



GUELPH ACTIVE TRANSPORTATION NETWORK STUDY

Final Report

June 2017



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EXECUTIVE SUMMARY

INTRODUCTION

The City of Guelph is committed to providing viable active transportation opportunities as a means to encourage more people to cycle, walk and use public transit more often, and to help promote active and healthy lifestyles. The City has made excellent progress developing the on-road cycling network in recent years, and the length of on-road bike lanes has been more than doubled since 2008. The off-road (trail) network complements the on-road network and the City currently has over 110 linear kilometers of off-road trails. The current off-road trail network includes some segments that do not meet cyclists' needs for destination-based active transportation trips – including narrow widths, surface treatments, grading and drainage issues, and barriers / discontinuities. It is recognized that improvements to the off-road network are needed to further increase cycling.

In May 2015, the active transportation specialist team from WSP Group Canada Ltd. (formerly MMM Group Ltd.) in association with Paradigm Transportation Solutions was retained by the City of Guelph to complete the Active Transportation Network Design Guidelines and Feasibility Study (ATN Study). This study complements and builds upon other key policy plans regarding trails, cycling and active transportation in the city, in particular the Guelph Trails Master Plan (GTMP, 2005), and the Cycling Master Plan (2012).

The ATN Study falls under the City's Transportation Demand Management (TDM) program. The study focuses on a portion of the overall off-road trail network. Specifically, it assesses the feasibility of upgrading just over 45km of existing and proposed main / primary trails in the city for the purpose of improving all-season, off-road, destination-based active transportation corridors throughout Guelph.

The scope of the ATN Study consists of:

- ▶ Background data collection, evaluation of existing and proposed facilities and review of industry best practices in order to develop recommendations for improvements to the selected portion of the City's trail network
- ▶ Design guidelines and evaluation of the construction feasibility and estimated cost to upgrade and maintain the selected network

- ▶ A natural heritage study of the selected portion of the City's trail network to identify segments requiring further studies of environmental impacts as part of the implementation for completing the recommended improvements.

RELATIONSHIP BETWEEN THE CYCLING MASTER PLAN, TRAILS MASTER PLAN AND THE ATN ROUTE NETWORK

Guelph Trails Master Plan

The trail routes examined in the ATN Study are contained in the GTMP or have been identified by other planning studies or land development processes since the time the Trails Master Plan was completed in 2005. The Draft ATN route identified in a draft form by the City at the outset of the ATN Study is generally consistent with the Primary Trail route network in the GTMP (2005). The ATN Study process identified and proposed some modifications to the routing of the Draft ATN route resulting from:

- ▶ Public and stakeholder input
- ▶ Changes in the trail network identified by City staff since the time the GTMP was completed
- ▶ Research and field investigations by the consultant team during the development of the ATN Study.

Bicycle-Friendly Guelph

The trail routes identified in the ATN Study complement the on-road network in Bicycle Friendly Guelph. On-road routes proposed in the Guelph Cycling Master Plan were assumed as noted in that master plan, and only on-road connectors considered critical to the connectivity of the ATN route are identified in this study. Specifically this includes:

- ▶ On-road links critical to connectivity of the ATN previously identified as part of the Guelph Cycling Master Plan network, and
- ▶ On-road links critical to connectivity of the ATN that were not previously identified in the Guelph Cycling Master Plan network (i.e. new links). These new links are few in number and generally consist of proposed signed cycling routes on local neighbourhood streets.

Implementation and Operation of Active Transportation Facilities

The responsibility to implement and operate / maintain active transportation facilities is assigned depending on the facility location. Specifically, Public Services (Parks Planning and Operations) have the lead role for off-road facilities in parks and open space; and Infrastructure, Design and Enterprise Services (Engineering and Capital Infrastructure Services) has the lead on the design and operation of facilities within the road right-of-way, including In-boulevard multi-use trails.

RELATIONSHIP TO THE NATURAL HERITAGE STRATEGY

As part of the scope of the ATN Study each of the routes proposed in the ATN was examined in the context of the City's natural heritage strategy. The purpose of this work was to identify which segments of the proposed ATN would be subject to Environmental Impact Study (EIS) requirements as part of next steps in designing and implementing the recommended trail improvements, and to assist in coordinating requirements and work plans for individual trail improvements between the Engineering and Capital Infrastructure Services, Planning, Urban Design and Building Services and Environmental Services groups within the City. The **Natural Heritage Study** accompanies the ATN Study report in the separately bound **Technical Appendix B**.

STUDY PROCESS

The ATN Study included the following steps by the consultant team:

1. Assembly of base information using the City's GIS database and recent high resolution aerial imagery.
2. Review of relevant City policy related to active transportation.
3. Detailed review of the Draft Proposed Active Transportation Network (ATN) from the ATN Study Terms of Reference.
4. Developing and launching a public engagement program consisting of on-line and in-person activities.
5. Conducting trail user data collection at select locations on the existing trail network throughout the city.
6. Completing a field inventory of the draft proposed ATN by traveling the entire ATN on bicycle and / or by foot to collect specific information regarding improvements and new links. This included site visits to the area of each identified project area, and data collection

(e.g. field notes and select measurements, digital photography and GPS waypoints). Data collected included information regarding existing site conditions and issues influencing detailed design, approvals, constructability and implementation cost.

7. Engaging with the public and key stakeholders throughout the study, including public events at key points during the ATN Study.
8. Suggesting modifications to the ATN based on field investigations, public and stakeholder input.
9. Undertake the natural heritage study of the refined ATN route.
10. Developing individual Project Information Sheets and supporting maps for each section of the ATN which illustrate and describe the:
 - a. location of the project
 - b. rationale for the project including connections key destinations and other parts of the City's active transportation network
 - c. recommendations regarding design improvements, typical design details and site specific design considerations
 - d. opinion of probable construction and maintenance/operational cost
 - e. stakeholders and agencies having an interest and or jurisdiction associated with the identified project, and who should be consulted during the detailed design and implementation of trail improvements.
11. Documenting the process, findings and recommendations in the ATN Study report.

The Recommended Active Transportation Network is illustrated in **Figure EX-1**.

INFORMING THE ATN STUDY

DATA ANALYSIS AND FIELD INVESTIGATIONS

Base data from the City's Geographic Information System (GIS) was assembled and provided to the consultant team as a starting point for the ATN Study. Data layers included the street network, property boundaries, parks and open space, natural heritage, existing and future trails, existing and future on-road cycling routes, high resolution aerial imagery, and the Draft ATN route from the Request for Proposal. This data was used as a starting point for the development of all mapping and displays used throughout the ATN Study and the report.

Field investigations involved members of the study team traveling the ATN routes on foot and/or on bicycle. An initial field investigation of the Draft ATN route was conducted in June 2015 to understand the alignment, general characteristics, trail surface and width, sightlines, signage, opportunities and challenges related to upgrading the trail sections to improve conditions for cycling, and potential impacts to natural heritage areas. Additional field investigations were conducted at select locations between October and December 2015 as part of refining the recommended ATN route, in preparation of materials for the second stakeholder meeting and Public Information Centre, and informing the development of recommendations in the ATN Study.

PUBLIC ENGAGEMENT

The ATN Study included a robust public engagement program which provided stakeholders and citizens with multiple opportunities to provide input to the study. The City website was used to post notices about study events and display materials used at events. There were 2 formal rounds of consultation during the study; one at the early stage to raise awareness about the ATN Study and seek input on the general types of improvements being proposed; and a second round later in the study to solicit feedback on the recommended ATN route and some of the specific improvements being considered.



Public Information Centre at the City of Guelph Farmers' Market (2015)

Opportunities to provide input included:

- ▶ **Trail intercept surveys** throughout the city (June 2015) – approximately 380 interactions with users on the trail
- ▶ **Public agency and public stakeholder workshops** (June 23, 2015, and February 11, 2016) – approximately a dozen agency and stakeholder representatives per round
- ▶ **Mindmixer forum** hosted though the City's website from June 2015 through February 2016) – over 50 interactions

▶ **Public Information Centres at**

- Canada Day celebration at Riverside Park (July 1, 2015) – directly engaged / spoke with approximately 75 residents and many more stopped to look at maps and pick up information
- Tour de Guelph at the University of Guelph (July 7, 2015) – engaged with approximately 20 participants at the event
- Guelph Farmers Market (October 31, 2015) – engaged with over 150 interested individuals.

▶ **Pop-up displays** at various locations throughout the City during the course of the study to raise awareness of the project and encourage residents to leave comments and / or access the city website to comment on maps and principles.

As a result the study team received a broad range of comments, many were specific to the ATN route and some were focused on trails and active transportation routes in other parts of the city. Comments and information gathered from the stakeholder and public engagement program were used to inform the selection of the recommended ATN route and various improvements recommended. Comments that pertained to trails in other parts of the city or related to other aspects of active transportation will be a valuable source of information for other studies and initiatives such as the update to the Guelph Trails Master Plan. The following highlights some of the comments received, and a more detailed summary of comments is contained in the separately bound **Technical Appendix A**.

Trail Design – General Considerations

- ▶ **Hard surfacing of trails** - Respondents were very divided over the concept of paving trails for a range of reasons.
 - Prefer Asphalt
 - provide a place for in-line skaters and other small wheeled users;
 - asphalt surface is more dependable for year-round active transportation use than granular trails which are wet and soft at some times during the year.
 - Prefer Granular
 - traction can be better in winter on ploughed granular trails than asphalt trails and asphalt trails can have black ice in winter which is hard to see and can be treacherous;

- concerns regarding the ability to do a good job repairing asphalt;
- granular surface trails are more visually pleasing than asphalt trails in some areas;
- granular surface trails put less stress on walkers' and runners' joints than asphalt trails.

- ▶ Resist the urge to remove challenges from all trails - Challenges build physical and mental health.
- ▶ Improve road crossings - Provide safe, convenient and responsive controlled crossings of roads, particularly busy arterial roads.
- ▶ Improve connectivity to trails using the on-road network, and use this as a strategy to close gaps in the network.
- ▶ Focus on improving connectivity before upgrading existing trails.
- ▶ Focus on general connectivity within the city and to surrounding rural area.
- ▶ Provide more leash free trails in the city.
- ▶ Don't use woodchips on trails, they get too wet and soft, making trails muddy and hard to use.
- ▶ Improve wayfinding on trails - Wayfinding and trail entrance maps, trail distance markers, interpretive signs, these are all needed on the trails. It was noted that these features can significantly benefit people with physical and mental health challenges. Maps of the network (online and handout) should be a priority.
- ▶ Linear parks are much better than older style isolated parks; linear parks serve everybody and are a great place to put trails. Trails benefit neighbourhoods and increase real estate values – people want to live near the trail.
- ▶ Trail etiquette / user education is an important part of promoting trail and active transportation use (e.g. making slower moving trail users aware of faster moving users, getting them to use the system in a respectful and cooperative manner).
- ▶ Permeable pavement should be considered when replacing old asphalt trails and when paving new trails / existing trails for the first time.
- ▶ Trail barriers / gate system – the openings are too narrow in some locations.
- ▶ Require developers to build trails in new communities at the time roads and houses are being built.

Connectivity, Specific Routes

- ▶ Create a trail crossing of Speed River at the Wellington Road and Hanlon Expressway intersection.
- ▶ Trails in Eastview area of the City are nicely developed with good linkages and good signage “a hidden gem”, but a better connection is needed along Eastview Road to Pollinators Park.
- ▶ Trail along the Guelph Junction Railway is fantastic; add more trail sections to extend it further. Extend the trail along the Guelph Junction Railway to Stevenson Street.
- ▶ Improve signage and road crossings along the Spurline Trail.
- ▶ Remove old asphalt and create 2 parallel trails in the hydro corridor / along Old Hanlon Road between Kortright Road and Stone Road.
- ▶ Light the culvert/tunnel under the Hanlon Expressway south of Kortright Road.
- ▶ The trail along Woodlawn Road is a great idea.
- ▶ Work with the University of Guelph to define a connection on the east side of the city and close this gap in the ATN (e.g. Hands Drive area through the Arboretum to College Avenue at Victoria Road).
- ▶ Create better definition of the Trans Canada Trail from Woodlawn Road through to Riverside Park.
- ▶ Utilize city owned laneways rather than selling them to adjacent landowners.
- ▶ Pedestrian signal delay at Edinburgh Road and the Speed River Trail is better than it used to be.
- ▶ Improve the trail from Guelph Lake to Victoria Road.
- ▶ Re-purpose the Niska Road bridge for a trail bridge somewhere in the city.
- ▶ Improve trail crossings including the Trans Canada Trail at Eramosa Road; the Royal Recreation Trail at Woolwich and Wellington, and Wellington at Macdonell and at Gow’s Bridge/McCrae Boulevard.
- ▶ Do not pave trail along the Speed River from Gordon Street to Municipal St, or the Royal Recreation Trail from Woodlawn Road to Victoria Road.
- ▶ Widen the trail in Royal City Park to meet high demand.

- ▶ Connect the northwest part of the city via trail access over the Speed River near Wellington and Hanlon Expressway.

Management / Implementation

- ▶ Identified the need for, and interest in participating in a Trail Advisory Committee as a way to be “in the loop” on a regular basis about what is happening with trails in the city.
- ▶ The City should have a staff person dedicated to trail improvements.
- ▶ Appreciation regarding the winter maintenance of key trail routes. The City should consider expanding trail maintenance in winter. Winter maintenance provides critical access to schools and helps with dispersal of traffic around schools.
- ▶ The need for more/better general maintenance of trails (e.g. clearing encroaching vegetation, fixing potholes and ruts, replacing broken asphalt, replacing worn out signs, more regular emptying of waste receptacles etc.).

DESIGN GUIDELINES

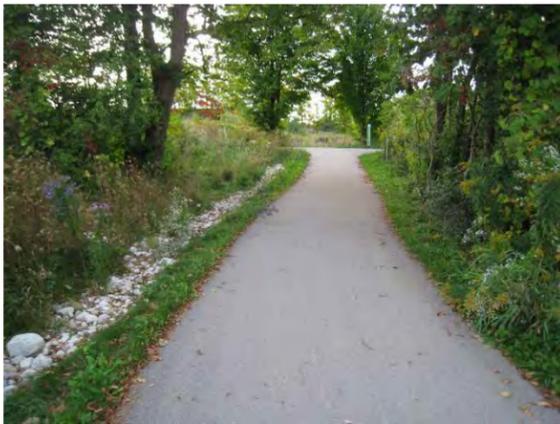
Chapter 4 of the ATN Study section provides guidance on various aspects of the design and maintenance of the ATN. It focuses on the off-road component of the ATN based on a review of best practices from other jurisdictions and the accumulated knowledge of the active transportation and trail specialist at WSP Canada Group Ltd. Regarding the on-road components of the ATN, Ontario Traffic Manual Book 18-Cycling Facilities and the Guelph Cycling Master Plan - Bicycle Friendly Guelph provide design guidance. The design guidelines in the ATN Study address the following key topic areas:

- ▶ Trail width and surface
- ▶ Trail alignments on private lands
- ▶ Accessibility
- ▶ Signage and wayfinding
- ▶ Trail crossings of roadways and other barriers
- ▶ The ATN in congested areas
- ▶ Maintenance of the ATN throughout the year.

The following provides some brief highlights of each design guideline topic area.

TRAIL WIDTH AND SURFACE

There are 4 basic trail types that make up the ATN:

	
<p>Asphalt surface trail – Watson Creek Trail (2016)</p>	<p>Granular surface trail – McAlister Park (2016)</p>
	
<p>In-boulevard Multi-use Trail – Woodlawn Road (Google 2016)</p>	<p>Boardwalk – New River Gorge West Virginia (2014)</p>

- ▶ **Asphalt surface** trail in parks and public open space
- ▶ **Granular surface** trails in parks and public open space
- ▶ **In-boulevard asphalt trail** (within a road right-of-way)
- ▶ **Boardwalks** for sections the ATN that encroach on or pass through sensitive wetlands.

The guidelines provide recommendations for the design and construction of each of the trail types including key considerations regarding trail width and selection of surface type.

Trail Width

- ▶ The preferred trail width is 3.0 m; this may be reduced to a minimum of 2.5 m in constrained locations or to minimize impact to the adjacent landscape (i.e. in natural heritage areas). For locations other than natural heritage areas this may be increased to 4.0m in the most heavily used / congested areas.
- ▶ A minimum inside curve radius of 10 m is recommended, based on an average travel speed of 20km/hr. This radius should be increased on downhill sections or trail widening should be added to the curve to give users some additional space to maintain control their bicycles.
- ▶ A minimum horizontal clear zone of 0.6 m is recommended from the edge of the trail to obstructions (e.g. sign posts, utility poles, gates, fences, steep slopes etc.). Where this cannot be achieved the clear zone can be reduced as low as 0.3m. Where only the minimum clear zone cannot be achieved consideration should be given to adding signs on, or immediately in front of the obstruction. This applies to both sides of obstruction so trail users coming from either direction are alerted to the narrow condition. On asphalt trails this may be supplemented with a 100mm wide white edge line on the trail surface to alert users.
- ▶ Existing asphalt surface trails that are less than 2.4 m wide should be widened to 3.0 m at the time the asphalt has reached the end of its service life and requires replacement. At this time the base should be reviewed to ensure it is appropriate and up to the current standard, and the additional base width should be added to support the widened asphalt.

Trail Surface

Currently, more than half of the recommended existing off-road / trail portion of the ATN route is surfaced with compacted limestone screenings. The ATN Study recommends upgrading a number of the existing limestone surfaced trail sections to hard surface (e.g. asphalt). Similarly, a number of the new proposed sections in the ATN are recommended to be asphalt surfaced. However this study does not recommend hard surfacing the entire ATN route; rather it recommends a balance between hard and soft surface for the off-road / trail portion of the ATN route. A number of factors contributed to recommendations regarding hard versus soft surface. Figure 4.6 in Chapter 4 provides guidance regarding the decision to provide a hard surface (e.g. asphalt) or soft surface (i.e. compacted limestone screenings) when existing ATN routes are being

upgraded or new ATN route links are being constructed for the first time. Trail location and setting, proximity to key community destinations, surrounding topography and soil conditions are among the factors that should be considered in making a decision to provide a hard surface (asphalt, concrete) versus a soft surface (compacted limestone / stonedust).

TRAIL ALIGNMENTS ON PRIVATE LANDS

Throughout the city there are a number of locations where trails cross privately-owned lands and lands owned by other public agencies. Formal agreements between the City and owner(s) exist for some of these routes, whereas others have simply evolved over time by citizens following desire-lines between destinations without any formal endorsement or agreement between the City and owner(s). Some of these trail routes across private lands offer an excellent opportunity to improve connectivity of the Active Transportation Network. Those that are considered good opportunities for ATN connectivity have been included in the recommended ATN route.

The following are the private properties crossed by the ATN:

- ▶ Hydro One corridor on the east side of the Hanlon Expressway and the proposed railway crossings within this corridor.
- ▶ Centennial CVI property (Upper Grand District School Board) on the north side of College Avenue.
- ▶ Stormwater management maintenance access route from McWilliams Road to the former Laird Road right-of-way between Hanlon Creek Boulevard and the Hanlon Expressway, and the former Laird Road right-of-way between Hanlon Creek Boulevard and the stormwater management corridor to McWilliams Road.
- ▶ Access path beside 340 Southgate Drive that connects the trail along the west side of the Hanlon Creek wetland to employment destinations on Southgate Drive.

In a number of case discussions have been underway for some time between the City and owner(s), and are at various stages of the process to secure an agreement. In cases where links across private or other public agency lands have been identified for the ATN and no discussions have taken place to date, the City should consider initiating discussions. Once a suitable agreement is reached the City should continue to engage the owners during the design and implementation of the connection.

ACCESSIBILITY

The goal of the Accessibility for Ontarians with Disabilities Act, (AODA, 2005) is to make Ontario accessible for people with disabilities by 2025. Ontario Regulation 413/12 (O.Reg 413/12) made under the Accessibility for Ontarians with Disabilities Act, 2005 includes guidelines and standards that apply to new construction and extensive renovation of exterior pedestrian facilities. The regulation does not apply to on-road cycling facilities. O. Reg. 413/12 also states that local accessibility standards shall take precedence over the provincial legislation where local standards are in place, and where they exceed requirements of the provincial legislation. The City of Guelph Facility Accessibility Design Manual (FADM) 2015 contains direction regarding trails over and above what is outlined in the provincial legislation. Accessibility requirements are embedded in the individual design guidelines throughout Chapter 4 of the ATN Study, including the following:

- ▶ Width and surface characteristics;
- ▶ Slope;
- ▶ Trail entrances and crossings of roadways;
- ▶ Elevated trails (i.e. boardwalks) and bridges;
- ▶ Signage; and
- ▶ The duty to consult with local accessibility groups during the planning and design of trails.

TRAIL CROSSINGS OF ROADWAYS

There are numerous locations where off-road sections of the ATN intersect with roadways, and each of these locations is an access point where pedestrian, cyclist and vehicle traffic will need to be managed. Trail crossing design guidelines in the ATN Study are founded on the following basic elements:

- ▶ Creating and maintaining an open sight triangle at the crossing point to allow trail users to see approaching vehicles and for trail users to be seen by drivers in approaching vehicles
- ▶ Access barriers on the trail which serve to
 - prevent unauthorized users from entering the trail, and
 - act as a visual cue to trail users that they are approaching an intersection with the road.

- ▶ Caution signs along the roadway in advance of the crossing point to alert motorists to the upcoming crossing.
- ▶ Caution signs along the trail to alert users of the upcoming roadway crossing.
- ▶ Aligning the crossing point to achieve as close to possible a perpendicular crossing of the roadway to minimize the time that users are in the traveled portion of the roadway.
- ▶ A concrete ramp in the boulevard and curb ramps on both sides of the road to allow users to enter and cross the roadway efficiently and quickly.
- ▶ Detectable warning plates which are
 - Mandatory for signalized crossings, and
 - Recommended unsignalized crossings.
- ▶ Pavement markings where appropriate, specifically
 - Pavement markings, to delineate a crossing should only be considered at crossings where there is some form of vehicle control in place (e.g. stop sign, or traffic signal).
 - Pavement markings should not be used at uncontrolled trail intersections with roads (i.e. free flowing vehicular traffic that is not controlled by a stop sign or traffic signal). Trail users are required to stop and wait for a gap in traffic at uncontrolled intersections. Pavement markings at uncontrolled crossings may give trail users the false sense that they have the right-of-way over motor vehicles, which is contrary to the Highway Traffic Act.

MANAGING ATN USERS IN CONGESTED AREAS

Leash Free Zones

There are three locations throughout the city where the ATN passes directly through designated unfenced leash free zones including:

- ▶ The west side / west end of Margaret Greene Park;
- ▶ John Gamble Park – hydro near Kortright Road. and the Hanlon Expressway; and
- ▶ Eramosa River Park at Victoria Road.

All three of these locations are very popular destinations for dog owners. Additionally there are a number of other areas where trails not included in the ATN pass through or nearby unfenced leash free zones. The combination of dogs running and playing freely with cyclists traveling at

speed has the potential to create conflict and can be a source of complaints between the two user groups, especially during peak use times such as weekday evenings and weekends. Although from the ATN user perspective the preference would be to have leash free zones to be physically separated from trails and cycling routes (i.e. fenced), addressing the fencing question needs to be part of a broader discussion and policy decision by the City. Regarding unfenced leash free zones best practice research suggests that etiquette, education and signage are tools that can be used to encourage cooperative behavior between cyclists and dog walkers / owners. Some suggested elements for the management and communication are described in Section 4.7 of the ATN Study.

Playgrounds and Congested Areas

There are a number of locations throughout the city where the Active Transportation Network passes near playgrounds where children will be playing and not always paying attention to their surroundings. Portions of the trail surrounding the playground are also promoted as a tricycle / bicycle loop for very young riders. Caution signage should be placed at the approaches to these areas to alert cyclists they are approaching a playground area and remind them to slow to 10km/hr. and be aware of children playing and possibly crossing the trail. In locations where playgrounds are frequently very busy and the route is passing through an active playground area (e.g. where there are play structures on both sides of the ATN route), and where space is available, consideration should be given to designing a short alternate route around the playground area.

LIGHTING

Very few municipalities light their entire trail system for a number of reasons, including:

- ▶ The cost of initial installation can be prohibitive. General budget figures can be over \$200,000 per kilometer including cabling, transformers, power supply and fixtures.
- ▶ Staff time and material cost to properly monitor, maintain lamp fixtures and replace broken and burned out bulbs on an ongoing basis.
- ▶ A tendency for vandals to target light bulbs.
- ▶ Energy consumption; though high efficiency LED and solar powered fixtures are now available.
- ▶ Excessive light pollution, especially in residential rear yards and adjacent to natural areas (though this can be controlled with proper shielding).

- ▶ Potential detrimental effects on flora and fauna, especially with light pollution in natural areas such as woodlands.
- ▶ The potential false sense of personal security created by lighting in the nighttime environment and the inability of the human eye to adapt to the high contrast resulting from brightly lit and dark shadowed areas adjacent one another.

Lighting the entire ATN is not recommended, however there may be some portions of the network where lighting may be appropriate, and the decision whether or not to light segments of the ATN should be made on a location-specific basis. Some candidate routes should include consideration for main connections to, or between important attractions such as major parks, heavily used commuter corridors and key school routes.

MAINTENANCE

Maintenance and monitoring of facilities once they are constructed is a critical aspect of any plans to move forward with implementation of the off-road trails and on-road routes. The general objectives of a maintenance program are to:

- ▶ Provide safe, dependable and affordable levels of service;
- ▶ Preserve infrastructure assets;
- ▶ Protect the natural environment;
- ▶ Enhance the appearance and health of the community;
- ▶ Provide a reference framework against which to measure performance;
- ▶ Periodically measure facility performance so that adjustments and improvements can be made in the delivery of trails and bikeways;
- ▶ Provide the basis of a peer review that is comparable with other municipalities;
- ▶ Provide citizens and Council with a reference for expectations.

Maintenance of 'mature' off-road multi-use trails in greenways and parks can range from \$4,000 to \$8,000 per linear kilometre of trail (e.g. 3.0 m wide), depending on the level of service standard. Annual maintenance typically includes drainage and storm channel maintenance, sweeping, topping-up and grading of granular surface trails clearing of debris, trash removal, vegetation management, mowing of grass along shoulders, minor surface repairs, repairs to trail fixtures (benches, signs) and other general repairs. Costs for the replacement or repair of major items

such as bridges, removal and replacement of asphalt are usually allocated through capital budgets.

Suggested maintenance tasks an estimated annual maintenance cost was provided for each of the ATN routes described in Chapter 5. Although the reported maintenance costs may require some adjustment based on the level of service for trails, it is critically important that the City budget for maintenance increases in an incremental fashion along with the incremental growth of the network of facilities. Therefore, as each new network segment is added the impact to the operations budget should be calculated by City staff so that it can be added into the annual maintenance budget request.

It is assumed that on-road portions of the ATN would be maintained as part of regular road and sidewalk maintenance according to the City's established protocol and Minimum Maintenance Standards.

Winter Trail Maintenance

Best practice research suggests that in the past most municipalities do not maintain (plough) their entire trail network for a variety of reasons. Those that provide winter maintenance typically restrict it to key links in the trail system such as school routes, links to major employment areas and short off-road connectors between designated on-road bike lanes. More recently, many municipalities are starting to consider more ploughing of trails in winter as part of providing winter cycling / dependable full year active transportation networks. This often includes a core set of routes within urban networks.

During consultations for the ATN study the public was asked about winter maintenance and responses revealed that:

- ▶ Respondents were generally pleased with winter trail maintenance that the City has been providing in recent years.
- ▶ Respondents didn't feel that the entire trail network needs to be maintained in winter, and maintenance of a core network is more appropriate; providing opportunities for other trail activities during winter months when weather permits (e.g. skiing and snowshoeing).
- ▶ Some preferred winter-maintained granular trails over winter-maintained asphalt trails; citing a sense of better traction on the granular trails with a skim of snow over the asphalt trails cleared to bare pavement which can sometimes have black ice.

- ▶ Some preferred winter-maintained asphalt trails over winter-maintained granular trails noting that energy from the sun assists in melting the snow creating a dry bare pavement surface.

More research and testing is needed regarding effective and sustainable winter maintenance practices for trails in the Ontario and local context given that so few municipalities maintain their trails in winter, and it is a relatively new practice for those that do. This is particularly relevant regarding the use of surface traction and de-icing methods. It is recommended that the City continue to evolve winter trail maintenance practices, including testing and piloting various methods, and sharing the results with other municipalities.

THE RECOMMENDED ACTIVE TRANSPORTATION NETWORK

As previously noted **Figure EX-1** illustrates the recommended ATN route. Details regarding the recommended improvements for each segment of the ATN are broken out into a set of 43 separate maps which comprise 17 'Project Areas' throughout the city. Each individual Project Area includes an illustration of the work area which summarizes observations and recommendations regarding the implementation of the particular route. Each also includes a project information sheet that provides further details on:

- ▶ Project location and rationale for the project;
- ▶ Observations of existing conditions and recommendations for improvements;
- ▶ Specific considerations
 - to inform the detail design
 - related to requirements for trail sections within designated natural heritage areas identified in the City's Natural Heritage Strategy
 - regarding public consultation and approvals to advance the project to implementation;
- ▶ Opinion of probable cost for construction and maintenance (based on the level of information collected);
- ▶ Suggested priority and next steps to advance the project.

Once complete the ATN route illustrated in **Figure EX-1** measures 54.0 km in length. This includes 46.2 km of off-road routes and 7.8 km of on-road links that are considered critical to the

connectivity of the off-road portions of ATN. **Figure EX-2** provides a breakdown of the overall length of the ATN.

Figure EX-2: Summary of ATN Route Lengths

Category (corresponds with map legend)	Length (km)
Off-road	
Existing off-road trail Included in the ATN	25.8
Proposed off-road trail included in the ATN (proposed from other City plans / studies)	17.0
Proposed off-road trail included in the ATN (route identified during the ATN study and not included in other City plan / studies)	3.4
Total Off-Road	46.2
On-road	
On-road link critical to connectivity of the ATN (also identified in the Guelph Cycling Master Plan)	3.8
On-road link critical to connectivity of the ATN (route identified during the ATN study and not included in other City plan / studies)	4.0
Total On-Road	7.8
Grand Total	54.0

Opinion of Probable Cost

An Opinion of Probable Cost for implementation and maintenance was developed for each of the 17 'Project Areas'. The Opinion of Probable Cost is based on based on unit prices and typical / normal conditions and includes a contingency. These costs can be used as a guideline to establish project budgets for Council approval. The unit costs used to generate the Opinion of Cost are based on unit prices for similar projects; they assume normal conditions and do not include costs for major utility relocations or property acquisitions. This Opinion of Cost should be refined as the project design is refined. The estimate does not differentiate between projects that already have Council approved budgets, which ones may be part of a larger infrastructure project and those that may be the responsibility of a developer to provide as part of a new city neighbourhood. **Figure EX-3** summarizes the aggregate cost for all Project Areas.

Figure EX-3: Opinion of Probable Capital & Annual Maintenance Cost for each of the Project Areas.

Project Area Number	Map Sheet Number(s)	Capital			Annual Maintenance (Off-road Links) ⁽¹⁾		
		Improvement to Existing Links	Addition of New Connections	Total Capital Cost	Maintenance of Existing Off-road Links	Maintenance of New Off-road Connections	Total Maintenance of Off-road Links
1	Sheets 1 and 2	\$115,900	\$7,900	\$123,800	\$8,400	\$0	\$8,400
2	Sheets 3 and 4	\$183,900	\$505,050	\$688,950	\$11,200	\$0	\$11,200
3	Sheets 5 and 6	\$332,310	\$31,750	\$364,060	\$22,240	\$0	\$22,240
4	Sheets 7, 8, 12	\$94,400	\$20,500	\$114,900	\$18,400	\$0	\$18,400
5	Sheets 9, 10, 11	\$91,500	\$960,000	\$1,051,500	\$7,000	\$7,000	\$14,000
6	Sheet 13	\$185,650	\$0	\$185,650	\$6,800	\$0	\$6,800
7	Sheets 14, 15, 16	\$501,575	\$347,350	\$848,925	\$19,200	\$0	\$19,200
8	Sheets 17, 34, 35	\$231,100	\$901,900	\$1,133,000	\$26,100	\$8,700	\$34,800
9	Sheet 18	\$0	\$4,850	\$4,850	\$0	\$6,000	\$6,000
10	Sheets 19, 20, 21	\$280,050	\$272,850	\$552,900	\$14,880	\$4,960	\$19,840
11	Sheets 22, 23, 24, 25	\$0	\$1,533,100	\$1,533,100	\$0	\$34,000	\$34,000
12	Sheets 26, 27	\$0	\$62,900	\$62,900	\$0	\$12,540	\$12,540
13	Sheets 28, 29	\$556,900	\$11,325	\$568,225	\$14,000	\$0	\$14,000
14	Sheets 30, 31	\$405,400	\$42,875	\$448,275	\$13,200	\$0	\$13,200
15	Sheets 32, 33	\$422,950	\$0	\$422,950	\$11,600	\$0	\$11,600
16	Sheets 36, 37, 38, 39	\$10,400	\$115,700	\$441,100	\$1,600	\$1,600	\$3,200
17	Sheets 40, 41, 42, 43	\$337,450	\$204,400	\$541,850	\$21,600	\$0	\$21,600
Subtotal		\$3,749,485	\$5,022,450	\$9,086,935	\$196,220	\$74,800	\$271,020
Contingency 15%⁽²⁾		\$562,423	\$753,368	\$1,363,040	n/a	n/a	n/a
Contingency 20%⁽³⁾		\$749,897	\$1,004,490	\$1,817,387	n/a	n/a	n/a
Total		\$5,061,805	\$6,780,308	\$12,267,362	\$196,220	\$74,800	\$271,020

Notes:

1. Annual maintenance includes summer and winter maintenance (assumes winter maintenance on 100% of the ATN)
2. 15% Engineering and design contingency on Capital only, no contingency on maintenance
3. 20% Construction and general contingency on Capital only, no contingency on maintenance

IMPLEMENTATION

The general approach to implementation should have consideration for the principles described in Figure EX-3.

Figure EX-3: Implementation Principles.

Short Term	<ul style="list-style-type: none"> ▶ Upgrade select locations / sections of the existing ATN where the width, surface type or other conditions are clearly substandard or contain potential hazards (e.g. very narrow, constantly eroding surface, obstacles encroaching into the vertical or horizontal clear zone etc.). ▶ Complete short missing links in the existing ATN, that when complete will improve overall connectivity especially locations in the off-road network where creating a short link will result in the addition of a long, continuous route. ▶ Complete short missing links in the ATN where demand is anticipated to be the highest. ▶ Ensure that improvements and new links are included in larger public infrastructure projects (where applicable) such as in-boulevard links along roads that are subject to Environmental Assessments, detailed design, and other upgrades. ▶ Continue to work with the local development industry to plan, design and implement links as part of new neighbourhood developments. ▶ Build upon projects already in the approval process or planned as identified by City staff. ▶ Focus on connections to key destinations such as community centres, schools, major City parks. ▶ Complete advance planning for larger, more complex projects so they will be ready for implementation in the mid-term.
Mid Term	<ul style="list-style-type: none"> ▶ Focus on upgrades to the ATN to bring trails currently meeting minimum recommended guidelines up to the preferred design criteria as described in Chapter 4. ▶ Upgrade from granular to hard surface where applicable. ▶ Upgrade hard surface trails to the preferred recommended guideline when the existing surface is approaching the end of its service life.

PRIORITY PROJECTS

Based on these principles the following list of potential priority projects is presented for consideration. They have been organized into 2 broad groups; **Upgrades to the Existing Network** and **New Links**. The selection of these is based on input received from stakeholders, the public, City staff and field observations and recommendations by the study team. They are presented in no priority order within the list.

Upgrades to the Existing Network

1. Finalize / agree upon the design approach for treating trail / road intersections and begin to implement changes where required throughout the ATN.
2. Define the route through Centennial CVI including trail links and design measures at College Avenue crossing to encourage trail users to cross at the designated location; and trail alignment, widening and surfacing improvements in Centennial Park to Municipal Street by the outdoor soccer bowl.
3. Repair and hard surfacing of the section of trail from the north end of Municipal Street to the Speed River to correct ongoing erosion.
4. Improvements at heavily used trail crossings; Royal City Park (Boathouse) at Gordon Street and Victoria Road at the Eramosa River.
5. Upgrade (widen) the very narrow section of the recommended ATN route between Gordon Street and Gosling Gardens; currently this sections is too narrow to allow bicycles to safely pass by one another.
6. Resurface the Old Hanlon road route immediately north of Kortright Road and complete the connection from the north end of the Hanlon Road cul-de-sac to Stone Road.
7. Complete trail improvements and realignments in W.E. Hamilton Park.
8. Upgrade the trail in Riverside Park from Woodlawn Road to the area of the existing pedestrian bridge to improve accessibility.
9. Complete the connection from the east end of the existing in-boulevard multi-use trail on Woodlawn Road at Nicklin Road into Woodlawn Cemetery and Riverside Park.
10. Trail alignment, widening and surface improvements to the ATN route west of Clairfields Drive and Jean Anderson Crescent, where the trail heads north into the Hanlon Creek Wetland behind Hayward Crescent, to the area of the footbridge near Kirkby Court.

11. Improve to the trail connections on the east and west side of the Hanlon Expressway at the culvert just south of Kortright Road – note that more extensive improvements are required on the east side as compared to the west.
12. Upgrade the CNR Spurline trail to improve road crossings, trail width and surface.

New Links

Over half these are implementation projects whereas the others involve the advance planning, consultations, further feasibility, EIS and detailed design work necessary to be 'shovel-ready' in the mid-term.

1. Move forward with detailed design of the connection from Speedvale Avenue to Riverside Park, based on the outcome of separate studies being conducted to evaluate the east side versus west side of the river.
2. Extend the trail along the Northwest Drain from Dunhill Place Park to Thornhill Drive.
3. Advance discussions/consultations regarding the use of the stormwater access corridor off McWilliams Road and the former section of Laird Road as a route in the ATN. Implementation of improvements could be coordinated with build-out of the southern end of the business park as demand for AT connections increases with the number of new employment destinations.
4. Continue discussions / negotiations with Hydro One regarding the implementation of a multi-use trail within the hydro corridor on the east side of the Hanlon Expressway from Paisley Road to Woodlawn Road.
5. Complete the connection between the Eastview Community Park and the northern end of the Laura Bailey Memorial Trail.
6. Continue the in-boulevard multi-use trail west along Woodlawn Road to provide access to employment and commercial destinations in the northwest part of the city.
7. Undertake studies regarding the recommended pedestrian bridge crossing of the Speed River on the east side of the Hanlon Expressway opposite the Wellington Street-Waterloo Avenue intersection.
8. Design and implement the Silvercreek Trail extension from Edinburgh Road heading west as part the development of a stronger connection to the northwest part of the city.
9. Complete the short connection along Watson Parkway from the Grange Road and Watson Parkway intersection to the Watson Trail to connection these two sections of existing off-road trail (replace section of sidewalk with a multi-use trail link).

10. Complete the trail connection between the west end of Margaret Greene Park and Ferman Drive, including conversion of the existing woodchip trail to a stonedust or boardwalk surface.
11. Complete the trail link north from Arkell Road to Bathgate Drive.
12. Complete the active transportation link along Silvercreek Parkway from Waterloo Avenue to Paisley Road as part of the railway grade separation and other development related improvements in the area.

NEXT STEPS

Following Council approval of the ATN Study the staff should:

- ▶ Review the recommended improvements and list of priorities contained in the ATN Study and select projects for implementation based on available budgets, ability to coordinate with other projects already underway and other City priorities.
- ▶ Continue to work with local developers on planning, designing and implementing ATN routes located within new/future neighbourhoods.
- ▶ Include consultations with residents, stakeholders, agencies and other approval bodies as part of the City's due diligence process regarding stakeholder and public engagement.
- ▶ Undertake Individual Projects
 - confirm the need for additional background studies for individual projects (e.g. EIS requirements where applicable);
 - identify the need for, and conduct additional consultations for individual projects in parallel with the preparation of detailed designs and cost estimates and EIS work (where applicable);
 - seek direction / approval from Council where necessary;
 - implement projects.
- ▶ Monitor success, and modify approaches to future projects based on lessons learned from monitoring.
- ▶ Report back to Council on the successes and challenges related to the ongoing development of the ATN.

1.0 STUDY PURPOSE AND METHODOLOGY

1.1 INTRODUCTION

In May of 2015 WSP Group Canada Ltd. (formerly MMM Group Ltd.) in association with Paradigm Transportation Solutions was retained by the City of Guelph to complete the Active Transportation Network Design Guidelines and Feasibility Study (ATN Study). This study complements and builds upon other key policy plans regarding trails, cycling and active transportation in the city, in particular the Guelph Trails Master Plan (GTMP, 2005), and the Cycling Master Plan (2012).

The ATN Study falls under the City's Transportation Demand Management (TDM) program in order to address active transportation connectivity throughout the community. The TDM program includes the Bicycle-Friendly Guelph Initiative, which was launched in 2008. One of the priority actions from the Bicycle-Friendly Guelph Initiative was to develop the Cycling Master Plan, which was adopted in 2012. The Cycling Master Plan includes recommendations for network planning, design and construction, education and training; encouragement and incentives; enforcement and evaluation. The cycling network consists primarily of on-road bike lanes, cycle tracks and multi-use boulevard trails.

The City has made excellent progress in recent years advancing the development of the on-road cycling network. For example the length of on-road bike lanes has been more than doubled since 2008. The off-road (trail) network complements the on-road network. It is recognized that improvements to the off-road network are needed to further increase cycling; to provide citizens with transportation choices, and in particular to attracting the broad sector of the cycling population that are interested in cycling but may be reluctant to exclusively use the on-road network due to lack of confidence or experience and concern about personal safety on the road. Improving the off-road network is viewed as a strategy to provide choice, encourage more people to cycle more often, enable them to increase their ability as cyclists with the ultimate goal of giving them the confidence to travel throughout the city by bicycle regardless of whether they are using the trail network, on-road bicycle lanes or any city street.

The City currently has over 110 linear kilometers of off-road trails; classified as Primary, Secondary; or Tertiary in the GTMP depending on their location and function. The trails have been designed and constructed to a variety of standards; some of this variation can be attributed to when they were built. Typically older trails in the city are narrower and contain a mix of surfaces including native/natural earth, moderate to coarse gravel, limestone screenings / stonedust, asphalt, patterned asphalt, unit pavers / interlocking stone and concrete.

The current off-road trail network includes some segments that do not meet cyclists' needs for destination-based active transportation trips – including narrow widths, surface treatments, grading and drainage issues, and barriers / discontinuities.

The ATN Study assesses the feasibility of upgrading and maintaining of just over 45km of existing and proposed Primary Trails in Guelph for the purpose of improving all-season, off-road, destination-based active transportation corridors through the City of Guelph. Primary Trails are defined in the Guelph Trails Master Plan (GTMP) as main north-south or east-west trail routes to provide access to city-wide destinations.

It is important to note that the ATN Study does not assess the entire city-wide off-road trail network. Figure 1.1, Schedule 2 from the Terms of Reference for the ATN Study illustrates the Draft Proposed Active Transportation Network (ATN), which is the focus of the feasibility assessment. It is generally consistent with the Primary Trail network in the GTMP, and represents a portion of the City's overall off-road trail network.

Active Transportation Network Proposed Route (Conceptual)



Figure 1.1: Draft Proposed Active Transportation Network (ATN) taken from the Request for Proposal document

The scope of the ATN Study consists of:

- ▶ Background data collection, evaluation of existing and proposed facilities and review of industry best practices in order to develop recommendations for improvements to the selected portion of the City's trail network
- ▶ Design guidelines and evaluation of the construction feasibility and estimated cost to upgrade and maintain the selected network
- ▶ A natural heritage study of the selected portion of the City's trail network to identify segments requiring further studies of environmental impacts as part of the implementation for completing the recommended improvements.

The ATN Study provides a design feasibility level of analysis and recommendations. It is important to note that detailed design is still required for each improvement project. This detailed design process will confirm the exact improvements, alignment adjustments / alignment of new links, additional study, consultation and approval requirements and provide a more detailed construction cost estimate. Where required, based on the nature and extent of individual improvement projects City staff will then report back to the City's Infrastructure Development and Enterprise Committee with the details and cost of the project and request Council's direction to proceed with tendering the project (seeking bids from contractors) and construction.

1.2 STUDY PROCESS

The ATN Study included the following steps:

12. Assemble base information using the City's GIS database and recent high resolution aerial imagery
13. Review relevant City policy
14. Review the Draft Proposed Active Transportation Network (ATN) from the ATN Study Terms of Reference
15. Develop and launch the public engagement program consisting of on-line and in-person activities
16. Conduct trail user data collection at select locations on the existing trail network throughout the city
17. Field inventory of the draft proposed ATN (travel the entire ATN on bicycle / on foot)
18. Public and Stakeholder Consultations (round 1)

19. Suggest modifications to the ATN based on field investigations, public and stakeholder input
20. Additional field investigations to refine the ATN and collect specific information regarding improvements and new links. This included a site visit and preliminary review for each identified project, and data collection (e.g. field notes and select measurements, digital photography and GPS waypoints). Data collected included information regarding existing site conditions and issues influencing detailed design, approvals, constructability and implementation cost;
21. Undertake the natural heritage study of the refined ATN route
22. Public and Stakeholder Consultations (round 2)
23. Develop Individual Project Area Information Sheets and supporting maps for each section of the ATN which include
 - a. Location of the project;
 - b. Rationale for the project including connections key destinations and other parts of the City's active transportation network (e.g. other off-road trails and on-road cycling facilities)
 - c. Presentation of recommendations regarding design improvements, typical design details and site specific design considerations;
 - d. An opinion of probable construction and maintenance/operational cost;
 - e. Identification of stakeholders and agencies, which have an interest and or jurisdiction associated with the identified project;
 - f. Suggested priority and next steps to advance the project.
24. Prepare the draft and final ATN Study report.

1.3 ORGANIZATION OF THE ATN STUDY REPORT

The ATN Study report contains the following

- ▶ **Chapter 2: Policy Context** provides a brief summary of key City policy plans that inform and support the ATN Study.
- ▶ **Chapter 3: Informing the Active Transportation Network Study** summarizes the data collection process and key findings from field investigations, research, public and stakeholder engagement during the project. A complete summary is contained in Appendix A – as a separately bound technical appendix.
- ▶ **Chapter 4: The Recommended Active Transportation Network** defines the recommended Active Transportation Network (ATN) and provides detailed recommendations regarding trail improvements, including mapping of all segments of the ATN.
- ▶ **Chapter 5: Design Guidelines** provides recommendations for the design of specific components of the ATN, maintenance of the network, and some guidance on managing certain aspects of ATN use.
- ▶ **Chapter 6: Implementation** identifies the approach to implementation, provides a list of the suggested high priority projects, grouped according to (i) improvements to the existing network and (ii) expansion of the network. The **Natural Heritage Study** is contained in the separately bound technical Appendix B. It provides direction on assessing potential impacts of trail improvements on those segments of the ATN that are located within the City's designated natural heritage areas.

2.0 POLICY CONTEXT

This section provides a brief synopsis of relevant policy documents and policies that relate to / support the objectives and recommendations of the ATN Study.

2.1 CITY OF GUELPH OFFICIAL PLAN (2012)

The Official Plan is the overarching visioning and planning document that sets out the goal, objectives and policies to shape the way that Guelph will change and grow over time, promote long term sustainability and maintain the good quality of life in the City. It includes strategic goals and policies surrounding a variety of important themes including land use, development, municipal services, protection of valuable resources, and transportation.

A strategic goal under the transportation theme is to develop

“a safe, efficient, convenient and sustainable transportation system that provides for all forms of travel including cycling and walking.”

This strategic goal is further articulated in key transportation objectives

- ▶ To derive a transportation system, involving all forms of transport modes, to move people and goods in an environmentally efficient and effective manner
- ▶ To implement programs to facilitate and encourage greater and safer use of the bicycle as a mode of transport
- ▶ To support measures to improve the pedestrian environment and system
- ▶ The City supports the creation of programs and facilities that will encourage walking and greater use of bicycles.

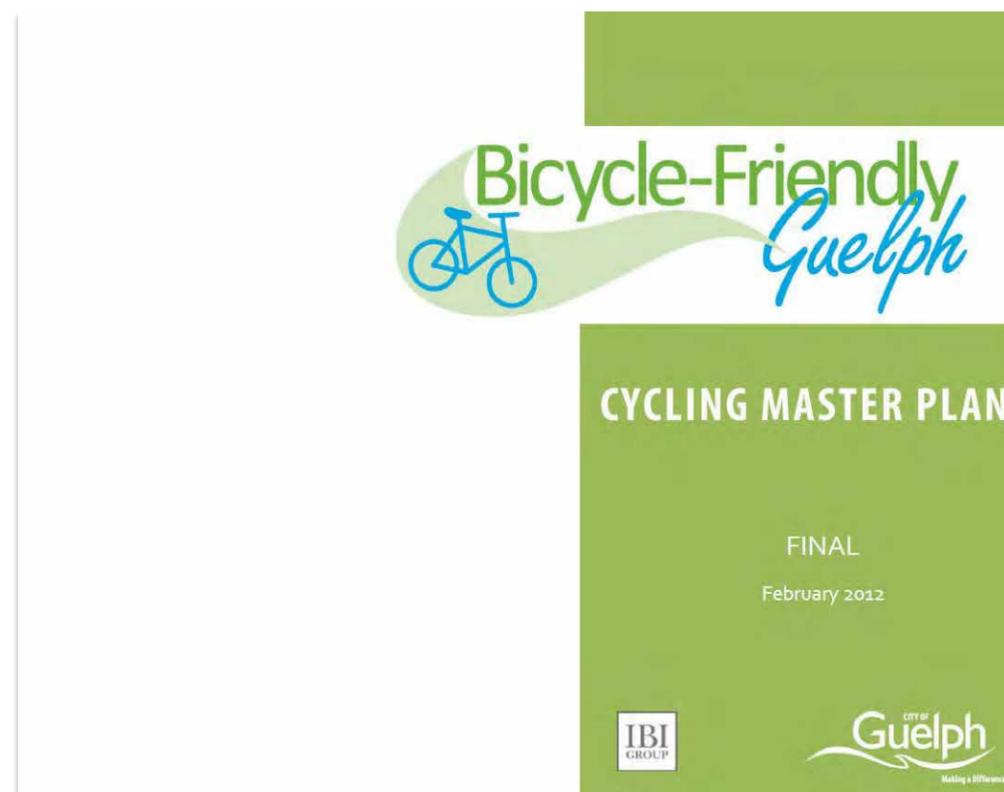
The strategic goal and accompanying objectives are supported by policies to

“ensure that pedestrian and bicycle networks are integrated into transportation planning to

- i) provide safe, comfortable travel for pedestrians and cyclists within existing communities and new development; and
- ii) provide linkages between intensification areas, adjacent neighbourhoods and transit stations, including dedicated bike lane space for cyclists on the major street network where feasible.”

2.2 CITY OF GUELPH CYCLING MASTER PLAN (2012)

Approved by Council in 2012, the Cycling Master Plan is a 10-year plan to guide the development of a cycling network throughout Guelph and provide a framework for programs and policies to encourage more people to cycle more often for fun, fitness and day-to-day travel throughout the city. It is the ‘operationalization’ of Bicycle Friendly Guelph, the original initiative and vision directed at making Guelph a better place to bicycle. The Cycling Master Plan is one part of the City’s broader commitment to encourage sustainable transportation options by including cycling as a means of reducing traffic congestion and related emissions.



The Bicycle-Friendly Guelph Cycling Master Plan (2012)

The vision established in the Cycling Master Plan is to “become one of Canada’s most bicycle-friendly cities by providing a safe, attractive, and practical cycling environment.” Tripling the city-wide cycling modal share by improving the cycling network, enhancing road safety, fostering a better understanding among cyclists and motorists about sharing the road is one of the Plan’s key objectives.

The Cycling Master Plan sets out 22 recommended objectives / actions related to both physical and social infrastructure organized under the 5 umbrellas of

- ▶ Engineering: enhancing the Bikeway Network
- ▶ Education and Encouragement: promoting a bicycle-friendly community
- ▶ Enforcement: Protecting a cycling-friendly environment
- ▶ Evaluation: monitoring progress in achieving goals and targets; and Implementation: successfully implementing the Cycling Master Plan.

The Cycling Master Plan documents existing cycling patterns in Guelph and the status of cycling network infrastructure and it examines user travel preferences and perceptions related to cycling safety and challenges. Infrastructure improvements to the cycling environment are described through various types of facilities that comprise a comprehensive network, and this is supported by the recommended city-wide cycling network which illustrates cycling routes and recommended infrastructure on those routes. The Plan also provides a suite of performance indicators that can be used to measure progress and success in the implementation of the Master Plan.

The ATN Study supports the physical infrastructure objectives (Engineering) aimed at enhancing and improving the bikeway network by maximizing cycling connections and reducing barriers to cycling, and is part of the overall picture to provide a comprehensive cycling network in Guelph.

2.3 CITY OF GUELPH TRAILS MASTER PLAN (2005)

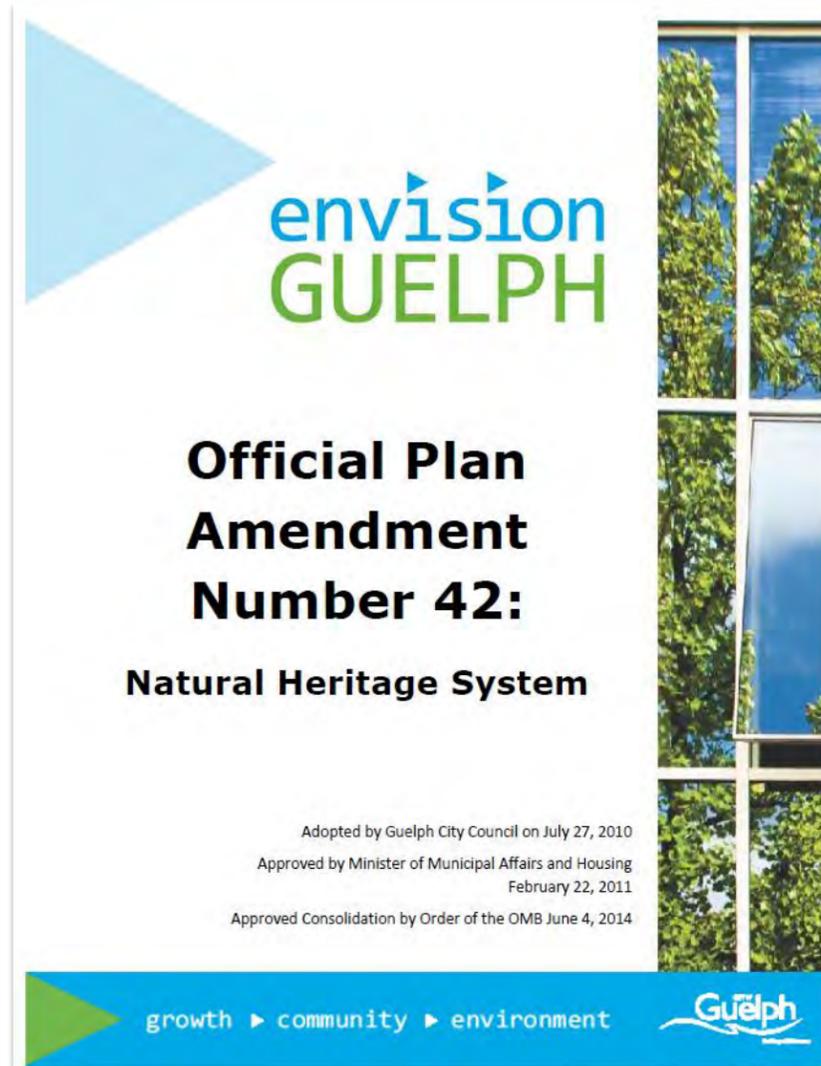
The Guelph Trails Master Plan (2005) was the city’s first comprehensive master plan for trails. Prior to its completion the City had been designing and implementing trails in parks, natural areas, new communities and civic spaces throughout Guelph on a project-by-project basis.

The GTMP established an overall vision for trails in the city, and has been used as a guiding document since 2006. Though the Trails Master Plan is currently being updated, it has successfully provided the guidance to implement numerous improvements to the existing trail system and many kilometres of new trails throughout the city.

The Trails Master Plan includes:

- ▶ an inventory of trails existing at the time of the plan’s development
- ▶ insight from public and stakeholder regarding trail user preferences, behaviors, suggested locations for trail improvements and future trail links
- ▶ a network of Primary, Secondary and Tertiary level trails along with design guidelines for the development of each trail type
- ▶ design guidelines for amenities to support the trail system such as staging areas and trail entrances; trail crossings; trail signage etc.
- ▶ guidance regarding implementing trails in existing neighbourhoods
- ▶ guidelines and recommendations for working with the development industry to ensure that trail planning is an integral part of the community design process, that trail routes are connected with surrounding neighbourhoods, and that trails are implemented at the same time as other public infrastructure
- ▶ suggested priorities for implementation along with estimated costs to construct and maintain the trail network.

In addition to the on-road network of facilities for cycling, trails serve an important active transportation function for cyclists and pedestrians alike. The ATN Study examines a portion of the GTMP network - generally consistent with the Primary Trail network and makes recommendations to improve these routes for day to day active transportation use.



Official Plan Amendment No. 42

2.4 CITY OF GUELPH OFFICIAL PLAN 2001 (2014 OFFICE CONSOLIDATION)

The natural heritage system policies contained in the 2001 Official Plan (2014 Office Consolidation) form part of the Official Plan and replace the Greenland's System policies of the 2001 Official Plan. The Official Plan (2014 Office Consolidation) identifies natural heritage features linked by natural corridors that are necessary to maintain biological and geological diversity, natural functions and ecosystems within the City. The natural heritage system also includes lands that have been restored and areas with the potential to be restored to a natural state.

The goal of the Strategy are to:

- ▶ protect natural features and areas for the long term
- ▶ and strike the balance between protection of the natural heritage system, compatible use and development
- ▶ minimize the impacts to natural heritage features and areas.

Passive recreational activities such as trails are permitted within the natural heritage system, subject to the findings and recommendations of specific studies (e.g. Scoped Environmental Impact Study (EIS) or Environmental Assessment (EA) study).

The ATN Study includes a review of the natural heritage strategy, specifically to identify which of the proposed ATN routes are located within natural heritage areas, understand what improvements are being proposed and develop a draft EIS terms of reference for individual applicable segments in the ATN. The draft terms of reference will become the basis for developing the detailed EIS terms of reference at the appropriate time.

3.0 INFORMING THE ACTIVE TRANSPORTATION NETWORK STUDY

3.1 DATA PROVIDED BY THE CITY AND STUDY TEAM FIELD INVESTIGATIONS

Base data from the City’s Geographic Information System (GIS) was assembled and provided to the consultant team as a starting point for the ATN Study. Data layers included the street network, property boundaries, parks and open space, natural heritage, existing and future trails, existing and future on-road cycling routes, high resolution aerial imagery, and the Draft ATN route from the Request for Proposal. This data was used as a starting point for the development of all mapping and displays used throughout the ATN Study and the report.

Field investigations involved members of the study team traveling the ATN routes on foot and/or on bicycle. An initial field investigation of the Draft ATN route was conducted in June 2015 to understand the alignment, general characteristics, trail surface and width, sightlines, signage, opportunities and challenges related to upgrading the trail sections to improve conditions for cycling, and potential impacts to natural heritage areas. Data collection included field notes, GPS points and digital photography. The information collected was used to inform the preparation of materials for the first round of stakeholder and public consultation. Additional field investigations were conducted at select locations between October and December 2015 as part of refining the recommended ATN route, in preparation of materials for the second stakeholder meeting and Public Information Centre, and informing the development of recommendations in the ATN Study.



Existing Speed River Trail at Edinburgh Road, Guelph (2015)



Existing limestone trail near Milson Crescent, Guelph (2015)

3.2 PUBLIC ENGAGEMENT PROGRAM

The ATN Study included a robust public engagement program which provided stakeholders and citizens with multiple opportunities to provide input to the study. The City website was used to post notices about study events and display materials used at events. There were 2 formal rounds of consultation during the study; one at the early stage to raise awareness about the ATN Study and seek input on the general types of improvements being proposed; and a second round later in the study to solicit feedback on the recommended ATN route and some of the specific improvements being considered. Opportunities to provide input included:

- ▶ Trail intercept surveys (June 2015)
- ▶ Public agency and public stakeholder workshops (June 23, 2015, and February 11, 2016)
- ▶ Mindmixer forum hosted through the City's website from June 2015 through February 2016)
- ▶ Public Information Centres at the
 - Canada Day celebration at Riverside Park (July 1, 2015)
 - Tour de Guelph at the University of Guelph (July 7, 2015)
 - Guelph Farmers Market (October 31, 2015)
- ▶ Pop-up displays at various locations throughout the City during the course of the study.

The study team received a broad range of comments, many were specific to the ATN route and some were focused on trails and active transportation routes in other parts of the city. Comments and information gathered from the stakeholder and public engagement program were used to inform the selection of the recommended ATN route and various improvements recommended. Comments that pertained to trails in other parts of the city or related to other aspects of active transportation will be a valuable source of information for other studies and initiatives such as the update to the Guelph Trails Master Plan.

The following sections highlight some of the comments received, and a more detailed summary of comments is contained in **Appendix A**; a separate technical appendix.

3.3 TRAIL USER COUNTS AND SURVEYS

In addition to field investigations of the ATN route trail user data collection also involved trail user counts and intercept surveys at locations throughout the City's trail network in June, 2015. Twelve separate sites throughout the City were selected to gain a broad understanding of trail use in different parts of the city. Additionally data was collected at the sites during different days of the week and times of day, to gather information on both recreational and utilitarian / commuter trips. The sites selected are listed below and illustrated in **Figure 3.1**. User counts were taken at all 12 sites listed below, and intercept surveys were collected at 6 of the 12 sites. **Table 3.2** lists the number of interactions at each of the 6 sites; a total of 383 interactions.

- ▶ 1: Speed River Trail near the intersection of Delhi St and Riverview Drive (count)
- ▶ 2: Speed River Trail/Downtown Trail at Speedvale Avenue (count and intercept survey)
- ▶ 3: Downtown Trail near Marcon Street (count)
- ▶ 4: Downtown Trail at Eramosa Road Crossing (count)
- ▶ 5: Covered Bridge at the Eramosa River – Speed River confluence (count and intercept survey)
- ▶ 6: Silvercreek Trail at the Edinburgh Road crossing (count)
- ▶ 7: Eramosa River Trail at the Victoria Road bridge (count)
- ▶ 8: Westwood Road overpass of the Hanlon Expressway (count and intercept survey)
- ▶ 9: Hadati Creek Trail crossing at Chesterton Lane (count and intercept survey)
- ▶ 10: Centennial Park at the main trail intersection behind Oriole Cr (count)
- ▶ 11: Hanlon Road near the entrance to the Leash Free Zone (count and intercept survey)
- ▶ 12: Trail crossing of Gordon St between Clair Road and Clairfields Drive (count and intercept survey)

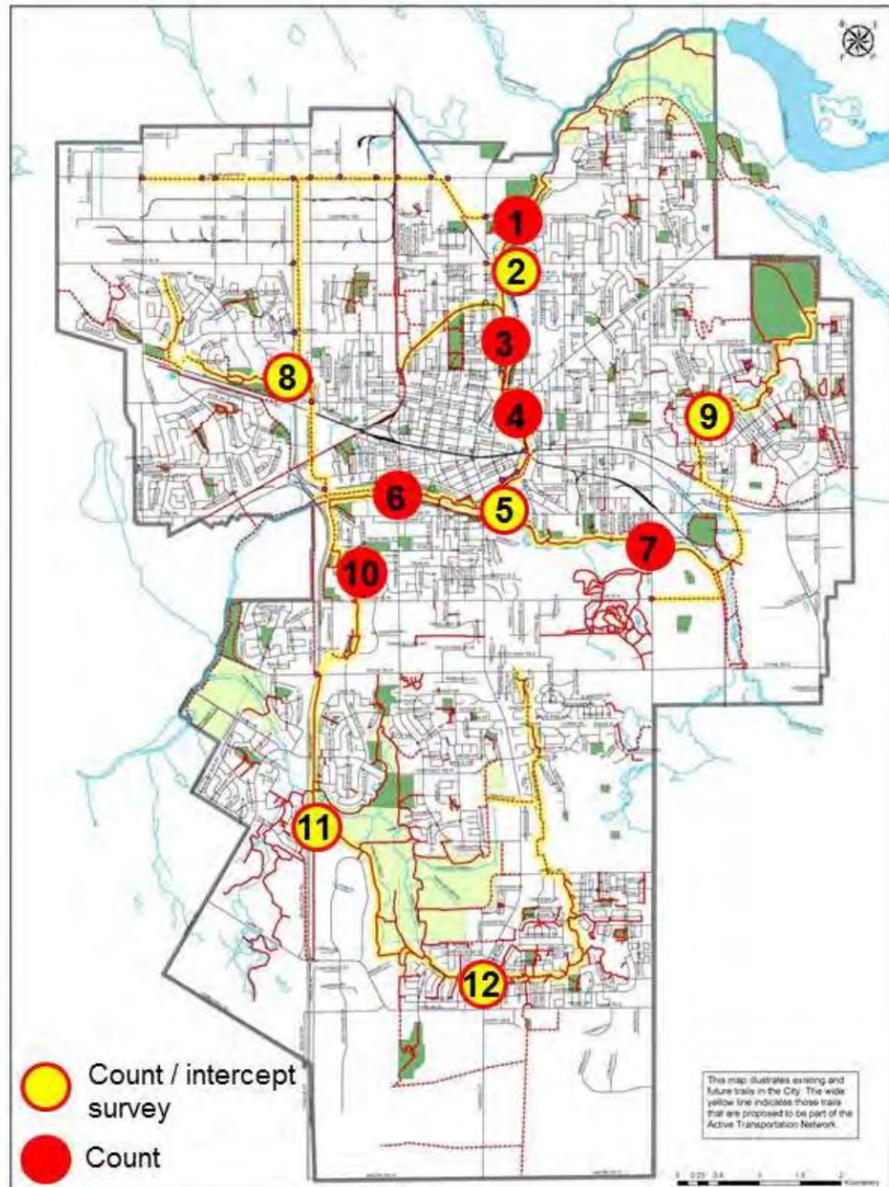


Figure 3.1: Map of city trail network with data collection points

Figure 3.2 provides a summary of trail user counts and intercept surveys. The highest user counts were recorded at Sites 1, 5 and 11. The Downtown Trail corridor between Riverside Park and the downtown area / Covered Bridge (Sites 1 to 5) represented 57% of the total number of trail users counted.

Figure 3.2: Trail User Counts and Intercept Surveys

Site	Pedestrians	Cyclists	Wheels ⁽¹⁾	Other	Total	Day	Intercept Surveys
1	492	71	5	1	569	Monday	n/a
2	173	29	1	0	203	Monday	45
3	281	96	0	3	380	Monday	n/a
4	210	81	0	2	293	Monday	n/a
5	427	131	0	1	559	Monday	126
6	145	96	0	0	241	Tuesday	n/a
7	58	21	0	0	79	Tuesday	n/a
8	241	45	0	0	286	Tuesday	47
9	64	3	0	0	67	Tuesday	14
10	199	69	0	3	271	Wednesday	n/a
11	491	53	0	1	545	Wednesday	131
12	64	35	0	0	99	Wednesday	20
Totals					3592		383

Notes:

1. Wheels includes skateboarders, in-line skaters

Intercept surveys asked respondents questions about the purpose of their trip and destination as well as questions related to potential trail improvements. Some popular responses regarding potential trail improvements included

- ▶ A desire for more trails in the City
- ▶ More amenities along the trails including waste receptacles, water fountains/stations, benches, washrooms (especially for young children and seniors)
- ▶ More shade along sunny stretches of trails
- ▶ Wider openings in trail gates
- ▶ Improved maintenance, including snow clearing
- ▶ Trail maps on signage
- ▶ Safer and dedicated crossings at busy roads (e.g. the Downtown Trail at Speedvale Avenue)



Intercept Survey (June 2015)

3.4 MINDMIXER

The Mindmixer platform hosted on the City’s website was used throughout the public engagement stage of the study. A series of questions and themes were posted at different points during this time, intended to focus respondents on various themes related to trail conditions and improvements for active transportation, receive input on the location and alignment of the ATN route as well as provoke general discussion about city trails as an element of the active transportation system. A number of themes emerged, some of which generated considerable discussion and comment.

- ▶ **Hard surfacing of trails:** This topic generated the most discussion. Respondents were very much divided over the concept of paving trails. Some noted they would rather see more kilometres of trails and better connectivity throughout the city rather than focusing on paving. Some viewed paving as less aesthetically pleasing and not sympathetic to park and natural area settings. Runners noted that paved trails are harder on their joints than granular trails. Grass and tree roots grow through the asphalt trails making them very uneven and cracked. A number of respondents noted a tendency for cyclists to travel more quickly on paved trails, potentially leading to more conflicts with slower moving users. It was suggested that only some trail routes be paved, such as those where there is no on-road cycling route to serve the same connection / link, and those on steeper slopes where granular trails tend to erode frequently. On the other hand it was noted that hard surface trails are easier to travel for users with mobility devices and small wheeled users such as in-line skaters and skateboarders.
- ▶ **Improving road crossings:** Providing safe, convenient and responsive controlled crossings of roads, particularly busy arterial roads were suggested as an important priority. A few locations were noted more often; Gordon Street at the Speed River / Boathouse / Royal City Park, Woodlawn Road at the Eramosa River (east side of river), Stone Road, Speedvale Avenue at the Downtown Trail.
- ▶ **Improving signage:** Some noted it is not obvious how some trails connect, and suggested the need for wayfinding signs along the trail system and signs with maps at trailheads and trail entrances. Some locations along trail where improved directional and regulatory signage is needed (e.g. Riverside Park to Woodlawn Avenue, where the trail could be widened and blind corners removed).
- ▶ **Improving and increasing maintenance:** Including winter maintenance of trails, vegetation removal, pruning of shrubs and trees encroaching into the trail.

- ▶ **Resisting the urge to remove challenges from all trails:** Challenges build physical and mental health.
- ▶ **Requiring developers to build trails:** In new communities at the time roads and houses are being built.
- ▶ **Upgrades to some trails and create more connections:** For example updating and upgrading the trail route from the Stone Road Mall area through Centennial Park along Municipal Street to the trail along the Speed River; working with the University of Guelph to improve the connection between City trails and trails in the Arboretum; generally adding more connections to key destinations such as grocery stores, community centres and schools.

3.5 STAKEHOLDER WORKSHOP AND PUBLIC INFORMATION CENTRE ROUND 1

The first round of stakeholder workshops and Public Information Centres focused on raising awareness about the Study and seeking input on the various types of improvements being considered for the ATN route. A public agency and public interest / stakeholder workshop was held on June 23, 2016 at City hall. Attendees included the GRCA, Hydro One, School Boards, Guelph Police, Guelph Hiking Trail Club, and Guelph Coalition for Active Transportation.

The first Public Information Centre was held at Riverside Park on July 1, 2015 during the Canada Day event. The study team was located at a tent / booth in the central exhibits area. Over 75 people interacted with the study team representatives by participating responding to questions on the display boards, marking trail destinations, desired improvements and new trail connections on route maps. The same display booth was set up at the Tour de Guelph at the University of Guelph on July 7, 2015 where it attracted attention and comments on the study from cyclists and volunteers taking part in the event. The following is a snapshot of comments received.

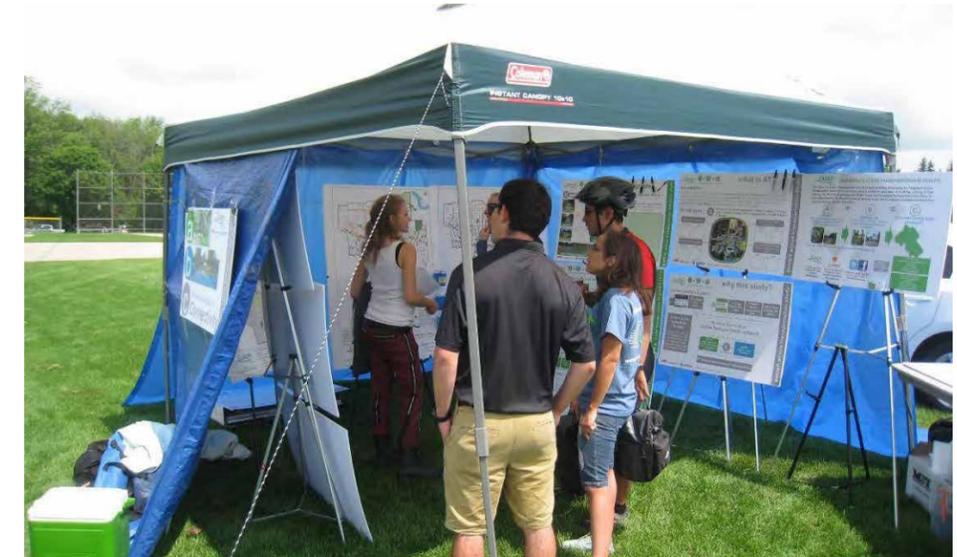
Connectivity, Specific Routes and Design

- ▶ Create a trail crossing of Speed River at the Wellington Road and Hanlon Expressway intersection
- ▶ Utilize city laneways rather than selling them to adjacent landowners
- ▶ Trails in Eastview area of the City are nicely developed with good linkages and good signage “a hidden gem”, but a better connection is needed along Eastview Road to Pollinators Park
- ▶ Trail along the Guelph Junction Railway is fantastic, add more trail sections to extend it further

- ▶ Improve connectivity to trails using the on-road network, and use this as a strategy to close gaps in the network, and focus on improving connectivity before upgrading existing trails
- ▶ Remove old asphalt and create 2 parallel trails in the hydro corridor / along Old Hanlon Road between Kortright Road and Stone Road
- ▶ Light the culvert/tunnel under the Hanlon Expressway south of Kortright Road
- ▶ The trail along Woodlawn Road is a great idea
- ▶ Provide more leash free trails in the city
- ▶ Improve signage and road crossings along the Spurline Trail
- ▶ Work with the University of Guelph to define a connection on the east side of the city and close this gap in the ATN (e.g. Hands Drive area through the Arboretum to College Avenue at Victoria Road)
- ▶ Create better definition of the Trans Canada Trail from Woodlawn Road through to Riverside Park
- ▶ Don't use woodchips on trails, they get too wet and soft, making trails muddy and hard to use
- ▶ Improve wayfinding on trails

Management / Implementation

- ▶ The need for and interest in participating in Trail Advisory Committee as a way to be “in the loop” on a regular basis about what is happening with trails in the Guelph
- ▶ The City should have a staff person dedicated to trail improvements
- ▶ Appreciate the winter maintenance of key trail routes (e.g. downtown area trails); consider expanding trail maintenance in winter. Winter maintenance provides critical access to schools and helps with dispersal of traffic around schools.
- ▶ The need for more/better general maintenance of trails (e.g. clearing encroaching vegetation, fixing potholes and ruts, replacing broken asphalt, replacing worn out signs, more regular emptying of waste receptacles etc.)

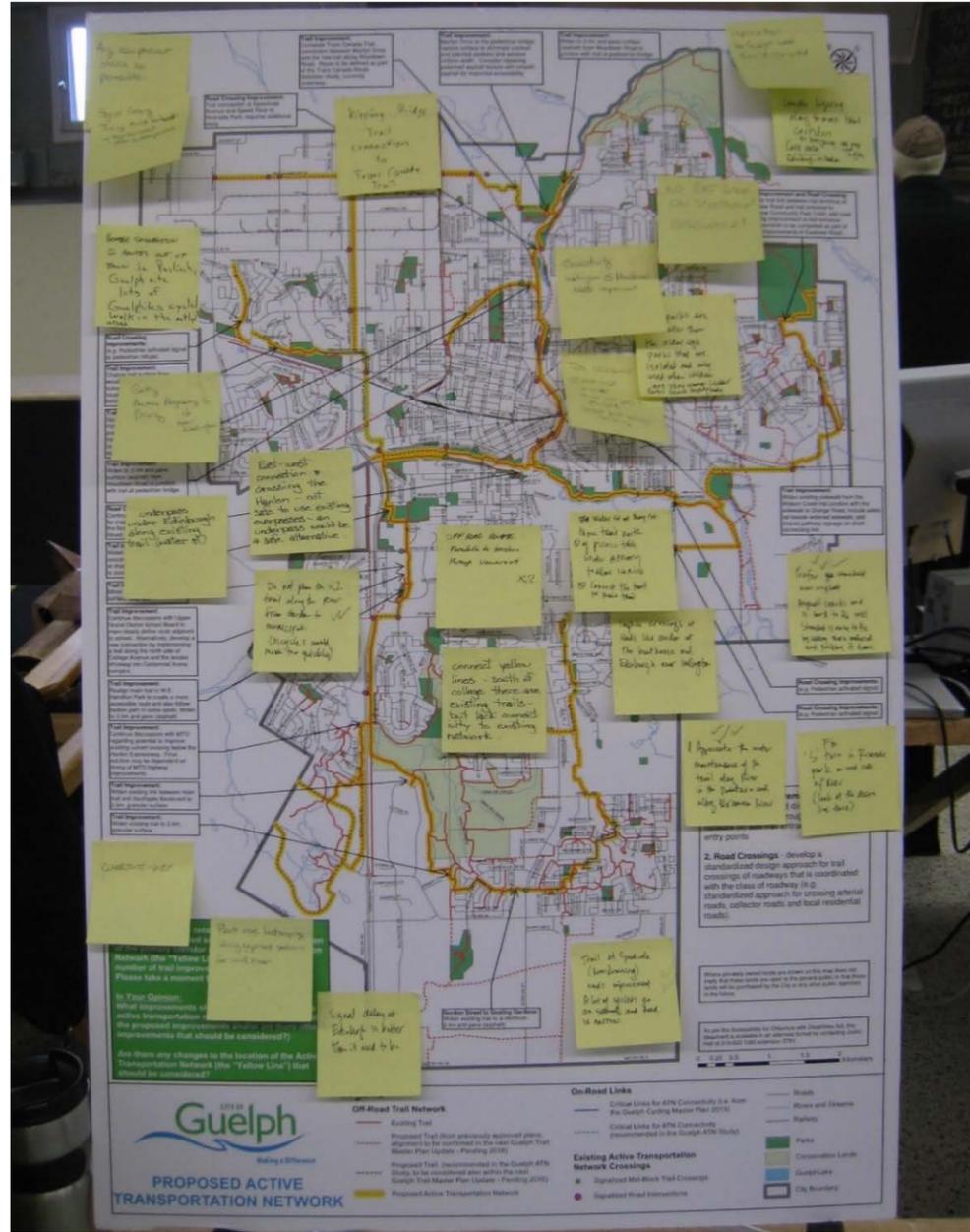


Public Information Centre, Canada Day at Riverside Park and Tour de Guelph (2015)

3.6 STAKEHOLDER WORKSHOP AND PUBLIC INFORMATION CENTRE ROUND 2

A second round stakeholder workshop and Public Information Centre was held toward the end of the public engagement process to provide participants with the opportunity to review the recommended ATN route, review some of the study team's findings and preliminary recommendations for priority projects. The PIC was held on Saturday October 31, 2015 from 7 AM to 12 noon at the Guelph Farmers' Market, where the study team interacted with more than 150 interested citizens. The second Stakeholder Workshop was held at City Hall on February 11, 2016, with the same group of participants from the first Stakeholder Workshop. The following is a cross-section of the comments received:

- ▶ Wayfinding and trail entrance maps, trail distance markers, interpretive signs, these are all needed on the trails. It was noted that these features can significantly benefit people with physical and mental health challenges
- ▶ Maps of the network (online and handout) should be a priority
- ▶ Trail etiquette / user education is an important part of promoting trail and active transportation use (e.g. making slower moving trail users aware of faster moving users, getting them to use the system in a respectful and cooperative manner)
- ▶ Permeable pavement should be considered when replacing old asphalt trails and when paving new trails / existing trails for the first time
- ▶ Need some paved trails for inline skaters, skateboarders, bicycles and people with mobility scooters
- ▶ Prefer stonedust over asphalt – hard to do a good job repairing asphalt, traction can be better in winter on ploughed granular trails than asphalt trails. Asphalt trails can have black ice in winter which is hard to see and can be treacherous
- ▶ Linear parks are much better than older style isolated parks, linear parks serve everybody and are a great place to put trails
- ▶ Trails benefit neighbourhoods and increase real estate values – people want to live near the trail
- ▶ Connectivity within the city and to surrounding areas
- ▶ Pedestrian signal delay at Edinburgh Road and the Speed River Trail is better than it used to be
- ▶ Improve the trail from Guelph Lake to Victoria Road
- ▶ Trail barriers / gate system – too tight in some locations
- ▶ Re-purpose the Niska Road bridge for a trail bridge somewhere in the city
- ▶ Extend the trail along the Guelph Junction Railway to Stevenson Street
- ▶ Improve trail crossings including the Trans Canada Trail at Eramosa Road; the Royal Recreation Trail at Woolwich and Wellington, and Wellington at Macdonell and at Gow's Bridge/McCrae Boulevard
- ▶ Do not pave trail along the Speed River from Gordon Street to Municipal St, or the Royal Recreation Trail from Woodlawn Road to Victoria Road
- ▶ Widen the trail in Royal City Park to meet high demand
- ▶ Connect the northwest part of the city via trail access over the Speed River near Wellington and Hanlon Expressway



Public Information Centre comments on an active transportation display board (2015)



Public Information Centre at the City of Guelph Farmers' Market (2015)

Comments and information gathered from the stakeholder and public engagement program were used to inform the selection of the recommended ATN route and various improvements recommended. A complete summary of comments received through the public engagement program is contained in **Appendix A** in a separate technical appendix.

4.0 Design Guidelines

This section provides guidance on various aspects of the design and maintenance of the ATN. It focuses on the off-road component of the ATN and addresses trail width and surface; trail alignments on private lands; accessibility; signage; trail crossings of roadways and other barriers; the management of the ATN in congested areas; and ATN route maintenance. In preparing these guidelines for the ATN a number of sources were reviewed, including the select references listed at the end of this report. Regarding the on-road components of the ATN Ontario Traffic Manual Book 18-Cycling Facilities and the Guelph Cycling Master Plan - Bicycle Friendly Guelph provide design guidance.

4.1 TRAIL WIDTH AND SURFACE

There are 4 basic trail types that make up the ATN:

- ▶ Asphalt surface trail in parks and public open space (**Figure 4.1**)
- ▶ Granular surface trails in parks and public open space (**Figure 4.2**)
- ▶ In-boulevard asphalt trail (within a road right-of-way (**Figure 4.3**))
- ▶ Boardwalks for sections the ATN that encroach on or pass through sensitive wetlands (**Figure 4.4**)

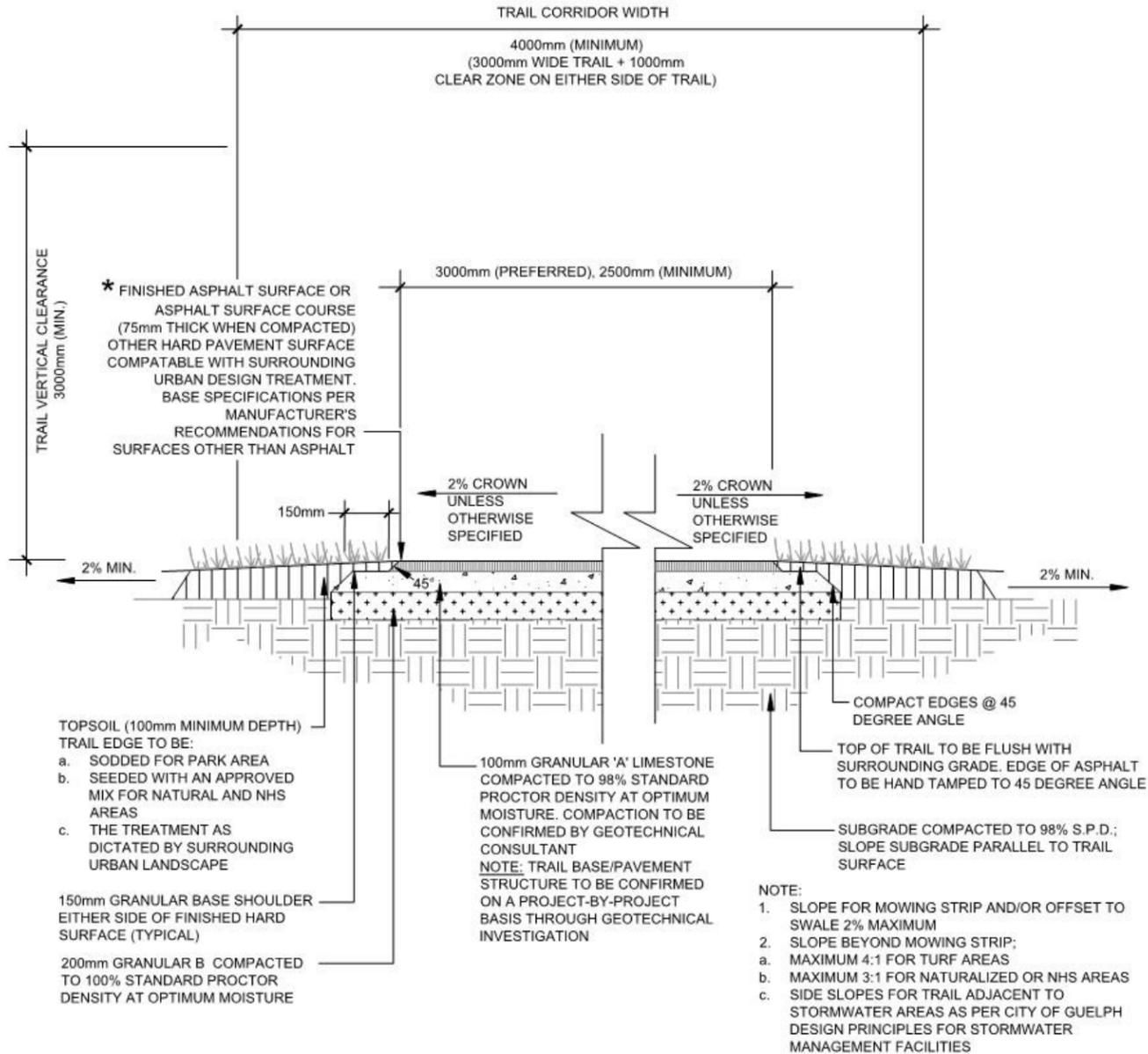


Figure 4.1: Asphalt surface trail in parks and public open space

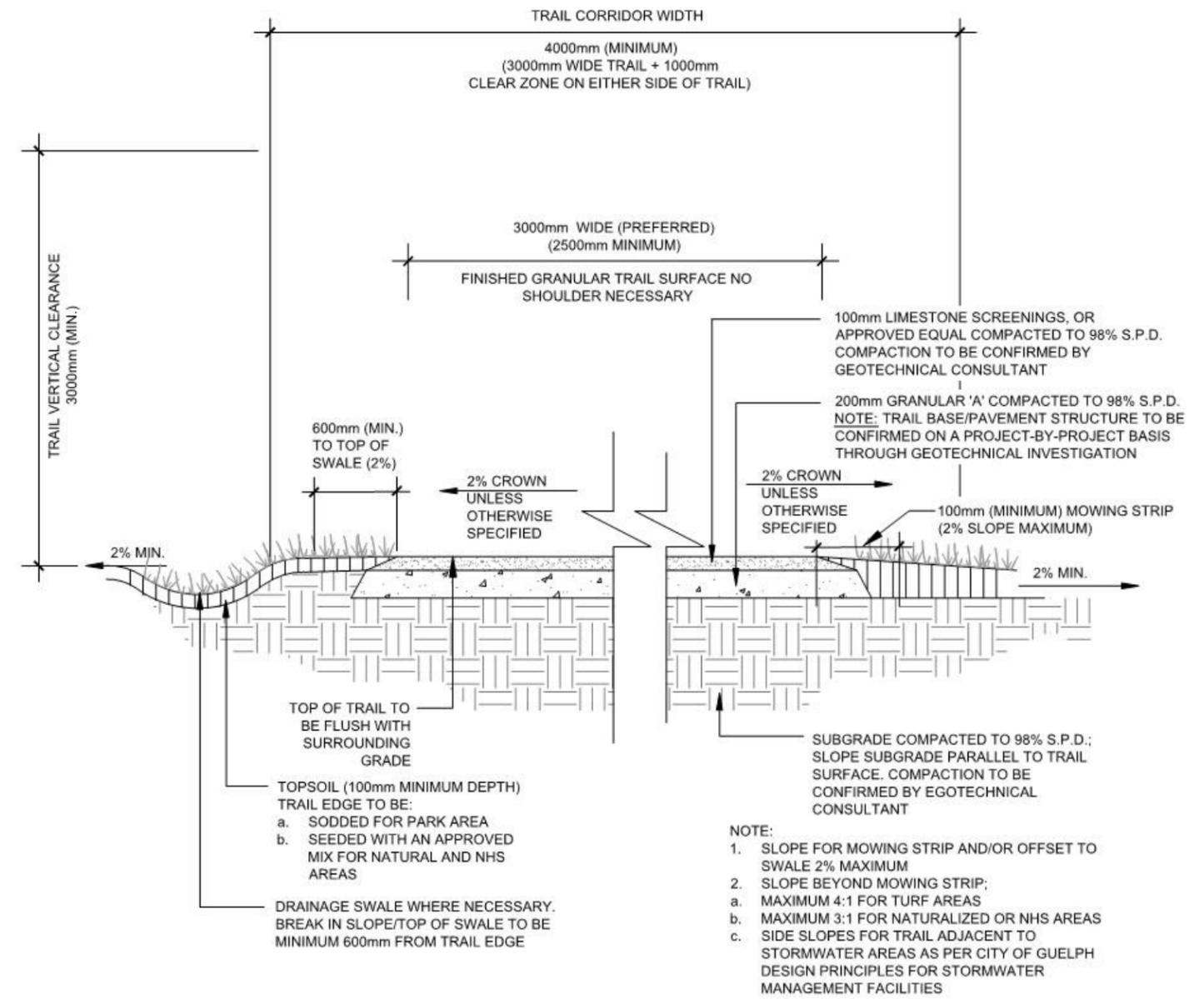


Figure 4.2: Granular surface trail in parks and public open space

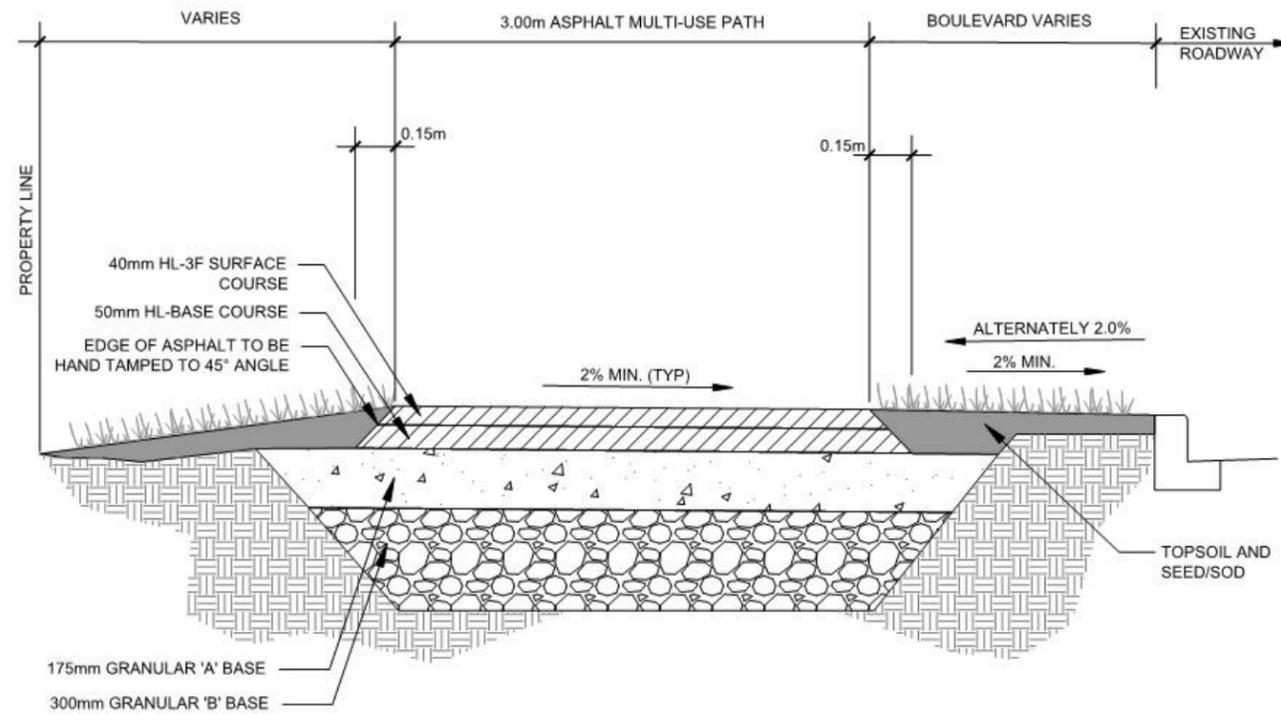


Figure 4.3: In-boulevard multi-use trail within a road right-of-way

Trail Width Considerations

In addition to the guidelines provided in **Figures 4.1 to 4.3**, the following are some additional considerations regarding trail width.

- ▶ The preferred trail width is 3.0 m; this may be reduced to a minimum of 2.5 m in constrained locations or to minimize impact to the adjacent landscape (i.e. in natural heritage areas)
- ▶ Consider widening to 4.0m in the most heavily used / congested areas or provide an alternate route for cyclists to avoid the congested area. Note this additional width does not apply to trails within designated natural heritage areas.
- ▶ Existing asphalt surface trails that are 2.4 m wide presently should be widened to 3.0 m at the time the asphalt has reached the end of its service life and requires replacement. At this time the base should be reviewed to ensure it is appropriate and up to the current standard, and the additional base width should be added to support the widened asphalt.
- ▶ A minimum inside curve radius of 10 m is recommended, based on an average travel speed of 20km/hr. This radius should be increased on downhill sections (preferred) or trail widening should be added to the curve to give users some additional space to maintain control their bicycles.
- ▶ A minimum horizontal clear zone of 0.6 m is recommended from the edge of the trail to obstructions (e.g. sign posts, utility poles, gates, fences, steep slopes etc.). Where this cannot be achieved the clear zone can be reduced as low as 0.3m. Where only the minimum clear zone cannot be achieved consideration should be given to adding Object Marker signs on, or immediately in front of the obstruction. This applies to both sides of obstruction so trail users coming from either direction are alerted to the narrow condition. This may be supplemented with a 100mm wide white edge line on the trail surface to alert users (applies to asphalt trails only).

Boardwalks

Where trails pass through sensitive natural heritage areas such as wetlands (e.g. marshes, wet meadows, shrub thickets and wooded swamps) a boardwalk will minimize impacts on vegetation and wildlife. Although boardwalk construction results in some impacts, they are much less in comparison to longer term impacts where there is no treatment / mitigation. If left untreated users tend to walk around obstacles such as wet spots and protruding roots gradually resulting in wider or multiple meandering “braided” paths, trampled vegetation, soil compaction and general erosion. Elevated boardwalks also allow small wildlife to pass freely below the trail and reduce the potential for accidental wildlife kills by pedestrians and cyclists. **Figures 4.4** and **4.5** illustrate some boardwalk examples, and the following are some key design considerations:

- ▶ Where the finished boardwalk elevation is close to that of the surrounding ground (e.g. less than 60 cm higher than the surrounding grade) a curb along the edge of the boardwalk is a suitable edge treatment that meets accessibility standards. Spacers below the curb are needed to permit water to drain freely off the boardwalk.
- ▶ Where the finished elevation is more than 60cm higher than the surrounding grade, a railing is recommended. They should be a minimum of 1.37 m in height to prevent cyclists from toppling over the railing.
- ▶ Deck boards must be oriented perpendicular to the path of travel, and spaces between deck boards must be less than 20 mm to prevent wheels, canes etc. from becoming caught between decking.
- ▶ “Bump outs” can be used along long sections of boardwalk to provide opportunities for users to pause without blocking other users from passing.
- ▶ Helical piles are an alternative foundation methodology that is cost effective and low impact compared to traditional concrete footings. Piles are drilled into the ground with small equipment then left in place to serve as the foundation. The use of helical piles helps to reduce the width of the construction corridor / disturbance and fewer trips to haul in materials for foundations.

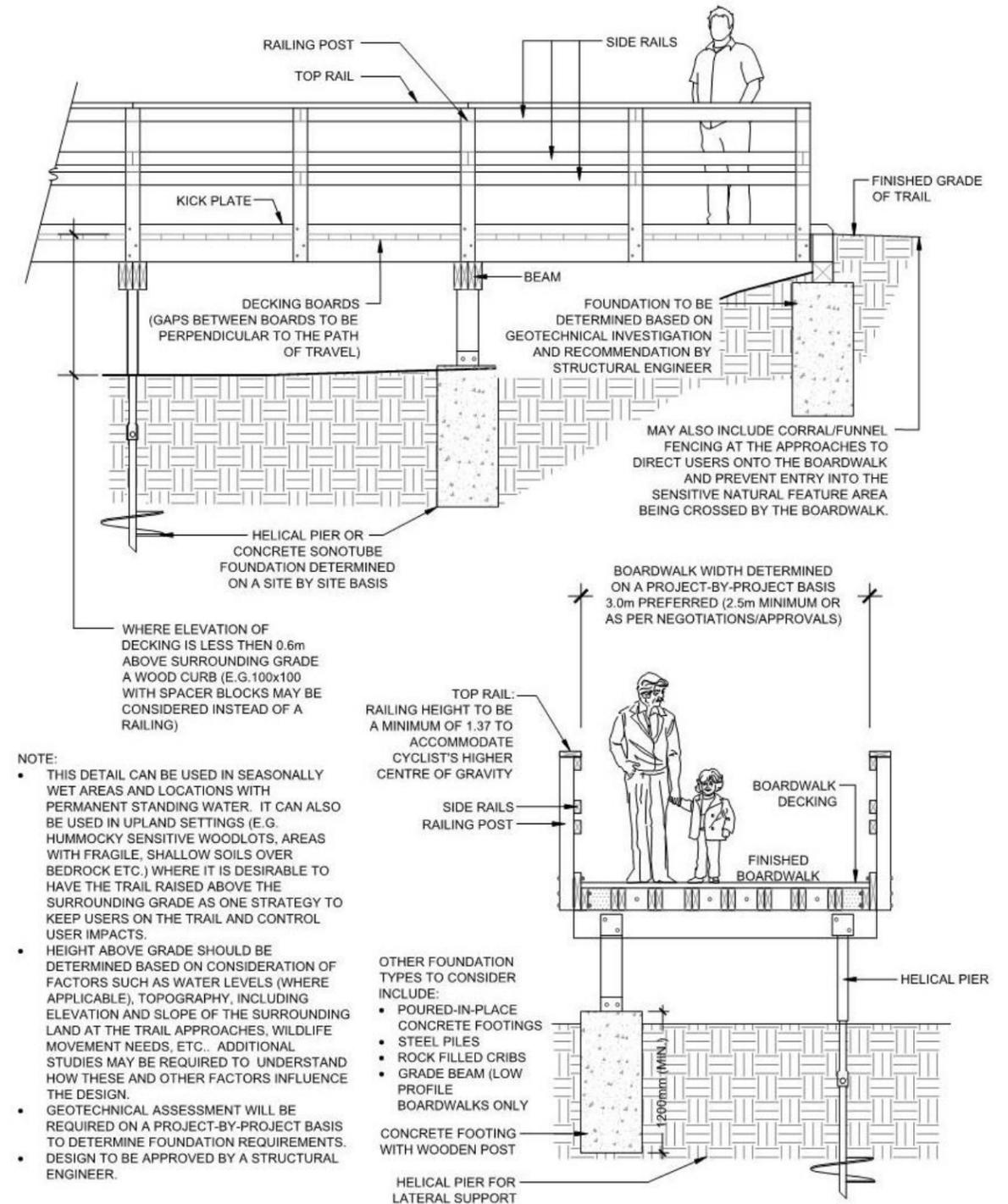


Figure 4.4: Example of a typical boardwalk



Figure 4.5: Boardwalks: top left – helical pier foundation Halton Hills Ontario, 2010; top right- Rondeau Provincial Park, Ontario over sensitive dunes, 2016, bottom left-low profile boardwalk with curb Inverness, Nova Scotia, 2017; bottom right through steeply sloped woodland, New River Gorge, West Virginia 2014

Trail Surface Considerations

Currently, more than half of the recommended existing off-road / trail portion of the ATN route is surfaced with limestone screenings. The ATN Study recommends upgrading a number of the existing limestone surfaced trail sections to hard surface (e.g. asphalt). Similarly, a number of the new proposed sections in the ATN are recommended to be asphalt surfaced. However this study does not recommend hard surfacing the entire ATN route. Rather it recommends a balance between hard and soft surface for the off-road / trail portion of the ATN route. A number of factors contributed to recommendations regarding hard versus soft surface.

- ▶ User preference - Throughout the course of the study the public sentiment regarding hard surfacing the entire ATN route versus having a portion of the network in a softer granular surface was clearly mixed. Though many preferred the hard surface for its firm and smooth finish when new and the ease of rolling on a new asphalt surface, there was an equal or greater number of comments from stakeholders and the public who were of the opinion that granular surfaces are easier on the joints when walking and running, they have a softer, more sympathetic appearance in a park or natural setting than asphalt, and a simple preference to “not ‘pave’ everything”.
- ▶ Impact on natural heritage areas – The base preparation required for asphalt trails involves a deeper excavation to remove all organic matter and roots as compared to granular surfaced trails. Asphalt trails require a full removal and replacement of the surface once it has reached the end of its service life. Both the initial installation and renewal can potentially result in more significant impacts to the surrounding natural area. Granular surfaced trails can have additional material added to the surface for renewal rather than stripping and removing materials from site, resulting in fewer / lower overall impact.
- ▶ Cost of repairs and ability to make effective repairs - Repairing asphalt surfaces requires cutting and patching whereas granular trails simply require “topping-up” of the surface / adding more material. Should the need arise to excavate below the trail base; the repaired granular surfaced trail can be easily blended with the surrounding trail giving it the look of a new trail. Over time asphalt surface trails can take on the appearance of a patchwork quilt of repairs that may not be consistent with the surrounding trail. Furthermore it is not possible to blend patches with the surrounding surface and each cut line from a patch represents a potential surface failure point in the future.

- ▶ The management of asphalt surfaces once they have reached their useable service life requires more energy and resources, and is less sustainable. Granular surface trails on the other hand can have an indefinite service life by simply adding to the surface as needed.
- ▶ The ability to provide dependable maintenance and give active transportation users the confidence they can use the trail for daily commuting, year-round. This also includes the City's techniques / practices to maintain granular surface trails during winter, which is unique. In most municipalities a hard surface trail is an absolute requirement before winter maintenance will be considered. Section 4.9 of this report describes the City of Guelph approach to winter maintenance on granular surfaced trails during normal winters. Note however that more freeze-thaw cycles and longer periods of thaw are becoming the norm for winter. Therefore the time in which granular surfaced trails are wet and soft may be increasing, rendering granular surfaced trails less accessible during longer periods over the winter.

Figure 4.6 provides some guidance regarding the decision to provide a hard surface (e.g. asphalt) or soft surface (i.e. compacted limestone screenings) when existing ATN routes are being upgraded or new ATN route links are being constructed for the first time.



Surface failure on an asphalt trail due to grasses and willows growing through, Guelph (2015)

Figure 4.6: Considerations for hard versus soft surfacing of trails in the ATN

Location / Consideration	Soft surface	Hard surface	Comments
Open areas		✓	<ul style="list-style-type: none"> Excavation for asphalt trail base in open areas has minimal impact to surrounding vegetation; herbaceous vegetation such as turf grasses and meadow species regenerate quickly. Reduced maintenance requirements for asphalt over granular in open settings; asphalt helps to control encroachment by grasses and herbs; regular surface grading is not required for asphalt.
Wooded areas	✓		<ul style="list-style-type: none"> Tree roots in wooded areas cause asphalt to buckle over time. Lifecycle replacement of asphalt creates additional impacts, whereas granular surfaces are easily topped-up in wooded areas with minimal additional impact after initial construction. Wet leaves and fallen branches / twigs on asphalt surface trails are more likely to result in traction issues than on granular surfaced trails. Asphalt surface trails attract small-wheeled users such as in-line skaters and skateboarders, which are more susceptible to slip and fall incidents than walkers or cyclists when traveling over sticks and wet leaves.
Key destination		✓	<ul style="list-style-type: none"> Trail sections that provide a direct connection to key destinations such as community centres and schools benefit from hard surfaced access; they provide access by all user types, including small wheeled users, and may be more easily maintained in winter months.
Within designated natural heritage areas	✓		<ul style="list-style-type: none"> Similar to wooded areas, the initial construction impact and lifecycle impact of asphalt trail construction within or immediately adjacent or within natural heritage areas is more significant than a granular surface trail.
Within Road right-of-way		✓	<ul style="list-style-type: none"> Also serves a key pedestrian function and needs to be hard surfaced for frequency of use and maintenance.
Longitudinal slope		✓	<ul style="list-style-type: none"> Where longitudinal slopes exceed 12% erosion of a granular surface trail is imminent, and becomes an ongoing maintenance issue. Realigning the trail to achieve a shallower slope and incorporating grade reversals, grade dips and culverts below the trail will assist with diverting water from the trail surface and will help to control erosion. Hard surfacing trails on slopes over 4% is a general City practice that helps to reduce erosion.
Organic soil	✓		<ul style="list-style-type: none"> Organic and wet / moist soil environments are more affected by freeze-thaw cycles because of higher moisture content and greater expansion during freezing. Asphalt trails in these environments are more susceptible to buckling. Tree, shrub and herbaceous plants tend to have shallower root systems in wet soil areas as compared to dry areas, and aggressive willow and wetland species are capable of growing through asphalt, compromising the integrity of the surface.

4.2 TRAIL ALIGNMENTS ON PRIVATE LANDS

Throughout the city there are a number of locations where trails cross privately-owned lands and lands owned by other public agencies. Formal agreements between the City and owner(s) exist for some of these routes, whereas others have simply evolved over time by citizens following desire-lines between destinations without any formal endorsement or agreement between the City and owner(s). Some of these trail routes across private lands offer an excellent opportunity to improve connectivity of the Active Transportation Network. Those that are considered good opportunities for ATN connectivity have been included in the recommended ATN route. In a number of case discussions have been underway for some time between the City and owner(s), and are at various stages of the process to secure an agreement. In cases where links across private or other public agency lands have been identified for the ATN and no discussions have taken place to date, the City should consider initiating discussions. Once a suitable agreement is reached the City should continue to engage the owners during the design and implementation of the connection.

The following are the private properties crossed by the ATN

- ▶ Hydro One corridor on the east side of the Hanlon Expressway and the proposed railway crossings within this corridor.
- ▶ Centennial CVI property (Upper Grand District School Board) on the north side of College Avenue
- ▶ Stormwater management maintenance access route from McWilliams Road to the former Laird Road right-of-way between Hanlon Creek Boulevard and the Hanlon Expressway, and the former Laird Road right-of-way between Hanlon Creek Boulevard and the stormwater management corridor to McWilliams Road.
- ▶ Access path beside 340 Southgate Drive that connects the trail along the west side of the Hanlon Creek wetland to employment destinations on Southgate Drive.

4.3 ACCESSIBILITY

The Accessibility for Ontarians with Disabilities Act, (AODA, 2005) includes the goal to make Ontario accessible for people with disabilities by 2025. Ontario Regulation 413/12 (O.Reg 413/12) made under the Accessibility for Ontarians with Disabilities Act, 2005 includes guidelines and standards that apply to new construction and extensive renovation of exterior pedestrian facilities. The regulation does not apply to on-road cycling facilities.

O.Reg 413/12 groups outdoor pedestrian routes into one of three categories as follows:

- ▶ Paths of Exterior Travel; which includes sidewalks and exterior walkways that connect directly to buildings and facilities. Examples include walkways that connect parking lots to buildings, main walkways in parks that connect to park pavilions, playgrounds and washroom buildings.
- ▶ Beach Access Routes; which are defined as the main connecting walkway(s) to beaches intended for public use.
- ▶ Recreational Trails; which encompass a range of facility types ranging from hard surface multi-use trails in major urban parks to natural surface walking trails in more remote areas.

Sections 80.8 and 80.10 in O.Reg. 413/12 provide the technical requirements for Recreational Trails. Some of the key requirements include:

- ▶ A minimum 1.0m wide tread free from obstructions
- ▶ A minimum of 2.1m clear head room above trail
- ▶ Trail surfaces that are firm and stable
- ▶ Openings in the trail surface must not allow passage of an object with a diameter of greater than 20mm, and elongated openings must be oriented perpendicular to the direction of travel
- ▶ Where trails are constructed adjacent to water or a drop-off the trail must have edge protection that prevents users from slipping over the edge. The top of the edge protection must be at least 50mm above the trail surface and it must be designed so as to not impede the drainage of the trail surface. Edge protection adjacent to water or a drop-off is not required where there is a protective barrier / railing that runs along the edge of the trail.
- ▶ Gates / barriers at trail entrances they must have an opening of between 850 mm and 1000mm
- ▶ Trailhead signage must indicate the length of the trail; type of surface; average and minimum trail width; average maximum running/longitudinal and cross slope; and the location of

amenities (where provided). Signage must have text that has a high tonal contrast with background colours to facilitate visual recognition, and text must use a sans serif font

- ▶ Brochures and media used to describe the trail must convey the same information in the same manner as required for trailhead signs.
- ▶ Signs and brochures must contain factual information about the trail (e.g. maximum slope, minimum width etc.) rather than subjective information (e.g. level of difficulty rating, which allows the user to make an informed personal decision whether or not to use the trail before they set out.

This section of O.Reg. 413/12 also recognizes exceptions where accessibility requirements can be waived. The exceptions generally relate to locations where:

- ▶ The impact of trail construction would adversely affect protected natural or cultural heritage resources, and these effects cannot be reasonably mitigated.
- ▶ It is not practicable to comply with the requirements, or some of them, because existing physical or site constraints prohibit modification or addition of elements, spaces or features that would be required to meet accessibility requirements.

Duty to Consult

The legislation also requires the City to consult with the accessibility community as part of the design / development process for the construction of new trails and significant redevelopment of existing trails. The Guelph Accessibility Advisory Committee (GAAC) provides vision and direction to staff and Council regarding accessibility, and engaging GAAC early in the design process is an effective method of sharing information and receiving feedback to inform the design.

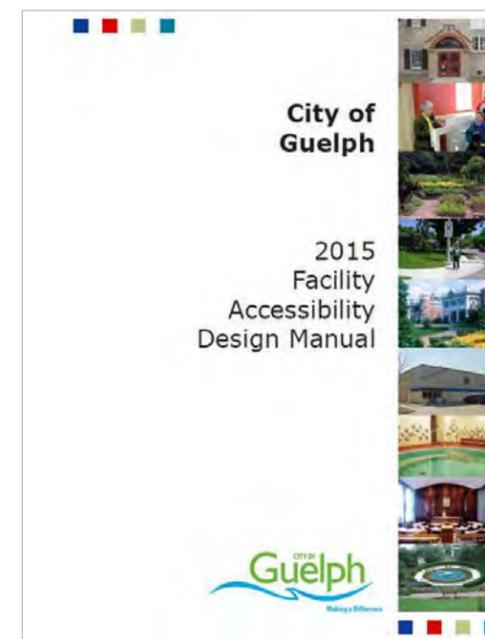
Consultations typically would focus on elements of the design including:

- ▶ General feasibility to meet accessibility requirements in the design of a particular new trail or trail improvement, and where requirements can be practicably be met, consulting on design criteria such as
 - Trail slope, the need for and location of ramps on the trail
 - The location and design of rest areas, passing areas, viewing areas, amenities along the trail and other pertinent trail features
 - Information related to accessibility that will be included on signage.

City of Guelph Facility Accessibility Design Manual (2015)

O. Reg. 413/12 also states that local accessibility standards shall take precedence over the provincial legislation where local standards are in place, and where they exceed requirements of the provincial legislation. The City of Guelph Facility Accessibility Design Manual (FADM) contains direction regarding trails over and above what is outlined in the provincial legislation. Additional requirements related to Recreational Trails are contained primarily in Section 4.5.2: Outdoor Recreational Facilities of the FADM, specifically:

- ▶ Trail routes shall be ideally sloped at no greater than 5% (1:20), and where technically feasible intermediate slopes of 1:12 to 1:20 shall have level rest areas 9m apart
- ▶ Steps, ramps and bridges shall have surfacing that is non-slip and includes colour contrasting handrails and/or guards
- ▶ Slopes on bridges shall not exceed 1:20
- ▶ Trails shall feature a tactile map at the start of the trail and periodically along its length
- ▶ Rest areas shall be provided on trails, positioned adjacent to the trail, have accessible ground surfaces, use contrasting finish material to identify functional change, incorporate at least one bench.



City of Guelph Facility Accessibility Design Manual (2015)

Rest Areas and the ATN

Specific recommendations regarding rest areas were not included in the Project Area maps for the ATN as this will require additional consultation with GAAC on a project-by-project / location-by-location basis. It is assumed however that on average one rest area every 150-200 m on the most the most heavily used sections of the ATN is appropriate, based on recommendations from GAAC.

A few key priority areas for a review of existing rest areas and upgrading with trail improvements include:

- ▶ Riverside Park to Downtown;
- ▶ along the Eramosa and Speed River from Victoria Road. to the Hanlon Expressway; and from the Speed River to Stone Road Mall through Centennial Park.



Rest area on Orin Reid Trail in Westminster Woods, Guelph (2015)



Rest area with wheelchair curb stop in Riverside Park, Guelph (2016)

4.4 SIGNAGE

As noted in Section 4.3 of this report there are specific requirements under O.Reg. 413/12 and FADM for trailhead and periodic wayfinding signs along trail corridors. These requirements would therefore apply to those sections of the trail network in the City that have been selected as part of the ATN. Suggested locations for trail directional signs throughout the ATN are noted on individual Project Area map sheets.

Trailhead / trail entrance and trail directional signs are part of a ‘family’ of signs for the trail system and the ATN. In recent years the City has implemented trailhead / trail entry signs and directional signs that are consistent with the City brand along some of the newer trails. Particular examples include trails in the northeast part of the City such as the Laura Bailey Memorial Trail and the Watson Creek Trail. These trail signs meet most of the requirements of O.Reg 413/12 and FADM, their design is attractive and materials used in their manufacture will offer a long service life and represent good value.

It is recommended that new trailhead / trail and trail directional signs for the ATN follow the design system established for the northeast trails with consideration for adding tactile qualities to the maps on trailhead and trail entrance signs.

Trail entrance signs following this new design / brand already installed in the northeast part of the city can be updated with tactile maps when they require replacement, and existing trail directional signs can have one of the four removable panels easily replaced with a new panel containing a tactile map.

<p>LEGEND:</p> <ul style="list-style-type: none">  Recreational Trail  Trail Access Point  Park and Open Space  Storm Water Management Pond  Creek  Washrooms  Parking <p>You Are Here</p>	<p>POINTS OF INTEREST:</p> <ol style="list-style-type: none"> 1. Laura Baily Memorial Trail 2. Grange Road Park 3. Severn Drive Park 4. Joe Veroni Park 5. Wetlands 6. Woodlot 7. Public Library 	<p>Trail Rules:</p> <p>Do not litter or dump waste. Stay on the marked trail. Do not disturb or remove any natural vegetation or wildlife. Cyclists yield to pedestrians. No motorized vehicles. Trails are prone to washouts. Please respect our environment</p>
	<p></p> <p>Maximum Running Slope 8% Cross Slope 2% Trail Width 2.5m Slope 0-4% Limestone Screenings Slope 4-8% Asphalt Paving</p>	

Appropriate messaging on a trail entry sign - Watson Creek Trail, Guelph (2016)



Trail entry sign - Watson Creek Trail, Guelph (2016)

4.5 TRAIL CROSSINGS OF ROADWAYS

There are numerous locations where off-road sections of the ATN intersect with roadways, and each of these locations is an access point where pedestrian, cyclist and vehicle traffic will need to be managed. Trail crossing design is founded on the following basic elements.

- ▶ Creating and maintaining an open sight triangle at the crossing point to allow trail users to see approaching vehicles and for trail users to be seen by drivers in approaching vehicles
- ▶ Access barriers on the trail which serve to:
 - prevent unauthorized users from entering the trail, and
 - act as a visual cue to trail users that they are approaching an intersection with the road
- ▶ Caution signs along the roadway in advance of the crossing point to alert motorists to the upcoming crossing
- ▶ Caution signs along the trail to alert users of the upcoming roadway crossing
- ▶ Aligning the crossing point to achieve as close to possible a perpendicular crossing of the roadway to minimize the time that users are in the traveled portion of the roadway
- ▶ A concrete ramp in the boulevard and curb ramps on both sides of the road to allow users to enter and cross the roadway efficiently and quickly
- ▶ Detectable warning plates which are
 - Mandatory for signalized crossings
 - Recommended unsignalized crossings
- ▶ Pavement markings where appropriate
 - Pavement markings, to delineate a crossing should only be considered at crossings where there is some form of vehicle control in place (e.g. stop sign, or traffic signal).
 - Pavement markings should not be used at uncontrolled trail intersections with roads (i.e. free flowing vehicular traffic that is not controlled by a stop sign or traffic signal). Trail users are required to stop and wait for a gap in traffic at uncontrolled intersections. Pavement markings at uncontrolled crossings may give trail users the false sense that they have the right-of-way over motor vehicles, which is contrary to the Highway Traffic Act.

Streetscape Guidelines to Improve Trail Crossings

In some locations signing on the trail may not be enough to get trail users to stop before crossing the road. Under these circumstances or in situations where the sight lines for motorists are reduced and/or where there is a tendency for motorists to travel faster than desirable, the addition of other elements into the trail crossing may be necessary. Changing the trail alignment may help to get trail users to slow and stop prior to crossing. Changes to the streetscape may also provide a visual cue and traffic calming effect for vehicles. **Figures 4.7 and 4.8** illustrate the key design principles for a controlled and uncontrolled trail crossing of a roadway.

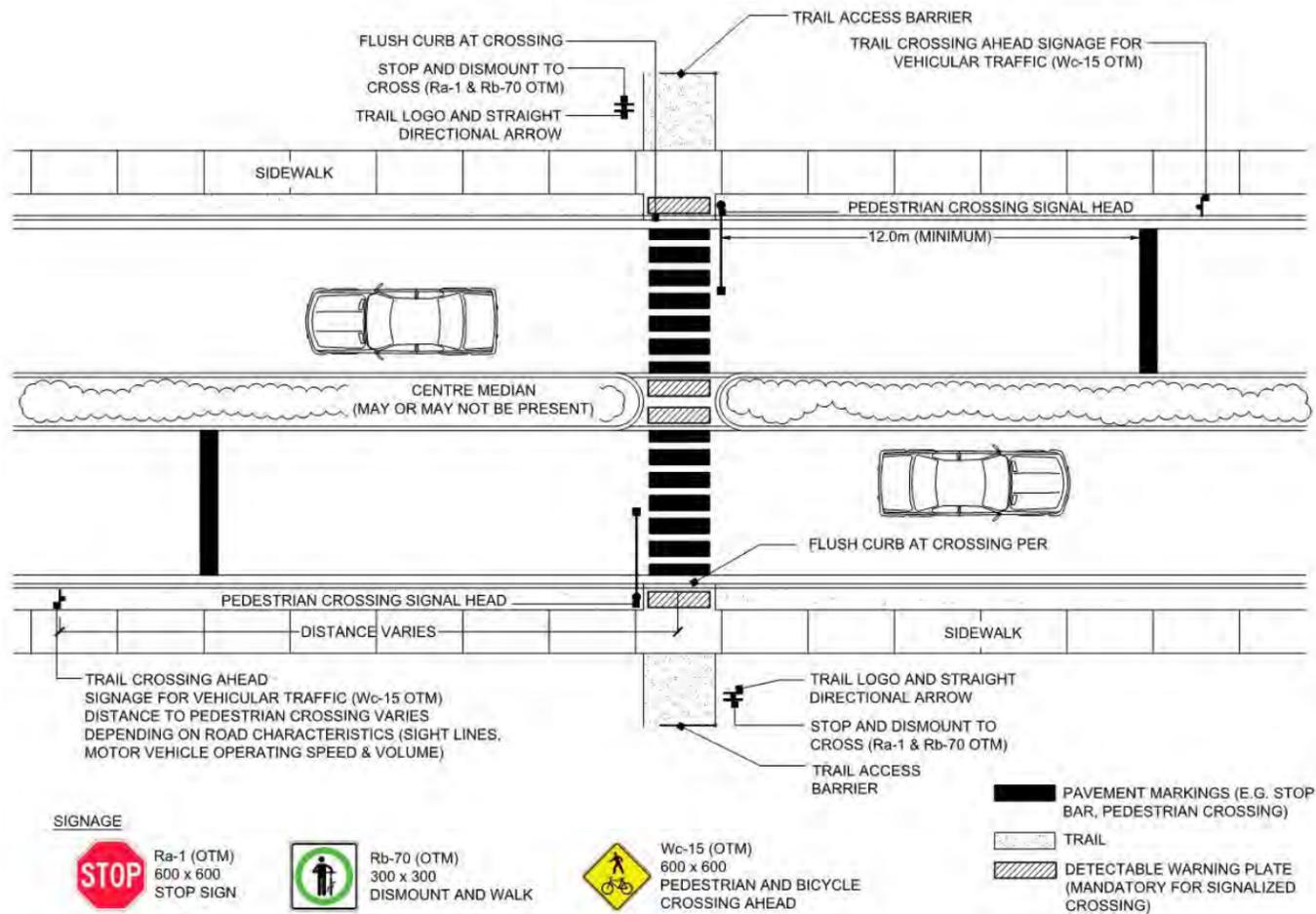


Figure 4.7: Trail crossing at a signal controlled location

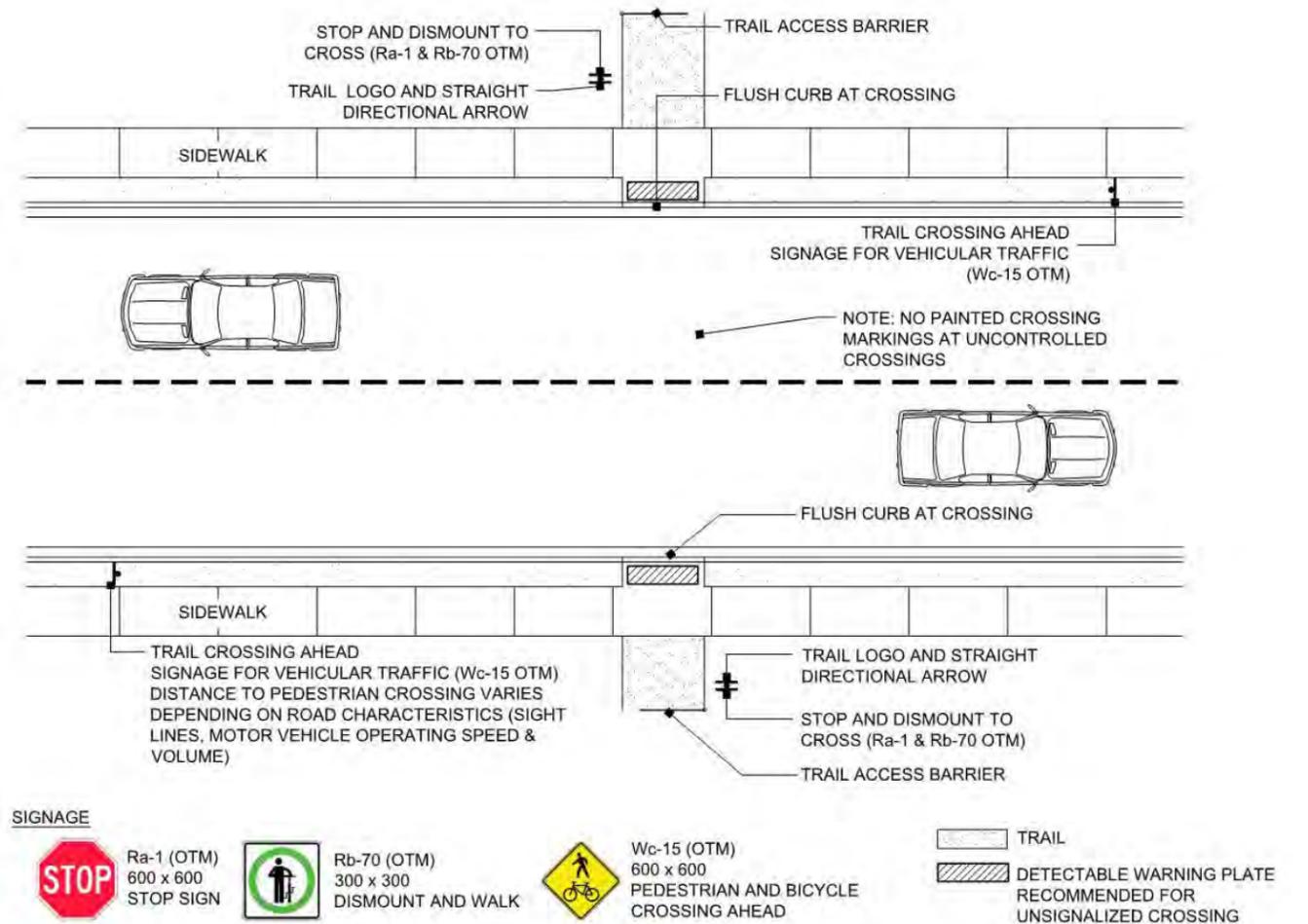


Figure 4.8: Trail crossing at an uncontrolled (unsignalized) location

Crossing Types

The type of crossing treatment selected generally depends on the type of road being crossed (e.g., low volume local street vs. urban arterial); number of lanes being crossed (e.g., 2-lane vs. multi-lane); traffic volume and vehicle operating speeds; sight lines (e.g., horizontal and vertical road alignment); and the anticipated volume of trail users. The following list of the general crossing types includes typical considerations for their application. They are arranged in order from crossings of low volume roads to high volume roads and controlled access highways.

Advance Warning Sign	Centre Median Refuge	Pedestrian Crossover	Mid-block Pedestrian Signal
<ul style="list-style-type: none"> ▶ 2-lane road cross-section ▶ Good sight lines (no horizontal or vertical curves in road that obstruct visibility of trail users or oncoming vehicles) ▶ Low motor vehicle traffic volume ▶ Low to moderate pedestrian volume (consider existing conditions and potential future demand) ▶ Residential neighbourhood in urban setting or collector road on the urban fringe 	<ul style="list-style-type: none"> ▶ 2-lane or multi-lane cross-section ▶ Generally good sight lines (no horizontal or vertical curves in road that obstruct visibility of trail users or oncoming vehicles), though could be used on 2-lane roads where there are minor sight line limitations ▶ Low motor vehicle traffic volume ▶ Low to moderate pedestrian volume (consider existing conditions and potential future demand) ▶ Rural, urban fringe or urban setting (e.g., collector or minor arterial road in urban setting) 	<ul style="list-style-type: none"> ▶ 2-lane or multi-lane cross-section ▶ Type 'A', 'B' or 'C' as per Ontario Traffic Manual Book 15 ▶ Good or slightly obstructed sight lines ▶ Moderate motor vehicle traffic volume ▶ Low to moderate pedestrian volume (consider existing conditions and potential future demand) ▶ Urban or urban fringe setting (e.g., collector or minor arterial road in urban setting) 	<ul style="list-style-type: none"> ▶ Multi-lane cross-section ▶ With or without centre median refuge ▶ Applied in conditions with good sight lines or compromised sight lines (other factors have greater influence on decision than sight lines) ▶ Moderate to high motor vehicle traffic volume ▶ Moderate to high pedestrian volume (consider existing conditions and potential future demand) ▶ Urban or urban fringe setting (e.g., arterial road in urban setting) ▶ In locations where there is no signal-controlled nearby (e.g. within 200 m of trail crossing point)
			
Elora Ontario 2016	Guelph Ontario, 2015	St. Thomas Ontario, 2016	Guelph Ontario, 2017

Intersection Pedestrian Signal	Cross Ride	Grade Separated Crossing	
<ul style="list-style-type: none"> ▶ Multi-lane cross-section ▶ Applied in conditions with good sight lines or compromised sight lines (other factors have greater influence on decision than sight lines) ▶ Moderate to high motor vehicle traffic volume ▶ Moderate to high pedestrian volume (consider existing conditions and potential future demand) ▶ Urban setting (e.g., arterial road) ▶ Trail crossing cannot be routed to a nearby stop-controlled intersection (e.g. within 200 m of trail crossing point) ▶ Note that signal control can also assist motor vehicles entering the arterial from the side street 	<ul style="list-style-type: none"> ▶ 2-lane or multi-lane cross-section ▶ Applied in conditions with good sight lines or compromised sight lines (other factors have greater influence on decision than sight lines) ▶ Moderate to high motor vehicle traffic volume ▶ Moderate to high pedestrian and cyclist volume (consider existing conditions and potential future demand) ▶ Signalized and stop-controlled intersections ▶ Private and commercial entrances with high volumes of vehicles entering / exiting ▶ Urban or urban fringe setting (e.g., arterial road in urban setting) ▶ Designed as per Ontario Traffic Manual Book 18 ▶ Bicycle crossing signal head (additional to pedestrian crossing signal head) which permits cyclists to ride through the pedestrian crossover area without contravening the Highway Traffic Act 	<ul style="list-style-type: none"> ▶ Controlled access highway, multi-lane road cross-section ▶ Can be applied in conditions with good or compromised sight lines (other factors have greater influence on decision than sight lines) ▶ High to very high motor vehicle traffic volume ▶ High pedestrian volume (consider existing conditions and potential future demand) ▶ Urban, urban fringe or rural setting (e.g., arterial road or controlled access highway in the urban setting) ▶ Trail crossing cannot be routed to a nearby signal controlled intersection, underpass or overpass ▶ Surrounding grades facilitate the design of a seamless crossing for trail users and the use of stairs or steep ramps can be avoided. Stairs or steep ramps on approach may discourage use of the grade separation 	
			
<p>Guelph Ontario, 2017</p>	<p>Caledon East Ontario, 2015</p>	<p>London Ontario, 2016</p>	<p>Above: Cambridge Ontario (2009) Louis Laroque Below: Waterloo Ontario, 2016</p>

4.6 TRAIL CROSSINGS OF OTHER BARRIERS

Waterways

Bridges are required for crossings of creeks and rivers. Prefabricated self-weathering steel truss bridges are typically the most cost effective form of bridge crossing. Though costly elements to design and implement their long service life makes them a worthwhile investment where a bridge is needed. Some key design considerations include:

- ▶ Bridge approaches, slope and surface decking must be designed to accessibility requirements as described in the Facility Accessibility Design Manual (FADM)
- ▶ Bridge railings should be designed to a minimum height of 1.37m; this height is important where cyclists are using the bridge as it provides the necessary protection due to a cyclist's higher centre of gravity on their bicycle
- ▶ The structure should be wide enough to accommodate maintenance vehicles, with the vehicle type being determined early in the design process
- ▶ The elevation of the structure shall meet Grand River Conservation Authority requirements regarding flood levels to potential for damage due to flooding and to prevent floating debris from being trapped.



Grade Separated Crossing in Westminster Woods – Guelph (2014)

Railways

Where the ATN crosses active railway lines crossing designs / design upgrades must follow Transport Canada Grade Crossing Standards (2014). Requirements are specific to the location, based on factors such as railway volume and speed; location relative to other crossings in the vicinity; proximity of the crossing to the existing road crossing of the railway (i.e. applies to on-road ATN crossing and ATN pathways within road rights-of-way); and whether or not the crossing is subject to whistle cessation.

<https://www.tc.gc.ca/media/documents/railsafety/grade-crossing-standards.pdf>



At grade railway crossing Hespeler, Ontario (2016)

4.7 MANAGING ATN USERS IN CONGESTED AREAS

Leash Free Zones

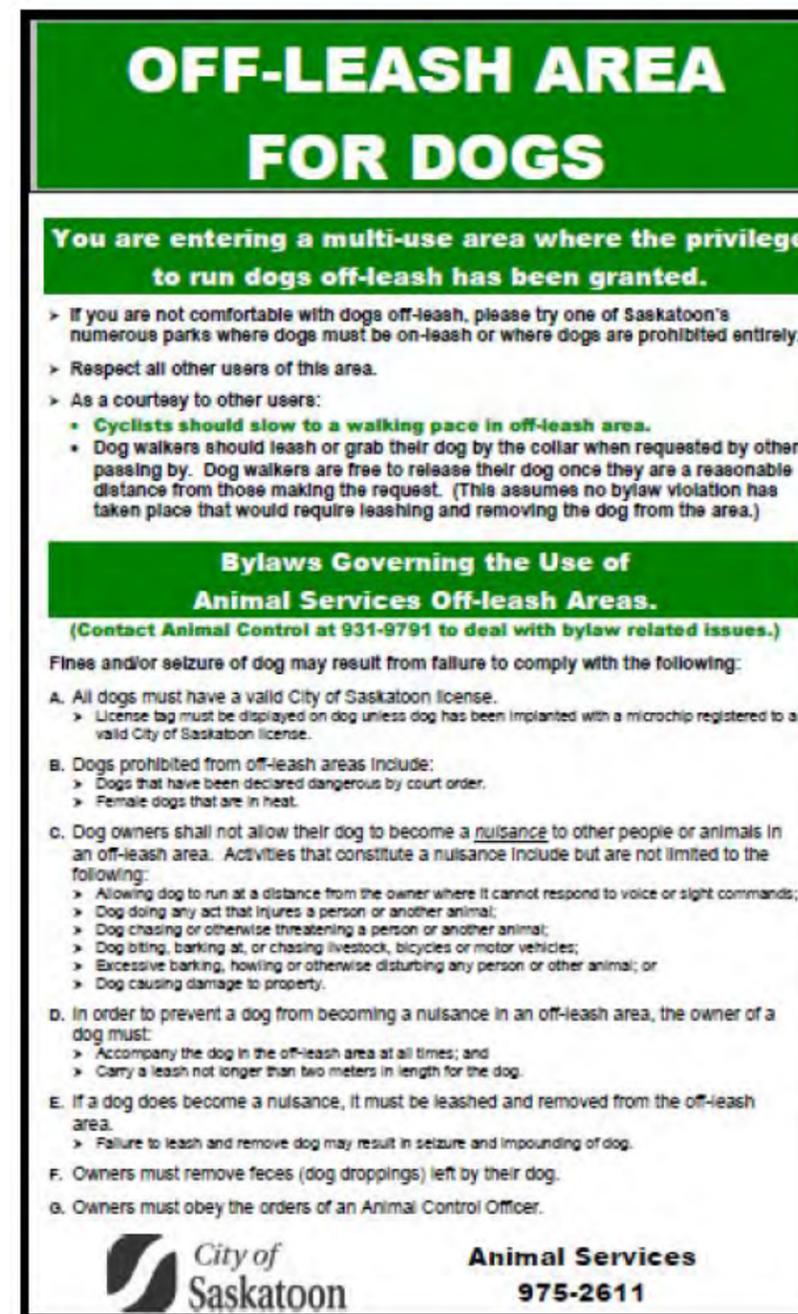
There are three locations throughout the city where the ATN passes directly through designated unfenced leash free zones including:

- ▶ The west side / west end of Margaret Greene Park
- ▶ John Gamble Park – hydro near Kortright Road. and the Hanlon Expressway
- ▶ Eramosa River Park at Victoria Road.

All three of these locations are very popular destinations for dog owners and their pets, giving them the necessary opportunity for exercise and socializing. Additionally there are a number of other areas where trails not included in the ATN pass through or nearby unfenced leash free zones. The combination of dogs running and playing freely with cyclists traveling at speed has the potential to create conflict and can be a source of complaints between the two user groups, especially during peak use times such as weekday evenings and weekends. Although from the ATN user perspective the preference would be to have leash free zones to be physically separated from trails and cycling routes (i.e. fenced), addressing the fencing question needs to be part of a broader discussion and policy decision by the City.

Regarding unfenced leash free zones best practice research suggests that etiquette, education and signage are tools that can be used to encourage cooperative behavior between cyclists and dog walkers / owners. Some suggested elements for the management and communication include:

- ▶ Caution signs along the ATN as the route approaches the leash free zone to alert cyclists that
 - they are entering the leash free zone where the privilege to run dogs off leash has been granted, and they should expect to encounter dogs running and playing freely, possibly crossing the cyclists' path of travel
 - some dogs may remain on-leash and leashes may extend across the cyclists' path of travel
 - a dog's movement can be unpredictable – they may suddenly stop, change direction, bolt, turn and bark etc.
- ▶ Signage should remind cyclists to be aware, proceed slowly (i.e. at a walking pace) and be prepared to brake should dog(s) suddenly change their path of travel.
- ▶ Similarly signage should inform dog-owners the trail is a key active transportation route and that cyclists will be traveling through the area. As such they should be prepared to control their dogs as necessary, and respect the use of the area by others, including cyclists.
- ▶ Mapping and promotion of the ATN should also recognize these areas and be used as an opportunity to share the messaging about cycling and dog owner etiquette in leash free zones. This could include an outreach campaign / event at the leash free zone once or twice during the busiest part of the cycling season.



Sample Etiquette Sign, City of Saskatoon

(http://www.mayerthorpe.ca/attachments/view/161/off_leash_paper3_2_.pdf)

Playgrounds and Congested Areas

There are a number of locations throughout the city where the Active Transportation route passes near playgrounds, for example MacAlister Park and Riverside Park where children will be playing and not always paying attention to their surroundings. Portions of the trail surrounding the playground are also promoted as a tricycle / bicycle loop for very young riders. Caution signage should be placed at the approaches to these areas to alert cyclists they are approaching a playground area and remind them to slow to 10km/hr. and be aware of children playing and possibly crossing the trail.

In locations where playgrounds are frequently very busy and the route is passing through an active playground area (e.g. where there are play structures on both sides of the ATN route), and where space is available, consideration should be given to designing a short alternate route around the playground area. In areas with hard surfacing, a different surface type or colour in the vicinity of the playground can also be used as a subtle cue to alert cyclists they are entering a different zone.

The signage and design techniques suggested for playgrounds can also be used in other busy or congested areas along the ATN, such as the River Run Centre, the soccer dome at Centennial Park and Riverside Park in the vicinity of the concession stand and carousel.



Trail through playground area – Guelph (2015)

Boulevard Multi-use Trails

Although the Highway Traffic Act requires vehicles entering the road right-of-way to yield to vehicles traveling within the road right-of-way (e.g. a car entering the road right-of-way from a private entrance/driveway and crossing over a boulevard multi-use trail), consideration should be

given to reinforcing this requirement with signage and local By-law. Yield signs to remind vehicle operators to yield to pedestrians and cyclists traveling in boulevard multi-use trails will help to reinforce and support this requirement.

Similarly signage and a supporting By-law to require cyclists to yield to pedestrians traveling in the boulevard multi-use trail will remind users on the facility to practice the courtesy of yielding to slower moving users.

The in-boulevard multi-use trail must be properly terminated so that users, in particular cyclists are aware that they must transition to the roadway. The termination should take place at an intersection and include signs to inform cyclists to dismount and embark on the roadway (on to bike lanes or an on-road signed route), and that cycling is not permitted beyond the end of boulevard multi-use trail (**Figure 4.9**).

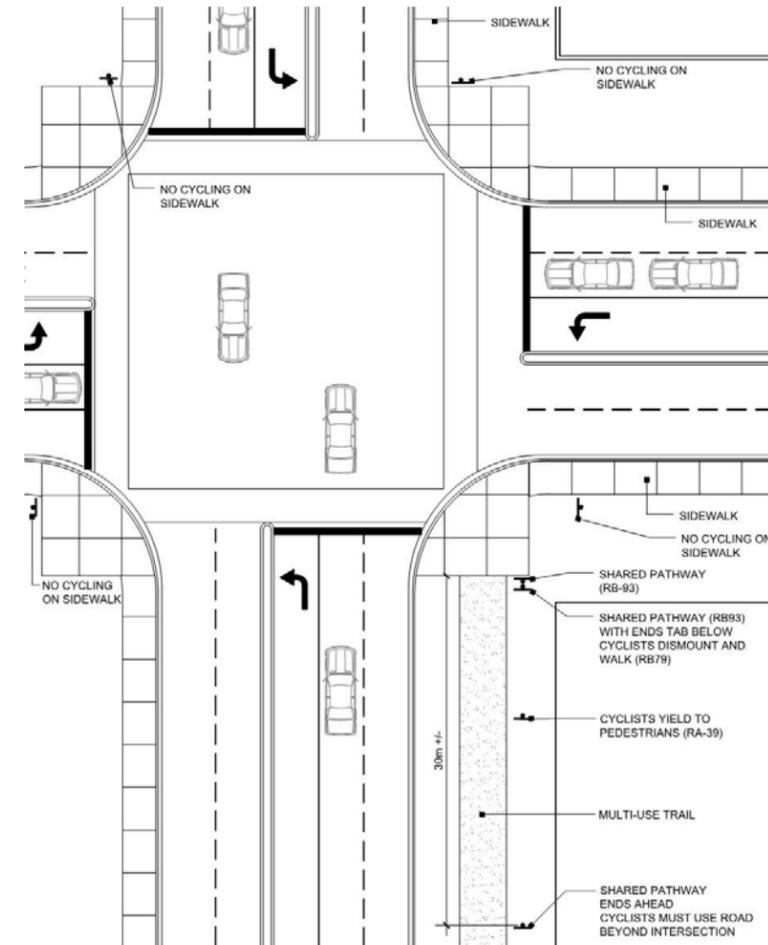


Figure 4.9 Terminating an In-boulevard Trail at an intersection

4.8 LIGHTING

Very few municipalities make the decision to light their entire trail system for a number of important reasons, including:

- ▶ The cost of initial installation can be prohibitive. General budget figures can be over \$200,000 per kilometer including cabling, transformers, power supply and fixtures
- ▶ Staff time and material cost to properly monitor, maintain lamp fixtures and replace broken and burned out bulbs on an ongoing basis
- ▶ A tendency for vandals to target light bulbs
- ▶ Energy consumption; though high efficiency LED and solar powered fixtures are now available
- ▶ Excessive light pollution, especially in residential rear yards and adjacent to natural areas (though this can be controlled with proper shielding)
- ▶ Potential detrimental effects on flora and fauna, especially with light pollution in natural areas such as woodlands
- ▶ The potential false sense of personal security created by lighting in the nighttime environment and the inability of the human eye to adapt to the high contrast resulting from brightly lit and dark shadowed areas adjacent one another.

Some candidate routes for lighting include:

- ▶ Main connections to, or between important attractions such major parks
- ▶ Heavily used commuter corridors
- ▶ Key school routes.

Lighting the entire ATN is not recommended, however there may be some portions of the network where lighting may be appropriate. The decision whether or not to light segments of the ATN should be made on a location-specific basis.

4.9 ATN ROUTE MAINTENANCE

Maintenance and monitoring of facilities once they are constructed is a critical aspect of any plans to move forward with implementation of the off-road trails and on-road routes. The general objectives of a maintenance program are to:

- ▶ Provide safe, dependable and affordable levels of service

- ▶ Preserve infrastructure assets
- ▶ Protect the natural environment
- ▶ Enhance the appearance and health of the community
- ▶ Provide a reference framework against which to measure performance
- ▶ Periodically measure facility performance so that adjustments and improvements can be made in the delivery of trails and bikeways
- ▶ Provide the basis of a peer review that is comparable with other municipalities
- ▶ Provide citizens and Council with a reference for expectations.

It is assumed that on-road portions of the ATN would be maintained as part of regular road and sidewalk maintenance according to the City's established protocol and Minimum Maintenance Standards.

Trail Maintenance Tasks

The following describes typical trail maintenance activities that should be reviewed in the context of the City's current trail maintenance practices. Tasks have been grouped according to the frequency with which they would typically be performed:

- ▶ Immediately (within 24 to 48 hours)
- ▶ Regularly (weekly/biweekly/monthly)
- ▶ Seasonally
- ▶ Annually
- ▶ Every 3 to 5 years
- ▶ Every 10 to 20 years.

Immediate

- ▶ Within 24 hours of being notified of, or becoming aware of a hazardous situation on a trail (e.g. significant erosion, broken railing, broken boardwalk decking, structural elements such as bridge beams, fallen tree on the trail etc.)
 - as a minimum, mark, barricade and sign the area to warn users
 - or close the trail completely until the problem can be corrected.

- ▶ Remove vegetation and/or windfalls, downed branches etc., where traffic flow on the trail is being impaired or the obstruction is resulting in a sight line issue.
- ▶ Remove hazard trees that pose an immediate danger to trail users.
- ▶ Repair or replace items that have been vandalized or stolen/removed which pose an immediate danger to trail users (e.g. bent or broken sign posts that are immediately adjacent to the trail or protruding into the trail clear zone, regulatory / warning signs for road crossings, steep grades, sharp curves etc.).
- ▶ Repair of obstructed drainage systems causing flooding that poses a hazard to trail users or that is resulting in trail deterioration that poses an immediate safety hazard.
- ▶ Remove trash in overflowing containers or material that has been illegally dumped.
- ▶ Monitor trail areas that are prone to erosion after severe summer storms and repair as required.

Regularly

- ▶ i.e. weekly / biweekly / monthly
- ▶ Trail patrols / inspections should review trail conditions (as often as weekly in high-use areas), to assess conditions and prioritize maintenance tasks and monitor known problem areas.
- ▶ Mowing along edges of trails
 - Weekly or biweekly in maintained park / open settings
 - Minimum of 2 times during the growing season for meadow and woodland edge areas, and occasionally as needed in wetland areas to help keep the clear zone open and slow the invasion of surrounding vegetation into pathway surfaces. The width of the mowing strip will vary according to location (typically 1.0m).
 - In woodland areas, occasional pruning and brushing is typically the only vegetation maintenance to be undertaken.
- ▶ Regular garbage pickup (10 day cycle or more frequent for heavily used areas). Note that receptacles should be located at trailheads and trail intersections with major roadways for ease of access by maintenance crews.
- ▶ Grooming on heavily used granular surfaced trails
- ▶ Repair within 30 days or less, partially obstructed drainage systems causing intermittent water backups that do not pose an immediate safety hazard, but that if left unchecked over time will

adversely affect the integrity of the trail and/or other trail related infrastructure or the surrounding area.

Seasonally

- ▶ Patching/minor regarding of trail pathway surfaces and removal of rocks protruding from the trail bed.
- ▶ Culvert cleanout as required.
- ▶ Top up trail surfaces on approaches to bridges.
- ▶ Planting, landscape rehabilitation, pruning/beautification.
- Installation/removal of seasonal signage.

Annually

- ▶ Conduct an annual safety audit. This task is not necessarily specific to trails and may be included with general annual safety audits for parks, playgrounds and recreation facilities.
- ▶ Assess and remove potential hazard trees within the fall zone of trails.
- ▶ Evaluate support facilities / trail amenities to determine repair and/or replacement needs.
- ▶ Examine trail surface to determine the need for patching and grading.
- ▶ “Topping up” surfaces on granular trails where needed.
- ▶ Pruning / vegetation management along trails and areas where branches may be encroaching into the clear zone a minimum of 1 time per year as a preventative measure. Cuttings may be chipped on site and placed appropriately or used as mulch for new plantings. Remove branches from the site unless they can be used for habitat (i.e. brush piles in a woodland setting), or used as part of the rehabilitation of closed pathways. Where invasive species are being pruned and/or removed, branches and cuttings should be disposed of in an appropriate manner.
- ▶ Inspect and secure all loose side rails, bridge supports, decking (ensure any structural repairs meet the original structural design criteria).
- ▶ Aerate soils in severely compacted areas.

Every 3 to 5 Years

- ▶ Cleaning and refurbishment of signs, benches and other trail amenities.

Every 10 to 20 years

- ▶ Major capital projects such as
 - Resurfacing asphalt trails (typically /on average every 15 years).
 - Major renovation or replacement of large items such as bridges, kiosks, gates, parking lots, benches etc.

Winter Trail Maintenance

Best practice research suggests that in the past most municipalities do not maintain (plough) their entire trail network for a variety of reasons. Those that provide winter maintenance typically restrict it to key links in the trail system such as school routes, links to major employment areas and short off-road connectors between designated on-road bike lanes. Additionally winter maintenance is typically restricted to trails that are hard surfaced with asphalt or concrete as ploughs can dig into softer granular surfaces, displacing material on to adjacent turf areas, resulting in extra spring cleanup work.

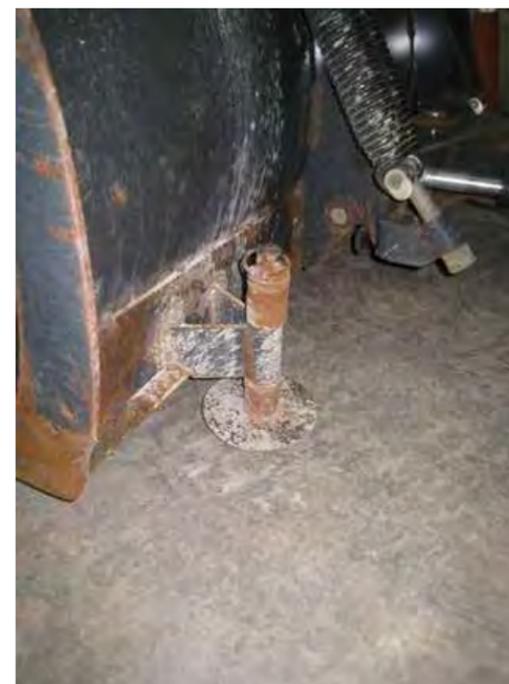
More recently, many municipalities are starting to consider more ploughing of trails in winter as part of providing winter cycling / dependable full year active transportation networks. This often includes a core set of routes within urban networks.

During consultations for the ATN study the public was asked about winter maintenance and responses revealed that:

- ▶ Respondents were generally pleased with winter trail maintenance that the City has been providing in recent years.
- ▶ Respondents don't feel that the entire trail network needs to be maintained in winter, and maintenance of a core network is more appropriate; providing opportunities for other trail activities during winter months when weather permits (e.g. skiing and snowshoeing).
- ▶ Some preferred winter-maintained granular trails over winter-maintained asphalt trails; citing a sense of better traction on the granular trails with a skim of snow over the asphalt trails cleared to bare pavement which can sometimes have black ice.
- ▶ Some preferred winter-maintained asphalt trails over winter-maintained granular trails noting that energy from the sun assists in melting the snow creating a dry bare pavement surface.

The City of Guelph is an innovator with regard in winter trail maintenance. The central location of the equipment facility makes it efficient for operators to clear some trail routes on their way to and

from the yard. In addition the equipment being used and a simple adaptation to the plough enables granular surfaced trails to be efficiently cleared. Shoes attached to the bottom of the plough in early winter, before the ground freezes solidly allow the plough to travel slightly above the trail surface leaving only a skim of snow on the surface without digging into the granular surface. Once the ground is completely frozen the shoes can be removed enabling the plough to clear the surface down to the granular, minimizing displacement of the trail surface and the need for costly surface repairs and cleanup in the spring.



Winter plough shoes on City of Guelph trail equipment (2016)

More research and testing is needed regarding effective and sustainable winter maintenance practices for trails in the Ontario and local context given that so few municipalities maintain their trails in winter, and it is a relatively new practice for those that do. This is particularly relevant regarding the use of surface traction and de-icing methods.

The use of salt is not recommended for winter trail maintenance for a number of reasons including:

- ▶ Limited effectiveness - research suggests that salt is largely ineffective on trails because the volume and weight of pedestrian and bicycle traffic is not sufficient to crush the salt crystals, which is required in order for it work as a melting agent.

- ▶ Damage to vegetation and surrounding habitat - the majority of plant species are not tolerant to salt, and some are highly sensitive to its negative effects. This is of particular concern in naturalized, and natural heritage areas.
- ▶ Pet owners' concerns - Salt causes irritation and sores on dog's feet, which can worsen with repeated exposure.
- ▶ Soil and groundwater contamination - widespread and growing concern regarding salt contamination of waterways and groundwater.

Winter maintenance of the off-road portions of the ATN should include consideration for the following:

- ▶ In-boulevard multi-use trails should be cleared of snow according to the same schedule and standard as established for sidewalks elsewhere along the subject road, including sanding, salting / brining / brushing practices.
- ▶ Other trails (e.g. in parks and open space) should be cleared within 12 hours of the end of a snowfall event (5 cm accumulation or more) to a snow packed standard, including sanding to improve traction
- ▶ Trails on the ATN that are adjacent to or within naturalized or designated natural heritage areas should be cleared to a snow packed standard, with sanding only on an as-needed basis and restricted to areas where ice tends to accumulate (e.g. steeper slopes and bottoms of slopes)
- ▶ Removal of windrows at trail entrances resulting from street and sidewalk ploughing should be completed as required.

Figure 4.10 illustrates the portion of the City trail that is currently being maintained during winter, including trail segments that are, and those that are not part of the ATN. Ultimately the entire ATN should be maintained in winter as demand for winter cycling and active transportation grows. This should be considered in the context of balancing the winter level of service on the trail network with that of the sidewalk network. In the interim a gradual expansion of the winter network is recommended. Candidate areas of the ATN for expanded winter trail maintenance are illustrated in **Figure 4.11**.

Candidates for expansion / prioritization for winter maintenance of the ATN should include the following considerations. This includes segments which:

- ▶ Connect sections of the ATN already being maintained in winter, especially short unmaintained link(s) between sections of the ATN already receiving winter maintenance.
- ▶ Provide direct access to key destinations such as
 - transit stops
 - elementary, secondary school or post-secondary institutions
 - community centres and medical centres
 - seniors' residences or long term care facilities
 - retail / commercial centres
 - key employment areas
- ▶ Can be safely maintained by operators.

Trail Maintenance Costs

Maintenance of 'mature' off-road multi-use trails in greenways and parks can range from \$4,000 to \$8,000 per linear kilometre of trail (e.g. 3.0 m wide), depending on the level of service standard. Annual maintenance typically includes drainage and storm channel maintenance, sweeping, topping-up and grading of granular surface trails clearing of debris, trash removal, vegetation management, mowing of grass along shoulders, minor surface repairs, repairs to trail fixtures (benches, signs) and other general repairs. Costs for the replacement or repair of major items such as bridges, removal and replacement of asphalt are usually allocated through capital budgets.

An annual maintenance estimate was provided for each of the Project Areas described in the chapter 5 ATN study. The estimate is based on a unit cost derived through consultation with City's Supervisor of Sports Fields and Turf Maintenance. Although this unit price may require some adjustment based on the level of service for trails, it is critically important that the City budget for maintenance increases in an incremental fashion along with the incremental growth of the network of facilities. Therefore, as each new network segment is added the impact to the operations budget should be calculated by City staff so that it can be added into the annual maintenance budget request.

It is recommended that the City continue to evolve winter trail maintenance practices, including testing and piloting various methods, and sharing the results with other municipalities.

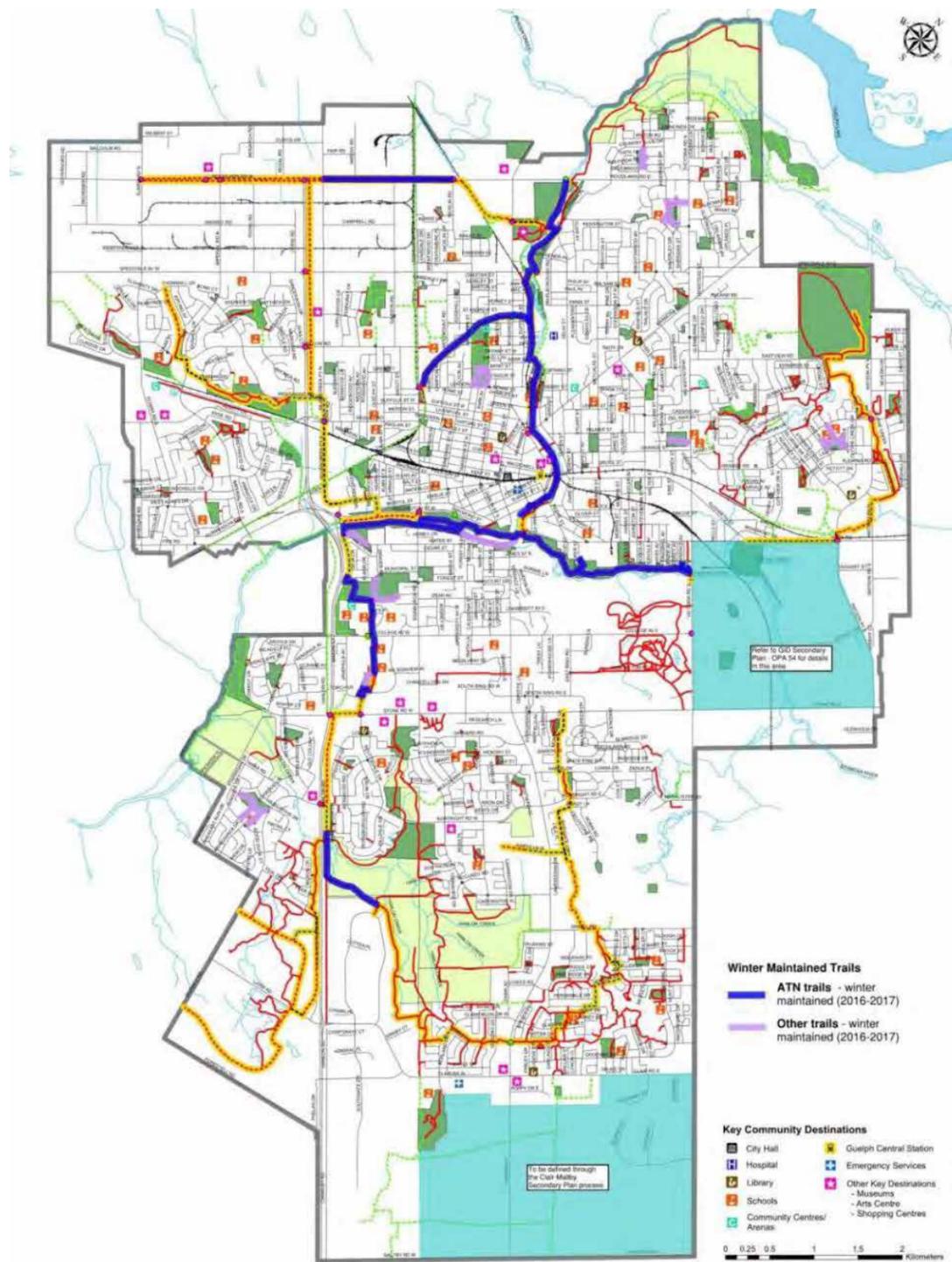


Figure 4.10: Current winter maintenance on the ATN route

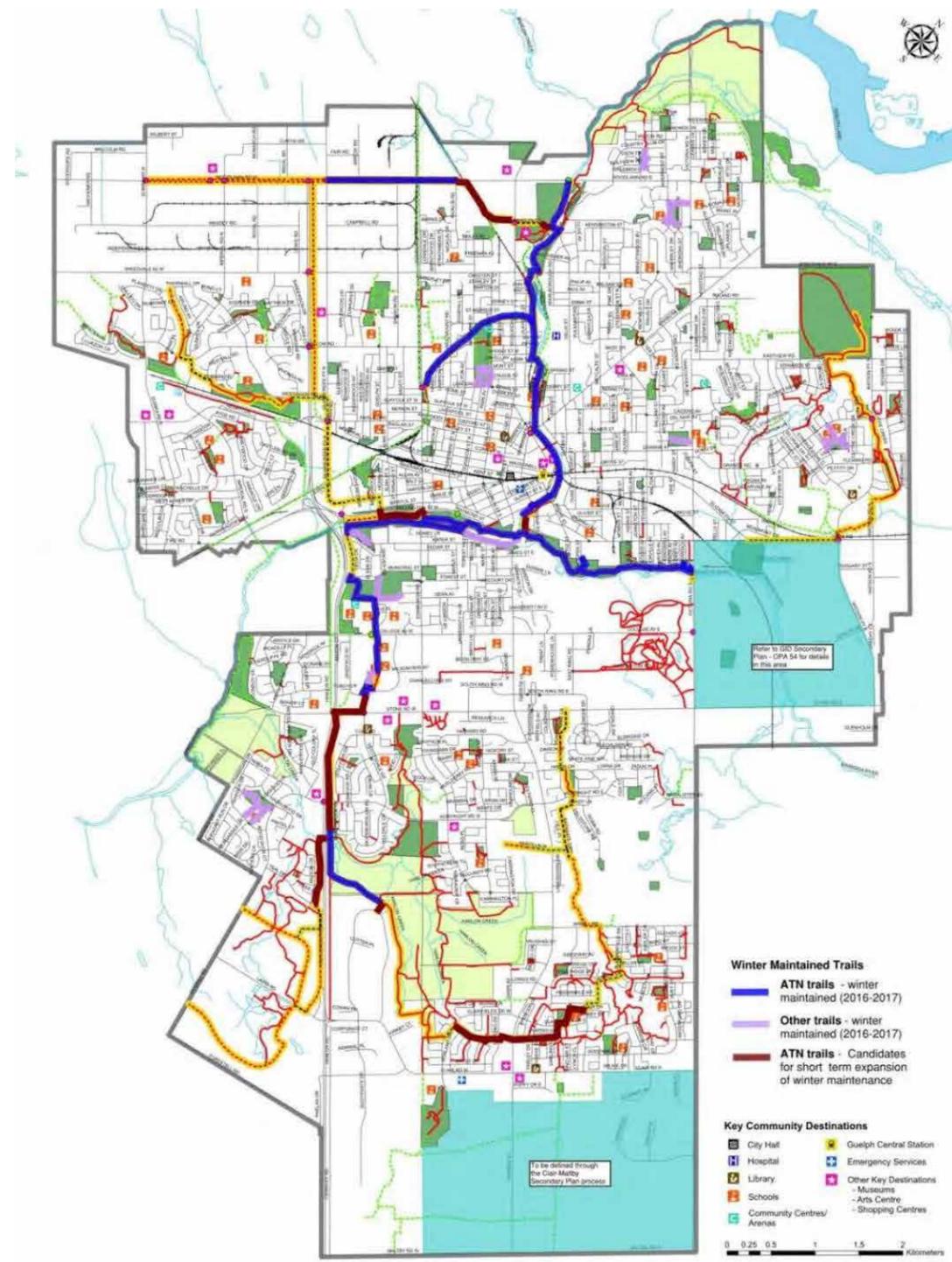


Figure 4.11: Suggested short term winter maintenance expansion on the ATN route

5.0 THE RECOMMENDED ACTIVE TRANSPORTATION NETWORK

5.1 DESCRIPTION OF THE ACTIVE TRANSPORTATION NETWORK

This section provides the details associated with improvements recommended for the ATN route. **Figure 5.1** illustrates the recommended ATN route. Based on public and stakeholder input, City staff review, research and field investigations by the consultant team, the recommended ATN was modified in some locations from the Draft ATN route presented in the original project terms of reference (refer to Figure 1.1). The modifications are summarized in **Figure 5.2**.

Figure 5.2: Summary of Recommended Modifications to the ATN route

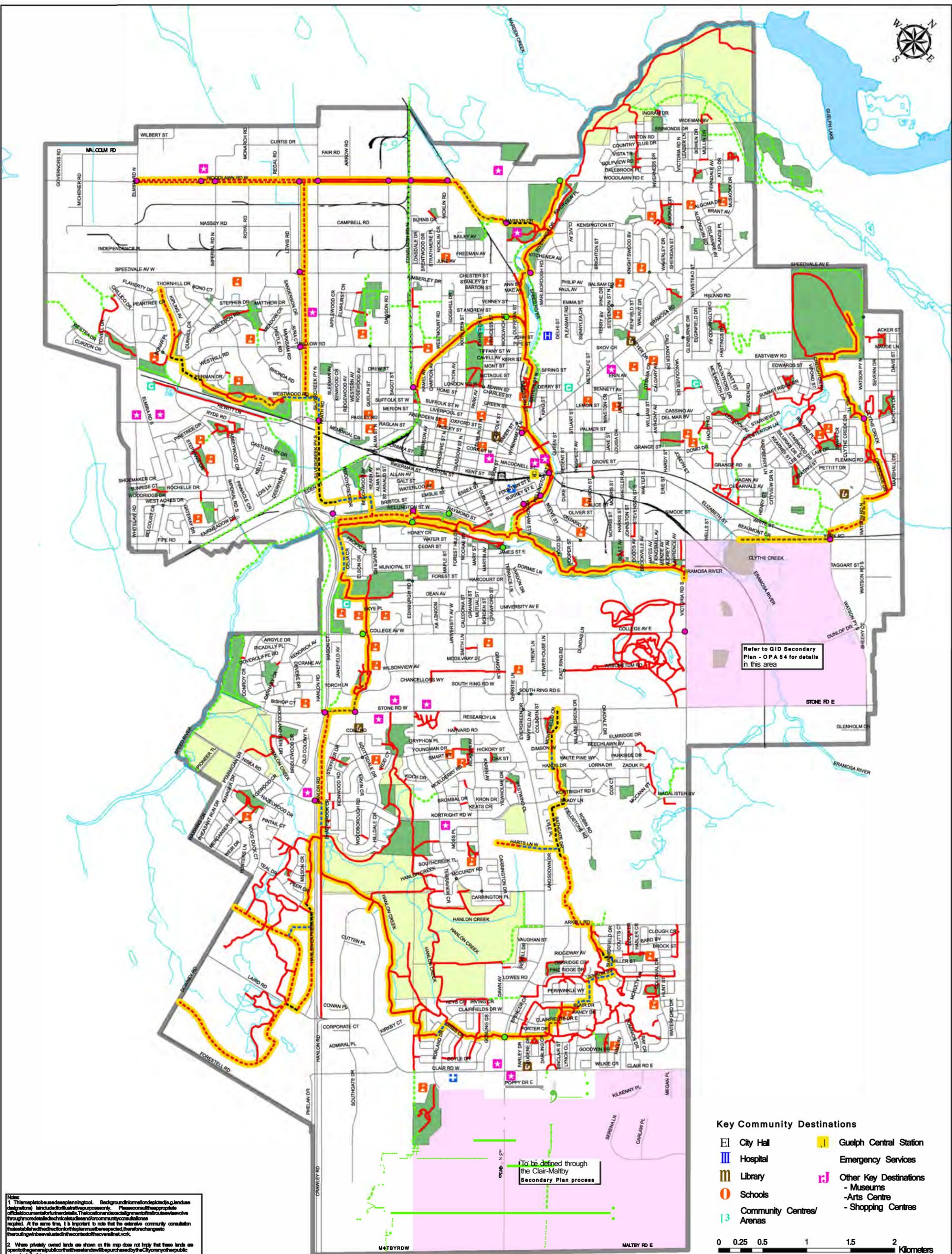
As Illustrated in Figure 1.1 the ATN Study Terms of Reference	Modification Recommended in the ATN Study
Trail on east side of the Speed River between Woodlawn Road E. and pedestrian bridge in Riverside Park	Trail on west side of the Speed River between Woodlawn Road E. and pedestrian bridge in Riverside Park
Northwest Drain between Imperial Road N. south of Ferman Drive to Willow Road	On-road on Imperial Road North from Ferman Drive to Willow Road, and on-road from Imperial Road N. to the Northwest Drain
Cityview Drive and Hadati Creek Trail from Royal City Jaycees Park to Eastview Drive	York Road corridor from Royal City Jaycees Park to Watson Parkway N; Watson Creek Trail system to Grange Road and Watson Parkway N., linking to Laura Bailey Memorial Trail to Eastview Road
Mayfield Park and Old Stone Court from Monticello Crescent to Monticello Crescent	Remain on-road along Monticello Crescent
Stormwater easement east of Brady Lane and Fieldstone Road intersection; natural area behind Bathgate Drive	On-road on Brady Lane and Bathgate Drive to cul de sac at south end of Bathgate Drive
Trail system between Holland Crescent and Westminster Woods Park	On-road on Holland Crescent, Summerfield Drive, Jenson Boulevard, Pineridge Drive, Farley Drive, Beaver Meadow Drive between trail in Holland Crescent Park and trail at St. Patrick Catholic School / Westminster Woods Park
Trail around the stormwater pond on the west side of Clairfields Drive north of Jean Anderson Cres	Clairfields Drive between the trail entrance north of Jean Anderson Crescent to the trail entrance at the south leg of Jean Anderson Crescent
Added route not in Draft ATN (Figure 1.1)	Connection to Kortright Hills and the Hanlon Business Park (west) using the culvert crossing below the Hanlon Expressway south of Kortright Road, the trail behind Milson Crescent, McWilliams Road and the stormwater maintenance access road on the west side of the Hanlon Expressway between McWilliams Road and the former Laird Road right-of-way to the future in-boulevard trail on Hanlon Creek Boulevard

Figure 5.3 is a key plan illustrating the context of the recommended ATN route within the entire city. It also indicates the location for each of the 43 separate Map Sheets which contain detailed recommendations regarding trail improvements.

Map Sheets have been organized into 17 Project Areas which represent sections of the ATN route based on their location and common features. For example Map Sheets 30 and 31 are grouped together as Project Area 14, making up the CNR Spurline Trail. **Figure 5.4** lists the 17 Project Areas the corresponding Map Sheet Number(s) that comprise the Project Area and the relevant natural heritage segment number(s); linking the active transportation route network improvements to requirements related to natural heritage as described in detail in the separately bound **Natural Heritage Study**.

Figure 5.4: Reference Guide to ATN Project Areas, ATN route maps and natural heritage segments

Project Area Number	Active Transportation Network Map Sheet Number(s)	Natural Heritage Segment Number(s) Refer to Natural Heritage Study (separately bound technical appendix)
1	1, 2	19A
2	3,4	18B, 19A, 19B
3	5,6	NHS, 17B, 17C, 18A
4	7,8,12	17A,17B,17C, 21
5	9, 10, 11	21, 22
6	13	Not applicable
7	14,15,16	24
8	17, 34, 35	5, 6A, 6B, 7, 8A, 24
9	18	Not applicable
10	19, 20, 21	23
11	22, 23, 24, 25	16
12	26, 27	Not applicable
13	28, 29	1A, 1B, 2A
14	30, 31	2B
15	32, 33	3, 4, 5
16	36, 37, 38, 39	8A, 8B, 9, 10, 11, 12A
17	40, 41, 42, 43	11, 12A, 13, 14



5.1 RECOMMENDED ACTIVE TRANSPORTATION NETWORK



Off-Road Trail Network

- Existing Trail
- - - - Proposed Trail (from previously approved plans, alignment to be confirmed in the next Guelph Trail Master Plan Update)
- - - - Proposed trail route identified during the ATN Study

Recommended Active Transportation Network

- - - - Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan/ planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

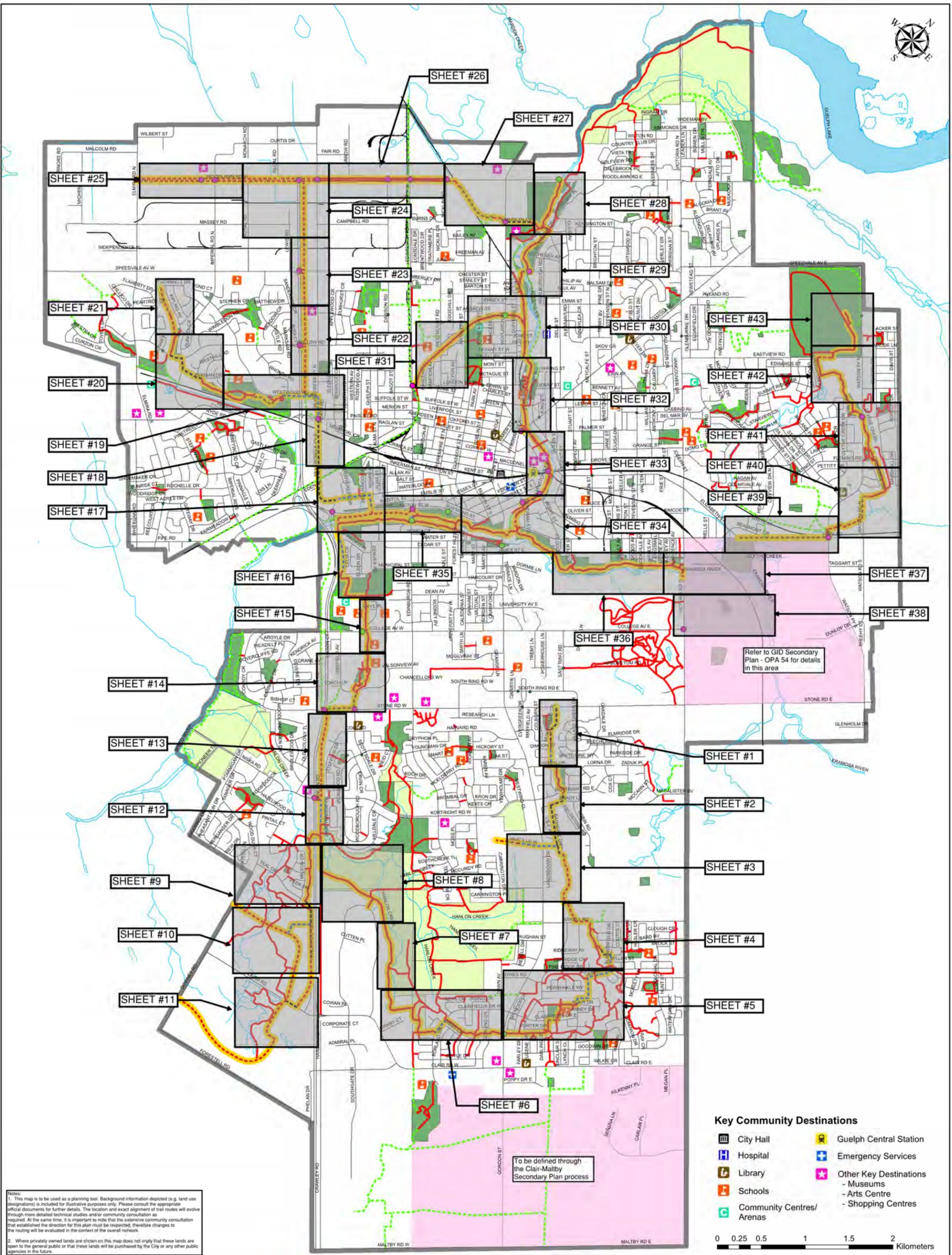
- - - - On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- - - - On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Existing Active Transportation Network Crossings

- Existing Mid-block Pedestrian Signal located on the ATN Study Route
- Existing Signalized Road Intersection located on the ATN Study Route

Roads

- Rivers and Streams
- - - - Railway
- City-owned Park or Open Space
- Conservation Authority Lands
- Guelphlake
- City Boundary



5.3 KEY PLAN TO INDIVIDUAL MAP SHEETS



Off-Road Trail Network

- Existing Trail
- Proposed Trail (from previously approved plans, alignment to be confirmed in the next Guelph Trail Master Plan Update)
- Proposed trail route identified during the ATN Study
- Recommended Active Transportation Network
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Existing Active Transportation Network Crossings

- Existing Mid-block Pedestrian Signal Located on the ATN Study Route
- Existing Signalized Road Intersection located on the ATN Study Route

- Roads
- Rivers and Streams
- Railway
- City-owned Park or Open Space
- Conservation Authority Lands
- GuelphLake
- City Boundary

Each individual Project Area includes an illustration of the work area which summarizes observations and recommendations regarding the implementation of the particular route. Each also includes a project information sheet that provides further details on:

- ▶ location;
- ▶ rationale for the project;
- ▶ observations and recommendations
- ▶ notes to inform the detail design
- ▶ considerations regarding public consultation and approvals;
- ▶ opinion of probable cost for construction and maintenance (based on the level of information collected)
- ▶ suggested priority and next steps to advance the project.

Opinion of Probable Cost

An Opinion of Probable Cost for implementation and maintenance was developed for each of the 17 Project Areas described in **Figure 5.4**. The Opinion of Probable Cost is based on based on unit prices and typical / normal conditions and includes a contingency. These costs can be used as a guideline to establish project budgets for Council approval. The unit costs used to generate the Opinion of Cost are based on unit prices for similar projects; they assume normal conditions and do not include costs for major utility relocations or property acquisitions. This Opinion of Cost should be refined as the project design is refined.

The Opinion of Cost includes all links that comprise the recommended ATN route. The estimate does not differentiate between projects that already have Council approved budgets, which ones may be part of a larger infrastructure project and those that may be the responsibility of a developer to provide as part of a new city neighbourhood. **Figure 5.5** summarizes the aggregate cost for all Project Areas.

Figure 5.5: Opinion of Probable Capital & Annual Maintenance Cost for each of the Project Areas.

Project Area Number	Map Sheet Number(s)	Capital			Annual Maintenance (Off-road Links) ⁽¹⁾		
		Improvement to Existing Links	Addition of New Connections	Total Capital Cost	Maintenance of Existing Off-road Links	Maintenance of New Off-road Connections	Total Maintenance of Off-road Links
1	Sheets 1 and 2	\$115,900	\$7,900	\$123,800	\$8,400	\$0	\$8,400
2	Sheets 3 and 4	\$183,900	\$505,050	\$688,950	\$11,200	\$0	\$11,200
3	Sheets 5 and 6	\$332,310	\$31,750	\$364,060	\$22,240	\$0	\$22,240
4	Sheets 7, 8, 12	\$94,400	\$20,500	\$114,900	\$18,400	\$0	\$18,400
5	Sheets 9, 10, 11	\$91,500	\$960,000	\$1,051,500	\$7,000	\$7,000	\$14,000
6	Sheet 13	\$185,650	\$0	\$185,650	\$6,800	\$0	\$6,800
7	Sheets 14, 15, 16	\$501,575	\$347,350	\$848,925	\$19,200	\$0	\$19,200
8	Sheets 17, 34, 35	\$231,100	\$901,900	\$1,133,000	\$26,100	\$8,700	\$34,800
9	Sheet 18	\$0	\$4,850	\$4,850	\$0	\$6,000	\$6,000
10	Sheets 19, 20, 21	\$280,050	\$272,850	\$552,900	\$14,880	\$4,960	\$19,840
11	Sheets 22, 23, 24, 25	\$0	\$1,533,100	\$1,533,100	\$0	\$34,000	\$34,000
12	Sheets 26, 27	\$0	\$62,900	\$62,900	\$0	\$12,540	\$12,540
13	Sheets 28, 29	\$556,900	\$11,325	\$568,225	\$14,000	\$0	\$14,000
14	Sheets 30, 31	\$405,400	\$42,875	\$448,275	\$13,200	\$0	\$13,200
15	Sheets 32, 33	\$422,950	\$0	\$422,950	\$11,600	\$0	\$11,600
16	Sheets 36, 37, 38, 39	\$10,400	\$115,700	\$441,100	\$1,600	\$1,600	\$3,200
17	Sheets 40, 41, 42, 43	\$337,450	\$204,400	\$541,850	\$21,600	\$0	\$21,600
Subtotal		\$3,749,485	\$5,022,450	\$9,086,935	\$196,220	\$74,800	\$271,020
Contingency 15%⁽²⁾		\$562,423	\$753,368	\$1,363,040	n/a	n/a	n/a
Contingency 20%⁽³⁾		\$749,897	\$1,004,490	\$1,817,387	n/a	n/a	n/a
Total		\$5,061,805	\$6,780,308	\$12,267,362	\$196,220	\$74,800	\$271,020

Notes:

1. Annual maintenance includes summer and winter maintenance (assumes winter maintenance on 100% of the ATN)
2. 15% Engineering and design contingency on Capital only, no contingency on maintenance
3. 20% Construction and general contingency on Capital only, no contingency on maintenance

Once complete the ATN route measures 54.0 km in length. This includes 46.2 km of off-road routes and 7.8 km of on-road links that are considered critical to the connectivity of the off-road portions of ATN. **Figure 5.6** provides a breakdown of the overall length of the ATN.

Figure 5.6: Summary of ATN Route Lengths

Category (corresponds with map legend)	Length (km)
Off-road	
Existing off-road trail Included in the ATN	25.8
Proposed off-road trail included in the ATN (proposed from other City plans / studies)	17.0
Proposed off-road trail included in the ATN (route identified during the ATN study and not included in other City plan / studies)	3.4
Total Off-Road	46.2
On-road	
On-road link critical to connectivity of the ATN (also identified in the Guelph Cycling Master Plan)	3.8
On-road link critical to connectivity of the ATN (route identified during the ATN study and not included in other City plan / studies)	4.0
Total On-Road	7.8
Grand Total	54.0

5.2 RELATIONSHIP BETWEEN THE CYCLING MASTER PLAN, TRAILS MASTER PLAN AND THE ATN ROUTE NETWORK

The ATN route complements and builds upon the route networks identified in the Guelph Trails Master Plan, 2005 (GTMP) and the Guelph Cycling Master Plan (2012). As previously noted in Section 1.1 the purpose of the ATN Study was to identify which sections of the City’s off-road network would be suitable as a spine active transportation network which, when combined with the on-road network in the Cycling Master Plan creates a comprehensive on and off-road active transportation network for Guelph.

Guelph Trails Master Plan

The trail routes examined in the ATN Study are contained in the GTMP or have been identified by other planning studies or land development processes since the time the Trails Master Plan was completed in 2005. The Draft ATN route identified in a draft form by the City at the outset of the ATN Study is generally consistent with the Primary Trail route network in the Guelph Trails Master Plan. The ATN Study process identified and proposed some modifications to the routing of the Draft ATN route resulting from:

- ▶ public and stakeholder input;
- ▶ changes in the trail network identified by City staff since the time the GTMP was completed; and
- ▶ research and field investigations by the consultant team during the development of the ATN Study.

Bicycle-Friendly Guelph

The trail routes identified in the ATN Study complement the on-road network in Bicycle Friendly Guelph. On-road routes proposed in the Guelph Cycling Master Plan were assumed as noted in that master plan, and only on-road connectors considered critical to the connectivity of the ATN route are identified in this study. Specifically this includes:

- ▶ on-road links critical to connectivity of the ATN previously identified as part of the Guelph Cycling Master Plan network; and
- ▶ on-road links critical to connectivity of the ATN that were not previously identified in the Guelph Cycling Master Plan network (i.e. new links). These new links are few in number and generally consist of proposed signed cycling routes on local neighbourhood streets.

Implementation and Operation of Active Transportation Facilities

The responsibility to implement and operate / maintain active transportation facilities is assigned depending on the facility location. Specifically, Public Services (Parks Planning and Operations) has the lead role for off-road facilities in parks and open space; and Infrastructure, Design and Enterprise Services (Engineering and Capital Infrastructure Services) has the lead on the design and operation of facilities within the road right-of-way.

5.3 RELATIONSHIP TO THE NATURAL HERITAGE STRATEGY

As part of the scope of the ATN Study each of the routes proposed in the ATN was examined in the context of the City’s natural heritage strategy. The purpose of this work was to identify which segments of the proposed ATN would be subject to Environmental Impact Study (EIS) requirements as part of next steps in designing and implementing the recommended trail improvements, and to assist in coordinating requirements and work plans for individual trail improvements between the Engineering and Capital Infrastructure Services, Planning, Urban Design and Building Services and Environmental Services groups within the City. Where the requirement for EIS work has been identified each applicable Map Sheet in Section 4.4 of this report includes a cross-reference to the relevant mapping sections and accompanying EIS terms of reference contained in the natural heritage study. The **Natural Heritage Study** accompanies the ATN Study report as a separately bound technical appendix.

PROJECT AREA 1: STONE ROAD EAST TO HARTS LANE EAST (MAP SHEETS 1, 2)

1. Location

Start: Stone Road East at Monticello Crescent

End: Harts Lane East trail junction

- ▶ Ward: 5, 6
- ▶ Approximate Length: 1,850 m
- ▶ Connects with:
 - University of Guelph
 - Future Bike Lanes on Stone Road
 - Existing trails in Mayfield Park and MacAlister Park

2. Rationale

- ▶ Provides north-south connection in the south east part of the city using existing and future trail routes linked by short segments of on-road signed cycling routes. This route provides an alternative to bike lanes on Gordon Street, which youth, senior and less experienced cyclists may be uncomfortable using until their confidence increases.

3. Observations and Recommendations

- ▶ Refer to accompanying map Sheets 1 and 2

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail, with on-road signed bike route for connecting links between off-road sections
- ▶ Typical Cross Section: 3.0 m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Widen existing stonedust trails to a consistent preferred width of 3.0 m (2.5 m minimum)

- Provide short in-boulevard trail connection on Monticello Crescent at the walkway block between Monticello Crescent and Dimson Court and to discourage users from using private driveway
- Provide curb cuts in various location where trails meets streets to improve accessibility as noted on map sheets
- Add cautionary signage near the playground in MacAlister Park to alert cyclists that young children may be playing on or near the trail
- Add trail directional signs at key decision points

▶ Key Constraints:

- Developing a formal trail link utilizing the stormwater service access between two residential properties on Brady Lane may not be feasible. The boundaries of the easement / corridor are not visually defined giving the corridor the appearance of belonging to the abutting residences. An on-road cycling route along Bathgate Drive with access to the open space at via the cul-de-sac south of Harts Lane will provide a connection to the future trail route associated with the new neighbourhood development behind Landsdown Drive
- Creating this connection by extending the trail link into Bathgate Park is also not feasible due to the grade difference between the wetland and park.
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 19A in the **Natural Heritage Study** for detailed requirements.
- ▶ Road Crossings: Local streets only, no crossings of major collectors or arterials
- ▶ Structures Required: None noted, however structures may be required based on the trail alignment being negotiated for new neighbourhood development closer to Arkell Road and on the east side of the wetland, north of Dawes Avenue (see Project Area 2)

5. Public / Stakeholder Consultations

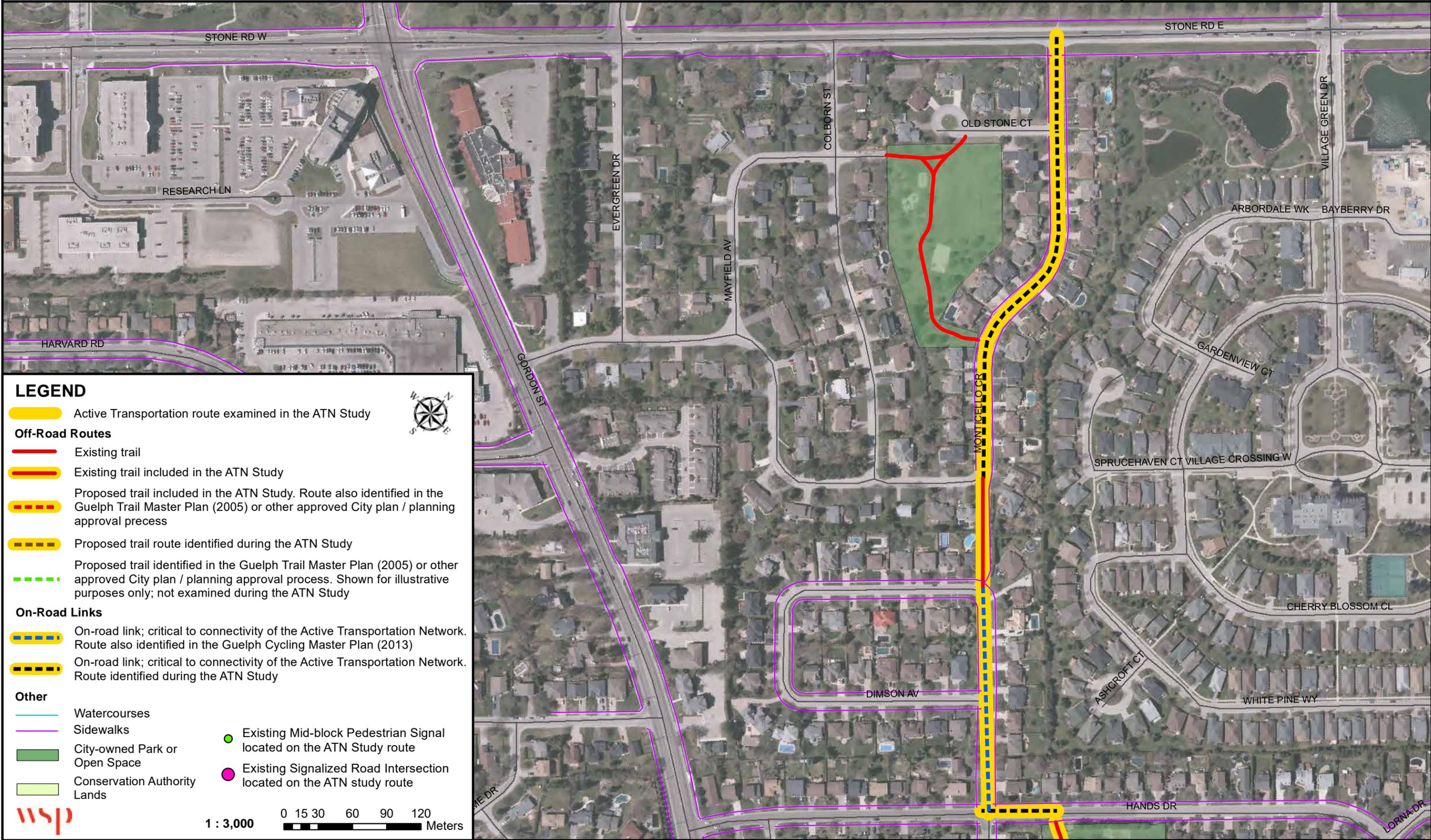
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 1					
1	Trail Directional Sign	Each	5	\$1,100.00	\$5,500.00
2	Trail Regulatory sign (Cyclists use street - do not ride on sidewalk)	Each	4	\$150.00	\$600.00
3	Trail Caution sign (Narrow Trail)	Each	2	\$150.00	\$300.00
4	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
5	Curb cut where trail meets street	Each	1	\$1,000.00	\$1,000.00
6	New 3.0m wide asphalt trail beside driveway (WP005)	Square metres	30	\$100.00	\$3,000.00
7	On-Street Signed Route along sections of Old Stone Court, Monticello Cr., Dimson Dr. and Hands Dr.	Linear metres	630	\$5.00	\$3,150.00
8	Trim overgrown vegetation in select locations	Lump sum	1	\$750.00	\$750.00
Map Sheet 2					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	Trail Regulatory sign (Cyclists use street - do not ride on sidewalk)	Each	1	\$150.00	\$150.00
3	Trail Caution sign (Playground)	Each	2	\$150.00	\$300.00
4	Increase width of existing 2.0m stonedust trail to 3.0m asphalt	Square metres	960	\$100.00	\$96,000.00
5	On-Street Signed Route along Bathgate Drive	Linear metres	550	\$5.00	\$2,750.00
6	Curb cut where trail meets street	Each	2	\$1,000.00	\$2,000.00
7	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
Total Capital					\$123,800.00
Design and Engineering Contingency (15%)					\$18,570.00
Construction Contingency (20%)					\$24,760.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	1050	\$3.00	\$3,150.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1050	\$5.00	\$5,250.00
Total Maintenance					\$8,400.00

7. Next Steps / Priority

- Medium – coordinate with active transportation and trail plans for new development areas to the south and east



LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
 - Existing trail
 - Existing trail included in the ATN Study
 - Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
 - Proposed trail route identified during the ATN Study
 - Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
 - On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
 - On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
 - Watercourses
 - Sidewalks
 - City-owned Park or Open Space
 - Conservation Authority Lands
 - Existing Mid-block Pedestrian Signal located on the ATN Study route
 - Existing Signalized Road Intersection located on the ATN study route

WSP

1 : 3,000 0 15 30 60 90 120 Meters

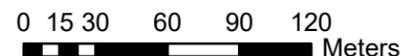


LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000



PROJECT AREA 2: HARTS LANE EAST TO JENSON BOULEVARD (MAP SHEETS 3, 4)

1. Location

Start: South of Harts Lane East trail junction

End: The intersection of Summerfield Drive and Jenson Boulevard

- ▶ Ward: 6
- ▶ Approximate Length: 2,600 m
- ▶ Connects with:
 - Future proposed trail / route along Harts Lane
 - Trails in the Pine Ridge neighbourhood
 - Existing Bike lanes on Arkell Road and Gordon Street

2. Rationale

- ▶ Part of a north-south connection in the south east part of the city and key link to Pine Ridge and Westminster Woods communities, providing connections using off-road trails linked with segments of on-road signed cycling routes
- ▶ May provide an alternative to bike lanes on Gordon Street, which youth, senior and less experienced cyclists may uncomfortable using until their confidence increases, though it much less direct than the Gordon Street bike lanes

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 3 and 4

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail, with on-road signed bike route for connecting links between off-road sections
- ▶ Typical Cross Section: 3.0 m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Widen existing stonedust trails to a consistent preferred width of 3.0 m where possible (2.5 m minimum)
 - New trail alignment and design details adjacent to new neighbourhood east of Landsdown Road to be determined through planning approvals process for new community development

- Add new stonedust trail to connect the Harts Lane route (east-west) to the University – Clairfields route (north-south)
- Provide curb cuts in various location where trails meets streets to improve accessibility as noted on map sheets
- Add cautionary signage near the playground in Holland Crescent Park to alert cyclists that young children may be playing on or near the trail. During detailed design consideration should be given to developing an alternate alignment for the ATN within the park to move it further away from the playground area, if space permits.
- Add trail directional signs at key decision points
- Create mid-block trail crossing on Arkell Road east of Ridgeway Avenue:
 - Option 1: Mid-block pedestrian signal
 - Option 2: Pedestrian refuge

- ▶ Key Constraints: Route must divert away from existing trail at Holland Crescent to avoid significant impacts to the natural area south of Holland Crescent Existing trails in this area are adjacent to sensitive natural features and widening the trail and/or aligning the trail to eliminate sight line issues and steep slopes
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 18A, 19A and 19B for detailed requirements.
- ▶ Road Crossings:
 - Arkell Road – Requires mid-block crossing
 - Holland Crescent. Summerfield Drive
 - Jenson Boulevard
- ▶ Structures Required: May consider the addition of a bridge of boardwalk over the turfstone overflow outlet at the stormwater management facility immediately south of Arkell Road

5. Public / Stakeholder Consultations

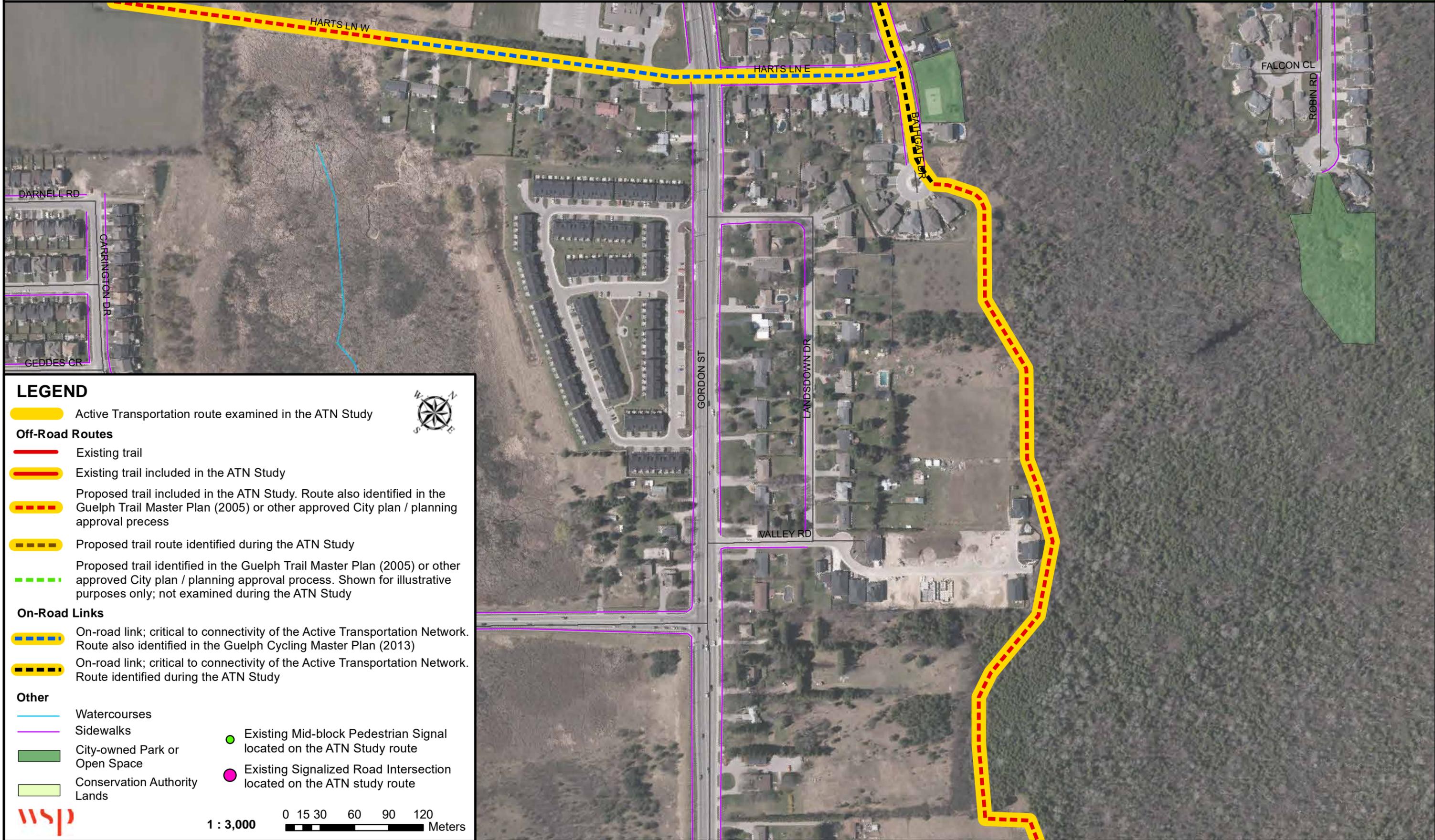
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Direct consultation / communication with Condominium board at Pine Ridge
- ▶ Consultation / approvals from GRCA
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 3					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Add Signalizing to existing intersection at Hart's Lane and Gordon St	Each	1	\$150,000.00	\$150,000.00
3	On-street signed route along Bathgate Dr	Linear metres	250	\$5.00	\$1,250.00
4	On-Street Signed route along Harts Lane	Linear metres	480	\$5.00	\$2,400.00
5	New 2.5 m wide stonedust trail connection	Square metres	1100	\$55.00	\$60,500.00
6	New boardwalk (Bathgate Dr to Arkell Rd	Square metres	1720	\$150.00	\$258,000.00
7	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
8	Curb cut where trail meets street	Each	1	\$1,000.00	\$1,000.00
Map Sheet 4					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Trail Regulatory sign (Cyclists use street - do not ride on sidewalk)	Each	1	\$150.00	\$150.00
3	Add Caution signs for playground	Each	2	\$150.00	\$300.00
4	Add Caution signs for storm water management facility	Each	2	\$150.00	\$300.00
5	(Option 1) Mid-Block Pedestrian Signal	Each	1	\$80,000.00	\$80,000.00
6	(Option 2) Pedestrian refuge	Each	1	\$20,000.00	\$20,000.00
7	New 3.0m wide stonedust trail connection	Square metres	450	\$50.00	\$22,500.00
8	Increase width of existing 2.0m wide stonedust trail to 3.0m	Square metres	350	\$55.00	\$19,250.00
9	Consideration for boardwalk where trail is adjacent to wetland (south of Arkell Rd)	Square metres	330	\$150.00	\$49,500.00
10	Asphalt trail pad between existing sidewalk and curb at Holland Cr.	Square metres	5	\$100.00	\$500.00
11	Curb cut where trail meets street	Each	3	\$1,000.00	\$3,000.00
12	On-Street Signed route along Holland Cr., Summerfield Dr., and Jenson Cr.	Linear metres	400	\$5.00	\$2,000.00
13	Trim overgrown vegetation in select locations	Lump sum	1	\$1,500.00	\$1,500.00
14	Trail Barrier Gate	Each	2	\$1,500.00	\$3,000.00
Total Capital					\$688,950.00
Design and Engineering Contingency (15%)					\$103,342.50
Construction Contingency (20%)					\$137,790.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	1400	\$3.00	\$4,200.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1400	\$5.00	\$7,000.00
Total Maintenance					\$11,200.00

7. Next Steps / Priority

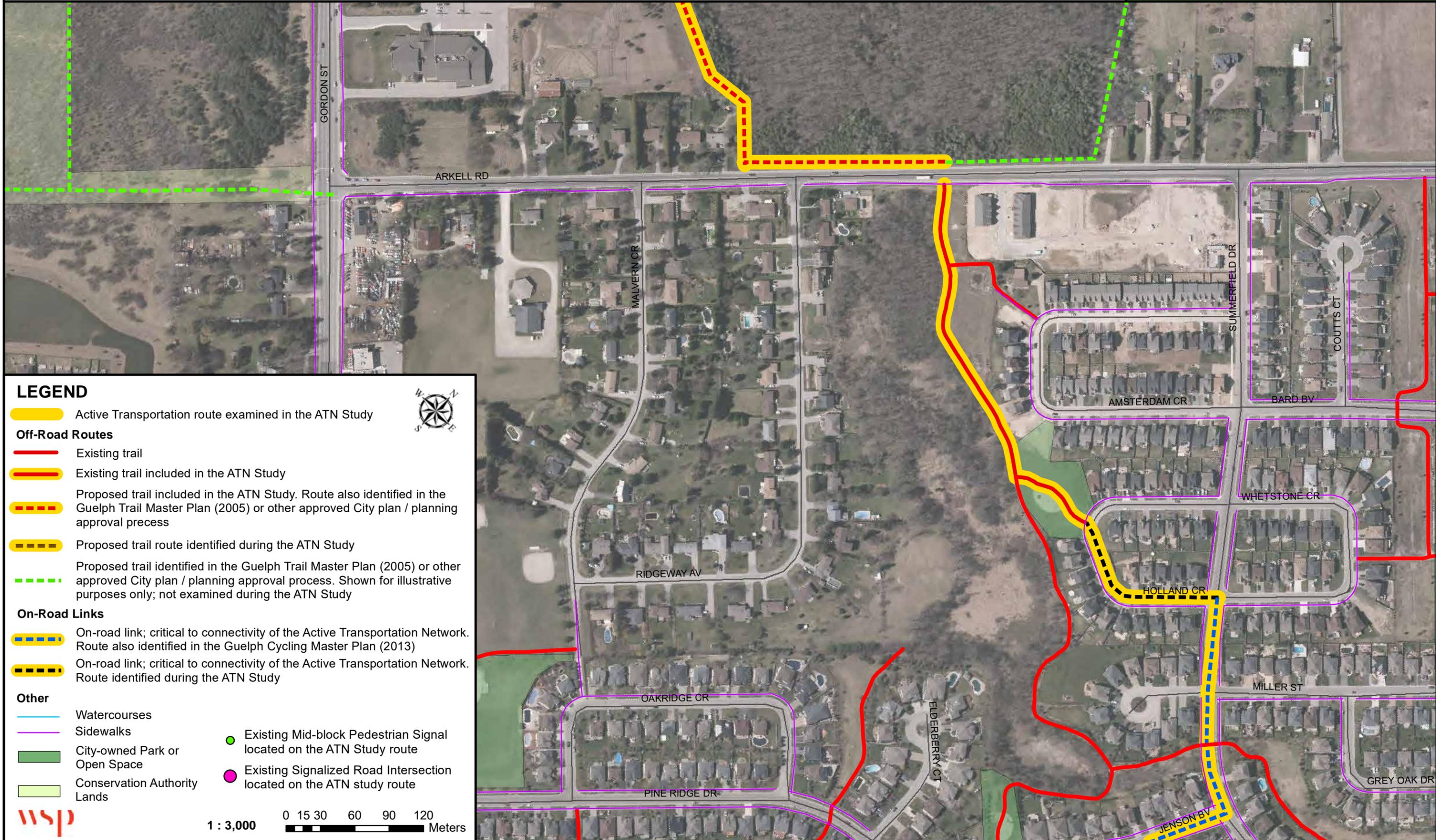
- ▶ Medium to high. The trail already exists south of Arkell Road (Map Sheet 4), therefore improvements for active transportation could take place at a later date. The section of trail north of Arkell Road is higher priority and could be completed along with new neighbourhood development



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route





LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

1 : 3,000 0 15 30 60 90 120 Meters

PROJECT AREA 3: JENSON BOULEVARD TO HANLON CREEK TRAIL (MAP SHEETS 5, 6)

1. Location

Start: The intersection of Summerfield Drive and Jenson Boulevard

End: The Hanlon Creek Trail north of Laird Road at Southgate Drive

- ▶ Ward: 6
- ▶ Approximate Length: 3,900 m
- ▶ Connects with:
 - Existing bike lanes on Gordon Street
 - Multiple connections to existing trail network in Westminster Woods and Clairfields neighbourhoods

2. Rationale

- ▶ Builds on / enhances existing trail network in southern part of the City
- ▶ Much of the routing can be using off-road trails with minimal requirement for on-road links
- ▶ Forms part of an east-west route in the south part of the City connecting to sport facilities, schools, parks, retail / commercial in the Clair Road / Gordon Street area, and to significant employment area in the Hanlon Business Park (east side of the Hanlon Expressway)

3. Observations and Recommendations

- ▶ Refer to accompanying drawing sheet 5 and 6

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0 m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Add short in-boulevard trail link along north side of Clairfields Drive
 - Provide curb cut where trail meets street on Clairfields Drive
 - Widening required to existing stonedust and granular 'A' trail between Gordon St and Gosling Gardens to a consistent minimum width of 2.5 m
 - Asphalt required on slope near Gosling Gardens to control erosion

- Existing stonedust and granular trails to be widened to a consistent width of 3.0 m where possible, and 2.5 m as a minimum
- Add additional base near trail junction to raise grade of approach and reduce slope
- Provide 150 mm culverts below trail surface in any low lying or seasonally we areas along this section of the trail
- Platform widening required on top of berm along trail on south side of Hanlon Creek wetland to accept a minimum 2.5 m wide stonedust trail
- Provide curb cuts in various location where trails meets streets to improve accessibility as noted on map sheets
- Add cautionary signage near the playground in Westminster Woods Park Boulevard Park and Gosling Gardens Park to caution cyclists that young children may be playing on or near the trail
- Add trail directional signs at key decision points

▶ Key Constraints:

- Trail improvements in a portion of Hanlon Creek wetland (i.e. from waypoint 053 to 038) will require significant widening and improvements over the existing trail, including tree removals
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 17B, 17C, 18A and NHS Restoration Area for detailed requirements.
- ▶ Road Crossings: Farley Drive: Existing crossing with curb cuts, Clairfields Drive East, Gordon Street, Gosling Gardens, Clairfields Drive West
- ▶ Structures Required: Repair / upgrade existing trail bridge on Hanlon Creek Trail north of Kirkby Court (waypoint 039)

5. Public / Stakeholder Consultations

- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Grand River Conservation Authority
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)							
Item	Description			Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 5							
1	Trail Directional Sign			Each	8	\$1,100.00	\$8,800.00
2	Add Caution signs for playground			Each	2	\$150.00	\$300.00
3	Add steep slope and sharp curve sign			Each	1	\$150.00	\$150.00
4	Add in-boulevard 3.0m wide asphalt trail link along north side of Clairfields Dr.			Square metres	270	\$100.00	\$27,000.00
5	Widen and update existing 1.5m wide partially asphalt, stonedust and granular 'A' trail to 2.5m stonedust trail between Gordon St and Gosling Gardens			Square metres	150	\$55.00	\$8,250.00
6	Asphalt on slope near Gosling Gardens			Square metres	70	\$100.00	\$7,000.00
7	Curb cut where trail meets street			Each	2	\$1,000.00	\$2,000.00
8	On-Street Signed route along Jenson Blvd, Pine Ridge Dr., Farley Dr. and Beaver Meadow Dr.			Linear metres	750	\$5.00	\$3,750.00
9	Trim overgrown vegetation in selects locations			Lump sum	1	\$1,500.00	\$1,500.00
10	Trail Barrier Gate			Each	4	\$2,500.00	\$10,000.00
Map Sheet 6							
1	Trail Directional Sign			Each	5	\$1,100.00	\$5,500.00
2	Trail Regulatory sign (Cyclists use street - do not ride on sidewalk)			Each	2	\$150.00	\$300.00
3	Add Caution signs for playground			Each	2	\$150.00	\$300.00
4	Existing stonedust trail varying in width of 1.8m-2.4m - widen to consistent 3.0m			Square metres	550	\$55.00	\$30,250.00
5	Existing stonedust trail varying in width of 0.75m-1.0m - widen to consistent 3.0m (Additional trail base near junction to reduce trail slope)			Square metres	950	\$55.00	\$52,250.00
6	Consideration for boardwalk in section where trail encroaches into wetland			Square metres	950	\$150.00	\$142,500.00
7	Existing granular surface trail approx. 0.5m wide on top of berm - Widen to 3.0m (requires platform)			Square metres	750	\$50.00	\$37,500.00
8	Footbridge (2.4m wide) decking to be replaced			Square metres	12	\$80.00	\$960.00
9	Add railing to existing footbridge			Linear metres	10	\$150.00	\$1,500.00
10	Provide 150mm dia. Culverts below trail surface in any low lying or seasonally wet locations			Each (allowance for 8)	8	\$2,000.00	\$16,000.00
11	On-Street Signed route along Clairfields Dr. between 2 off-road trail segments			Linear metres	200	\$5.00	\$1,000.00
12	Trim overgrown vegetation in selects locations			Lump sum	1	\$2,250.00	\$2,250.00
13	Trail Barrier Gate			Each	2	\$2,500.00	\$5,000.00
Total Capital:							\$364,060.00
Design and Engineering Contingency (15%)							\$54,609.00
Construction Contingency (20%)							\$72,812.00
Opinion of Probable Cost (Annual Maintenance / Operations)							
1	Maintenance of Off-road segments (Winter)	Linear metres	2780	\$3.00			\$8,340.00
2	Maintenance of Off-road segments (Summer)	Linear metres	2780	\$5.00			\$13,900.00
Total Maintenance							\$22,240.00

7. Next Steps / Priority

- Medium – low as majority of trails already exist.

LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

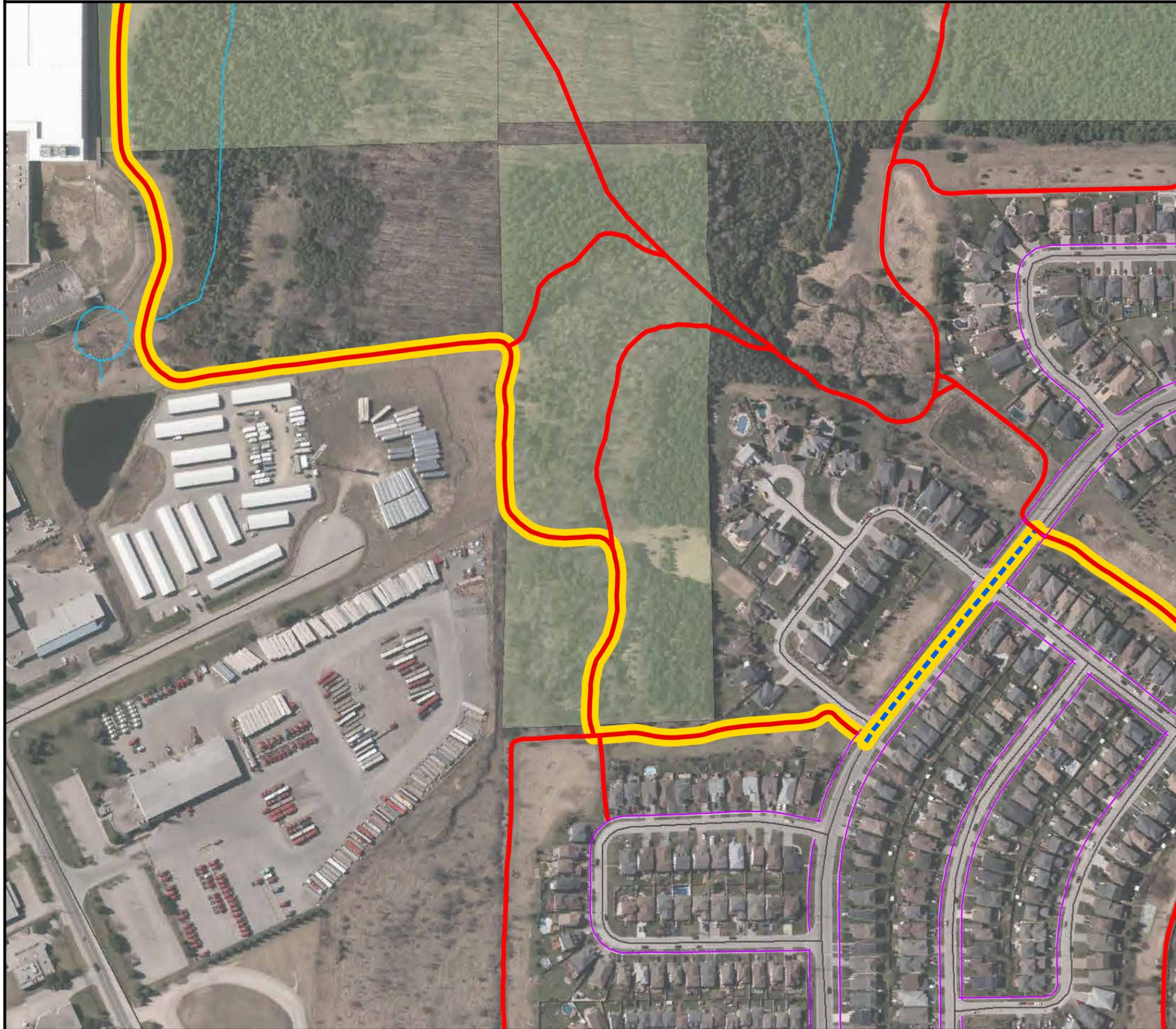
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

1 : 3,000





LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

WSP

1 : 3,000 0 15 30 60 90 120 Meters



PROJECT AREA 4: HANLON CREEK TRAIL TO HANLON EXPRESSWAY / KORTRIGHT ROAD WEST (MAP SHEETS 7, 8, 12)

1. Location

Start: The Hanlon Creek Trail north of Laird Road at Southgate Drive / Kirkby Court

End: Intersection of the Hanlon Expressway and Kortright Road West

- ▶ Ward: 6
- ▶ Approximate Length: 2,650 m
- ▶ Connects with:
 - Existing culvert below the Hanlon Expressway south of Kortright Road
 - Trails in the Hanlon Creek Wetland and Preservation Park

2. Rationale

- ▶ Key off-road spine route connection from central part of the city into the south end, and in particular the Hanlon Creek Business Park and Southgate Business Park employment areas

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 7, 8 and 12

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail with section of on-road signed route immediately south of Kortright Road (on old Hanlon Road)
- ▶ Typical Cross Section: 3.0 m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Existing Stonedust trails to be widened to a consistent width of 3.0 m (2.5 m minimum)
 - Platform widening as required on top of berm along Hanlon Creek Trail to accept a 3.0 m stonedust trail
 - Minor surface improvements as required to existing granular trail / service access running parallel to Hanlon Expressway; improvements to this portion of the route will also need to meet the needs for Hydro service access
 - Consider lighting improvements inside culvert which passes below the Hanlon Expressway south of Kortright Road

- Work with private landowner to improve width and surfacing of trail connection between waypoint 048 and Southgate Drive
- Add trail directional signs at key decision points
- Add cautionary signage on the approaches to the leash free area to alert cyclists that dogs may be running on and off the trail
- Remove existing footbridge near waypoint 048, which has become redundant since culverts were added at the storm water management pond outlet

- ▶ Key Constraints: Current width of berm platform running along the east side of the Hanlon Creek wetland may limit the ability to achieve a preferred trail width of 3.0 m
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 17A, 17B, 17C and 21 for detailed requirements.

- ▶ Structures Required: None

- ▶ Road Crossings

- Kortright Road West

5. Public / Stakeholder Consultations

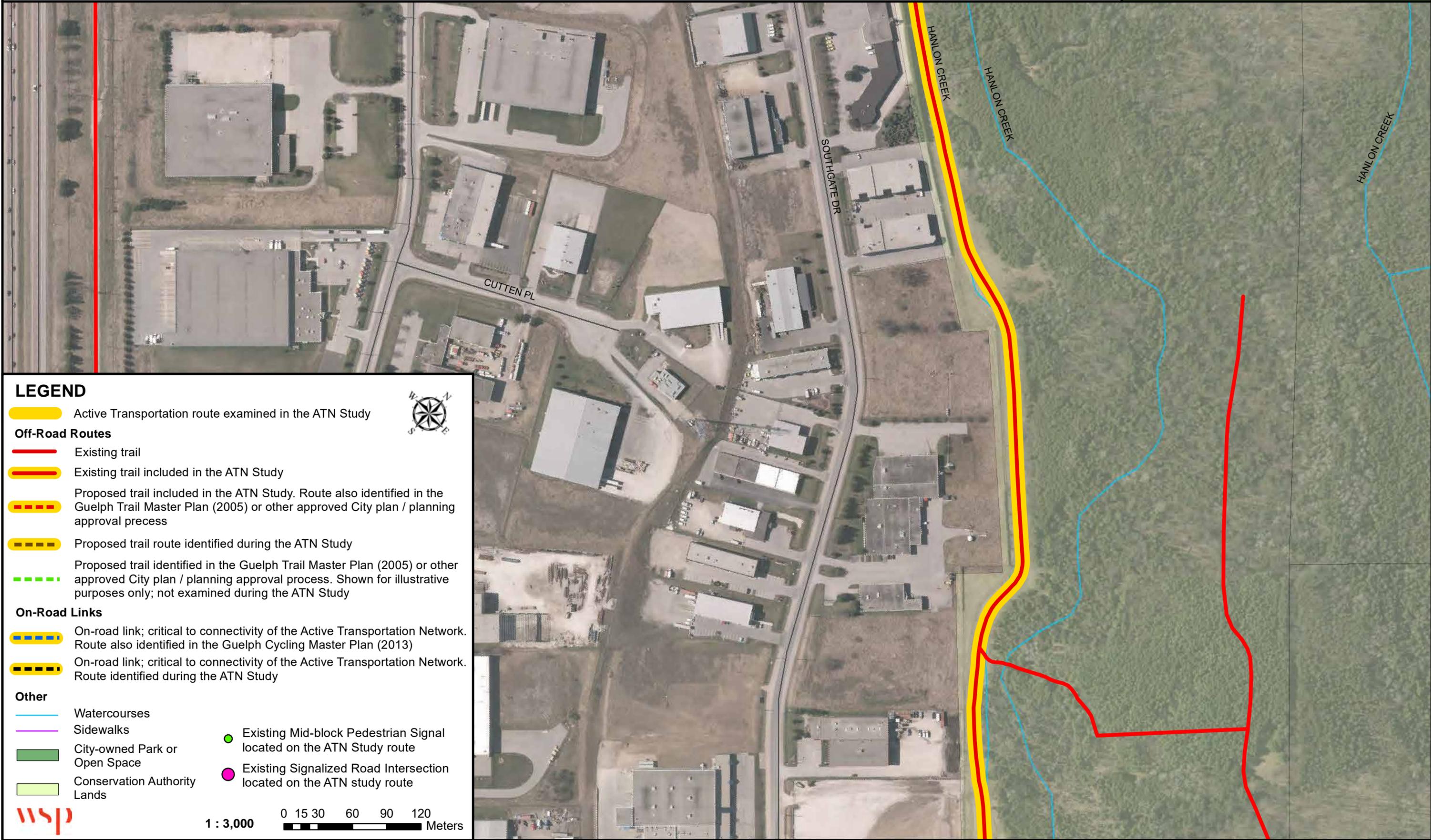
- ▶ MTO to formalize access and use of culvert, and ensure that access is maintained with future improvements to the Hanlon Expressway. Discuss timing of improvements at Kortright Road and Hanlon Expressway to determine timing and investment for suggested trail connection to the signalized crossing of Kortright Road at the Expressway and Old Hanlon Road.
- ▶ GRCA regarding improvements to Hanlon Creek Trail along east side of Hanlon Creek Wetland
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Private landowner on Southgate Drive regarding suggested improvements to trail link on private property
- ▶ Consider local neighbourhood meeting or Public Information Centre regarding trail improvements along east side of Hanlon Creek wetland and through leash free area south of Kortright
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 7					
1	Existing granular surface trail approx. 2.0m wide on top of berm - Widen to 3.0m (preferred), requires platform in select locations	Square metres	550	\$55.00	\$30,250.00
2	Widen platform in locations as required	Lump sum	1	\$5,000.00	\$5,000.00
3	Trim overgrown vegetation in selects locations	Lump sum	1	\$750.00	\$750.00
Map Sheet 8					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	Trail connection to Southgate Drive - 3.0 m (preferred) stonedust trail. Raised above surrounding grade	Square metres	360	\$55.00	\$19,800.00
3	Widen platform in select locations as required	Lump sum	1	\$5,000.00	\$5,000.00
4	Existing granular trail/service access selective surface improvements	Lump sum	1	\$5,000.00	\$5,000.00
5	Remove existing footbridge and re-purpose to another City trail	Lump sum	1	\$500.00	\$500.00
6	Trim overgrown vegetation in selects locations	Lump sum	1	\$750.00	\$750.00
Map Sheet 12					
1	Trail Directional Sign	Each	1	\$1,100.00	\$1,100.00
2	Trail Directional Sign "Trail users cross at signal"	Each	2	\$150.00	\$300.00
3	Trail caution sign (northbound): entering congested area. Proceed with caution	Each	2	\$150.00	\$300.00
4	Trail Caution sign: entering leash free zone proceed with caution	Each	3	\$150.00	\$450.00
5	New 3.0m wide stonedust trail connection from Hanlon Rd corridor at Hanlon Creek to underpass at expressway	Square metres	100	\$55.00	\$5,500.00
6	Lighting trail underpass of Hanlon Expressway (power already present)	Linear metres	120	\$150.00	\$18,000.00
7	Add in-boulevard 3.4m wide asphalt trail link from Old Hanlon Rd. to signalized crossings of Kortright at Hanlon Expressway (includes north and south side of Kortright Rd.)	Square metres	150	\$100.00	\$15,000.00
8	Existing granular trail/service access selective surface improvements	Lump sum	1	\$5,000.00	\$5,000.00
Total Capital					\$114,900.00
Design and Engineering Contingency (15%)					\$17,235.00
Construction Contingency (20%)					\$22,980.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	2300	\$3.00	\$6,900.00
2	Maintenance of Off-road segments (Summer)	Linear metres	2300	\$5.00	\$11,500.00
Total Maintenance					\$18,400.00

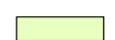
7. Next Steps / Priority

- Medium as majority of trail is already in place



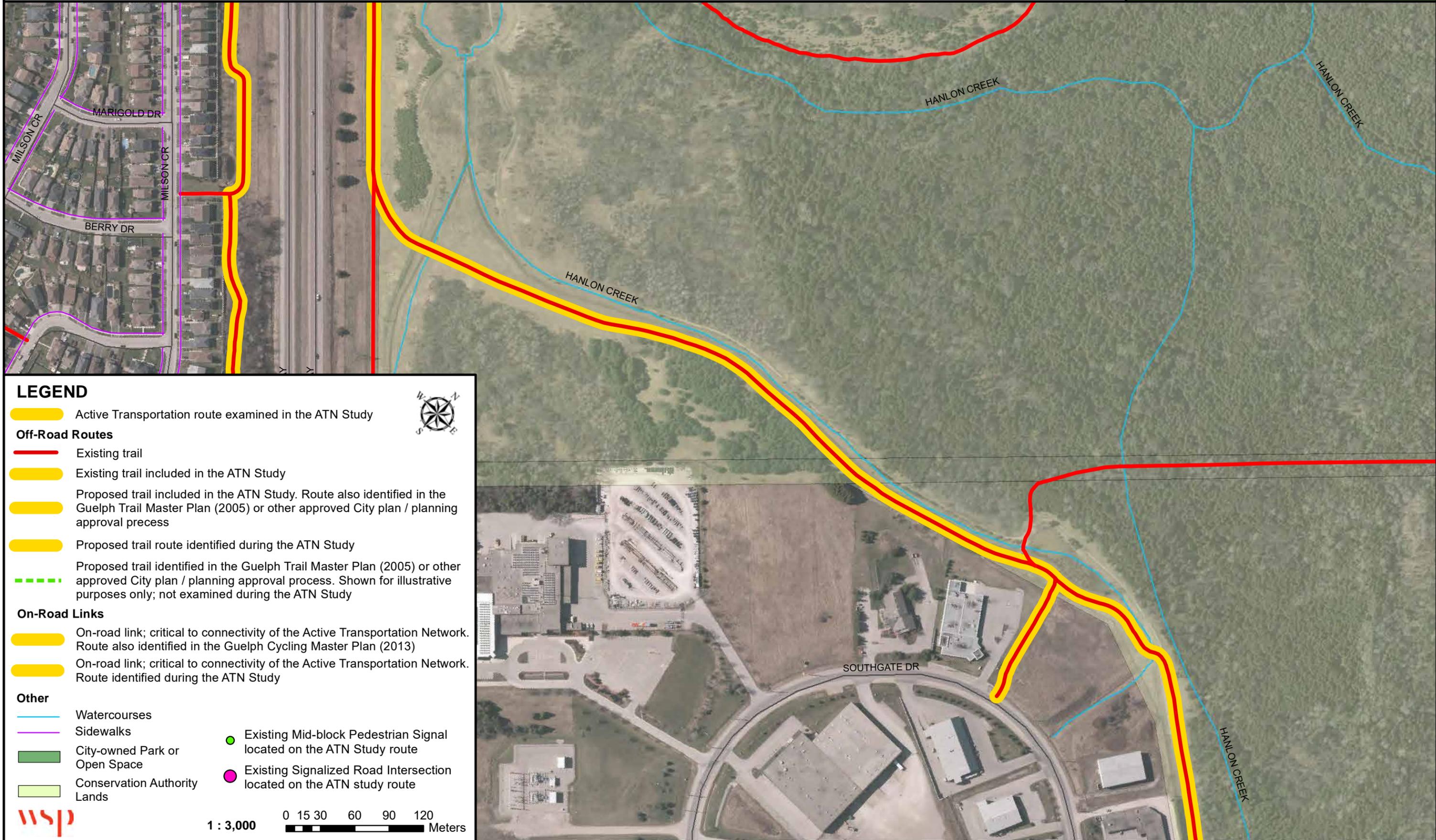
LEGEND



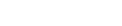
-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters

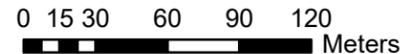


LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000





LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
 - Existing trail
 - Existing trail included in the ATN Study
 - Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
 - Proposed trail route identified during the ATN Study
 - Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
 - On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
 - On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
 - Watercourses
 - Sidewalks
 - City-owned Park or Open Space
 - Conservation Authority Lands
 - Off Leash Area
 - Existing Mid-block Pedestrian Signal located on the ATN Study route
 - Existing Signalized Road Intersection located on the ATN study route

Scale: 1 : 3,000
0 15 30 60 90 120 Meters

WSP



PROJECT AREA 5: HANLON EXPRESSWAY / HANLON CREEK TRAIL TO LAIRD ROAD (MAP SHEETS 9, 10, 11)

1. Location

Start: Hanlon Creek Trail culvert underpass south of Kortright Road

End: Hanlon Creek Boulevard and Downey Road

- ▶ Ward: 6
- ▶ Approximate Length: 4,200 m
- ▶ Connects with:
 - Existing trail network on west side of the Hanlon Expressway
 - Existing and future bike lanes on Downey Road
 - In-boulevard multi-use trail on Hanlon Creek Boulevard

2. Rationale

- ▶ Provides access from the north-south spine on the east side of the Hanlon Expressway to the City's southwest residential area and employment destinations in the Hanlon Creek Business Park and Southgate Business Park

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 9, 10 and 11

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail with short sections of on-road signed cycling route on McWilliams Road and portion of former Laird Road immediately east of Hanlon Creek Boulevard.
 - Proposed route through the Hanlon Creek Business Park shall be off-road wherever possible
- ▶ Typical Cross Section: 3.0 m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Existing stonedust trails to be widened to a consistent minimum width of 3.0 m

- Minor surface improvements as required to existing stonedust trails to fill low spots to ensure positive drainage
- Trail bridge (approx. 5 m long) over the stormwater management pond overflow / outfall and raise trail approaches in the vicinity of proposed bridge near waypoint 051
- Consider paving the shoulder of the road along McWilliams Road to improve on-road connection
- Minor grading and the installation of a culvert at the trail intersection and Laird Road
- Future in-boulevard multi-use trail along Hanlon Creek Boulevard should be upgraded to an asphalt surface
- Add trail directional signs at key decision points

▶ Key Constraints: None

▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 21 and 22 for detailed requirements.

▶ Structures Required: Recommended trail bridge over stormwater management outfall near waypoint 051

▶ Road Crossings: Teal Drive / McWilliams Road

5. Public / Stakeholder Consultations

▶ Consultation and agreement with the private landowners regarding use of the stormwater service access for part of the ATN route, including any recommended improvements. (i.e. the corridor between McWilliams Road and the former Laird Road ROW - Map Sheet 10 and 11). The existing City easement is for stormwater maintenance access.

▶ Guelph Accessibility Advisory Committee (GAAC)

▶ Consultation and agreement with the private landowner and Guelph Hydro (as an easement holder) regarding the use of the former section of Laird Road and the Hanlon Expressway as a part of the ATN route, including any recommended improvements (Map Sheet 11)

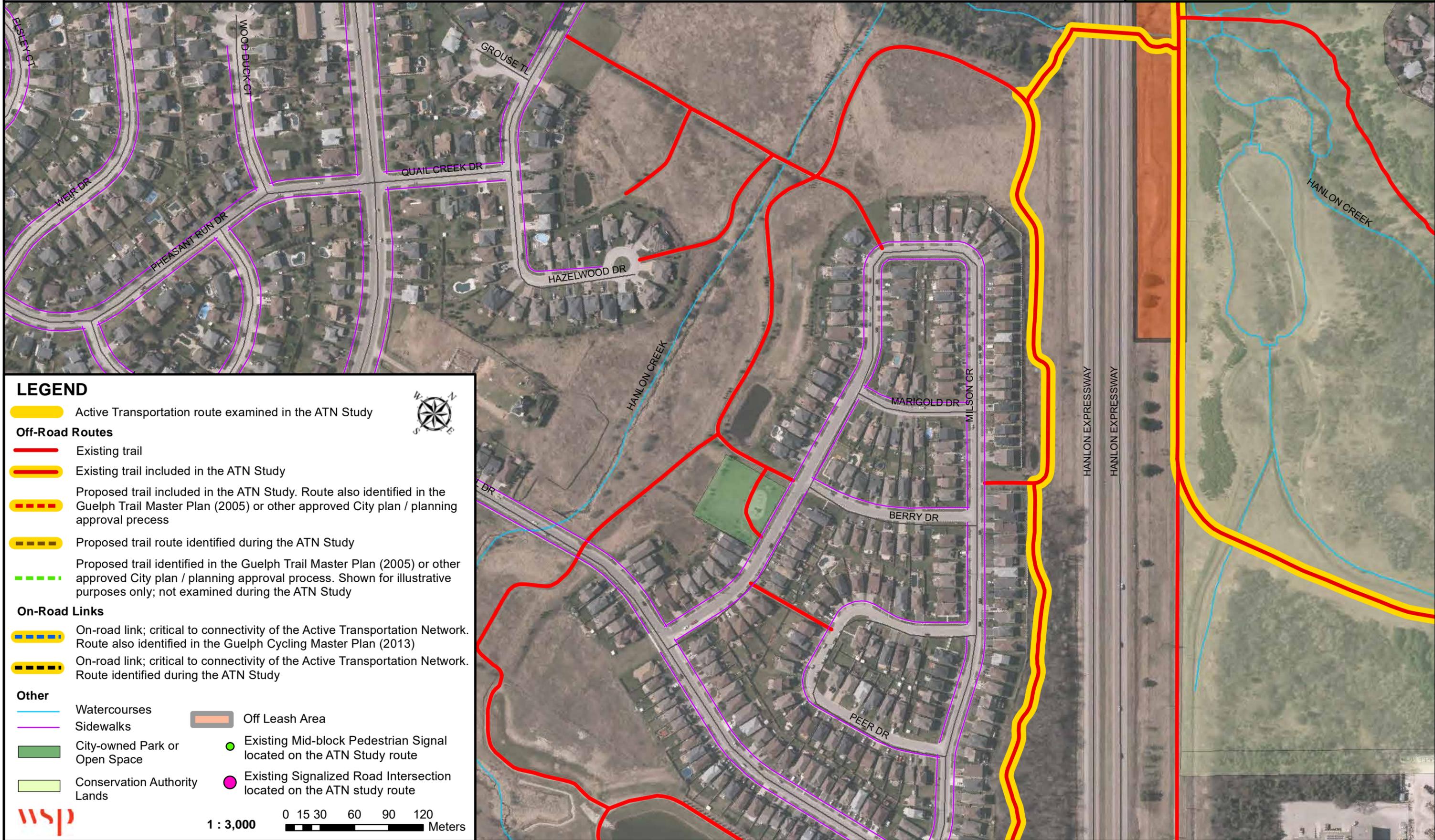
▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 9					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	Improve informal trail access by widening trail to 3.0m	Square metres	100	\$55.00	\$5,500.00
3	Culvert below trail between WP 049 and 050	Each	1	\$2,500.00	\$2,500.00
4	Selective surface improvements along existing 2.4m wide and widen to 3.0m stonedust trail	Square metres	220	\$55.00	\$12,100.00
5	Existing stonedust trail varying in width of 2.0m-2.4m - widen to consistent 3.0m	Square metres	400	\$55.00	\$22,000.00
6	Turfstone overflow for adjacent storm water management pond raise elevation of approaches (WP051)	Lump Sum	1	\$2,500.00	\$2,500.00
7	Bridge (WP051) (Approx. 5.0m length)	Square metres	15	\$2,500.00	\$37,500.00
8	Trim overgrown vegetation in select locations	Lump sum	1	\$750.00	\$750.00
Map Sheet 10					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	On-Street Signed route along McWilliams Road	Linear metres	300	\$5.00	\$1,500.00
3	On-Street Signed route Teal Dr and Bett Ct	Linear metres	320	\$5.00	\$1,600.00
4	Upgrade in-boulevard multi-use trail along Hanlon Creek Blvd from granular surface to asphalt (Downey Road to Laird Road). Base has already been installed	Square metres	4800	\$75.00	\$360,000.00
5	Selective surface improvements along existing 3.0m wide stonedust trail	Lump sum	1	\$2,000.00	\$2,000.00
6	Trail Barrier Gate	Each	1	\$1,500.00	\$1,500.00
7	Trim overgrown vegetation in selects locations	Lump sum	1	\$750.00	\$750.00
Map Sheet 11					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	Selective surface improvements along existing stonedust trail / SWM access route	Lump sum	1	\$4,000.00	\$4,000.00
3	On-Street Signed route former Laird Road ROW from Hanlon Creek Blvd. to stormwater access	Linear metres	140	\$5.00	\$700.00
4	Minor grading and improvements, plus culvert where the stormwater access trail and former Laird Road ROW meet	Lump sum	1	\$4,500.00	\$4,500.00
5	Upgrade in-boulevard multi-use trail along Hanlon Creek Blvd and Laird Rd from granular surface to asphalt (Laird Rd to Quarterman Rd)	Square metres	2400	\$100.00	\$240,000.00
6	Upgrade in-boulevard multi-use trail along Laird Rd from granular surface to asphalt (Quarterman Rd to Downey Rd)	Square metres	3500	\$100.00	\$350,000.00
Total Capital:					\$1,056,000.00
Design and Engineering Contingency (15%)					\$158,400.00
Construction Contingency (20%)					\$211,200.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	1750	\$3.00	\$5,250.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1750	\$5.00	\$8,750.00
Total Maintenance					\$14,000.00

7. Next Steps / Priority

- Medium as majority of trail routes currently exist

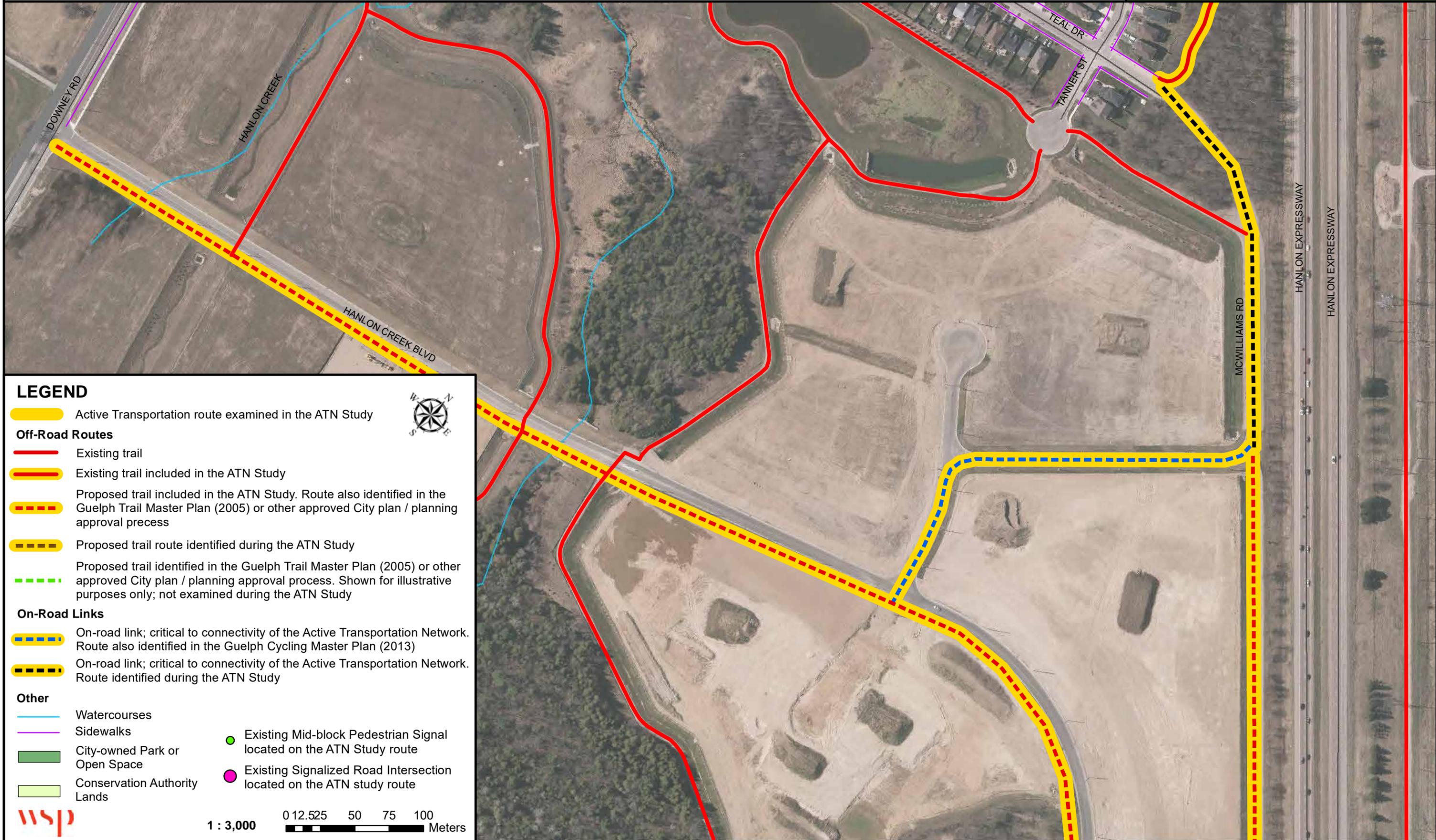


LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
 - Existing trail
 - Existing trail included in the ATN Study
 - Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
 - Proposed trail route identified during the ATN Study
 - Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
 - On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
 - On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
 - Watercourses
 - Sidewalks
 - City-owned Park or Open Space
 - Conservation Authority Lands
 - Off Leash Area
 - Existing Mid-block Pedestrian Signal located on the ATN Study route
 - Existing Signalized Road Intersection located on the ATN study route

W N S E

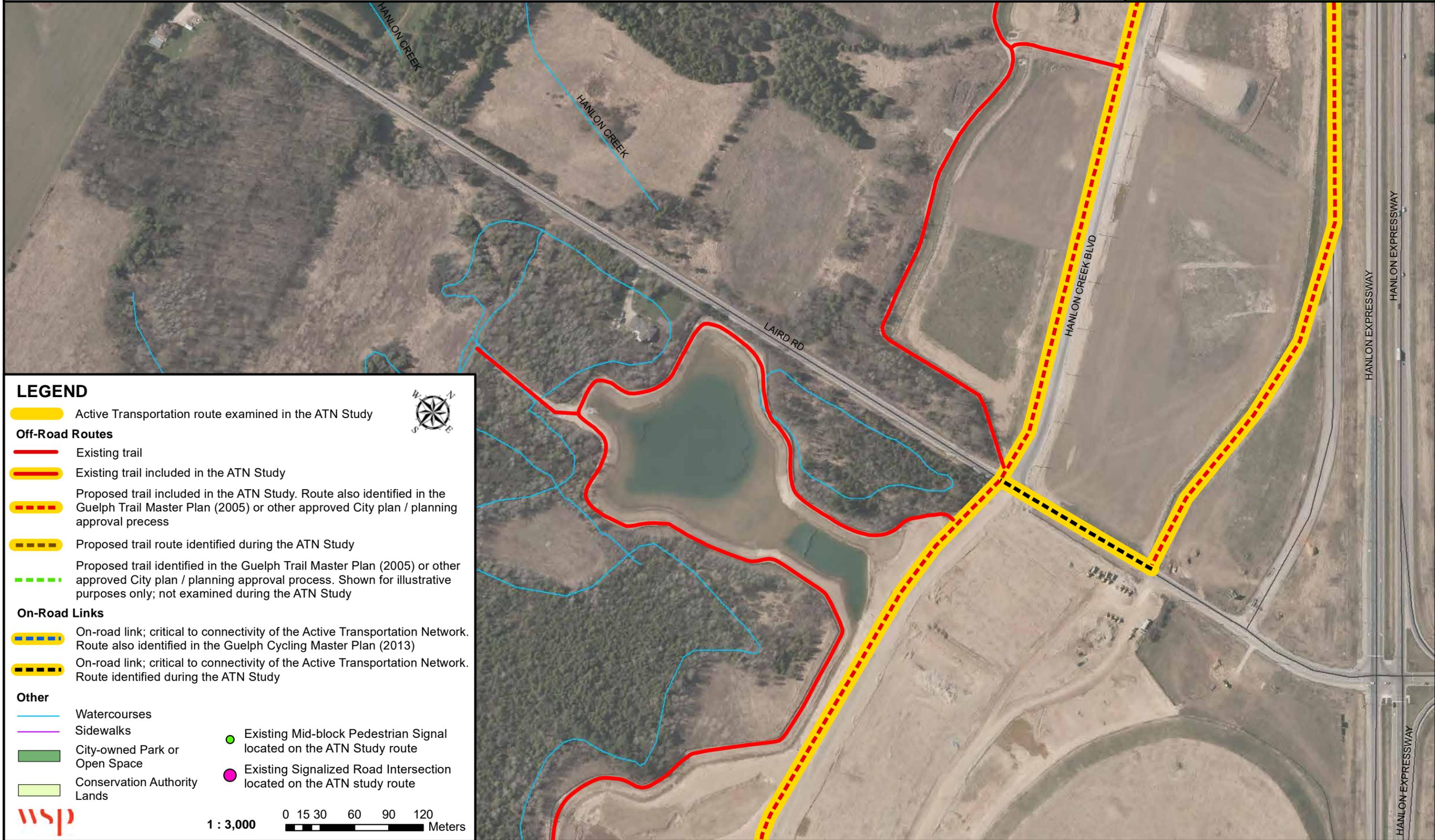
1 : 3,000 0 15 30 60 90 120 Meters



LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
 - Existing trail
 - Existing trail included in the ATN Study
 - Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
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- On-Road Links**
 - On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
 - On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
 - Watercourses
 - Sidewalks
 - City-owned Park or Open Space
 - Conservation Authority Lands
 - Existing Mid-block Pedestrian Signal located on the ATN Study route
 - Existing Signalized Road Intersection located on the ATN study route

1 : 3,000



LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

1 : 3,000 0 15 30 60 90 120 Meters

PROJECT AREA 6: ALONG THE HANLON EXPRESSWAY FROM KORTRIGHT ROAD TO STONE ROAD (MAP SHEET 13)

1. Location

Start: Intersection of the Hanlon Expressway and Kortright Road West

End: Intersection of the Hanlon Expressway and Stone Road West

- ▶ Ward: 5
- ▶ Approximate Length: 1,000 m
- ▶ Connects with: no direct connection to existing active transportation facility other than the key north-south spine route, of which it is a part

2. Rationale

- ▶ Key off-road spine route connection from central part of the city into the south end, and in particular the Hanlon Business Park employment area

3. Observations and Recommendations

- ▶ Refer to accompanying map sheet 13

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0m (preferred) wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Asphalt along old Hanlon Road running parallel to Hanlon Expressway from Kortright Road to Stone Road is in poor condition; resurfacing is recommended
 - Removal of the old asphalt and repaving a narrower route should also include restoration of the remaining area of the former road bed with a layer of topsoil and seed; the granular base should remain in place to provide a solid base / access for hydro service vehicles as necessary
 - Width of corridor may allow for a narrow, meandering natural surface trail parallel to the recommended asphalt surface trail following the old Hanlon Road alignment
 - New section of asphalt surface trail following desire line / beaten path from cul-de-sac for old Hanlon Road to Stone Road
 - Add trail directional signs at Kortright and Stone Road ends of this trail section
 - Add cautionary signage on the approaches to the leash free area to alert cyclists that dogs may be running on and off the trail

- ▶ Key Constraints: None
- ▶ Natural Heritage: Not applicable
- ▶ Structures Required: None
- ▶ Road Crossings: Kortright Road, Stone Road

5. Public / Stakeholder Consultations

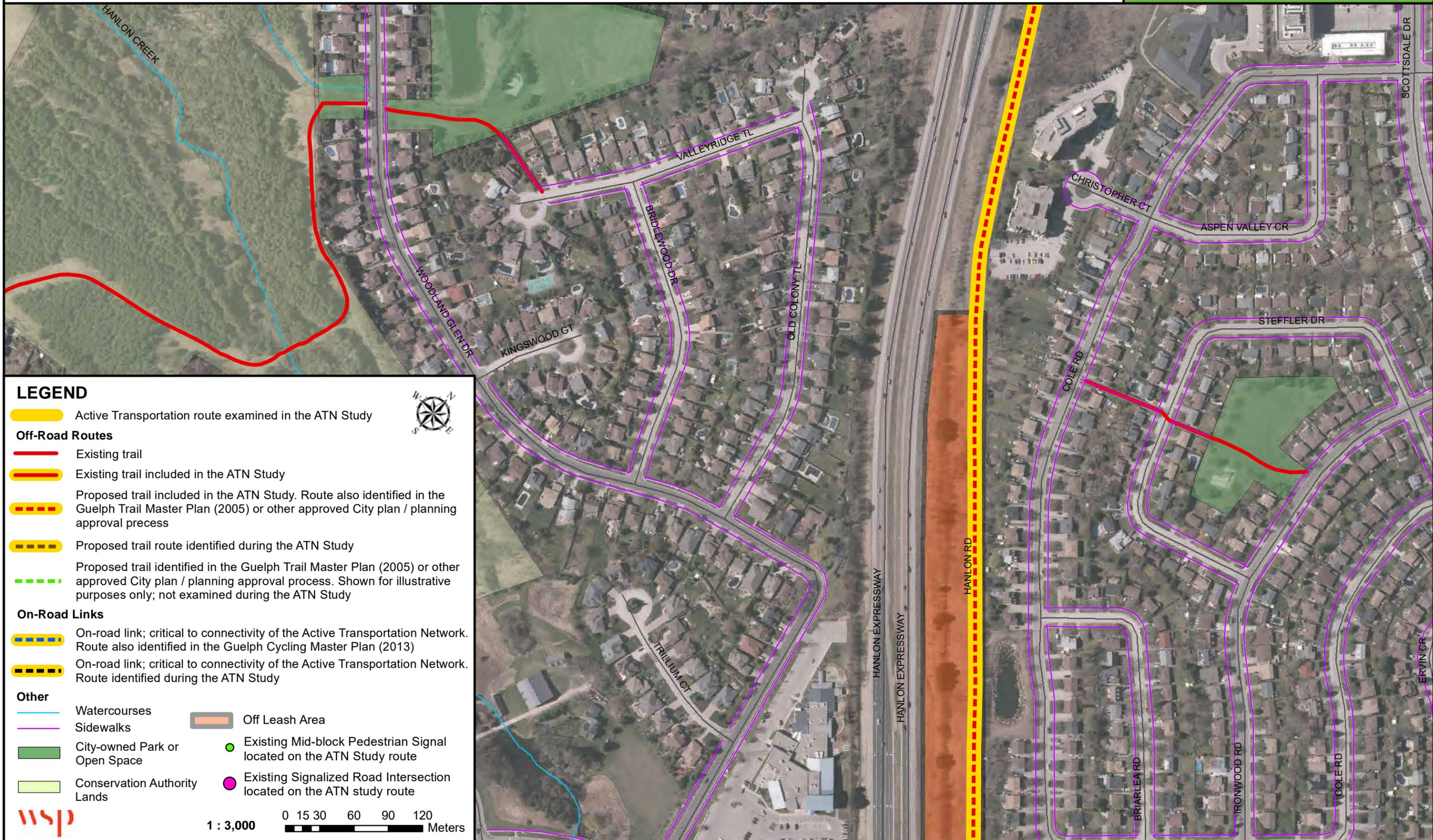
- ▶ Consider local neighbourhood meeting or Public Information Centre regarding trail improvements through designated leash free area north of Kortright Road
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Consult with Hydro as improvements to this portion of the route will also need to meet the needs for service access
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 13					
1	Asphalt resurfacing 3.0 m wide	Square metres	1600	\$100.00	\$160,000.00
2	Remove and dispose of excess width of existing asphalt, and restore remaining 4.0m wide strip	Square metres	1700	\$15.00	\$25,500.00
3	Trail Caution sign: entering leash free zone proceed with caution	Each	1	\$150.00	\$150.00
Total Capital:					\$185,650.00
Design and Engineering Contingency (15%)					\$27,847.50
Construction Contingency (20%)					\$37,130.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	850	\$3.00	\$2,550.00
2	Maintenance of Off-road segments (Summer)	Linear metres	850	\$5.00	\$4,250.00
Total Maintenance					\$6,800.00

7. Next Steps / Priority

- ▶ Medium to high



LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Off Leash Area
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters

PROJECT AREA 7: STONE ROAD TO THE SPEED RIVER (MAP SHEETS 14, 15, 16)

1. Location

Start: West of the intersection of the Hanlon Expressway and Stone Road West

End: North end of Municipal Street (end of cul-de-sac)

- ▶ Ward: 5
- ▶ Approximate Length: 2,850 m
- ▶ Connects with:
 - Existing Bike Lanes on College Avenue
 - Trails in Centennial Park and W. E. Hamilton Park
 - Existing multi-use trail along south side of Eramosa River at Municipal Street

2. Rationale

- ▶ Main north-south corridor connecting key destinations: Stone Road Mall, Priory Park Elementary School, Centennial CVI, College Heights SS, Centennial Arena, Guelph Soccer Dome, Guelph Saults Gymnastic Club
- ▶ Connects to main multi-use trail along south side of Eramosa River and will provide future connection to route(s) to northwest part of the City

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 14, 15 and 16

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0m wide to accommodate service vehicle access (minimum 2.5 m)
- ▶ Key Design Elements to be Considered:
 - Provide 3.0m wide asphalt trail in the north boulevard along Stone Road from Hanlon Expressway to Scottsdale Drive
 - Widen trail to 3.0m and resurface trail with asphalt from the end of Hanlon Road to Stone Road
 - Consider removing the existing sidewalk along the west side of Scottsdale Drive and replace with 3.0m multi-use trail
 - Decommission section of trail through W.E. Hamilton Park and realign trail to desire line path
 - Widen and resurface the existing stonedust trail north of W.E. Hamilton Park with asphalt

- Consider the addition of cross ride to the mid-block crossing on College Avenue in compliance to OTM Book 18-Cycling Facility Design for guidance on detailed design
- Improve directional signage in the vicinity of the College Avenue crossing to guide users through the Centennial CVI property
- Widened trail running along the north side of Centennial CVI and past Centennial arena to a consistent desired width and resurface with asphalt
- Realign fence at the corner of soccer bowl to provide better sight lines
- Install a new asphalt trail parallel to the fence beside the outdoor soccer bowl, including the area of the widened radius and the sloped section of trail north of the soccer bowl to remedy ongoing erosion
- Remove existing concrete walkway on trail access to Municipal Street and replace with 3.0m wide asphalt trail
- Provide curb cuts in various location where trails meet streets to improve accessibility as noted on map sheets
- Add cautionary signage near the playground in W.E Hamilton Park to alert cyclists that young children may be playing on or near the trail
- Add trail directional signs at key decision points
- Provide curb cut at Municipal Street

▶ Key Constraints: None

▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 24 for detailed requirements.

▶ Structures Required: None

▶ Road Crossings:

- Stone Road
- Janefield Avenue
- College Avenue West – existing mid-block pedestrian signal already in place
- Municipal Street

5. Public / Stakeholder Consultations

- ▶ Upper Grand District School Board for section on school property at Centennial CVI
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Guelph Soccer Club for realignment of fence beside outdoor soccer bowl
- ▶ Notification of Construction

6. Opinion of Probable Cost

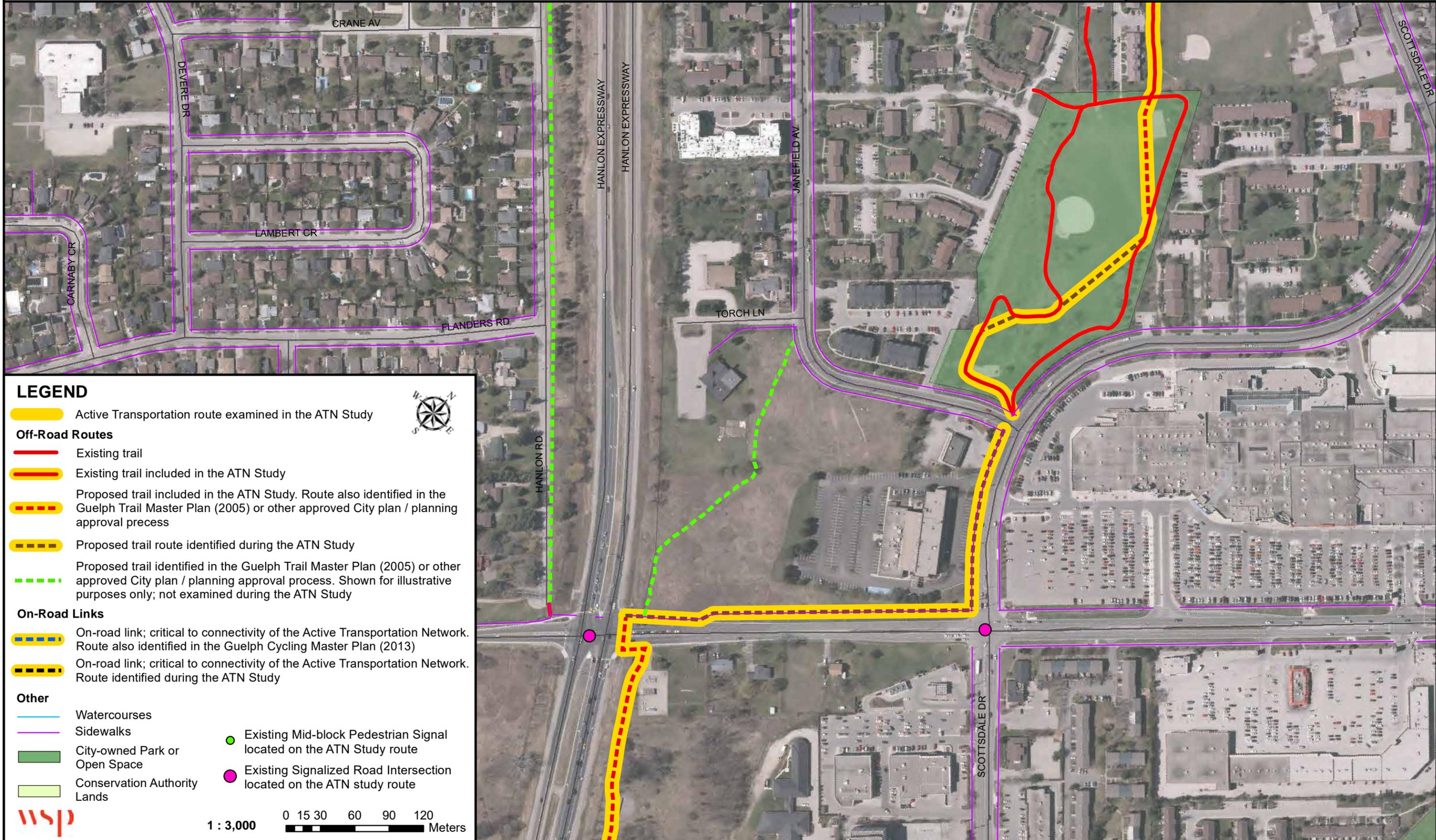
Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 14					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Trail Regulatory sign (Cyclists use street - do not ride on sidewalk)	Each	1	\$150.00	\$150.00
3	Add Caution signs for playground	Each	2	\$150.00	\$300.00
4	New 3.0m wide asphalt trail from old Hanlon Rd. cul de sac to Stone Rd.	Square metres	420	\$100.00	\$42,000.00
5	New 3.0m wide boulevard asphalt trail along Stone Rd. from Scottsdale Dr. to Hanlon Expressway	Square metres	900	\$100.00	\$90,000.00
6	Removal of existing sidewalks from Stone road to Janefield Dr.	Square metres	240	\$15.00	\$3,600.00
7	New 3.0m wide boulevard asphalt trail along Scottsdale Dr from Stone road to Janefield Dr.	Square metres	350	\$100.00	\$35,000.00
8	New 3.0m wide asphalt trail on existing 2.0m wide stonedust path	Square metres	700	\$100.00	\$70,000.00
9	New segments of 3.0m wide asphalt trail (realigned sections as shown on Sheet 14)	Square metres	660	\$100.00	\$66,000.00
10	Decommission existing stonedust trail	Square metres	450	\$5.00	\$2,250.00
11	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
Map Sheet 15					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	Barrier with directional signage (south boulevard)	Each	1	\$2,500.00	\$2,500.00
3	New 3.0m wide asphalt boulevard path to crosswalk (includes segments on north and south sides of College Ave.)	Square metres	320	\$100.00	\$32,000.00
4	Removal of existing sidewalks from trail to crosswalk (includes segments on both sides of College Ave.)	Square metres	160	\$15.00	\$2,400.00
5	New 3.0m wide asphalt trail on existing 2.5m wide stonedust path (south of College Ave.)	Square metres	1100	\$100.00	\$110,000.00
6	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
7	New 3.0m wide asphalt trail on existing 2.0m wide stonedust path (north of College Ave.)	Square metres	650	\$100.00	\$65,000.00
Map Sheet 16					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Trail Regulatory sign: Cyclists use Municipal Street - (do not ride on sidewalk)	Each	2	\$150.00	\$300.00
3	Trail Regulatory sign Congested area - Cyclist Yield to pedestrians Maximum 10km/h	Each	2	\$150.00	\$300.00
4	New 3.5m wide asphalt trail on existing 3.5m-4.0m wide stonedust path	Square metres	750	\$100.00	\$75,000.00
5	New 3.0m wide asphalt trail on existing 2.5m wide stonedust path	Square metres	750	\$100.00	\$75,000.00
6	(Option 1 at Municipal St) Provide curb cut (already specified bellow) at south end of link for cyclists to use street, sign sidewalk for pedestrians	Each	1	\$1,000.00	\$1,000.00
7	(Option 1 at Municipal St) On-Street Signed route along Municipal Street between walkway block to Centennial Park and Silvercreek Trail entrance at end of Municipal Street	Linear metres	450	\$5.00	\$2,250.00
8	(Option 2 at Municipal St) remove existing sidewalk	Square metres	650	\$15.00	\$9,750.00
9	(Option 2 at Municipal St) New 3.0m wide boulevard asphalt trail between walkway block to Centennial Park and Silvercreek Trail entrance at end of Municipal Street	Square metres	1350	\$100.00	\$135,000.00
10	Realign north corner of soccer field fence	Linear metres	35	\$75.00	\$2,625.00
11	New 3.0 m wide asphalt trail where soccer field fence has been realigned	Linear metres	105	\$100.00	\$10,500.00
Total Capital					\$848,925.00
Design and Engineering Contingency (15%)					\$127,338.75
Construction Contingency (20%)					\$169,785.00



Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	2400	\$3.00	\$7,200.00
2	Maintenance of Off-road segments (Summer)	Linear metres	2400	\$5.00	\$12,000.00
Total Maintenance					\$19,200.00

7. Next Steps / Priority

- ▶ Candidate for expanded Winter maintenance
- ▶ Medium priority for implementation



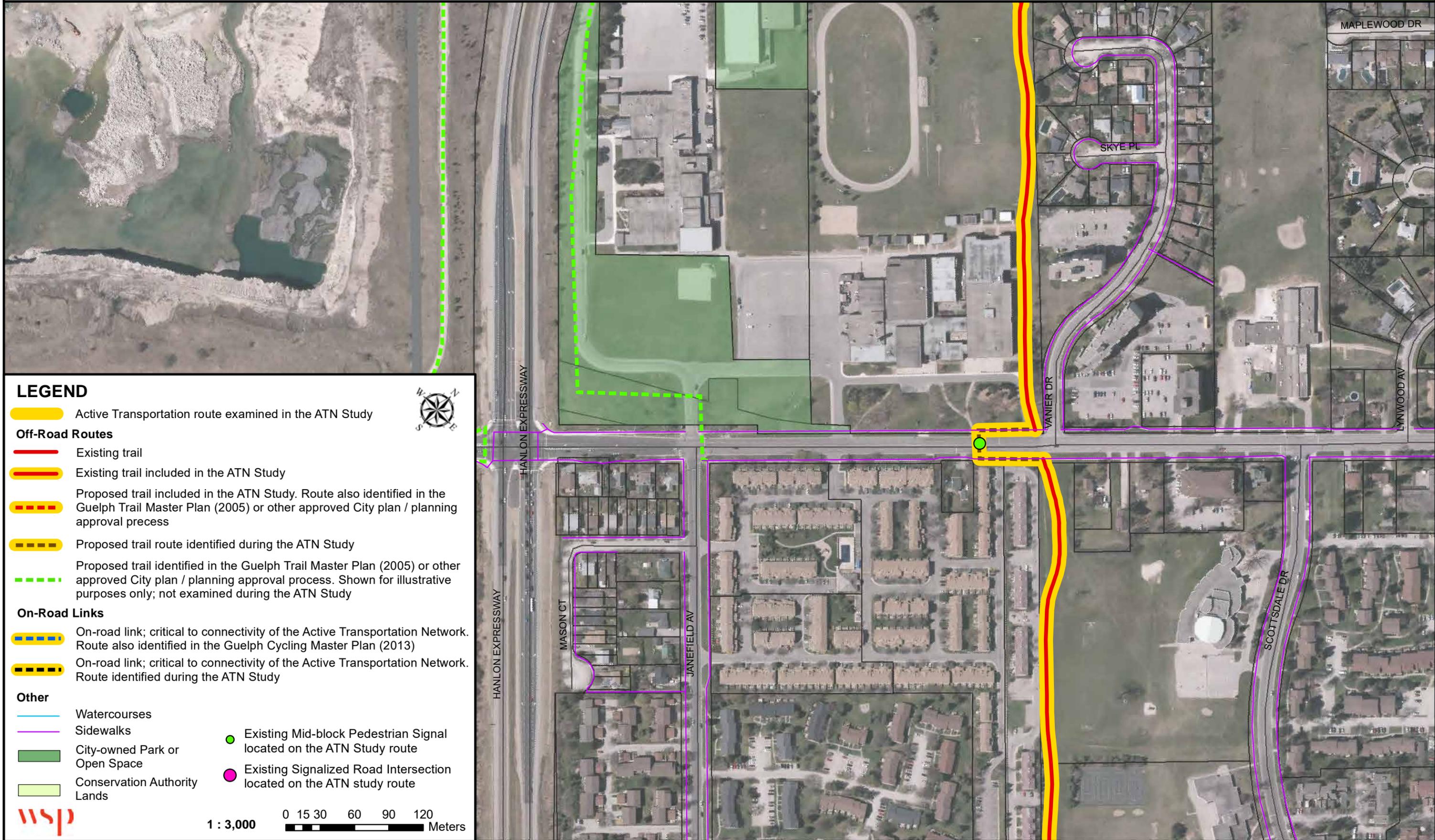
LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
 - Existing trail
 - Existing trail included in the ATN Study
 - Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
 - Proposed trail route identified during the ATN Study
 - Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
 - On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
 - On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
 - Watercourses
 - Sidewalks
 - City-owned Park or Open Space
 - Conservation Authority Lands
 - Existing Mid-block Pedestrian Signal located on the ATN Study route
 - Existing Signalized Road Intersection located on the ATN study route

WSP

1 : 3,000 0 15 30 60 90 120 Meters

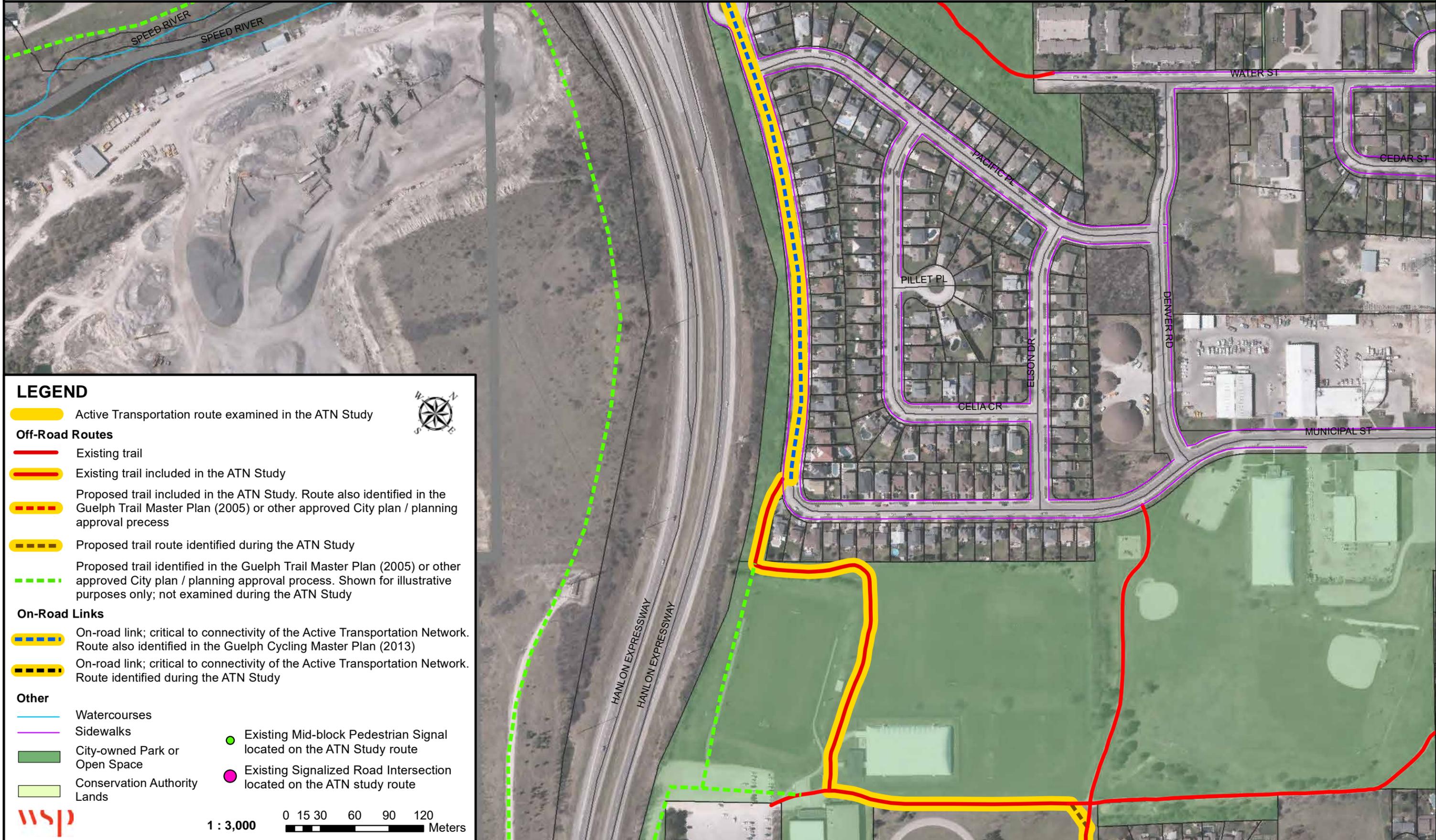




LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route





LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



PROJECT AREA 8: ALONG THE SPEED RIVER FROM THE HANLON EXPRESSWAY TO GORDON STREET (MAP SHEETS 17, 34, 35)

1. Location

Start: North end of Municipal Street (end of cul-de-sac)

End: Gordon Street and the Speed River / Eramosa River confluence

- ▶ Ward: 1, 5
- ▶ Approximate Length: 3,700 m
- ▶ Connects with:
 - Bike lanes on Gordon Street
 - Trails surrounding the Speed River

2. Rationale

- ▶ Key east-west trail route in the central part of the city along the Eramosa River on one or both sides of the river, depending on which side of the river the user is on
- ▶ Provides access to recreational destinations along the river
- ▶ This is a popular and heavily used section of the City's trail system
- ▶ Connects to north-south spine route running south from the river towards Stone Road Mall and destinations in the south part of the city

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 17, 35 and 34

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail, with short on-road connections in Royal City Park using park laneway and laneway accessing the Boathouse
- ▶ Typical Cross Section: 3.0m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Minor trail improvements to trail surface in select locations as needed to ensure positive drainage and prevent ponding on trail surface and to maintain a consistent minimum width of 3.0m
 - Widen and resurface existing trail with asphalt from Municipal Street to bottom of slope beside the river to reduce ongoing erosion

- Proposed 3.0m wide trail along north side of Speed River west from the Edinburgh Road / Wellington Street intersection
- Ultimate alignment of route from Gordon Street to the covered bridge (near the boathouse) subject to future visioning / design of public space surrounding the lawn bowling club
- Remove aging, narrow asphalt trail on south side of Speed River between Wyndham Street and York Road and replace with 3.0 m wide (preferred, 2.5 m minimum) asphalt trail; once trail access is secured for the section immediately north of York Road at the river / covered bridge
- Provide hard asphalt surface on slopes approaching the dam west of Gow's bridge to prevent ongoing trail erosion
- Add signage in the vicinity of congested areas (e.g. Royal City Park, Boathouse, covered bridge) to alert cyclists and encourage them to proceed with caution through busy areas
- Add trail directional signs at key decision points
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 5, 6A, 6B, 7, 8A, 24 for detailed requirements.
- ▶ Key Constraints: None
 - Structures Required: Pedestrian bridge connecting to north side of Speed River (Approx. 65m)
- ▶ Road Crossings:
 - Edinburgh Road
 - McCrae Boulevard
 - Gordon Street
 - Wyndham Street
 - York Road (dead end section west of Wyndham Street near covered bridge)

5. Public / Stakeholder Consultations

- ▶ Public and stakeholder consultations as part of an Environmental Assessment for future pedestrian bridge over Eramosa River near the Wellington Road – Hanlon Expressway intersection
- ▶ Public and stakeholder consultations related to trail and other future improvements in the area of the Boathouse and lawn bowling club (part of a larger visioning and design study for this important node along the trail system)

- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ GRCA related to proposed trail improvements along the river
- ▶ Notification of Construction

6. Opinion of Probable Cost

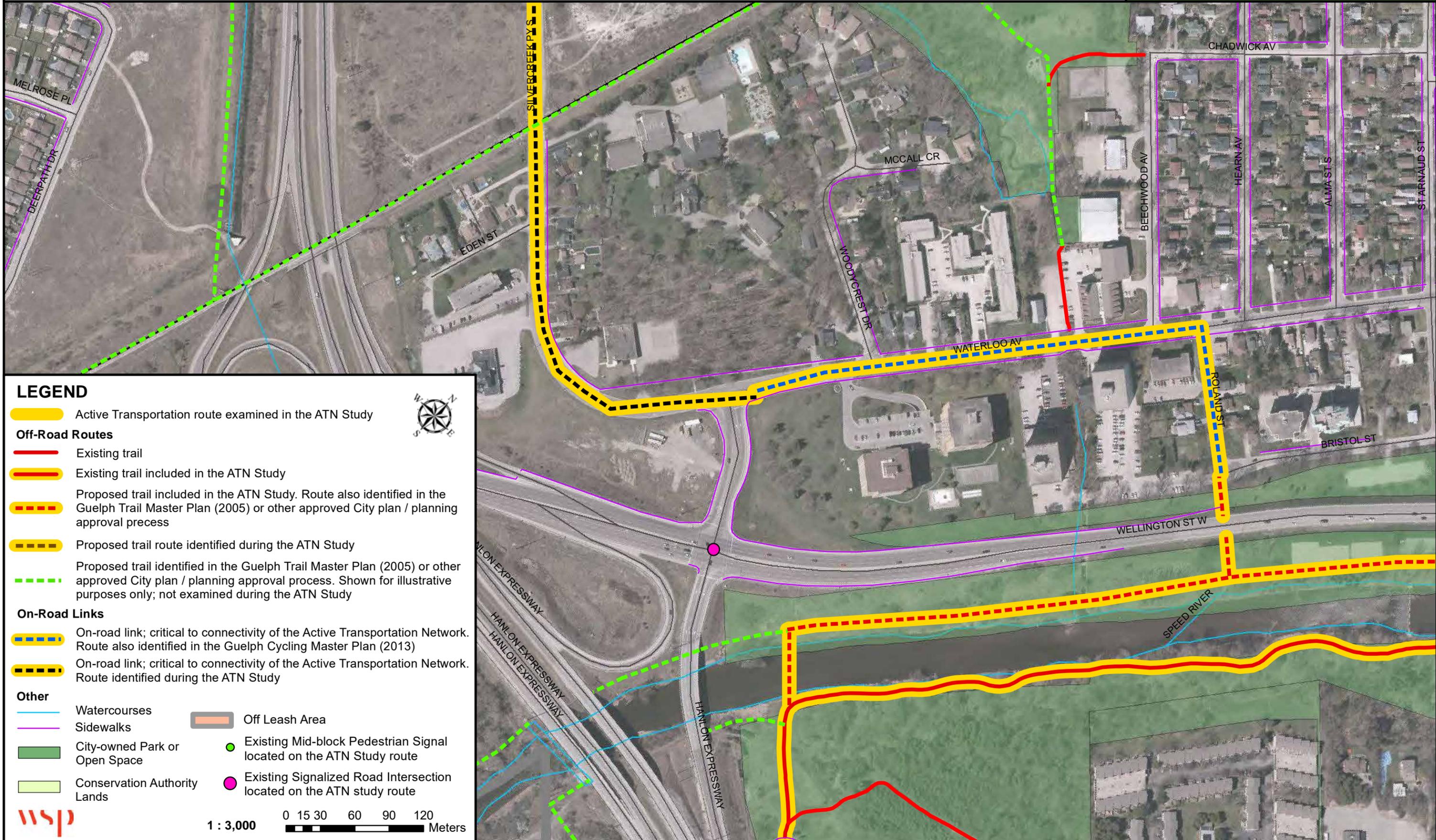
Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 17					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	Trail Regulatory sign: Cyclists use Municipal Street - (do not ride on sidewalk)	Each	1	\$150.00	\$150.00
3	Minor trail surface improvements to existing 3.0m wide stonedust trail (south side of river, west of Edinburgh Rd to trail at bottom of hill near Hanlon Expressway)	Lump Sum	1	\$5,000.00	\$5,000.00
4	New 3.0m wide asphalt surface trail from Edinburgh Rd. (north side of river) to future pedestrian bridge	Square metres	1350	\$100.00	\$135,000.00
5	New 3.0m asphalt trail from new Silvercreek Trail to Roland St	Square metres	180	\$100.00	\$18,000.00
6	Mid-block pedestrian signal on Wellington St. at Roland Ave link	Each	1	\$75,000.00	\$75,000.00
7	On-street signed route on Roland St from Bristol St to Wellington St	Linear metres	130	\$5.00	\$650.00
8	Pedestrian Bridge over Speed River	Square metres	200	\$2,500.00	\$500,000.00
9	New 3.0m wide asphalt trail on existing 2.5m wide stonedust and asphalt path, on sloped trail from Municipal St. cul de sac to Speed River	Square metres	320	\$100.00	\$32,000.00
10	On-Street Signed route on along Silvercreek Pkwy from Waterloo Ave. to north of railway tracks	Linear metres	450	\$5.00	\$2,250.00
11	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
12	Trim select vegetation encroaching on trail area	Lump Sum	1	\$1,500.00	\$1,500.00
Map Sheet 34					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Trail Regulatory sign Congested area - Cyclist Yield to pedestrians Maximum 10km/h	Each	4	\$150.00	\$600.00
3	Improvements to trail alignment and surface on south side of dam, includes adding asphalt to sloped section	Square metres	200	\$100.00	\$20,000.00
4	Mid-block pedestrian signal	Each	1	\$75,000.00	\$75,000.00
5	Remove and replace aging existing 2.0m asphalt trail with 3.0m asphalt trail immediately west of Wyndham St.	Square metres	360	\$100.00	\$36,000.00
6	New 3.0m asphalt trail link from York Rd to end of existing trail off Wyndham St.	Square metres	150	\$100.00	\$15,000.00
7	Trail Barrier Gate	Each	4	\$2,500.00	\$10,000.00
8	Minor trail surface improvements to existing 3.0m wide stonedust trail	Lump Sum	1	\$5,000.00	\$5,000.00
9	Trim select vegetation encroaching on trail area	Lump Sum	1	\$2,250.00	\$2,250.00

Sheet 35

1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	New 3.0m asphalt trail link on north side of river from washroom building to intersection of Edinburgh Rd and Wellington St.	Square metres	360	\$100.00	\$36,000.00
3	New 3.0m asphalt trail link on north side of river from Edinburgh Rd. to area of volleyball court and starting point of stonedust trail.	Square metres	1150	\$100.00	\$115,000.00
4	Improvements to trail alignment and surface on west side of Edinburgh Rd. includes asphalt on sloped section - south side of river	Square metres	150	\$100.00	\$15,000.00
5	Minor trail surface improvements to existing 3.0m wide trail (east and west of Edinburgh Rd.- south side of river)	Lump Sum	1	\$5,000.00	\$5,000.00
6	Trail Barrier Gate	Each	4	\$2,500.00	\$10,000.00
7	Trim select vegetation encroaching on trail area	Lump Sum	1	\$1,500.00	\$1,500.00
Total Capital					\$1,133,000.00
Design and Engineering Contingency (15%)					\$169,950.00
Construction Contingency (20%)					\$226,600.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	4350	\$3.00	\$13,050.00
2	Maintenance of Off-road segments (Summer)	Linear metres	4350	\$5.00	\$21,750.00
3	Annual maintenance of new mid-block pedestrian signal	Each	1	\$2,500.00	\$2,500.00
Total Maintenance					\$37,300.00

7. Next Steps / Priority

- ▶ High for recommended trail improvements related to reducing erosion on slopes
- ▶ High for planning studies related to the proposed trail bridge over the Eramosa River near Wellington Street at the Hanlon Expressway
- ▶ High for trail improvements in the vicinity of the Boathouse
- ▶ High for the Silvercreek trail extension
- ▶ Medium for other improvements to the trail system as much of the trail currently exist



LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Off Leash Area
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route





LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

Existing trail

Existing trail included in the ATN Study

Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process

Proposed trail route identified during the ATN Study

Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)

On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

Watercourses

Sidewalks

City-owned Park or Open Space

Conservation Authority Lands

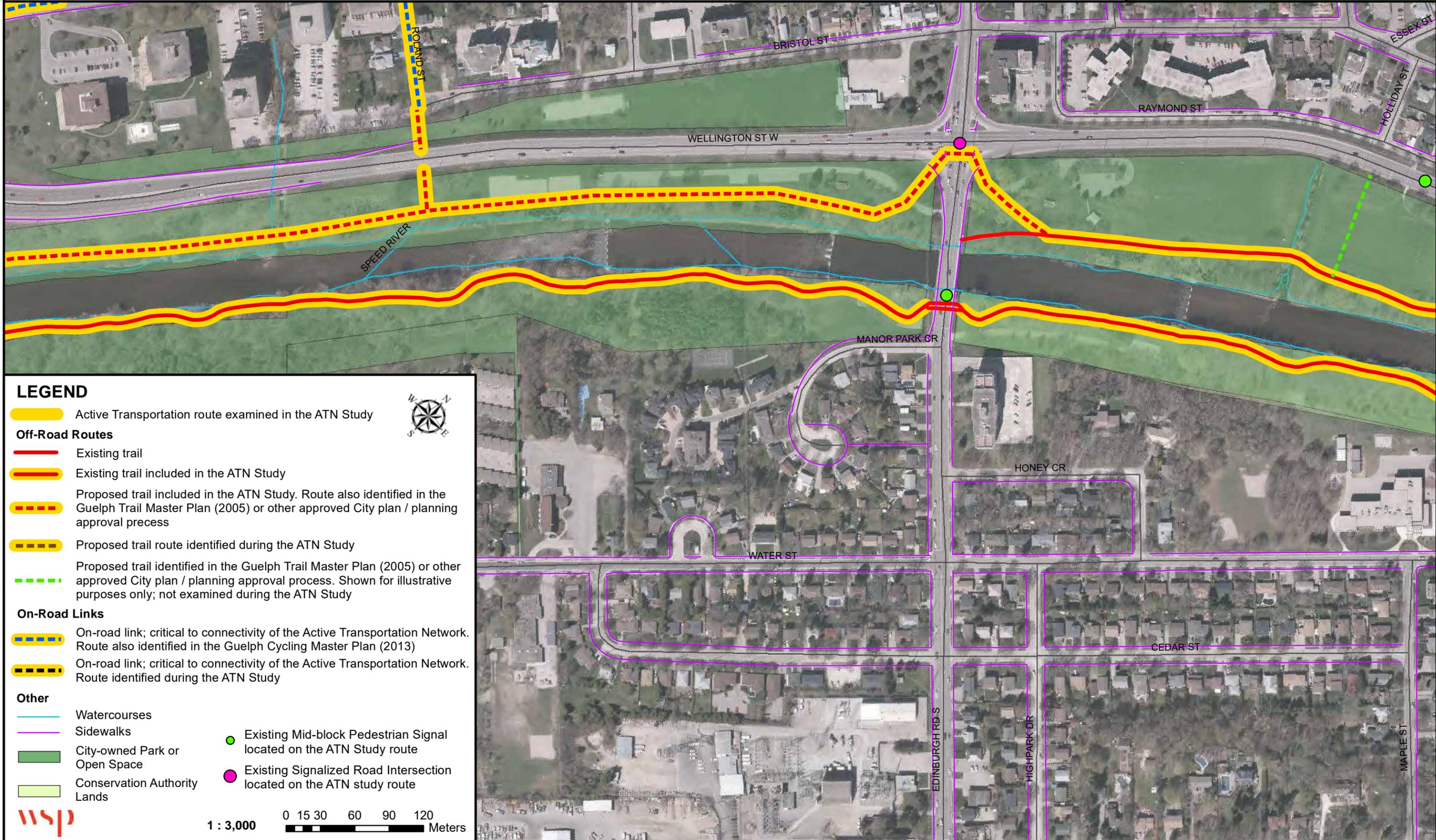
Existing Mid-block Pedestrian Signal located on the ATN Study route

Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters





LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route



PROJECT AREA 9: ALONG SILVERCREEK PARKWAY SOUTH FROM THE SPEED RIVER AND PAISLEY ROAD (MAP SHEET 18)

1. Location

Start: Gordon Street and the Speed River / Eramosa River confluence

End: Intersection of Paisley Road and Silvercreek Parkway North

- ▶ Ward: 3
- ▶ Approximate Length: 1,200 m
- ▶ Connects with:
 - Bike lanes on Waterloo Avenue

2. Rationale

- ▶ Part of key north-south spine connection on the west side of the city, providing active transportation connections to neighbourhoods on the west side of the Hanlon Expressway

3. Observations and Recommendations

- ▶ Refer to accompanying map sheet 18

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail, with short on-road signed route and bike lane connections on Waterloo Avenue and Silvercreek Parkway immediately west of the Wellington Street West – Waterloo Avenue intersection
- ▶ Typical Cross Section: 3.0m wide multi-use trail
- ▶ Key Design Elements to be Considered:
 - Future Trail Link running parallel with Hanlon Expressway, aligning with Silvercreek Parkway North
 - Trail details to be determined through future planning approvals for infill neighbourhood development, and future Silvercreek Parkway which includes a future grade separation of the railway immediately south of Paisley Road
 - Consideration for a potential off-road route in hydro corridor immediately east of the Hanlon Expressway between Paisley and Westwood Road – this should also consider challenges

and possible opportunities to develop a suitable crossing of Westwood Road within the hydro corridor. This will require further examination of the difference in elevation between hydro corridor and Westwood Road and sightlines for motorists heading east along Westwood Road from the west side of the Hanlon Expressway

- Provide curb cuts in various locations where trails meet streets to improve accessibility as noted on map sheets
- Add trail directional signs at key decision points
- ▶ Key Constraints: None
- ▶ Natural Heritage: Not applicable
- ▶ Structures Required: Grade separation of Silvercreek Parkway and the CN Railway immediately south of Paisley Road; which is being addressed as part of the Silvercreek Parkway South reconstruction
- ▶ Road Crossings:
 - Wellington Road West / Waterloo Avenue
 - Paisley Road
 - Westwood Road (potential crossing subject to future feasibility investigations related to trail in Hydro One corridor between Paisley Road and Westwood Road)

5. Public / Stakeholder Consultations

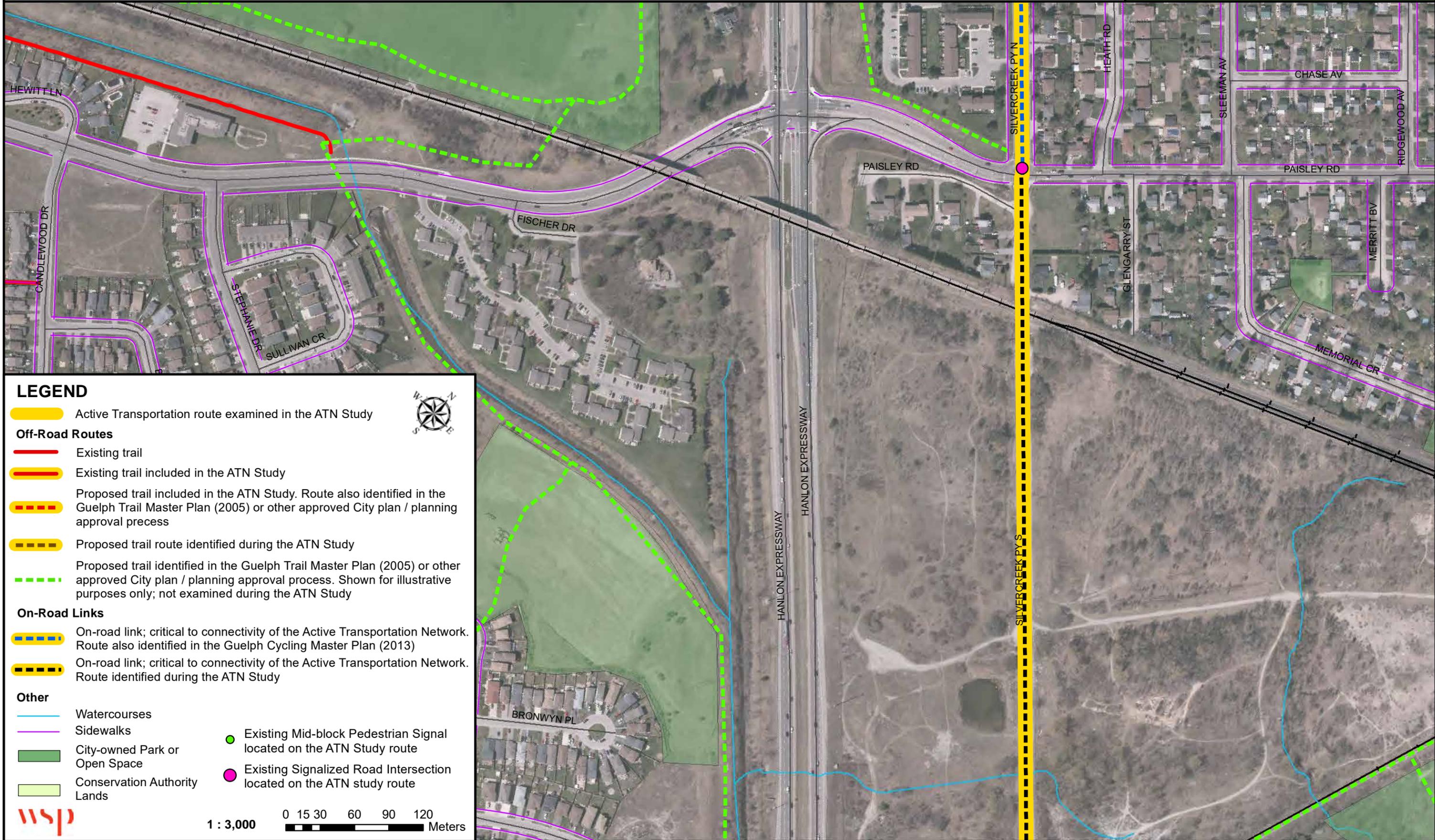
- ▶ Continued consultations with Hydro One regarding trail route within hydro corridor north of Paisley Road
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Consultations related to planning approvals for new community development on former Lafarge lands, and grade separation of Silvercreek Parkway at railway
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 18					
1	Trail Directional Sign	Each	1	\$1,100.00	\$1,100.00
2	On-Street Signed route along Silvercreek Parkway	Linear metres	750	\$5.00	\$3,750.00
Total Capital:					\$4,850.00
Design and Engineering Contingency (15%)					\$727.50
Construction Contingency (20%)					\$970.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	750	\$3.00	\$2,250.00
2	Maintenance of Off-road segments (Summer)	Linear metres	750	\$5.00	\$3,750.00
Total Maintenance					\$6,000.00

7. Next Steps / Priority

- ▶ Timing to be coordinated with planning approvals and implementation of improvements to Silvercreek Parkway South between Paisley Road and Waterloo Avenue



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000

PROJECT AREA 10: SILVERCREEK PARKWAY TO SPEEDVALE AVENUE WEST / ELMIRA ROAD WEST (MAP SHEETS 19, 20, 21)

1. Location

Start: Intersection of Paisley Road and Silvercreek Parkway North

End: Thornhill Drive (120m) east of Flaherty Drive

- ▶ Ward: 4
- ▶ Approximate Length: 3,650 m
- ▶ Connects with:
 - Bike lanes on Willow Road west of Imperial Road
 - Trails in, and connecting to Margaret Greene Park
 - Bike lanes on Imperial Road

2. Rationale

- ▶ Forms part of the key spine connection to the city's northwest neighbourhoods and recreational destinations in Margaret Greene Park
- ▶ Important connection that can be implemented in the short / medium term, given that a trail connection below the Hanlon Expressway at Wellington Road may only be feasible in the long term

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 19, 20 and 21

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail, with on-road signed route connections along short sections of Westwood Road and Ferman Drive
- ▶ Typical Cross Section: 3.0m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Long term recommendation – accommodate multi-use facility on south side of Westwood Road bridge with future reconstruction
 - Recommended 3.0m wide stonedust trail connection from existing park entrance to Margaret Greene Park to existing trail at south side of the St. Peters Catholic School parking lot

- Replace existing woodchip trail on south side of St. Peters Catholic School property to Freeman Drive with 3.0m wide stonedust trail
 - Elevate grade with Granular B and install culverts at 30m intervals (approx.)
 - Add additional base in select locations as needed to eliminate steep slopes in short sections of trail
- Alternatively, consider replacing the existing woodchip trail with a boardwalk
- Install a concrete pad on north side of Willow Road at trail connection beside Mitchell Woods Public School, and provide median refuge to facilitate pedestrian crossing
- Install new 3.0 m stonedust trail along desire line in grass parallel to the Northwest Drain from Willow Road to Thornhill Drive
- Provide curb cuts in various location where trails meets streets to improve accessibility as noted on map sheets
- Add cautionary signage near the playground in Margaret Greene Park and leash-free zone to alert cyclists that young children may be playing, and dogs may be running on or near the trail in these areas
- Add trail directional signs at key decision points
- ▶ Key Constraints: Challenges and possible opportunities to develop a suitable crossing of Westwood Road within the hydro corridor (i.e. difference in elevation between hydro corridor and Westwood Road and sightlines for motorists heading east along Westwood Road from the west side of the Hanlon Expressway)
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segments 15 and 23 for detailed requirements
- ▶ Structures Required: Long term – consider the addition of a wider platform on the Westwood Road bridge over the Hanlon Expressway when it is next reconstructed, to accommodate a multi-use trail connection on the south side of the bridge and to replace the existing narrow sidewalk
- ▶ Road Crossings:
 - Imperial Road
 - Willow Road
 - Ferman Drive

5. Public / Stakeholder Consultations

- ▶ Local neighbourhood meeting or broader Public Information session related to recommended changes to trail design in the leash-free zone west of Margaret Greene Park, and recommended new trail along the Northwest Drain from north of Willow Road to Thornhill Drive

- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 19					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	Trail Regulatory sign: Cyclists use Street - (do not ride on sidewalk)	Each	3	\$150.00	\$450.00
3	Trail Caution sign: entering leash free zone proceed with caution	Each	1	\$150.00	\$150.00
4	Add Caution signs for playground	Each	2	\$150.00	\$300.00
5	On-Street Signed route along Westwood Rd. from Silvercreek Pkwy to park entrance	Linear metres	400	\$5.00	\$2,000.00
6	Alternate connection to Silvercreek Parkway using Hydro One corridor from Paisley Rd. to Westwood Rd. (3.0m stonedust trail)	Square metres	950	\$55.00	\$52,250.00
7	New 3.0m wide stonedust trail from intersection at Silvercreek Pkwy. and Westwood Rd. to hydro corridor and north in hydro corridor	Square metres	1050	\$55.00	\$57,750.00
8	New 3.0m wide stonedust trail linking existing trail between 2 parking lots in Margaret Greene Park	Square metres	950	\$55.00	\$52,250.00
9	Replace existing woodchip trail west of ball diamonds with 3.0 m wide stonedust trail	Square metres	460	\$55.00	\$25,300.00
10	Consideration for boardwalk instead of stonedust trail as replacement for woodchip trail	Square metres	460	\$150.00	\$69,000.00
11	Culverts below trail being converted from woodchip to stonedust (allowance for 3 culverts in this section)	Each	3	\$2,500.00	\$7,500.00
Map Sheet 20					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Trail Regulatory sign: Cyclists use Street - (do not ride on sidewalk)	Each	1	\$150.00	\$150.00
3	Replace existing woodchip behind Ferman Dr. with 3.0 m wide stonedust trail	Square metres	640	\$55.00	\$35,200.00
4	Consideration for boardwalk instead of stonedust trail as replacement for woodchip trail	Square metres	640	\$150.00	\$96,000.00
5	Culverts below trail being converted from woodchip to stonedust (allowance for 7 culverts in this section)	Each	7	\$2,500.00	\$17,500.00
6	Asphalt pad in boulevard on north side of Willow Rd.	Square metres	8	\$100.00	\$800.00
7	Median refuge in 2-way center left turn lane on Willow Rd. at Mitchell Woods PS	Each	1	\$20,000.00	\$20,000.00
8	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
9	New 3.0m stonedust trail along north west drain from approximately 200m north of Willow Rd.	Square metres	300	\$55.00	\$16,500.00



Map Sheet 21					
1	Trail Directional Sign	Each	1	\$1,100.00	\$1,100.00
2	Curb Cut at Thornhill Dr	Each	1	\$1,000.00	\$1,000.00
3	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
4	New 3.0m stonedust trail along north west drain to Thornhill Dr.	Square metres	1500	\$55.00	\$82,500.00
Total Capital					\$552,900.00
Design and Engineering Contingency (15%)					\$82,935.00
Construction Contingency (20%)					\$110,580.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	2480	\$3.00	\$7,440.00
2	Maintenance of Off-road segments (Summer)	Linear metres	2480	\$5.00	\$12,400.00
Total Maintenance					\$19,840.00

7. Next Steps / Priority

- ▶ Short term for additional feasibility investigations at select locations throughout Project Area 10
- ▶ Medium term for implementation of trail improvements and new trail links



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Off Leash Area
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



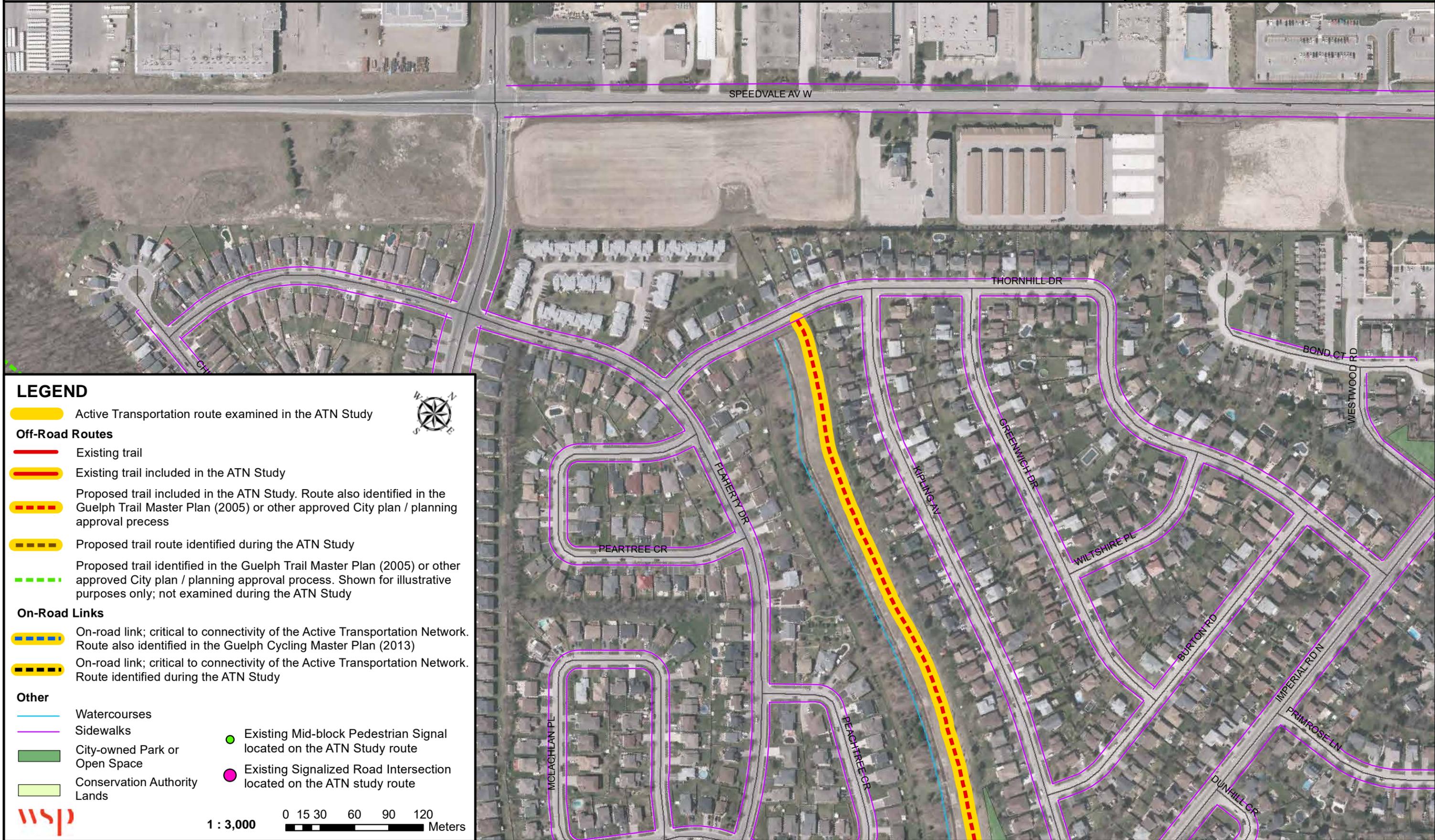
1 : 3,000 0 15 30 60 90 120 Meters



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Off Leash Area
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route





LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
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- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters



PROJECT AREA 11: HYDRO CORRIDOR AND WOODLAWN ROAD WEST FROM WILLOW ROAD TO ELMIRA ROAD NORTH (MAP SHEETS 22, 23, 24, 25)

1. Location

Start: Willow Road on the east side Hanlon Expressway

End: The intersection of Woodlawn Road West and Elmira Road North

- ▶ Ward: 4
- ▶ Approximate Length: 3,800 m
- ▶ Connects with:
 - Existing and future in-boulevard trail along Woodlawn Road

2. Rationale

- ▶ The Hydro One corridor on the east side of the Hanlon Expressway provides a direct north-south route opportunity, connecting retail / commercial destinations in the Willow West area and employment destinations in the northwest part of the city with a spine connection through to the south end of the city. When complete this route contributes significantly to linking active transportation routes from the northwest parts of the city to destinations and routes throughout the rest of Guelph

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 22, 23, 24 and 25

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0 m wide asphalt trails
- ▶ Key Design Elements to be Considered:
 - Provide 3.0 m wide asphalt trail parallel to Hanlon Expressway from Westwood Road to Willow Road, portions of which may also serve as service access to Hydro One towers within the Hydro One corridor
 - Provide directional signage and trail alignment to bring users to signalized intersections at the Willow Road and Speedvale Avenue intersections with the Hanlon
 - Railway spurline crossings north of Speedvale Avenue to follow Transport Canada Guidelines

- Add trail directional signs at key decision points
- ▶ Key Constraints: Trail crossings at Willow Road and Speedvale Avenue, and two railway spurline crossings north of Speedvale Avenue will require further investigations and consultations with MTO, Hydro One and railway owner(s)
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system in the vicinity of the Hanlon Expressway and Woodlawn Road (southwest quadrant). Refer to Segment 16 for detailed requirements.
- ▶ Structures Required: Trail bridge over drainage channel opposite Campbell Road
- ▶ Crossings:
 - Willow Road
 - Speedvale Avenue
 - Hanlon Expressway at Woodlawn Road / New Highway 7
 - Railway spurline crossings (2): approximately 250 m south of Woodlawn Road, and approximately 300 m north of Speedvale Avenue

5. Public / Stakeholder Consultations

- ▶ MTO to discuss timing of intersection improvements at Willow Road and Speedvale Avenue and Hanlon Expressway to determine timing and investment for suggested trail connections to these signalized crossings
- ▶ MTO regarding the design of the multi-use trail across the Hanlon Expressway in the vicinity of the Hanlon Expressway / Woodlawn Road intersection
- ▶ On-going discussions with Hydro One regarding trail link within the Hydro One corridor adjacent to the Hanlon Expressway
- ▶ Consultations with owner(s) of railway spurlines (2) north of Speedvale Avenue regarding proposed trail crossings
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 22					
1	Trail Regulatory sign: Cross at signal	Each	2	\$150.00	\$300.00
2	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
3	New 3.0m wide stonedust in hydro corridor using service access road as base	Square metres	2100	\$25.00	\$52,500.00
4	New 3.0m wide asphalt trail link from hydro corridor trail to intersection (Hanlon Expressway at Willow Rd)	Square metres	150	\$100.00	\$15,000.00
Map Sheet 23					
1	Trail Regulatory sign: Cross at signal	Each	2	\$150.00	\$300.00
2	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
3	Trail crossing at railway approximately 250 m north of Speedvale Ave)	Each	1	\$5,000.00	\$5,000.00
4	New 3.0m wide stonedust in hydro corridor using service access road as base	Square metres	2400	\$25.00	\$60,000.00
5	New 3.0m wide asphalt trail link from hydro corridor trail to intersection (Hanlon Expressway at Speedvale Ave.)	Square metres	150	\$100.00	\$15,000.00
Map Sheet 24					
1	Trail crossing at railway approximately 250 m south of Woodlawn Rd)	Each	1	\$5,000.00	\$5,000.00
2	Bridge (Approx. 10.0m length, 480m south of Woodlawn Rd.)	Square metres	30	\$2,500.00	\$75,000.00
3	New 3.0m wide asphalt boulevard trail from Silvercreek Parkway to approximately 140 m west of Royal Road (includes trails on the north and south sides of road, and all signage)	Square metres	6150	\$100.00	\$615,000.00
4	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
5	New 3.0m wide stonedust in hydro corridor using service access road as base	Square metres	2200	\$25.00	\$55,000.00
Map Sheet 25					
1	New 3.0m wide asphalt boulevard trail from approximately 140 m west of Royal Road to Elmira Road (includes trails on the north and south sides of road, and all signage)	Square metres	6200	\$100.00	\$620,000.00
Total Capital					\$1,533,100.00
Design and Engineering Contingency (15%)					\$229,965.00
Construction Contingency (20%)					\$306,620.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	4250	\$3.00	\$12,750.00
2	Maintenance of Off-road segments (Summer)	Linear metres	4250	\$5.00	\$21,250.00
Total Maintenance					\$34,000.00

7. Next Steps / Priority

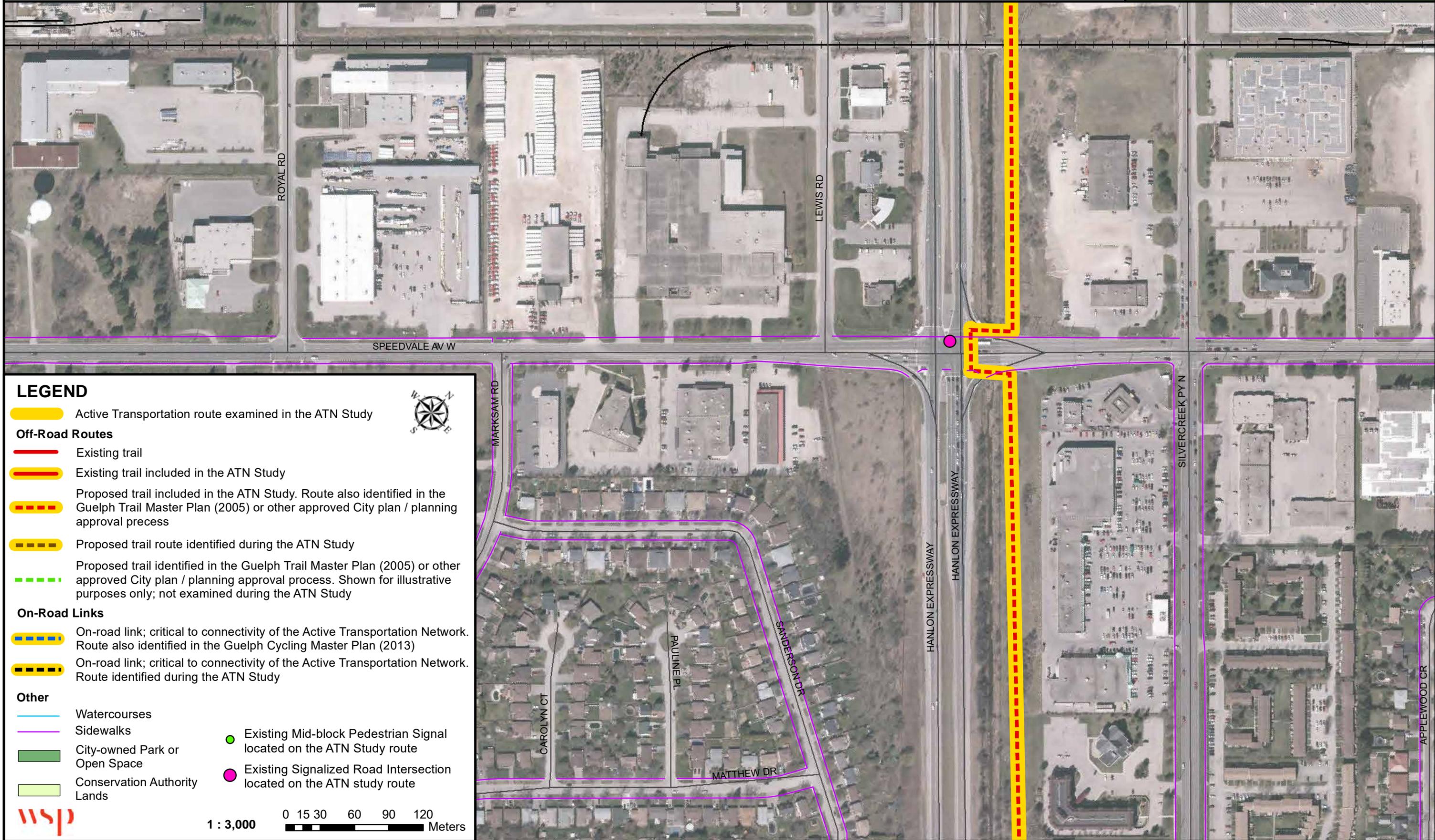
- ▶ Short term for planning, feasibility investigations and consultation related to the trail in the Hydro One Corridor; and medium term for implementation
- ▶ Short term for design and implementation of the in-boulevard multi-use trail along Woodlawn Road from Silvercreek Parkway to Imperial Road; mid-term for design and implementation of the section from Imperial Road to Elmira Road



LEGEND

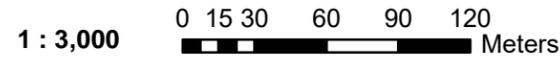
- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

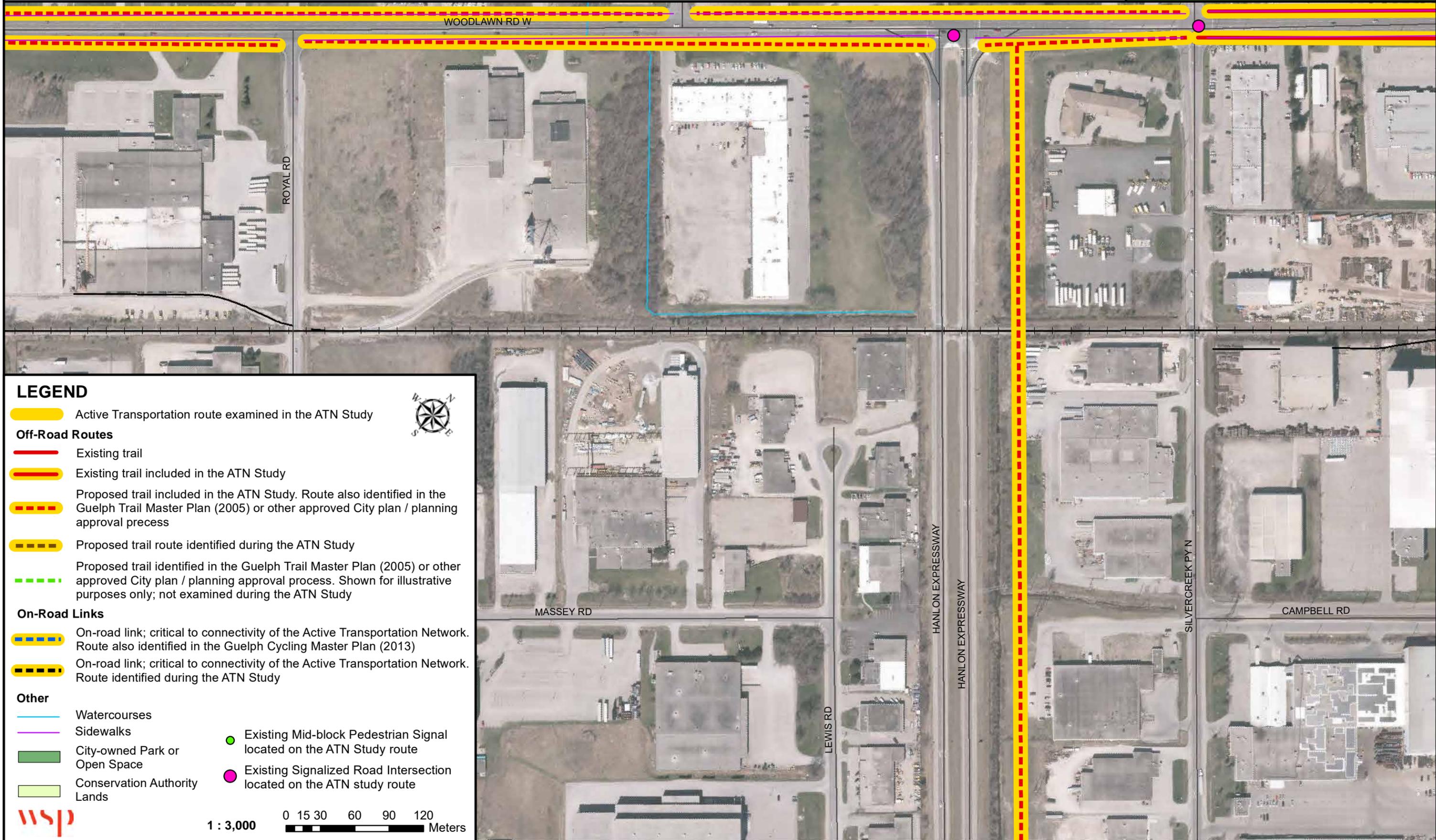




LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
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- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route





LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

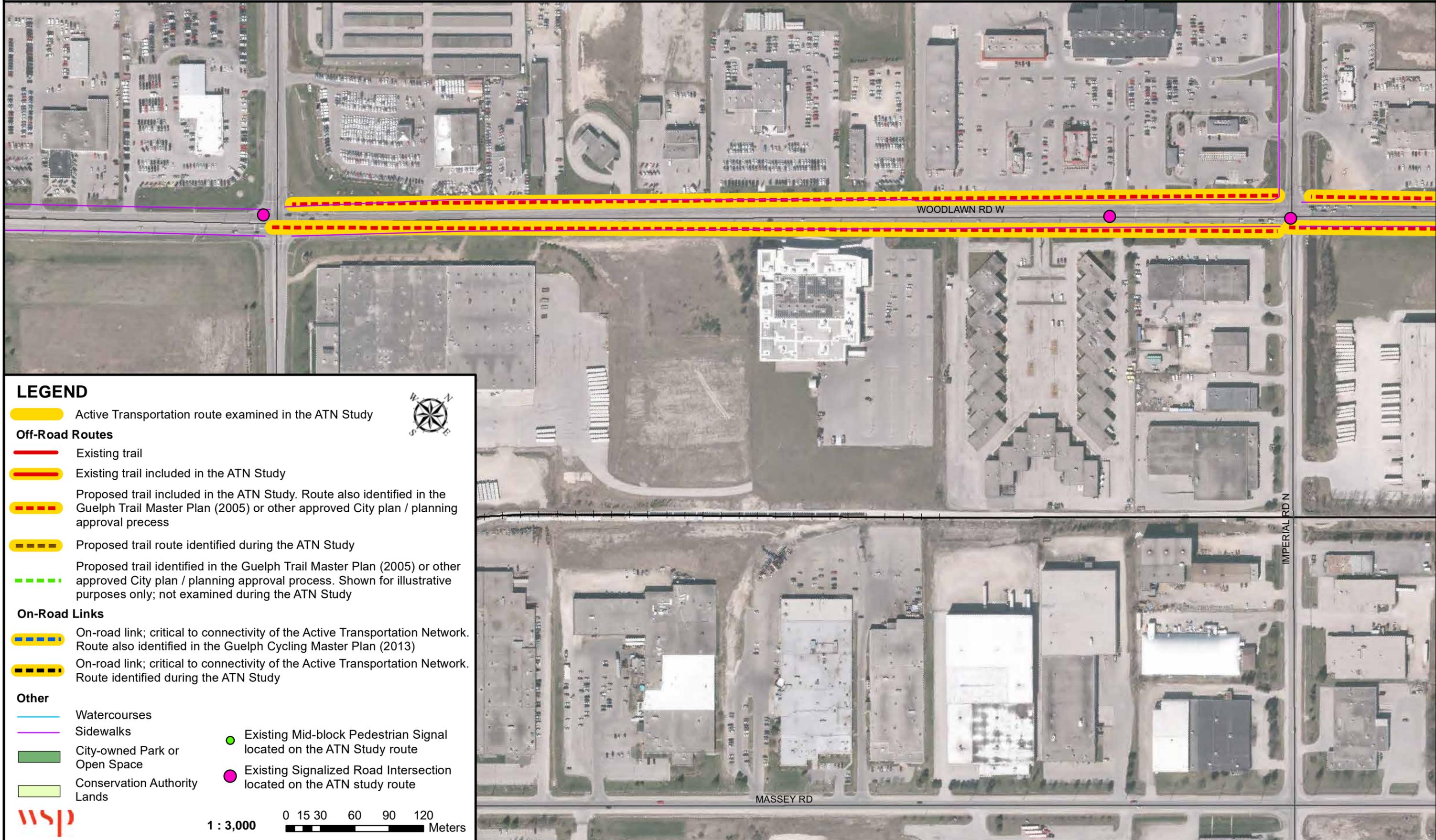
On-Road Links

- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

1 : 3,000 0 15 30 60 90 120 Meters



LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route



PROJECT AREA 12: WOODLAWN ROAD WEST / HANLON EXPRESSWAY INTO WOODLAWN CEMETERY (MAP SHEETS 26, 27)

1. Location

Start: Intersection of Silvercreek Parkway and Woodlawn Road West

End: The southeast access driveway to the Woodlawn Cemetery on Woolwich Street (Marilyn Drive)

- ▶ Ward: 2, 3
- ▶ Approximate Length: 4,250 m
- ▶ Connects with:
 - Bike lanes on Gordon Street
 - Existing in-boulevard multi-use trail on along Woodlawn Road from Nicklin Road to Silvercreek Parkway

2. Rationale

- ▶ This route provides a continuous east – west link across a portion of the northern part of the City from Gordon Street westerly connecting some retail / commercial destinations and a number of employment destinations in the north part of the city. When combined with the extension of this route west from Silvercreek Parkway (a portion of Project Area 11) it results in a complete route to the western city boundary.

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 26 and 27

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0m wide trail

▶ Key Design Elements to be Considered:

- Continue 3.0m wide multi-use trail along Woodlawn Road From Nicklin Road to Proposed Connection into Woodlawn Cemetery
- Trail crossing of the Guelph Junction railway at Nicklin Street in the south boulevard of Woodlawn Road
- Signed route through the Cemetery (alignment to be finalized through the Trans Canada Trail Routing Study)
- Add trail directional signs at key decision points

▶ Key Constraints: None

▶ Natural Heritage: Not applicable.

▶ Structures Required: None

▶ Road Crossings:

- Edinburgh Road (existing and designed to current standards)
- Nicklin Road (existing and designed to current standards)
- Woolwich Street

5. Public / Stakeholder Consultations

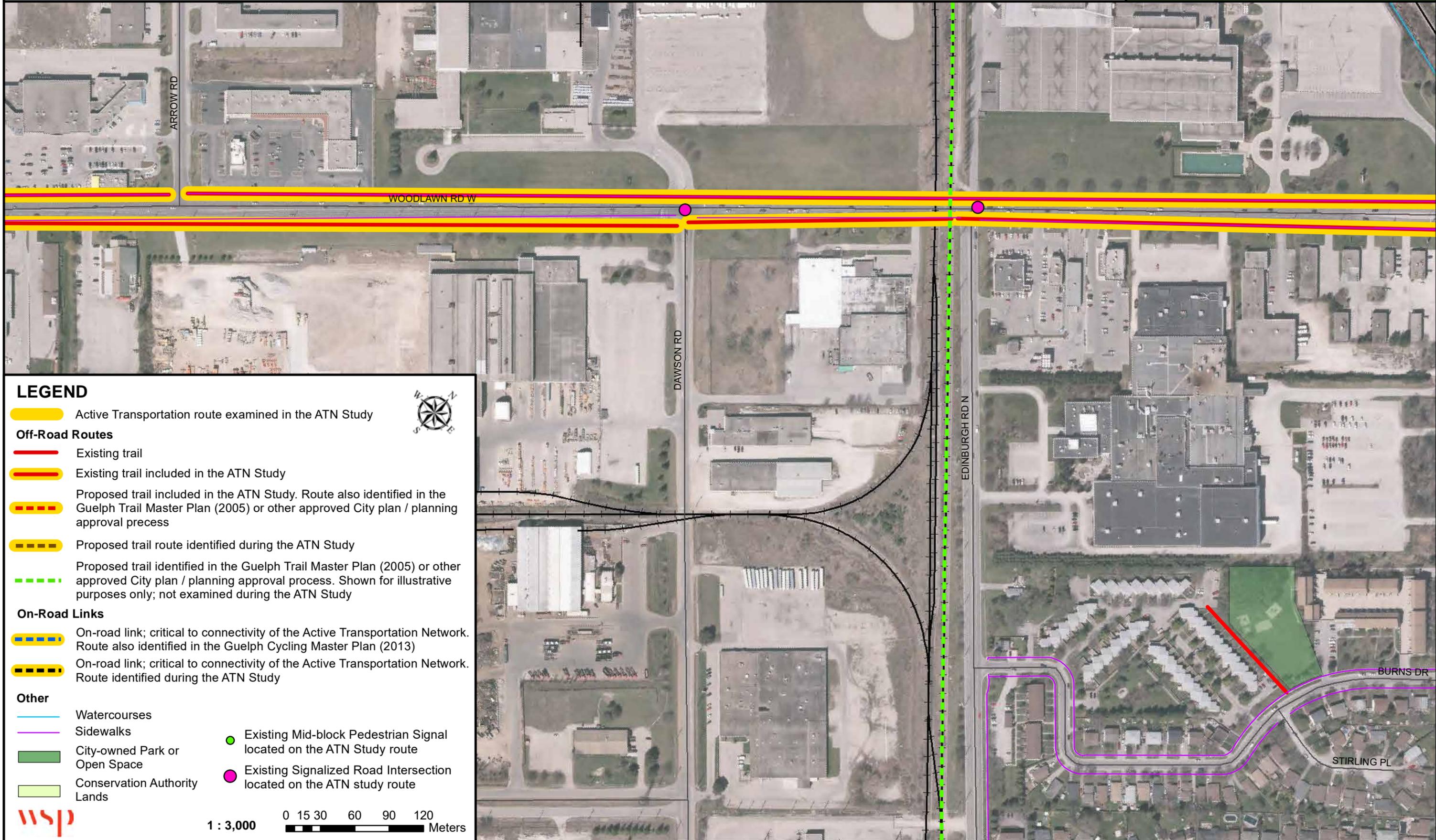
- ▶ Consultations with the Guelph Cemetery Commission for the route through Woodlawn Cemetery, and with the Guelph Junction Railway for the connection between Woodlawn Road and the trail access gate into the cemetery
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 26					
1	Construction complete	N/A	0	\$0.00	\$0.00
Map Sheet 27					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	New 3.0 m in-boulevard asphalt multi-use trail from Nicklin Rd to east side of GJR Railway	Square metres	320	\$100.00	\$32,000.00
3	New 3.0 m asphalt multi-use Woodlawn Rd. to rear entrance at Woodlawn Cemetery	Square metres	180	\$100.00	\$18,000.00
4	Trail crossing railway at Nicklin Rd.	Each	1	\$5,000.00	\$5,000.00
5	Trail route through Woodlawn Cemetery (signage only marking route)	Linear metres	700	\$5.00	\$3,500.00
6	On-Street Signed route along Marilyn Dr.	Linear metres	275	\$5.00	\$1,375.00
Total Capital					\$64,275.00
Design and Engineering Contingency (15%)					\$9,641.25
Construction Contingency (20%)					\$12,855.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	2180	\$3.00	\$6,540.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1200	\$5.00	\$6,000.00
Total Maintenance					\$12,540.00

7. Next Steps / Priority

- ▶ High priority to complete the connection between Nicklin Road and Woodlawn Cemetery



LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

Scale: 1 : 3,000

Scale Bar: 0 15 30 60 90 120 Meters

WSP





LEGEND

- Active Transportation route examined in the ATN Study
- Off-Road Routes**
- Existing trail
- Existing trail included in the ATN Study
- Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
- Proposed trail route identified during the ATN Study
- Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

PROJECT AREA 13: WOODLAWN CEMETERY, ALONG THE SPEED RIVER SOUTH OF SPEEDVALE AVENUE WEST (MAP SHEETS 28, 29)

1. Location

Start: The southeast access driveway to the Woodlawn Cemetery on Woolwich Street (Marilyn Drive)

End 1: (Northbound) Woodlawn Road West and the Speed River

End 2: (Southbound) 50m north of George Street on the Downtown Trail (junction of the Downtown Trail and Spurline Trail)

- ▶ Ward: 2
- ▶ Approximate Length: 2,300 m
- ▶ Connects with:
 - Spurline Trail
 - Trails in and connecting to Riverside Park
 - Trail to Guelph Lake
 - Bike lanes on Gordon Street
 - Bike lanes on Woodlawn Road east of the Speed River

2. Rationale

- ▶ This route provides a connection between the east-west corridor along Woodlawn Road with a key north-south corridor through the central part of the city and into the downtown core, connecting key recreational destinations such as Riverside Park, residential areas, and the downtown commercial core
- ▶ It provides an off-road alternative to bike lanes on Gordon Street for cyclists who are less experienced or less comfortable using bike lanes, and also provides a continuous recreational trail connection for other active transportation user groups

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 28 and 29

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail, with a short section of on-road signed cycling route along Marilyn Drive

- ▶ Typical Cross Section: 3.0 wide trails
- ▶ Key Design Elements to be Considered:
 - Remove and replace existing patterned asphalt surface at entrance of Riverside Park with new 3.0m wide asphalt trail
 - Realign trail line select locations in Riverside Park to accommodate desire lines
 - Minor widening to trail from Woodlawn Road to pedestrian bridge to achieve a consistent width (3.0m) trail and surface with asphalt
 - Add trail base to reduce the longitudinal slope for the trail as it approaches Woodlawn Road and surface with asphalt; and add culverts below trail to provide drainage for surface run-off as needed
 - Minor widening to trail from pedestrian bridge in Riverside Park to Speedvale Avenue to achieve a consistent 3.0 m wide trail and surface with asphalt
 - Provide in-boulevard trail connection from the existing trail at Speedvale Avenue to the signalized crossing to signalized crossing at the fire hall near Riverview Drive
 - Follow recommendations from the Environmental Impact Study (EIS) examining the potential trail connection below the Speedvale Avenue bridge on the west side of the Speed River. Note: a route on the west side of the river between Speedvale Avenue and the pedestrian bridge in Riverside Park would take precedence over improvements to the route on the east should the EIS recommend a trail connection is appropriate. This would avoid the need to make 2 river crossings using the existing bridge in the park and the Speedvale Avenue bridge
 - Provide curb cuts in various location where trails meet streets to improve accessibility as noted on map sheets
 - Add cautionary signage near the playground, concession building and near the pedestrian bridge in Riverside Park to alert cyclists of the potential for high levels of activity and congestion on or near the trail. Alternatively, during the detailed design process consider an asphalt trail link within the park that is further from the playground
 - Add trail directional signs at key decision points
- ▶ Key Constraints: Trail connection from the north side of Speedvale Avenue to the Downtown Trail on the south side of Speedvale Avenue
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 1A, 1B and 2A for detailed requirements.
- ▶ Structures Required: None

- ▶ Road Crossings:
 - Speedvale Avenue E

5. Public / Stakeholder Consultations

- ▶ Consultations with GRCA regarding proposed trail upgrades in Riverside Park

- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Broad public consultation(s) related to the EIS for the Speedvale Avenue crossing
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 28					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	Trail Regulatory Sign: Congested area - Cyclists Yield to pedestrians. Maximum 10km/hr.	Each	2	\$150.00	\$300.00
3	Replace aging existing patterned asphalt with new 3.0m asphalt trail	Square metres	540	\$100.00	\$54,000.00
4	New 3.0m wide asphalt trail on existing stonedust path (minor widening and realignment as required)	Square metres	1800	\$100.00	\$180,000.00
5	Decommissioned segments of trail to be removed and restored	Square metres	400	\$5.00	\$2,000.00
6	Culvert below trail at sloped section at Woodlawn Rd	Each	2	\$2,500.00	\$5,000.00
8	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
9	New 3.0m wide asphalt trail on existing stonedust path on east side of river from pedestrian bridge)	Square metres	400	\$50.00	\$20,000.00
10	Pedestrian activated signal at Woodlawn Rd on east side of bridge	Each	1	\$80,000.00	\$80,000.00
Map Sheet 29					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	New 3.0m wide asphalt trail on existing stonedust path (minor widening as required)	Square metres	1525	\$100.00	\$152,500.00
3	New 3.0 m in-boulevard asphalt multi-use trail from trail entrance at Speedvale Ave. to pedestrian signal at fire station	Square metres	105	\$100.00	\$10,500.00
4	Remove existing sidewalk between junction and crosswalk	Square metres	55	\$15.00	\$825.00
5	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
6	New 3.0m wide asphalt trail on existing stonedust path from Speedvale Ave. to junction south of bridge	Square metres	475	\$100.00	\$47,500.00
7	Add 150mm diameter culvert	Each	2	\$2,000.00	\$4,000.00
Total Capital					\$568,225.00
Design and Engineering Contingency (15%)					\$85,233.75
Construction Contingency (20%)					\$113,645.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	1750	\$3.00	\$5,250.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1750	\$5.00	\$8,750.00
Total Maintenance					\$14,000.00

7. Next Steps / Priority

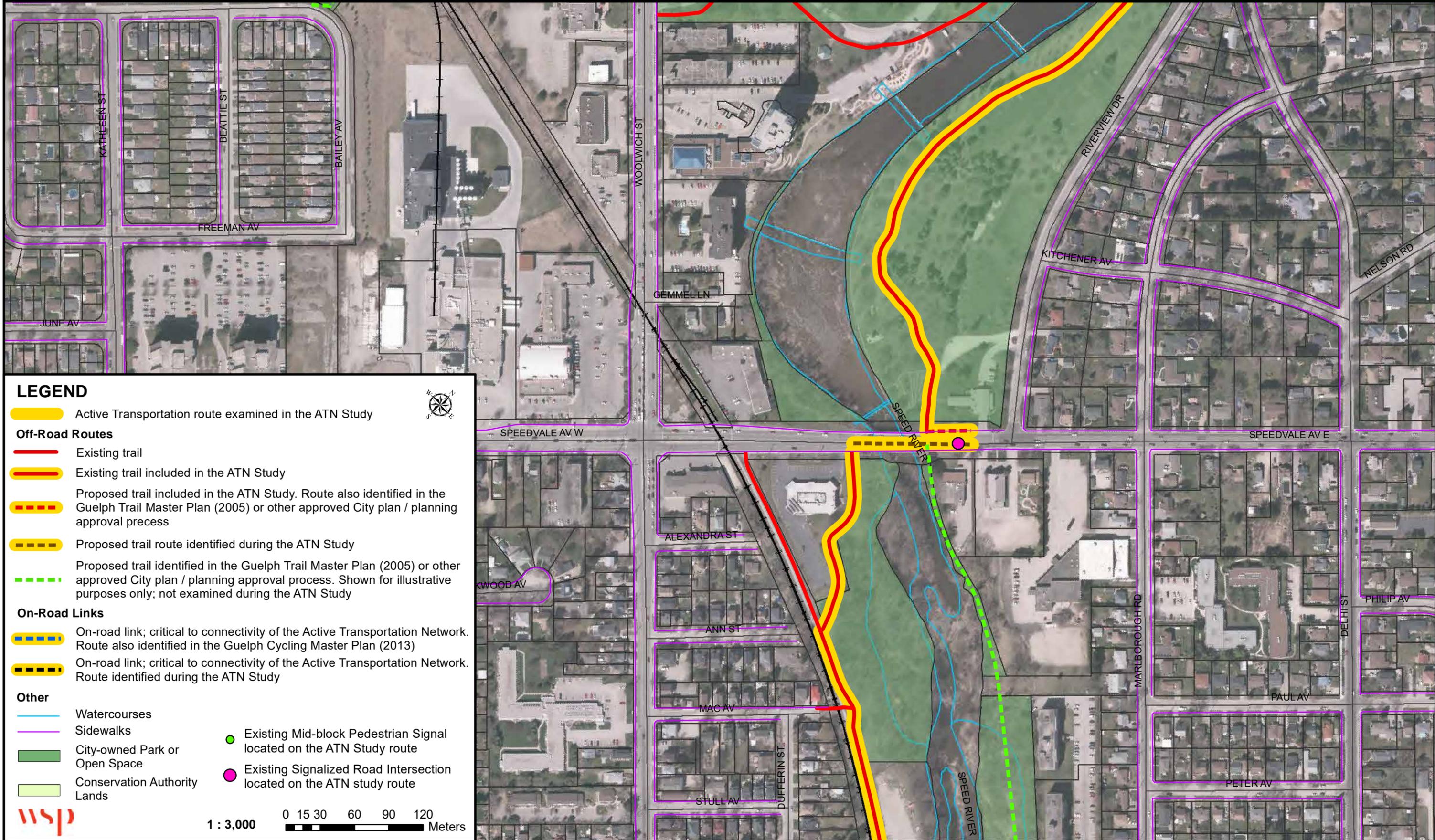
- ▶ High for ongoing feasibility / EIS work related to the Speedvale Avenue crossing
- ▶ Medium for upgrades within Riverside Park



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



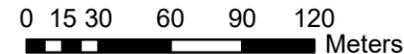


LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000



PROJECT AREA 14: DOWNTOWN TRAIL / CLARENCE STREET TO LONDON ROAD WEST AND EDINBURGH ROAD NORTH (SHEETS 30, 31)

1. Location

Start: 50m north of George Street on the Downtown Trail (junction of Downtown Trail and Spurline Trail)

End: The intersection of London Road West and Edinburgh Road North

- ▶ Ward: 2, 3
- ▶ Approximate Length: 1,700 m
- ▶ Connects with
 - Downtown Trail
 - Bike lanes on Gordon Street
 - Bike lanes on Edinburgh Road south of Willow Road

2. Rationale

- ▶ The Spurline trail provides an off-road active transportation connection from the Downtown Trail (a key north-south spine in the central part of the city) to older residential areas in the city core, Exhibition Park and commercial destinations in the Willow Road area

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 30 and 31

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Widen existing stonedust trail to a minimum of 3.0 m and surface with asphalt
 - Define limit edge of parking lot / trail through parking lot in segment between Clarence and Dufferin Streets (e.g. with post and rail type barrier)
 - Remove trail apron and provide new curb cut on trail connections at Exhibition Street
 - Widen existing stonedust trail between Division Street and Exhibition Street to 3.0 m wide,

while realigning trail connection at Division Street to achieve a more perpendicular alignment and resurface with asphalt

- Resurface existing trail passing through Exhibition Park with asphalt, widen as required to achieve 3.0 m
 - Widen existing trail between Kathleen Street and Westmount Street to 3.0m wide and surface with asphalt
 - Reconsider placement of trail barriers at Westmount Road to discourage diagonal crossing by trail users
 - Widen existing trail from Westmount Road to London Road and raise elevation in locations where water may be pooling to improve drainage; surface with asphalt
 - Provide curb cuts in various location where trails meet streets to improve accessibility as noted on map sheets
 - Add cautionary signage near the playground in CNR Spurline Park to alert cyclists that young children may be playing on or near the trail; the opportunity to realign the trail in this location is unlikely due to the narrow width of the park
 - Add trail directional signs at key decision points
- ▶ Key Constraints: None
 - ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 2B for detailed requirements.
 - ▶ Structures Required: None
 - ▶ Road Crossings:
 - Clarence Street
 - Dufferin Street
 - Woolwich Street
 - Exhibition Street
 - Division Street
 - Kathleen Street
 - Westmount Road

Public / Stakeholder Consultations

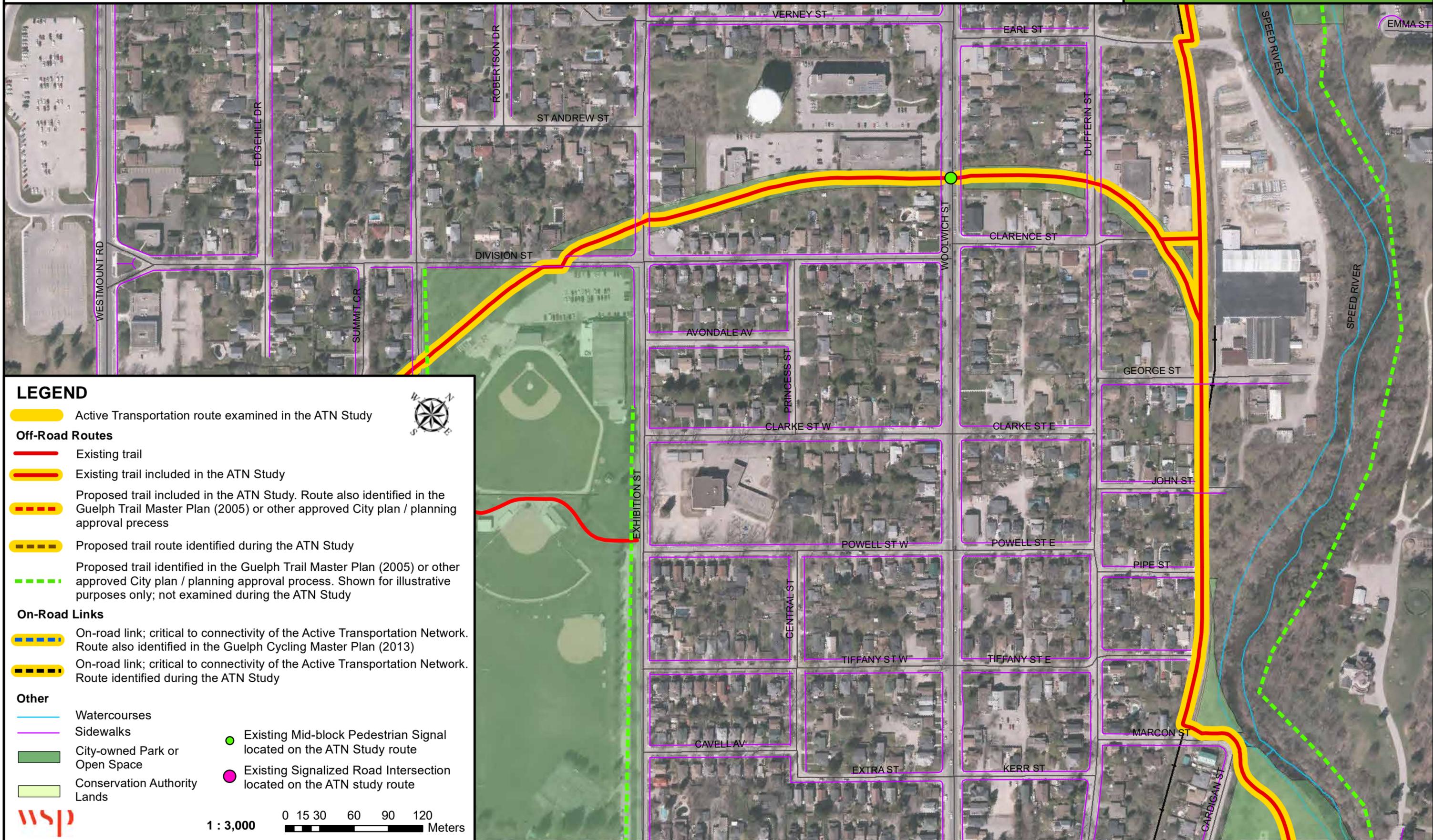
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 30					
1	Trail Directional Sign	Each	6	\$1,100.00	\$6,600.00
2	Warning sign: Caution vehicles exiting parking lot	Each	1	\$150.00	\$150.00
3	Add Caution signs for playground	Each	2	\$150.00	\$300.00
4	Warning sign for vehicles exiting parking lot: Caution watch for trail users	Each	1	\$150.00	\$150.00
5	New 3.0m wide asphalt trail through parking lot between Trans Canada Trail and Dufferin St.	Square metres	200	\$100.00	\$20,000.00
6	Post and rail barriers to define trail limit through parking lot between Trans Canada Trail and Dufferin St.	Linear metres	65	\$75.00	\$4,875.00
7	New 3.0m wide asphalt on existing 2.2m stonedust path (Woolwich St. to 125m west of Kathleen St)	Square metres	1500	\$100.00	\$150,000.00
8	Remove and replace existing trail apron at Exhibition St. to provide new cut curb (both sides of road)	Lump Sum	2	\$6,000.00	\$12,000.00
9	Trail Barrier Gate	Each	8	\$2,500.00	\$20,000.00
10	Curb Cut (Division Street near entrance to Exhibition Park arena)	Lump Sum	2	\$1,000.00	\$2,000.00
11	Trim select vegetation encroaching on trail area	Lump sum	1	\$1,500.00	\$1,500.00
Map Sheet 31					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	New 3.0m wide asphalt trail on existing 2.5m stonedust path	Square metres	600	\$100.00	\$60,000.00
3	New 3.0m wide asphalt trail on existing 2.2m-2.5m stonedust path (raise elevation of trail in required locations)	Square metres	1450	\$100.00	\$145,000.00
4	Adjust trail barriers at Westmount Rd to discourage diagonal crossing of road	Lump Sum	1	\$1,000.00	\$1,000.00
5	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
6	Removal of existing sidewalks from CNR Spurline Trail to Edinburgh Rd.	Square metres	60	\$15.00	\$900.00
7	New 3.0 m in-boulevard asphalt multi-use trail from end of Spurline Trail to intersection of London Rd at Edinburgh Rd.	Square metres	180	\$100.00	\$18,000.00
Total Capital					\$448,275.00
Design and Engineering Contingency (15%)					\$67,241.25
Construction Contingency (20%)					\$89,655.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	1650	\$3.00	\$4,950.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1650	\$5.00	\$8,250.00
Total Maintenance					\$13,200.00

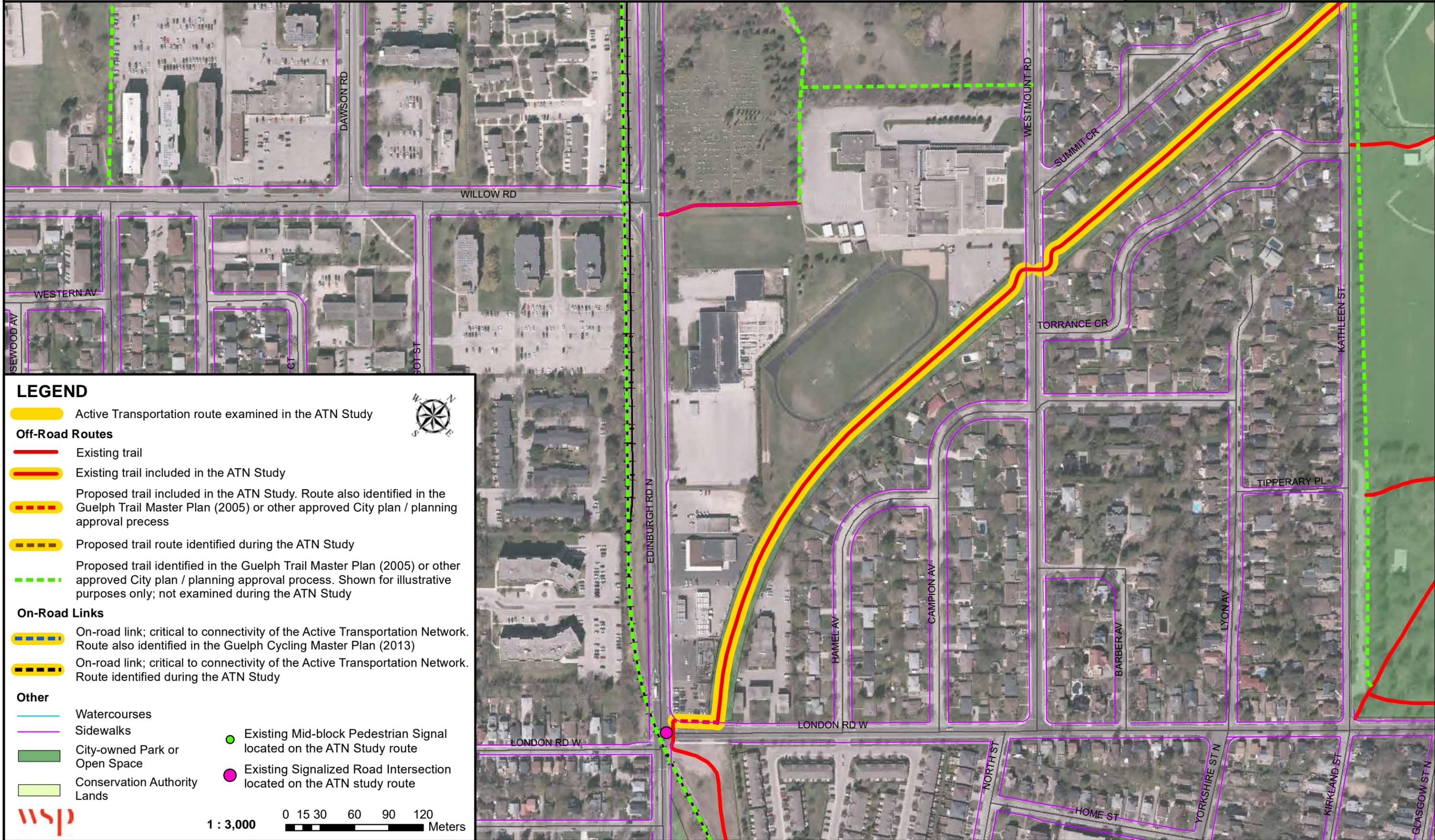
7. Next Steps / Priority

- High to bring one of the City's older trails to a more contemporary standard



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



LEGEND

-  Active Transportation route examined in the ATN Study
- Off-Road Routes**
-  Existing trail
-  Existing trail included in the ATN Study
-  Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process
-  Proposed trail route identified during the ATN Study
-  Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study
- On-Road Links**
-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters

PROJECT AREA 15: RIVER RUN CENTRE TO MACDONELL STREET / WELLINGTON STREET EAST (SHEETS 32, 33)

1. Location

Start: 50m north of George Street on the Downtown Trail (junction of the Downtown Trail and Spurline Trail)

End: Gordon Street (45m) north of the Speed River

- ▶ Ward: 1, 2
- ▶ Approximate Length: 1,950 m
- ▶ Connects with:
 - Bike lanes on Elizabeth Street and Gordon Street
 - Trails in Goldie Mill Park

2. Rationale

- ▶ Part of the central north-south corridor connecting key recreational destinations including Riverside Park, Goldie Mill Park, River Run Centre, Royal City Park with residential areas in the central core and north of downtown, and the downtown commercial / retail core
- ▶ Provides an off-road alternative to bike lanes on Gordon Street for cyclists who are less experienced or less comfortable using bike lanes, and also provides a continuous recreational trail connection for other active transportation user groups

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 32 and 33

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:

- Existing 3.0m wide trail between Marcon Street and Norwich Street E to be resurfaced
- Remove existing 3.0m wide patterned asphalt and install new asphalt surface to improve accessibility between Eramosa Road and Macdonell Street
- Remove existing 2.4m wide asphalt trail between Macdonell Street and Neeve Street Replacing it with a new 3.0m wide asphalt trail, raising elevations in spot locations as needed to provide positive drainage from trail surfaced
- Provide curb cuts in various location where trails meet streets to improve accessibility as noted on map sheets
- Intersection of Macdonell and Wellington Streets should be reviewed for design improvements that support safer pedestrian and cyclist crossing and traffic flow through this area
- Add cautionary signage near the playground in the River Run area to alert cyclists of the potential for the trail in this area to be congested at times, and to proceed with caution
- Add trail directional signs at key decision points

▶ Key Constraints: None

▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 3, 4 and 5 for detailed requirements.

▶ Structures Required: None

▶ Road Crossings:

- Eramosa Road
- Macdonell Street

5. Public / Stakeholder Consultations

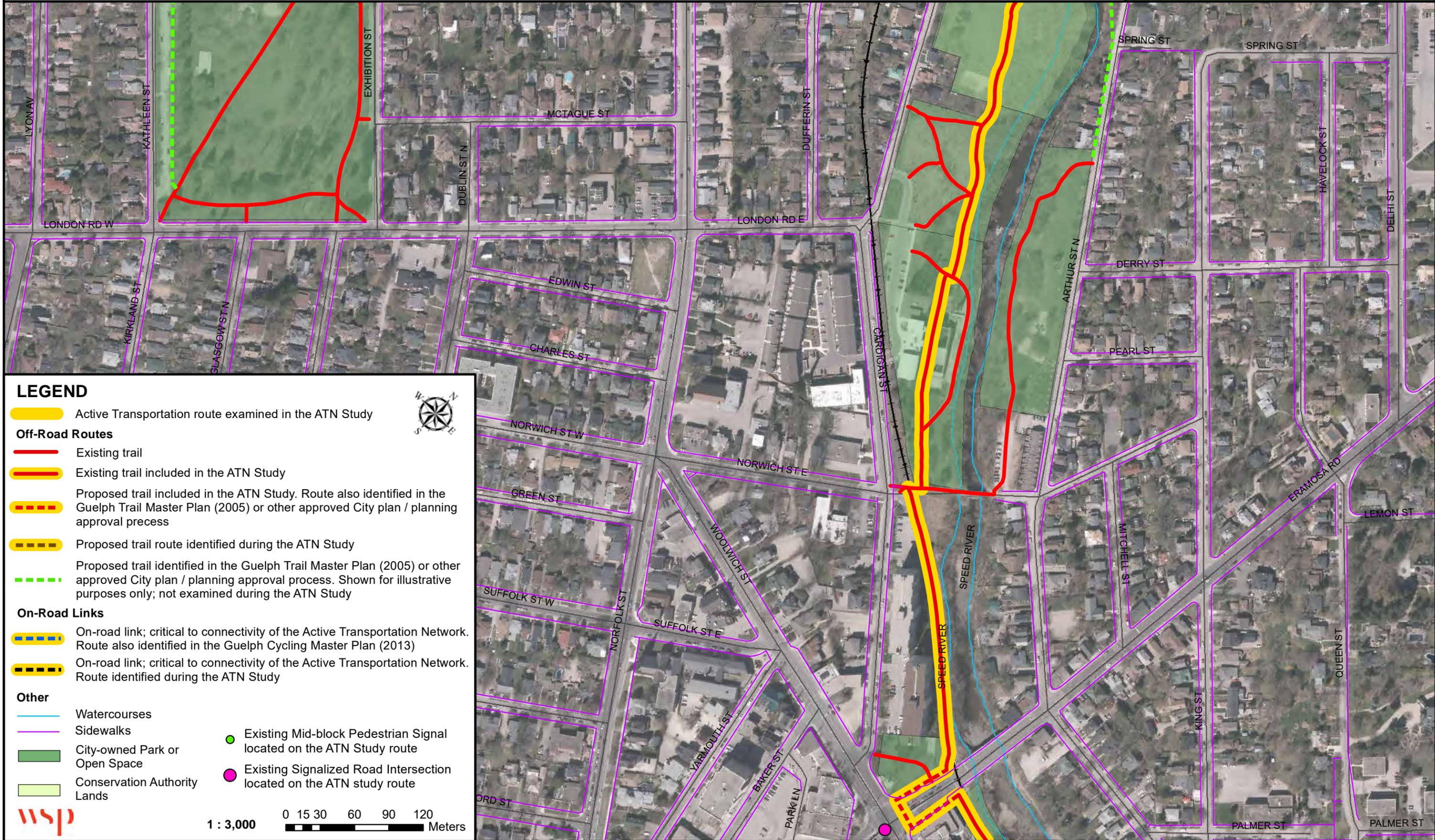
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 32					
1	Trail Directional Sign	Each	4	\$1,100.00	\$4,400.00
2	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
3	New 3.0m wide asphalt trail on existing 3.0m stonedust trail	Square metres	1600	\$100.00	\$160,000.00
Map Sheet 33					
1	Trail Regulatory sign for southbound users: Congested area during events at the River Run Center - Cyclists Yield to Pedestrians. Maximum 10 km/hr.	Each	2	\$150.00	\$300.00
2	Replace aging existing patterned asphalt with new 3.0m asphalt trail (Eramosa Rd. to Macdonell St.)	Square metres	1675	\$100.00	\$167,500.00
3	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
4	Widen existing asphalt trail to 3.0m and repave when resurfacing is required (Macdonell St. to Neeve St.)	Square metres	850	\$100.00	\$85,000.00
5	Prune/remove vegetation encroaching into trail near intersection	Lump Sum	1	\$750.00	\$750.00
Total Capital					\$422,950.00
Design and Engineering Contingency (15%)					\$63,442.50
Construction Contingency (20%)					\$84,590.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	1450	\$3.00	\$4,350.00
2	Maintenance of Off-road segments (Summer)	Linear metres	1450	\$5.00	\$7,250.00
Total Maintenance					\$11,600.00

7. Next Steps / Priority

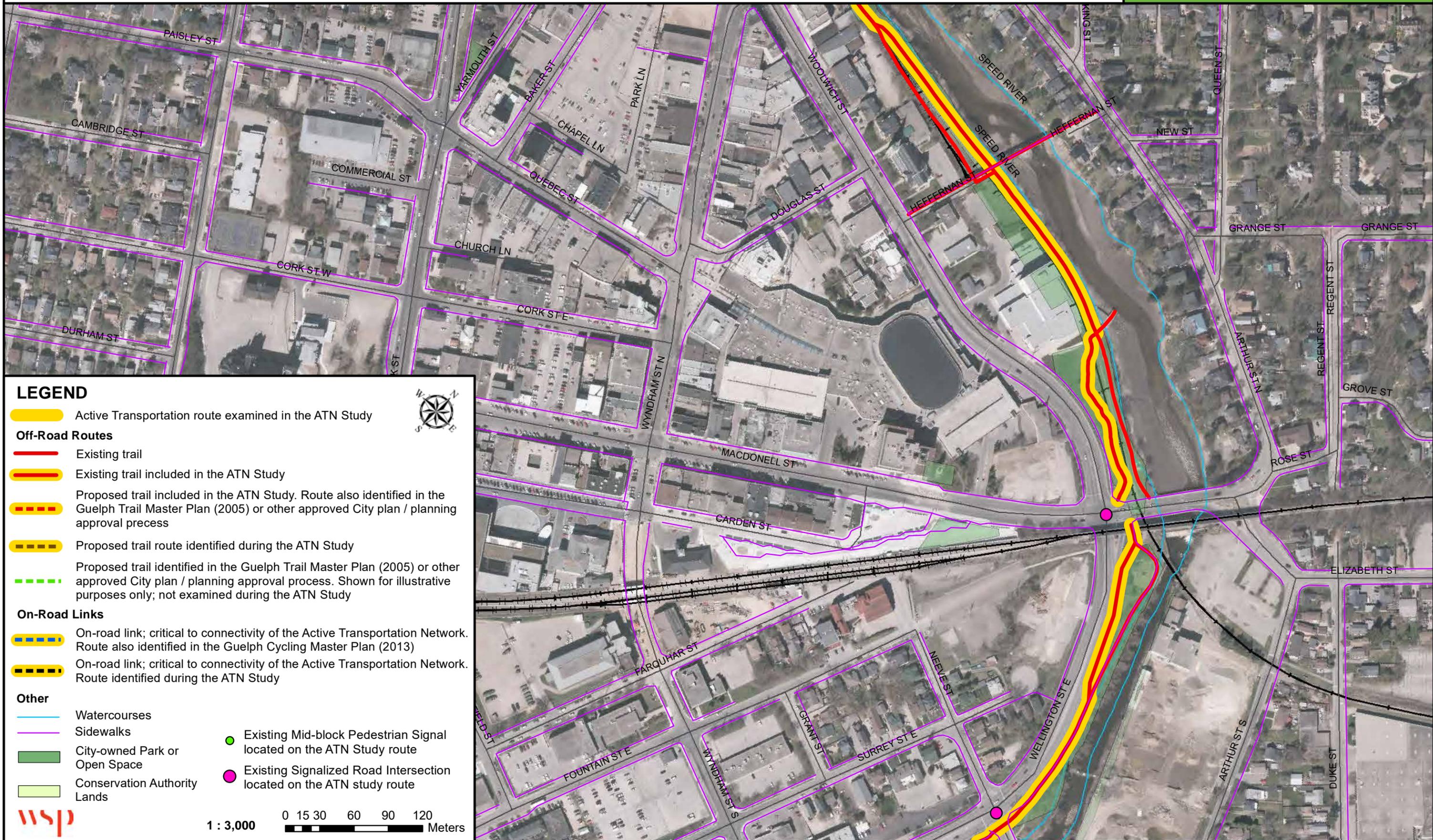
- ▶ Medium



LEGEND

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-  On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route





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-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters

PROJECT AREA 16: ALONG SPEED RIVER FROM GORDON STREET TO COLLEGE AVENUE EAST (MAP SHEETS 36, 37, 38 & 39)

1. Location

Start: West end of York Road, (approximately 100m west of Wyndham Street South at York Road)

End 1: The intersection of College Avenue East and Victoria Road South

End 2: 140m (approximately) north of the intersection of York Road and Watson Parkway North

- ▶ Ward: 1
- ▶ Approximate Length: 6,400 m
- ▶ Connects with:
 - Existing bike lanes on Gordon Street
 - Trails connecting the street network / local neighbourhoods to the Eramosa River corridor

2. Rationale

- ▶ Key east – west route in central part of the city connecting a number of recreational destinations along the Eramosa River including playgrounds, sport fields, Lyons Park and pool, York Road Park, Royal City Park
- ▶ Provides older and new neighbourhoods in the east end of the city with access to trails along the Eramosa River and an off-road route into the downtown core

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 36, 37, 38 and 39

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail
- ▶ Typical Cross Section: 3.0m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:
 - Existing 3.0m wide stonedust trail requires minor surface improvements in select areas to ensure positive drainage and prevent ponding on trail surface

- Victoria Road Crossing improvement via mid-block pedestrian at the Victoria Road bridge
- Refer to the Guelph Innovation District (GID) Secondary Plan - OPA 54 for trail connection and alignment details in the area bounded by Victoria, York, Watson and Stone Road
- Link along York Road to Watson Parkway; subject to results of the York Road Environmental Assessment and the GID Secondary Plan – OPA 54
- Add cautionary signage near the playground in Eramosa River Park and off Hooper Street Park to alert cyclists that young children may be playing on or near the trail
- Add trail directional signs at key decision points

▶ Key Constraints: None

▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 8A, 8B, 9, 10, 11 and 12A for detailed requirements.

▶ Structures Required: Bridge over the Eramosa River east of Victoria Road (refer to OPA-54)

▶ Road Crossings:

- Victoria Road
- York Road
- Watson Parkway

5. Public / Stakeholder Consultations

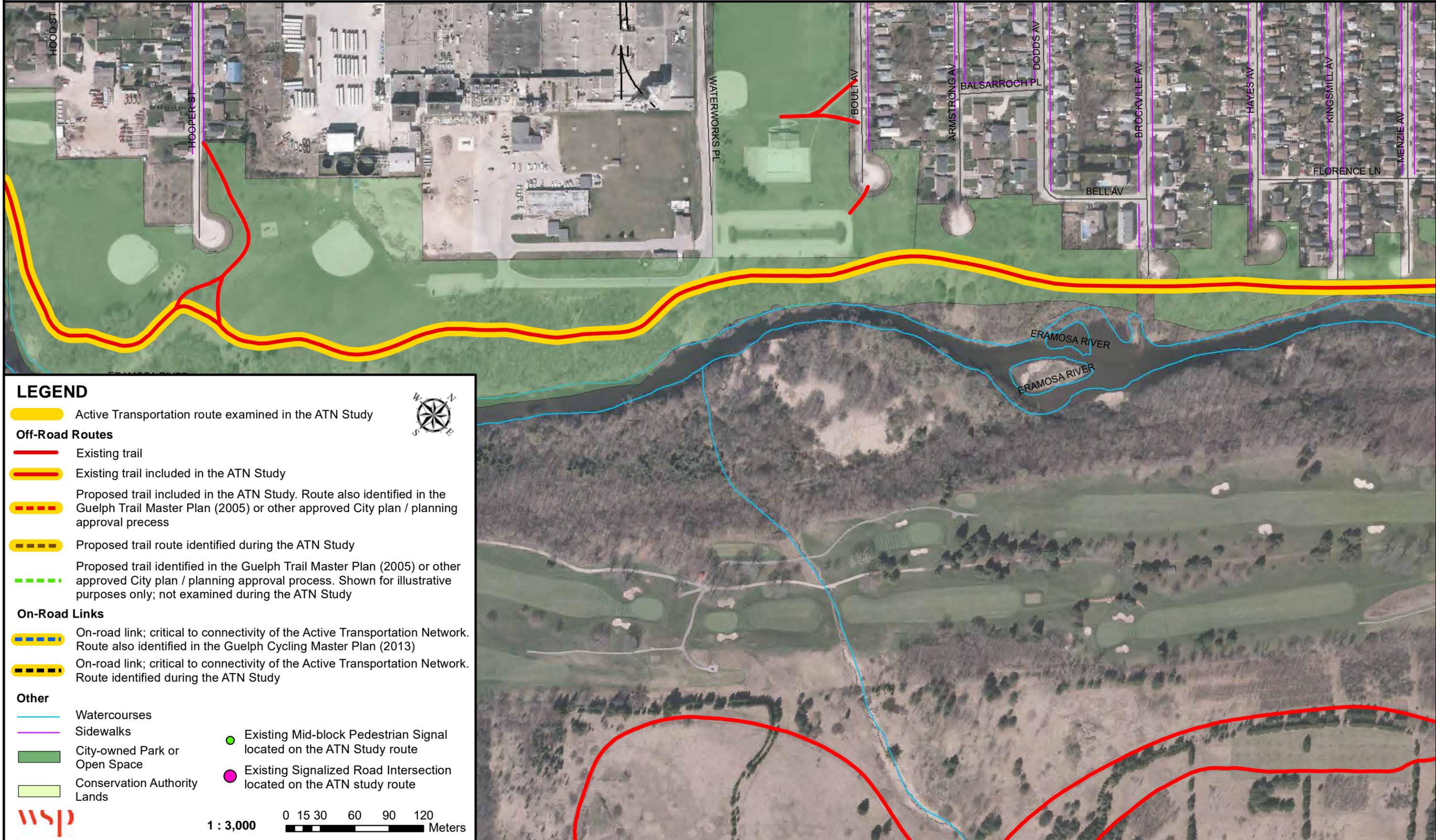
- ▶ Broad public consultations as part of the York Road EA
- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ GRCA for trail improvements in the vicinity of the Eramosa River
- ▶ Guelph Hiking Trail Club
- ▶ Guelph Junction Railway
- ▶ Infrastructure Ontario
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Sheet 36					
1	Minor trail surface improvements to existing 3.0m wide stonedust trail	Lump Sum	1	\$5,000.00	\$5,000.00
2	Trim select vegetation encroaching on trail area	Lump sum	1	\$1,500.00	\$1,500.00
Sheet 37					
1	Trail Directional Sign	Each	1	\$1,100.00	\$1,100.00
2	Victoria Rd. Crossing: Add pedestrian mid block signal (Victoria Road, south side of river)	Lump Sum	1	\$75,000.00	\$75,000.00
3	Trail Caution sign: entering leash free zone proceed with caution	Each	2	\$150.00	\$300.00
4	Trail Barrier Gates	Each	1	\$2,500.00	\$2,500.00
Sheet 38					
1	No costing for this sheet, refer to OPA-54				
Map Sheet 39					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	Trail Barrier Gate	Each	1	\$2,500.00	\$2,500.00
3	New 3.0 m in-boulevard asphalt multi-use trail along York Rd. from Elizabeth St. to Watson Pkwy.	Square metres	3150	\$100.00	\$315,000.00
4	New 3.0 m in-boulevard asphalt multi-use trail along Watson Pkwy from York Rd. intersection to off-road multi-use trail junction	Square metres	360	\$100.00	\$36,000.00
Total Capital					\$441,100.00
Design and Engineering Contingency (15%)					\$66,165.00
Construction Contingency (20%)					\$88,220.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	400	\$3.00	\$1,200.00
2	Maintenance of Off-road segments (Summer)	Linear metres	400	\$5.00	\$2,000.00
Total Maintenance					\$3,200.00

7. Next Steps / Priority

- ▶ Medium for trail improvements in section from Gordon Street to Victoria Road as this trail currently exists
- ▶ Timing for implementation of routes within the Guelph Innovation District is subject recommendations and outcomes of the GID planning and design process

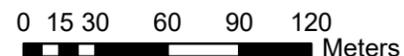


LEGEND

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-  On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
-  Existing Mid-block Pedestrian Signal located on the ATN Study route
-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000



LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

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On-Road Links

- On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)
- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- Off Leash Area
- OPA54
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route

1 : 3,000 Meters





LEGEND

Active Transportation route examined in the ATN Study

Off-Road Routes

Existing trail

Existing trail included in the ATN Study

Proposed trail included in the ATN Study. Route also identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process

Proposed trail route identified during the ATN Study

Proposed trail identified in the Guelph Trail Master Plan (2005) or other approved City plan / planning approval process. Shown for illustrative purposes only; not examined during the ATN Study

On-Road Links

On-road link; critical to connectivity of the Active Transportation Network. Route also identified in the Guelph Cycling Master Plan (2013)

On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study

Other

Watercourses

Sidewalks

City-owned Park or Open Space

Conservation Authority Lands

OPA54

Existing Mid-block Pedestrian Signal located on the ATN Study route

Existing Signalized Road Intersection located on the ATN study route



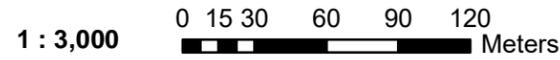
1 : 3,000 Meters





LEGEND

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- On-road link; critical to connectivity of the Active Transportation Network. Route identified during the ATN Study
- Other**
- Watercourses
- Sidewalks
- City-owned Park or Open Space
- Conservation Authority Lands
- OPA54
- Existing Mid-block Pedestrian Signal located on the ATN Study route
- Existing Signalized Road Intersection located on the ATN study route



PROJECT AREA 17: YORK STREET / ELIZABETH STREET TO EASTVIEW ROAD / WATSON PARKWAY NORTH (MAP SHEETS 40, 41, 42 & 43)

1. Location

Start: 140m (approximately) north of the intersection of York Road and Watson Parkway North

End: Eastview Community Park, approximately 90m west of the intersection of Watson Parkway North and Couling Crescent

- ▶ Ward: 1
- ▶ Approximate Length: 6,400 m
- ▶ Connects with:
 - Trail network in the east end of the City

2. Rationale

- ▶ Recreational destinations including Grange Road Park, Joe Veroni Park, Pollinators Park / Eastview Community Park
- ▶ Provides key spine route in the east end of the City, connecting to the route along the north side of the Eramosa River and recreational destinations along the river and commercial / retail destinations in the downtown core

3. Observations and Recommendations

- ▶ Refer to accompanying map sheets 40, 41, 42 and 43

4. Detail Design Notes

- ▶ Facility Type: Off-road multi-use trail , with short segments of on – road signed cycling routes and / or in-boulevard multi-use trails
- ▶ Typical Cross Section: 3.0m wide multi-use trail (2.5 m minimum)
- ▶ Key Design Elements to be Considered:

- Future trail connection along Clythe Creek from Watson Parkway to Old Watson Road, connected to a boulevard multi-use trail along Old Watson Road and the stormwater management pond access on the east side of Old Watson Road
- Extend trail hardening on steep downhill section south of Creekside Drive
- Add cautionary signage near the playground in Grange Road Park to alert cyclists that young children may be playing on or near the trail
- Consider implementing sections of boardwalk where the trail encroaches into wetland areas (2 sections north of Grange Park – refer to map sheet 41)
- Add trail directional signs at key decision points
- Connection along Eastview Road from Clythe Creek Trail to trail entrance to Eastview entrance to the former Eastview landfill site / Pollinators Park
- ▶ Key Constraints: proposed trail connection along Clythe Creek dependent on timing for development of lands between Old Watson Road and Watson Parkway
- ▶ Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Segment 11, 12A, 13 and 14 for detailed requirements.
- ▶ Structures Required: None
- ▶ Road Crossings:
 - Old Watson Road
 - Fleming Road
 - Grange Road
 - Eastview Road

5. Public / Stakeholder Consultations

- ▶ Guelph Accessibility Advisory Committee (GAAC)
- ▶ Notification of Construction

6. Opinion of Probable Cost

Opinion of Probable Cost (Capital)					
Item	Description	Unit	Estimated Quantity	Estimated Unit Price	TOTAL
Map Sheet 40					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	Trail warning sign: Steep slope, keep on right, maximum 20km/hr.	Each	2	\$150.00	\$300.00
3	Extend asphalt 50m downhill beyond bottom of slope	Square metres	250	\$100.00	\$25,000.00
4	Extend asphalt 50m uphill on existing stonedust trail	Square metres	250	\$100.00	\$25,000.00
5	Add safety / rub rail on outside radius for downhill section	Linear metres	100	\$75.00	\$7,500.00
6	Add 3.0 m stonedust surface over existing base for storm water management pond access	Square metres	370	\$25.00	\$9,250.00
7	Trail Barrier Gate	Each	2	\$2,500.00	\$5,000.00
8	New 3.0 m in-boulevard asphalt multi-use trail along Watson Rd from multi-use trail junction to stormwater access laneway	Square metres	720	\$100.00	\$72,000.00
9	New 3.0 m stonedust pathway from Watson Pkwy. to Watson Rd.	Square metres	1250	\$55.00	\$68,750.00
Map Sheet 41					
1	Trail Directional Sign	Each	3	\$1,100.00	\$3,300.00
2	Widen 1.5m concrete sidewalk to 2.5m wide.	Square metres	80	\$110.00	\$8,800.00
3	Retaining wall along sidewalk (may be required)	Square metres face	80	\$400.00	\$32,000.00
4	Railing along sidewalk (may be required)	Linear metres	80	\$75.00	\$6,000.00
5	Widen existing 2.4m stonedust trail to 3.0m from Grange Road to north end of Grange Park	Square metres	100	\$55.00	\$5,500.00
6	Trail Caution sign (Playground)	Each	2	\$150.00	\$300.00
7	Trail Barrier Gate	Each	3	\$2,500.00	\$7,500.00
Map Sheet 42					
1	Trail Directional Sign	Each	2	\$1,100.00	\$2,200.00
2	New 3.0 m in-boulevard asphalt multi-use trail along Eastview Rd from Clythe Creek Trail to Eastview Trail entrance	Square metres	500	\$100.00	\$50,000.00
3	Pedestrian crossing of Eastview Road at trail entrance	allowance	1	\$80,000.00	\$80,000.00
4	Add 3.5m stonedust surface over existing base heading north from Eastview Community Park trail entrance to WP 178	Square metres	1050	\$25.00	\$26,250.00
5	Widen existing 2.4m stonedust trail to 3.0m from north end of Grange Road Park to Eastview Road	Square metres	400	\$55.00	\$22,000.00
6	Consideration for boardwalk where trail encroaches into wetland (2 sections north of Grange Park)	Square metres	360	\$150.00	\$54,000.00
7	Trim select vegetation encroaching on trail area	Lump Sum	1	\$1,500.00	\$1,500.00
Map Sheet 43					
1	Add 3.5m stonedust surface over existing base heading north from WP 178 to intersection with existing stonedust trail off parking lot	Square metres	1100	\$25.00	\$27,500.00
Total Capital					\$541,850.00
Design and Engineering Contingency (15%)					\$81,277.50
Construction Contingency (20%)					\$108,370.00
Opinion of Probable Cost (Annual Maintenance / Operations)					
1	Maintenance of Off-road segments (Winter)	Linear metres	2700	\$3.00	\$8,100.00
2	Maintenance of Off-road segments (Summer)	Linear metres	2700	\$5.00	\$13,500.00
Total Maintenance					\$21,600.00

7. Next Steps / Priority

- ▶ High for trail connection along Eastview Road from the north limit of the existing trail along Clythe Creek to the trail entrance at Eastview Community Park, including the pedestrian crossing improvements for Eastview Road
- ▶ High for the widening / improvement of the short connection along the east side of Watson Parkway north from the intersection of Grange Road and Watson Parkway North to the trail entrance for the Watson Creek Trails

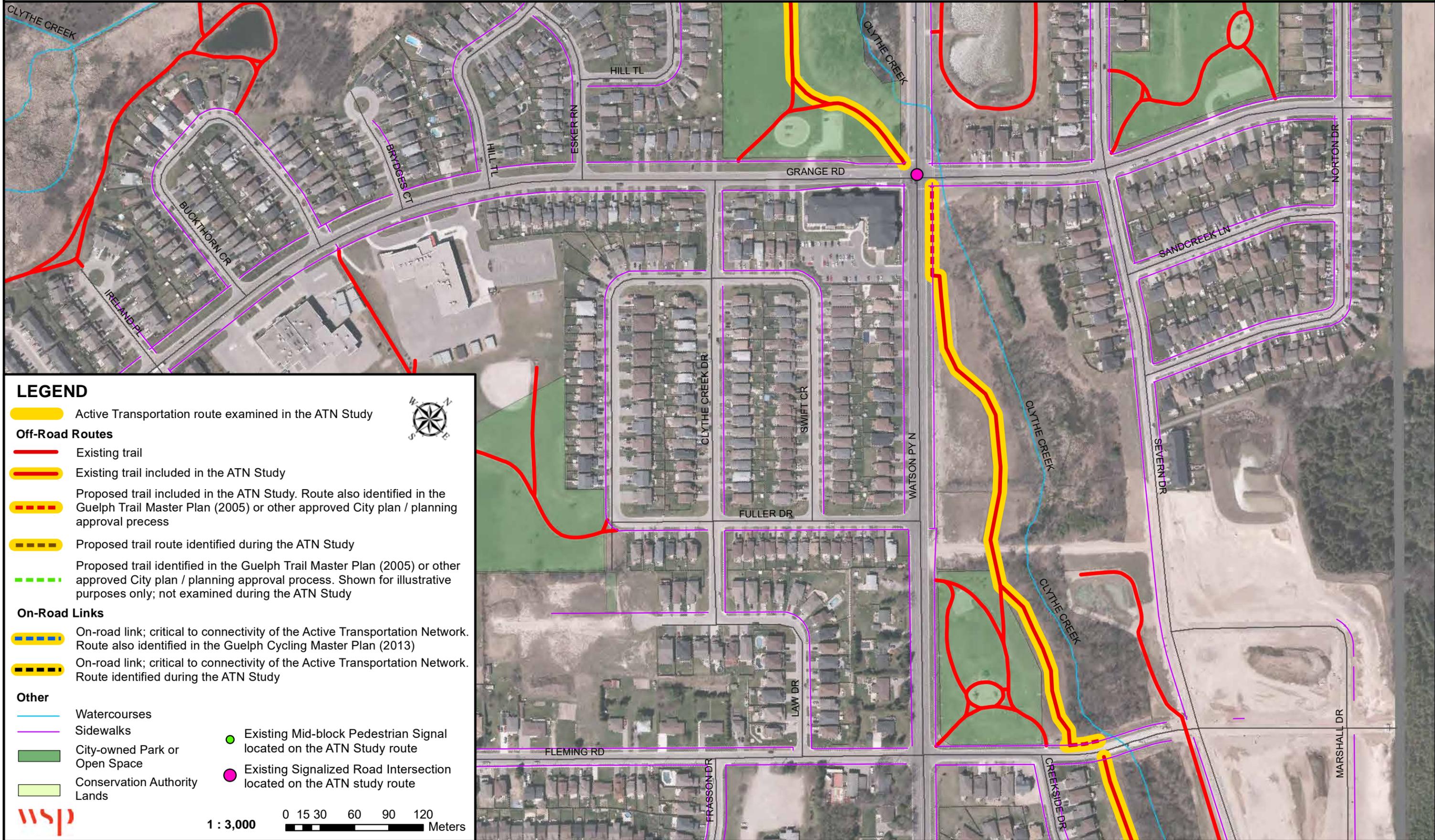


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- Other**
-  Watercourses
-  Sidewalks
-  City-owned Park or Open Space
-  Conservation Authority Lands
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-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000 0 15 30 60 90 120 Meters

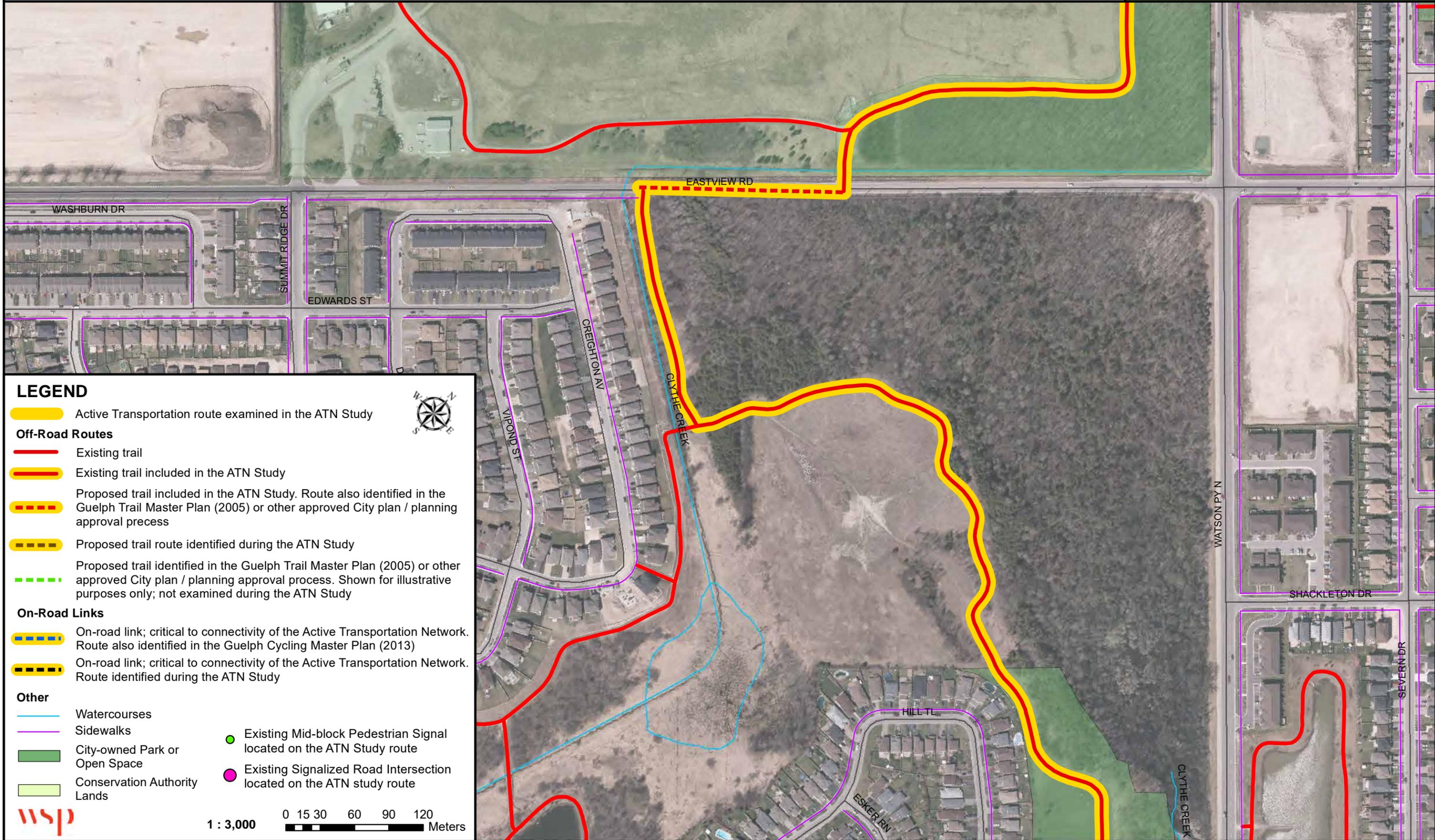


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1 : 3,000 0 15 30 60 90 120 Meters



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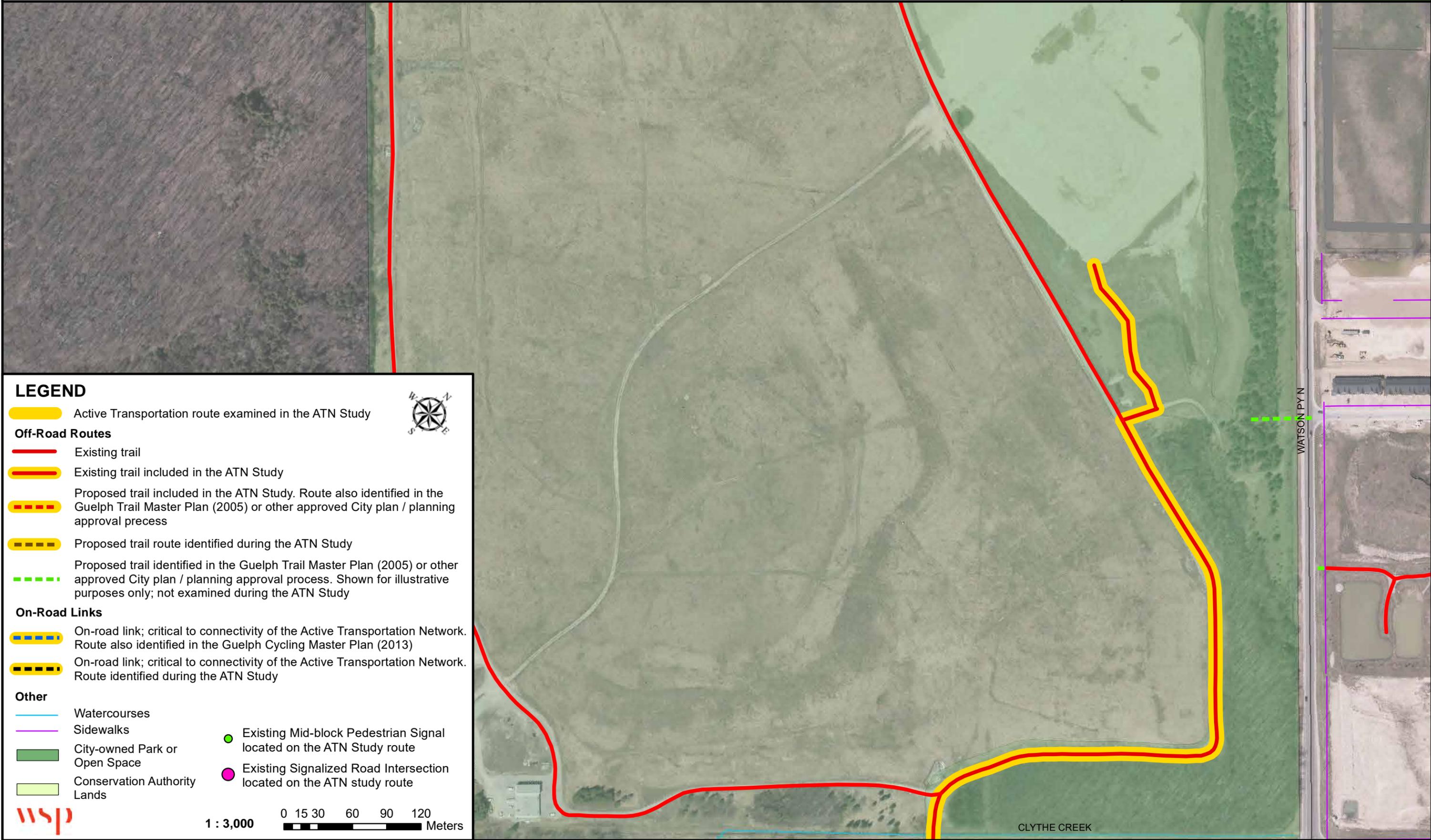
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1 : 3,000

0 15 30 60 90 120 Meters



Map labels include: WASHBURN DR, SUMMIT RIDGE DR, EDWARDS ST, CREIGHTON AV, VILPOND ST, EASTVIEW RD, CLYTHE CREEK, HILL TL, ESKER RN, WATSON PY N, SHACKLETON DR, SEVERN DR.



LEGEND

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- Other**
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-  Sidewalks
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-  Conservation Authority Lands
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-  Existing Signalized Road Intersection located on the ATN study route



1 : 3,000  0 15 30 60 90 120 Meters



CLYTHE CREEK

WATSON PY N

6.0 Implementation

6.1 Approach to Implementation

The general approach to implementation should consider the following:

Short Term

- ▶ Upgrade select locations / sections of the existing ATN where the width, surface type or other conditions are clearly substandard or contain potential hazards (e.g. very narrow, constantly eroding surface, obstacles encroaching into the vertical or horizontal clear zone etc.).
- ▶ Complete short missing links in the existing ATN, that when complete will improve overall connectivity especially locations in the off-road network where creating a short link will result in the addition of a long, continuous route.
- ▶ Complete short missing links in the ATN where demand is anticipated to be the highest.
- ▶ Ensure that improvements and new links are included in larger public infrastructure projects (where applicable) such as in-boulevard links along roads that are subject to Environmental Assessments, detailed design, and other upgrades.
- ▶ Continue to work with the local development industry to plan, design and implement links as part of new neighbourhood developments.
- ▶ Build upon projects already in the approval process or planned as identified by City staff.
- ▶ Focus on connections to key destinations such as community centres, schools, major City parks.
- ▶ Complete advance planning for larger, more complex projects so they will be ready for implementation in the mid-term.

Mid Term

- ▶ Focus on upgrades to the ATN to bring trails currently meeting minimum recommended guidelines up to the preferred guideline (i.e. width, corner radii etc.).
- ▶ Upgrade from granular to hard surface where applicable.
- ▶ Upgrade hard surface trails to the preferred recommended guideline when the existing surface is approaching the end of its service life.

Based on these principles the following list of potential priority projects is presented for consideration. They have been organized into 2 broad groups; Upgrades to the Existing Network and New Links. The selection of these is based on input received from stakeholders, the public, City staff and field observations and recommendations by the study team. They are presented in no priority order within the list.

Upgrades to the Existing Network

1. Finalize / agree upon the design approach for treating trail / road intersections and begin to implement changes where required throughout the ATN.
2. Define the route through Centennial CVI including trail links and design measures at College Avenue crossing to encourage trail users to cross at the designated location; and trail alignment, widening and surfacing improvements in Centennial Park to Municipal Street by the outdoor soccer bowl.
3. Repair and hard surfacing of the section of trail from the north end of Municipal Street to the Speed River to correct ongoing erosion.
4. Improvements at heavily used trail crossings; Royal City Park (Boathouse) at Gordon Street and Victoria Road at the Eramosa River.
5. Upgrade (widen) the very narrow section of the recommended ATN route between Gordon Street and Gosling Gardens; currently this sections is too narrow to allow bicycles to safely pass by one another.
6. Resurface the Old Hanlon road route immediately north of Kortright Road. and complete the connection from the north end of the Hanlon Road cul-de-sac to Stone Road.
7. Complete trail improvements and realignments in W.E. Hamilton Park.
8. Upgrade the trail in Riverside Park from Woodlawn Road to the area of the existing pedestrian bridge to improve accessibility.
9. Complete the connection from the east end of the existing in-boulevard multi-use trail on Woodlawn Road. at Nicklin Road. into Woodlawn Cemetery and Riverside Park.

10. Trail alignment, widening and surface improvements to the ATN route west of Clairfields Drive and Jean Anderson Crescent, where the trail heads north into the Hanlon Creek Wetland behind Hayward Crescent, to the area of the footbridge near Kirkby Court.
11. Improve to the trail connections on the east and west side of the Hanlon Expressway at the culvert just south of Kortright Road – note that more extensive improvements are required on the east side as compared to the west.
12. Upgrade the CNR Spurline trail to improve road crossings, trail width and surface.

New Links

Over half these are implementation projects whereas the others involve the advance planning, consultations, further feasibility, EIS and detailed design work necessary to be 'shovel-ready' in the mid-term.

1. Move forward with detailed design of the connection from Speedvale Avenue to Riverside Park, based on the outcome of separate studies being conducted to evaluate the east side versus west side of the river.
2. Extend the trail along the Northwest Drain from Dunhill Place Park to Thornhill Drive
3. Advance discussions/consultations regarding the use of the stormwater access corridor off McWilliams Road and the former section of Laird Road as a route in the ATN. Implementation of improvements could be coordinated with build-out of the southern end of the business park as demand for AT connections increases with the number of new employment destinations.
4. Continue discussions / negotiations with Hydro One regarding the implementation of a multi-use trail within the hydro corridor on the east side of the Hanlon Expressway from Paisley Road to Woodlawn Road.
5. Complete the connection between the Eastview Community Park and the northern end of the Laura Bailey Memorial Trail.
6. Continue the in-boulevard multi-use trail west along Woodlawn Road to provide access to employment and commercial destinations in the northwest part of the city.
7. Undertake studies regarding the recommended pedestrian bridge crossing of the Speed River on the east side of the Hanlon Expressway opposite the Wellington Street-Waterloo Avenue intersection.
8. Design and implement the Silvercreek Trail extension from Edinburgh Road heading west as part the development of a stronger connection to the northwest part of the city.

9. Complete the short connection along Watson Parkway from the Grange Road and Watson Parkway intersection to the Watson Trail to connection these two sections of existing off-road trail (replace section of sidewalk with a multi-use trail link).
10. Complete the trail connection between the west end of Margaret Greene Park and Ferman Drive, including conversion of the existing woodchip trail to a stonedust or boardwalk surface.
11. Complete the trail link north from Arkell Road to Bathgate Drive.
12. Complete the active transportation link along Silvercreek Parkway from Waterloo Avenue to Paisley Road as part of the railway grade separation and other development related improvements in the area.

6.2 Next Steps

Following Council approval of the ATN Study the City should:

- ▶ Review the recommended improvements and list of priorities contained in the ATN Study and select projects for implementation based on available budgets, ability to coordinate with other projects already underway and other City priorities.
- ▶ Continue to work with local developers on planning, designing and implementing ATN routes located within new/future neighbourhoods.
- ▶ Include consultations with residents, stakeholders, agencies and other approval bodies as part of the City's due diligence process regarding stakeholder and public engagement
- ▶ Undertake Individual Projects
 - confirm the need for additional background studies for individual projects (e.g. EIS requirements where applicable)
 - identify the need for, and conduct additional consultations for individual projects in parallel with the preparation of detailed designs and cost estimates and EIS work (where applicable)
 - seek direction / approval from Council where necessary
 - implement projects
- ▶ Monitor success, and modify approaches to future projects based on lessons learned from monitoring.
- ▶ Report back to Council on the successes and challenges related to the ongoing development of the ATN.

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