify facilities which link neighbourhoods to the downtown core; and • Complete key gaps in the Steve Bauer Trail.
Intersection improvements	• Identify major intersections which have key safety concerns; • Recommend potential intersections treatments for key areas; and • Design accessibility in mind.
Missing Links in the Sidewalk System	• Identify and map the existing linkages and key gaps; and • Prepare and recommend of criteria to investigate missing linkages.

The needs…	The opportunities…
PLANNING	
Traffic Calming	• Identify high traffic volume areas based on Town data / information; • Identify potential traffic calming design treatments within key locations; and • Identify policy recommendations and updates.
Improved Safety	• Consider and design for various user groups; • Recommend a range of facility types with different levels of separation; and • Recommend education, encouragement and enforcement.
Accessibility	• Consider the Accessibility for Ontarians with Disabilities Act; • Design for those with limited mobility where possible; and • Identify and plan for areas of concern.
Trail connectivity	• Identify and map missing links; • Identify design considerations and potential treatments; and • Improve amenities along existing trails and with future trail linkages.
Rural connections	• Identify routes and facilities within the rural areas of the Town; • Develop design guidelines and standards for both urban and rural areas; and • Partner with surrounding municipalities to create inter-municipal connections.
PROCESS	
Maintenance	• Understand and define the appropriate level of service; • Identify potential routes which could form part of a winter cycling network; and • Define and understand the costs associated with seasonal maintenance.
Implementation	• Define roles and responsibilities to achieve next steps; • Establish a process and tools to support implementation; and • Identify a phased approach which is costed and communicated.

The needs…	The opportunities…
Improved Cycling facilities	• Apply the facility selection tool outlined in OTM Book 18; • Consider a range of potential facility types based on roadway conditions; and • Consider and apply unique trail design principles with cycling in mind.
PROMOTION	
Education and awareness	• Define best practices from applicable municipalities; • Recommend programs and initiatives to improve education tailored to Pelham; and • Identify partnerships to support implementation of initiatives.

Did you know that…
Everyone is technically a pedestrian. At some point in your day you will need to walk. Making it more enjoyable and safe should be a priority.

1.5 Defining the AT Plan

Who is this Plan for?

This document is meant to be **your** plan – the residents of the Town of Pelham. It was developed specifically for the Town of Pelham and includes solutions that are unique to the interests and objectives of its residents. The routes and facilities have been designed with comfort and safety in mind. The two primary users that have been considered are **pedestrians** and **cyclists**. The system addresses the preferences of these two primary user groups but also takes into consideration other seasonal users such as cross-country skiiers, in-line skaters, snow-shoers and other non-motorized forms of transportation.

Pedestrians Cyclists

Cross-Country Skiiers In-line Skaters E-Bikes

Master Plan Assumptions

There are a number of different assumptions about what an active transportation plan is meant to be. Some of these assumptions are accurate and others are beyond the intent and purpose of the document. Before presenting the plan, it is important to identify what is it meant to be and what it is not meant to be to set the expectations for its use.

What is it…	What it is not…
A blueprint for future planning	A commitment of monies
A flexible tool for Town staff	A prescriptive set of projects
Guidelines for the design of facilities	A final design for roads and trails
A community building asset	A requirement for policy change

The plan is meant to be action oriented, giving Town staff and the Active Transportation Committee some clear next steps to move forward with the implementation of active transportation infrastructure, programs and initiatives. Though the plan is meant to be a flexible and adaptable resource for staff and stakeholders it is also meant to be a guide for future decision making re: planning, design and development. As such, any future changes to the AT Plan should be reviewed by Staff in consultation with residents and stakeholders and documented.

Promotion of the Town at Summerfest 2016
Source: http://www.pelham.ca/en/experience/Pelham-Summerfest.aspx

2.0 PELHAM'S AT SYSTEM

2

One of the key objectives of the Pelham AT Plan is the identification of a comprehensive system of continuous and connected active transportation routes and facilities. The process that was used to develop Pelham's AT system was one of the primary components of the project. Applying an iterative approach which is based on input from the public and stakeholders as well as a consistent set of criteria helped to establish a system which not only reflects Town priorities but also those of various user groups, the Region and other Town partners.

Identifying and describing the steps used to develop Pelham's AT system gives those not involved in each step of the process a better understanding of what was considered, how routes were evaluated and selected and how facilities were investigated and identified. Though it is intended to be a continuous and connected system, combinations of select routes and facilities make up objective and user specific networks which help to prioritize implementation.

What's in this section?

2.1	Provides readers with a better understanding of each of the steps that were used to develop the AT system for Pelham.
2.2	Highlights the input that was received through consultation and engagement tools to inform the development of the AT system and other recommendations.
2.3	Highlights the different networks that make up the AT system. Specifically, we looked at the routes that make up the commuter cycling network, the recreational / touring cycling network, the pedestrian network, the winter network and the safe routes to school network.

2.1 Developing Pelham's AT System

The process used to develop Pelham's AT system was made up of six key steps. It was an iterative process that builds upon existing infrastructure, policies and programs while continuously integrating public and stakeholder input. A high-level overview of the process and each of the steps is provided in **Figure 4**. Additional details are provided in **Section 2.3**.

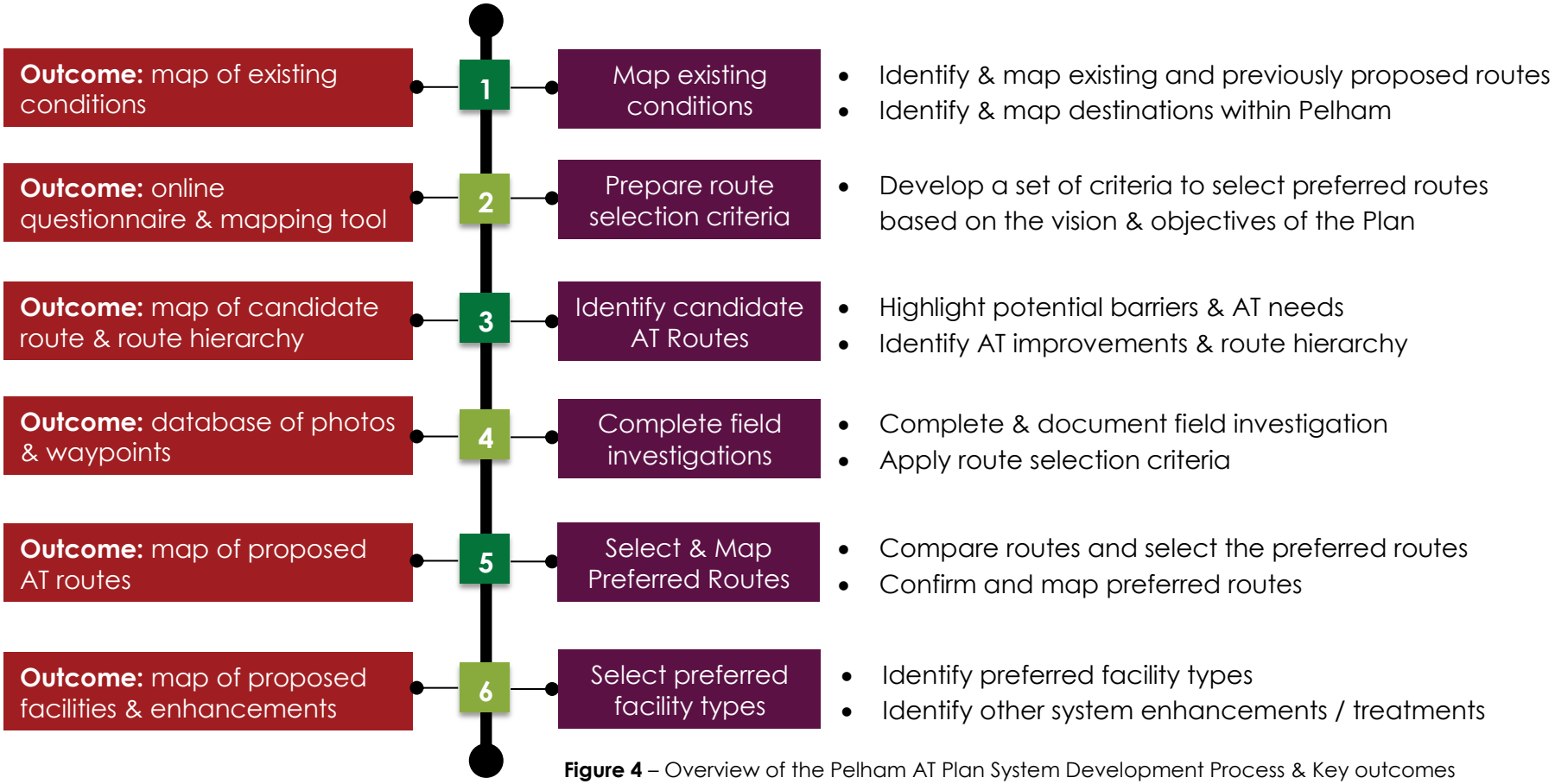


Figure 4 – Overview of the Pelham AT Plan System Development Process & Key outcomes

2.2 *Informing the System Development Process*

The process that was used to develop Pelham's AT system was based on a typical master planning process, best practices and lessons learned. Consultation and engagement occurred as the system was developed. For each step, there was a clear ask from the committee, stakeholders or residents. Three types of input were used to influence the system development process. Highlights of these consultation activities are presented below.

Past Input Gathered by the PATC

The PATC has been gathering input over the past five to ten years at community events. The input gathered was provided to the consultant team to consider as they were developing the AT Plan. The following are the two sources of input:

- **Summer Fest 2015:** The PATC attended the 2015 Summer Fest and "allowed" visitors to "Have Their Say" about active transportation in the Town. Attendees engaged through one on one discussions with members of the committee and provided input on suggested improvements related to infrastructure as well as enforcement and design.
- **Farmer's Market:** The PATC regularly has a booth at the Farmer's Market where they provide information to residents about walking and cycling and engage them on key issues and priorities related to AT. Members of the committee are available to speak with residents and visitors about what they need and how to improve AT. The committee has been gathering input at the Farmer's Market since 2010. The input received is included in **Technical Appendix B**.

Did you know that…
Pelham's AT committee has a strategic plan in place which guides the work that they do? This plan will help with future actions and strategies.

Did you know that…
Similar tools can be used to help provide input to implementation? A map of the system can be used annually to identify priorities and actions.

Online Input

Two online tools were developed for the Pelham AT Plan. They included:

- **An interactive online mapping tool:** A map of Pelham, presenting the existing and previously planned walking and cycling routes was put online. Respondents were asked to identify areas in Pelham which represent cycling opportunities or issues, walking opportunities or issues, community destinations, locations where bicycle parking should be considered and recommendations for signage and wayfinding improvements. A total of 34 comments were provided using the interactive online mapping tool.
- **An online survey:** The online survey asked respondents to answer questions about current cycling and walking habits and route / facility preferences as well as some general socio-demographic information about each respondent. A total of 113 responses were provided to the online survey. Key outcomes from the online survey are presented on the following page. A more detailed summary of input received through to online survey is presented in **Technical Appendix B**.

In-person Input

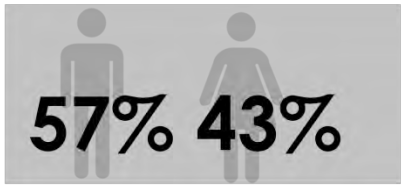
The study team met, discussed with and gathered input from residents and stakeholders. There were two points of contact including:

- **Pelham Active Transportation Committee Meetings:** The consultant team met with members of the PATC four times over the course of the development of the AT Plan. The meetings were used to discuss the key milestones and outcomes of the project and to gather input on the different stages of the system development process.
- **Public Information Centre / Home Show:** Members of the consultant team attended the Pelham Home Show to present the draft AT system and to gather input of the facilities and system enhancements. Results from the PIC are summarized in more detail in **Technical Appendix B**.

Members of the team attended meetings for the Region's Transportation Master Plan Update and consulted with Regional staff on recommended routes and priorities.

who responded...

113 responses **79%** residents



66% travel less than 10km for work **44%** Between 20 and 54 years

CYCLING RESPONSES

Ownership...

95%

Trip frequency...

32% Cycle **daily** **47%** Cycle **weekly**

Trip purpose...

65% 35% 12% 7%

Cycling to school...

27% someone that cycles to school

Comfort level...

66% feel comfortable cycling

Potential improvements...

57% more routes **59%** connectivity

49% improve facilities **38%** washrooms & maps

PEDESTRIAN RESPONSES

Trip frequency...

62% walk **daily** **25%** walk **weekly**

Trip purpose...

72% 57% 26% 31%

Walking to school...

22% someone that walks to school

Comfort level...

87% feel comfortable walking

Potential improvements...

75% more routes **47%** connectivity

35% more park space **22%** school access

CYCLING RESPONSES		PEDESTRIAN RESPONSES	
Comfortable	**Uncomfortable***	**Comfortable**	**Uncomfortable***
• Respectful drivers • Safe side streets • Good facilities • Enjoyable experience	• High speeds • Not enough facilities • Main roads too busy • Narrow shoulders • Deep ditches	• Safe neighbourhoods • Good sidewalks • Signs & trail access • Well-lit trails • Accessible facilities	• Missing sidewalks • Narrow shoulders • Too close to the street • Enforcement • Maintenance

Paved Shoulder

Cycle Track

Sidewalks

Off-road Trail Through Park

Signed Bike Route

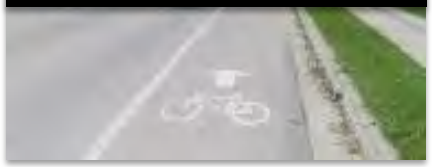
Buffered Bike Lane

Woodchip Trail

Natural Surface Single Track

Sharrow

Bike Lane



*the responses provided regarding level of comfort for facilities very much reflects prior use. If an individual did not have experience using these facilities the responses reflect a lower score. As such "uncomfortable" likely means lack of prior use.

In-boulevard Multi-use Trail

2.3 *Undertaking & Documenting the Seven Step Process*

As noted in Section 2.1, each step in the system development process had an approach and outcome. These are documented in the following sections.

Did you know that…
The GIS Database prepared for the Pelham AT Plan can be used as a tool to track the implementation of the plan? It can be updated as routes are desianed and constructed.

Step 1: Mapping Existing Conditions

Information was gathered from the Town of Pelham and the Region of Niagara and used to develop a GIS database of existing and previously planned AT routes and facilities. As the team worked through the system development process, the database was updated. **Maps 1** and **2** present the existing and previously proposed AT routes in Pelham. When reviewing the maps, the following key features were identified:

- **Regional Routes:** Though not under the Town's jurisdiction, these routes make up a spine system of routes within Pelham. Regional routes typically provide opportunities for long-distance cycling trips as well as connections between rural communities. The routes presented were identified in the Region's Bikeways Master Plan. This document is currently being reviewed and revised as part of the update to the Region's Transportation Master Plan.

- **Connections to Surrounding Municipalities:** Identifying connections to the surrounding municipalities can facilitate inter-municipal and intra-regional travel. When developing the AT system, the study team reviewed available policies and plans from surrounding municipalities as well as the Region's Bikeways Master Plan to identify points of access along the boundary of the Town.

- **Linear Trails:** Existing linear trails found in hydro corridors and along abandoned rail corridors provide both recreational and commuter walking and cycling opportunities. In some locations they access areas of natural and cultural significance. In some locations, there are key missing links. Bridging these gaps or creating on-road connections would provide access to major natural and cultural areas of significance.

- **Steve Bauer Trail:** The trail is a key north-south connection in Fonthill for pedestrians and cyclists. It provides access to key residential areas and surrounding municipalities (e.g. City of Welland and the City of Thorold). Opportunities for expansion or the implementation of missing links could help to improve access to the trail system.

- **Local Cycling Facilities:** The Town has implemented some on-road cycling facilities on local roads specifically within the community of Fonthill. For example Haist Street and Port Robinson. These two connections provide cyclists with an existing north-south and east-west corridor into and out of the Town. As they currently stand, these facilities are somewhat isolated but provide a strong basis for future connectivity.

- **Unopened Road Allowances:** Parcel fabric information was used to illustrate and investigate unopened road allowances throughout the Town. The outcomes of the investigation will be documented in **section 4.0**; however, preliminary results show that there are a number of opportunities where unopened road allowances should be protected for future trail development.

- **Transit Connections:** The Town of Pelham recently implemented a local transit pilot project. Transit stops are identified between Fonthill, Ridgeville and Fenwick. The transit system provides opportunities for increased walking and cycling by taking advantage of the first and last mile and provides access to surrounding areas as well transit systems in surrounding municipalities.

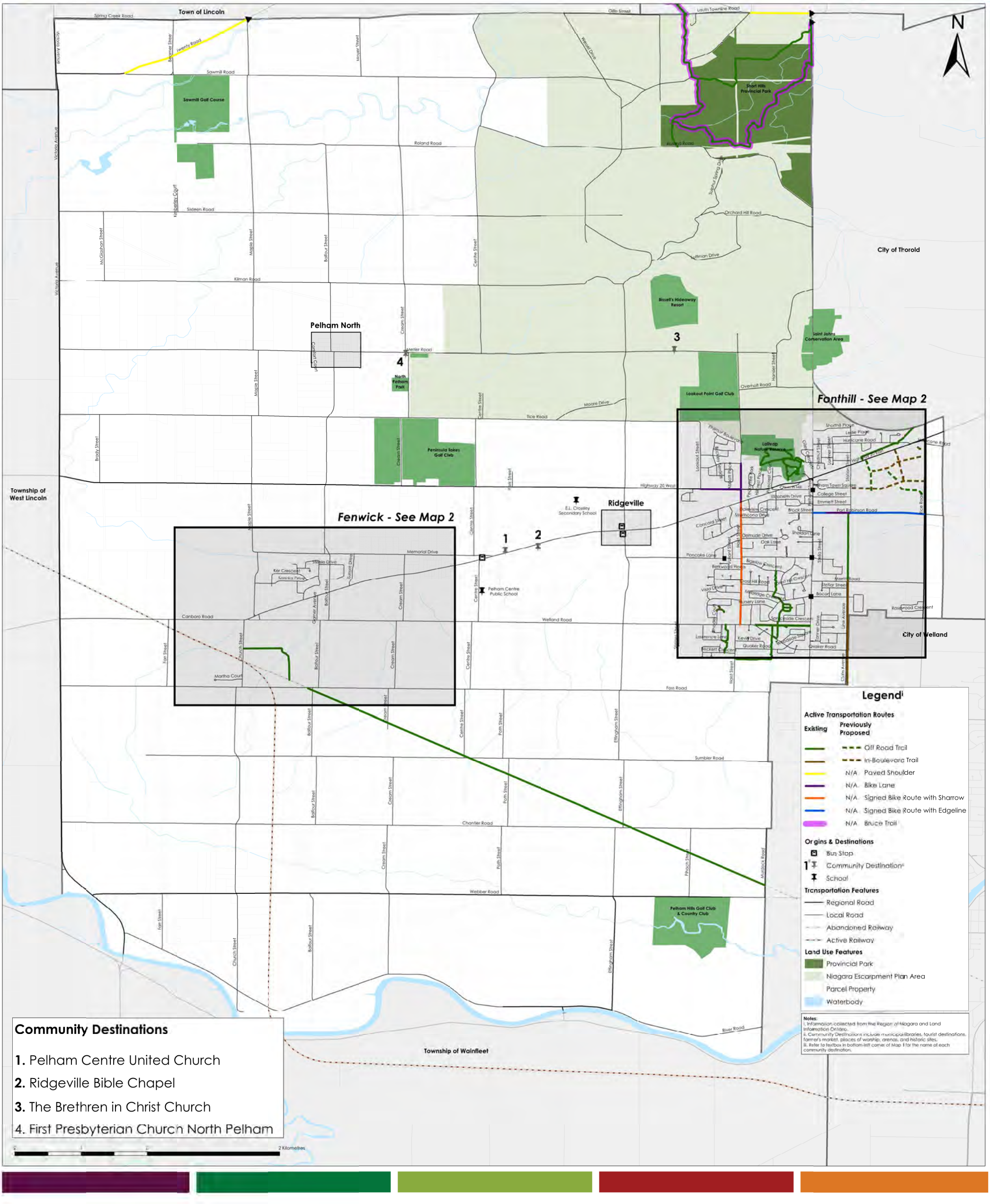
- **Share the Road:** Throughout the urban, semi-urban and rural areas of the Town, Share the Road signs have been implemented in select locations. Though not considered a formal cycling facility type, it does increase awareness to motorists of other potential road users and can also be a way to highlight context sensitive conditions such as poor sightlines or narrowing of the roadway.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 1

MAP 1 - EXISTING AND PREVIOUSLY PROPOSED CONDITIONS (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

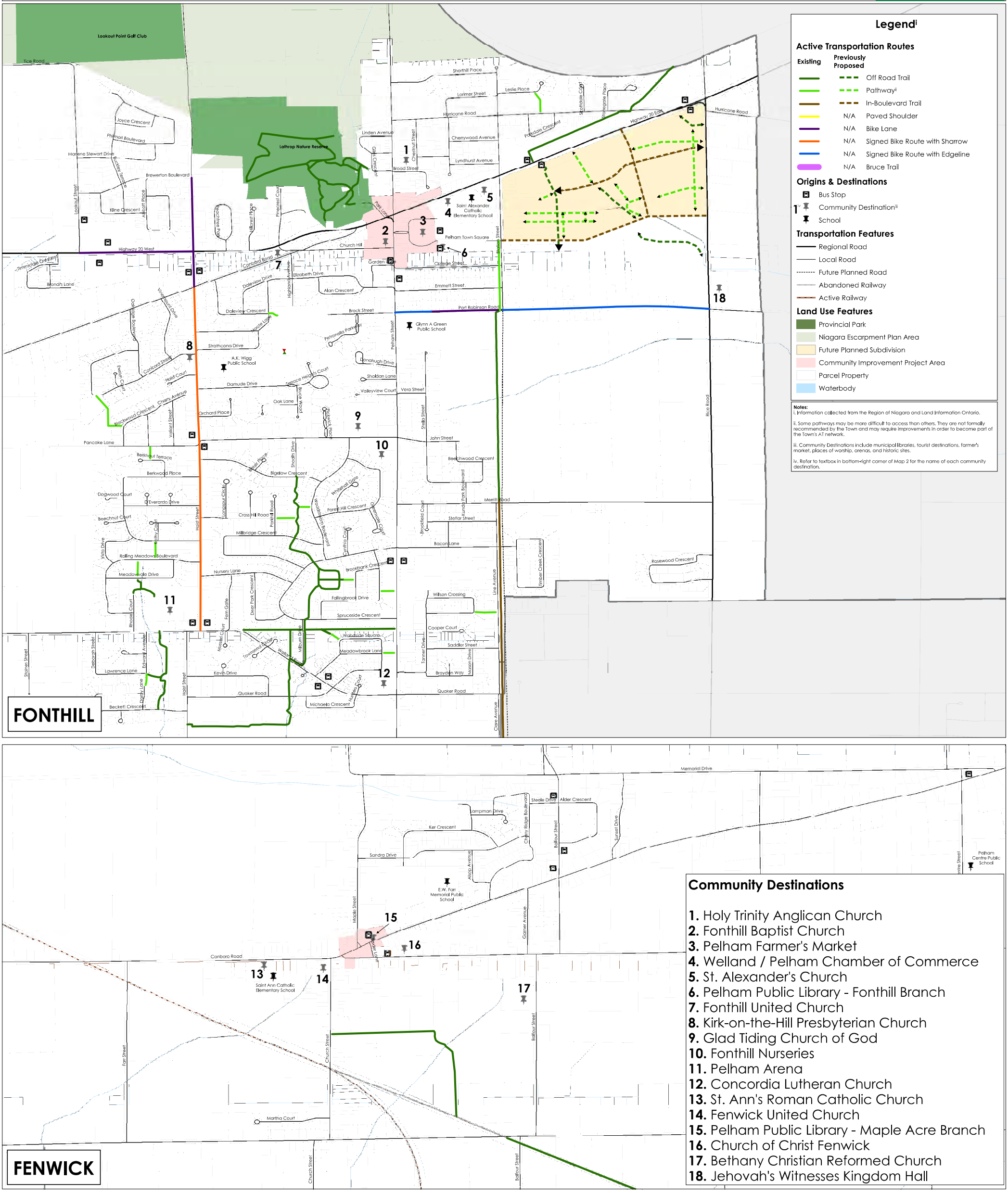


ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 2 - EXISTING AND PREVIOUSLY PROPOSED CONDITIONS (URBAN AREAS)

Map 2

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Active Transportation Routes

Existing	Previously Proposed	
		Off Road Trail
		Pathway[ii]
		In-Boulevard Trail
	N/A	Paved Shoulder
	N/A	Bike Lane
	N/A	Signed Bike Route with Sharrow
	N/A	Signed Bike Route with Edgeline
	N/A	Bruce Trail

Origins & Destinations

- Bus Stop
- 1[iv] Community Destination[iii]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

iv. Refer to textbox in bottom-right corner of Map 2 for the name of each community destination.

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

Step 2: Prepare Route Selection Criteria

Route selection criteria are a set of principles that reflect the Plan's goals and objectives. They are shaped by the facility selection considerations outlined in OTM Book 18, best practices and lessons learned. The criteria, presented below, were used to inform the selection the routes that make up the AT system. Details on the questions asked when assessing each route are outlined in **Technical Appendix C**.

Access & Potential Use — The ability which a route is able to provide direct access to key destinations and the increase in users it may experience

Connectivity & Convenience — How well the route links opportunities for walking and cycling and is it considered a route that is accessible for users

Environmental Sustainability — The ability for a route to impact the number of single occupancy vehicles with minimal impact on the environment.

Attractiveness — The experience that the route provides the user and the potential for a route to access areas of natural significance.

Safety & Comfort — The conflicts that could be created or prevented by implementing the route and the appeal to various users.

Cost — How well the route links opportunities for walking and cycling and provides access to local businesses and tourism destinations.

Consideration of Future Use — The impact that the route will have on the volume of cyclists and pedestrians of all ages and abilities.

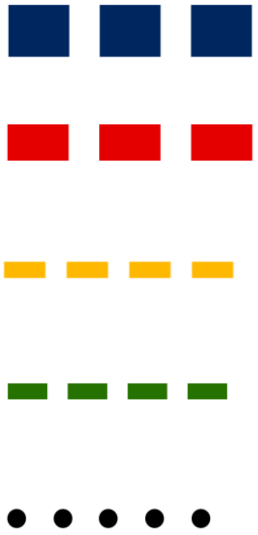
Tourism — The ability of the route to support tourism objectives of the Town and Region.

Step 3: Identify Candidate AT Routes

Candidate routes are potential active transportation connections that were investigated as alternatives which could form part of the AT system. Candidate routes were selected for Pelham that:

- Were identified in local and / or regional master planning or strategic planning documents;
- Previously identified through consultations with the public and stakeholders;
- Were identified as part of future development areas;
- Complete missing linkages in the existing system; and
- Achieve connections to surrounding municipalities.

The candidate routes identified were organized into four categories that represent the hierarchy or objective of the linkage. The four categories were selected based on high-level objectives of the AT System. The candidate routes and the hierarchy that was identified for each is presented on **Maps 3** and **4** and are described below.



Regional: routes identified outside of the Town's jurisdiction on regional roads but provide strategic inter-municipal linkages.

Primary: direct north-south and east-west connections that provide direct access to major communities and destinations within the boundaries of the Town and in some cases outside.

Secondary: routes found on local neighbourhood roadways within communities and alternative connections to the primary system within the rural areas.

Off-road: routes found in green spaces or along abandoned rail or hydro corridors. Provide opportunities to experience the natural areas and may be part of a regionally significant trail system.

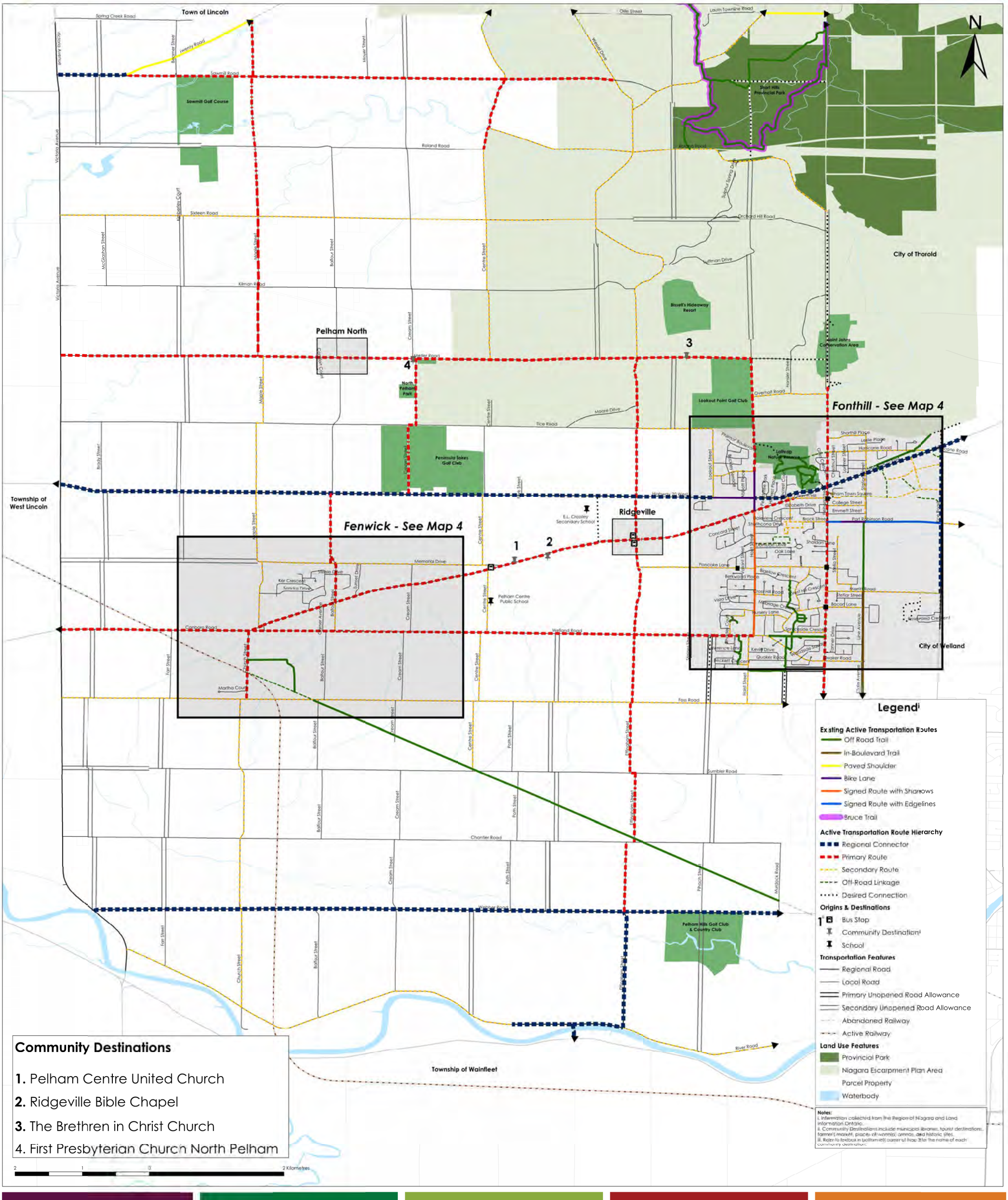
Desired: routes that are identified on lands that are not currently found under the jurisdiction of the Town but would achieve connectivity and continuity in the system.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 3 - ACTIVE TRANSPORTATION ROUTE HIERARCHY (TOWN-WIDE)

Map 3

Pelham NIAGARA | WSP | MMM GROUP



Community Destinations

1. Pelham Centre United Church
2. Ridgeville Bible Chapel
3. The Brethren in Christ Church
4. First Presbyterian Church North Pelham

2 1 0 2 Kilometres

Legend

Existing Active Transportation Routes
- Off Road Trail
- In-Boulevard Trail
- Paved Shoulder
- Bike Lane
- Signed Route with Sharrows
- Signed Route with Edgelines
- Bruce Trail

Active Transportation Route Hierarchy
- Regional Connector
- Primary Route
- Secondary Route
- Off-Road Linkage
- Desired Connection

Origins & Destinations
- Bus Stop
- Community Destination[i]
- School

Transportation Features
- Regional Road
- Local Road
- Primary Unopened Road Allowance
- Secondary Unopened Road Allowance
- Abandoned Railway
- Active Railway

Land Use Features
- Provincial Park
- Niagara Escarpment Plan Area
- Parcel Property
- Waterbody

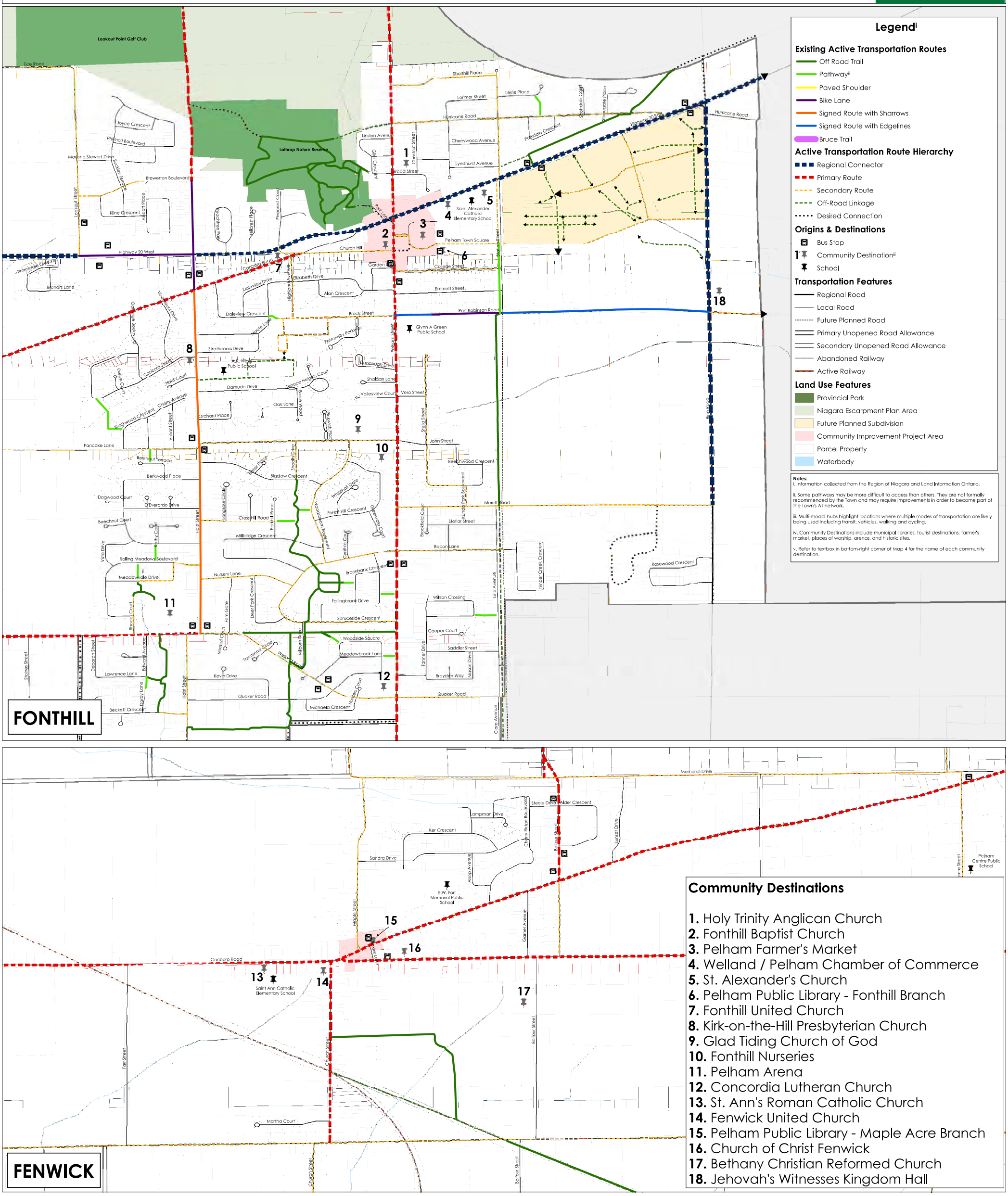
Notes:
i. Information collected from the Region of Niagara and Land Information Ontario.
ii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.
iii. Refer to textbox in bottom left corner of map title the name of each Community Destination.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 4 - ACTIVE TRANSPORTATION ROUTE HIERARCHY (URBAN AREAS)

Map 4

Pelham NIAGARA | WSP | MMM GROUP



Step 4: Complete Field Investigation

Field investigations were undertaken to gain a better understanding of the current conditions which will have a direct impact on the selection of potential routes as well as the selection of preferred facility types. Information was gathered using two sources, GPS waypoints and photographs. These tools helped the team to better understand the specific location of route considerations and characteristics and provide a visual representation of the current conditions.

There were a total of 634 photos and 274 waypoints taken over the course of a day investigating the candidate routes. The information forms a "database" of information which can be overlaid onto GoogleEarth. The database is recommended to be used as a tool to help inform implementation or when the master plan is updated and the system is revisited. **Figure 5** is an example of the information collected and how it could be presented in Google Earth.

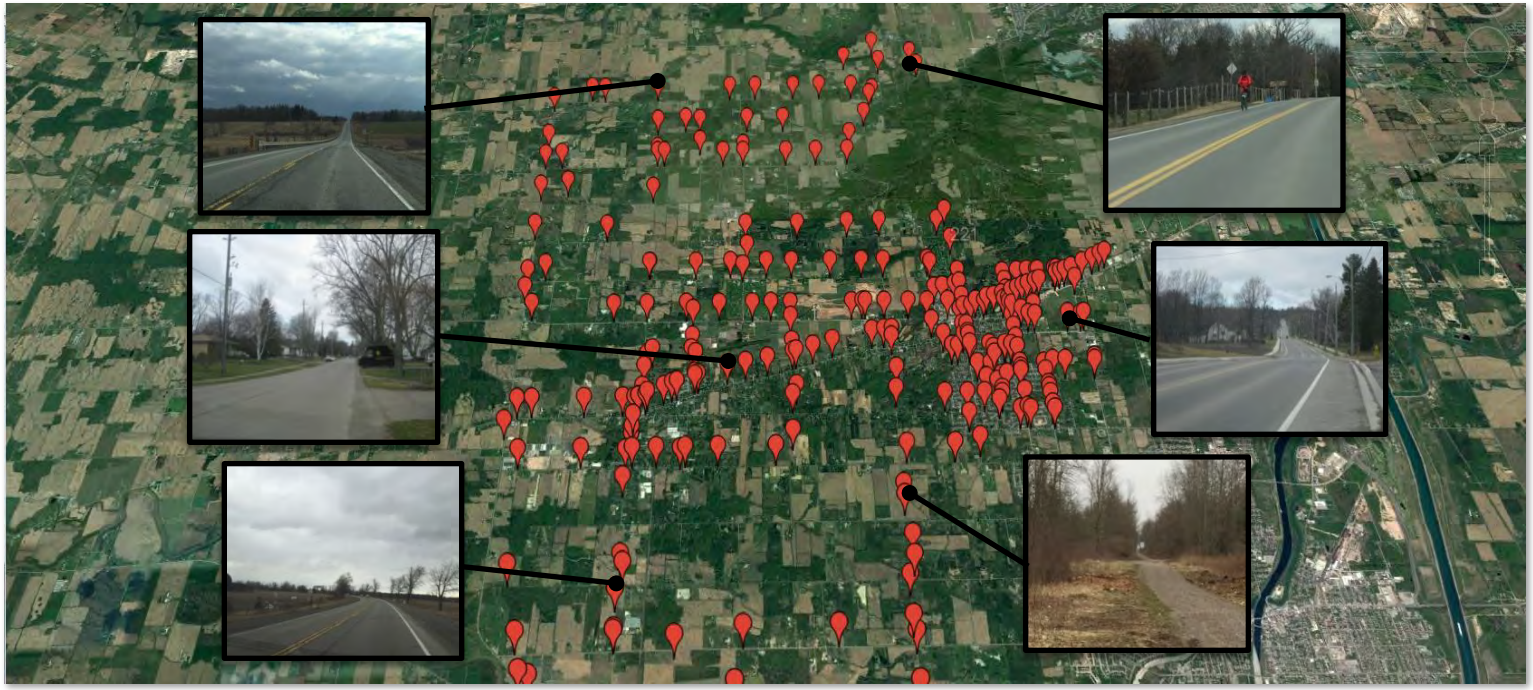


Figure 5 – Inventory of Waypoints and Photos Collected During Field Investigation

Step 5: Select & Map Preferred AT Routes

The preferred AT routes for Pelham were ultimately selected using six key inputs. They are presented in detail below:

- **Route Selection Criteria:** As the consultant team completed the in-field investigation and supplementary desk-top investigations, each of the criteria were considered and applied. It is expected that to some extent each of the routes proposed meets all of the criteria to some extent. Comments and considerations when applying the criteria were documented and incorporated onto a map of the candidate routes found in **Technical Appendix D**.

- **Existing Cross-section Design:** Roads with sufficient space to accommodate the minimum width of a cycling facility type were selected as preferred routes. To determine this, measurements of road cross sections and road platforms were taken in the field and using online measurement tools. This investigation also allowed the team to better understand the potential level of impact a facility type could have on the function and alignment of roadway.

- **Traffic Volumes & Speed:** Average Annual Daily Traffic (AADT) volumes and operating speeds were reviewed to determine whether a roadway was appropriate for implementation of an AT route. At locations where the AADT volumes and operating speeds are very high, it may be more appropriate to consider an alternate road / route. This information was also used to determine the appropriate facility for routes that made it beyond step 5.

- **Land Ownership & Jurisdiction:** For off-road linkages or links identified outside of the road right of way, the consultant team took into consideration the owner of the land. Where possible, routes were selected that were either owned by the Town or Region. Though this scenario was preferred, it is sometimes inevitable that a proposed pedestrian or multi-use route outside of the road right-of-way may require future land acquisition or partnerships with private land owners.

- **On-street Parking:** Cycling facilities adjacent to on-street parking or the removal of on-street parking to accommodate cycling or walking facilities is not considered ideal. The current locations of on-street parking were considered and where it would be significantly impacted, there was consideration for an alternate route or a context specific design treatment.

- **Public / Stakeholder Input:** The candidate routes were presented to the PATC. They were asked to provide input to the proposed routes and identify any issues or concerns or missed opportunities for the consultant to consider. Their input was used to evaluate the candidate routes and ultimately select the preferred.

The preferred routes form the proposed AT system concept which will be investigated further to determine the appropriate facilities for each route – see **step 6** of the system development process. Maps are provided in **Technical Appendix D**.

Step 6: Selecting Preferred Facility Types

Pelham's AT system was developed with the primary objective of developing routes that are continuous and connected. Once the routes were confirmed, the study team went through a process to identify the most appropriate facility type. The process was based on the three-step facility selection tool identified in OTM Book 18: Cycling Facilities.

The steps and considerations are illustrated in **Figure 6**. The results are presented on **Maps 5** and **6**. A summary of the recommended facility types is presented in **Table 2**. Graphics of the proposed facility types noted in **Table 2** are illustrated in **Figure 7**. In considering the pedestrians connectivity and network opportunities the consultant team investigated missing links in the sidewalk system and priorities to complete those gaps. The assessment and recommended next steps are presented in **section 4.0** of the AT Plan.

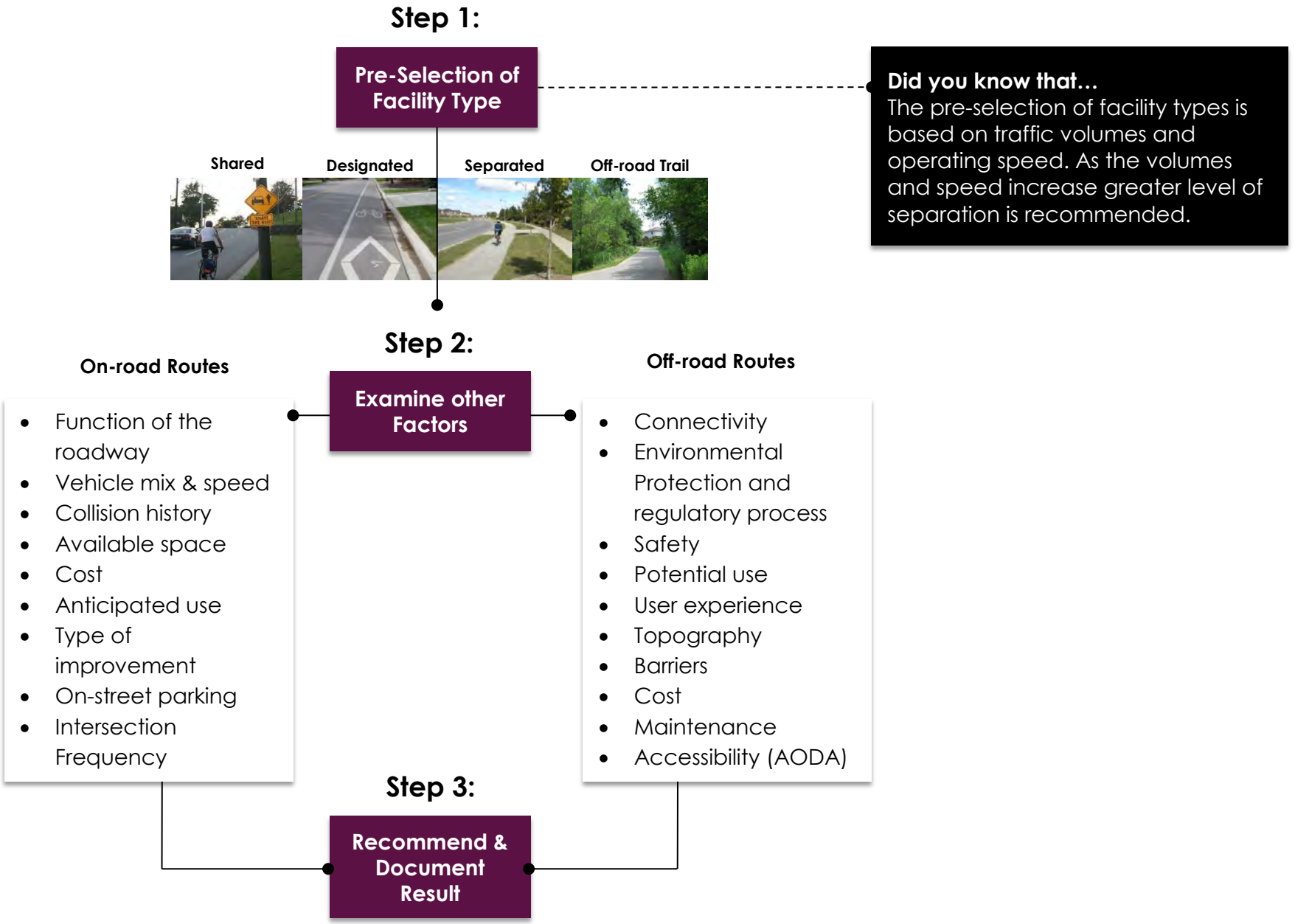


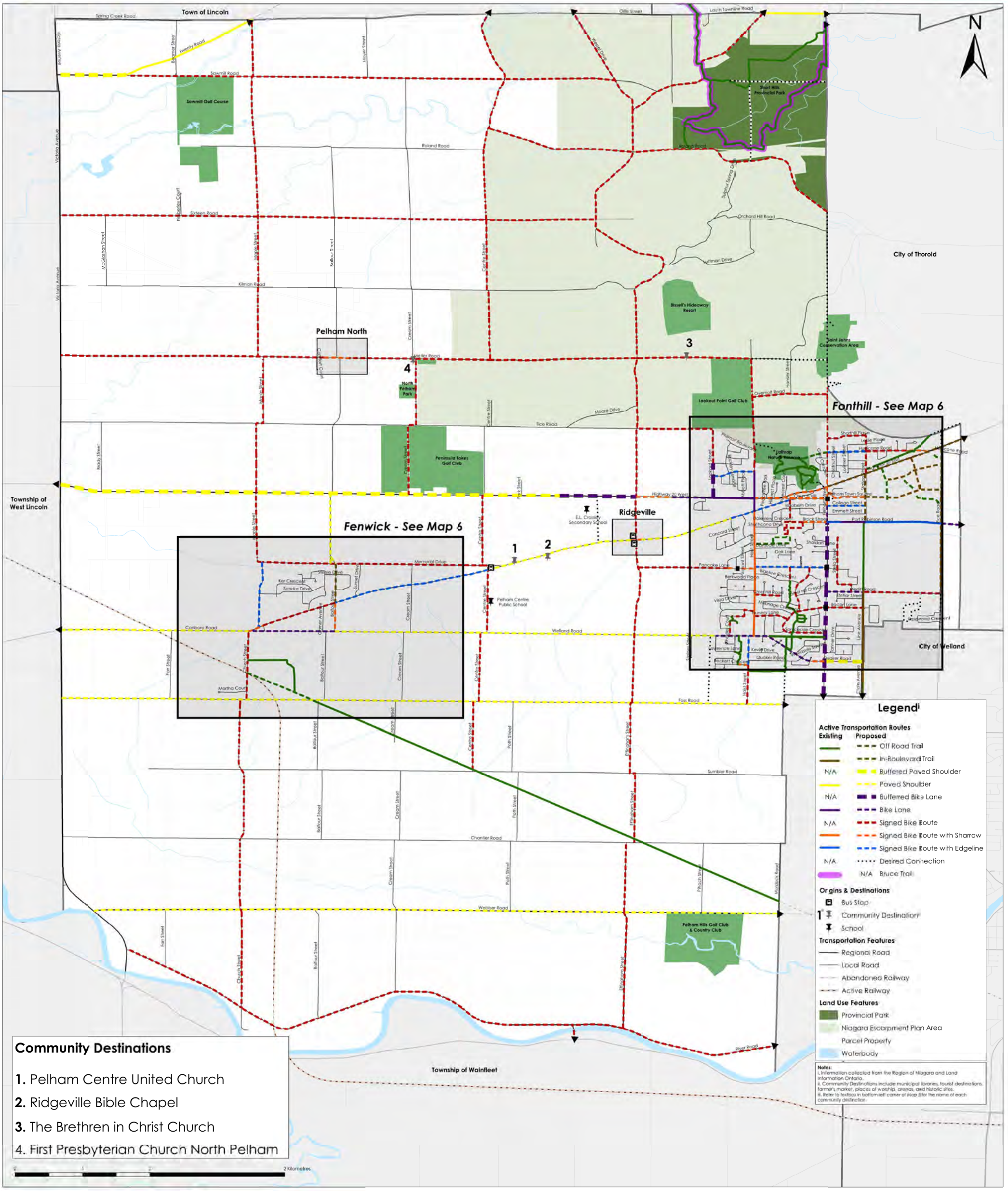
Figure 6 – Facility Selection Process used for the Pelham AT System

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 5

MAP 5 - PROPOSED ACTIVE TRANSPORTATION SYSTEM BY FACILITY TYPE (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

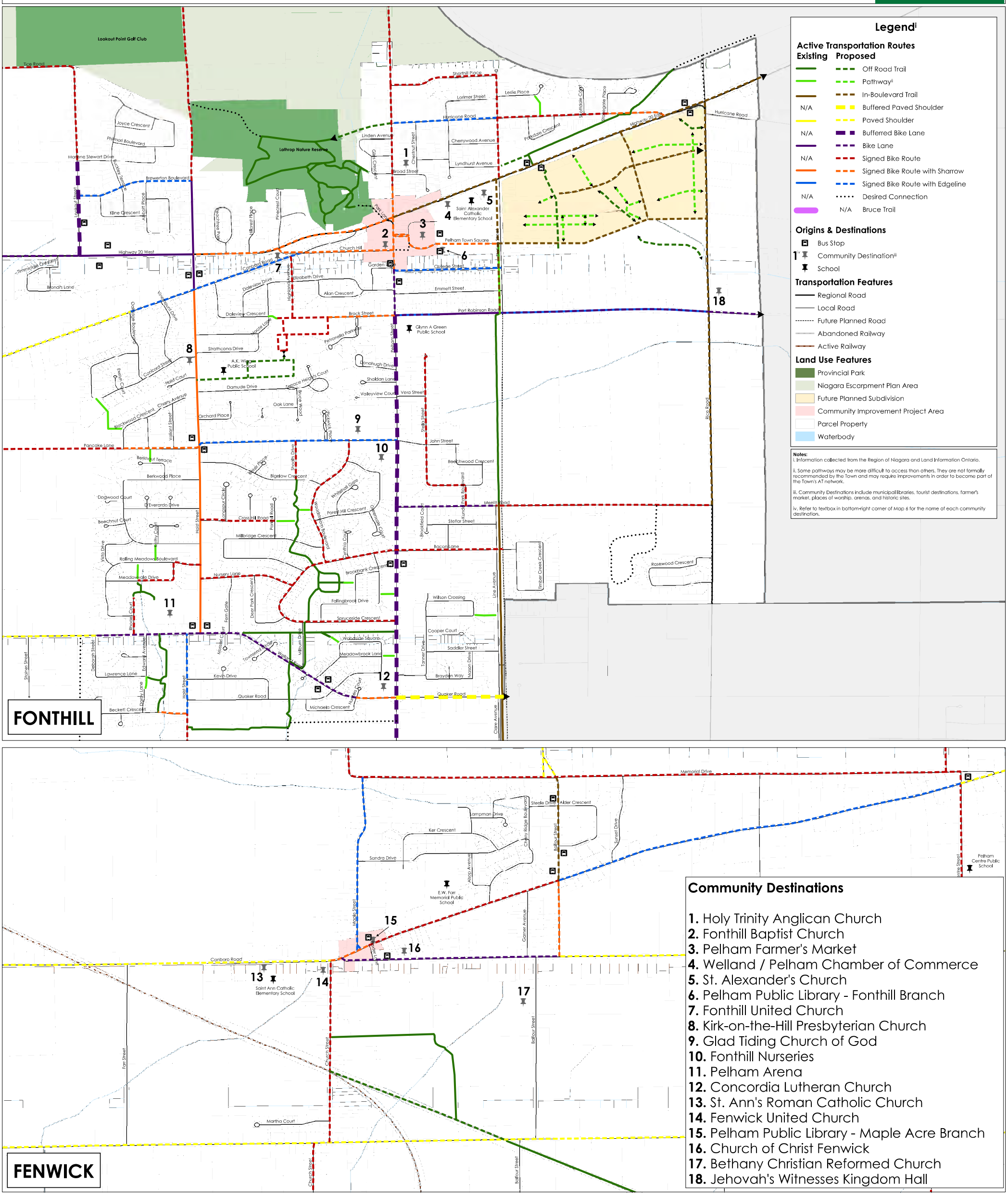


ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 6

MAP 6 - PROPOSED ACTIVE TRANSPORTATION SYSTEM BY FACILITY TYPE (URBAN AREAS)

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Active Transportation Routes

Existing	Proposed	
		Off Road Trail
		Pathway[ii]
		In-Boulevard Trail
N/A		Buffered Paved Shoulder
		Paved Shoulder
N/A		Bufferred Bike Lane
		Bike Lane
N/A		Signed Bike Route
		Signed Bike Route with Sharrow
		Signed Bike Route with Edgeline
N/A		Desired Connection
	N/A	Bruce Trail

Origins & Destinations

- Bus Stop
- 1[iv] Community Destination[iii]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

iv. Refer to textbox in bottom-right corner of Map 6 for the name of each community destination.

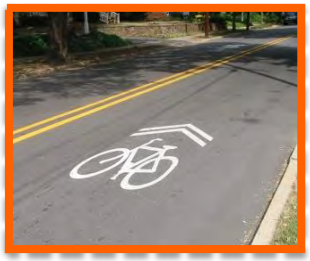
Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

Table 2 – Summary of Existing and Proposed AT Routes that make up Pelham's AT System

Facility Type	Existing (km)	Proposed (km)	Total (km)
Off-Road Trail	18.4	7.4	25.8
In-Boulevard Trail	1.6	7.1	8.7
Buffered Paved Shoulder	0	6.7	6.7
Paved Shoulder	2.3	25.4	27.6
Buffered Bike Lane	0	3.9	3.9
Bike Lane	1.3	4.3	5.6
Signed Bike Route	0	87.8	87.8
Signed Bike Route with Sharrows	1.9	4.8	6.6
Signed Bike Route with Edgelines	0.96	6.1	7.0

Signed Bike Route



Signed Bike route with Sharrow

Signed Bike Route with Edgeline

Paved Shoulder

Bike Lane

Off-road Trail

In-Boulevard Multi-use Trail

Buffered Paved Shoulder

Buffered Bike Lane

Figure 7 – Overview of Proposed Active Transportation Facilities

Recommendations

1	The proposed active transportation network illustrated on **Maps 5** and **6** should be adopted by the Town of Pelham to guide for future facility design and implementation.
2	As the AT network changes with time, the mapping and GIS database should be updated to reflect the most up to date conditions. The Town should strive to review and revised the database and mapping on an annual basis.
3	The AT network is flexible. There may be opportunities for additional or alternate connections to be made in the future – based on new development or partnerships. These connections should be made and the mapping and database updated.

2.4 The Networks

Pelham's Active Transportation System is made up of a number of networks which aim to accommodate the various user groups identified and the objectives of the Plan. Together, they make up a continuous and connected system of AT routes and facilities but independently they still provide opportunities for pedestrians, cyclists and other human powered forms of activity. There are four (4) networks that form the AT system, they are described in further detail below.

Pedestrian Network

Cyclist Network

Winter Network

Active & Safe Routes to School Network

The Pedestrian Network

Within Pelham, walking is one of the primary modes of transportation. The pedestrian network is meant to accommodate walkers, hikers, joggers and runners for various trip purposes. Pedestrians typically require ~1.0m of operating space. Facilities which accommodate pedestrians typically include sidewalks, footpaths, off-road trails, in-boulevard trails and paved shoulders. Each of these facilities ranges from 1.5m to 3.0m in width.

A typical trip for a pedestrian is 1 – 2 km. The communities of Fonthill and Fenwick both cover less than 2km making it possible for most pedestrians to access their destinations. As part of the development of the AT system, the consultant team reviewed the existing sidewalks to identify missing linkages as well as the unopened road allowances to identify future potential pedestrian connections. Mapping which illustrates the results of this investigation are found in **Technical Appendix E**.

Ultimately the goal is to implement sidewalks on both sides of the roadway; however, sidewalks can be a costly undertaking. As such, it is important to prioritize their implementation. The mapping illustrates the missing links that are considered priority connections – red dotted lines. Sidewalk priorities were determined based on two key criteria – whether it is located within the communities of Fonthill or Fenwick and whether it was identified as part of the AT system. The outcome of this assessment provides a more focused list of sidewalk improvements. Following the adoption of the plan, the Town should work to prioritize the implementation of the primary missing sidewalk links by applying a prioritization tool and criteria – see **section 4.2**.

Pedestrians also appreciate off-road opportunities for more recreational trips. The consultant team investigated land ownership information made available by the Town to identify potential unopened road allowances. These locations have been identified as “desired connections” on the pedestrian network map. They represent future potential trail connections which should be protected by the Town and investigated in the future as potential trail connections linking the major communities as well natural areas.

The Cycling Network

The cycling network is made up of both commuter routes as well as recreational / touring routes. The network is intended to be used by those who cycle to and from their home to work, school or other frequent destinations within the community or for fitness and recreation. Cyclists typically require ~1.5m of operating space. There are three levels of potential separation for cycling facilities including shared facilities (where cyclists share the same space as motor vehicles), designated facilities (where cyclists have a specific space identified for their use) and separated facilities (where there is either physical or spatial separation between cyclists and motor vehicles).

As noted above, there are two types of sub-networks as part of the cycling network. Commuter cyclists are typically willing to travel a distance of approximately 5km. They typically look for routes that provide direct access to their destinations. Those who live and work within the Town of Pelham have opportunities for short distance commuter cycling trips whereas individuals who work within surrounding municipalities may select to do longer distance trips or combine cycling with other modes. The other types of cyclists are those who cycle for recreational and touring purposes. They are typically willing to travel longer distances to access major areas of natural and cultural significance within their leisure time.

The route hierarchy provides clarity on the anticipated trip type and purpose. When identifying the cycling network the following was assumed:

- **Commuter Cycling Routes:** including regional and primary linkages which provide direct north-south and east-west connections to surrounding municipalities and local community destinations.
- **Recreational / Touring Cycling Routes:** including off-road linkages and secondary connections which provide access to the areas of natural and cultural significance and local neighbourhoods.

Though these are the anticipated uses of the routes it is important to note that all cyclists will be encouraged to use all of the routes as they are implemented. The Cycling Network is illustrated on maps found in **Technical Appendix E**.

The Winter Network

Active transportation does not have to be seasonally dependent. There should be opportunities for people to be active throughout the winter as well as the summer months. Within Niagara Region and Pelham, the winter is relatively mild due to its more southern location within Ontario. That said there is still winter weather related maintenance that is needed to allow pedestrians and cyclists to use the active transportation system year-round.

Did you know that…
The Minimum Maintenance Standards are currently being reviewed and updated to include more clear direction on the maintenance of cyclina facilities

Within the province of Ontario the Minimum Maintenance Standards (MMS) for Municipal Highways outlines standards for the removal of snow accumulation on municipal roadways. The standards are based on road classifications which are determined using the road's **AADT**. There are a total of five classifications of roadway and corresponding snow removal times for each – presented in **Table 3**.

Table 3 - MMS Road Classification related to Snow Removal Time & Plowing Depth

Class of Highway	Plowing Depth (cm)	Snow Removal Time
1	2.5	4 hours
2	5	6 hours
3	8	12 hours
4	8	16 hours
5	10	24 hours

AADT information was provided to inform the development of the AT system. Using this information the consultant team was able to identify a road class for each of the proposed AT routes which provides the Town with direction on winter maintenance. More specifically, it was determined there are no Class 1 roads identified as part of the AT network, there is one Class 2 road (Pelham Street) and all remaining roads are Class 3, 4 or 5. For routes that are identified as primary on or off-road connections, the Town is encouraged to increase the frequency of winter maintenance to establish a winter network for example, Canboro Road and Welland Road along with the Steve Bauer Trail. The proposed winter maintained cycling routes are presented in **Technical Appendix E**. It is also recommended that as routes and facility types are built, the Town consider maintenance of these links to support year-round use. Further maintenance considerations are outline in **section 4.0**.

The Safe Routes to School Network

Results of the online questionnaire and past consultations show a high demand for active and safe routes for school aged children. Walking and cycling routes that provide an alternate to driving or bussing which are also considered both comfortable and safe. There is typically a high interest in walking and cycling by school aged children, however, the concern typically comes directly from the adults. As part of the development of the AT system, the locations of all schools throughout the Town were mapped and considered. In addition, information was provided by the local bussing consortium which identified the walkable and bikeable distance for these schools. This information was mapped and is presented in **Technical Appendix E**. There are two distances illustrated for each school which include:

- JK / SK walking area which represents a distance of 0.8km
- Grade 1 – 8 walking area which represents a distance of 1.6km

Though not specifically illustrated on the mapping, those students in grades 9 – 12 have an identified walking distance of 2.5km. While the walking area for those in grades 9 – 12 cover much of the catchment area for the elementary schools, improvements within the walking area for JK / SK and Grades 1 - 8 should be made more of a priority than those for other grades as the area is smaller and can be achieved more efficiently. This age group also tends to be more vulnerable requiring more support.

With this information in mind, the consultant team was able to identify both pedestrian and cycling routes, facilities and priorities within the designated walking areas for each school. Where possible, the intent is to achieve sidewalks on both sides of the street along proposed AT routes within these areas as well as overall connectivity – both on and off-road – for cyclists. The trails system provides a strong spine of more separated facilities, which, when combined with on road routes in local neighbourhood provides access to each of the schools within Pelham. The Town should continue to work with the Region and the consortium to encourage walking and cycling and to support the implementation of the route identified. Further considerations regarding the promotion of active and safe routes to school are outlined in **section 4.0**.

Recommendations

4	The Town of Pelham should prioritize the implementation of missing sidewalks linkages along roads where a proposed on-road cycling linkage has been identified as part of the AT network
5	The Town of Pelham should protect the unopened road allowances identified as "desired connection" for future trail implementation until there is available budget to pursue the linkage
6	The Town of Pelham should focus on implementing both commuter (i.e. shopping, to work and / or to school) as well as recreational / touring cycling routes throughout the urban and rural areas and communities
7	The Town of Pelham should continue to monitor updates to the Minimum Maintenance Standards and should adopt new standards related to cycling as they are amended
8	The Town of Pelham should consider improving the winter maintenance along Canboro Road, Welland Road and the Steve Bauer Trail
9	The Town of Pelham should prioritize the implementation of walking and cycling routes identified within the walking areas as defined by the Transportation Consortium for Niagara

WALK.BIKE.ROLL.HIKE. LET'S MAKE PELHAM ACTIVE

3.0 DESIGNING THE AT SYSTEM

An AT system should be designed based on sound engineering judgement, standards, guidelines and best practices. Understanding and using consistent design guidelines will help to ensure that the active transportation facilities are implemented in a way that provides users with the sense of comfort and safety to use them. It also provides practitioners with the necessary guidance to feel confident about the decision being made.

Pelham's AT System was designed using the most recent guidelines and best practices but with local context and considerations in mind. No facilities were identified that did not meet the criteria for the particular roadway or off-road connection. Staff were also consulted through this process to ensure that sound engineering judgement was integrated into the final decision.

In addition to facility design, there are other design considerations that help to make an active transportation system more enjoyable and user friendly. These other design elements must also be considered to enhance the sense of comfort and safety of users and achieve the connectivity and continuity that is desired.

What's in this section?

Did you know that…
The same consultant that prepared OTM Book 18 prepared the MTO guidelines which ensure consistency between the recommended desian standards.

3.1 Designing the AT System: Assumptions

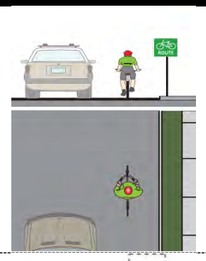
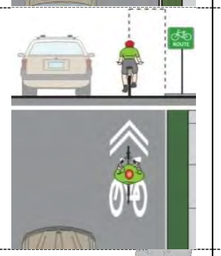
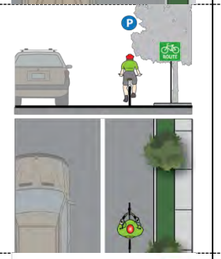
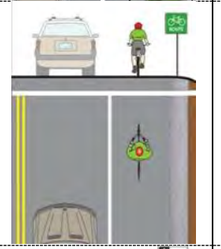
When identifying the preferred facility types for the AT System, the following guidelines and standards – from provincial, national and international sources - were considered:

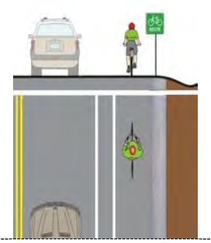
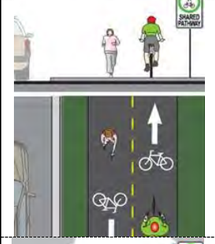
- Ontario Traffic Manual Book 18: Cycling Facilities (here).
- Ontario Traffic Manual Book 15: Pedestrian Crossing Treatments (here).
- Ministry of Transportation Ontario (MTO) Bikeways Design Guidelines.
- National Association of City Transportation Officials Urban Bikeways Design Guide and Urban Street Design Guide (here).
- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (here).
- Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (here).
- Transportation Association of Canada (TAC) Bikeway Traffic Control Guideline for Canada (here).
- Accessibility for Ontarians with Disabilities Act – Built Environment Standards (here).

The minimum standards for the facility types proposed are to be implemented with the exception of sidewalks where the Town has selected to have a minimum width of 1.6m as opposed to 1.5m. As part of the Plan, the consultant team contributed to the development of the Town's updated design guidelines. As a result, the recommended facility types identified as part of the AT System are now specifically identified within the guidelines and are consistent with current guidelines. This resource will ensure that the design and implementation of AT facilities within Pelham becomes part of future roadway redesign and reconstruction and roads within new developments.

3.2 Understanding the Facilities

There are a number of facilities that have been identified as part of the AT System which are currently found within the Town of Pelham. There are others that are being recommended that do not currently exist. As such, it is important to define some of the key design consideration for each of the facilities.

Facility Type	Cross Section	Description	Location		Context			Volume	Speed	Minimum Width	Signage				Pavement Markings		
			O*	W*	U*	S*	R*				Green Bike Route Sign	Bike Lane Sign	Share the Road	Multi-use Pathway	Bike Stencil	Painted Line	Chevron
Signed Bike Route		Motorists and cyclists share the same vehicular travel lane. Bicycle route signs are used to provide route guidelines. Could be supplemented by a Share the Road Sign in select locations i.e. poor sightlines, etc.		•	•	•		▼	▼	N/A	×		×				
Signed Bike Route with Sharrow		Motorists and cyclists share the same space, however, the space for cyclists is identified through the use of a bicycle stencil with two chevrons above it placed 1.5m from the curb. In narrow locations there may be the need for a share the road sign – single file.		•	•	•		▼	▼	Stencil: 1.0m	×		×		×		×
Signed Bike Route with Edgeline		Cyclists are provided their own space by painting an edgeline in the space designated for on-street parking. Parking is not restricted along the road, however, bike route signage is provided.		•	•	•		▶	▶	1.5	×					×	
Paved Shoulder		Cyclists are provided with a designated space on the road platform. The route is signed as a bicycle route and could include supplementary share the road signage in select locations.		•			•	▶	▶	1.5	×		×			×	
Bike Lane		Cyclists are provided with a designated space which is identified by pavement markings and signage. Bike lanes could include green painted treatment along key corridors. When approaching an intersection dash lines to allow for passing.		•	•	•		▲	▲	1.5		×			×	×	

Facility Type	Cross Section	Description	Location		Context			Volume	Speed	Minimum Width	Signage					Pavement Markings	
			O*	W*	U*	S*	R*				Green Bike Route Sign	Bike Lane Sign	Share the Road	Multi-use Pathway	Bike Stencil	Painted Line	Chevron
Buffered Paved Shoulder		On roads with higher volume and speed within rural areas, in addition to the paved shoulder a buffer may be implemented. The width depends on the speed and volume of the roadway		•			•	▲	▲	Lane 1.5m Buffer 0.5m	×		×			×	
Buffered Bike Lane		On roads with higher volume and speed within urban and suburban areas a buffer may be implemented to provide more separation between the cyclist and motor vehicles.		•	•	•		▲	▲	Lane 1.5m Buffer 0.5m		×			×	×	
In-boulevard Multi-use Trails		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	•		•	•		▲	▲	3.0m				×	×		
Off-road Trail		A separated space typically through a natural area or corridor that accommodates pedestrians and cyclists. The surface type can range from natural surface to asphalt depending on the location.	•		•	•	•	N/A	N/A	3.0m							
Sidewalk		A space within the boulevard which accommodates pedestrians.	•		•	•	•	▲	▲	1.6m							

Location Notes: *O – Outside of the Road Right of Way; *W – Within the Road Right of Way
Context Notes: context pertains to the type of land-use / neighbourhood where the facility type might be more appropriate *U – Urban; *S – Semi-Urban; *R – Rural
▲ high traffic volume or speed; ►moderate traffic volume or speed; ▼low traffic volume or speed

3.3 *Other Design Considerations*

Designing an active transportation system is not just about the different types of facilities. There are many other elements to designing a walking and cycling system that help to encourage people to feel more comfortable and safe when being active. Through the development of the AT Plan, stakeholders and members of the public identified a number of challenges and barriers. In this section, the following challenges / barriers and recommended planning and design solutions are addressed:

- Conflicts between cyclists, pedestrians and other road users by designing **complete streets;**
- Providing options for multi-modal connections by integrating **active transportation and transit routes**;
- Making walking and cycling more comfortable for people getting to work, school or most frequent destination by implementing **end-of-trip facilities and rest areas**;
- Increasing the level of comfort when moving between different types of walking and cycling facilities through the design of **transitions and conflict points**;
- Providing access to people of all abilities by increasing **accessibility** of walking and cycling facilities;
- Managing high speed traffic corridors – specific motor vehicle – throughout the Town by considering **traffic calming**; and
- Gaining a better understanding of where and what routes to use by designing and implementing **signage and wayfinding**.

Did you know that…
Complete streets are for everyone. They are deigned and operated to enable safe access for all users including pedestrians, bicyclists, motorists and transit riders.

Complete Streets

Challenge:
Streets have, in the past, been designed to move cars and other motorized traffic. With the growing impact on our environment and the need for more physical activity, people are demanding that streets be designed more as public spaces as opposed to a place just to move vehicles.

Solution:
The concept of complete streets takes a roadway and designs it as a space for all potential users. Research shows that public spaces – including streets – should not be designed for one specific user. The implementation of complete streets can result in:

- Better and improved transportation options;
- Improved safety for cyclists and pedestrians;
- A reduction in traffic congestion;
- A reduction in greenhouse gas emissions;
- The creation of a more walkable, and therefore liveable community; and
- Economic growth with increased shopping activity, sales and property values.

There is not one specific design standard that can be universally applied. Each road has a different context and purpose. Complete streets are not a new concept within the Region of Niagara. In 2013, the Region released a policy and design guide which addressed the different ways complete streets can be implemented within the Niagara context. This document provides direction on where and how complete streets can be achieved and should continue to be used for this purpose.

When designing complete streets, the following considerations should be addressed – land use, the role of the street in the overall transportation network, traffic volumes, existing transportation modes, cyclist and pedestrian demand, utilities, etc. The implementation of complete streets requires coordination between engineers, planners, decision makers, businesses, stakeholders and residents.

Active Transportation & Transit Routes

Challenge:

People need to get to and from work, school or other location for a daily activity. In some cases, the distance or travel time to access these destinations can be too far or long to walk or bicycle which means people will likely drive.

Solution:

Walking and cycling can be a cost effective way to complete the first or last mile of a trip to work, school or frequent destination. When combined with transit, it can reach farther distances and create greater access. In 2015, Pelham received a provincial grant from the Community Transportation Pilot Grant Program which allowed them to launch the Pelham Bus Transit Pilot. This 2-year pilot program is intended to provide residents with bus service to surrounding municipalities, schools and major community destinations in addition to connections to Niagara Regional Transit and GO Transit. All buses have bike racks and are fully accessible with curb-level kneeling capabilities and mobility aid ramps. The bus stops are located along major routes which provide direct access to major communities and destinations. The Town of Pelham should continue to monitor the pilot program and should investigate the opportunity to permanently adopt the system with incremental expansion as demand increases.

Special consideration should be given for AT routes identified along the existing transit network. Larger vehicles should be considered when implementing bicycle routes along the transit network to help minimize potential conflicts. Depending on the context, a cyclists' level of comfort and safety may be compromised due to large vehicles. Where on-road cycling routes are proposed and transit routes exist, there is the potential for conflict where buses are required to merge over proposed facilities. In these scenarios, the applications of left-side bike lanes or other design treatments could be considered (see **section 5.4.2** in OTM Book 18 for additional design treatments). The transit system can be further enhanced to accommodate pedestrians and cyclists by providing other amenities such as route maps, wayfinding and signage markers and / or bicycle parking at more frequently used stops.

Did you know that…
Providing walking and cycling connections to transit could help to decrease greenhouse gases. More sustainable modes for short trips can create the greatest impact.

Did you know that…
The Steve Bauer Trail already has some existing trail amenities and rest area at some of the new entry points?

End of Trip Facilities & Rest Areas

Challenge:
People can be deterred from walking and cycling as a means of commuting to work, school or day to day locations because of concerns that arise regarding what to do when they get there. Feeling discomfort at the end of the trip can lead to missed trip opportunities.

Solution:
Implementing cycling and pedestrian amenities along and at the end point of a walking or cycling route can help to improve the sense of comfort and safety around the activity. There are two types of supportive amenities and features that can be designed and implemented to help improve the rider or walkers' experience – rest areas and end-of-trip facilities.

Rest areas are designated locations along an AT route that provides users with a comfortable location to stop during a walking or cycling trip. The design can include lighting, seating, car and bicycle parking, signage, loading / unloading areas, garbage receptacles, washrooms, amenity buildings and gates / access barriers.

End-of-trip facilities are implemented at key locations throughout the community that are considered major destinations i.e. community centres or retail stops. Depending on the location, end-of-trip facilities could include showers, change rooms, bike rooms, lockers, bicycle repair stations etc.

Section 7.0 of OTM Book 18 provides design considerations and details about the different types of rest areas and end-of-trip facilities based on various land uses and building types. Rest areas and end-of-trip facilities should be provided at strategic locations such as gathering points, attractions and destinations as well as other locations where users are expected to stop within Pelham. The types of amenities and design should be considerate and reflective of context sensitive characteristics of the site and best practices.

Transition Points & Conflict Points

Challenge:
Integrating walking and cycling into the overall transportation system can create conflicts between the active modes and other road users at intersections. Building new facilities both within and outside of the road right-of-way can cause confusion at points of transition.

Solution:
To maximize connectivity, pedestrians and cyclists should be able to transition between facilities and cross conflict points in a way that is considered to be both safe and comfortable. Most conflicts occur at intersections as they are the most common location where different modes cross paths. A conflict typically occurs when a right or left-turn is being made. There are a number of treatments which can help to improve a user's ability to cross a roadway or transition between facility types more comfortably and safely. They are described in more detail in **section 5.0** of OTM Book 18. Select examples are provided below.

- **Bike boxes** are designated areas between the crosswalk and the stop bar which are meant to be used by cyclists while waiting for a signal to change. The bike box is intended to increase a cyclist's visibility for motorists and allows cyclists to proceed ahead of motorists on the green traffic signal.
- **Signage and pavement markings** are painted visual cues on the pavement which increase awareness of the presence of cyclists on the road and to provide cyclists with a space to use when going through an intersection or transitioning to another facility. Pavement markings can include lines to designate the space, stencils of pedestrians and cyclists or sharrows.
- **Cross-rides** are a crossing treatment which can be used by both pedestrians and cyclists. It allows cyclists to proceed through the intersection without having to dismount and separates pedestrians and cyclists to decrease potential conflict.

Did you know that…
When implementing new design features it is important to educate people on how to use them. The billboard below is a sample from Hamilton.

Did you know that…
Designing with accessibility in mind helps to create a more equitable environment for people and can have a direct impact on social experiences.

Accessibility

Challenge:
There will always be users of different abilities and interests. Their needs and preferences vary and have an impact on where facilities are implemented and how they are designed.

Solution:
Approximately one in eight Canadians must live with a form of physical or mental disability. Mobility, agility and pain-related disabilities are by far the most common, each accounting for approximately 10% of reported disabilities nationally. The Accessibility for Ontarians with Disabilities Act (AODA) promotes the goal of making Ontario accessible for people with disabilities by 2025.

The Accessibility Standards for the Built Environment applies to pathways, trails and sidewalks. The intent is to help remove barriers to buildings and outdoor spaces. The standard only applies to new construction and extensive renovation and is not mandatory for the design of on-road cycling facilities. That said, when designing and implementing off-road cycling facilities and multi-use trails, reference should be made to the guidelines outlined in the Built Environment Standards to ensure that they are met. Sections 80.8 and 80.10 of the Accessibility Standards for the Built Environment provide the technical requirements for multi-use recreational trails.

Where possible the AODA requirements and guidelines should be met to the greatest extent possible. However, it is important to note that this may not be possible in all proposed locations along the AT network. Specifically for trails, one must take into consideration the context of each trail including but not limited to the location, the surrounding environment and type of trail experience that is desired. In some locations it may not be possible to implement an accessible trail. In these cases, the Town should provide sufficient information to all potential users to make them aware of the conditions and the expected experience.

Traffic Calming / AT Priority Streets

Challenge:

The speed of traffic and the number of cars on the roadway have a significant impact on the level of comfort and safety of pedestrians and cyclists and can in some cases deter them from walking and cycling.

Solution:

In residential neighbourhoods and along some major roadways design treatments can be implemented to decrease the speed of traffic and / or generate a more cyclist or pedestrian focused environment. Pedestrian or bicycle priority streets are typically found on low-volume and low-speed roadways that have been designed to optimize pedestrian and cyclist movements and travel. Typical treatments could include traffic calming, traffic reduction, signage, pavement markings and intersection treatments – described in detail below:

- **Traffic Reduction:** could be achieved through the implementation of cul-de-sacs which would restrict through motorized traffic while still providing through access for non-motorized traffic.
- **Intersection Treatments:** such as bike boxes, advanced stop bard, bicycle actuated signals, cross-rides and refuge islands which can help to improve the ability to cross a roadway.
- **Signage:** giving pedestrians and cyclists priority on the roadway by implementing signage which requires motorists to yield to pedestrians and cyclists in appropriate locations.
- **Traffic Calming:** measures such as roundabouts, speed tables, road diets and reduced speed limits which aim to reduce the speed and volume of motor vehicle traffic on the roadway.

The Town should monitor roadways where concerns are raised about the speed and volume of traffic. If identified as part of the AT system, additional design treatments should be considered to manage the speed as well as prioritize pedestrians and cyclists.

Did you know that…
There are streets throughout the world that only permit walking and cycling? They restrict motorized vehicles and provide access to key destinations.

Did you know that…
Signage and wayfinding was on of the biggest priorities identified by Pelham residents? Understanding where to go and how to get there is important.

Signage & Wayfinding

Challenge:
Understanding where to go and what facilities to use is important to people. Without this information potential cyclists and pedestrians may be deterred from walking or cycling or trying new trips.

Solution:
A connected and continuous system of AT facilities requires signage for a variety of intents and purposes. The Town should consider implementing signage along the proposed AT system Town-wide. There are a number of different types of signs which can be implemented – also known as a "family". These signs, when designed with unifying graphic elements, can become immediately recognizable by the user whether it is a resident or a visitor. The following are the typical signs included in a "family":

- **Directional Signage:** informs cyclists and pedestrians of the direction and distance to a nearby destination. This sign should be installed at locations where additional directional guidance is required.
- **Trail Entry Signage:** installed at entrances to off-road segments of the AT network. This sign should provide information regarding level of difficulty, trail name, trail map, trail length, QR code and branding logo.
- **Information Signage:** installed on off-road segments of the AT network to inform users of restricted activities (as per municipal by-laws). This sign should be installed above trail entrance sign presented above
- **Route Marker Signage:** implemented 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.

Signage has been implemented throughout Pelham primarily at major trail heads of the Steve Bauer Trail and other trail destinations. Additional signage which identifies the AT system, once components are implemented, should be considered. Please see **section 4.2** for additional signage related recommendations.

10	The Town of Pelham should adopt the design guidelines for pedestrian and cycling facilities as outlined in **section 3.0** of the AT Plan. They should be supported by other provincial design guidelines including but not limited to OTM Book 18, MTO Bikeways Design Guidelines, OTM Book 15, etc.
11	The Town of Pelham should adopt the revisions to the design standards for municipal roadways which incorporate the recommended pedestrian and cycling facilities as outlined in the AT Plan
12	The Town of Pelham should not only design the proposed AT routes but should look for opportunities where additional design enhancement to encourage walking and cycling or improve the sense of comfort and safety.

Recommendations


ADMISSION PRICES
honey maxx

4.0 IMPLEMENTATION: A STRATEGY

Pelham's AT Plan is a long-term blueprint and guide for the planning, design, construction and maintenance of pedestrian and cycling facilities. A growth in walking and cycling culture for all day to day activities requires more than a connected and continuous AT system. There also needs to be a strong set of policies, programs and priorities that encourage, enforce and educate people how to engage in active forms of transportation.

All of these components of a comprehensive plan need to have reasonable, realistic and feasible strategy for implementation. Creating a road map to guide the implementation of the AT Plan, its recommendations, actions and priorities is necessary to ensure that the AT Plan becomes more than a master plan / policy document on the shelves of Town staff. The intent is for this document, and specifically the implementation strategy, to provide the Town with the resources, tools and directions needed to see the plan grow from policy to reality.

What's in this section?

4.1	An overview of the proposed timeline for implementation and the approach used to identify phasing for the routes that make up the AT system
4.2	Presenting the Five P's of the AT Plan. A set of actions which address system priorities, policy, process, programming / promotion and partnerships.
4.3	An overview of how the AT Plan – including the system and supportive actions – are proposed to be funded over the short, medium and long-term horizon.
4.4	Conclusions to the plan and a summary of the recommendations embedded throughout the body of the AT Plan.

4.1 Implementation: A Phased Approach

A master plan is not implemented overnight. There are steps and phases that are needed to realistically and feasibly achieve success. A successful AT Plan requires an effective and thoughtful strategy for implementation to ensure that what is recommended in the plan is seen through from the planning to the design and construction stage.

An implementation strategy is typically made up of phases which provide a flexible tool and guide for what to do within various time horizons. The Pelham AT implementation strategy is a guide for the next 10+ years on what to do and when to do it. The implementation strategy is not intended to be prescriptive. There is flexibility with the timelines and the projects which can be determined on an annual basis by staff and Council. The following sections outline the three phases that make-up in the implementation strategy and how they were identified.

What is the Phasing Plan?

The Pelham AT system has a 10+ year timeline which is organized in three phases:

- Short Term – 0-5 Years
- Medium Term – 6-10 Years
- Long Term – 10+ Years

Since municipal planning documents are typically updated every five years, it is recognized that medium and long-term projects may change over time. As such, the focus of this master plan is to prioritize and work towards implementing those projects identified within the short and medium term, with ongoing updates and tracking of progress to ensure that the system, actions and recommendations are still relevant when updated.

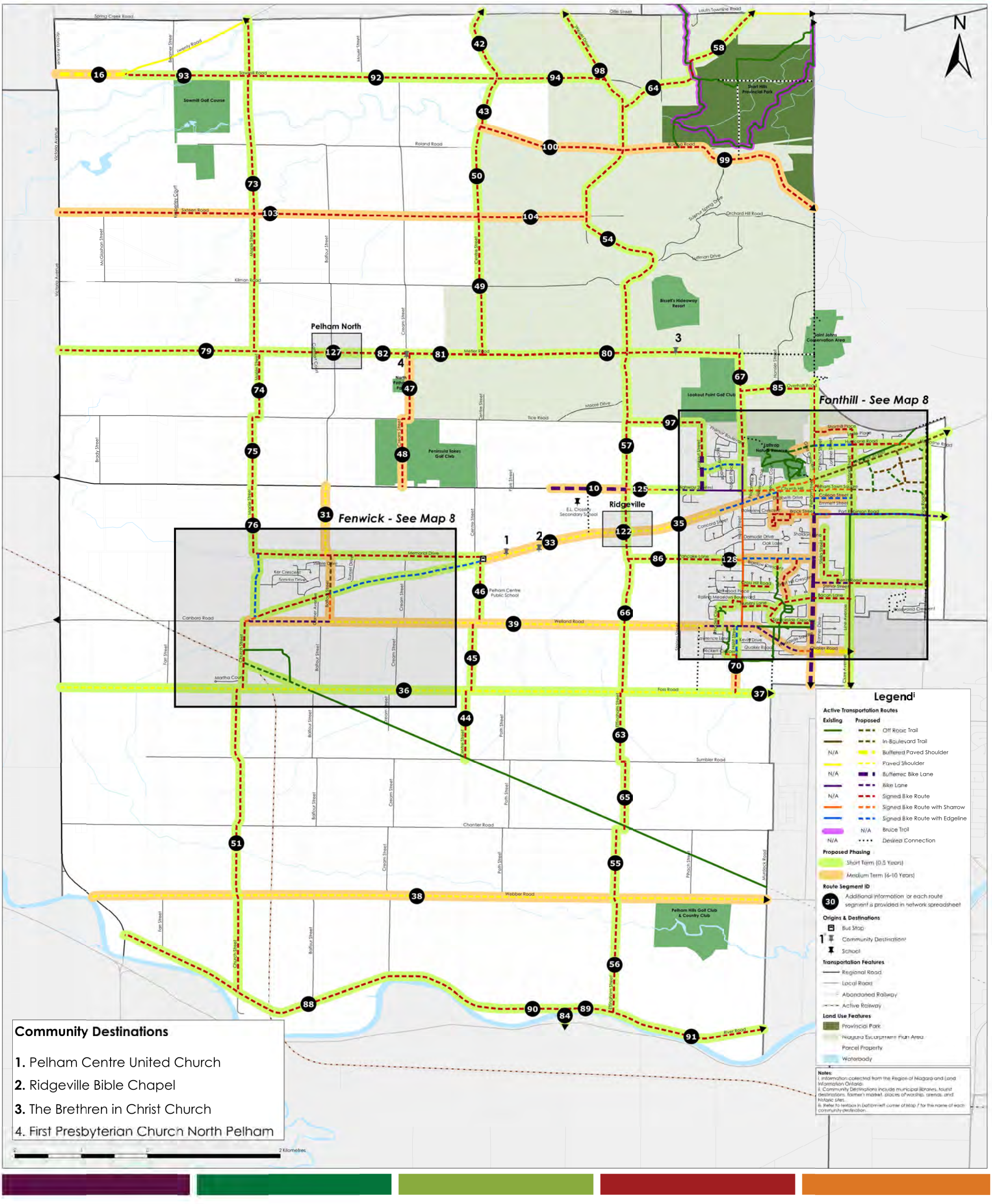
Proposed short and medium-term routes are illustrated on **Maps 7** and **8**. An overview of the proposed facility types by phase is provided in **Table 4**. Although the implementation strategy focusses on the short and medium term, routes proposed in the long term are illustrated on maps contained in **Technical Appendix F**.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 7

MAP 7 - PROPOSED SHORT TERM & MEDIUM TERM PHASING (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP



Community Destinations

1. Pelham Centre United Church

2. Ridgeville Bible Chapel

3. The Brethren in Christ Church

4. First Presbyterian Church North Pelham

Legend[i]

Active Transportation Routes

Existing	Proposed
	Off Road Trail
	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Buffered Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
N/A	Bruce Trail
N/A	Desired Connection

Proposed Phasing

- Short Term (0-5 Years)
- Medium Term (6-10 Years)

Route Segment ID

30 Additional information for each route segment is provided in network spreadsheet

Origins & Destinations

- Bus Stop
- 1 Community Destination[ii]
- School

Transportation Features

- Regional Road
- Local Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

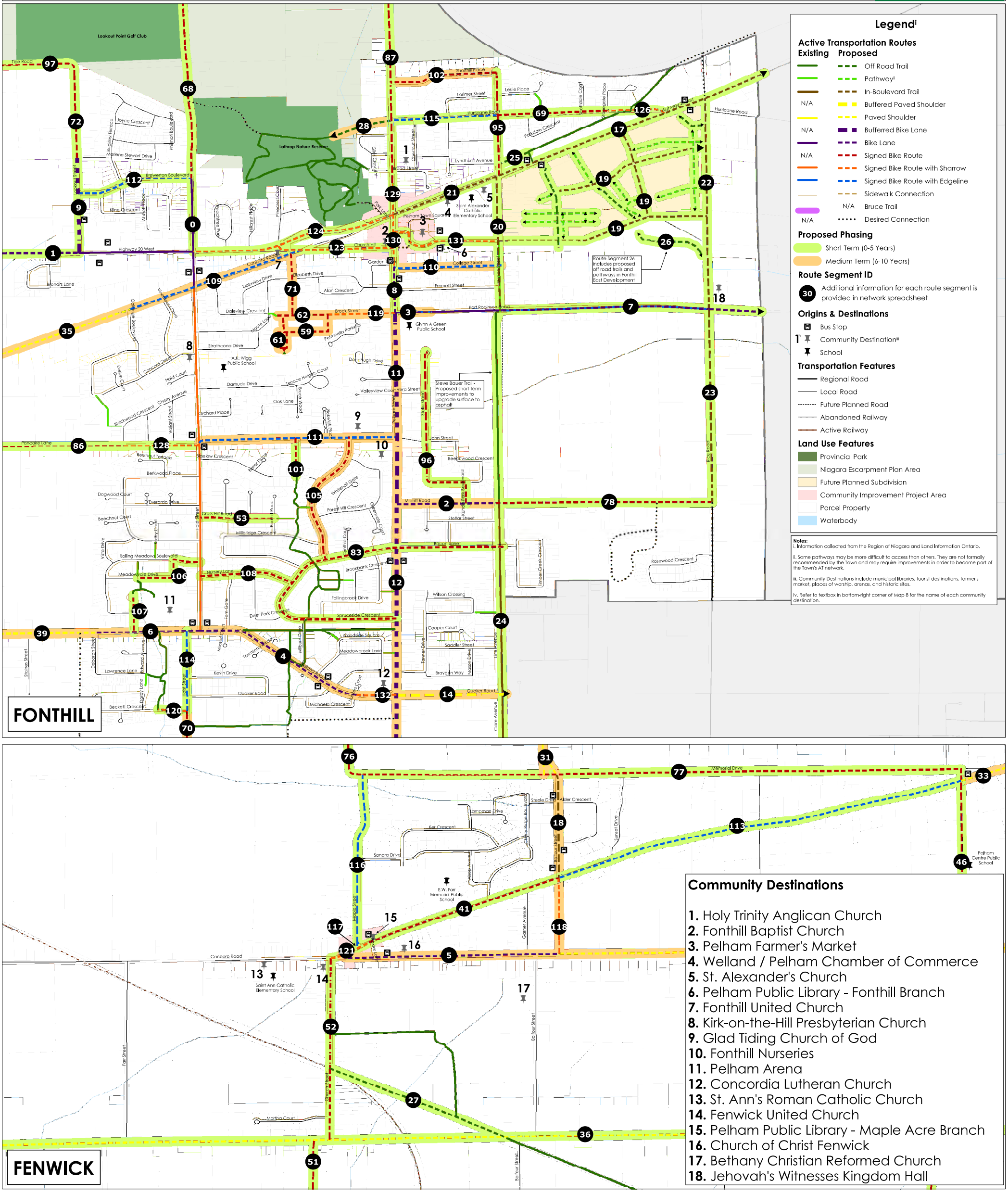
iii. Refer to textbox in bottom-left corner of Map 7 for the name of each community destination.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 8 - PROPOSED SHORT TERM & MEDIUM TERM PHASING (URBAN AREAS)

Map 8

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Active Transportation Routes

Existing	Proposed	
		Off Road Trail
		Pathway[ii]
		In-Boulevard Trail
N/A		Buffered Paved Shoulder
		Paved Shoulder
N/A		Bufferred Bike Lane
		Bike Lane
N/A		Signed Bike Route
		Signed Bike Route with Sharrow
		Signed Bike Route with Edgeline
		Sidewalk Connection
N/A		Bruce Trail
N/A		Desired Connection

Proposed Phasing

- Short Term (0-5 Years)
- Medium Term (6-10 Years)

Route Segment ID

30 Additional information for each route segment is provided in network spreadsheet

Origins & Destinations

- Bus Stop
- Community Destination[iii]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

iv. Refer to textbox in bottom-right corner of Map 8 for the name of each community destination.

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

Table 4 - Summary of Proposed Facility Types within the Short and Medium-term

	Existing (km)	Short Term (0-5 Years)	Medium Term (6-10 Years)	Total (km)
Off-Road Trail	18.4[1]	6.4	0.2	25
In-Boulevard Trail	1.6	6.5	0.6	8.7
Buffered Paved Shoulder	-	0.0	1.2	1.2
Paved Shoulder	2.25	7.9	15.5	25.7
Buffered Bike Lane	-	0.5	3.4	3.9
Bike Lane	1.3	1.7	2.6	5.6
Signed Bike Route	-	71.6	15.1	86.7
Signed Bike Route with Sharrows	1.85	3.9	0.9	6.7
Signed Bike Route with Edgelines	0.96	4.1	2.0	7.1
Total	**26.4**	**102.6**	**41.5**	**170.5**

Notes:
1. Includes 2.1km of proposed pathways

The Town of Pelham should adopt the proposed phasing plan as a guide for the next 10 years. Though the phasing has been identified it should also be reviewed on an annual basis to ensure that the projects and priorities identified are feasible based on available budgets and / or coordination with other capital projects. The phasing plan should not be perceived as being prescriptive. The phasing plan is not meant to dictate when a project is intended to commence. This is intended to be determined by Town staff and Council as they proceed with the implementation of the Plan.

13 The Town of Pelham should adopt the proposed network phasing illustrated in **Maps 7** and **8** of the AT Plan and should be used by staff as a guide for implementation of the AT system.

14 The proposed phasing identified in the AT Plan should be communicated to Town partners including but not limited to Niagara Region and surrounding municipalities.

Recommendations

How was the Phasing Plan Developed?

Identifying and proposing phasing requires the consideration of a number of key influences and factors. These considerations help to establish a phasing strategy that can be easily integrated into existing Town processes and protocols. The phasing considerations for Pelham's AT Plan included:

- **Council Approved Town of Pelham 2016 Capital Budget**: Roadway improvements are identified in the Town's capital budget. The timelines identified in this document were used to inform the selection of a preferred phase for the proposed AT route. Coordination with large scale capital projects can be an efficient and effective way to implement AT infrastructure.

- **Council Approved Secondary Plans**: On and off-road facility types are identified in the Town's approved secondary plans specifically the future East Fonthill development area. The proposed facility types and phasing of these routes are consistent with the approved plans.

- **Coordination of Regional Projects**: The phasing of routes located along regional roads is consistent with the Region of Niagara's planning documents. The Region is currently undertaking a review of their Bikeways master plan. Pelham's proposed AT system was provided to Regional staff to incorporate for consistency.

- **Master Plan Objectives**: The objectives noted in section 1.3 were considered when identifying the proposed phasing of AT routes. Routes identified within each phase are intended to achieve these objectives.

- **Public Input:** Those who attended the Home Show in April 2106 were asked to provide their input on top 3 routes for implementation. The public also provided their input regarding priority routes using the online interactive mapping tool. The comments were reviewed and where appropriate, incorporated into the Pelham AT phasing. In addition, input was collected from Pelham's Advisory Committee.

4.2 *Pelham's AT Action Plan: The Four P's*

A master plan requires an action plan. Without clear directions on the implementation of both hard and soft infrastructure it can be difficult to identify and prioritize what is needed. A number of strategic actions have been identified for the Town of Pelham's consideration as they move forward with the implementation of the Plan. Together these actions make up the Town's "Action Plan". The actions have been organized based on the four AT Plan themes noted in **section 1.0** also known as the four P's:

1

Priorities

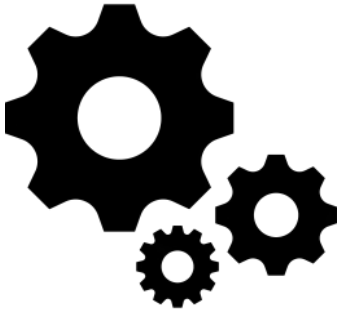
- Includes the top 10 infrastructure priorities that the Town should consider implementing within the first 5 years

2

Planning

- AT in New development areas
- AT in Established Neighbourhoods
- Risk Management & Liability
- Integration with Land-use Planning

3



Process

- Establishing an Implementation Process
- Integrating with the MCEA Process
- Maintenance & Operation
- Monitoring & Evaluation

4

Promotion

- Designing a Signage Strategy
- Identifying AT Hubs & Staging Areas
- Mapping & Promotional Tools
- Encourage through Network Enhancements

1

PRIORITIES

Though a long-term vision for a connected and continuous system of AT facilities and routes is important, it is also key to identify priority projects which can be easily achieved within the short-term to demonstrate successes and momentum as a result of the development of the AT Plan.

Ten (10) projects have been selected which the Town should prioritize within the first five (5) years of implementation. They are illustrated on **Maps 9** and **10**. The projects were selected based on input from the public and stakeholders and Town staff and were shaped by objectives and key gaps and barriers in the existing system. Although they are proposed to commence in the short-term they may not be completed until the medium or long-term due to the nature of each of the projects. Some will be easier to achieve than others. Additional details on each of the project are presented in **Table 5**.

Table 5 - Summary of Proposed Priority Projects

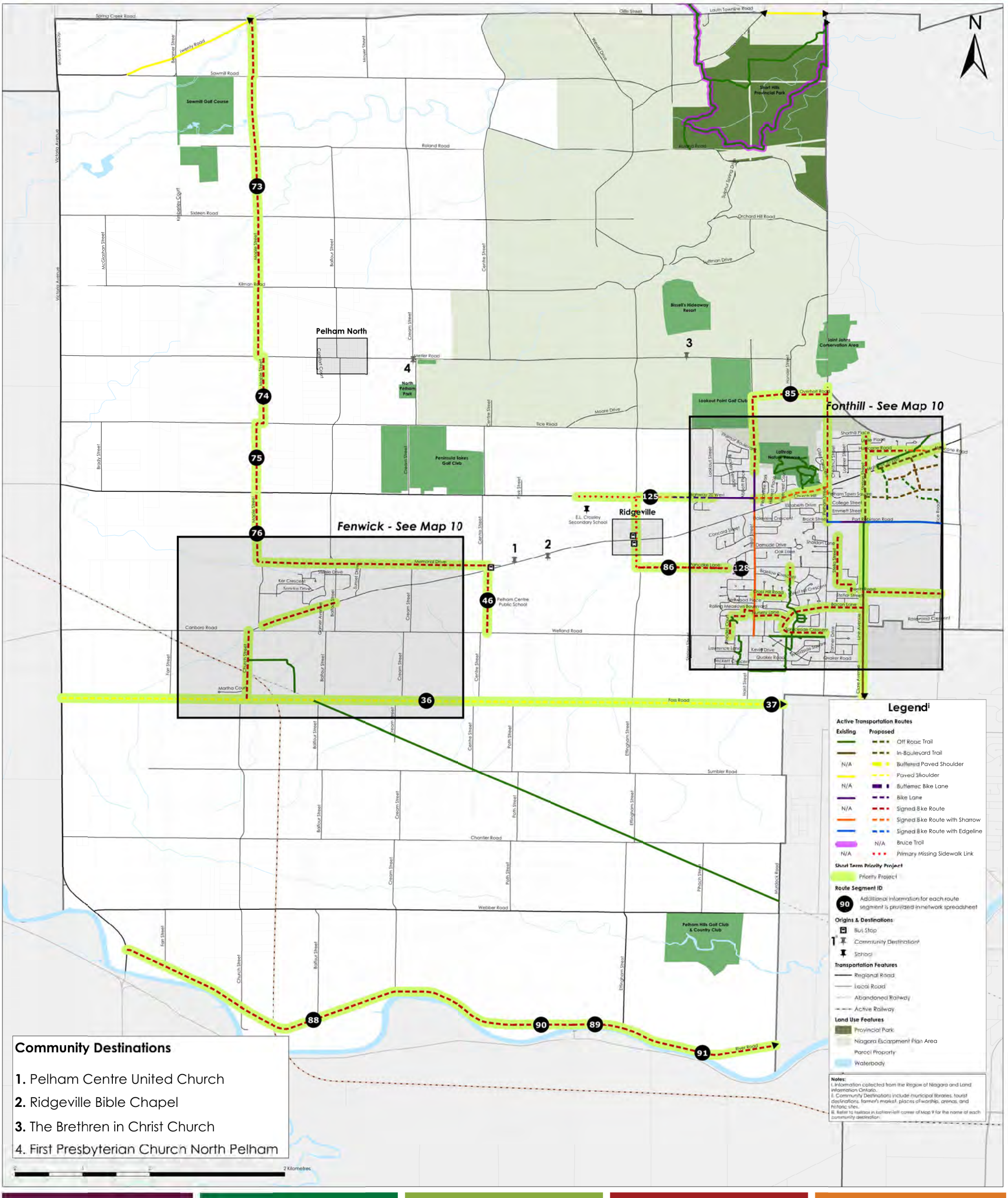
East Fonthill AT Linkages	In 2014, the East Fonthill Secondary Plan was approved by the Ontario Municipal Board (OMB) and construction began in 2015. As per the approved transportation plan, East Fonthill is expected to include in-boulevard multi-use trails along the north-south collector road, Wellspring Way and Ceremonial Route, as well as a number of off-road trails and pathways. The proposed pedestrian and cycling networks will connect to the existing Steve Bauer Trail and other planned linkages surrounding the East Fonthill site.
Steve Bauer Trail Surface Upgrades	The Steve Bauer Trail is an important link in the Pelham AT system that is used by pedestrians and cyclists for both recreation and utilitarian purposes. The trail surface is mostly hard-packed crushed stone surface and is less than 3.0m wide. The Town should improve the section of the Steve Bauer Trail between Port Robinson Road and Quaker Road to an asphalt surface and minimum width of 3.0 metres to improve accessibility for all users e.g. those with limited mobility and mom's with strollers and promote year-round use.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 9

MAP 9 - PROPOSED SHORT TERM PRIORITY PROJECTS (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP



Community Destinations

1. Pelham Centre United Church
2. Ridgeville Bible Chapel
3. The Brethren in Christ Church
4. First Presbyterian Church North Pelham

2 Kilometres

Legend[i]

Active Transportation Routes

Existing	Proposed	
		Off Road Trail
		In-Boulevard Trail
N/A		Buffered Paved Shoulder
		Paved Shoulder
N/A		Buffered Bike Lane
		Bike Lane
N/A		Signed Bike Route
		Signed Bike Route with Sharrow
		Signed Bike Route with Edgeline
	N/A	Bruce Trail
N/A		Primary Missing Sidewalk Link

Short Term Priority Project

Priority Project

Route Segment ID

90 Additional information for each route segment is provided in network spreadsheet

Origins & Destinations

Bus Stop
Community Destination[ii]
School

Transportation Features

Regional Road
Local Road
Abandoned Railway
Active Railway

Land Use Features

Provincial Park
Niagara Escarpment Plan Area
Parcel Property
Waterbody

Notes:

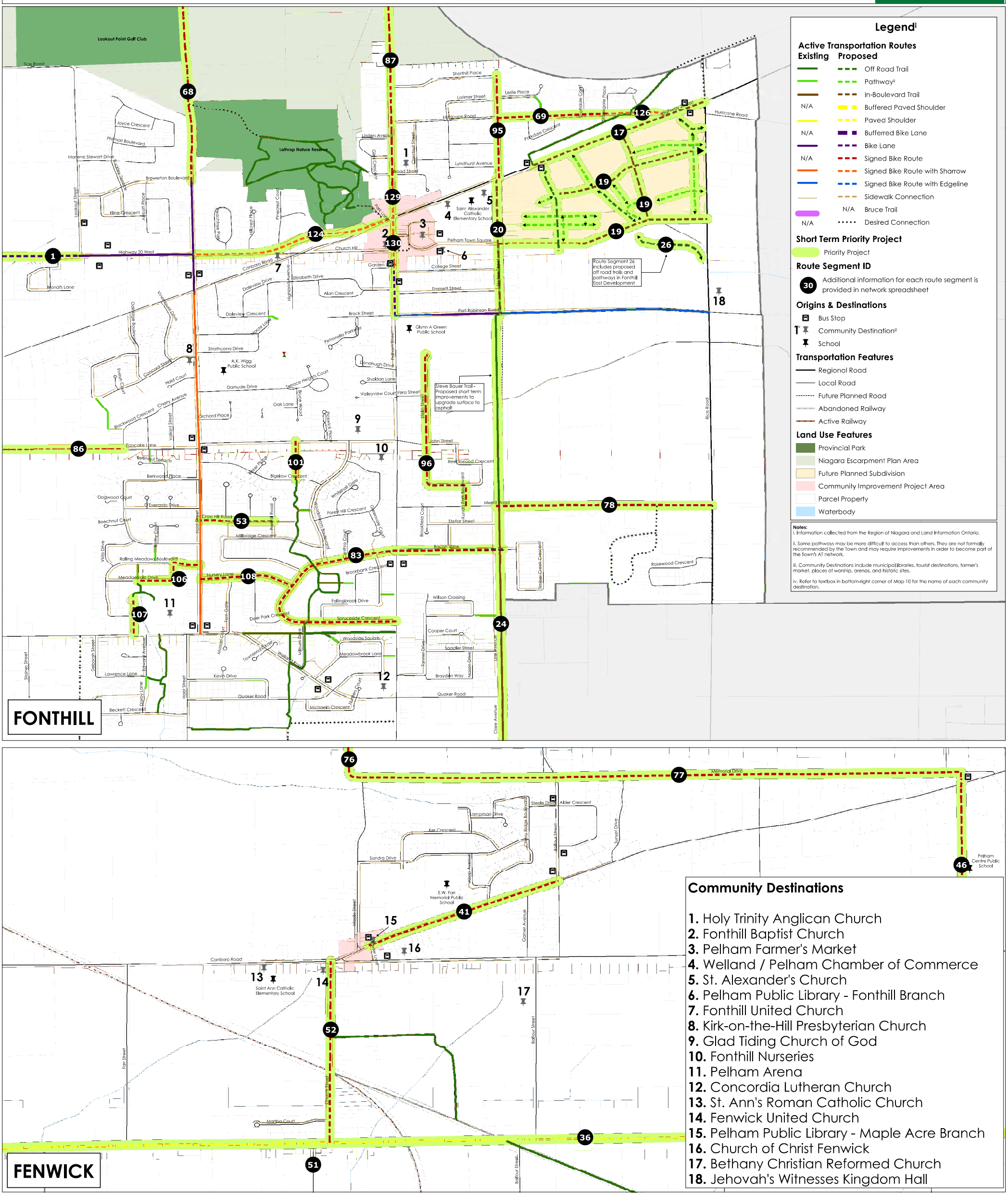
i. Information collected from the Region of Niagara and Land Information Ontario.
ii. Community Destination) include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.
iii. Refer to textbox in bottom-left corner of Map 9 for the name of each community destination.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 10 - PROPOSED SHORT TERM PRIORITY PROJECTS (URBAN AREAS)

Map 10

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Active Transportation Routes

Existing	Proposed
	Off Road Trail
	Pathway[ii]
	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Bufferred Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
	Sidewalk Connection
N/A	Bruce Trail
N/A	Desired Connection

Short Term Priority Project

Priority Project

Route Segment ID

30 Additional information for each route segment is provided in network spreadsheet

Origins & Destinations

- Bus Stop
- Community Destination[iii]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

iv. Refer to textbox in bottom-right corner of Map 10 for the name of each community destination.

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

In-boulevard Trail on Station Street	Station Street is identified in the Town`s approved capital program for a full redesign and construction between Highway 20 and Pelham Town Square. To maximize efficiencies, an in-boulevard multi-use trail should be implemented on the west side of the roadway to complete the gap in the Steve Bauer Trail system, link to the East Fonthill AT routes and connect students to the school at Highway 20 and Station Street.
Urban Signed Bicycle Routes	Signed bike routes account for 57% of the total AT network. Signed bike routes can help to achieve a system of well-connected routes particularly in urban areas where there is a higher density of existing routes. As such, signed routes found within Fonthill and Fenwick should be implemented within the first-year following adoption of the AT Master Plan. The standard green Bicycle Route Marker sign should be installed on all routes identified as a signed bike route. The cost of signage is minimal compared to other facility types and can have the greatest impact based on capital investment.
Paved Shoulders along Foss Road	Foss Road is key east-west route that provides a direction connection into Fonthill, Fenwick, surrounding municipalities as well as the existing rail-trail. Paved shoulders are typically favoured among local cycling groups and touring cyclists due to the added separation provided between motorists and cyclists on rural roads. The current shoulder width is sufficient to accommodate 1.5m paved shoulders on both sides of the road.
Signed Bike Route on River Road	River Road is a key east-west route in the south of Pelham that provides connections to surrounding municipalities at a minimal cost. The current cross-section width, motor-vehicle volumes and operating speeds make it an appropriate route for implementation of a signed bike route. In addition, the Region is already promoting River Road as a scenic bike route.

Sidewalk to E.L. Crossley	Currently there is a gap in the pedestrian network preventing youth from walking to and from school. Residents and Town staff identified this connection as a priority project to complete in the short term. To take advantage of the Region's scheduled resurfacing of Highway 20, the Town has allocated budget in the approved capital program to construct a sidewalk to E.L. Crossley Secondary School in 2016 from Effingham Street to the entrance of E.L. Crossley.
Signed Bike Route on Maple & Church Street	Maple Street and Church Street are key north-south connections that provide connections to Fenwick, the Township of Lincoln and other priority projects e.g. Foss Road. In addition, the Region is already promoting Maple Street and Church Street as a scenic bike routes.
Sharrows at Highway 20 & Pelham Street	The intersection of Highway 20 and Pelham Street is a main passage through Fonthill for motor-vehicles and cyclists. Some cyclists may be dissuaded from travelling through this intersection due to the lack of a marked and / or signed bike facility. The application of sharrows in the centre of the curb lane and green Bicycle Route Marker signs could assist cyclists travelling through the intersection and provide a greater sense of comfort.
Highway 20 Bike Lanes & Sharrows	Highway 20 is a key east-west route that connects users to urban and rural areas, key destinations and surrounding municipalities. Implementation of bike lanes and sharrows should be coordinated with the scheduled resurfacing of Highway 20 identified in the Town's approved capital budget.

In addition to the 10 priority projects noted above there are also additional desired connections identified on **Maps 9** and **10**. Some of the desired connections identified as part Pelham's AT system represent long-term projects that require additional coordination on the part of the Town and / or the active transportation committee prior to moving forward with implementation.

For example there are a number of unopened road allowances within the Town which provide significant trail potential, however, additional investigation of the linkage and surrounding conditions would be needed. In addition, there are additional on-road AT linkages to surrounding areas or existing trail connections which have potential but are dependent on future development or improvement from surrounding Municipalities. The Town should work with the Region, local municipalities and stakeholders to continue to move these potential projects forward.

15 The Town of Pelham should prioritize the implementation of the ten (10) projects. They should be integrated into the existing capital works plan and if needed, the Town should work collaboratively with the Region and other stakeholders to facilitate implementation.

16 The Town of Pelham should continue to work with its partners – private land owners, the Region of Niagara, surrounding municipalities, PATC and other stakeholders – to explore the viability of the desired connections including but not limited to trail linkages in unopened road allowances, improvements to sections of the Steve Bauer trail outside of the Town and extensions to future proposed At routes.

Recommendations

WALK.BIKE.ROLL.HIKE. LET'S MAKE PELHAM ACTIVE

PLANNING

2

Developing and integrating planning policy and principles that are supportive of AT can help to affect long-term change. Embedding supportive policies into the Town's Official Plan and other strategic planning documents will ensure that future planning creates communities and neighbourhoods that encourage activity and have a high quality of life. The following planning and policy principles should be considered as Town policies are updated.

Action #1: *AT in New Development Areas*

AT facilities should be part of future land development. New developments should be designed with complete streets in mind with specific focus on the walkable and bikeable environment. The proposed AT network and supportive recommendations outlined in the Plan should be reinforced in the day to day planning process and practice. When designing new developments within the Town of Pelham, the following strategies should be considered to promote and encourage active transportation:

- **Prepare Conceptual / Layout Plans:** Developers should prepare and submit conceptual / layout plans including typical details for AT facilities prior to draft plan approval.
- **Prepare Detailed Design Drawings:** Developers should be required to prepare and submit detailed design drawings, specifications and cost estimates for construction.
- **Prepare Requirements for Developers:** Developers should be encouraged to construct AT routes as part of the installation of other infrastructure e.g. utilities or roads prior to subdivision approval and registration.
- **Integrate with the Development Charges:** AT routes should be considered eligible infrastructure under the Town's development charges by-law.

17 Updates to Town's development process to reinforce the planning, design and construction of AT projects should be made and clearly communicated to the development community.

Recommendations

4

Action #2: *AT in Established Neighbourhoods*

Active transportation facilities are not only needed in new neighbourhoods and developments but also within some of the older communities throughout the Town. The implementation of walking and cycling facilities within these areas can at times be challenging. Despite having a plan where routes are identified and endorsed, there may be opposition when proceeding with more detailed design and implementation. Identifying the planning stage and appropriate consultation will help to identify engagement opportunities early in the process which can help to address any concerns or issues which may arise. Consultation / engagement opportunities could include:

- **Notice of Consultation:** Public notice should be developed and published on the Town's webpage and included in other local publications. It should include a brief explanation of the project, its relationship to the AT Plan and details on expected start and completion dates. The notice should be published for at least 30 days.
- **Local Neighbourhood Meetings:** Would be used to review projects in the final draft design and approvals stage when not yet tendered. The meeting would be used to review the recommended alignment and design concept or to present proposed changes to the solution. If there are significant revisions the Town may proceed to a more focused consultation.
- **Focused Consultation for Detailed Design Projects:** When there are significant revisions to the design concept the Town may explore additional work to confirm the route alignment and may engage in meetings with staff, Councillors and stakeholders. If there is consensus the Town should proceed with the final design, approvals, tender, notification of construction and construction.

Recommendations **18** The Town of Pelham should review the consultation alternatives when implementing an AT project and should identify the appropriate level of consultation that is needed.

Action #3: *Risk Management & Liability*

The way in which AT routes are designed and maintained can have a direct influence on liability. On-road cycling facilities are compared against the same liability criteria as roadways and sidewalks which means that the Town would be partially liable if the facility is improperly designed, constructed or maintained. Though trails are separated, because a bicycle is legally defined as a vehicle, those trails where cycling is permitted may need to adhere to the same requirements as a roadway / highway. This further reinforces the importance of adhering to provincial and national design guidelines and standards as they provide the greatest legal protection. In addition to using guidelines and standards to mitigate risk and liability issues, the Town should also consider the following when designing, implementing and maintaining AT facilities:

- Improve the physical environment, increase public awareness of the rights and obligations of users and improve access to educational programs;
- Select and design facilities in compliance with the highest prevailing standards;
- Design concepts should comply with all applicable laws and regulations;
- Conform to acceptable standards. If hazards cannot be removed they should be isolated with a barrier or notified by clear warning signs.
- Monitor on and off-road facilities through regular patrols, document the physical conditions and operations and promptly respond as needed;
- Keep written records of all monitoring and maintenance activities;
- Avoid using description such as "safe" or "safer" for on or off-road routes;
- Maintain proper insurance coverage;
- When considering new AT routes or modifications to the system, document the assessment tool used to select the preferred facility; and
- Consider using principles outlined in the Centre for Sustainable Transportation's Child and Youth Friendly Land Use and Transport Planning Guidelines.

19 The Town of Pelham should review and adopt the appropriate risk management and liability prevention strategies into day to day decision making related to AT planning, design and maintenance.

Recommendations

Action #4: *Integrating with Land-use Planning*

Land-use planning drives development patterns and community design. The way communities and neighbourhoods are designed have a direct influence on how people live, work and play as well as the transportation and recreation choices they make. "Shaping Active and Health Communities" (Heart and Stroke Foundation) documents found that there are direct benefits that can result from creating well-designed and connected communities.

Land-use planning policies embedded in the OP and Zoning By-law determine how communities are developed and designed. The Heart and Stroke Foundation have a built environment toolkit which outlines land-use planning strategies which reinforce healthy and active living. The strategies that would apply within Pelham are included in

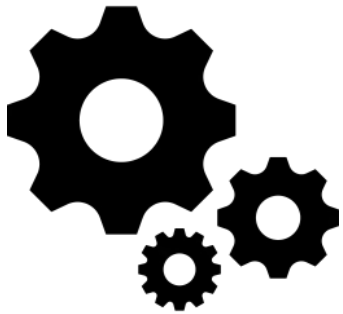
Table 6 - Land-use Planning & Design Principles that Promote AT

Mixed Use	Mixing housing with other land uses to decrease the distance travelled to a destination thus increasing walking and cycling rates.
Convenient School Locations	Locating schools throughout the community in areas that are easily accessible and providing cycling and walking amenities that encourage children to feel safer and secure about walking or cycling to school.
Integrating Infrastructure	Integrating active living infrastructure e.g. parks, trails, bicycle parking into overall community designs.
Appealing Streetscapes	Making streetscape more appealing through effective design with engaging treatments which improve aesthetics and improve comfort.
Bikeway Boulevards	Designing streets to increase comfort and safety by including lane narrowing, facilities, landscaping, traffic calming, etc.
Recreational Facilities	Providing recreational facilities such as parks and open space which are safe and secure which encourage physical activity.

Recommendations **20** The Town of Pelham should explore the development and implementation of land-use planning policies that support active transportation including mixed use developments, user friendly streets, streetscaping and supportive amenities.

PROCESS

A process is needed and should be communicated to all of those staff members and stakeholders who will be involved in the day to day implementation, management, maintenance and evaluation of the AT Plan. Clearly defining the steps will help to streamline future decision making which will lead to more successes.



Action #1: *Establishing an Implementation Process*

As noted previously, the AT Plan sets out recommended routes / facilities and a suggested timeline for implementation but is still meant to be a flexible tool. Route alignments have been identified which may change with time and will evolve through planning, design and budgeting decisions. A step-by-step process to guide implementation as a proposed AT route moves from the planning to the design and development stage has been identified.

Figure 8 illustrates the proposed step-by-step implementation process. It is consistent with the proposed process identified in OTM Book 18 in **section 5.0**. Additional details on each of the stages is provided in **Technical Appendix G**.

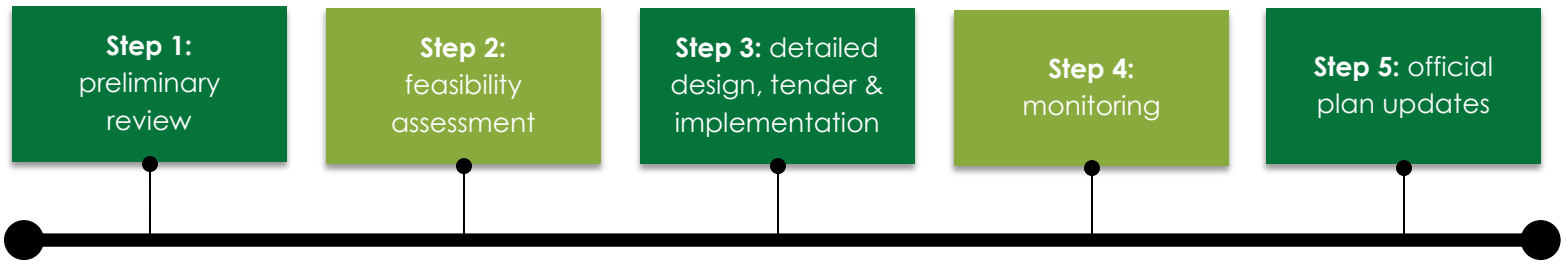


Figure 8 - AT Plan Implementation Process

21 The Town of Pelham should review and consider utilizing the process when moving forward with the implementation of the AT Plan. The details outlined in **Technical Appendix G** and OTM Book 18 should be reviewed and communicated to other staff.

Recommendations

Action #2: *Coordination with the Municipal Class EA*

Many large scale infrastructure projects require the completion of an Environmental Assessment. As a result of the completion of this AT Plan, the Town will have completed the necessary steps to fulfill Phases 1 and 2 of the Municipal Class EA (MCEA) process. A number of updates have been made to the MCEA Act which pre-approves the construction or operation of cycling facilities within the existing road right-of-way if there are no major impacts to the width or the alignment of the roadway. In addition, previous editions of the MCEA did not provide direction on multi-use trails. This has now been clarified in "Appendix 1-Cycling Changes to Project Schedules" in the March 2015 Proposed Amendments". The following clarifications impact facility implementation.

- Normal or emergency operation and maintenance of linear facilities now includes multi-use trails, and are pre-approved;
- Construction or removal of multi-use trails within existing or protected rights-of-way are pre-approved; and
- Construction or removal of multi-use trail including water crossings outside existing rights-of-way identify cost thresholds. Projects valued between $3.5 and $9.5M should adhere to Schedule B, and over $9.5M should adhere to Schedule C. The exemption is maintained for smaller projects and larger projects are to follow a well-accepted and proven process.

Schedule A and A+ projects are considered pre-approved and do not require a full Class EA. Pre-approved project include those where the proposed project does not require significant changes to the roadway or where traffic impacts have been studied and mitigated. The process used to evaluate and select preferred routes and facilities for the AT system took into consideration available roadway and platform width. As such, there are only one or two projects which will require a Class EA to be completed.

Recommendations **22** The Town of Pelham should investigate the environmental impacts and determine the appropriate schedule for each individual project and to inform the necessary next steps that should be completed.

Action #3: *Maintenance & Operation*

Pelham's AT Plan is meant to be a guide for implementation and operation. Funding should be allocated not only for the design and construction of each project but also for the operation and maintenance of those linkages. Operation costs include:

- Establishing an on-going funding program for the implementation of the plan;
- Preparing annual progress reports to Council regarding implementation;
- Working with partners to develop and deliver promotion and outreach programs; and
- Maintaining facilities in a good state of repair.

Maintenance was taken into consideration but an absolute dollar value by location and facility type was not calculated. The budget will need to grow incrementally to reflect the growth of the system. As each new section is implemented, staff should provide a summary of potential impacts to the operations budget. The dollar amount should be calculated and included in annual budgeting information. On-road facility maintenance costs are estimated at $1,000.00 to $3,000.00 per km per year depending on the facility types. Costs include pavement markings and stencil reapplication, sign replacement, replacement of sharrows or bike lanes on local roads, minor asphalt repair, sweeping, snow plowing and replacement of older style catch basin grates with bicycle friendly grates. Maintenance of off-road multi-use trails in urban areas particularly in park spaces and greenways can range from $2,000.00 to $5,000.00 per km per year depending on the level of service standard and trail conditions. Maintenance of rural off-road trails can be considerably higher as it typically includes drainage and storm channel maintenance, sweeping, clearing of debris, trash removal, weed control and vegetation management, mowing of grass along shoulders, minor surface repairs, repairs to trail fixtures and staging areas and other general repairs.

23 The Town of Pelham should identify an annual budget for the operations and maintenance of AT facilities. As the system is implemented, the budget will need to be revisited to ensure that the amount allocated is sufficient.

Recommendations

Action #4: *Monitoring & Evaluation*

Evaluating and documenting what is achieved as a result of the implementation of the AT Plan over time will help Town staff to assess the level of influence that the infrastructure and programs have to achieve the overall AT vision and objectives. Annual or frequent (every 2 – 3 years) reviews can help to determine future priorities. Identifying a set of performance measures and applying them through these reviews would help to track change and collect informative data. The following are suggested performance measures for the Town's review and consideration.

Table 7 - Proposed Performance Measures

Existing Use	The assessment of the number of different users, the proximity to AT routes, demographics of AT users and duration of typical trip.
Network Provisions	An assessment of the amount of the network that has been built and the provision of typical end-of-trip facilities or rest areas
Investment	The amount of funding made available to implementation the AT Plan
Comfort & Convenience	The number of facilities on Local and Regional roadways that are maintained and the number of destinations along the proposed route
Partnership & Recognition	Local events and businesses that help to support AT and external recognition of local efforts
Outreach & Provision	The amount of educational materials that are developed and provided
Public Engagement	The opportunities for public engagement, media coverage, generated views on the website, the amount of community support from stakeholders and the tourism generated.
Safety	The overall safety of cyclists determined by the number of collisions and injuries, safety of trail users assessed by reported incidents and the use of the Share the Road campaign
Citation & Ticketing	How many citations the police service are involved in or positive reinforcement campaigns

Recommendations » **24** The Town of Pelham should review, revise and adopt the performance measures. Once completed, the Town should establish a process where data is collected every two years to measure performance of the Plan.

PROMOTION

Increasing walking and cycling in Pelham requires more than improved / additional infrastructure. There needs to be programs and initiatives that encourage and promote people to understand where, when and how they can become more active within their community. There are a number of different tools and strategies that can help to encourage and educate residents and visitors of these opportunities within Pelham.

Action #1: *Designing a Signage & Wayfinding Strategy*

There are two general categories of signage that are needed when developing an AT system. The first are regulatory signage which are intended to instruct road users on what they must or should do; the second are wayfinding signs which provide users with visual cues and spatial information to better understand where one is, desired locations and how to get there. The appropriate application and design regulatory sign design and identified in OTM Book 18. Based on the proposed facilities identified in the AT system, the application of the green bike route marker sign, bike lane sign, multi-use pathway sign and signage for transition points will be needed. When regulatory signage is complemented by a family of wayfinding signs (see **section 3.2**) with a consistent visual identity, it can create a cohesive and continuous system of AT facilities – both on and off-road.

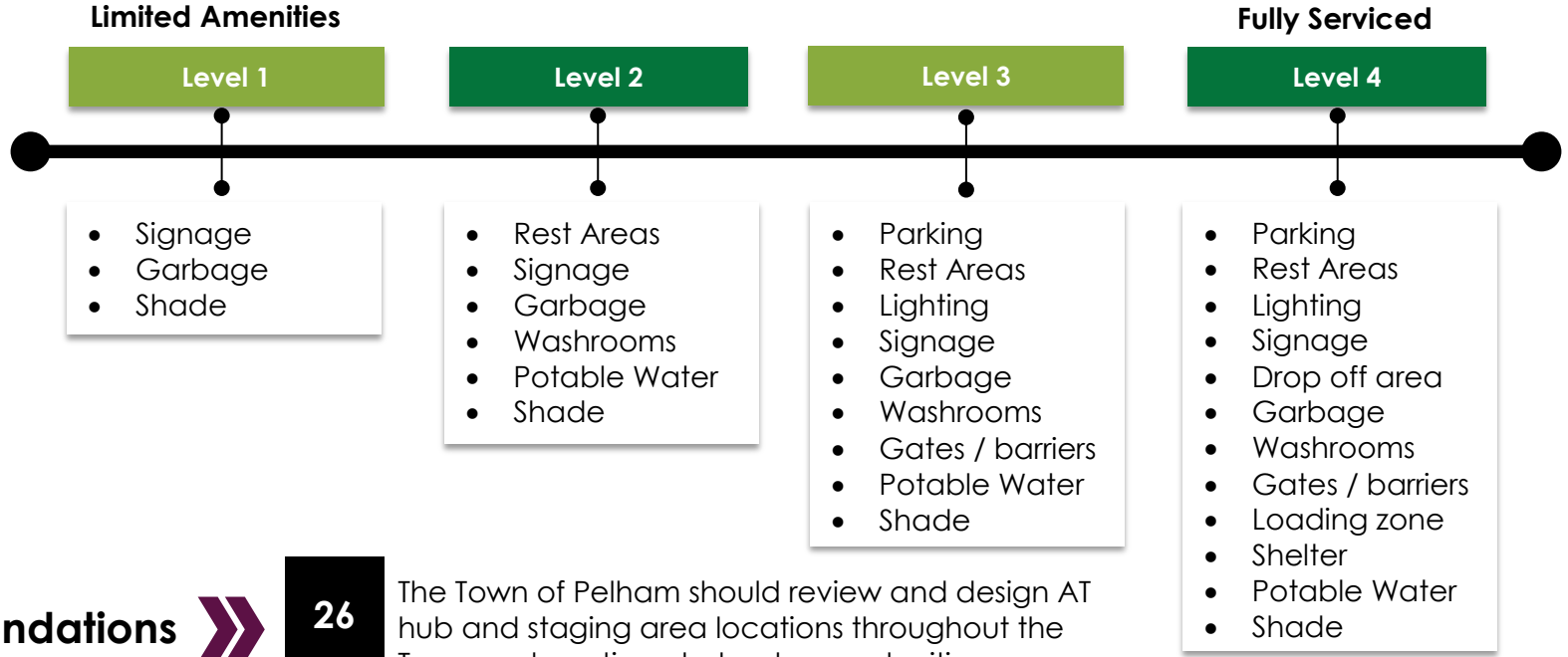
Effective AT wayfinding requires a concept which not only builds on the the Town's brand and identity but also provides the information needed by users. As part of the development of the AT plan, design concepts for a family of signs which could be implemented by the Town of Pelham at the AT system is constructed. An overview of the proposed regulatory signs to be implemented within Pelham and a map of their potential recommended locations along AT routes along with the proposed design concepts for the family of wayfinding signs is presented in **Technical Appendix H**.

25 As the AT system is implemented, the Town of Pelham should implement the necessary regulatory signage for specific facilities which is complemented by a set of branded wayfinding signs.

Recommendations

Action #2: *Developing AT Hubs / Staging Areas*

The AT system should not only be made up of walking and cycling routes. The system should be complemented by AT amenities such as bicycle parking, rest areas and washrooms. The design and implementation of walking and cycling amenities can help to encourage people to use the AT system for both recreational as well as commuter trips. **Section 3.0** speaks to some of the amenities that could be considered for implementation at key locations i.e. AT hubs or staging areas throughout the system. As a guide the Town should consider developing and adopting a standardized approach to the design of locations throughout the network that will help to encourage higher walking and cycling rates. Potential staging areas and community AT hubs are identified on **Maps 11** and **12.** These locations were informed by discussions with Town staff and the committee as well as input from the public. When designing these hubs / staging areas the Town should review and consider the four (4) levels of design and select the appropriate treatments.



Recommendations **26** The Town of Pelham should review and design AT hub and staging area locations throughout the Town and continue to track opportunities.

Action #3: Mapping & Promotional Tools

Mapping can be one of the most overlooked opportunities to educate people. Maps inform users where the routes are located and can also be a method of distributing information regarding the conditions of the road of trail which could influence route decision making, user etiquette and "rules of the road". Maps can be expensive to first create, but can be updated as the AT system grows which makes the initial investment pay for itself with time. Once completed, the document can be used to communicate information about the system and can be used to promote local destinations.

Select committee members from the PATC have undertaken an exercise to assess and map current roadway conditions and levels of difficulty. This information, combined with the GIS information created as part of the AT Plan could be combined and used as the base for a Town-wide AT map.

Next steps have been identified that the Town should explore to establish a formal AT map for promotion and outreach:

- Adapt the GIS database and undertake research to identify the target audience as well as potential funding and partnership opportunities.
- Internally discuss the types of user group that the map is intended to target – helps to identify relevant routes and information.
- Engage with local businesses, stakeholders and the public to discuss the development and design of the mapping.
- Determine the locations to make the map available.
- Approach and engage local businesses, local agencies and the Region.
- Discuses messaging to be included on the mapping.
- Determine the timing of development, printing, launch and distribution.

Did you know that…
To assist in offsetting the cost of producing the maps, the Town could explore selling advertisement space to local businesses and interest groups.

27 The Town of Pelham should explore the use of the GIS database prepared for the AT plan to prepare an AT map for the Town. This information should be enhanced using the mapping information generated by the PATC to promote AT activities Town-wide.

Recommendations

Action #4: *Design & Encourage through Network Enhancements*

As noted above, pedestrians and cyclists can sometimes be discouraged from walking and cycling if direction is not provided or treatments are not designed to address the areas of conflict or concern. There are two areas where this can occur – at intersections and crossings or at points of transition. Many of these areas of concern were identified through the development of the AT Plan. With guidance from OTM Book 18 and OTM Book 15, the consultant team identified potential intersection, crossing and transition point design treatments to accommodate pedestrians and cyclists in a way that is intended to make them feel more safe and comfortable while also maintaining the flow of traffic. The results of this investigation are presented on **Maps 11** and **12** and include:

- **Cross-rides**: which allows cyclists to cross the intersection without having to dismount or ride with vehicular traffic.
- **Pavement marking at intersections**: which uses pavement marking such as sharrows to provide guidance for cyclists through intersections
- **Off-road crossings:** which provide mid-block crossings of off-road trails to provide access to the next linkage or other point of interest.
- **Guidance between facilities:** which uses signage and pavement markings to identify and guide the transition from one cycling or pedestrian facility to another.

There are numerous design treatments identified in OTM Book 18 and 15 which help to improve pedestrian and cyclist comfort at these complex points. When implementing the AT system, the Town should be aware of the start and end point of each facility and any major or minor crossings that need to be made. These areas are to be identified and design as part of the overall project.

Recommendations »

28 The Town of Pelham should design and implement intersection treatments, crossings and transitions between AT facilities as the AT system is implemented based on guidance from OTM Book 18 and 15.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 11

MAP 11 - PROPOSED NETWORK ENHANCEMENTS (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

Proposed Bicycle Parking

The following factors should be considered when planning and designing bicycle parking:
- Type and location of bicycle parking area
- Visibility and security
- Type of bicycle parking facility
- Weather protection
- Clearance considerations.

Examples of short term bicycle parking currently existing in Pelham are illustrated below.

Ribbon style bicycle rack at Pelham Street / Highway 20

Grid style bicycle parking at Pelham Town Square

Proposed Staging Area

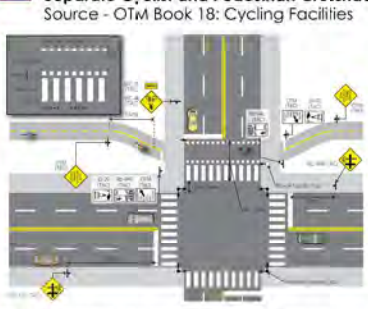
Staging areas can include lighting, rest areas, car and bicycle parking, signage, loading and unloading areas, garbage receptacles, washroom and amenity buildings, and gates / access barriers.

Examples of existing staging areas in the Town of Pelham are illustrated below.

Existing staging area at Steve Bauer Trail (access from Port Robinson Road)

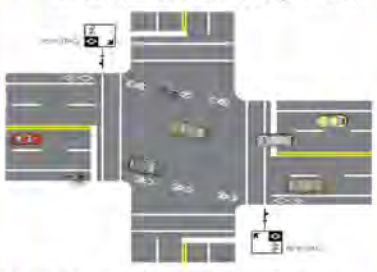
Existing staging area at Steve Bauer Trail (access from Hurricane Road)

Proposed Intersection Treatment Example
Separate Cyclist and Pedestrian Crossride
Source - OTM Book 18: Cycling Facilities



A crossride allows cyclists to cross the intersection without having dismount or ride with vehicular traffic. In locations where the facility intersects the sidewalk, guidance should be provided on where cyclists should wait at the intersection.

Proposed Intersection Treatment Example
Optional Sharrows in an Intersection
Source - OTM Book 18: Cycling Facilities



Pavement markings or treatments through the intersection can help guide cyclists between facilities and highlight potential conflict areas. Possible treatments could include bike stencils or chevrons, sharrows, dashed guide lines and green surface treatment.

Enhanced Off-Road Route Crossing

Pedestrian and Bicycle Crossing Ahead Sign
The Pedestrian and Bicycle Crossing Ahead sign (WC-46) should be placed on the roadway at the approach of the route crossing facing the direction of travel on both sides of the road.

The Crossing tab sign (WC-7S) should be installed below WC-46 to convey the meaning of the sign.

Bicycle Trail Crossing Side Street Sign
The Bicycle Trail Crossing Side Street sign (WC-44L or WC-44R) should be placed on the roadway at the approach to an intersection with a side street where a parallel route crosses the side street close to the through road.

The Trail Crossing Tab sign (WC-44T) be installed below WC-44L or WC-44R to convey the meaning of the sign.

Township of West Lincoln
Township of Wainfleet
City of Welland
Pelham North
Fenwick - See Map 12
Ridgeville
Fonthill - See Map 12
Sawmill Road
Roland Road
Orchard Hill Road
Kilman Road
Meller Road
Overholt Road
Moore Drive
Tice Road
Highway 20 West
Memorial Drive
Canboro Road
Welland Road
Foss Road
Sumbler Road
Chantler Road
Webber Road
River Road
Short Hills Provincial Park
Bissett's Hideaway Resort
Saint Johns Conservation Area
Lookout Point Golf Club
Peninsula Lakes Golf Club
Pelham Hills Golf Club & Country Club
Lathrop Nature Preserve
E.L. Crossley Secondary School
Pelham Centre Public School
Martha Court
Pelham Town Square

Legend

Active Transportation Routes

Existing	Proposed
	Off Road Trail
	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Buffered Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
N/A	Desired Connection
N/A	Bruce Trail

Existing Active Transportation Features
- Existing Bike Parking (bike rack)
- Existing Signage / Wayfinding
- Existing Staging Area
- Existing Crosswalk

Proposed Active Transportation Enhancements
- Proposed Intersection Improvement / Redesign
- Proposed Bike Parking
- Proposed Staging Area
- Proposed Traffic Signal
- Enhanced Off-Road Route Crossing
- Enhanced On-Road Route Crossing

Proposed crossing enhancement organized by icon colour. Refer to graphics on Map 7 for example and description of each proposed enhancement.

Origins & Destinations
- Bus Stop
- Community Destination[ii]
- School

Transportation Features
- Regional Road
- Local Road
- Abandoned Railway
- Active Railway

Land Use Features
- Provincial Park
- Niagara Escarpment Plan Area
- Parcel Property
- Waterbody

Notes:
i. Information collected from the Region of Niagara and Land Information Ontario.
ii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

0 1 0 2 Kilometres

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 12 - PROPOSED NETWORK ENHANCEMENTS (URBAN AREAS)

Map 12

Pelham NIAGARA | WSP | MMM GROUP

Proposed Bicycle Parking

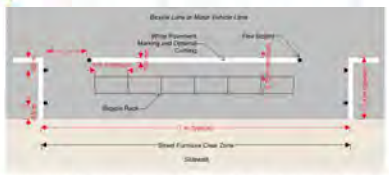
The following factors should be considered when planning and designing bicycle parking:
- Type and location of bicycle parking area
- Visibility and security
- Type of bicycle parking facility
- Weather protection
- Clearance considerations.

Examples of short term bicycle parking currently existing in Pelham are illustrated below.

Ribbon style bicycle rack at Pelham Street / Highway 20

Grid style bicycle parking at Pelham Town Square

Proposed Bicycle Parking - Bicycle Corral



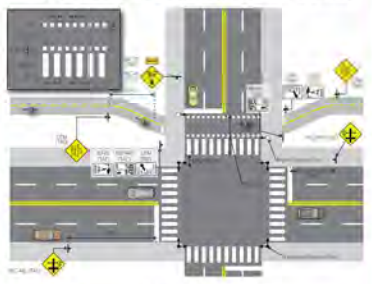
Convert one or more on-street motor vehicle parking spot to bicycle corral parking during peak seasons. Typically 8 or more bicycles can park in the parking space allocated for one motor vehicle.

An example of a layout diagram is illustrated in the graphic above.

Steve Bauer Trail

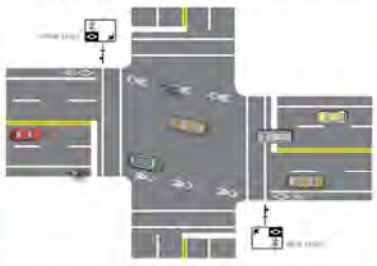
Proposed improvements - upgrade existing stonedust surface to asphalt surface.

Proposed Intersection Treatment Example
Separate Cyclist and Pedestrian Crossride
Source - OTM Book 18: Cycling Facilities



A crossride allows cyclists to cross the intersection without having dismount or ride with vehicular traffic. In locations where the facility intersects the sidewalk, guidance should be provided on where cyclists should wait at the intersection.

Proposed Intersection Treatment Example
Optional Sharrows in an Intersection
Source - OTM Book 18: Cycling Facilities



Pavement markings or treatments through the intersection can help guide cyclists between facilities and highlight potential conflict areas. Possible treatments could include bike stencils or chevrons, sharrows, dashed guide lines and green surface treatment.

Enhanced Off-Road Route Crossing

Pedestrian and Bicycle Crossing Ahead Sign
The Pedestrian and Bicycle Crossing Ahead sign (WC-46) should be placed on the roadway at the approach of the route crossing facing the direction of travel on both sides of the road.

The Crossing Tab sign (WC-7S) should be installed below WC-46 to convey the meaning of the sign.

Bicycle Trail Crossing Side Street Sign
The Bicycle Trail Crossing Side Street sign (WC-44L or WC-44R) should be placed on the roadway at the approach to an intersection with a side street where a parallel route crosses the side street close to the through road

The Trail Crossing Tab sign (WC-44T) be installed below WC-44L or WC-44R to convey the meaning of the sign.

Legend[i]

Active Transportation Routes

Existing	Proposed
	Off Road Trail
	Pathway[ii]
	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Buffered Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
N/A	Desired Connection
N/A	Bruce Trail

Existing Active Transportation Features
- Existing Bike Parking (bike rack)
- Existing Signage / Wayfinding
- Existing Staging Area
- Crosswalk
- Transportation Node[iii]

Proposed Active Transportation Enhancements
- Proposed Intersection Improvement / Redesign
- Proposed Bike Parking
- Proposed Signal Heads
- Enhanced Off-Road Route Crossing
- Enhanced On-Road Route Crossing

Proposed crossing enhancement organized by icon colour. Refer to graphics on Map 8 for example and description of each proposed enhancement.

Origins & Destinations
- Bus Stop
- Community Destination[iv]
- School

Transportation Features
- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features
- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:
i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Transportation hubs highlight locations where multiple modes of transportation are likely being used including transit, vehicles, walking and cycling.

iv. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

FONTHILL

FENWICK

Action #5: *Designing & Implementing Bicycle Parking*

Bicycle parking is another means of promoting cycling. It provides people with a sense of security at the end of their trip and also allows individuals to make stops during their trip. A lack of adequate bicycle parking supply or type can deter many from considering using their bicycle as a basic mode of transportation. OTM Book 18 recognizes that bicycle parking facilities are essential to creating a more active and sustainable community. It identifies the following planning and designing considerations related to bicycle parking:

- Type and Location of Bicycle Parking Area
- Visibility and Security
- Type of Bicycle Parking Facility
- Weather Protection
- Clearance Conditions

Cyclists require both short and long-term parking alternatives. Short-term parking is requires a high degree of convenience (e.g. bicycle racks) while long-term parking is requires a high degree of security and weather protection (e.g. bicycle lockers, parking in enclosed areas such as condominium, transit hubs, etc.). Locations where bicycle parking is needed and / or desired were identified by residents and stakeholders through the online engagement tool as well as past discussions with the committee. These locations are illustrated on **Maps 11** and **12**. The Town should explore the implantation of different types of bicycle parking depending on the location and the intent of the destination. Town staff should refer to OTM Book 18 **section 7.1** for additional information on the various bicycle design treatments. The Town should investigate opportunities to convert select downtown parking spaces into bicycle corrals or acquire secure bicycle lockers for community destinations.

29 The Town of Pelham should identify and implement appropriate bicycle parking for the locations illustrated on maps 9 and 10 and should continue to identify future locations where bicycle parking can be implemented.

Recommendations

4.3 Getting the System Built / Plan Implemented

The implementation, operation and maintenance of cycling and walking infrastructure and programs requires resources – both staff and stakeholder time and monies. Along with a proposed timeline there also needs to be supportive strategies that facilitate the funding of the recommendations outlined in the plan and identify the individuals who will be responsible for the various components of the plan. The following sections provide direction on how this can be done.

How much will it Cost?

How was the AT System costed?

An estimated cost for the implementation of the AT system has been developed for the Town's consideration as they inform future budgets and decision making. When developing the implementation strategy the consultant team developed preliminary costing based on a set of unit prices. Unit prices are blended rates that reflect best practices from various municipalities throughout southern Ontario. It is recognized that the level of effort will vary on a project-by-project basis and some projects could require additional work than other projects included in cost estimates. The unit prices:

- Are intended to be used for functional design purposes as they only include the installation of facilities and do not include contingency, design and approvals costs;
- Do not include the cost of property acquisitions, signal modifications, utility relocations, major roadside draining works or costs associated with site-specific projects such as bridges, railway crossings, retaining walls, and stairways, unless otherwise noted;
- Assume typical environmental conditions and topography; and
- Do not include applicable taxes and permit fees – which are considered additional.

The unit price assumptions used to inform the costing of the Pelham AT Plan and presented in **Technical Appendix I**.

Based on the unit prices highlighted in **Technical Appendix I**, network costing has been developed for the short and medium term phases. A summary of the estimated cost to implement the Pelham AT system is provided in **Table 8**.

Table 8 - Summary of Estimated Costs to Implement the Short + Medium Term Phases

	Short Term (0-5 Years)	Medium Term (6-10 Years)	Total
Planned Projects			
Capital Projects Identified in 20 year capital plan*	$2,709,992	$10,487,101	$13,197,093
Unplanned Projects			
Municipal Share	$3,237,381	$1,942,513	$5,179,894
Regional Share	$1,010,679	$1,898,789	$2,909,468
Total by Phase			
Total Planned Projects + Total Unplanned Projects	**$6,958,051**	**$14,328,403**	**$21,286,455**

*The capital plan is revisited on an annual basis to confirm the projects which will proceed through to implementation. The information contained within the plan is meant to help inform this review and used as a tool to support staff and council.

The total estimated cost to implement the Pelham AT system is approximately $21 million over the next ten years of which $5.2 million is the Town's share and $2.9 million in the Region's share. Approximately $13 million of the total estimated cost has already been allocated through future planned major road projects identified in the Town's capital plan. The Town's capital plan is reviewed and updated on an annual basis and should be used as a guide for implementation. As new opportunities (e.g. monies, resources, etc.) the Town should coordinate the implementation of AT infrastructure with larger-scale planned projects.

It is important to note that the Town of Pelham – specifically Council and staff - already has a history of financially supporting active transportation. In 2014 and 2015 monies were allocated to the implementation of Rail Trail pieces from Foss Road to Centre Street (~$40,000) and from Centre Street to Murdoch Street (~$70,000). The implementation of sharrows on Haist Street is another example of Council's past financial commitments and the implementation of the in-boulevard multi-use trail as part of the East Fonthills development will be a collaborative financial commitment (operations and maintenance) between the Town and the developer.

Details regarding the network costing for the Pelham AT system are contained in **Technical Appendix J.** To supplement the unit price schedule and a GIS database of the Pelham AT System, it is recommended that **Technical Appendix J** be used as a tool by Town staff to track implementation of the AT system and to inform future budgeting and decision making.

Thought the preliminary costing is meant to inform future decision making the information contained in the Plan related to phasing and costing is not meant to be prescriptive. Town staff should work with Council and stakeholders on an annual basis to ensure that what has been recommended is still consistent with the Town's priorities and objectives and is considered feasible and sustainable. Costing of routes and facilities should be reviewed and confirmed as a project moves through to implementation.

Recommendations

30	**Technical Appendix I** should be used as a reference to inform the Town's future budgeting and costing for AT facilities including on and off-road routes.
31	The Town should use the preliminary costing identified through the AT Plan to inform future budgeting decisions on an annual basis. As needed the costing should be updated to reflect more accurate estimates based on inflation and other external factors.

How will it be Funded?

Implementing Pelham's AT system will require an allocation of funds and resources from the Town and other partners on an annual basis. Annual funding for construction, maintenance, operations and programming should be identified in the Town's annual budgeting process to strategically implement the AT system over the short and medium term horizon. In addition, the Town should seek additional funding sources to maximize budget efficiencies and coordinate with other major projects.

A number of existing programs and budgets were reviewed to determine how the Pelham AT system could be funded. The following outlines funding strategies for the Town to consider as they proceed with the implementation of the AT System.

- **Approved Capital Budgets:** Proposed AT routes may be funded through previously planned and budgeted large-scale projects. The Town's capital budget is updated on an annual basis and set-outs a 20-year budgeting schedule. As such the cost to implement an AT route may be integrated into an overall project cost. When the capital plan is being updated, Town staff should investigate opportunities to coordinate the implementation of AT infrastructure as part of other larger-scale projects.
- **Development Charges By-Law:** Future planned infrastructure is funded through budgets based on the Town's Development Charges By-law (#3527). The cost to build an AT facility type is part of the overall development cost and integrated within the determine budget.
- **Sidewalk Implementation Program:** Funding for sidewalk implementation and repairs are identified in the Town's capital budget. The budget is based on an annual inspection and could include improvements to address spalling, cracks, heaves and other hazards,
- **Coordination with Regional Projects:** Implementation of the Pelham AT System will require coordination with on-going and future planned Regional projects. The Town and Region should work together to identify funding opportunities for implementation of routes located on roads and lands under the Region's jurisdiction.

- **External Funding Sources:** There are a number of funding opportunities available at the provincial and federal level. Where possible, external funding sources should be explored such as the federal / provincial gas tax, Federation of Canadian Municipalities Green Municipal Fund, Federal and Provincial Infrastructure Stimulus Program, Ontario Municipal Cycling Infrastructure / Climate Strategy Programs as well as Corporate Environmental Funds to help fund infrastructure and cycling supportive programs.

Recommendations

32	The Town should continue to identify projects which can be funded by existing programs and budgets e.g. annual capital budgets, sidewalk implementation programs, etc.
33	The Town should explore external funding sources and partnerships to help fund implementation as well as other programs and promotional initiatives.
34	The Town should identify opportunities to coordinate large-scale capital projects to achieve economies of scale and build the costs for AT facilities into those budgets.

Who will do what?

Implementing the AT Plan will require ongoing coordination and communication between staff, external agencies, stakeholders and Council. It will require champions at all levels to ensure that all elements of the plan are implemented. Defining those responsible for the day to day implementation of the plan as well as the partners who will support them is important at the master plan level.

Roles & Responsibilities

A defined reporting structure will help to establish an effective and efficient decision-making process. As part of the development of the Plan the study team reviewed existing Town structures and processes and have identified a reporting structure for future decision making related to the AT Plan – see **Figure 9**.

The Town should review and revise the proposed structure and ultimately adopt the preferred approach as a guide for staff and stakeholders.

When developing the reporting structure the following assumptions were made:

- Staff from the Public Works department will lead the implementation of the AT Plan and will be responsible for coordinating involvement with other municipal staff from corporate services, community planning and development and recreation, culture and wellness.
- Public works should identify a staff point person to coordinate the implementation of the AT Plan. The staff point person will communicate with the Pelham AT Committee and other key stakeholders e.g. the Region, conservation authority, public health, etc. to implement proposed AT linkages and to coordinate programming and education initiatives.
- After 2 – 3 years of implementation the Town should re-evaluate the coordination of implementation and should consider establishing a more formal staff role to lead the implementation of the AT Plan and to manage future planning, design and construction.
- The Pelham Active Transportation Committee should still remain a committee to Council and will provide direction to Town staff on key network priorities on an annual basis as well as ongoing promotion and initiatives.
- Residents and stakeholders should be engaged on a continuous basis as the master plan is implemented. As necessary, members of the public should be invited to attend the AT Committee meetings or provide input on a project by project basis.

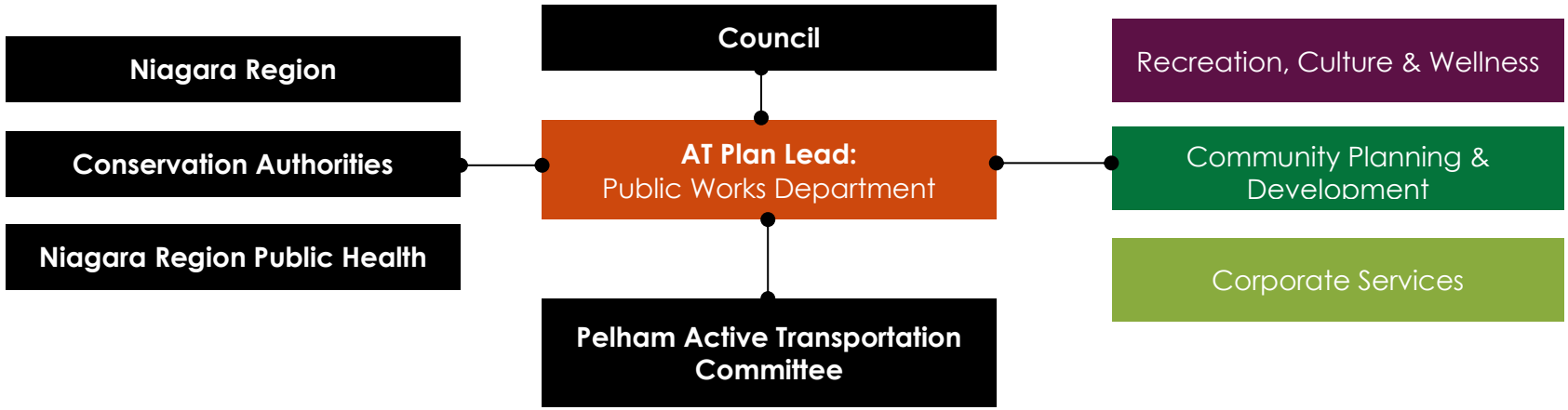


Figure 9 - Proposed AT Plan Reporting Structure

Recommendations

35 The Town of Pelham should review the roles and responsibilities outlined in the AT Plan and adopt them as the preferred method to allocate time and effort to implementing the AT Plan.

Partnerships

The Town of Pelham has a long history of partnerships with local stakeholders and interest groups which has resulted in their recognition as a bike and walk friendly community. Ongoing coordination with these partners will be needed to move forward with the implementation of the AT Plan. The intent is for the Town to work collaboratively with these agencies and interest groups as they have done through the development of the Plan. **Table 9** summarizes the proposed partners and their recommended roles.

Table 9 – Proposed Partnerships and Recommended Roles

Region of Niagara	Implement linkages identified along Regional Roads which provide key connections through the Town.
Surrounding Municipalities	Coordinate implementation of routes which generate inter-municipal connectivity to ensure continuity of the system
Niagara Public Health	Develop programs and education campaigns to promote the connection between health and cycling as well as safe cycling practices
Niagara Tourism	Identify opportunities to enhance and promote AT tourism destinations and identify opportunities to highlight supportive businesses
Niagara Police Service	Monitor and enforce safe and proper cycling and walking etiquette and if needed provide information related to collisions and other safety related requests.
Niagara Region Conservation Authority	Provide input on the potential connections which can be made into local conservation areas and opportunities to highlight local natural areas. The conservation authority also has other activities which they are required to undertake based on the Conservation Authorities Act Regulation (Section 28). External property owners must obtain permission from the Niagara Region Conversation Authority before beginning any development, site alteration, construction or placement of fill.

School Boards	Provide input on opportunities to partner with local schools who may be interested in participating in local events such as Bike to School Day or the Active and Safe Routes to School Program.
Regional Stakeholders	Regional stakeholders such as the Ministry of Transportation, Ontario by Bike, Ontario Trails Council, Trans Canada Trail Association and Share the Road Cycling Coalition should be engaged as the plan is implemented. Opportunities to partner with these organizations exist to promote to encourage and support active and healthy lifestyles, help municipalities advance safe walking and cycling networks, enhance infrastructure to make Ontario's roads safer for all road users and to build on AT tourism.

Recommendations

36	The Town of Pelham should continue to work with their partners and local interest groups to ensure that the Plan and its recommendations are implemented. Specifically, the Town should work with technical agencies to implement the AT system while engaging regional stakeholders in promotion and outreach
37	The Town of Pelham should continually look for opportunities for additional partnerships as well as local volunteerism to support the implementation of the Plan.

Managing the Network

In addition to the processes outlined in the action plan, implementation of the AT Plan will also require a tool to help track the work that is being done.

The GIS database that has been prepared as a result of the network development process can be used by Town staff as a means of tracking the implementation of the AT system as well as overall asset management. Once the AT Plan has been adopted, the information contained within the GIS database should be integrated into the Town's GIS database and should be managed by Staff. The GIS database is a tool which can be used in the following ways.

1	To develop a KMZ or KML file which can be overlaid into GoogleEarth to facilitate internal and external communication regarding the AT system
2	To track implementation and confirm the feasibility of proposed facilities as well as network priorities.
3	To document the implementation of new segments by updating the "facilities" component of the database – resulting in the need for fewer master plan updates
4	To establish an AT map for the Town or to inform future updates to Regional mapping.

Though the GIS database is a good tool, it is important to acknowledge that not all people have access to the programs needed to use it. As such, the team has developed an excel version of the information presented in GIS. The tables are formatted to mimic the formatting of the GIS database and organized by phase.

To supplement the unit price schedule and a GIS database of the Pelham AT System, it is recommended that **Technical Appendix J** be used as a tool by Town staff to track implementation of the AT system and to inform future budgeting and decision making

Key information contained in **Technical Appendix J** includes:

- Visual representation of the line type by facility type displayed on **Maps 5** and **6**;
- Unit costs applied by facility type (consistent with **Technical Appendix I**);
- Break-down of capital approved, municipal and regional projects;
- Unique segment IDs, start and end point, total length and jurisdiction of route
- Proposed route hierarchy consistent with **Maps 3** and **4**; and
- Information regarding motor-vehicle operating speeds, AADT volumes and field investigation observations of each route.

Recommendations 38

Technical Appendix J should be used as tool to manage and track implementation of the Pelham AT system. The tool should be updated on an on-going basis to inform future decision making and budgeting.

5.0 CONCLUSION & SUMMARY OF RECOMMENDATIONS

Pelham's AT plan is made in Pelham and reflects its principles and values. The past and present efforts of local champions have resulted in province-wide recognition and significant community benefits. The future initiatives outline in this plan will help to enhance existing successes to make Pelham even more walking and cycling friendly. The plan acknowledges that not everyone has the same interests and preferences. It also acknowledges that there are competing interests for resources when it comes to a smaller town. That said the opportunities that are available through funding, partnerships, coordination and collaboration will help to off-set the challenges to allow staff and Council to efficiently move forward with the implementation of the proposed AT system and other recommendations.

The plan was truly developed using a made in Pelham approach. The recommendations respond to the input received over the course of the study and the ongoing consultation that the AT committee continues to undertake. Core community objectives are woven throughout the document and will be achieved through its implementation. Together, this plan will see the Town of Pelham continue to grow as a destination for walking and cycling but more importantly a community with a high quality of life, happy and healthy residents.

The recommendations outlined in the Plan create the back-bone of how the Town will affect change. The recommendations outlined in the AT Plan have been organized into four high-level categories – **priorities**, **planning**, **process** and **promotion.** The core recommendations are strategies and actions to support these four high-level categories and are the foundation for future asks to Council and implementation. The numbers included in the tables correspond to the recommendation number in the body of the report – also included are the page numbers for each of the recommendations.

Recommendation #1: Priorities

The Town of Pelham should prioritize the implementation of active transportation infrastructure, policies, programs and protocols including easy to implement short-term facilities as well as the integration of active transportation into day to day decision making.

4	The Town of Pelham should prioritize the implementation of missing sidewalks linkages along roads where a proposed on-road cycling linkage has been identified as part of the AT network	39
6	The Town of Pelham should focus on implementing both commuter as well as recreational / touring cycling routes throughout the urban and rural areas and communities	39
8	The Town of Pelham should consider improving the winter maintenance along Canboro Road, Welland Road and the Steve Bauer Trail	39
9	The Town of Pelham should prioritize the implementation of walking and cycling routes identified within the walking areas as defined by the Transportation Consortium for Niagara	39
15	The Town of Pelham should prioritize the implementation of the ten (10) projects. They should be integrated into the existing capital works plan and if needed, the Town should work collaboratively with the Region and other stakeholders to facilitate implementation.	63
16	The Town of Pelham should continue to work with its partners – private land owners, the Region of Niagara, surrounding municipalities, PATC and other stakeholders – to explore the viability of the desired connections including but not limited to trail linkages in unopened road allowances, improvements to sections of the Steve Bauer trail outside of the Town and extensions to future proposed At routes.	63

Recommendation #2: Planning

The Town of Pelham should strategically plan for future active transportation improvements and changes by adopting the system, actions and recommendations outlined in the AT Plan and updating policies to reflect AT planning principles.

1	The proposed active transportation network illustrated on **Maps 5** and **6** is to be adopted by the Town of Pelham to guide for future facility design and implementation.	36
3	The AT network is flexible. There may be opportunities for additional or alternate connections to be made in the future – based on new development or partnerships. These connections should be made and the mapping and database updated.	36
5	The Town of Pelham should protect the unopened road allowances identified as "desired connection" for future trail implementation until there is available budget to pursue the linkage	41
13	The Town of Pelham should adopt the proposed network phasing illustrated in **Maps 7** and **8** of the AT Plan and should be used by staff as a guide for implementation of the AT system.	59
17	Updates to Town's development process to reinforce the planning, design and construction of AT projects should be made and clearly communicated to the development community.	67
18	The Town of Pelham should review the consultation alternatives when implementing and AT project and should identify the appropriate level of consultation that is needed.	68
19	The Town of Pelham should reviewed and adopt the appropriate risk management and liability prevention strategies into day to day decision making related to AT planning, design and maintenance.	69

20	The Town of Pelham should explore the development and implementation of land-use planning policies that support active transportation including mixed use developments, user friendly streets, streetscaping and supportive amenities.	70
34	The Town should identify opportunities to coordinate large-scale capital projects to achieve economies of scale and build the costs for AT facilities into those budgets.	84

Recommendation #3: Process

The Town of Pelham works in a collaborative and coordinator manner to implement active transportation infrastructure, policies and programs. Town Staff should work together to establish a process that engages internal and external partners in day to day decision making.

2	As the AT network changes with time, the mapping and GIS database should be updated to reflect the most up to date conditions. The Town should strive to review and revised the database and mapping on an annual basis.	36
7	The Town of Pelham should continue to monitor updates to the Minimum Maintenance Standards and should adopt new standards related to cycling as they are amended	41
10	The Town of Pelham should adopt the design guidelines for pedestrian and cycling facilities as outlined in **section 3.0** of the AT Plan. They should be supported by other provincial design guidelines including but not limited to OTM Book 18, MTO Bikeways Design Guidelines, OTM Book 15, etc.	55
11	The Town of Pelham should adopt the revisions to the design standards for municipal roadways which incorporate the recommended pedestrian and cycling facilities as outlined in the AT Plan	55

14	The proposed phasing identified in the AT Plan should be communicated to Town partners including but not limited to Niagara Region and surrounding municipalities.	59
21	The Town of Pelham should review and consider utilizing the process when moving forward with the implementation of the AT Plan. The details outlined in **Technical Appendix G** and OTM Book 18 should be reviewed and communicated to other staff.	761
22	The Town of Pelham should investigate the environmental impacts and determine the appropriate schedule for each individual project and to inform the necessary next steps that should be completed.	72
23	The Town of Pelham should identify an annual budget for the operations and maintenance of AT facilities. As the system is implemented, the budget will need to be revisited to ensure that the amount allocated is sufficient.	73
24	The Town of Pelham should review, revise and adopt the performance measures. Once completed, the Town should establish a process where data is collected every two years to measure performance of the Plan.	74
30	**Technical Appendix I** should be used as a reference to inform the Town's future budgeting and costing for AT facilities including on and off-road routes.	82
31	The Town should use the preliminary costing identified through the AT Plan to inform future budgeting decisions on an annual basis. As needed the costing should be updated to reflect more accurate estimates based on inflation and other external factors.	82
32	The Town should continue to identify projects which can be funded by existing programs and budgets e.g. annual capital budgets, sidewalk implementation programs, etc.	84

33	The Town should explore external funding sources and partnerships to help fund implementation as well as other programs and promotional initiatives.	84
35	The Town of Pelham should review the roles and responsibilities outlined in the AT Plan and adopt them as the preferred method to allocate time and effort to implementing the AT Plan.	86
36	The Town of Pelham should continue to work with their partners and local interest groups to ensure that the Plan and its recommendations are implemented. Specifically, the Town should work with technical agencies to implement the AT system while engaging regional stakeholders in promotion and outreach	88
37	The Town of Pelham should continually look for opportunities for additional partnerships as well as local volunteerism to support the implementation of the Plan.	88
38	**Technical Appendix J** should be used as tool to manage and track implementation of the Pelham AT system. The tool should be updated on an on-going basis to inform future decision making and budgeting.	90

Recommendation #4: Promotion

The Town of Pelham should continue to promote and educate residents and visitors of the importance of living active and healthy lifestyles and developing complete communities. Staff should work with community partners to identify and implement local programs and initiatives that encourage people to be more active for both recreational and day-to-day purposes.

12	The Town of Pelham should not only design the proposed AT routes but should look for opportunities where additional design enhancement to encourage walking and cycling or improve the sense of comfort and safety.	55
25	As the AT system is implemented, the Town of Pelham should implement the necessary regulatory signage for specific facilities which is complemented by a set of branded wayfinding signs.	75
26	The Town of Pelham should review and design AT hub and staging area design locations throughout the Town and continue to track opportunities.	77
27	The Town of Pelham should explore the use of the GIS database prepared for the AT plan to prepare an AT map for the Town. This information should be enhanced using the mapping information generated by the PATC to promote AT activities Town-wide.	77
28	The Town of Pelham should design and implement intersection treatments, crossings and transitions between AT facilities as the AT system is implemented based on guidance from OTM Book 18 and 15.	78
29	The Town of Pelham should identify and implement appropriate bicycle parking for the locations illustrated on maps 9 and 10 and should continue to identify future locations where bicycle parking can be implemented.	79

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Town of Pelham Active Transportation (AT) Plan & Implementation Strategy

Technical Appendices |
Final November 2016

Pelham NIAGARA

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Appendix A

Policy Review

A master plan typically outlines polices, strategies and recommendations that reflect community and municipal objectives. Policies provide the basis for future growth and development as well as community change. Where possible, they should be supported by polices and plans from other levels of government. Active Transportation and recreation have been integrated into a number of policies and plans at the federal, provincial and regional levels of government which have a direct impact on decision making at the Town of Pelham. In order to understand how to influence future policy changes, it is important to understand the existing policies.

The following is a summary of active transportation and recreation supportive policies at the federal, provincial, regional and local municipal level that have been reviewed as part of this project to provide the team with the necessary policy context.

Federal

Transport Canada

The Strategies for Sustainable Transportation Planning: a review of practices and options (2005) identifies guidelines for consideration when incorporating sustainable transportation into municipal policies. The report includes principles that support the promotion of active transportation as a mode of sustainable transportation at the federal level and the promotion of active transportation as a viable form of transportation.

Potential strategies identified in the Transport Canada guidelines include those that:

Land Use Planning Integration

- Encourage desirable land use form and design (e.g. compact, mixed-use, pedestrian / bike friendly) through transportation plan policies.

Environment & Health

- Mitigate air quality and noise impacts of transportation activities.
- Set goals and objectives for reducing the need to travel, improving transit mobility, and preserving minimum levels of service on roadways.
- Address the transportation needs of persons with disabilities, notably public transit service and barrier-free design in public rights-of-way.

Modal Sustainability

- Increase walking, cycling, other active transportation, transit, ridesharing and teleworking.
- Recognize synergies and tensions among different modes (e.g. potential for multimodal cycling-transit trips, potential for modal shift from transit to ridesharing).
- Make transit operations more sustainable.

The strategies identified in Transport Canada's report, demonstrate the federal government's commitment to developing national standards and practices which can be used to help improve conditions for walking and cycling.

Federation of Canadian Municipalities

The Federation of Canadian Municipalities (F.C.M.) fosters the development of sustainable communities that enjoy a high quality of life by promoting strong, effective and accountable municipal government.

F.C.M.'s "Communities in Motion: Bringing Active Transportation to Life Initiative" is a key resource for all Canadian municipalities. It sets out goals for promoting active transportation and eliminating barrier to difficult travel modes.

The strategy outlines active transportation considerations for community design including travel times and distance, lighting on trails, wayfinding, cycling amenities and a varied experience to accommodate recreational, utilitarian and tourism trip types.

The design and development of walking and cycling facilities is reinforced and promoted through this policy. Local municipalities are encouraged to use the recommendations and design considerations outlined in this policy to help guide the development of individual routes, systems and linkages.

Provincial

Planning Act, 2014

The Planning Act (2014) sets out the ground rules for land use planning in Ontario and describes how land uses may be controlled, and who may control them. The Act is legislation passed by the elected provincial representatives. The Act considers both the provincial and municipal roles in decision making. The Act provides basis for management of resources, preparing plans for future development, regulating and controlling land uses through zooming by-laws and minor variances.

Provincial Policy Statement, 2014

The 2014 update to the Provincial Policy Statement (PPS) set the foundation for regulating land use planning and development within the Province of Ontario while supporting provincial goals and objectives. The PPS sets out guidelines for sustainable development and the protection of resources of provincial interest. The PPS promotes transportation choices that facilitate pedestrian and cycling mobility and other modes of travel. "Transportation systems" as defined in the PPS are systems that consist of corridors and rights-of-way used for the movement of people and goods as well as associated transportation facilities, including cycling lanes and park'n'ride lots. Policies pertaining to alternative modes of transportation are dispersed throughout the PPS. Policies which specifically address the development of active transportation infrastructure and programs include Section 1.1.3.2, 1.6.7.4 and 1.5.1.

Bill 51

Bill 51 was approved in January of 2007 and reforms the Planning Act. The Planning Act provides the legislative framework and is the guiding document for land use planning in Ontario. The document outlines changes to the planning process intended to support intensification, sustainable development and the protection of green space. This is facilitated by increasing municipalities' power and flexibility and providing them with the tools to efficiently use land, resources and infrastructure. Bill 51 is consistent with Ontario's recent policy shift towards sustainable land use development and planning. For instance, Bill 51 allows municipalities to require environmentally sustainable design for individual buildings as well as entire neighbourhoods. It has also identified sustainable development as a provincial goal and objective as part of the Provincial Policy Statement.

Municipal Act, 2001

The Municipal Act (2001) gives municipalities flexibility when dealing with issues which influence municipal development. It also requires municipalities to react quickly to economic, environmental or social changes. It recognizes that municipal governments are responsible and accountable when addressing matters within their jurisdictions and sets out policies pertaining to municipal jurisdiction over municipal highways and the maintenance of those highways which, in turn, has significant impact on the design and development of cycling facilities identified within the road right-of-way.

Places to Grow Act – Growth Plan for the Greater Golden Horseshoe, 2006

Under the Places to Grow Act (2005) the Growth Plan for the Greater Golden Horseshoe is a shared vision of municipalities and residents to sustainability manage growth of the region. The Plan guides decisions on a wide range of issues such as transportation, infrastructure planning, land-use planning, urban form, housing, natural heritage and resource protection. These issues are in the interest of promoting economic prosperity within the region.

In the past there has been a lack of sufficient investment, which has caused all levels of government to experience economic pressure. Tens of billions of dollars beyond current levels of investment will be required before the situation is back in balance. All levels of government are under pressure to meet public infrastructure needs. Additional support from federal partners such as; innovative, alternative partnership arrangements that protect the public interest; and the strategic staging of infrastructure investments are all required to respond to these challenges. Overall the plan will create better investment in our cities that will help to mitigate sprawl by enhancing infrastructure, integrating and improving transit systems, protecting valuable natural resources and strengthening local government.

Accessibility for Ontarians with Disabilities Act

The Accessibility for Ontarians with Disabilities Act (AODA) was passed on June 13, 2005. The policy calls on the business community, public and not-for-profit sector and people with disabilities to develop, implement and enforce mandatory standards. The policy makes Ontario the first jurisdiction in Canada to develop, implement and enforce accessibility standards applied to both private and public sectors. These guidelines provide directives on how businesses in Ontario can identify, remove and prevent barriers to accessibility. The Built Environment is the most relevant standard that can be applied to trail planning, design and construction. Recently a revision and update of the Built Environment Standard was undertaken and released in early 2013. "The goal of the Accessibility Standards for the Built Environment is to remove barriers in public spaces and buildings. This will make it easier for all Ontarians — including people with disabilities, seniors and families — to access the places where they work, travel, shop and play". The standard applies to new construction and redevelopment of existing facilities. The standards for public spaces cover: Recreational Trails and Beach Access Routes, Outdoor Public Use Eating Areas, Outdoor Play Spaces, Exterior Paths of Travel, Accessible Parking and Obtaining Services.

Some highlights of the technical requirements for recreational trails under the new regulation 80.8(1) include a minimum clear width of 1,000 mm; a clear height that provides a minimum head room clearance of 2,100 mm above the trail; a firm and stable surface type; and where trail is constructed adjacent to water or a drop-off, it must have edge protection that constitutes an elevated barrier that runs along the edge of the; a top edge of at least 50 mm above the trail surface; a protection barrier that does not impede the drainage of the trail surface; a clear opening of between 850 mm and 1,000 mm, whether the entrance includes a gate, bollard or other entrance design; and trail head signage that provides relevant accessibility information (the length of trail; the type of surface of which the trail is constructed; the average and the minimum trail width; the average and maximum running slope and cross slope and the location of amenities, where provided).

Ontario's Highway Traffic Act

Bicycles are recognized as a vehicle under the H.T.A. They can operate on public roadways with the same rights and responsibilities as a motor vehicle. However, bicycles are not permitted on controlled access freeways such as the 400 series highways or any roadway restricted for cycling by a municipal by-law.

The HTA contains a number of cycling related policies including bicycle lanes on municipal roadways, vehicles interacting with bicycles, bicycles being overtaken, and regulating or prohibiting bicycles on highways. Most recently, an amendment to the Highway Traffic Act was passed – Keeping Ontario's Roads Safe Act which provides further clarifications and regulations related to cycling and pedestrian activities.

Currently at school crossings and pedestrian crossovers, drivers must yield only half of the roadway to pedestrians who are crossing. If passed, the proposed legislation would improve pedestrian safety by:

- Requiring drivers to yield the whole roadway to pedestrians at school crossings and pedestrian crossovers
- Amending the Highway Traffic Act to allow for new pedestrian crossing devices on low-speed and low-volume roads as requested by municipalities

The proposed legislation responds to municipal requests, stakeholder input and recommendations from the Office of the Chief Coroner for Ontario to promote cycling as active transportation and improve cyclist safety by:

- Allowing cyclists to use the paved shoulders on unrestricted provincial highways to promote safer opportunities to cycle
- Supporting cycling in urban areas by allowing municipalities to create contra-flow bicycle lanes to provide more direct routes and connectivity for cyclists
- Increasing the fine range for convictions of dooring of cyclists from $60 - $500 to $300 - $1,000 and raising the demerit points from two to three
- Requiring all drivers to maintain a distance of one metre when passing cyclists
- Increasing the maximum fine from $20 to a set fine amount that falls in the range of $60 - $500 for not using required bicycle lights and other reflectors/reflective material; and permit the use of flashing red lights as a safety feature on bicycles.

As of September 2015, Bill 31 is now effective under the Highway Traffic Act, providing further direction and penalties for distracted driving and cycling. With regard to cycling, the Bill acknowledges the importance of cyclist safety and provides changes to encourage cycling , promote road safety and share the road. The changes that affect include penalties for drivers that engage in:

- Dooring" or a "door prize" commonly refers to someone who opens a parked motor vehicle door into the path of a cyclist or other traffic; or
- Passing too close to cyclists. Drivers must keep a one-metre (3 feet) distance when passing cyclists.

Fines are now given for both of these offences in addition to demerit points for dooring. Under Bill 31 cyclists are now required to have proper lights, reflective materials and reflectors with a fine being given for those who have improper lighting.

#CycleON & Action Plan

In November 2012 the Ministry of Transportation Ontario (MTO) published the Draft Cycling Strategy. The strategy acknowledges the importance of developing cycling infrastructure to help reduce GHG emissions, ease gridlock, enhance the economy, increase tourism and increase quality of life for Ontario residents. The strategy was developed based on increasing demand from local municipalities for direction from the province on the development of cycling facilities and responds to recommendations in the Coroner's report published in 2012.

The province's vision is to ultimately "develop a safe cycling network that connects the province, for collision rates and injuries to continue to drop, and for everyone from the occasional user to the daily commuter to feel safe when they get a bicycle in Ontario". The strategy outlines recommended cycling infrastructure, legislation changes and enhancements including a set of proposed changes to The Highway Traffic Act. In August 2013 the final version of the Ontario Cycling Strategy – #CycleON was released by the MTO along with a clear set of actions. These actions are a strong basis for strategic municipal plans as they address both soft and hard infrastructure as well as the importance of short-term actions and priorities to demonstrate early success.

Ontario Climate Change Strategy #ONClimate

In November 2015, Ontario's Ministry of Environment and Climate Change released a Climate Change Discussion Paper to educate Ontarians on key issues related to Climate Change in the provincial context. The Strategy is a response to the Climate Change Discussion Paper (February 2015) which presented a long-term vision and a set of goals to "fight" climate change. The Strategy builds upon the Ontario government's past successes to reduce greenhouse gases – a milestone that was achieved in 2014 as a result of the Climate Change Action Plan established in 2007.

The updated strategy sets out the transformative changes which are required in order to reduce greenhouse gas emissions by 37 per cent before 2030. Actions and initiatives have been identified based on Ontario's ultimate goal of reducing greenhouse gas levels by 80 per cent from the 1990 levels by 2050.

Most of Ontario's greenhouse gas emissions come from the transportation industry and buildings sectors. As such, a key consideration and action of the strategy is further investment in sustainable transportation e.g. bicycles, electric/hydrogen/biofuel cars, electric charging/hydrogen fueling stations and hybrid/bio gas hydrogen buses. To reduce the greenhouse gas emissions produced by transportation the province will continue to improve and provide residents with increased access to more sustainable transportation modes.

Ontario Trails Strategy

The Ontario Trails Strategy was developed by the Ministry of Tourism, Culture and Sport between 2003 and 2005 and formally launched on October 6, 2005 with a commitment to $3.5M in funding over the next 5 years. The Strategy is a long-term plan that establishes strategic directions for planning, managing, promoting and using trails in Ontario.

The Strategy sets out a strategic vision for trails within Ontario. The Ministry and its partners throughout Ontario aim to establish "a world-class system of diversified trails, planned and used in an environmentally responsible manner that enhances the health and prosperity of all Ontarians". The strategy focus on single and shared-use trail networks within urban, rural and wilderness areas which are meant for recreational, active living, utilitarian and tourism purposes.

The strategy sets out five strategic directions including:

- Improving collaboration between stakeholders;
- Enhancing the sustainability of Ontario's trails;
- Enhancing the trail users experience;
- Educating Ontarians about trails; and
- Fostering better health and strong economy through trails.

Transit Supportive Guidelines

In 1992, the Ontario Ministries of Transportation and Municipal Affairs and Housing published the Transit-Supportive Land Use Planning Guidelines which was recently updated to reflect continued progress in the development of more compact, transit-supportive communities. The updated report documents the most current thinking on transit-supportive urban planning and design in addition to current best practices in transit planning and the delivery of custom-oriented transit service throughout the Province of Ontario. The documents builds upon the policies, plans and initiatives developed by the Ministry over the past 10 + years and consists of over 50 guidelines and approximately 450 specific strategies to guide urban and transit planners, developers etc. in creating communities that support transit and transit ridership. The document also supports the development of pedestrian and cycling connections throughout urban and rural communities to help enhance transit infrastructure and usage.

The approach includes the provision of safe and accessible pedestrian and cycling connections to and from transit stops and stations. Recommendations set out on the transit-supportive guidelines will help to inform the development of proposed network linkages and recommendations which facilitate connectivity to transit and other modes of transportation. Specific reference is also made to the design and development of complete streets.

Greenbelt Plan

The Greenbelt Plan includes lands within, and builds upon the ecological protections provided by, the Niagara Escarpment Plan (NEP) and the Oak Ridges Moraine Conservation Plan (ORMCP). It also complements and supports other provincial level initiatives such as the Parkway Belt West Plan and the Rouge North Management Plan.

The Protected Countryside lands identified in this Greenbelt Plan are intended to enhance the spatial extent of agriculturally and environmentally protected lands currently covered by the NEP and the ORMCP while at the same time improving linkages between these areas and the surrounding major lake systems and watersheds. Collectively, the lands in these three plans form the Greenbelt.

In 2015, the Province of Ontario initiated the review of the Growth Plan for the Greater Golden Horseshoe, Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan and the Growth Plan. Throughout 2015 the province engaged in extensive consultation with various municipal representatives. A summary of the input received and proposed outcomes was prepared and published in November 2015. A report outlines the results of the consultations undertaken to inform the review. On numerous occasions active transportation, complete streets, complete communities, etc. were identified as a means of strategically growing within this geographic area of Ontario.

Regional

Niagara Region Consolidated Official Plan August 2015

The Regional Official Plan (OP) is the Region's guiding document for long-range, community planning and design. The policies contained within it are meant to be used to guide the physical, economic and social development of the Regional Municipality of Niagara. The OP outlines strategic objectives, policies and mapping that are intended to be used as resources by Regional and local municipal staff to manage growth, grow the economy, protect the natural environment, resources and agricultural land, and provide sufficient community infrastructure.

Section 9.0 speaks to transportation improvements and makes specific reference to the consideration, design and implementation of transit and cycling supportive infrastructure. Policy 9.C.6 notes that "the Region encourages and promotes the provision of adequate pedestrian and bicycling facilities in order to promote pedestrian safety, reduce pedestrian vehicle conflicts and encourage bicycling. A more detailed description of cycling related recommendations is provided in chapter 9.F "Active Transportation". Section 9.F.1 sets our bicycling specific objectives and reinforces proposed on and off-road routes (see Schedule E). Section 9.F.2 outlines policies specific to bicycling and identifies funding partnerships and other strategies to ensure local and regional infrastructure is appropriately designed and implemented.

Niagara's Transportation Strategy Update 2012

Niagara's Transportation Strategy was originally prepared in 2002; and updated in 2012. The 2012 transportation master plan identifies the relationship between future development and improvements to the transportation system related to infrastructure and modal choice. Regional Council recognizes the importance of transportation to Niagara's citizens, its economy and the environment. The Strategy contains policies, directions and initiatives which are intended to help guide future change. The strategy reinforces the Bikeways Master Plan and recommends that the Region "build upon existing bikeways, trails and pedestrian links to improve active transportation connections across Niagara".

The Region's Community Planning and Public Works departments are committed to working together on Environmental Assessment projects to ensure a solid connection between land use and transportation planning. The plan promotes the development, design and construction of dense urban centres with the goal of engaging more active transportation. More dense communities have shown to naturally promote physical activity and social interaction.

The Region is in the process of updating the Transportation Strategy. The 2012 document is being reviewed to ensure that the content and recommendations "are still relevant, current and appropriate".

Niagara Region Bikeways Master Plan, 2003

The regional Niagara Bikeways Master Plan (RNBP) sets out a long-term vision and strategy to establish programs and infrastructure that supports recreational, tourism and utilitarian cycling. Since its development in 1995, the Region has been working to implement the cycling network which includes newly designed on and off-road facilities as well as retrofitting regional roads to accommodate cycling infrastructure.

The Plan builds upon the work of the previous studies identifying a 20-year strategy, including a comprehensive cycling network, short, medium and long-term phasing and priorities, policies and recommendations as well as implementation, funding and partnership tools. It also provided the Region with a set of comprehensive planning and design guidelines as well as a strategy to improve co-ordination among jurisdictions who are partners and or responsible for providing and promoting bikeway facility development in the region.

Public Health 2012 – 2015 Strategic Plan & Niagara Age Friendly Community Initiative

Community design and public health are becoming highly visible strategic community priorities. Niagara Region's Public Health 2012-2015 Strategic Plan identifies "transportation" and "conditions that support healthy lifestyles" as common themes that were identified through discussions with regional and local municipal staff, stakeholders and members of the public.

Community inclusiveness includes the Niagara Age Friendly Community Initiative which focuses on the use of transportation to be accessible to all members of the community regardless of age, ability or other circumstances.

Niagara 2031: A Strategy for a Healthy, Sustainable Future

The document is a growth management strategy for the Region of Niagara which is intended to guide growth for the next 25 years onward. There are a total of five phases that make up the strategy which address the primary concerns of the Region e.g. population, employment, servicing systems, transportation corridors, agricultural lands and environmental features. The five phases include

- **Understanding Niagara** – an overview of the context and background of the region;
- **Anticipating Niagara** – future projections as a result of the resident survey and input provided by the community;
- **A Range of Options** – An overview of the three growth options for the Region and the evaluation that was undertaken of each;
- **Develop and Refine Preferred Option** – An overview of the preferred option for growth; and
- **Regional Official Plan Amendment** – An overview of the proposed policy amendment and an implementation strategy for the preferred growth option.

With the completion of the strategy, the Region and its local area municipalities are working together to update local Official Plan documents to reflect regional growth objectives / projections / priorities.

Policy Plan Amendment 2-2009: Region of Niagara Sustainable Communities Policy

Region of Niagara Sustainable Communities policy is an amendment to the Region's Official Plan to ensure that it conformed with the Places to Grow Act and the 2005 Provincial Policy Statement. The amendment was also developed to ensure the OP policies align with / confirm to the strategies outlined in Niagara 2031 – consistent with the content outlined in Phase 5 of the Strategy.

The amendment provides direction on a more sustainable urban vision, how the urban environments in Niagara are intended to be designed, future growth objectives and their impact on population, housing and employment, infrastructure improvements as well as implementation and monitoring strategies. Section 6.6 outlines walking and cycling policies including three primary objectives:

- Provide safe, comfortable travel for pedestrians and bicyclists within and between existing communities and new development.
- Provide linkages between intensification areas, adjacent neighbourhoods and transit stations including dedicated lane spaces for bicyclists on the major street network where feasible.

- Encourage provision of appropriate and sufficient bicycling parking facilities at major transit nodes and public and private facilities.

Supporting Active Transportation in Niagara Region: & Healthy Living Niagara – Economic Value of Active Transportation (Fact Sheets)

The toolkit and fact sheets were developed as educational tools for local citizens, committees, councils and staff to increase investment in and commitment to active transportation. The toolkit was developed by the Region's Public Health department to provide local citizen groups with resources which are intended to guide planning efforts with the goal of improving active transportation. Healthy Living Niagara created Economic Value of Active Transportation Fact Sheets to educate people on the connection between investments in AT infrastructure and economic growth. The fact sheets show the economic return for health, business, tourism, schools and air quality when communities are designed to support active transportation.

Healthy Living Niagara - Complete Streets Model Policy Handbook 2012 & Visualizing Complete Streets Workbook

In November of 2011, an Active Transportation Summit was hosted by Healthy Living Niagara to improve and encourage active transportation within the Region. Participants included municipal planners and engineers, elected officials, community stakeholders and local residents. A result of the summit was a recommendation to research and establish a complete streets policy for Niagara Region taking into consideration local context.

The Complete Streets for Niagara Model Policies meets the intent of the Provincial Policy Statement (2005), Growth Plan for the Greater Golden Horseshoe (2006), and the Regional Policy Plan and compliment Niagara's Transportation Strategy (2012).

The handbook is intended to be used as a resource/ guide for those municipalities within the Region who wish to pursue the design and implementation of complete streets. The document outlines a number of planning policies and design solutions that could be considered to accommodate various user groups within the road right of way. The document states that any street can be made more "complete" through reconfiguration, investment and infrastructure enhancement. While some enhancements can be low cost and yield significant economic, social and environmental benefits, it is important to maximize investment opportunities through proactive and coordinated planning.

The documents encourage the Region to establish partnerships with local business groups, adjacent landowners and the community as a whole to move forward with future initiatives and complete streets projects.

Niagara Region Facility Accessibility Design Standards, 2007

The Niagara Region adopted accessibility design standards as developed by the City of London, ON. The standards include guidelines on the design of regional facilities to accommodate citizens of various abilities to improve access and equality. The guidelines apply to all owned, leased or operated facilities, and to all employed and contracted persons doing business with our organization.

Niagara Region Urban Design Guidelines, 2005

Niagara Region's Council adopted Smart Growth urban design guidelines in 2005 through the Smarter Niagara initiative. The guidelines are intended to help Regional and local municipal staff to plan and design communities in a way that balances economic, social and environmental needs. The guidelines set-out suggested design considerations for various public realm aspects including transportation related features such as roads, sidewalks and streetscapes, parks and open space and multi-use trails.

The guidelines promote high level planning principles that support more active forms of transportation including but not limited to the design of a compact built form, walkable neighbourhoods and communities, centrally located schools and destinations and a variety of transportation choices and alternatives. Also included in the document are what are called critical success factors which guide future actions and priorities.

Local – Town of Pelham

Town of Pelham Official Plan, 2014

An Official Plan is considered a "blueprint for the future" for municipalities. OPs contain policies which provide staff with guidance on how to appropriately design municipal infrastructure including but not limited to roads, water mains and sewers. The Town initiated the development of their new OP in 2012. The document was approved in 2014.

Pelham's OP sets out goals and objectives for eight areas of focus including:

- The Natural Environment
- Growth and Settlement
- Urban Character
- The Economy
- Infrastructure
- Natural Resources
- Cultural Heritage
- Community Improvement

Active Transportation is noted in a number of locations throughout the Official Plan providing strong policy support for future improvements and investments by the Town. The promotion of active transportation is a primary objective for:

- "The Economy" – for tourism purposes, agri-business and secondary uses.

- "Infrastructure" – to develop an integrated transportation system that is both safe and efficient.

Transportation improvements are identified for various secondary plan areas as well as the town as a whole. Within this mapping off-road trail connections are identified e.g. Steve Bauer Trail but no future improvements have been proposed.

Town of Pelham 2015 Strategic Plan

In February 2011 the newly elected Council and senior staff engaged in a full day strategic planning session to develop the new 2015 strategic plan.

The Strategic plan sets out a vision, mission and values for the Pelham community. The vision is to be the most vibrant, creative and caring community in Niagara; the mission is to enhance the unique blend of urban and rural communities and the values are to be open and transparent, accountable, fair and equitable. The vision, mission and values are further supported by four primary goals:

- Feel like a small town
- Enhance the quality of life
- Provide the environment so our businesses can thrive
- Become financially resilient for the next 20 years

The goals are supported by more immediate actions, objectives and initiatives which help to shape next steps. These objectives and initiatives are meant to ensure that progress is made, monitored and measures as the plan is implemented.

Through the strategic plan, there are strategies that provide support for more active and healthy community development including the development of a "greener" community by encouraging walking and creating initiatives to reduce the carbon footprint.

Town of Pelham Cultural Master Plan, 2013

The Town's Cultural Master Plan was developed and adopted by Council in 2013. The master plan's purpose is to establish a strategic approach and framework for action to "direct, sustain and leverage cultural investment in Pelham". The master plan looks at the various sectors within the community to establish actions and initiatives to help achieve one of Pelham's strategic plan goals - to become "the most vibrant, creative and caring community in Niagara".

The strategy also aims to provide staff and citizens with a better understanding of key community assets and to develop tools to help track and manage these assets for future tracking and management.

One of the master plan's long-term actions is to "establish and develop cultural heritage routes" which could include cycling routes to promote local tourism and economic growth. The master plan outlines high-level strategies that aim to establish a completed, connected, healthy and culturally appealing community.

Investments in active communities, active transportation and complete communities will help to achieve many of these targets including a higher quality of life for residents and a more appealing community for visitors.

Fenwick Fonthill Downtown Master Plan, 2014

In 2014, the Town of Pelham initiated the development of a master plan and set of design guidelines for the downtown areas of Fenwick and Fonthill in Pelham. The master plan was developed to provide Town staff and developers with a reference document for future planning and design of these two prominent communities.

The primary objective was to "think carefully about the street and buildings, conduct an analysis, and consult with the community in defining a vision for its future". The guidelines are intended to provide a "clear and consistent rationale" to future planning and design changes and improvements.

Within the master plan and design guidelines there are references to active transportation improvements as part of the design considerations for the downtown areas. More specifically, the master plan identifies mid-block connections and paths to accommodate pedestrians and cyclists, pedestrian crossing, bike paths and routes and trails. The guidelines provide direction on the design of various roadways within the downtown core and surrounding areas that include consideration for both pedestrians and cyclists.

Pelham Heritage Master Plan (2012)

The heritage master plan was developed in 2012. The plan is intended to:

- Guide the Town's planning for finding, assessing, conserving and celebrating heritage resources;
- Encourage development that respect the heritage and character of Pelham;
- Recommend policies for inclusion in the Town's OP; and
- Provide priorities and timelines for the Town's action in heritage conservation.

As part of the development of the heritage master plan, the Town was provided with a review of potential tourism opportunities for future growth. Initiatives to support Regional Tourism agencies to prepare self-guided walking and cycling tours were identified in the short and medium term. There are also a number of heritage trails / walks that have been identified which could potential be explore as formal walking / hiking / cycling connections.

2009 Pelham Community Improvement Plan

In 2008 / 2009 the Town undertook a project to prepare a community improvement plan to help incentivize investment in the two primary downtown areas within the community – Fonthill and Fenwick. Both are commercial areas which were designated as the two community improvement areas that the community improvement plan was intended to focus on.

A community improvement plan outlines strategic incentive programs "to encourage private sector investment, rehabilitation, adaptive reuse, redevelopment and construction". The plan and the strategies contained within it were developed based on significant input from the project steering committee, town staff, the downtown beatification advisory committee, stakeholders and members of the community. Based on input provided, there were priorities that were highlighted that encourage sustainable and active transportation.

Town of Pelham Active Transportation Master Plan P.O. 4098

Summary of Background Information, Policies and Plans

Province of Ontario	Niagara Region	Town of Pelham	Surrounding Municipalities				
			Township of Wainfleet	City of Welland	City of Thorold	Township of West Lincoln	Town of Lincoln
Planning Act	Niagara's Transportation Strategy Update 2012	2015 Town of Pelham Strategic Plan	Township of Wainfleet Official Plan	City of Welland Urban Design Guidelines, 2014	2010 City of Thorold Official Plan	West Lincoln Official Plan	Town of Lincoln Official Plan, 2010
Provincial Policy Statement, 2005	Niagara Region Consolidated Official Plan for August 2015	Town of Pelham 2011 Strategic Plan		City of Welland Official Plan	2013 Thorold Community Improvement Plan	West Lincoln: A Strategy for the Future, 2012	Town of Lincoln Bikeway and Trail Master Plan
Bill 51	Niagara 2031: A Strategy for a Healthy, Sustainable Future (https://www.niagararegion.ca/government/initiatives/2031/niagara-2031.aspx#phases)	Town of Pelham Official Plan, 2014		City of Welland Downtown Health and Wellness Cluster Community Improvement Plan, 2014	City of Thorold Downtown Streetscape Master Plan 2015	Smithville Trails and Corridors Master Plan - Township of West Lincoln, 2012	
Municipal Act (2001)	Policy Plan Amendement 2-2009	Town of Pelham Cultural Master Plan, 2013				Sustainable Downtown Smithville Community Improvement Plan, 2009	
Highway Traffic Act	Supporting Active Transportation in Niagara Region: A practical guide for citizens' groups toolkit	Fenwick Fonthill Downtown Master Plan, 2014				Urban Design Manual for Smithville, 2015	
Places to Grow Act - Growth Plan for the Greater Golden Horseshoe	Feasibility Study for an Economic Value of Active Transportation Calculator Tool 2014	2009 Pelham Community Improvement Plan					
Accessibility for Ontarians with Disabilities Act	Healthy Living Niagara - Economic Value of Active Transportation (5 Fact Sheets)						
#CycleON & Action Plan	Healthy Living Niagara - Complete Streets Model Policy Handbok 2012						
Ontario Climate Change Strategy #Onclimate	Healthy Living Niagara - Proposed Model Bicycle Parking Zoning Provisions for Niagara (RNBC-C 54-2013)						
Ontario Trails Strategy	Niagara Region Bikeways Master Plan, 2003						
Transit Supportive Guidelines	Niagara Region Facility Accessibility Design Standards, 2007						
Greenbelt Plan	Niagara Region Urban Design Guidelines, 2005						
The Big Move							

Appendix B

Consultation Summary

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 1 - CYCLING FACILITY TYPES (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

WALK. BIKE. HIKE. ACTIVE TRANSPORTATION IN PELHAM.

Map 1

Town of Lincoln

Signage (To connected areas, to destinations)

Pelham North

Township of West Lincoln

Township of Wainfleet

City of Welland

Fenwick - See Map 2

Fonthill - See Map 2

Ridgeville

Separation!

Unopened Road Allowance

Rumble Strips (now) Removal! Walkers / Cyclist Oppose

Paved Shoulders!

Use unopened road to St. John's

No space for cyclists

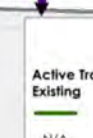
WE WANT TO HEAR FROM YOU...

ABOUT THE CYCLING & PEDESTRIAN NETWORK.
LET US KNOW WHAT YOU THINK!

We're looking for your **input on future priorities**. Please use the **stickers** to **note your top priorities**. Place a sticker ***on the proposed walking or cycling*** links that you think should be considered top priorities for the Town. There are four types of stickers:

- **Priority #1** — **Highest Importance:** A key link! Should be done first!
- **Priority #2** — **Medium Importance:** Should be considered but not a key link
- **Priority #3** — **Lowest Importance:** What you think could be done last
- **Place of Residence**

Are there also **missing links** that we haven't included that you think should be considered as part of the network?

Use a  and a  or write your comments **directly** on the map!

THANK YOU FOR YOUR INPUT!

Community Destinations

1. Pelham Centre United Church
2. Ridgeville Bible Chapel
3. The Brethren in Christ Church
4. First Presbyterian Church North Pelham

0 1 0 2 Kilometres

Legend[i]

Active Transportation Routes

Existing	Proposed
	Off Road Trail
N/A	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Bufferred Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
	N/A Bruce Trail
N/A	Desired Connection

Additional AT Features

- Off-Road Route Crossing
- On-Road Route Crossing
- Signage / Wayfinding
- Staging Area
- Bike Parking
- Crosswalk

Origins & Destinations

- Bus Stop
- Community Destination[ii]
- School

Transportation Features

- Regional Road
- Local Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Parcel Property
- Waterbody

Notes:
i. Information collected from the Region of Niagara and Land Information Ontario
ii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.
iii. Refer to textbox in bottom-left corner of Map 1 for the name of each community destination.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

Map 2

MAP 2 - CYCLING FACILITY TYPES (URBAN AREAS)

Pelham NIAGARA | WSP | MMM GROUP

WALK. BIKE. HIKE. ACTIVE TRANSPORTATION IN PELHAM.

Great idea

Link?

Walking

Hills

Bollards

No connection to streets

Redesign

Buffered Cycle Track

More parking needed at Pelham Town Square & mall

- Bandshell

- Free parking for seniors

Massimos Bike Parking

Hard to see

Better crossing

Parking and walking

Buffer More Separation

To Niagara Circle Route

Fast!!

Retrofit & Rehab

Bike Parking

Multi-use path

Back Route for students

Signs where next

Increased students

FONTHILL

FENWICK

Legend[i]

Active Transportation Routes

Existing	Proposed	
		Off Road Trail
		Pathway[ii]
N/A		In-Boulevard Trail
N/A		Buffered Paved Shoulder
		Paved Shoulder
N/A		Bufferred Bike Lane
		Bike Lane
N/A		Signed Bike Route
		Signed Bike Route with Sharrow
		Signed Bike Route with Edgeline
N/A		Bruce Trail
N/A		Desired Connection

Additional AT Features

- Off-Road Route Crossing
- On-Road Route Crossing
- Signage / Wayfinding
- Staging Area
- Bike Parking
- Transportation Hub[iii]
- Crosswalk

Origins & Destinations

- Bus Stop
- Community Destination[iv]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

WE WANT TO HEAR FROM YOU...

ABOUT THE CYCLING & PEDESTRIAN NETWORK.
LET US KNOW WHAT YOU THINK!

We're looking for your **input on future priorities**. Please use the **stickers** to **note your top priorities**. Place a sticker ***on the proposed walking or cycling*** links that you think should be considered top priorities for the Town. There are four types of stickers:

Priority #1 — Highest importance: A key link! Should be done first!

Priority #2 — Medium importance: Should be considered but not a key link

Priority #3 — Lowest importance: What you think could be done last

Place of Residence

Are there also **missing links** that we haven't included that you think should be considered as part of the network?

Use a  and a  or write your comments **directly** on the map!

THANK YOU FOR YOUR INPUT!

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

MAP 3 - PEDESTRIAN NETWORK (URBAN AREAS)

Pelham NIAGARA | WSP | MMM GROUP

WALK. BIKE. HIKE. ACTIVE TRANSPORTATION IN PELHAM.

Map 3

Maintenance (winter / cracks)

Drainage Water pooling Ice in winter

Post box flooding

Continue?

- Sidewalk more leveled on north side
- Titled sidewalk
- Maintenance

A resident on Effingham Rd. at 16th says all the car drivers are scared to crest a hill. So many bikes – need a lane.

Bad sightlines No left turns

Narrow sidewalk

Better sidewalks

Ped. Plaza

Muddy

Cut through the complex

Missing

Traffic Study

The lack of facilities stops people from riding

Need sidewalk

Paved Trail Good idea

Sidewalk needed

ESA Trail?

Sidewalk?

No existing facilities – needs improvements

Foss Road no sidewalk

FONTHILL

Sidewalk water

Water drainage on sidewalk

To dangerous to walk on roads in rural areas

Bicycles should be licensed with the fee going to cycling improvements

Kids on scooters are a safety concern

FENWICK

Legend[i]

Pedestrian Routes

Existing	Proposed
	Paved Shoulder
	Off Road Trail
	Pathway[ii]
N/A	In-Boulevard Trail
	Sidewalk Connection
N/A	Primary Missing Sidewalk Link

Additional AT Features

- Off-Road Route Crossing
- On-Road Route Crossing
- Signage / Wayfinding
- Staging Area
- Bike Parking
- Transportation Hub[iii]
- Crosswalk

Origins & Destinations

- Bus Stop
- Community Destination[iv]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Multi-modal hubs highlight locations where multiple modes of transportation are likely being used including transit, vehicles, walking and cycling.

iv. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas and historic sites.

v. Refer to textbox in bottom right corner of Map 3 for the name of each community destination.

WE WANT TO HEAR FROM YOU...

ABOUT THE CYCLING & PEDESTRIAN NETWORK.
LET US KNOW WHAT YOU THINK!

We're looking for your **input on future priorities**. Please use the **stickers** to **note your top priorities**. Place a sticker ***on the proposed walking or cycling*** links that you think should be considered top priorities for the Town. There are four types of stickers:

Priority #1 **Priority #2** **Priority #3** **Place of Residence**

Highest importance: A key link! Should be done first!

Medium importance: Should be considered, but not a key link

Lowest importance: What you think could be done last

Are there also **missing links** that we haven't included that you think should be considered as part of the network?

Use a  and a  or write your comments **directly** on the map!

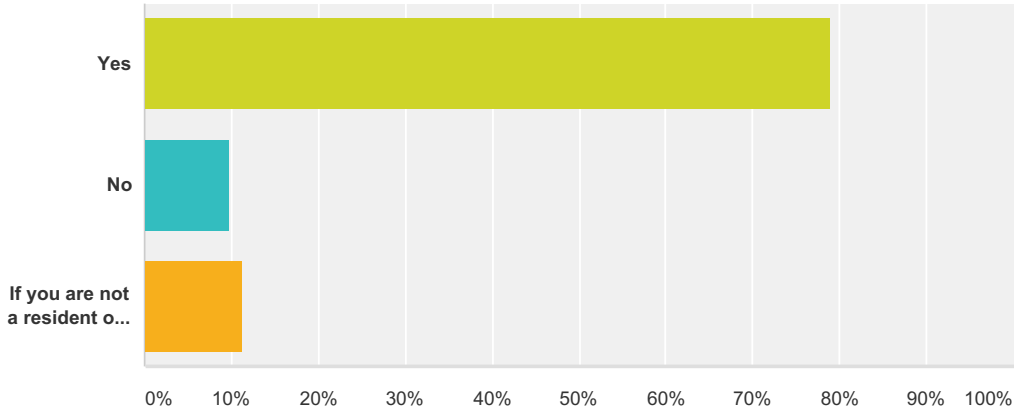
THANK YOU FOR YOUR INPUT!

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

Q1 Are you a resident of the Town of Pelham?

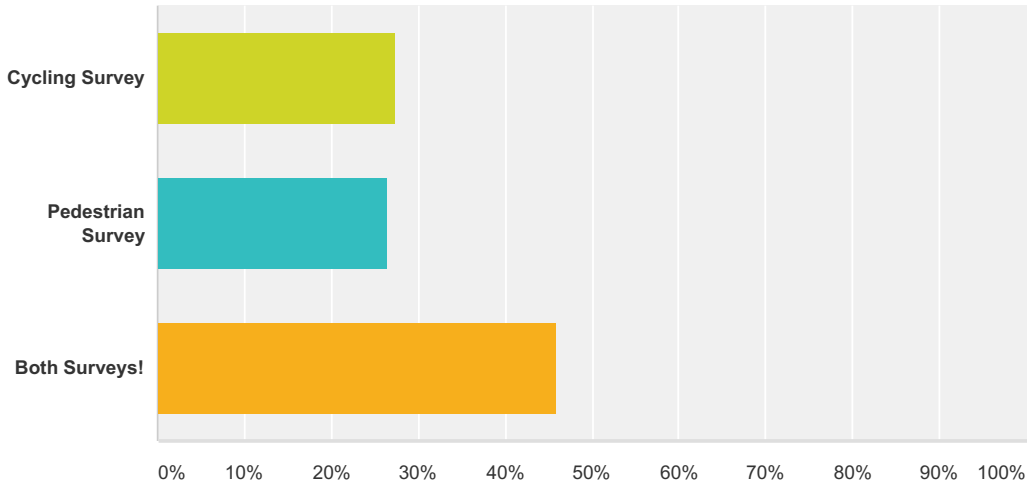
Answered: 71 Skipped: 42



Answer Choices	Responses	
Yes	**78.87%**	56
No	**9.86%**	7
If you are not a resident of Pelham please identify where you live in the comment box below.	**11.27%**	8
Total		**71**

Q2 Which survey would you like to respond to?

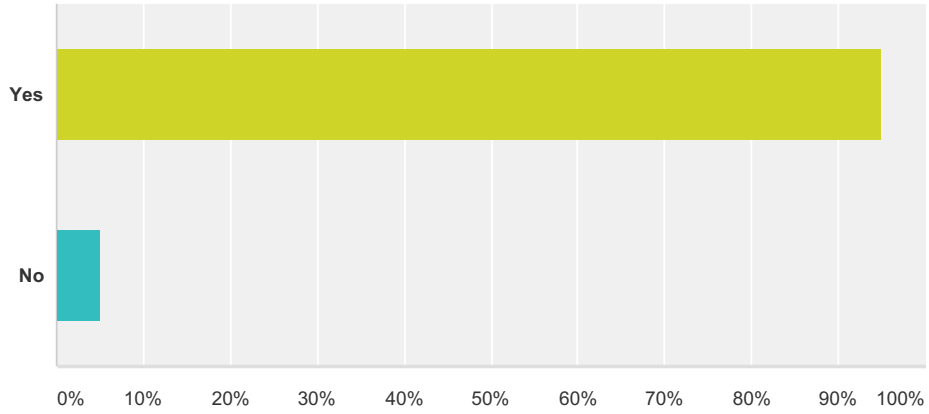
Answered: 113 Skipped: 0



Answer Choices	Responses	
Cycling Survey	**27.43%**	31
Pedestrian Survey	**26.55%**	30
Both Surveys!	**46.02%**	52
Total		**113**

Q3 Do you own a bicycle?

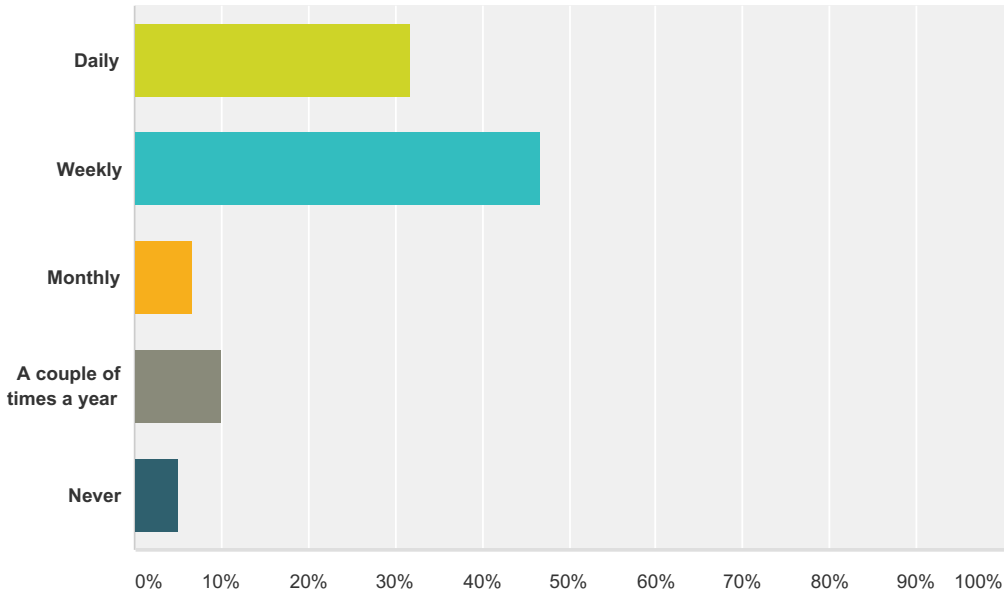
Answered: 61 Skipped: 52



Answer Choices	Responses	
Yes	**95.08%**	58
No	**4.92%**	3
Total		**61**

Q4 How often do you cycle?

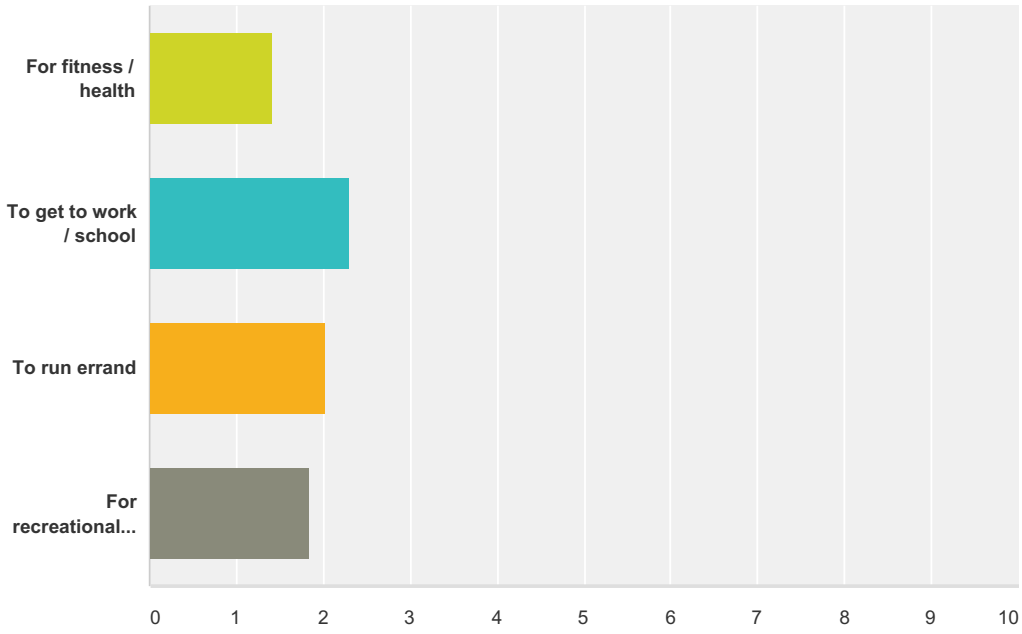
Answered: 60 Skipped: 53



Answer Choices	Responses	
Daily	**31.67%**	19
Weekly	**46.67%**	28
Monthly	**6.67%**	4
A couple of times a year	**10.00%**	6
Never	**5.00%**	3
Total		**60**

Q5 Why do you cycle?

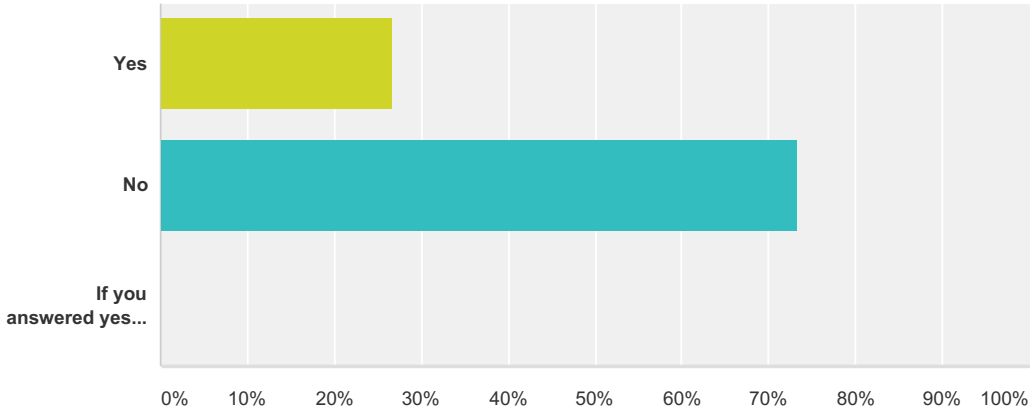
Answered: 60 Skipped: 53



	Always	Sometimes	Never	Total	Weighted Average
For fitness / health	**65.52%** 38	**27.59%** 16	**6.90%** 4	58	1.41
To get to work / school	**6.52%** 3	**56.52%** 26	**36.96%** 17	46	2.30
To run errand	**11.76%** 6	**74.51%** 38	**13.73%** 7	51	2.02
For recreational / touring trips	**34.62%** 18	**48.08%** 25	**17.31%** 9	52	1.83

Q6 Are there people in your household that bike to school?

Answered: 60 Skipped: 53



Answer Choices	Responses	
Yes	**26.67%**	16
No	**73.33%**	44
If you answered yes, how many individuals cycle and which school do they go to?	**0.00%**	0
Total		**60**

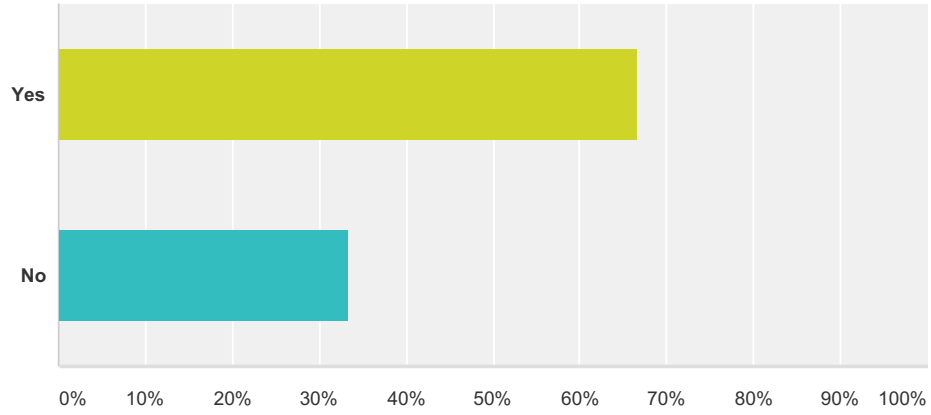
Q7 Please provide answers to the two questions below about the individuals thatcycle to school.

Answered: 15 Skipped: 98

Answer Choices	Responses	
School	86.67%	13
Age	100.00%	15

Q8 Do you feel comfortable cycling in Pelham right now?

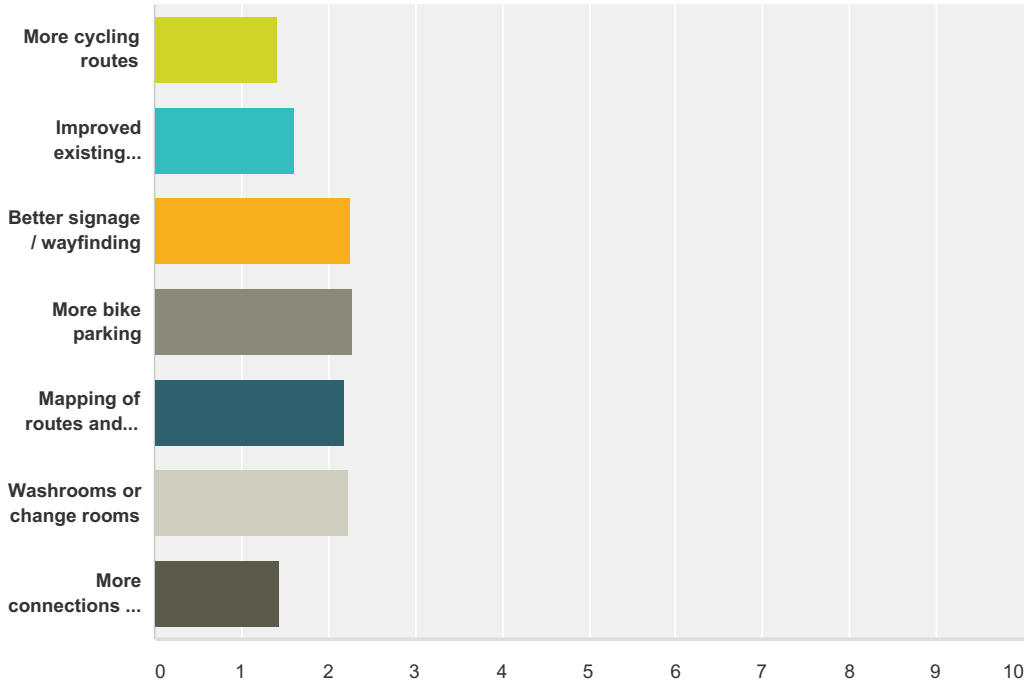
Answered: 57 Skipped: 56



Answer Choices	Responses	
Yes	**66.67%**	38
No	**33.33%**	19
Total		**57**

Q9 What would make you feel more comfortable cycling / encourage you to cycle morein Pelham? Please rank each option based onits level of influence.

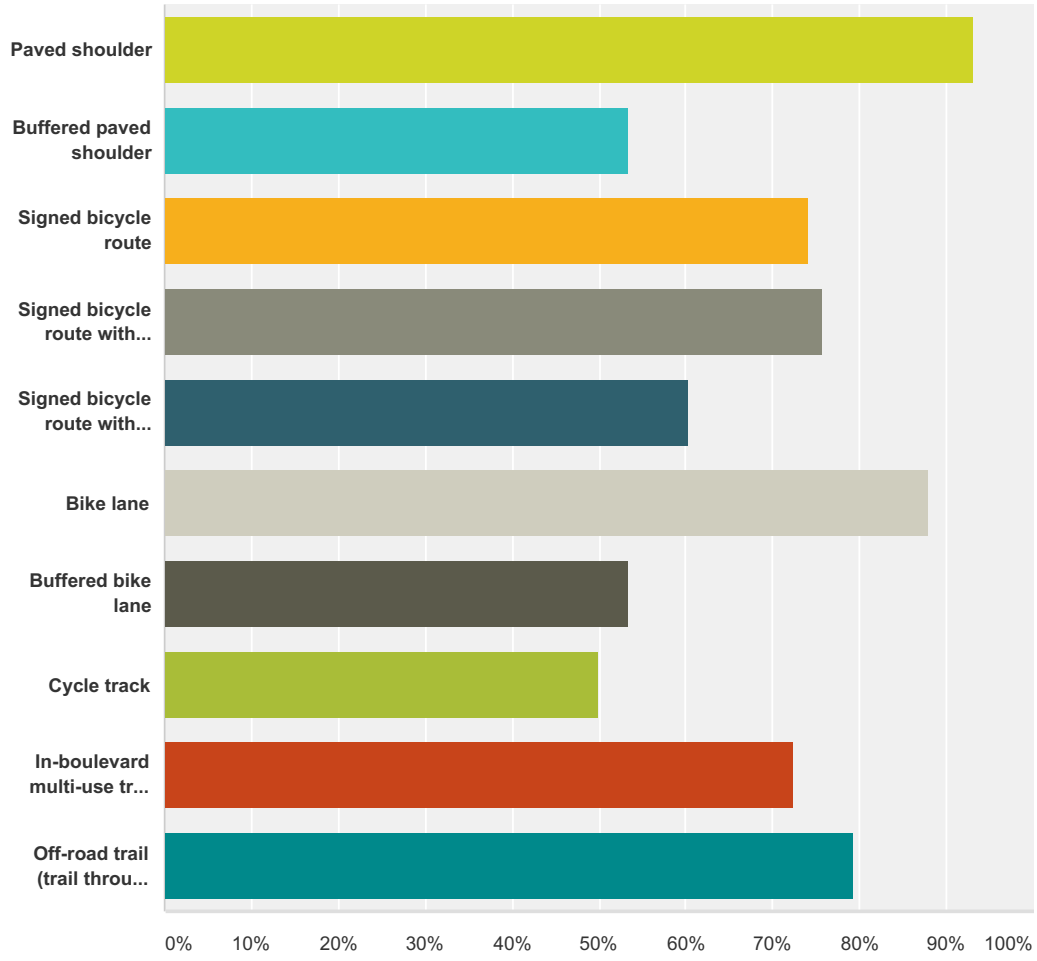
Answered: 60 Skipped: 53



	Most Influence	Influence	No Influence	N/A	Total	Weighted Average
More cycling routes	**56.67%** 34	**40.00%** 24	**0.00%** 0	**3.33%** 2	60	1.41
Improved existing cycling facilities	**49.12%** 28	**36.84%** 21	**10.53%** 6	**3.51%** 2	57	1.60
Better signage / wayfinding	**15.79%** 9	**36.84%** 21	**40.35%** 23	**7.02%** 4	57	2.26
More bike parking	**17.86%** 10	**30.36%** 17	**42.86%** 24	**8.93%** 5	56	2.27
Mapping of routes and promotional materials	**18.18%** 10	**41.82%** 23	**38.18%** 21	**1.82%** 1	55	2.20
Washrooms or change rooms	**20.00%** 11	**34.55%** 19	**43.64%** 24	**1.82%** 1	55	2.24
More connections to surrounding areas	**58.93%** 33	**35.71%** 20	**3.57%** 2	**1.79%** 1	56	1.44

Q10 Which of the following cycling facilities have you heard of / have you used before? See the images below for examples of the different types of facilities.

Answered: 58 Skipped: 55

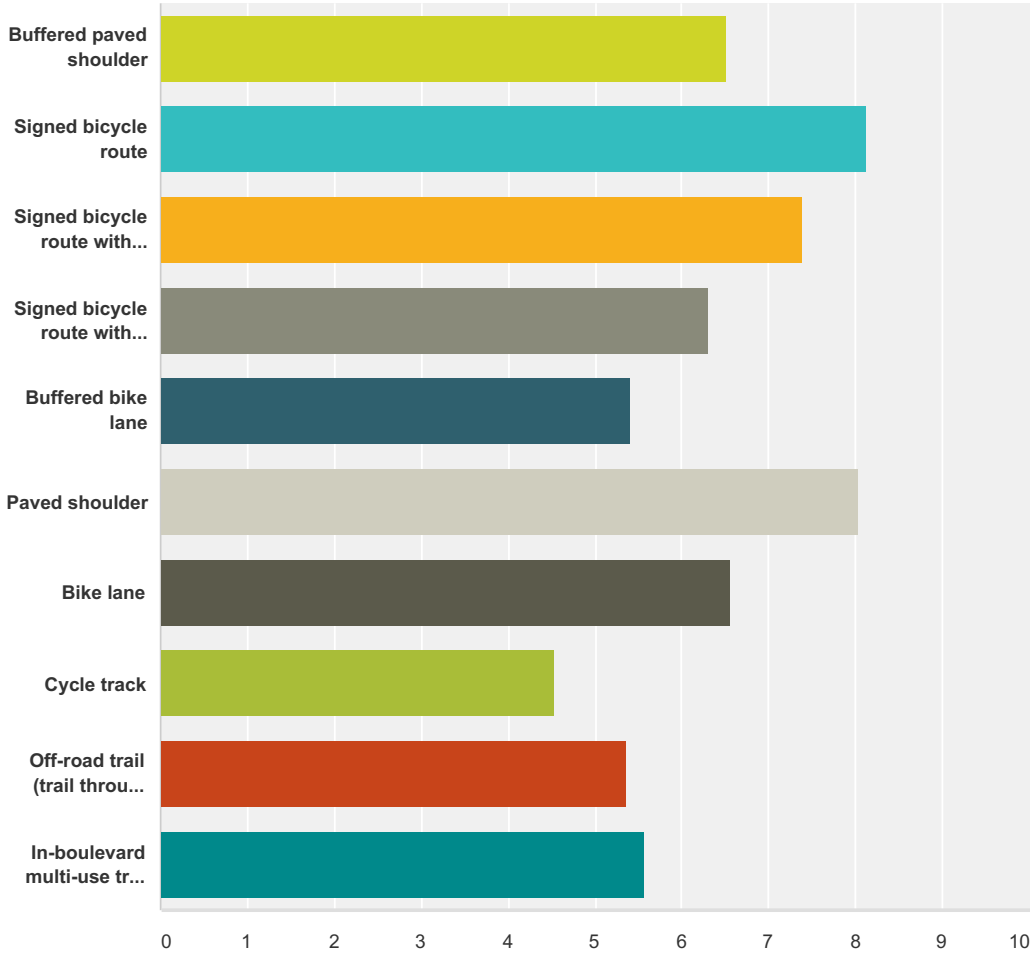


Answer Choices	Responses	
Paved shoulder	**93.10%**	54
Buffered paved shoulder	**53.45%**	31
Signed bicycle route	**74.14%**	43
Signed bicycle route with sharrow	**75.86%**	44
Signed bicycle route with edgeline	**60.34%**	35
Bike lane	**87.93%**	51
Buffered bike lane	**53.45%**	31
Cycle track	**50.00%**	29
In-boulevard multi-use trail (trail in place of a sidewalk)	**72.41%**	42

Off-road trail (trail through a park)	**79.31%**	46
Total Respondents: 58		

Q11 Thinking of the responses you picked in the previous question, please rank them based on your level of comfort using each, where the lowest number is the least comfortable and the highest number is the most comfortable.

Answered: 52 Skipped: 61

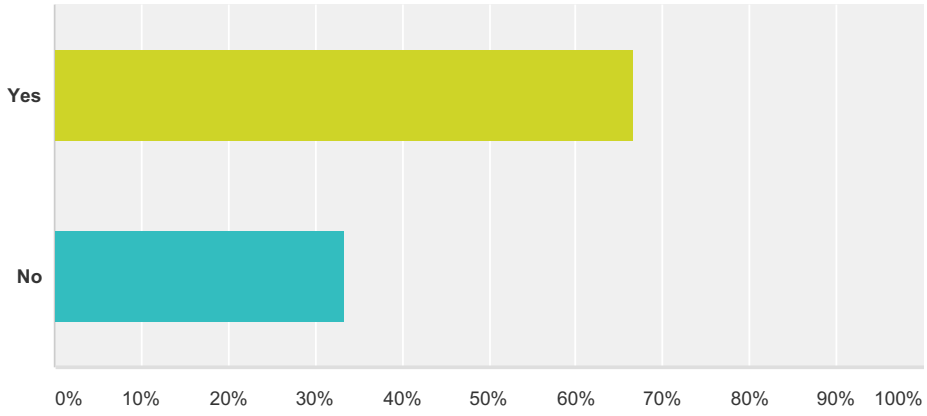


	1	2	3	4	5	6	7	8	9	10	Total	Score
Buffered paved shoulder	8.70% 2	17.39% 4	17.39% 4	4.35% 1	21.74% 5	13.04% 3	4.35% 1	0.00% 0	13.04% 3	0.00% 0	23	6.52
Signed bicycle route	37.50% 12	15.63% 5	15.63% 5	15.63% 5	3.13% 1	0.00% 0	6.25% 2	6.25% 2	0.00% 0	0.00% 0	32	8.13
Signed bicycle route with sharrow	10.71% 3	32.14% 9	7.14% 2	17.86% 5	17.86% 5	3.57% 1	7.14% 2	0.00% 0	3.57% 1	0.00% 0	28	7.39
Signed bicycle route with edgeline	3.85% 1	15.38% 4	15.38% 4	11.54% 3	11.54% 3	23.08% 6	7.69% 2	11.54% 3	0.00% 0	0.00% 0	26	6.31
Buffered bike lane	4.55% 1	4.55% 1	9.09% 2	9.09% 2	13.64% 3	22.73% 5	22.73% 5	4.55% 1	9.09% 2	0.00% 0	22	5.41

Paved shoulder	**32.43%** 12	**18.92%** 7	**16.22%** 6	**13.51%** 5	**5.41%** 2	**5.41%** 2	**5.41%** 2	**0.00%** 0	**0.00%** 0	**2.70%** 1	37	8.03
Bike lane	**2.78%** 1	**13.89%** 5	**27.78%** 10	**11.11%** 4	**19.44%** 7	**11.11%** 4	**2.78%** 1	**2.78%** 1	**2.78%** 1	**5.56%** 2	36	6.56
Cycle track	**5.88%** 1	**0.00%** 0	**11.76%** 2	**11.76%** 2	**0.00%** 0	**11.76%** 2	**17.65%** 3	**17.65%** 3	**11.76%** 2	**11.76%** 2	17	4.53
Off-road trail (trail through a park)	**13.16%** 5	**5.26%** 2	**7.89%** 3	**13.16%** 5	**10.53%** 4	**5.26%** 2	**10.53%** 4	**7.89%** 3	**21.05%** 8	**5.26%** 2	38	5.37
In-boulevard multi-use trail (trail in place of a sidewalk)	**3.33%** 1	**16.67%** 5	**16.67%** 5	**13.33%** 4	**0.00%** 0	**10.00%** 3	**6.67%** 2	**16.67%** 5	**3.33%** 1	**13.33%** 4	30	5.57

Q12 Thanks for filling out the Cycling Survey!Would you like to continue on to the Pedestrian Survey?

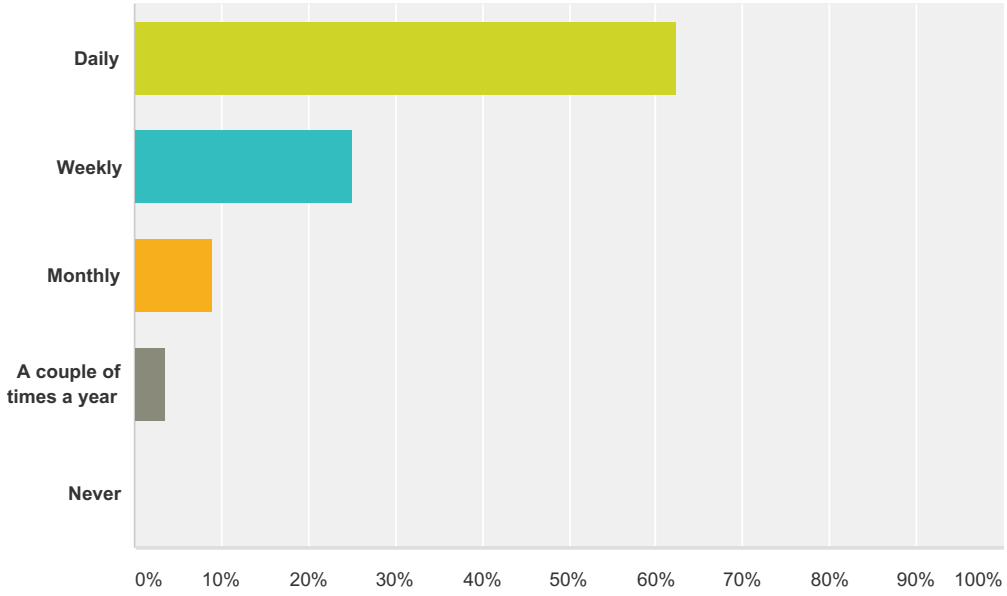
Answered: 57 Skipped: 56



Answer Choices	Responses	
Yes	**66.67%**	38
No	**33.33%**	19
Total		**57**

Q13 How often do you walk?

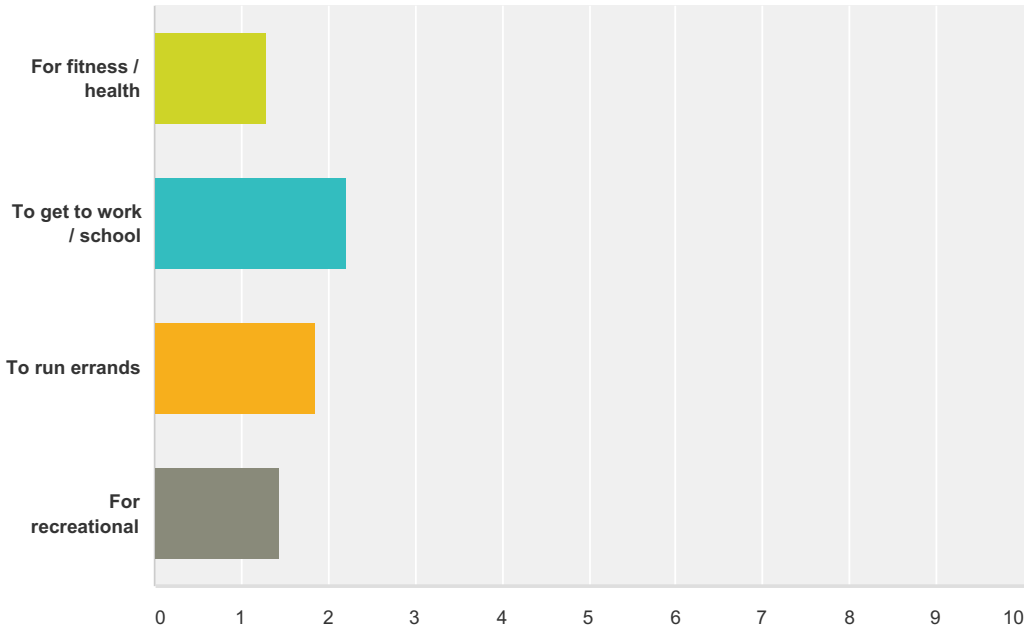
Answered: 56 Skipped: 57



Answer Choices	Responses	
Daily	**62.50%**	35
Weekly	**25.00%**	14
Monthly	**8.93%**	5
A couple of times a year	**3.57%**	2
Never	**0.00%**	0
Total		**56**

Q14 Why do you walk?

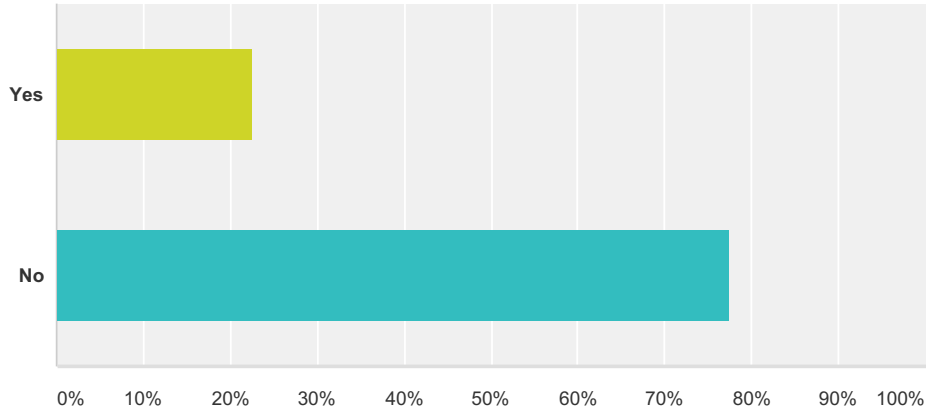
Answered: 56 Skipped: 57



	Always	Sometimes	Never	Total	Weighted Average
For fitness / health	**72.73%** 40	**25.45%** 14	**1.82%** 1	55	1.29
To get to work / school	**31.03%** 9	**17.24%** 5	**51.72%** 15	29	2.21
To run errands	**26.09%** 12	**63.04%** 29	**10.87%** 5	46	1.85
For recreational	**57.69%** 30	**40.38%** 21	**1.92%** 1	52	1.44

Q15 Are there people in your household who walk to school?

Answered: 49 Skipped: 64



Answer Choices	Responses	
Yes	**22.45%**	11
No	**77.55%**	38
Total		**49**

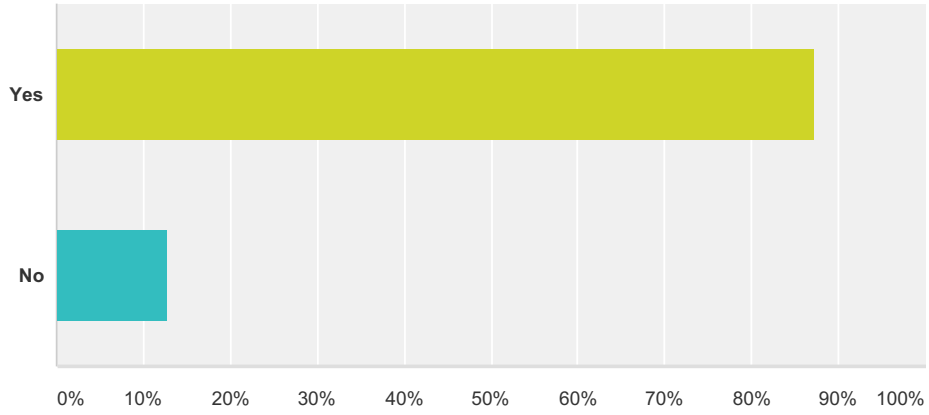
Q16 Please provide answers to the two questions below about the individuals thatwalk to school.

Answered: 10 Skipped: 103

Answer Choices	Responses	
School	100.00%	10
Age	100.00%	10

Q17 Do you feel comfortablewalking in Pelham right now?

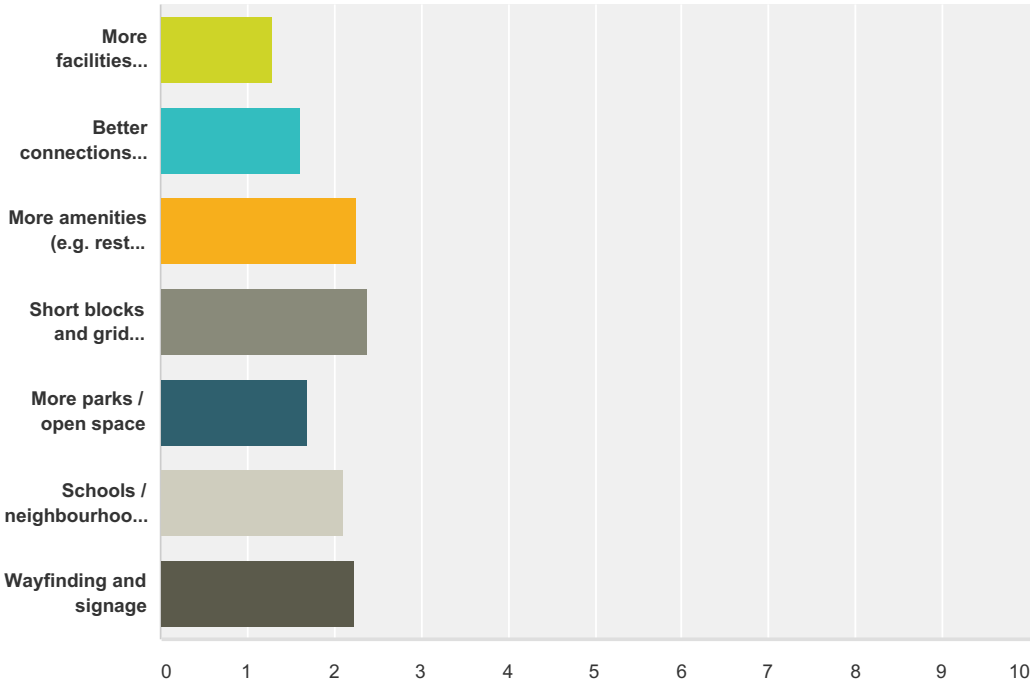
Answered: 55 Skipped: 58



Answer Choices	Responses	
Yes	**87.27%**	48
No	**12.73%**	7
Total		**55**

Q18 What would make you feel more comfortable walking / encourage you to walkin Pelham? Please rank each option based onits level of influence.

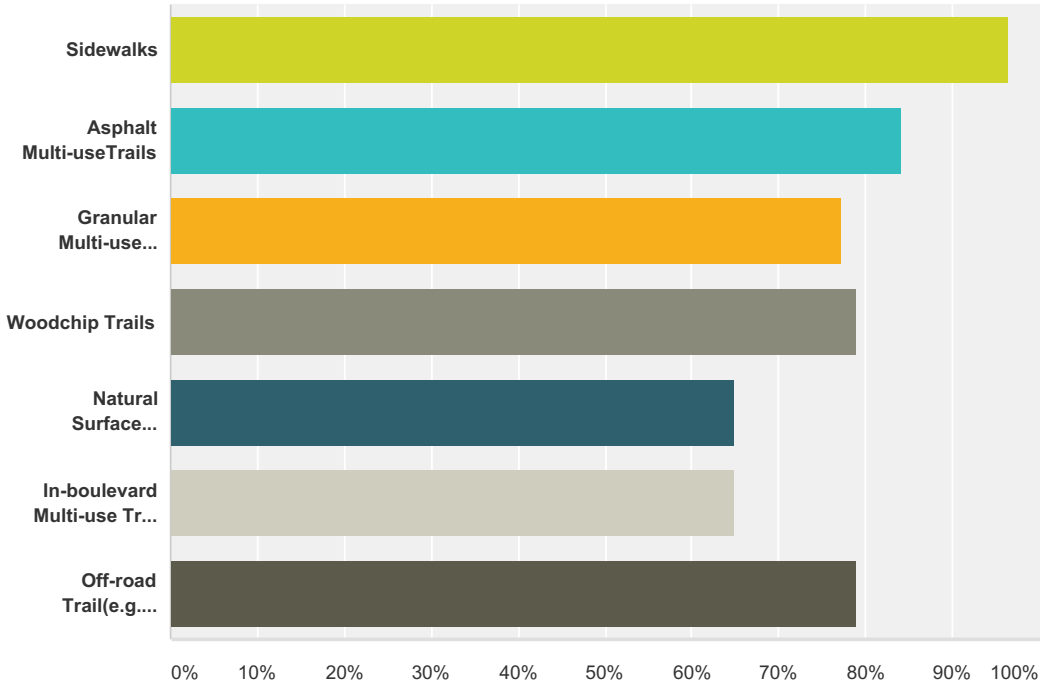
Answered: 55 Skipped: 58



	Most Influence	Influence	No Influence	N/A	Total	Weighted Average
More facilities (e.g. sidewalks, trails, etc.)	**74.55%** 41	**18.18%** 10	**5.45%** 3	**1.82%** 1	55	1.30
Better connections (i.e. no gaps)	**46.94%** 23	**44.90%** 22	**8.16%** 4	**0.00%** 0	49	1.61
More amenities (e.g. rest area, washrooms,etc.)	**16.33%** 8	**40.82%** 20	**40.82%** 20	**2.04%** 1	49	2.25
Short blocks and grid network	**17.02%** 8	**23.40%** 11	**51.06%** 24	**8.51%** 4	47	2.37
More parks / open space	**35.29%** 18	**54.90%** 28	**5.88%** 3	**3.92%** 2	51	1.69
Schools / neighbourhoods close to major destinations	**20.83%** 10	**37.50%** 18	**29.17%** 14	**12.50%** 6	48	2.10
Wayfinding and signage	**14.89%** 7	**44.68%** 21	**38.30%** 18	**2.13%** 1	47	2.24

Q19 Which of the followingpedestrian facilities are you aware of / have you used before?

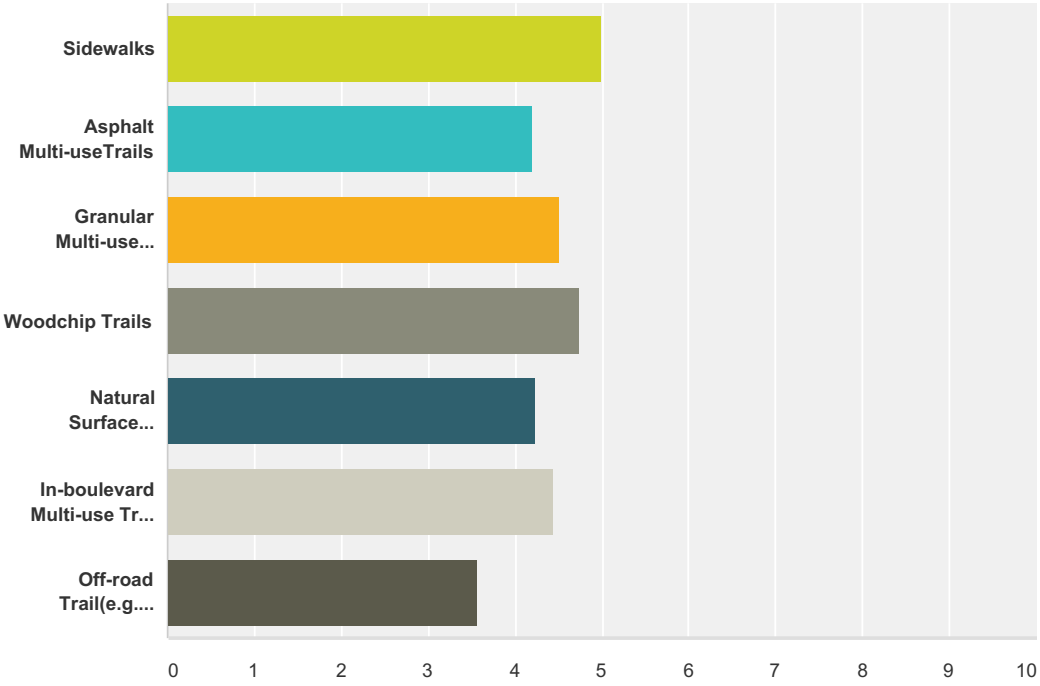
Answered: 57 Skipped: 56



Answer Choices	Responses	
Sidewalks	**96.49%**	55
Asphalt Multi-useTrails	**84.21%**	48
Granular Multi-use Trails	**77.19%**	44
Woodchip Trails	**78.95%**	45
Natural Surface Single-Track Trails	**64.91%**	37
In-boulevard Multi-use Trail (trail in place of a sidewalk)	**64.91%**	37
Off-road Trail(e.g. trail through a park / natural space)	**78.95%**	45
Total Respondents: 57		

Q20 Thinking of the responses you picked the previous question, please rank them based on your level of comfort using each, where the lowest number is the least comfortable and the highest number is the most comfortable.

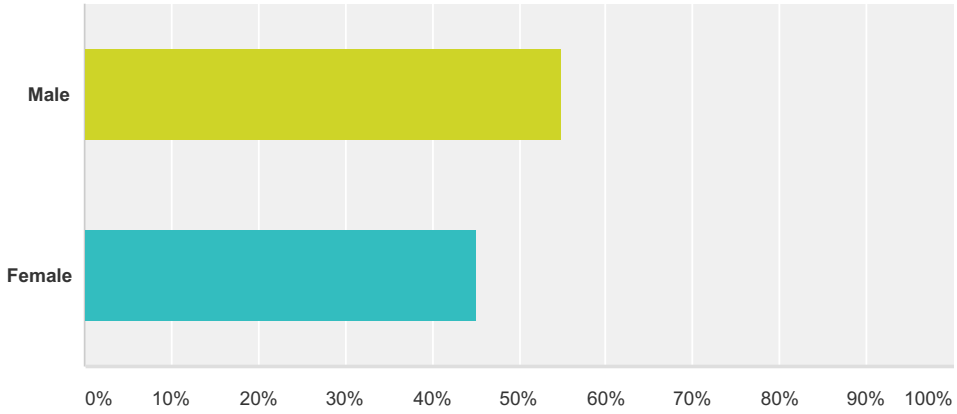
Answered: 54 Skipped: 59



	1	2	3	4	5	6	7	Total	Score
Sidewalks	33.33% 15	20.00% 9	8.89% 4	13.33% 6	6.67% 3	8.89% 4	8.89% 4	45	4.98
Asphalt Multi-useTrails	7.32% 3	24.39% 10	17.07% 7	14.63% 6	14.63% 6	12.20% 5	9.76% 4	41	4.20
Granular Multi-use Trails	5.41% 2	24.32% 9	24.32% 9	21.62% 8	13.51% 5	8.11% 3	2.70% 1	37	4.51
Woodchip Trails	21.62% 8	13.51% 5	21.62% 8	13.51% 5	18.92% 7	10.81% 4	0.00% 0	37	4.73
Natural Surface Single-Track Trails	6.45% 2	19.35% 6	19.35% 6	22.58% 7	16.13% 5	9.68% 3	6.45% 2	31	4.23
In-boulevard Multi-use Trail (trail in place of a sidewalk)	24.24% 8	12.12% 4	15.15% 5	15.15% 5	9.09% 3	15.15% 5	9.09% 3	33	4.45
Off-road Trail(e.g. trail through a park / natural space)	16.28% 7	6.98% 3	13.95% 6	9.30% 4	13.95% 6	13.95% 6	25.58% 11	43	3.58

Q21 Which gender do you identify with?

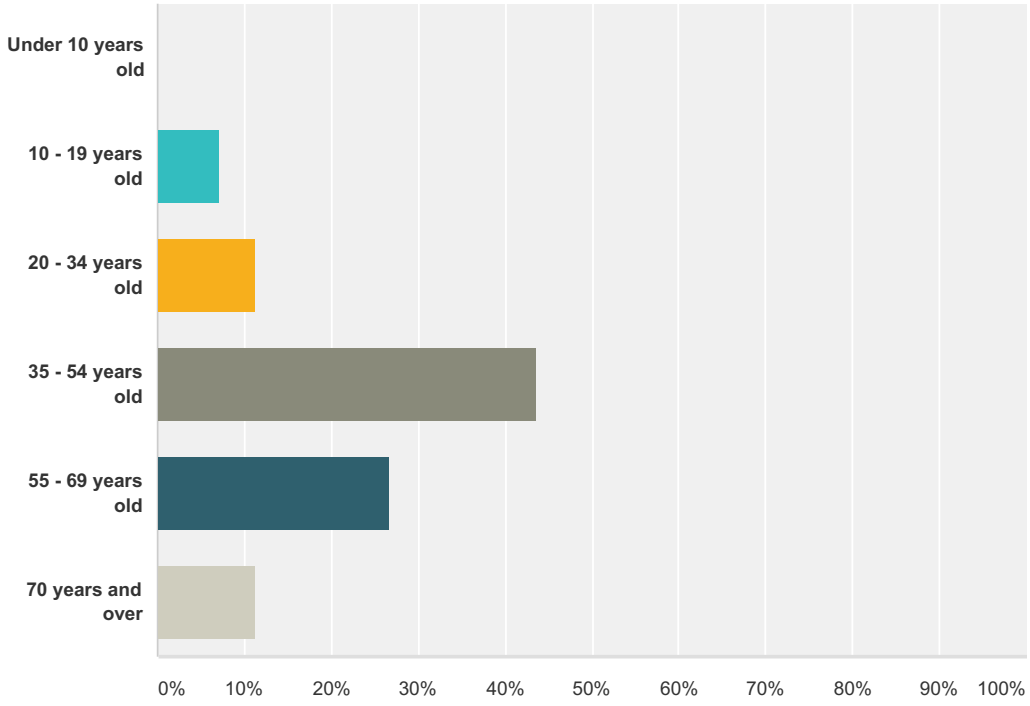
Answered: 71 Skipped: 42



Answer Choices	Responses	
Male	**54.93%**	39
Female	**45.07%**	32
Total		**71**

Q22 What is your age?

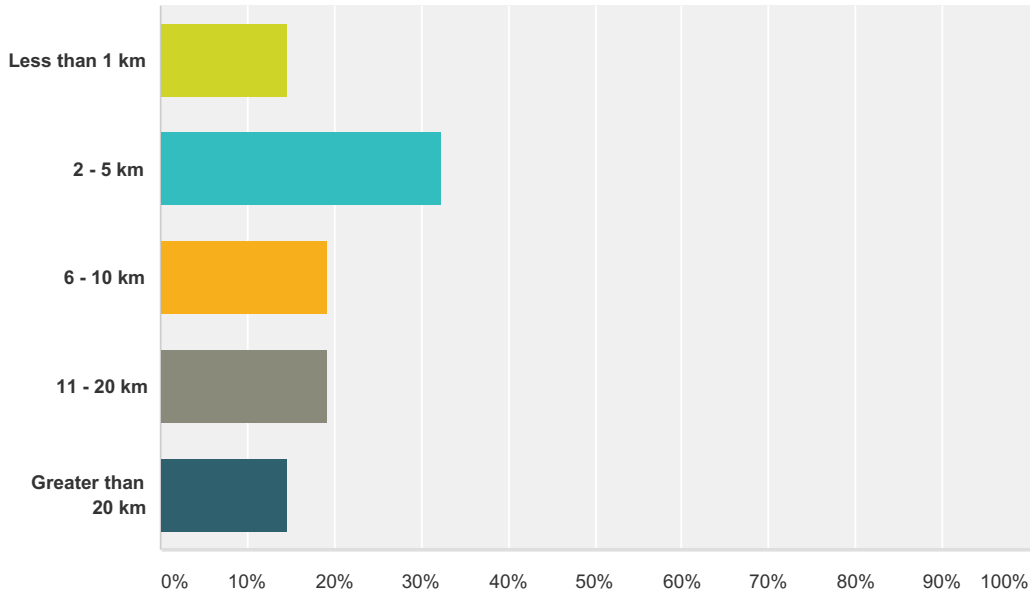
Answered: 71 Skipped: 42



Answer Choices	Responses	
Under 10 years old	**0.00%**	0
10 - 19 years old	**7.04%**	5
20 - 34 years old	**11.27%**	8
35 - 54 years old	**43.66%**	31
55 - 69 years old	**26.76%**	19
70 years and over	**11.27%**	8
Total		**71**

Q23 How long is your trip to and from work, school or other frequent destination?

Answered: 68 Skipped: 45



Answer Choices	Responses	
Less than 1 km	**14.71%**	10
2 - 5 km	**32.35%**	22
6 - 10 km	**19.12%**	13
11 - 20 km	**19.12%**	13
Greater than 20 km	**14.71%**	10
Total		**68**

Q24 (Optional) Please provide your contact information below if you would like to participate in or are interested in active transportation initiatives in Pelham.

Answered: 29 Skipped: 84

Answer Choices	Responses	
Name	89.66%	26
Email	79.31%	23
Postal Code	86.21%	25

Appendix C

Route Selection Criteria

The route selection criteria are shaped by the master plan objectives and are also heavily influenced by the criteria outlined in OTM Book 18: Cycling Facilities. They include:

- **Access and Potential Use:**
  - Does the route connect significant origins, destinations or nodes such as residential neighbourhoods, employment areas, transit hubs, commercial, recreational or institutional destinations?
  - Do alternative routes already exist?

- **Connectivity and Convenience:**
  - How directly does the route connect origins, destinations and nodes?
  - Is the route intersected by other routes?
  - Does the route provide pedestrians and cyclists with direct access to primary destinations within and surrounding the community?
  - Is the connectivity and the convenience of the route compromised by barriers that may deter some cyclists and / or pedestrians such as narrow bridges, steep slopes, expressways or railways?

- **Environmental Sustainability:**
  - Does the proposed facility type have the potential to reduce the number of single occupancy vehicles on the roadway?
  - Does the route provide access to other modes of transportation throughout the Town e.g. new transit routes – local and regional?
  - Does the proposed route and facility type have minimal impact on the environment?
  - Does the route avoid areas of environmental significance where possible?

- **Attractiveness**:
  - Is there scenic value that enriches the experience along the route?
  - Is there potential for the route to access natural, historic or cultural areas of interest within and outside of the Town?

- **Safety and Comfort:**
  - What is the potential for conflict between cyclists, pedestrians and other road users?
  - Can a route feasibly be implemented that would appeal to a broad user range of potential pedestrians and cyclists?

- **Cost**:
  - Would the construction of an appropriate route require a disproportionate amount of the budget available for infrastructure relative to the potential use of the facility?

- **Consideration of Future Use:**
  - Is there significant potential to increase the volume of cyclists using the candidate route in the future?
  - Is it clear who the intended users of the proposed facility type are?
  - Are there sufficient routes / proposed facility types for users of all ages and abilities?

- **Tourism:**
  - Does the route support local tourism initiatives?
  - Does the route link to regional connections providing access to external tourism destinations?

Appendix D

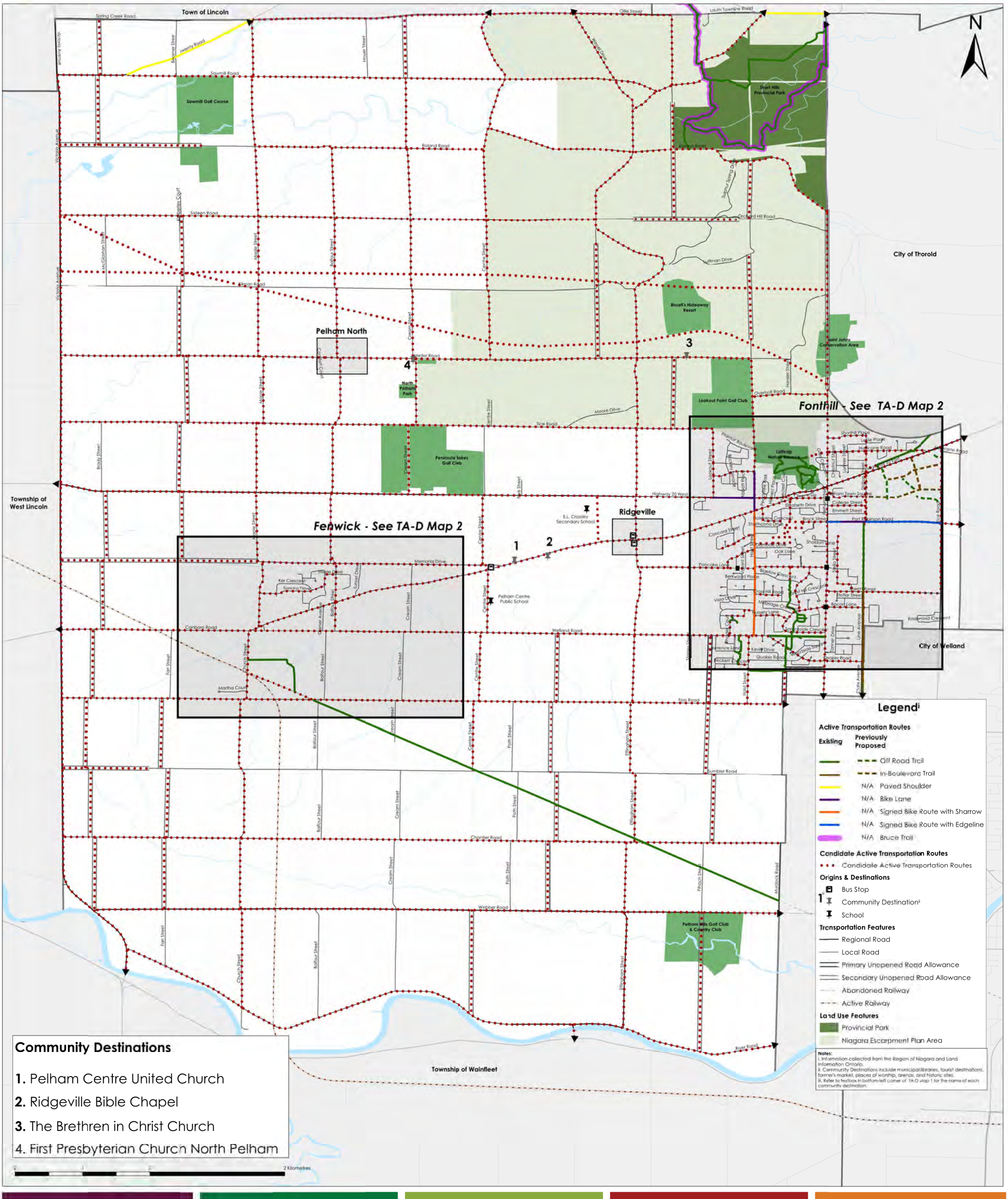
System Concept Maps

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX D MAP 1 - CANDIDATE ROUTES (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

TA-D Map 1

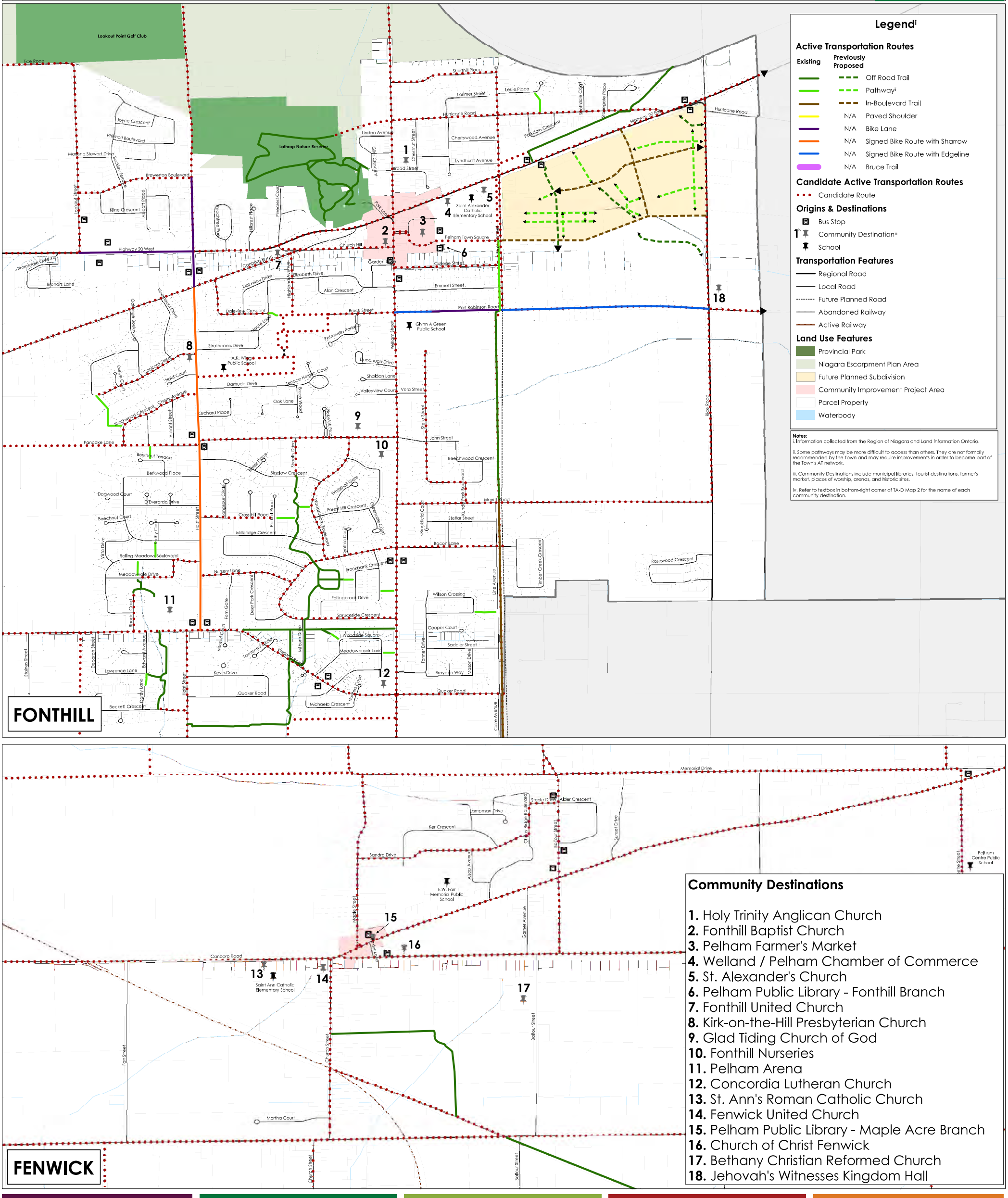


ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX D MAP 2 - CANDIDATE ROUTES (URBAN AREAS)

TA-D Map 2

Pelham NIAGARA | WSP | MMM GROUP



Appendix E

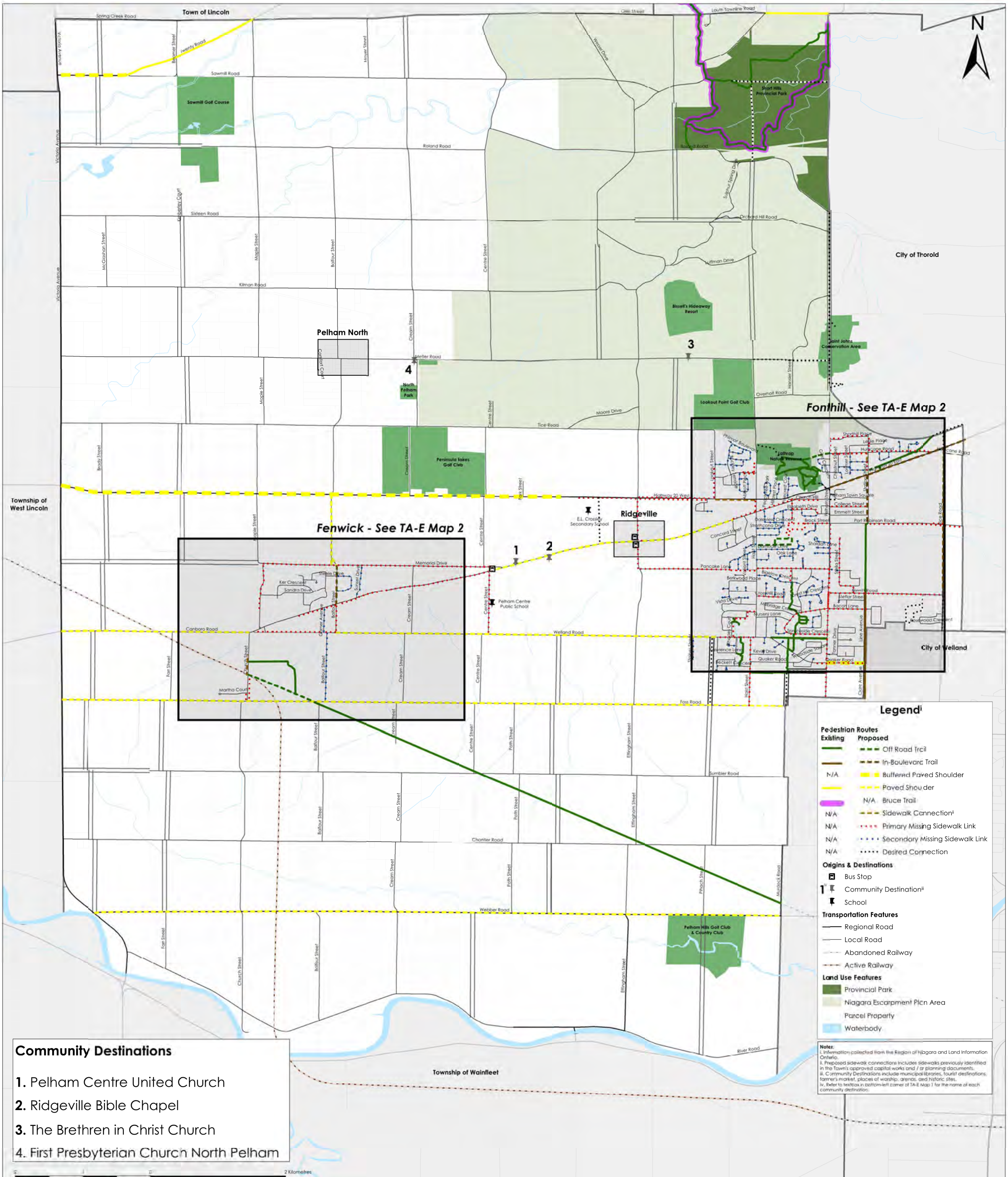
Network Mapping

ACTIVE TRANSPORTATION (AT)
MASTER PLAN & IMPLEMENTATION STRATEGY

TA-E Map 1

TECHNICAL APPENDIX E MAP 1 - PEDESTRIAN NETWORK (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP



ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX E MAP 2 - PEDESTRIAN NETWORK (URBAN AREAS)

TA-E Map 2

Pelham NIAGARA | WSP | MMM GROUP

Legend[i]

Pedestrian Routes

Existing	Proposed	
		Paved Shoulder
		Off Road Trail
		Pathway[ii]
		In-Boulevard Trail
		Sidewalk Connection[iii]
N/A		Primary Missing Sidewalk Link
N/A		Secondary Missing Sidewalk Link

Origins & Destinations

- Bus Stop
- Community Destination[iv]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Proposed sidewalk connections includes sidewalks previously identified in the Town's approved capital works and / or planning documents.

iv. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

v. Refer to textbox in bottom-right corner of TA-E Map 2 for the name of each community destination.

FONTHILL

FENWICK

Community Destinations

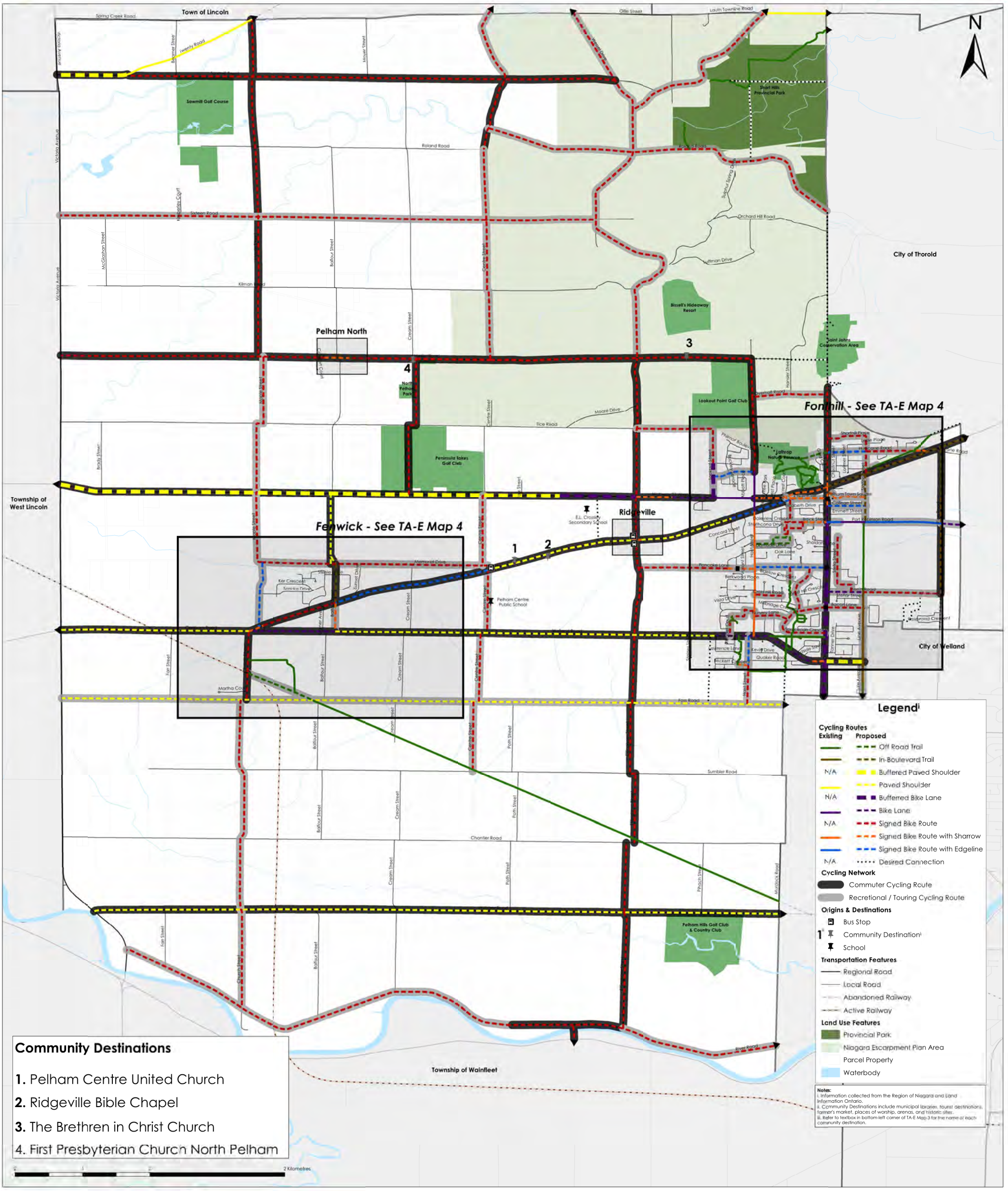
1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX E MAP 3 - CYCLING NETWORK (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

TA-E Map 3



Community Destinations

1. Pelham Centre United Church

2. Ridgeville Bible Chapel

3. The Brethren in Christ Church

4. First Presbyterian Church North Pelham

Legend[i]

Cycling Routes

Existing	Proposed
	Off Road Trail
	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Buffered Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
N/A	Desired Connection

Cycling Network

- Commuter Cycling Route
- Recretional / Touring Cycling Route

Origins & Destinations

- Bus Stop
- 1 Community Destination[ii]
- School

Transportation Features

- Regional Road
- Local Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Parcel Property
- Waterbody

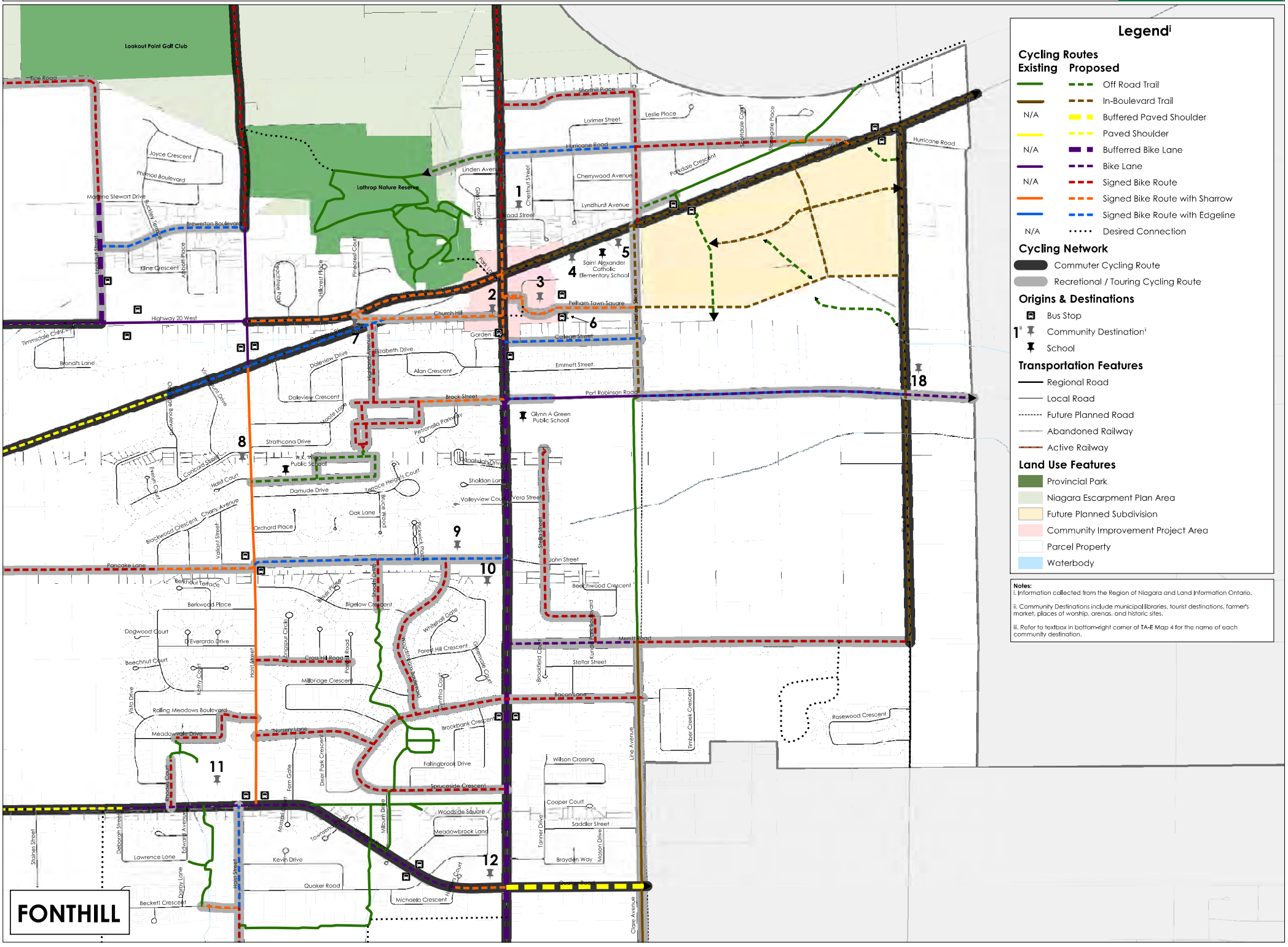
Notes:
i. Information collected from the Region of Niagara and Land Information Ontario.
ii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.
iii. Refer to textbox in bottom-left corner of TA-E Map 3 for the name of each community destination.

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX E MAP 4 - CYCLING NETWORK (URBAN AREAS)

TA-E Map 4

Pelham NIAGARA | WSP | MMM GROUP

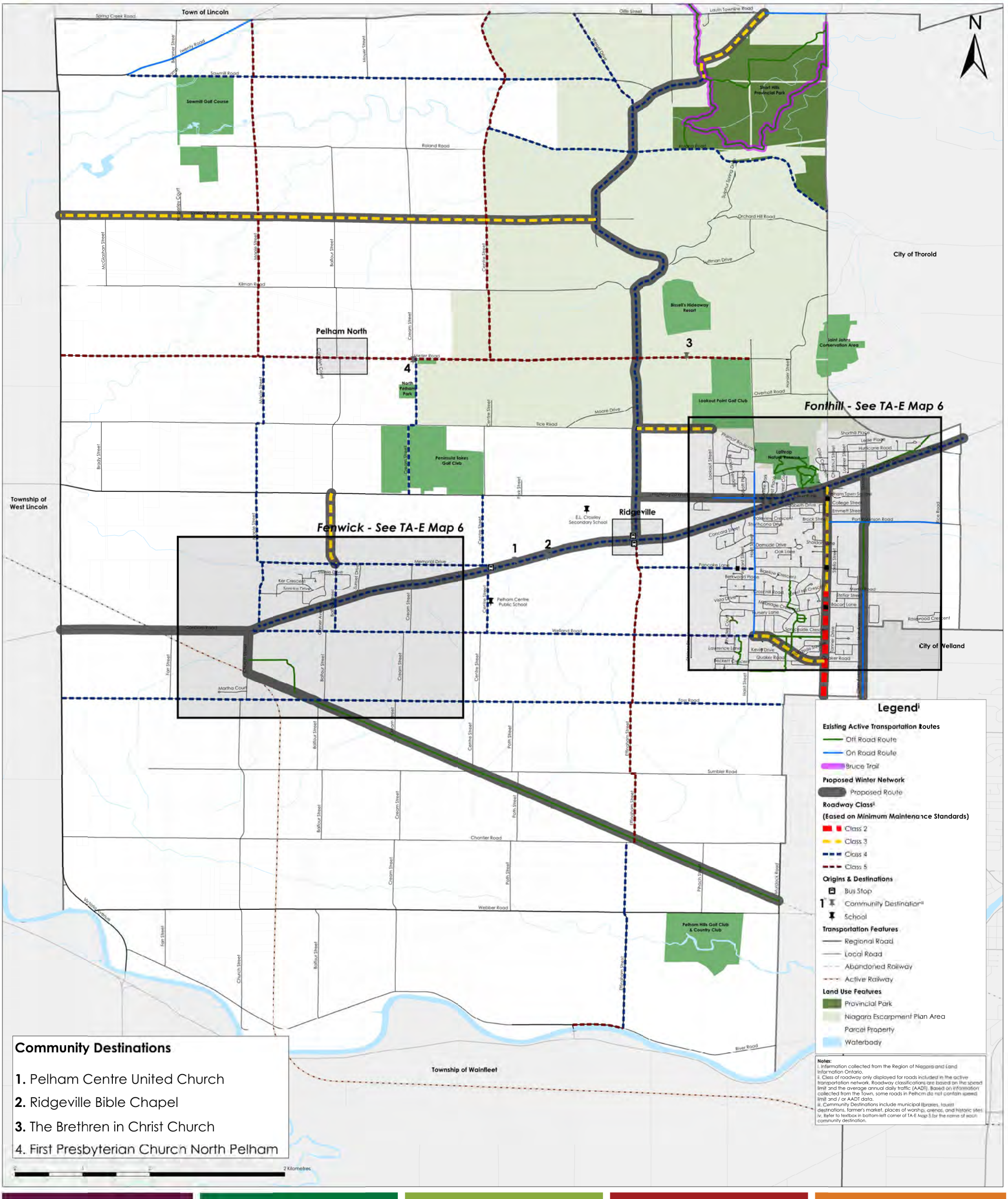


ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX E MAP 5 - WINTER CYCLING NETWORK (TOWN-WIDE)

TA-E Map 5

Pelham NIAGARA | WSP | MMM GROUP



Community Destinations

1. Pelham Centre United Church

2. Ridgeville Bible Chapel

3. The Brethren in Christ Church

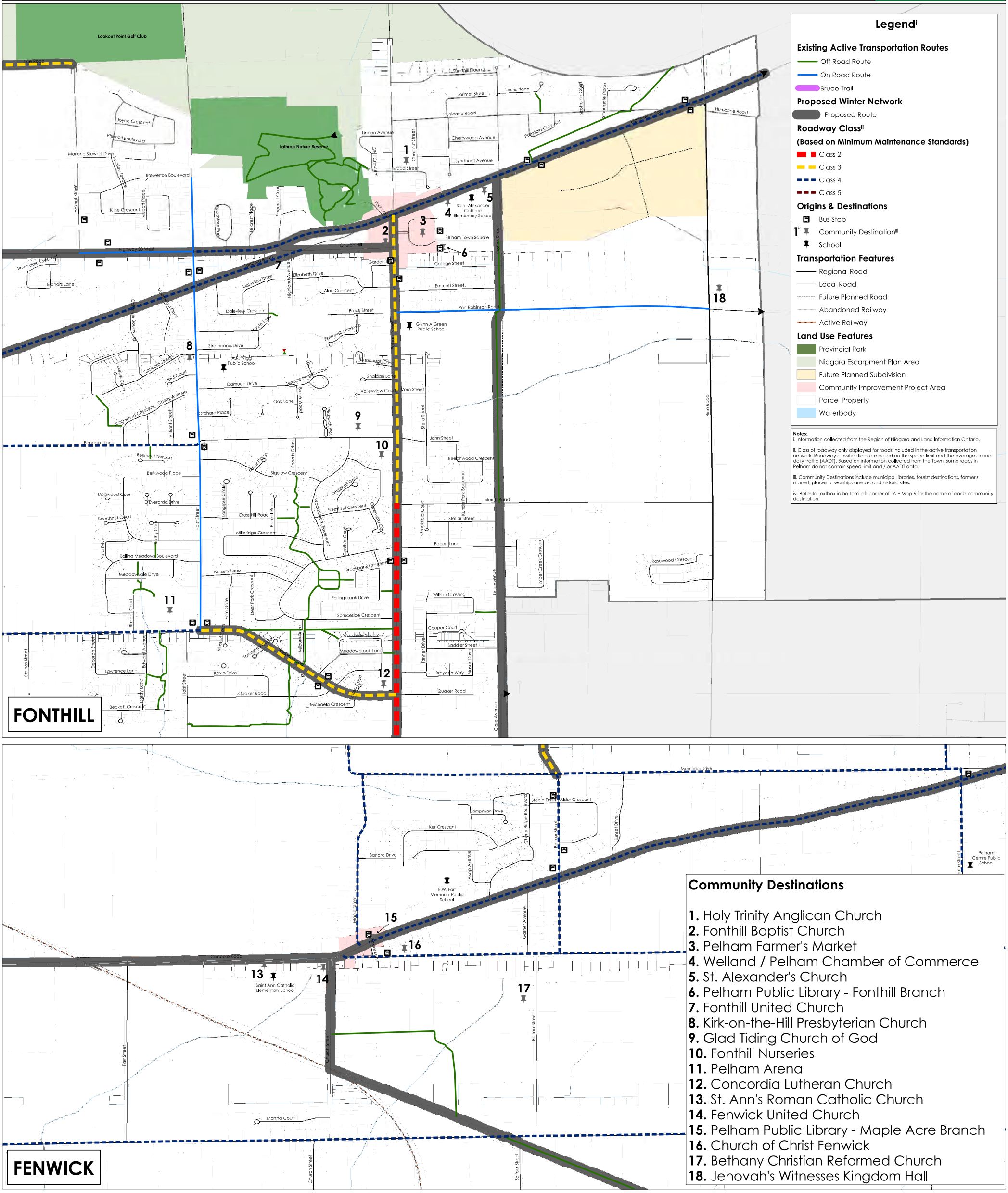
4. First Presbyterian Church North Pelham

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX E MAP 6 - WINTER CYCLING NETWORK (URBAN AREAS)

TA-E Map 6

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Existing Active Transportation Routes
- Off Road Route
- On Road Route
- Bruce Trail

Proposed Winter Network
- Proposed Route

Roadway Class[ii]
(Based on Minimum Maintenance Standards)
- Class 2
- Class 3
- Class 4
- Class 5

Origins & Destinations
- Bus Stop
- 1[iv] Community Destination[iii]
- School

Transportation Features
- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features
- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:
i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Class of roadway only displayed for roads included in the active transportation network. Roadway classifications are based on the speed limit and the average annual daily traffic (AADT). Based on information collected from the Town, some roads in Pelham do not contain speed limit and / or AADT data.

iii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

iv. Refer to textbox in bottom-left corner of TA E Map 6 for the name of each community destination.

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX E MAP 7 - SAFE ROUTES TO SCHOOL NETWORK (URBAN AREAS)

TA-E Map 7

Pelham NIAGARA | WSP | MMM GROUP

Legend[i]

Active Transportation Routes

Existing	Proposed	
		Off Road Trail
		Pathway[ii]
		In-Boulevard Trail
		Buffered Paved Shoulder
		Paved Shoulder
N/A		Bufferred Bike Lane
		Bike Lane
N/A		Signed Bike Route
		Signed Bike Route with Sharrow
		Signed Bike Route with Edgeline
N/A		Desired Connection
	N/A	Bruce Trail

School Walking Areas[iii]

- JK / SK Walking Area
- Grades 1-8 Walking Area

School Catchement Area

- Saint Ann Catholic Elementary School
- E.W. Farr Memorial Public School
- A.K. Wigg Public School
- Glynn A. Green Public School
- Saint Alexander Catholic Elementary School

Origins & Destinations

- Bus Stop
- 1[v] Community Destination[iv]
- School

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Based on information identified in Niagara Student Transportation Services Board Student Transportation Policy

iv. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

v. Refer to textbox in bottom-right corner of TA-E Map 7 for the name of each community destination.

FONTHILL

FENWICK

Overlap of E.W. Farr Memorial Public School Catchment Area & Saint Ann Catholic Elementary School Catchment Area

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

Appendix F

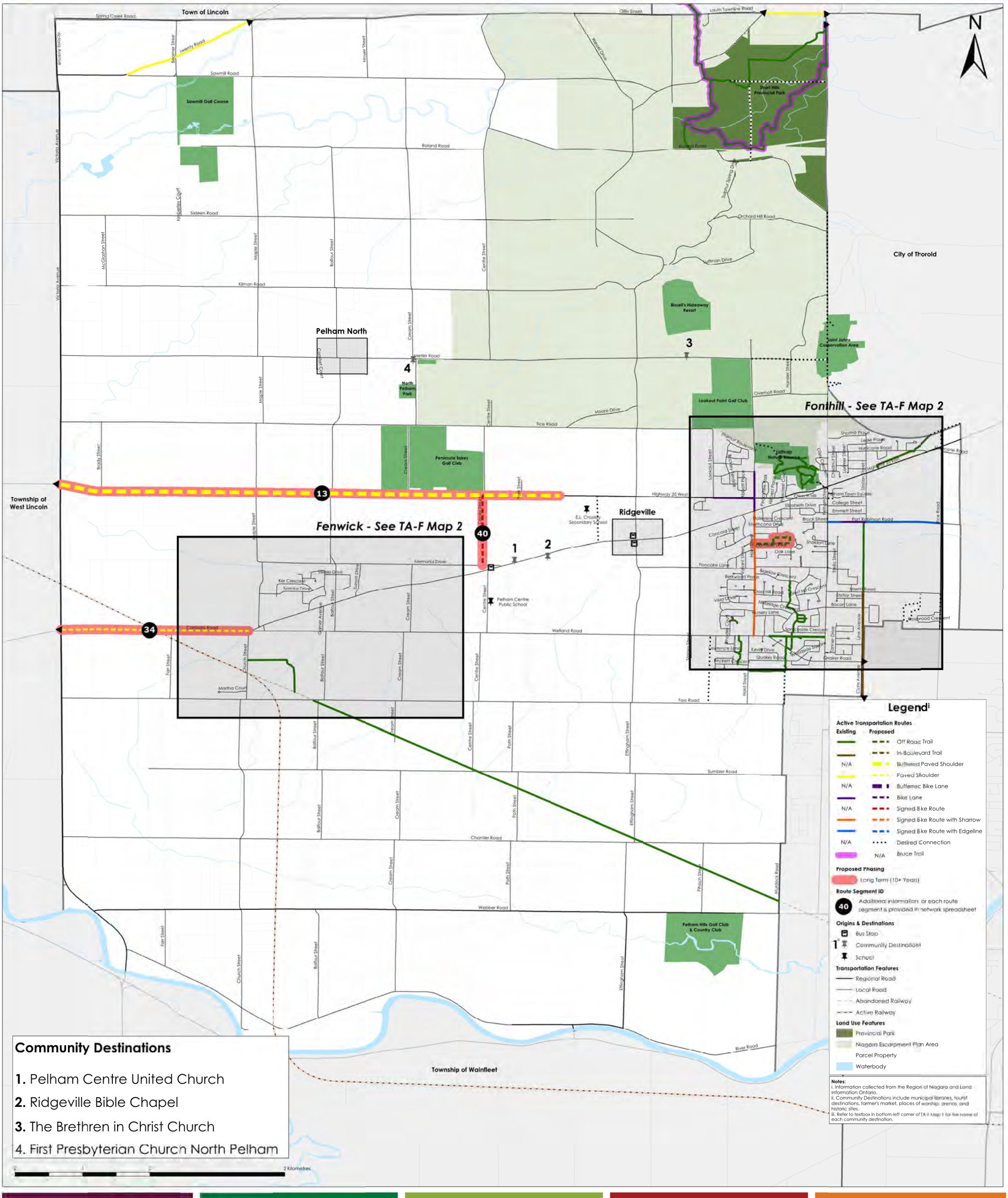
Long-term Phasing

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TA-F Map 1

TECHNICAL APPENDIX F MAP 1 - PROPOSED LONG TERM PHASING (TOWN-WIDE)

Pelham NIAGARA | WSP | MMM GROUP

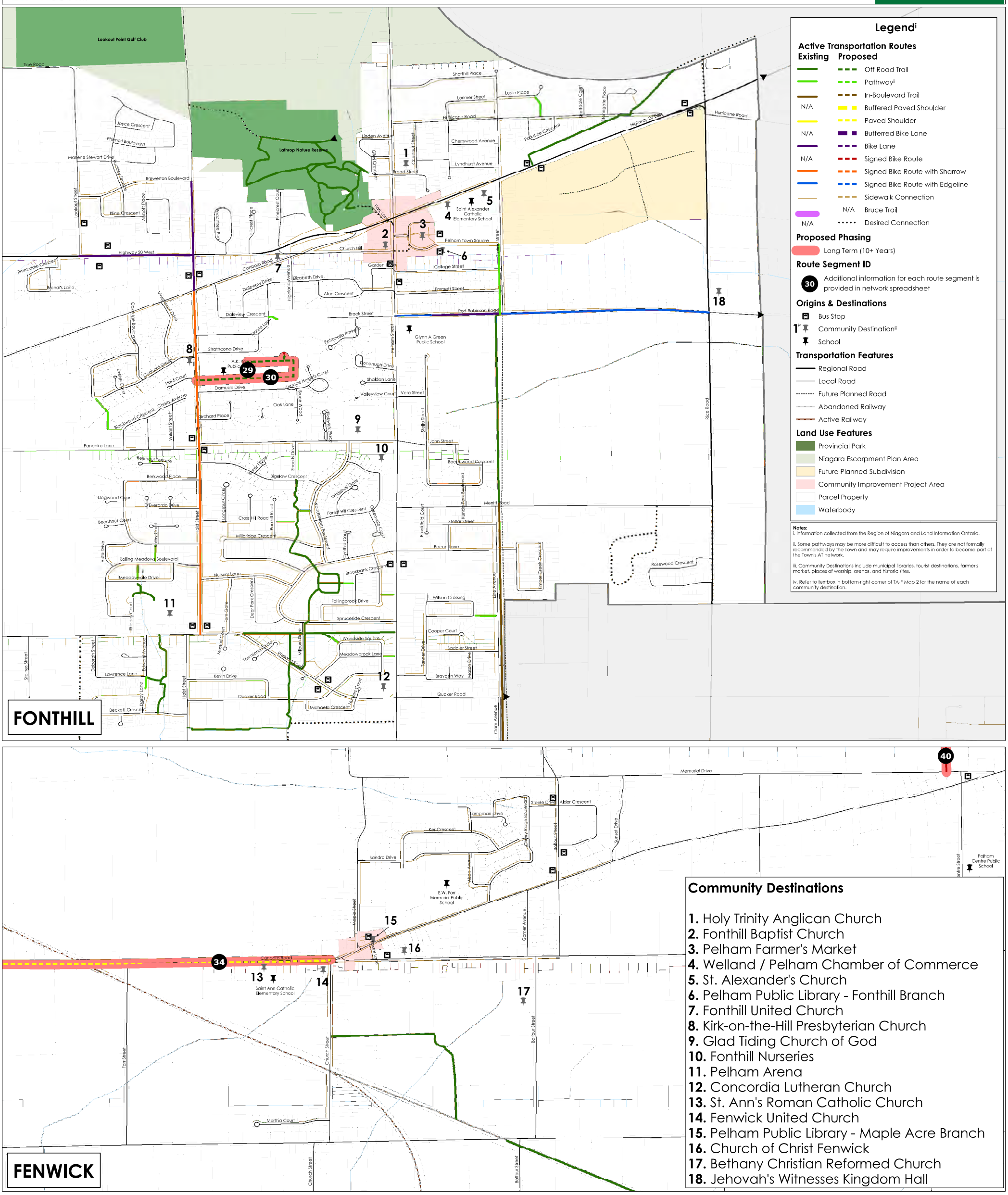


ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX F MAP 2 - PROPOSED LONG TERM PHASING (URBAN AREAS)

TA-F Map 2

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Active Transportation Routes

Existing	Proposed	
		Off Road Trail
		Pathway[ii]
		In-Boulevard Trail
N/A		Buffered Paved Shoulder
		Paved Shoulder
N/A		Bufferred Bike Lane
		Bike Lane
N/A		Signed Bike Route
		Signed Bike Route with Sharrow
		Signed Bike Route with Edgeline
		Sidewalk Connection
	N/A	Bruce Trail
N/A		Desired Connection

Proposed Phasing

Long Term (10+ Years)

Route Segment ID

30 Additional information for each route segment is provided in network spreadsheet

Origins & Destinations

Bus Stop

1[iv] Community Destination[iii]

School

Transportation Features

Regional Road

Local Road

Future Planned Road

Abandoned Railway

Active Railway

Land Use Features

Provincial Park

Niagara Escarpment Plan Area

Future Planned Subdivision

Community Improvement Project Area

Parcel Property

Waterbody

Notes:

i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Community Destinations include municipal libraries, tourist destinations, farmer's market, places of worship, arenas, and historic sites.

iv. Refer to textbox in bottom-right corner of TA-F Map 2 for the name of each community destination.

Community Destinations

1. Holy Trinity Anglican Church
2. Fonthill Baptist Church
3. Pelham Farmer's Market
4. Welland / Pelham Chamber of Commerce
5. St. Alexander's Church
6. Pelham Public Library - Fonthill Branch
7. Fonthill United Church
8. Kirk-on-the-Hill Presbyterian Church
9. Glad Tiding Church of God
10. Fonthill Nurseries
11. Pelham Arena
12. Concordia Lutheran Church
13. St. Ann's Roman Catholic Church
14. Fenwick United Church
15. Pelham Public Library - Maple Acre Branch
16. Church of Christ Fenwick
17. Bethany Christian Reformed Church
18. Jehovah's Witnesses Kingdom Hall

Appendix G

Implementation Process

6. Implementing a Bikeway Network

The fundamentals outlined in **Section 2 (Bikeway Network Planning), Section 3 (Bicycle Facility Type Selection)** and **Section 4 (Bicycle Facility Design)** are brought together in this chapter. **Section 6** presents a recommended implementation process, including management structure and the necessary steps required to support the review, approval, design and implementation of bicycle facilities on roadways throughout Ontario.

6.1 Five- Stage Implementation Process

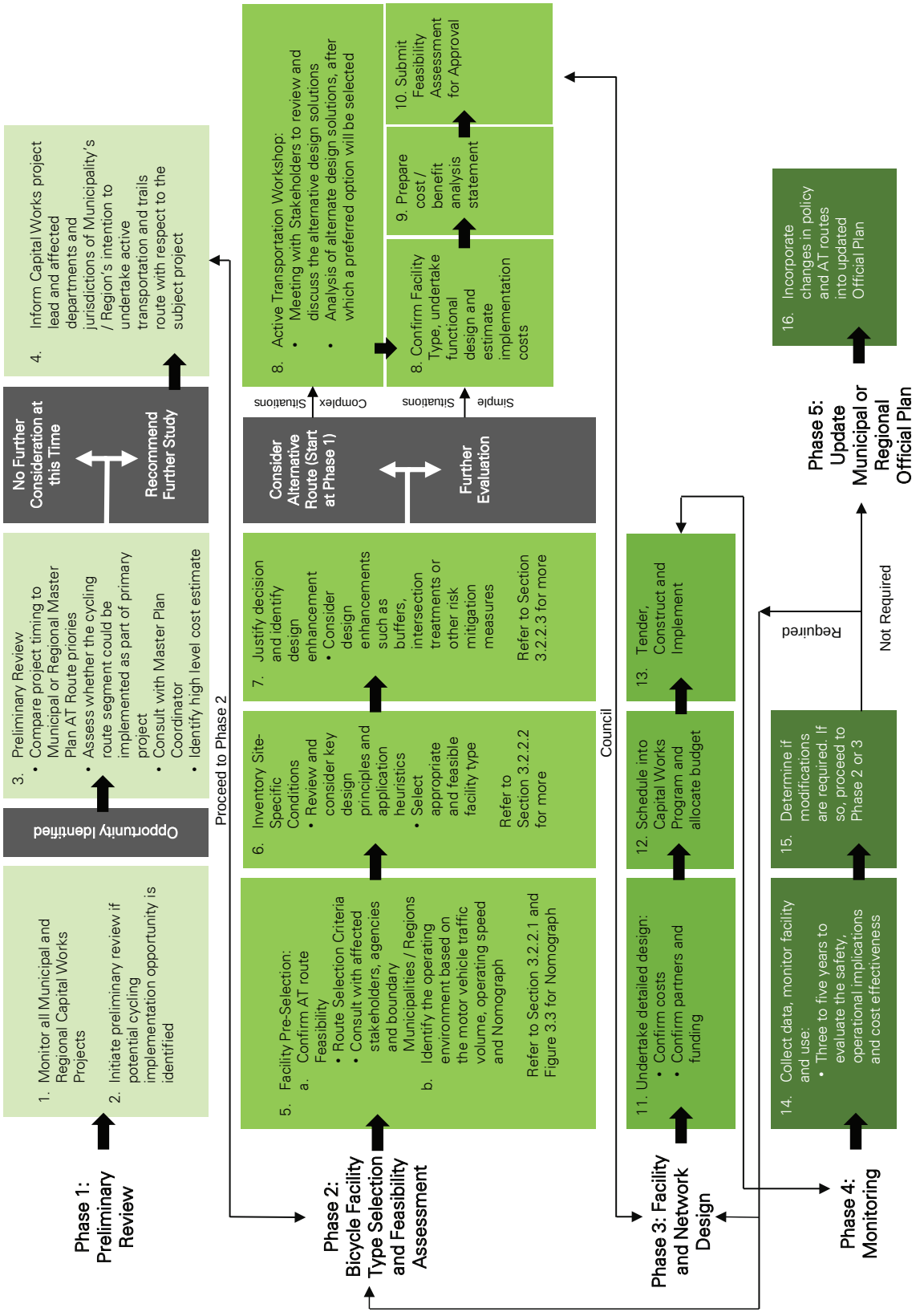
The five-stage implementation process forms the final step in the Bicycle Network Planning, Design and Implementation Process and outlines a strategy to support the successful implementation of a bicycle network. The process is a step-by-step mechanism to guide practitioners through a feasibility assessment of each bicycle route which is recommended to be undertaken at the time implementation is proposed.

A key step in this process will be the review of Municipal or Regional Master Plans and AT route priorities which will need to be considered in detail when capital infrastructure projects are identified and scheduled. This should include municipal and regional asset management programs for reconstructing or resurfacing roads, as well as any investigation of potential new road alignments. The objective is to ensure that municipal and regional assets, particularly roads designated in the Master Plan for future cycling routes, are given due regard when planning, designing and budgeting for road and infrastructure projects. This step should also apply to planning studies. Without this step, network opportunities could be lost and cost efficiencies not realized.

Building upon this primary recommendation, **Figure 6.1** illustrates the implementation process tool for guiding practitioners through the planning and design of bicycle facilities in Ontario.

The five part process is comprised of a step-by-step mechanism to confirm feasibility of each cycling route proposed. It is intended to assist practitioners from various municipal and regional departments to work together by sharing information that will facilitate the implementation of the proposed cycling route or network. Each part of the network implementation process is described in the following sections.

Figure 6.1 – Five-Stage Implementation Schedule



6.1.1 Phase 1: Preliminary Review

The first step in the implementation process is to identify and communicate opportunities. Practitioners should monitor all Municipal and Regional capital works programs to identify projects that link existing corridors and cycling routes identified in a Master Plan document. Through this process, road construction projects can be coordinated with the implementation of the proposed cycling facility.

If an opportunity arises to establish a new route not previously identified in the Master Plan, practitioners should undertake Phase 1: Preliminary Review.

The Preliminary Review should:

- Identify the jurisdictions involved in a project;
- Compare the timing of the project to the short and long term implementation priorities identified within the Region or Municipality;
- Assess whether the nature of the project permits the implementation of the preferred cycling facility type in a cost-effective manner; and
- Inform the project lead and affected departments whether or not a feasibility assessment should be undertaken to confirm the practicality and costs for implementing the proposed cycling route as part of the subject project.

A key aspect of this Preliminary Review is communication. Staff from various departments within the Region and Municipality should document all upcoming projects that may involve or impact a cycling facility designated in a Master Plan document. From this point forward, the project lead, with appropriate technical support, would be expected to work through the remaining three phases of the implementation process with various departments at the Region or Municipality, as appropriate.

6.1.2 Phase 2: Bicycle Facility Type Selection

If a cycling project is confirmed through the Preliminary Review Process (Phase 1), the project lead should undertake a two-part feasibility assessment.

Part one of the assessment consists of confirming the feasibility of the route based on a review of the submitted plans, supporting route selection, planning and design criteria, as well as other relevant information. **The Bicycle Facility Type Selection Tool** presented in **Section 3** should serve as the basis for this feasibility assessment, and should include:

- A collection or confirmation of current roadway characteristics including AADT volumes, collision data and commercial vehicle percentages; and
- A field check for both on and off-road route segments to measure sight distances (if applicable), and to identify any other site characteristics that may be considered for facility type selection.

If site-specific issues, context sensitive conditions or the outcome of the feasibility assessment conclude that a facility cannot be constructed in association with a particular road improvement project, other nearby parallel routes should be closely examined at this time to determine their suitability.

If the route location is considered complex or there are significant constraints, then as part of the feasibility assessment, the practitioner should

conduct a multi-disciplinary Active Transportation Workshop. The focus of this workshop would be to review the proposed route and the design, then identify and evaluate alternative designs or enhancements. Through this rigorous technical review and assessment of the various design alternatives, the practitioner can determine whether a proposed bicycle route and associated facility type can be accommodated on the roadway, or whether an alternative route should be considered.

Once a suitable route and facility type have been selected, part two of the feasibility assessment can be undertaken. This involves production of a preliminary functional design for the preferred on or off-road cycling facility segment. It also includes an estimate of the implementation costs, including construction and signing.

6.1.3 Phase 3: Facility Design

Once approval has been obtained to implement the cycling route segment, the required detailed design should be undertaken as outlined in **Section 4 (Bicycle Facility Design)**. This step is typically completed as part of a primary capital roads project such as a road widening. The third phase of the implementation process should also include the confirmation of potential partners (if any) and cost sharing opportunities. The project should then be scheduled into the municipal capital road program, and a suitable budget should be allocated. The final step involves tendering the project, followed by construction and implementation.

It is also possible that following the detailed design stage, a decision may be made not to proceed with the preferred facility type because of costs or other constraints that may arise through the detailed design process.

6.1.4 Phase 4: Monitoring Phase

Once cycling facilities have been constructed, their design and use should be monitored to ensure that they function in the manner that was intended. When necessary, the facilities should also be upgraded and maintained to ensure continued safe use by cyclists. A monitoring team should also check that the cycling facilities comply with current design guidelines. This step will involve the collection of data to assist in the monitoring step in the process.

6.1.5 Update to the Municipality's Official Plan

The fifth phase of the implementation process includes updating the Regional or Municipal Official Plans (when the next update is scheduled) to account for changes in AT policy and network routes.

Appendix H

Wayfinding / Signage Concept

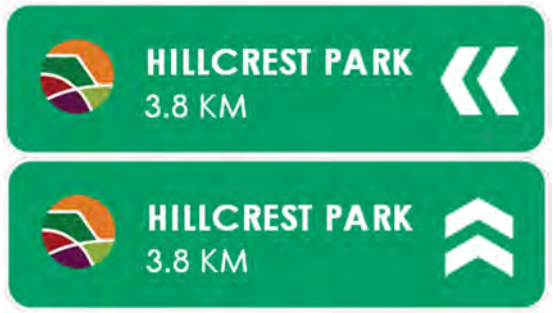
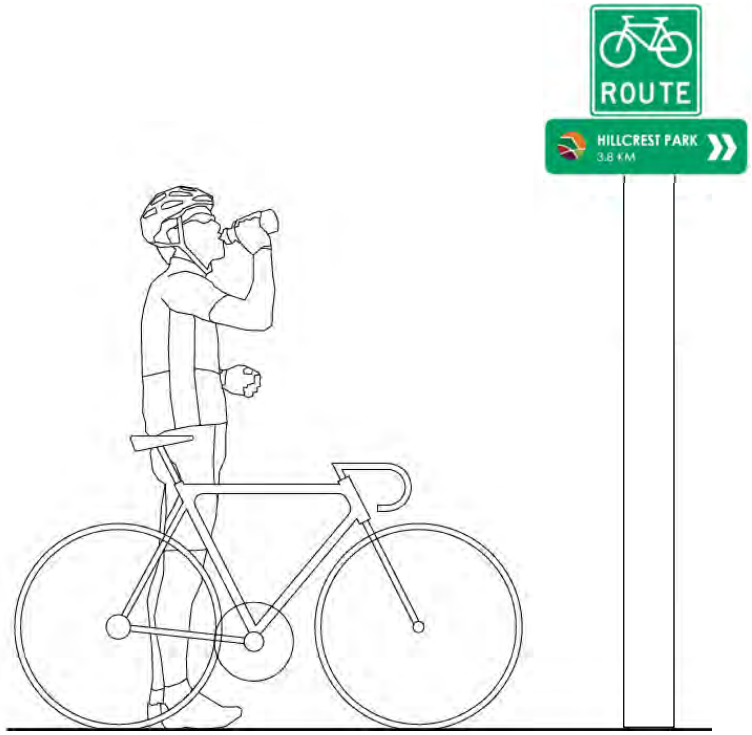
Regulatory and Warning Signs

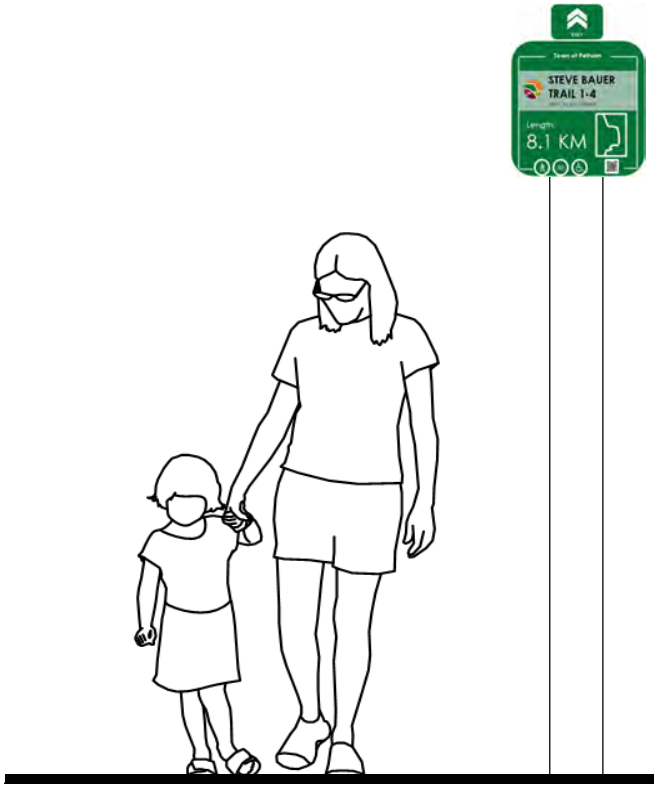
Sign Type	Description	Application	Reference	Dimensions	Other Information
Bicycle Route Marker Sign  M511 (OTM)	To be used on segments of a shared roadway that are designated as a bicycle route	• Signed Bike Route • Signed Bike Route with Sharrows • Signed Bike Route with Edgelines • Paved Shoulder • Buffered Paved Shoulder	OTM Book 18, Section 4.1.1.2 (page 44)	450mm x 450mm	• Placed every 2.0km on rural roadways • Placed every 400m to 800m on urban roadways • Installed on the far side of major intersections or other major decision points
Share the Road Sign  Wc-19 (OTM)  Wc-19t(OTM)	Intended to caution all road users on the approach to locations where there may be a change in the road configuration	• Signed Bike Route • Signed Bike Route with Sharrows	OTM Book 18, Section 4.1.1.2 (page 46)	600mm x 600mm 300mm x 600mm	• In locations where motorists are discouraged from passing cyclists, (i.e. where lane widths are narrow) the 'Shared Use Single File' sign (Wc-24, OTM) and supplementary tab sign (Wc-24t, OTM) should be installed
Shared Pathway Sign  Rb-71 (OTM)	To be installed along in-boulevard shared-use facilities to indicate that users are expected to share the space	• In-boulevard Trails	OTM Book 18, Section 4.4.1.2 (page 117)	300mm x 450mm	• Signs should be mounted with a minimum clearance of 2.5m between the pavement surface and lower edge of the sign • Installed on the far side of major intersections or other major decision points

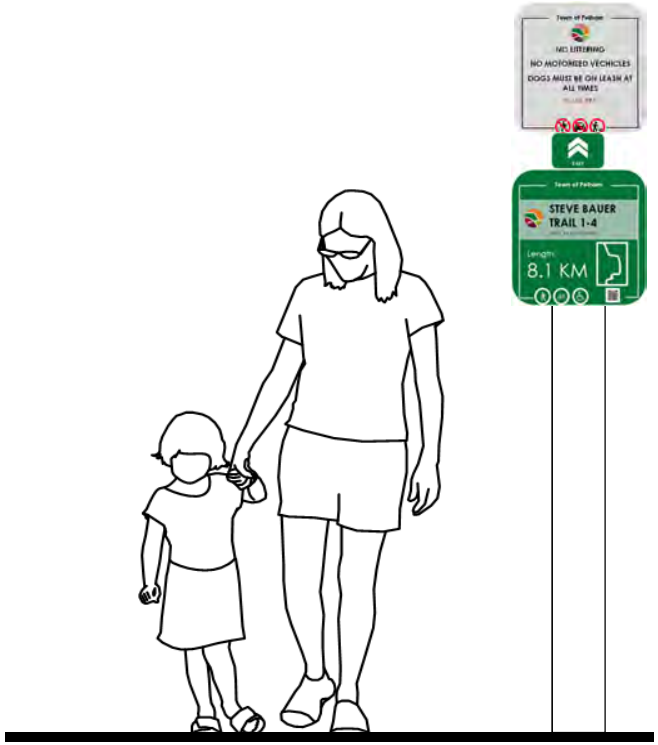
Sign Type	Description	Application	Reference	Dimensions	Other Information
Reserved Bicycle Lane Sign  RB-91 (TAC)	Used to designate an on-road lane for the exclusive use of cyclists	• Bike Lane • Buffered Bike Lane	OTM Book 18, Section 4.2.1.2 (page 63)	600mm x 750mm	• Maximum spacing between signs is 200m • Signs should be installed after every intersection • Oversized version may be used where traffic conditions warrant greater visibility
Reserved Bicycle Lane Sign  RB-92 (TAC)	Used to designate the terminus an on-road lane for the exclusive use of cyclists	• Bike Lane • Buffered Bike Lane	OTM Book 18, Section 4.2.1.2 (page 63)	600mm x 750mm	• Should be installed up to 15 metres upstream of the end of a bicycle lane • Share the Road sign should be installed following the end of a bicycle lane to indicate to users that they are entering a shared space

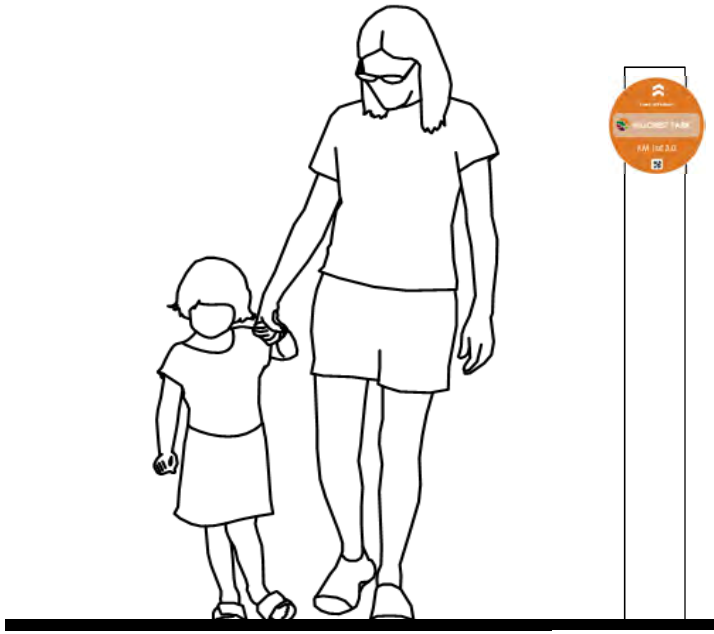
Wayfinding Signs

Sign Type	Description	Application	Colour Codes	Other Information
	Intended to inform on-road cyclists of the direction and distance to a nearby destination	• Signed Bike Route • Signed Bike Route with Sharrows • Signed Bike Route with Edgelines • Paved Shoulder • Buffered Paved Shoulder	R G B 29 168 113	• To be installed below the Bicycle Route Marker sign • Arrows oriented in the direction of travel
	To be installed at the entrance of off-road trails to inform users of trail start	• Off-Road Multi-Use Trail	R G B 92 17 69 160 30 33 222 120 38 137 171 62 4 116 59	• Sign to include the following information: o Level of difficulty o Trail name o Trail map o Trail length Permitted uses o QR code o Town or branding logo
	To be installed at the entrance of off-road trails and inform users of restricted activities consistent with municipal by-law(s)	• Off-Road Multi-Use Trail	R G B 217 217 217	• Sign should include relevant by-law information • Sign should be installed above trail entrance sign presented above
	Intended to inform users distance travelled along a trail	• Off-Road Multi-Use Trails	R G B 92 17 69 160 30 33 222 120 38 137 171 62 4 116 59	• To be installed at regular intervals or in locations where additional guidance may be needed e.g. change in direction on trail

Sign Type	Sign Design and Layout
	
	

Sign Type	Sign Design and Layout
	
	

Sign Type	Sign Layout
	

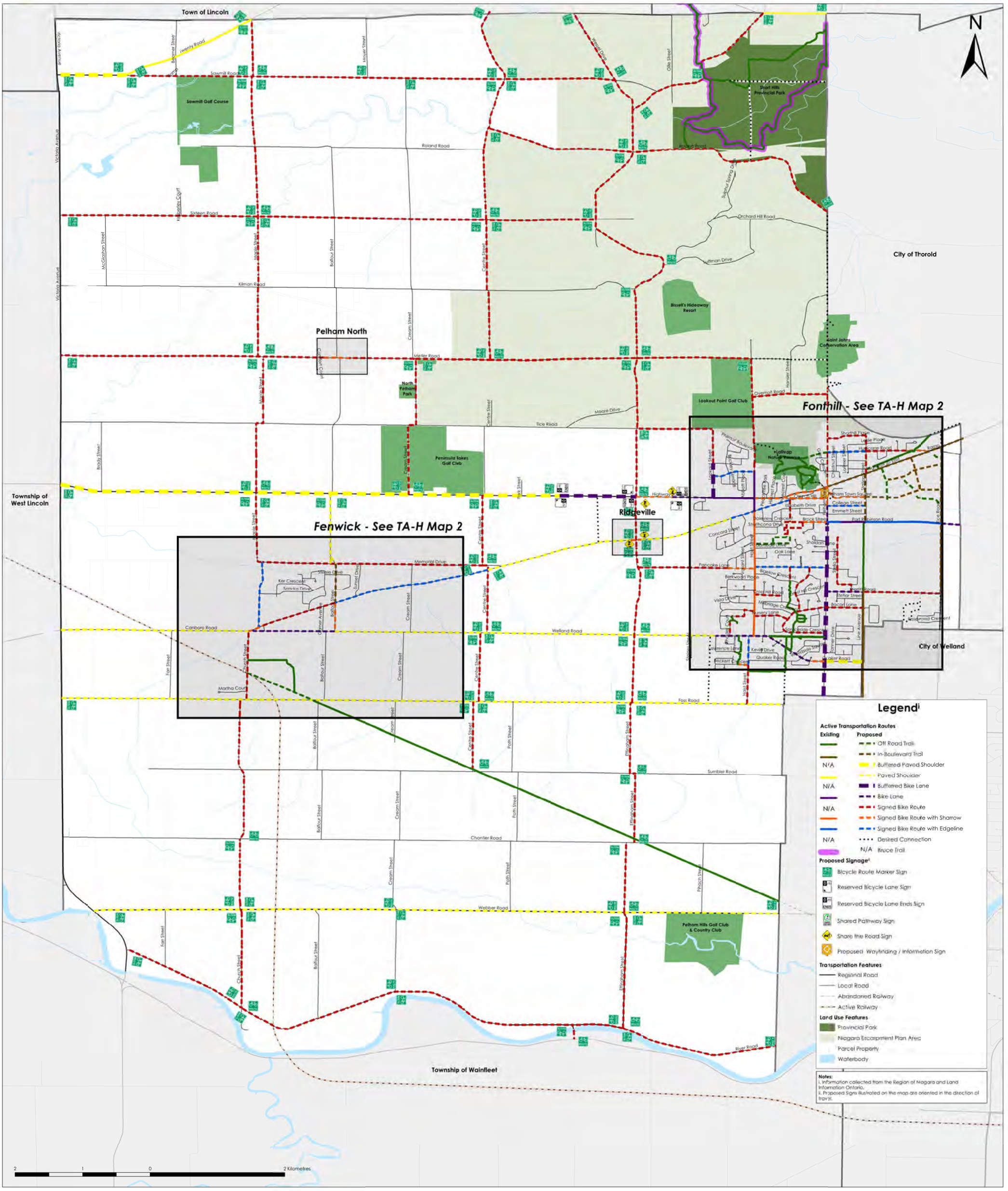
Sign Type	Sign Design and Layout
	 

ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TECHNICAL APPENDIX H MAP 1 - PROPOSED SIGNAGE (TOWN-WIDE)

TA-H Map 1

Pelham NIAGARA | WSP | MMM GROUP

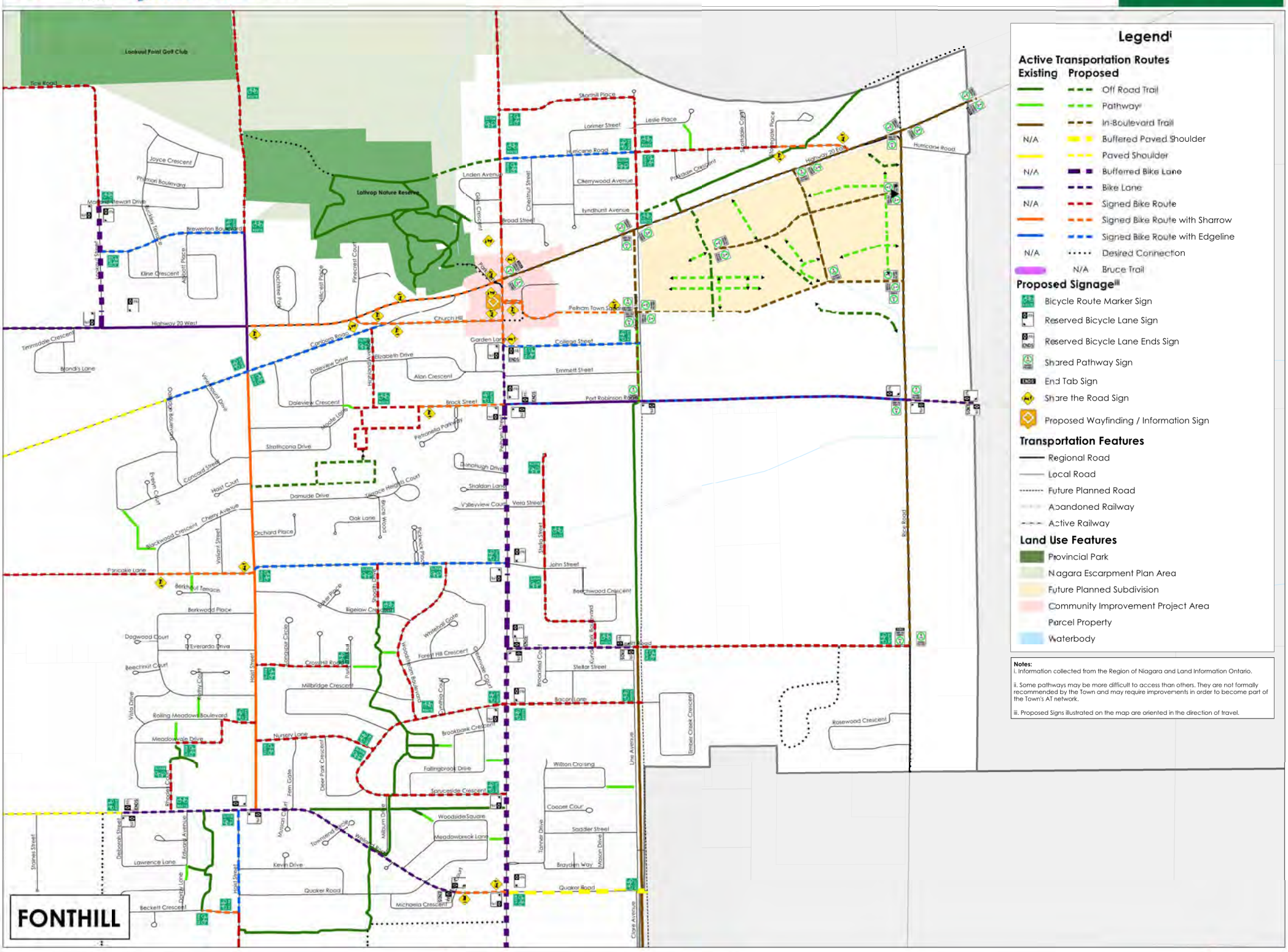


ACTIVE TRANSPORTATION (AT) MASTER PLAN & IMPLEMENTATION STRATEGY

TA-H Map 2

TECHNICAL APPENDIX H MAP 2 - PROPOSED SIGNAGE (URBAN AREAS)

Pelham NIAGARA | WSP | MMM GROUP



Legend[i]

Active Transportation Routes

Existing	Proposed
	Off Road Trail
	Pathway[ii]
	In-Boulevard Trail
N/A	Buffered Paved Shoulder
	Paved Shoulder
N/A	Buffered Bike Lane
	Bike Lane
N/A	Signed Bike Route
	Signed Bike Route with Sharrow
	Signed Bike Route with Edgeline
N/A	Desired Connection
N/A	Bruce Trail

Proposed Signage[iii]

- Bicycle Route Marker Sign
- Reserved Bicycle Lane Sign
- Reserved Bicycle Lane Ends Sign
- Shared Pathway Sign
- End Tab Sign
- Share the Road Sign
- Proposed Wayfinding / Information Sign

Transportation Features

- Regional Road
- Local Road
- Future Planned Road
- Abandoned Railway
- Active Railway

Land Use Features

- Provincial Park
- Niagara Escarpment Plan Area
- Future Planned Subdivision
- Community Improvement Project Area
- Parcel Property
- Waterbody

Notes:
i. Information collected from the Region of Niagara and Land Information Ontario.

ii. Some pathways may be more difficult to access than others. They are not formally recommended by the Town and may require improvements in order to become part of the Town's AT network.

iii. Proposed Signs illustrated on the map are oriented in the direction of travel.

Appendix I

Unit Costs

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ITEM	DESCRIPTION	UNIT	VALUE	COMMENTS/ASSUMPTIONS
1.0 GENERAL ACTIVE TRANSPORTATION FACILITIES				
Shared Lanes / Paved Shoulders				
1.1	Signed Bike Route in Urban Area	linear KM	$2,000.00	Price for both sides of the road, assumes one sign a minimum of every 330m / direction of travel (e.g. 6 signs / km).
1.2	Signed Bike Route in Rural Area	linear KM	$200.00	Price for both sides of the road, assumes one sign a minimum of every 600m / direction of travel (e.g. 4 signs / km)
1.3	Signed Bike Route with Sharrow Lane Markings	linear KM	$3,500.00	Price for both sides of the road, includes route signs every 330m ($1,500/km both sides), and sharrow stencil every 75m as per Ministry Guidelines (Painted $75 each x 26/km = $1,950 in table) If thermoplastic type product is used assume $250 / each x 26 = $6,500 source Flint Trading Inc.
1.4	Signed Route with Edgeline	linear KM	$4,000.00	Price for both sides of the road, includes signs and edge line. Price is for conventional paint, (assumes painted lane line at $1 / m + $2000 for signs)
1.5	Signed Bike Route with Wide Curb Lane with Construction of a New Road	linear KM	$60,000.00	Price for both sides of the road, assumes 0.5m to 1.0m widening on both sides of the road (3.5m to 4.0m)
1.6	Signed Bike Route with Wide Curb Lane with Road Reconstruction Project	linear KM	$240,000.00	Price for both sides of the road, includes curb replacement, catch basin adjustments, lead extensions and driveway ramps
1.7	Signed Bike Route with Paved Shoulder in conjunction with existing road reconstruction / resurfacing	linear KM	$200,000.00	Price for both sides of the road, 1.5m paved shoulder. Assumes cycling project pays for additional granular base, asphalt and edgeline. Price may vary from $110,000 to $150,000 depending on work needed to improve platform.
1.8	Signed Bike Route with Buffered Paved Shoulder in conjunction with existing road reconstruction / resurfacing project	linear KM	$150,000.00	Price for both sides of the road, 1.5m paved shoulder + 0.5 to 1.0m paved buffer, assumes cycling project pays for additional granular base, asphalt, edge lines and signs (buffer zone framed by white edge lines)
1.9	Addition of Rumble Strip to Existing Buffered Paved Shoulder (rural)	linear KM	$3,000.00	Price for both sides
1.1	Granular Shoulder Sealing	linear KM	$3,000.00	Both sides spray emulsion applied to harden the granular shoulder. This will reduce gravel on the paved portion of the shoulder and significantly reduce shoulder maintenance.
Conventional and Separated Bike Lanes				
1.11	Conventional 1.5m-1.8m Bicycle Lanes by Adding Bike Lane Markings and Signs	linear KM	$12,000.00	Price for both sides of the road, includes signs, stencils and edge line. Price is for conventional paint, (assumes painted lane line at $1 / m + $75 / symbol x 26 + $2000 for signs)increase budget to $20,000 /km for Thermoplastic) e.g. lane line in thermo is $5.50/m compared to $1.00/m for paint
1.12	Conventional 1.5m-1.8m Bicycle Lanes through Lane Conversion from 4 lanes to 3 lanes	linear KM	$35,000.00	Price for both sides. Includes grinding of existing pavement, markings, signs, line painting and symbols
1.13	Conventional 1.5m-1.8m Bicycle Lanes in Conjunction with a New Road or Road Reconstruction Project	linear KM	$300,000.00	Price for both sides of the road, assumes 1.5m bike lanes on both sides of the roadway (1.5m x 2 sides = 3.0m). Includes catch basin leads, asphalt, signs, pavement markings sub-base only. Road project funds all other improvements

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Conventional and Separated Bike Lanes - CONT'D				
1.14	Conventional 1.5m-1.8m Bicycle Lanes by Retrofitting / Widening Existing Road	linear KM	$700,000.00	Price for both sides of the road, includes the cost for excavation, adjust catch basins, lead extensions, new curbs/driveway ramps, asphalt and sub-base, pavement markings and signs.
1.15	Wide Bicycle Lane (2.0m - 2.5m BL) in Conjunction with New Road or Road Widening Project	linear KM	$250,000.00	Price for both sides of the road, assumes 2.0m to 2.5m bike lanes on both sides of the roadway . Includes catch basin leads, asphalt, signs, pavement markings sub-base only
1.16	Buffered Bicycle Lane with Hatched Pavement Markings - Assumes New Road or Road Reconstruction/Widening already Planned	linear KM	$350,000.00	Price for both sides of the road, assumes 1.5m bike lanes + 0.5m - 1.0m buffer zone with hatched pavement markings on both sides of the roadway. Includes catch basin leads, asphalt, signs, pavement markings sub-base only. Road project funds all other components
1.17	Buffered Bicycle Lane with Flex Bollards - Assumes New Road or Road Reconstruction/Widening Already Planned	linear KM	$365,000.00	Price for both sides of the road, assumes 1.5m bike lanes + flex bollards centered in hatched buffer zone at 10m intervals. Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) sub-base only
1.18	Buffered Bicycle Lane with Pre-Cast Barrier - Assumes New road or Road Reconstruction/Widening Already Planned	linear KM	$400,000.00	Price for both sides of the road, assumes 1.5m bike lanes + pre-cast and anchored curb delineators. Includes catch basin leads, asphalt, signs, edge line pavement markings (both sides of buffer zone) sub-base only
Cycle Tracks				
1.19	Uni-directional Cycle Tracks: Raised and Curb Separated - Retrofit Existing Roadway	linear KM	$500,000 - $1,200,000	Both sides. Includes construction but excludes design and signal modifications. Form of cycle track and materials as well as related components such as bike signals, upgrade/modification of signal controllers, utility/lighting pole relocations, bike boxes etc. are project specific and will impact unit price
1.20	Two Way Cycle Track - Retrofit Existing Roadway	linear KM	$500,000 - $800,000	One side. Includes construction but excludes design and signal modifications. Form of cycle track and materials as well as related components such as bike signals, upgrade/modification of signal controllers, utility/lighting pole relocations, bike boxes etc. are project specific and will impact unit price
Active Transportation Paths and Multi-Use Trails				
1.21	Two Way Active Transportation Multi-use path within road right-of-way	linear KM	$250,000.00	3.0m wide hard surface pathway (asphalt) within road right of way (no utility relocations)
1.22	Two Way Active Transportation Multi-use path within road right-of-way on one side with removal of existing sidewalk	linear KM	$275,000.00	3.0m wide hard surface pathway (asphalt) within road right of way on one side of road in place of 1.5m concrete sidewalk (includes crushing of existing sidewalk and compacting for trail base)
1.23	Concrete Splash Strip placed within road right-of-way between Active Transportation Multi-Use Path and Roadway	m^2	$150.00	Colour Stamped Concrete

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Active Transportation Paths and Multi-Use Trails - CONT'D				
1.24	Hard Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting (New)	linear KM	$250,000.00	3.0m wide hard surface pathway (asphalt) within park setting (normal conditions) 90mm asphalt depth
1.25	Hard Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting (Upgrade existing granular surface)	linear KM	$100,000.00	Includes some new base work (25% approx.), half of the material excavated is removed from site. Add trail marker signs
1.26	Granular Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Urban Setting	linear KM	$140,000.00	3.0m wide, compacted stone dust surface normal site conditions
1.27	Granular Surfaced Off-Road Multi-Use Trail Outside of Road Right-of-Way in an Rural Setting (New)	linear KM	$200,000.00	3.0m wide, compacted stone dust surface in complex site conditions (includes cost of clearing and grubbing)
1.28	Upgrade existing granular surface trail to meet 3.0m wide compacted granular trail standard	linear KM	$50,000.00	Includes some new base work (25% approx.) and an average of 20 regulatory signs per kilometre
1.29	Off-Road Multi-Use Trail Outside of Road Right-of-Way on Abandoned Rail Bed	linear KM	$80,000.00	3.0m wide, compacted stone dust surface, includes signage along trail and gates at road crossings
1.30	Granular Surfaced Multi-use Trail in a Woodland Setting	linear KM	$120,000.00	2.4m wide, compacted stone dust surface
2.0 PEDESTRIAN FACILITIES				
2.1	Sidewalk	m	$160.00	Price may vary from $90 to $160 / m for one side of the roadway. 1.5m concrete sidewalk.
3.0 STRUCTURES AND CROSSINGS				
3.1	Pedestrian Boardwalk (Light-Duty)	linear KM	$1,500,000.00	Structure on footings, 3.0m wide with railings
3.2	Self weathering steel truss bridge	m^2	$2000 - $2500	Footings/ abutments additional, assume $30,000 per side for spread footings; $50,000 - $90,000 per side for piles
3.3	Retrofit / Widen Existing Pedestrian / Trail Bridge (29m long, 3m clear width)	m^2	$2,500.00	Price assumes modifications to existing abutments
3.4	Grade separated cycling/overpass of major arterial/highway	each	$1,000,000- $8,000,000	Requirements and design vary widely, use price as general guideline only
3.5	Metal stairs with hand railing and gutter to roll bicycle	vertical M	$3,000.00	1.8m wide, galvanized steel
3.6	Pathway Crossing of Private Entrance	each	$1500 - $2000	Adjustment of existing curb cuts to accommodate 3.0m multi-use pathway
3.7	Median Refuge	each	$20,000.00	Average price for basic refuge with curbs, no pedestrian signals
3.8	Pedestrian and Cyclist Crossride	each	$80,000.00	Average price for pedestrian and cyclist crossride
3.9	Mid-block Crossing	each	$80,000.00	Average price for mid-block crossing

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3.0 STRUCTURES AND CROSSINGS - CONT'D				
3.10	Intersection Pedestrian Signal	each	$80,000.00	Average price for intersection pedestrian signal
3.11	At grade railway crossing	each	$120,000.00	Flashing lights, motion sensing switch (C.N. estimate)
3.12	At grade railway crossing with gate	each	$300,000.00	Flashing lights, motion sensing switch and automatic gate (C.N. estimate)
3.13	Below grade railway crossing	each	$500,000-$750,000	3.0m wide, unlit culvert style approx. 10 m long for single elevated railway track
3.14	Multi use subway under 4 lane road	each	$1,000,000-$1,200,000	Guideline price only for basic 3.3 m wide, lit.
3.15	Retaining Wall	m^2	$600.00	Face metre squared
4.0 BARRIERS AND ACCESS CONTROL FOR MULTI-USE TRAILS OUTSIDE OF THE ROAD RIGHT-OF-WAY				
4.1	Lockable gate (2 per road crossing)	each	$5,000.00	Heavy duty gates (e.g. equestrian supported step over gate). Price for one side of road - 2 required per road crossing. Typically only required in rural settings or city boundary areas
4.2	Metal offset gates	each	$1,200.00	"P"-style park gate
4.3	Removable Bollard	each	$500-$750	Basic style (e.g. 75mm diameter galvanized), with footing. Increase budget for decorative style bollards
4.4	Berming/boulders at road crossing	each	$600.00	Price for one side of road (2 required per road crossing)
4.5	Granular parking lot at staging area (15 car capacity-gravel)	each	$35,000.00	Basic granular surfaced parking area (i.e. 300mm granular B sub-base with 150mm granular A surface), with precast bumper curbs. Includes minor landscaping and site furnishings, such as garbage receptacles and bike racks.
4.6	Page wire fencing	linear M	$20.00	1.5m height with peeled wood posts
4.7	Chain link fencing	linear M	$100.00	Galvanized, 1.5m height
5.0 SIGNAGE				
5.1	Regulatory and caution Signage (off-road pathway) on new metal post	each	$150-$250	300mm x 300mm metal signboard c/w metal "u" channel post
5.2	Signboards for interpretive sign	each	$500-$800	Does not include graphic design. Based on a 600mm x 900mm typical size and embedded polymer material, up to 40% less for aluminum or aluminum composite panel
5.3	Staging area kiosk	each	$2,000-$10,000	Wide range provided. Price depends on design and materials selected. Does not include design and supply of signboards
5.4	Signboards for staging area kiosk sign	each	$1,500-$2,000	Typical production cost, does not include graphic design (based on a 900mm x 1500mm typical size and embedded polymer material). Up to 40% less for aluminum or aluminum composite panel
5.5	Pathway directional sign	each	$500-$750	Bollard / post (100mm x100mm marker), with graphics on all 4 sides
5.6	Pathway marker sign	each	$250.00	Bollard / post (100mm x100mm marker), graphics on one side only
5.7	Pathway marker sign	linear KM	$1,500.00	Price for both sides of the path, assumes one sign on average, per direction of travel every 0.5 km

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6.0 OTHER				
6.1	Bike Box	each	$1,000	Price may vary depending on road cross-section (e.g. two lane roadway, four lane roadway, etc.). Price includes installing a bike box on the approach of an intersection using a bike stencil and thermoplastic e.g. green surface treatment ($250 / each). Price also include estimate to move stop-bar back to provide space for bike box.
6.2	Major rough grading (for multi-use pathway)	m^3	$10-$25	Varies depending on a number of factors including site access, disposal location etc.
6.3	Clearing and Grubbing	m^2	$2.00	
6.4	Bicycle rack (Post and Ring style)	each	$150-$250	Holds 2 bicycles , price varies depending on manufacturer (includes installation)
6.5	Bicycle Rack	each	$1,000-$1,200	Holds 6 bicycles, price varies depending on manufacturer (includes installation)
6.6	Bicycle Locker	each	$3,000.00	Price varies depending on style and size. Does not include concrete mounting pad
6.7	Bike Loop	each	$2,500	Price for installation including labour and equipment. Price also includes materials e.g. two channel detector for traffic cabinet, bike loop (wire and sealant), cable to traffic cabinet, handhole and conduit.
6.8	Bicycle Corral (one parking space with bollards)	each	$1,500 to $2,900	Price may vary from $1,500 (galvanized finish with the mad shield corrosion warranty) to $2,900 (stainless finish with the mad shield corrosion warranty) for one parking space.
6.9	Bench	each	$1,000-$2,000	Price varies depending on style and size. Does not include footing/concrete mounting pad
6.10	Safety Railings/Rubrail	linear M	$100-$120	1.4m height basic post and rail style
6.11	Small diameter culvert	linear M	$150-$250	Price range applies to 400mm to 600mm diameter PVC or CSP culverts for drainage below trail
6.12	Pathway Lighting	linear M	$130-$160	Includes cabling, connection to power supply, transformers and fixtures
6.13	Relocation of Light / Support Pole	each	$4,000.00	Adjustment of pole offset (distance between pole and roadway)
6.14	Relocation of Signal Pole / Utility Box	each	$8,000.00	Adjustment of pole offset (distance between pole and roadway)
6.15	Flexible Bollards	each	$100.00	Should be placed at 10m intervals where required
6.16	Pavement Markings	linear M	$1.00	
6.17	Upgrade Granular Surface Back Road to Chip Seal Surface	linear M	$40,000.00	Price includes pulverizing existing surface with double treatment or tar and chip at 7m wide.

Notes:

1. Unit Prices are for functional design purposes only, include installation but exclude contingency, design and approvals costs (unless noted) and reflect 2016 dollars, based on projects in southern Ontario.
2. Estimates do not include the cost of property acquisitions, signal modifications, utility relocations, major roadside drainage works or costs associated with site-specific projects such as bridges, railway crossings, retaining walls, and stairways, unless otherwise noted.
3. Assumes typical environmental conditions and topography.
4. Applicable taxes and permit fees are additional.

Appendix J

Implementation Tracking Spreadsheet

ID	Street Name	From	To	Jurisidction	Length (km)	Hierarchy	Speed	AADT	Phasing	Field Investigation Observations
PROPOSED BIKE LANE		**Line Type:**			**Unit Cost:**	**$12,000 to $300,000**		**Total kms proposed:**	**4.3**	
1	Highway 20 East	Lookout Street	445m west of Lookout Street	Region	0.4	Regional Connector	N/A	N/A		
2	Merrit Road	Pelham Street	Rice Road	Municipal	0.4	Secondary	N/A	N/A		- Road reconstruction needed for bike lane implementation
3	Port Robinson Road	Pelham Street	Existing Port Robinson bike lanes	Municipal	0.1	Secondary	N/A	N/A		- Parking bay on south side of roadway in front of Glynn A Green Public School - Existing bike lanes from Pelham Street to Station Street: bike stencils and signage - Repaint / signs needed for bike lanes
4	Welland Road	Haist Street	Michaela Crescent	Municipal	0.7	Secondary	53-55	6410		- Repaint / signs needed for bike lanes
5	Welland Road	Church Street	Haist Street	Municipal	0.9	Primary	N/A	1506-2922		- Road construction needed to implement bike lanes
6	Welland Road	Deborah Street	Haist Street	Municipal	0.4	Primary	N/A	1506-2922		- Road construction needed to implement bike lanes
7	Port Robinson Road	Station Street	Town Boundary	Municipal	1.0	Secondary	N/A	N/A		- Station Street to Rice Road: - New road cross-section with curb and edgeline (1.8m) - Sidewalk on south side abutting curb. - Sidewalk on north side set back from roadway. - Narrow edgeline on south side of roadway (0.9m) - Repaint / signs needed for bike lanes
8	Pelham Street	College Street	Port Robinson Road	Municipal	0.2	Primary	N/A	N/A		- Road construction needed to implement bike lanes
PROPOSED BUFFERED BIKE LANE		**Line Type:**			**Unit Cost:**	**$350,000**		**Total kms proposed:**	**3.9**	
9	Lookout Street	Marlene Stewart Drive	Highway 20 West	Municipal	0.5	Secondary	N/A	N/A		- Wide cross-section - Roadway surface in good condition, urban cross-section (e.g. curb and gutter), lane markings - Repaint / signs needed for bike lanes
10	Highway 20 West	Effingham Street	EL Crossley Secondary School	Region	0.8	Regional Connector	N/A	N/A		
11	Pelham Street	Port Robinson Road	Pancake Lane	Municipal	0.7	Primary	N/A	N/A		- Road widening required to implement buffered bike lanes
12	Pelham Street	Town Boundary	Pancake Lane	Municipal	1.9	Primary	64-72	10552-11458		- Road widening required to implement buffered bike lanes
PROPOSED BUFFERED PAVED SHOULDER		**Line Type:**			**Unit Cost:**	**$150,000**		**Total kms proposed:**	**6.7**	
13	Highway 20 East	Regional Road 24 / Victoria Avenue	EL Crossley Secondary School	Region	5.5	Regional Connector	N/A	N/A		- Difficult crossing at Centre Street - Between Cream Street and Balfour Street: sidewalks on north side - Major signalized intersection at Regional Road 24 / Victoria Avenue
14	Quaker Road	Pelham Street	Town Boundary	Municipal	0.4	Secondary	5,420	63		- Between Pelham Street and Clare Avenue: no curb, pedestrian crossing beyond Town boundary
16	Regional Road 69	Regional Road 24 / Victoria Avenue	Sawmill Road	Region	0.8	Regional Connector	N/A	N/A		- Narrow paved shoulder, no existing platform - Existing regional bike map illustrates an existing paved shoulder on Regional Road 69; however, current paved shoulder is below OTM Book 18 minimum of 1.5m
PROPOSED IN-BOULEVARD TRAIL		**Line Type:**			**Unit Cost:**	**$250,000 to $275,000**		**Total kms proposed:**	**3.7**	
17	Highway 20 West	Station Street	Town Boundary	Region	1.2	Regional Connector	58-65	2312-3129		
18	Balfour Street	Memorial Drive	Canboro Road	Municipal	0.6	Primary	55-73	1080-1731		- Poor sightlines - Narrow roadway (less than 7m), no painted lane lines - Remove sidewalk on west side. Two way AT path.
19	Future Planned Road	Future Planned Subdivision boundary (Highway 20 East to south boundary of subdivision)	Future Planned Subdivision boundary (Station Road to Rice Road)	Municipal	2.0	Secondary	N/A	N/A		
20	Station Street	Highway 20 East	Port Robinson Road	Municipal	0.7	Secondary	N/A	N/A		
21	Highway 20 East	Pelham Street	Station Street	Region	0.5	Regional Connector	58-65	2312-3129		- Remove sidewalks on both sides. One way AT path.
22	Rice Road	Highway 20	Port Robinson Road	Region	1.1	Regional Connector	N/A	N/A		
23	Rice Road	Port Robinson Road	Merritt Road	Region	1.0	Regional Connector	N/A	N/A		- No curb or platform - Narrow road right-of-way (<7m)
PROPOSED OFF ROAD TRAIL		**Line Type:**			**Unit Cost:**	**$80,000 to $250,000**		**Total kms proposed:**	**7.4**	
24	Steve Bauer Trail	Port Robinson Road	Town Boundary	Municipal	2.3	Trail Connection	N/A	N/A		Existing trail - upgrade asphalt surface
25	Off Road Trail connection to Steve Bauer Trail	Lyndhurst Street	Steve Bauer Trail	Municipal	0.1	Trail Connection	N/A	N/A		
26	Off Road Trails in Fonthill East Development	Station Road	Rice Road	Municipal	3.2	Trail Connection	N/A	N/A		
27	Proposed trail along abandoned rail corridor	Church Street	Foss Road	Municipal	0.8	Trail Connection	N/A	N/A		
28	Proposed trail west to Lathrop Nature Reserve	Hurricane Street	Approximately 250m west	Municipal	0.2	Trail Connection	N/A	N/A		
29	Trail Connection at AK Wigg Public School	Haist Street	Fonthill Cemetery	Municipal	0.2	Trail Connection	N/A	N/A		
30	Trail Connection at AK Wigg Public School	Haist Street	Fonthill Cemetery	Municipal	0.5	Trail Connection	N/A	N/A		

Legend

- Short-term
- Medium-term
- Long-term

ID	Street Name	From	To	Jurisidction	Length (km)	Hierarchy	Speed	AADT	Phasing	Field Investigation Observations
PROPOSED PAVED SHOULDER		**Line Type:**			**Unit Cost:**	**$200,000**		**Total kms proposed:**	**25.4**	
31	Balfour Street	Highway 20	Memorial Drive	Municipal	1.1	Primary	72-80	2074		- Poor sightlines - Narrow roadway (less than 7m), no painted lane lines
32	Balfour Street	Memorial Drive	Approximately 120m north	Municipal	0.1	Primary	N/A	N/A		- Poor sightlines - Narrow roadway (less than 7m), no painted lane lines - Capital Budget, 2021 road rehabilitation
33	Canboro Road	Centre Street	60m west of Effingham Street	Municipal	1.6	Primary	58-65	2312-3129		- Bicycle friendly business - Ridge Berry Farms (a 'Bike Friendly' sign outside in parking lot) - Existing rumble strips - Existing narrow sidewalk
34	Canboro Road	Regional Road 24 / Victoria Avenue	Church Street	Municipal	2.0	Primary	N/A	N/A		- Narrow shoulder - Scenic roadway
35	Canboro Road	55m east of Effingham Street	Oakridge Boulevard	Municipal	1.0	Primary	58-65	2312-3129		- Existing narrow sidewalk
36	Foss Road	Regional Road 24 / Victoria Avenue	Haist Street	Municipal	7.5	Secondary	51-78	1136-2650		
37	Foss Road	Town Boundary	Haist Street	Municipal	0.4	Secondary	51-78	1136-2650		
38	Regional Road 29 / Webber Road	Victoria Avenue	Murdock Road	Region	7.5	Regional Connector	N/A	N/A		
39	Welland Road	Deborah Street	Haist Street	Municipal	4.2	Primary	N/A	1506-2922		
PROPOSED SIGNED BIKE ROUTE		**Line Type:**			**Unit Cost:**	**$200 - $2,000**		**Total kms proposed:**	**91.4**	**15.31**
40	Centre Street	Highway 20	Memorial Drive	Municipal	1.0	Secondary	78	587		- Add Share the Road signs at constrained locations
41	Canboro Road	Baxter Lane	Balfour Street	Municipal	0.9	Primary	58-65	2312-3129		- Narrow shoulder - Scenic roadway
42	Centre Street	Sawmill Road	Town Boundary	Municipal	1.1	Secondary	62-72	228		- Add Share the Road signs at constrained locations
43	Centre Street	Sawmill Road	Roland Road	Municipal	1.1	Primary	65-83	169-209		- Add Share the Road signs at constrained locations - Capital Budget, 2018 road rehabilitation
44	Centre Street	Foss Road	Sumbler Road	Municipal	1.0	Secondary	N/A	N/A		
45	Centre Street	Welland Road	Foss Road	Municipal	1.0	Secondary	N/A	N/A		- No existing shoulder
46	Centre Street	Memorial Drive	Welland Road	Municipal	1.1	Secondary	78	587		- Add Share the Road signs at constrained locations
47	Cream Street	Metler Road	Tice Road	Municipal	1.1	Primary	79	409		- Observed cyclists along Cream Street - Good sightlines - Roadway surface in good condition - Roadway should be primary route - Capital Budget, 2020 road rehabilitation
48	Cream Street	Tice Road	Highway 20	Municipal	1.0	Primary	79-82	383		- Observed cyclists along Cream Street - Good sightlines - Roadway surface in good condition - Roadway should be primary route
49	Centre Street	Sixteen Road	Metler Road	Municipal	2.1	Secondary	65-83	169-209		- Add Share the Road signs at constrained locations
50	Centre Street	Roland Road	Sixteen Road	Municipal	1.0	Secondary	65-83	169-209		- Add Share the Road signs at constrained locations
51	Church Street	Foss Road	River Road	Municipal	4.6	Secondary	N/A	N/A		Capital Budget, 2017 road rehabilitation
52	Church Street	Canboro Road	Foss Road	Municipal	1.0	Primary	N/A	N/A		- New sidewalks north of Foss Road
53	Cross Hill Road	Packhill Road	Haist Street	Municipal	0.3	Secondary	N/A	N/A		
54	Effingham Street	Metler Road	Wessel Drive	Municipal	4.4	Secondary	67-84	1408-2425		
55	Effingham Street	Chantler Road	Regional Road 29 / Webber Road	Municipal	1.0	Primary	78	513		- At trail crossing (north of Chantler Road): - Existing signage to prohibit the use of motorized vehicles and small stop signs - South of Webber Road: granular shoulders, platform, good sightlines, roadway surface in poor condition
56	Regional Road 529 / Effingham Street	Regional Road 29 / Webber Road	River Road	Region	1.7	Regional Connector	N/A	N/A		- At trail crossing (north of Chantler Road): - Existing signage to prohibit the use of motorized vehicles and small stop signs - South of Webber Road: granular shoulders, platform, good sightlines, roadway surface in poor condition
57	Effingham Street	Metler Road	Canboro Road	Municipal	2.7	Primary	61-84	638-2909		- Signalized intersection at Highway 20 - At Canboro Road: stop controlled intersection, high utilization of on-street parking, low density commercial use including bakery, restaurant, shops
58	Effingham Street	Bruce Trail	Town Boundary	Municipal	1.3	Secondary	75-80	2131		- Existing trail connection to Bruce Trail - Add Share the Road signs at constrained locations
59	Fonthill Cemetery	Brock Street	AK Wigg Public School	Municipal	0.4	Secondary	N/A	N/A		
60	Fonthill Cemetery	Fonthill Cemetery	Fonthill Cemetery	Municipal	0.1	Secondary	N/A	N/A		
61	Fonthill Cemetery	Fonthill Cemetery	Fonthill Cemetery	Municipal	0.1	Secondary	N/A	N/A		
62	Fonthill Cemetery	Brock Street	AK Wigg Public School	Municipal	0.2	Secondary	N/A	N/A		
63	Effingham Street	Foss Road	Sumbler Road	Municipal	1.1	Primary	61-84	638-2909		- Capital Budget, 2021 road rehabilitation
64	Effingham Street	Wessel Drive	Bruce Trail	Municipal	1.0	Secondary	67-84	1408-2425		
65	Effingham Street	Sumbler Road	Chantler Road	Municipal	1.0	Primary	61-84	638-2909		- Capital Budget, 2020 / 2021 road rehabilitation
66	Effingham Street	Canboro Road	Foss Road	Municipal	2.4	Primary	61-84	638-2909		
67	Haist Street	Metler Road	Overholt Road	Municipal	0.6	Primary	N/A	N/A		- Add Share the Road signs at constrained locations
68	Haist Street	Overholt Road	Brewerton Boulevard	Municipal	1.1	Primary	N/A	N/A		- Roadway narrows north of Brewerton Boulevard - Add Share the Road signs at constrained locations
69	Hurricane Road	Station Street	Stonegate Place	Municipal	0.4	Secondary	N/A	N/A		- West of Highway 20 East crossing: rural road (e.g. no curb), 8.1m cross-section - Trail crossing with trailhead / staging area including access gate, seating, trash receptacle. Signage
70	Haist Street	Beckett Crescent	Foss Road	Municipal	0.6	Secondary	N/A	N/A		
71	Highland Avenue	Canboro Road	Fonthill Cemetery	Municipal	0.3	Secondary	N/A	N/A		
72	Lookout Street	Tice Road	Marlene Stewart Drive	Municipal	0.5	Secondary	N/A	N/A		- Wide cross-section - Roadway surface in good condition, urban cross-section (e.g. curb and gutter), lane markings
73	Maple Street	Metler Road	Regional Road 69 / Twenty Road	Municipal	5.0	Primary	51-83	284-290		- Roadway surface in good condition - Good sightlines

Legend

Short-term
Medium-term
Long-term

ID	Street Name	From	To	Jurisidction	Length (km)	Hierarchy	Speed	AADT	Phasing	Field Investigation Observations
PROPOSED SIGNED BIKE ROUTE		**Line Type:**			**Unit Cost:**	**$200 - $2,000**		**Total kms proposed:**	**91.4**	
74	Maple Street	Metler Road	Tice Road	Municipal	1.1	Secondary	77-83	291		- Good crossing at Maple Street and Tice Road - Roadway surface in good condition - Good sightlines - Capital Budget, 2018 road rehabilitation
75	Maple Street	Tice Road	Highway 20	Municipal	1.0	Secondary	73-82	342		- Good crossing at Maple Street and Tice Road - Roadway surface in good condition - Good sightlines - Capital Budget, 2018 road rehabilitation
76	Maple Street	Highway 20	Memorial Drive	Municipal	1.1	Secondary	77-80	776		- Roadway surface in good condition - Good sightlines
77	Memorial Drive	Maple Street	Centre Street	Municipal	2.4	Secondary	55-69	300-499		- Scenic roadway, ditches, berm on north side of roadway, quiet roadway
78	Merrit Road	Pelham Street	Rice Road	Municipal	0.9	Secondary	N/A	N/A		
79	Metler Road	Regional Road 24 / Victoria Avenue	Pelham North Boundary	Municipal	2.9	Primary	62-90	292-746		
80	Metler Road	Centre Street	Haist Street	Municipal	2.8	Primary	62-90	292-746		- Capital Budget, 2020 road rehabilitation
81	Metler Road	Cream Street	Centre Street	Municipal	0.8	Primary	62-90	292-746		
82	Metler Road	Pelham North - West Boundary	Cream Street	Municipal	0.7	Primary	62-90	292-746		
83	Nursery Lane / Bacon Lane	Haist Street	Pelham Street	Municipal	1.5	Secondary	N/A	N/A		
84	O'Reilly's Road North	River Road	Town Boundary	Region	0.2	Regional Connector	N/A	N/A		
85	Overholt Road	Haist Street	Pelham Street	Municipal	0.8	Secondary	N/A	N/A		
86	Pancake Lane	Blackwood Crescent	Effingham Street	Municipal	1.0	Secondary	59-64	804		- Capital Budget, 2018 road rehabilitation
87	Pelham Street	Town Boundary	170m north of Highway 20 East	Municipal	1.3	Primary	N/A	N/A		
88	River Road	Regional Road 24 / Victoria Avenue	O'Reilly's Road North	Municipal	4.8	Secondary	N/A	N/A		- Add Share the Road signs at constrained locations
89	River Road	Effingham Street	O'Reilly's Road North	Region	0.6	Regional Connector	84-94	195		- Add Share the Road signs at constrained locations
90	River Road	Regional Road 24 / Victoria Avenue	O'Reilly's Road North	Region	0.7	Regional Connector	N/A	N/A		- Add Share the Road signs at constrained locations
91	River Road	Effingham Street	Town Boundary	Municipal	1.8	Secondary	N/A	N/A		
92	Sawmill Road	Maple Street	Centre Street	Municipal	2.7	Primary	79-84	255-342		- Good sightlines - Roadway surface in good condition - Roadway should be primary route
93	Sawmill Road	Regional Road 69 / Twenty Road	Effingham Street	Municipal	1.4	Primary	79-84	255-342		
94	Sawmill Road	Centre Street	Wessel Drive	Municipal	1.2	Primary	79-84	255-342		
95	Station Street	Highway 20 East	Pelham Town Square	Municipal	0.6	Secondary	N/A	N/A		Road construction needed
96	Stella Street	Merrit Road	Road terminus	Municipal	1.0	Secondary	N/A	N/A		
97	Tice Road	Effingham Street	Lookout Street	Municipal	0.8	Secondary	81	257		- Large / deep ditches on south side of roadway - Narrow platform, no shoulder - Recommended treatment: signed bike route - Roadway narrows between Centre Street and Effingham Street
98	Wessel Drive	Effingham Street	Ollie Street	Municipal	1.6	Secondary	75-78	509		- Capital Budget, 2019 road rehabilitation
99	Roland Road	Effingham Jay	Town Boundary	Municipal	2.7	Secondary	73-77	181-589		- Add Share the Road signs at constrained locations
100	Roland Road	Centre Street	Effingham Street	Municipal	1.6	Secondary	73-77	181-589		
101	Shoalts Drive	Pancake Lane	Bigelow Crescent	Municipal	0.2	Secondary	N/A	N/A		
102	Shorthill Place	Pelham Street	Station Street	Municipal	0.4	Secondary	N/A	N/A		
103	Sixteen Road	Regional Road 64 / Victoria Avenue	Effingham Street	Municipal	4.6	Secondary	85-98	706-1204		
104	Sixteen Road	Centre Street	Effingham Street	Municipal	1.2	Secondary	85-98	706-1204		
105	Woodstream Boulevard	Pancake Lane	Spruceside Crescent	Municipal	0.7	Secondary	N/A	N/A		
106	Rolling Meadows Boulevard / Meadowvale Drive	Haist Street	Existing Off-Road Trail	Municipal	0.3	Secondary	N/A	N/A		
107	Rhodes Court	Welland Road	Existing Off-Road Trail	Municipal	0.2	Secondary	N/A	N/A		
108	Nursery Lane	Haist Street	Spruceside Crescent	Municipal	0.4	Secondary	N/A	N/A		
PROPOSED SIGNED BIKE ROUTE WITH EDGELINE		**Line Type:**			**Unit Cost:**	**$4,000**		**Total kms proposed:**	**6.1**	
109	Canboro Road	Church Hill	Oakridge Boulevard	Municipal	0.8	Primary	58-65	2312-3129		- Narrow shoulder - Scenic roadway
110	College Street	Pelham Street	Station Street	Municipal	0.4	Secondary	N/A	N/A		- Narrow roadway with on-street parking
111	Pancake Lane	Haist Street	Pelham Street	Municipal	0.8	Secondary	N/A	N/A		- Enhance crossing at Pelham Street - Old trees along roadway - No curb, ditched on south side of roadway - Crossing at Haist Street off-set - Capital Budget, 2021 road reconstruction
112	Brewerton Boulevard	Lookout Street	Haist Street	Municipal	0.5	Secondary	N/A	N/A		
113	Canboro Road	Balfour Street	Centre Street	Municipal	1.7	Primary	58-65	2312-3129		- Narrow shoulder - Scenic roadway - Add Share the Road signs at constrained locations
114	Haist Street	Welland Road	Beckett Crescent	Municipal	0.4	Secondary	N/A	N/A		
115	Hurricane Road	Station Street	Pelham Street	Municipal	0.4	Secondary	N/A	N/A		- East of Pelham Street: rural road (e.g. no curb), roadway surface in poor condition, utilities close to roadway, 9.5m cross-section
116	Maple Street	Memorial Drive	Canboro Road	Municipal	1.0	Secondary	60-67	923-1052		- Roadway surface in good condition - Good sightlines
117	Maple Street	Canboro Road	Approximately 35m north	Municipal	0.0	Secondary	59	1052		- Roadway surface in good condition - Good sightlines

Legend

- Short-term
- Medium-term
- Long-term

ID	Street Name	From	To	Jurisidction	Length (km)	Hierarchy	Speed	AADT	Phasing	Field Investigation Observations
PROPOSED SIGNED BIKE ROUTE WITH SHARROWS			**Line Type:**		**Unit Cost:**	**$3,500**		**Total kms proposed:**	**4.8**	
118	Balfour Street	Canboro Road	Welland Road	Municipal	0.4	Secondary	55-73	1080-1731		- Poor sightlines - Narrow roadway (less than 7m), no painted lane lines
119	Brock Street	Road Terminus	Pelham Street	Municipal	0.3	Secondary	N/A	N/A		
120	Beckett Crescent	Haist Street	Existing Off-Road Trail west of Haist Street	Municipal	0.1	Secondary	N/A	N/A		
121	Canboro Road	Church Street	Baxter Lane	Municipal	0.2	Primary	N/A	N/A		- Narrow shoulder - Scenic roadway - Implement green backed sharrows through downtown Fenwick
122	Canboro Road	60m west of Effingha Strete	55m east of Effingham Street	Municipal	0.1	Primary	58-65	2312-3129		- Existing rumble strips - Existing narrow sidewalk
123	Church Hill	Highway 20 East	Pelham Street	Municipal	0.5	Secondary	N/A	N/A		
124	Highway 20 East	Regional Road 24 / Victoria Avenue	Canboro Road	Region	0.4	Regional Connector	N/A	N/A		
125	Highway 20 East	Pelham Street	Haist Street	Region	0.8	Regional Connector	58-65	2312-3129		- Construction on short-section west of crossing with Pelham Street - Wide sidewalks east of Haist Street - Add Share the Road signs at constrained locations
126	Hurricane Road	Stonegate Place	Highway 20 East	Municipal	0.2	Secondary	N/A	N/A		- West of Highway 20 East crossing: rural road (e.g. no curb), 8.1m cross-section
127	Metler Road	Pelham North - East Boundary	Pelham North - West Boundary	Municipal	0.3	Primary	62-90	292-746		
128	Pancake Lane	Blackwood Crescent	Haist Street	Municipal	0.3	Secondary	59-64	804		- Crossing at Haist Street off-set
129	Pelham Street	170m north of Highway 20	Highway 20 East	Municipal	0.2	Primary	N/A	N/A		
130	Pelham Street	Highway 20 East	College Street	Municipal	0.3	Primary	N/A	N/A		- Crossing at Highway 20 / Canboro Road: busy intersection (downtown), pedestrian crossing - Implement green backed sharrows
131	Pelham Town Sqaure	Station Road	Pelham Town Square	Municipal	0.4	Secondary	N/A	N/A		
132	Welland Road	Michaela Crescent	Pelham Street	Municipal	0.2	Secondary	53-55	6410		
133	Pelham Town Square	Pelham Street	Pelham Town Square	Municipal	0.1	Secondary	N/A	N/A		

Legend

- Short-term
- Medium-term
- Long-term

Technical Appendix J - Short Term Network Summary

Final September 2016

ID	Street Name	From	To	Length (km)	Hierarchy	Capital Project Details				Estimated Cost	
						Project	Year	Improvement	Cost[1]	Town	Region
PROPOSED BIKE LANE		**Line Type:**		**Unit Cost:**	**$12,000**	**Total kms:**	**1.7**				
1	Highway 20 East	Lookout Street	445m west of Lookout Street	0.4	Regional Connector						$ 5,329
7	Port Robinson Road	Station Street	Town Boundary	1.0	Secondary					$ 12,317	
8	Pelham Street	College Street	Port Robinson Road	0.2	Primary	●	2024	Road Reconstruction	$ 625,000		
PROPOSED BUFFERED BIKE LANE		**Line Type:**		**Unit Cost:**	**$700,000**	**Total kms:**	**0.5**				
9	Lookout Street	Marlene Stewart Drive	Highway 20 West	0.5	Secondary					$ 6,193	
PROPOSED IN-BOULEVARD TRAIL		**Line Type:**		**Unit Cost:**	**$250,0000 to $275,0000**	**Total kms:**	**6.5**				
17	Highway 20 West	Station Street	Town Boundary	1.2	Regional Connector						$ 326,023
19	Future Planned Road	Future Planned Subdivision boundary (Highway 20 East to south boundary of subdivision)	Future Planned Subdivision boundary (Station Road to Rice Road)	2.0	Secondary					$ 492,564	
20	Station Street	Highway 20 East	Port Robinson Road	0.7	Secondary					$ 180,791	
21	Highway 20 East	Pelham Street	Station Street	0.5	Regional Connector						$ 129,400
22	Rice Road	Highway 20	Port Robinson Road	1.1	Regional Connector						$ 284,170
23	Rice Road	Port Robinson Road	Merritt Road	1.0	Regional Connector						$ 260,834
PROPOSED OFF ROAD TRAIL		**Line Type:**		**Unit Cost:**	**$80,000**	**Total kms:**	**6.4**				
24	Steve Bauer Trail	Port Robinson Road	Town Boundary	2.3	Trail Connection					$ 113,971	
25	Off Road Trail connection to Steve Bauer Trail	Lyndhurst Street	Steve Bauer Trail	0.1	Trail Connection					$ 30,862	
26	Off Road Trails in Fonthill East Development	Station Road	Rice Road	3.2	Trail Connection					$ 788,378	
27	Proposed trail along abandoned rail corridor	Church Street	Foss Road	0.8	Trail Connection					$ 65,302	
PROPOSED PAVED SHOULDER		**Line Type:**		**Unit Cost:**	**$200,000**	**Total kms:**	**7.9**				
36	Foss Road	Regional Road 24 / Victoria Avenue	Haist Street	7.5	Secondary					$ 1,495,617	
37	Foss Road	Town Boundary	Haist Street	0.4	Secondary	●	2020	Road Rehabilitation	$ 115,000		
PROPOSED SIGNED BIKE ROUTE		**Line Type:**		**Unit Cost:**	**$200 - $2,000**	**Total kms:**	**76.2**				
41	Canboro Road	Baxter Lane	Balfour Street	0.9	Primary	●	2019	Road Reconstruction	$ 880,000		
42	Centre Street	Sawmill Road	Town Boundary	1.1	Secondary					$ 211	
43	Centre Street	Sawmill Road	Roland Road	1.1	Primary	●	2018	Road Rehabilitation	$ 96,646		
44	Centre Street	Foss Road	Sumbler Road	1.0	Secondary					$ 208	
45	Centre Street	Welland Road	Foss Road	1.0	Secondary					$ 205	
46	Centre Street	Memorial Drive	Welland Road	1.1	Secondary					$ 213	
49	Centre Street	Sixteen Road	Metler Road	2.1	Secondary					$ 417	
50	Centre Street	Roland Road	Sixteen Road	1.0	Secondary					$ 209	
51	Church Street	Foss Road	River Road	4.6	Secondary	●	2017 & 2019	Road Rehabilitation	$ 176,040		
52	Church Street	Canboro Road	Foss Road	1.0	Primary					$ 2,041	
53	Cross Hill Road	Packhill Road	Haist Street	0.3	Secondary					$ 589	
54	Effingham Street	Metler Road	Wessel Drive	4.4	Secondary					$ 875	
55	Effingham Street	Chantler Road	Regional Road 29 / Webber Road	1.0	Primary					$ 208	
56	Regional Road 529 / Effingham Street	Regional Road 29 / Webber Road	River Road	1.7	Regional Connector						$ 345
57	Effingham Street	Metler Road	Canboro Road	2.7	Primary	●	2017	Road Rehabilitation	$ 115,000		
58	Effingham Street	Bruce Trail	Town Boundary	1.3	Secondary					$ 254	
63	Effingham Street	Foss Road	Sumbler Road	1.1	Primary	●	2021	Road Rehabilitation	$ 174,898		
64	Effingham Street	Wessel Drive	Bruce Trail	1.0	Secondary					$ 192	
65	Effingham Street	Sumbler Road	Chantler Road	1.0	Primary	●	2020 / 2021	Road Rehabilitation	$ 185,250		
66	Effingham Street	Canboro Road	Foss Road	2.4	Primary					$ 485	
67	Haist Street	Metler Road	Overholt Road	0.6	Primary					$ 1,129	
68	Haist Street	Overholt Road	Brewerton Boulevard	1.1	Primary					$ 2,226	
69	Hurricane Road	Station Street	Stonegate Place	0.4	Secondary					$ 872	

Technical Appendix J - Short Term Network Summary

Final September 2016

ID	Street Name	From	To	Length (km)	Hierarchy	Capital Project Details				Estimated Cost	
						Project	Year	Improvement	Cost[1]	Town	Region
PROPOSED SIGNED BIKE ROUTE		**Line Type:**		**Unit Cost:**	**$200 - $2,000**	**Total kms:**	**76.2**				
72	Lookout Street	Tice Road	Marlene Stewart Drive	0.5	Secondary					$ 1,011	
73	Maple Street	Metler Road	Regional Road 69 / Twenty Road	5.0	Primary	●	2018	Road Rehabilitation	$ 19,630		
74	Maple Street	Metler Road	Tice Road	1.1	Secondary						
75	Maple Street	Tice Road	Highway 20	1.0	Secondary	●	2018	Road Rehabilitation	$ 23,639		
76	Maple Street	Highway 20	Memorial Drive	1.1	Secondary					$ 2,148	
77	Memorial Drive	Maple Street	Centre Street	2.4	Secondary					$ 4,805	
78	Merrit Road	Pelham Street	Rice Road	0.9	Secondary					$ 1,713	
79	Metler Road	Regional Road 24 / Victoria Avenue	Pelham North Boundary	2.9	Primary					$ 574	
80	Metler Road	Centre Street	Haist Street	2.8	Primary	●	2020	Road Rehabilitation	$ 29,000		
81	Metler Road	Cream Street	Centre Street	0.8	Primary					$ 162	
82	Metler Road	Pelham North - West Boundary	Cream Street	0.7	Primary					$ 145	
83	Nursery Lane / Bacon Lane	Haist Street	Pelham Street	1.5	Secondary					$ 3,078	
84	O'Reilly's Road North	River Road	Town Boundary	0.2	Regional Connector						$ 42
85	Overholt Road	Haist Street	Pelham Street	0.8	Secondary					$ 1,644	
86	Pancake Lane	Blackwood Crescent	Effingham Street	1.0	Secondary	●	2018	Road Rehabilitation	$ 61,372		
87	Pelham Street	Town Boundary	170m north of Highway 20 East	1.3	Primary					$ 2,624	
88	River Road	Regional Road 24 / Victoria Avenue	O'Reilly's Road North	4.8	Secondary					$ 969	
89	River Road	Effingham Street	O'Reilly's Road North	0.6	Regional Connector						$ 111
90	River Road	Regional Road 24 / Victoria Avenue	O'Reilly's Road North	0.7	Regional Connector						$ 132
91	River Road	Effingham Street	Town Boundary	1.8	Secondary					$ 353	
92	Sawmill Road	Maple Street	Centre Street	2.7	Primary					$ 549	
93	Sawmill Road	Regional Road 69 / Twenty Road	Effingham Street	1.4	Primary					$ 274	
94	Sawmill Road	Centre Street	Wessel Drive	1.2	Primary					$ 241	
95	Station Street	Highway 20 East	Pelham Town Square	0.6	Secondary					$ 1,113	
96	Stella Street	Merrit Road	Road terminus	1.0	Secondary					$ 1,947	
97	Tice Road	Effingham Street	Lookout Street	0.8	Secondary					$ 164	
98	Wessel Drive	Effingham Street	Ollie Street	1.6	Secondary	●	2019	Road Rehabilitation	$ 97,367		
101	Shoalts Drive	Pancake Lane	Bigelow Crescent	0.2	Secondary					$ 414	
106	Rolling Meadows Boulevard /	Haist Street	Existing Off-Road Trail	0.3	Secondary					$ 691	
107	Rhodes Court	Welland Road	Existing Off-Road Trail	0.2	Secondary					$ 403	
108	Nursery Lane	Haist Street	Spruceside Crescent	0.4	Secondary					$ 756	
PROPOSED SIGNED BIKE ROUTE WITH EDGELINE		**Line Type:**		**Unit Cost:**	**$4,000**	**Total kms:**	**4.1**				
112	Brewerton Boulevard	Lookout Street	Haist Street	0.5	Secondary					$ 464	
113	Canboro Road	Balfour Street	Centre Street	1.7	Primary					$ 1,868	
114	Haist Street	Welland Road	Beckett Crescent	0.4	Secondary	●	2019	Road Reconstruction	$ 111,150		
115	Hurricane Road	Station Street	Pelham Street	0.4	Secondary					$ 1,725	
116	Maple Street	Memorial Drive	Canboro Road	1.0	Secondary					$ 1,681	
117	Maple Street	Canboro Road	Approximately 35m north	0.03	Secondary					$ 138	

Technical Appendix J - Short Term Network Summary

Final September 2016

ID	Street Name	From	To	Length (km)	Hierarchy	Capital Project Details				Estimated Cost	
						Project	Year	Improvement	Cost[1]	Town	Region
PROPOSED SIGNED BIKE ROUTE WITH SHARROWS			**Line Type:**	**Unit Cost:**	**$3,500**	**Total kms:**	**3.9**				
120	Beckett Crescent	Haist Street	Existing Off-Road Trail west of Haist Street	0.1	Secondary					$ 406	
121	Canboro Road	Church Street	Baxter Lane	0.2	Primary					$ 629	
122	Canboro Road	60m west of Effingha Strete	55m east of Effingham Street	0.1	Primary					$ 396	
123	Church Hill	Highway 20 East	Pelham Street	0.5	Secondary					$ 1,640	
124	Highway 20 East	Regional Road 24 / Victoria Avenue	Canboro Road	0.4	Regional Connector						$ 1,391
125	Highway 20 East	Pelham Street	Haist Street	0.8	Regional Connector						$ 2,902
126	Hurricane Road	Stonegate Place	Highway 20 East	0.2	Secondary					$ 810	
127	Metler Road	Pelham North - East Boundary	Pelham North - West Boundary	0.3	Primary					$ 960	
128	Pancake Lane	Blackwood Crescent	Haist Street	0.3	Secondary					$ 1,074	
129	Pelham Street	170m north of Highway 20	Highway 20 East	0.2	Primary					$ 590	
130	Pelham Street	Highway 20 East	College Street	0.3	Primary					$ 976	
131	Pelham Town Sqaure	Station Road	Pelham Town Square	0.4	Secondary					$ 1,480	
133	Pelham Town Square	Pelham Street	Pelham Town Square	0.1	Secondary					$ 439	
			Total Length (km)	**107.2**				**Total Cost**		**$ 3,237,381**	**$ 1,010,679**

Technical Appendix J - Medium Term Network Summary
Final November 2016

ID	Street Name	From	To	Length (km)	Hierarchy	Capital Project Details				Estimated Cost	
						Capital Project	Year	Improvement	Cost	Town	Region
PROPOSED BIKE LANE		**Line Type:**		**Unit Cost**	**$12,000 - $300,000**	**Total kms:**	**2.6**				
2	Merrit Road	Pelham Street	Rice Road	0.4	Secondary					$ 117,647	
3	Port Robinson Road	Pelham Street	Existing Port Robinson bike lanes	0.1	Secondary					$ 1,712	
4	Welland Road	Haist Street	Michaela Crescent	0.7	Secondary	●	2022	Road Rehabilitation	$ 175,500		
5	Welland Road	Church Street	Haist Street	0.9	Primary					$ 270,697	
6	Welland Road	Deborah Street	Haist Street	0.4	Primary					$ 124,431	
PROPOSED BUFFERED BIKE LANE		**Line Type:**		**Unit Cost**	**$350,000**	**Total kms:**	**3.4**				
10	Highway 20 West	Effingham Street	EL Crossley Secondary School	0.8	Regional Connector						$ 290,088
11	Pelham Street	Port Robinson Road	Pancake Lane	0.7	Primary	●	2025	Road Reconstruction	$ 1,005,000		
12	Pelham Street	Town Boundary	Pancake Lane	1.9	Primary	●	2023 & 2024	Road Reconstruction	$ 2,930,000		
PROPOSED BUFFERED PAVED SHOULDER		**Line Type:**		**Unit Cost**	**$150,000**	**Total kms:**	**1.2**				
14	Quaker Road	Pelham Street	Town Boundary	0.4	Secondary	●	2023	Road Reconstruction	$ 820,000		
16	Regional Road 69	Regional Road 24 / Victoria Avenue	Sawmill Road	0.8	Regional Connector						$ 114,549
PROPOSED IN-BOULEVARD TRAIL		**Line Type:**		**Unit Cost**	**$250,000 - $275,000**	**Total kms:**	**0.6**				
18	Balfour Street	Memorial Drive	Canboro Road	0.6	Primary	●	2021	Road Rehabilitation	$ 117,000		
PROPOSED OFF ROAD TRAIL		**Line Type:**		**Unit Cost**	**$140,000**	**Total kms:**	**0.2**				
28	Proposed trail west to Lathrop Nature Reserve	Hurricane Street	Approximately 250m west	0.2	Trail Connection					$ 34,450	
PROPOSED PAVED SHOULDER		**Line Type:**		**Unit Cost**	**$200,000**	**Total kms:**	**15.5**				
31	Balfour Street	Highway 20	Memorial Drive	1.1	Primary	●	2021	Road Rehabilitation	$ 16,235		
32	Balfour Street	Memorial Drive	Approximately 120m north	0.1	Primary					$ 23,132	
33	Canboro Road	Centre Street	60m west of Effingham Street	1.6	Primary					$ 325,990	
35	Canboro Road	55m east of Effingham Street	Oakridge Boulevard	1.0	Primary					$ 209,236	
38	Regional Road 29 / Webber Road	Victoria Avenue	Murdock Road	7.5	Regional Connector						$ 1,494,151
39	Welland Road	Deborah Street	Haist Street	4.2	Primary					$ 830,072	
PROPOSED SIGNED BIKE ROUTE		**Line Type:**		**Unit Cost**	**$200 - $2,000**	**Total kms:**	**15.1**				
47	Cream Street	Metler Road	Tice Road	1.1	Primary	●	2020	Road Rehabilitation	$ 20,000		
48	Cream Street	Tice Road	Highway 20	1.0	Primary					$ 205	
59	Fonthill Cemetery	Brock Street	AK Wigg Public School	0.4	Secondary					$ 705	
60	Fonthill Cemetery	Fonthill Cemetery	Fonthill Cemetery	0.1	Secondary					$ 196	
61	Fonthill Cemetery	Fonthill Cemetery	Fonthill Cemetery	0.1	Secondary					$ 288	
62	Fonthill Cemetery	Brock Street	AK Wigg Public School	0.2	Secondary					$ 401	
70	Haist Street	Beckett Crescent	Foss Road	0.6	Secondary	●	2022	Road Rehabilitation	$ 117,000		
71	Highland Avenue	Canboro Road	Fonthill Cemetery	0.3	Secondary					$ 67	
99	Roland Road	Effingham Jay	Town Boundary	2.7	Secondary					$ 329	
100	Roland Road	Centre Street	Effingham Street	1.6	Secondary	●	2021	Road Rehabilitation	$ 194,851		
102	Shorthill Place	Pelham Street	Station Street	0.4	Secondary					$ 859	
103	Sixteen Road	Regional Road 64 / Victoria Avenue	Effingham Street	4.6	Secondary					$ 927	
104	Sixteen Road	Centre Street	Effingham Street	1.2	Secondary					$ 240	
105	Woodstream Boulevard	Pancake Lane	Spruceside Crescent	0.7	Secondary	●	2024	Road Reconstruction	$ 136,015		

Technical Appendix J - Medium Term Network Summary

Final November 2016

ID	Street Name	From	To	Length (km)	Hierarchy	Capital Project Details				Estimated Cost	
						Capital Project	Year	Improvement	Cost	Town	Region
PROPOSED SIGNED BIKE ROUTE WITH EDGELINE			**Line Type:**	**Unit Cost**	**$4,000**	**Total kms:**	**2.0**				
109	Canboro Road	Church Hill	Oakridge Boulevard	0.8	Primary	●	2024	Road Reconstruction	$ 1,770,000		
110	College Street	Pelham Street	Station Street	0.4	Secondary	●	2024 & 2025	Road Reconstruction	$ 1,550,000		
111	Pancake Lane	Haist Street	Pelham Street	0.8	Secondary	●	2023	Road Reconstruction	$ 730,000		
PROPOSED SIGNED BIKE ROUTE WITH SHARROWS			**Line Type:**	**Unit Cost**	**$3,500**	**Total kms:**	**0.9**				
118	Balfour Street	Canboro Road	Welland Road	0.4	Secondary	●	2022	Road Reconstruction	$ 730,000		
119	Brock Street	Road Terminus	Pelham Street	0.3	Secondary					$ 932	
132	Welland Road	Michaela Crescent	Pelham Street	0.2	Secondary	●	2022	Road Rehabilitation	$ 175,500		
			Total Length (km)	**41.4**				**Total Cost**		**$ 1,942,513**	**$ 1,898,789**

Technical Appendix J - Long Term Network Summary

Final November 2016

ID	Street Name	From	To	Length (km)	Hierarchy	Capital Project Details				Estimated Cost	
						Capital	Year	Improvement	Cost	Town	Region
PROPOSED PAVED SHOULDER		**Line Type:**		**Unit Cost:**	**$200,000**	**Total kms p**	**2.0**				
34	Canboro Road	Regional Road 24 / Victoria Avenue	Church Street	2.0	Primary					$ 408,666	
PROPOSED SIGNED BIKE ROUTE		**Line Type:**		**Unit Cost:**	**$200 - $2,000**	**Total kms p**	**1.0**				
40	Centre Street	Highway 20	Memorial Drive	1.0	Secondary					$ 210	
PROPOSED BUFFERED PAVED SHOULDER		**Line Type:**		**Unit Cost:**	**$150,000**	**Total kms p**	**5.5**				
13	Highway 20 East	Regional Road 24 / Victoria Avenue	EL Crossley Secondary School	5.5	Regional Connector						$ 817,736
PROPOSED OFF ROAD TRAIL		**Line Type:**		**Unit Cost:**	**$250,000**	**Total kms p**	**0.8**				
29	Trail Connection at AK Wigg Public School	Haist Street	Fonthill Cemetery	0.2	Trail Connection					$ 58,198	
30	Trail Connection at AK Wigg Public School	Haist Street	Fonthill Cemetery	0.5	Trail Connection					$ 132,623	
			Total Length (km)	**9.3**				**Total Cost**		**$ 599,697**	**$ 817,736**

Technical Appendix J - Network Summary Table
Final November 2016

Facility Type	Municipal				Regional		Total Length (km)	
	Previously Planned		Additional Links					
	Distance (km)	Cost	Distance (km)	Cost	Distance (km)	Cost	Distance (km)	Cost[1]
SHORT-TERM (0 - 5 years)								
Off Road Trail	-	-	6.4	$ 998,511	-	-	**6.4**	**$ 998,511**
In-Boulevard Trail	-	-	2.7	$ 673,354	3.8	$ 1,000,426	**6.5**	**$ 1,673,780**
Buffered Paved Shoulder	-	-	-	-	-	-	**0.0**	**$ -**
Paved Shoulder	0.4	$ 115,000	7.5	$ 1,495,617	-	-	**7.9**	**$ 1,495,617**
Buffered Bike Lane	-	-	0.5	$ 6,193	-	-	**0.5**	**$ 6,193**
Bike Lane	0.2	$ 625,000	1.0	$ 12,317	0.4	$ 5,329	**1.7**	**$ 17,646**
Signed Bike Route	23.9	$ 1,858,842	49.1	$ 36,109	3.2	$ 630.6	**76.2**	**$ 36,740**
Signed Bike Route with Sharrows	-	-	2.7	$ 9,401	1.2	$ 4,294	**3.9**	**$ 13,695**
Signed Bike Route with Edgelines	0.4	$ 111,150	3.6	$ 5,877	-	-	**4.1**	**$ 5,877**
Total	**25.0**	**$ 2,709,992**	**73.6**	**$ 3,237,381**	**8.7**	**$ 1,010,679**	**107.2**	**$ 4,248,059**
MEDIUM-TERM (6 - 10 years)								
Off Road Trail	-	-	0.2	$ 34,450	-	-	**0.2**	**$ 34,450**
In-Boulevard Trail	0.6	$ 117,000	-	-	-	-	**0.6**	**$ -**
Buffered Paved Shoulder	0.4	$ 820,000	-	-	0.8	$ 114,549	**1.2**	**$ 114,549**
Paved Shoulder	1.1	$ 16,235	6.9	$ 1,388,429	7.5	$ 1,494,151	**15.5**	**$ 2,882,580**
Buffered Bike Lane	2.6	$ 3,935,000	-	-	0.8	$ 290,088	**3.4**	**$ 290,088**
Bike Lane	0.7	$ 175,500	1.9	$ 514,487	-	-	**2.6**	**$ 514,487**
Signed Bike Route	4.0	$ 467,866	11.1	$ 4,216	-	-	**15.1**	**$ 4,216**
Signed Bike Route with Sharrows	0.6	$ 905,500	0.3	$ 932	-	-	**0.9**	**$ 932**
Signed Bike Route with Edgelines	2.0	$ 4,050,000	-	-	-	-	**2.0**	**$ -**
Total	**12.0**	**$ 10,487,101**	**20.4**	**$ 1,942,513**	**9.1**	**$ 1,898,789**	**41.4**	**$ 3,841,302**
LONG-TERM (10 + years)								
Off Road Trail	-	-	0.8	$ 190,821	-	-	**0.8**	**$ 190,821**
In-Boulevard Trail	-	-	-	-	-	-	**0.0**	**$ -**
Buffered Paved Shoulder	-	-	-	-	5.5	$ 817,736	**5.5**	**$ 817,736**
Paved Shoulder	-	-	2.0	$ 408,666	-	-	**2.0**	**$ 408,666**
Buffered Bike Lane	-	-	-	-	-	-	**0.0**	**$ -**
Bike Lane	-	-	-	-	-	-	**0.0**	**$ -**
Signed Bike Route	-	-	1.0	$ 210	-	-	**1.0**	**$ 210**
Signed Bike Route with Sharrows	-	-	-	-	-	-	**0.0**	**$ -**
Signed Bike Route with Edgelines	-	-	-	-	-	-	**0.0**	**$ -**
Total	**0**	**$ -**	**3.9**	**$ 599,697**	**5.5**	**$ 817,736**	**9.3**	**$ 1,417,433**

Note:
1. The Total cost to implement the proposed AT network does not include the amount budgetted for capital projects. The intent is for this to reflect the economies of scale which could be realized as a result of implementing active transportation infrastructure as part of a large-scale infrastructure project such as a road reconstruction, road rehabilitation and / or new development areas or watermain reconstruction.