Guelph Trail Master Plan

May 2021

Accessible formats available by calling 519-822-1260x3371 or TTY 519-826-9771

Acknowledgement

We are grateful to our local community, trail user groups and agency partners for their participation in the Guelph Trail Master Plan. It was built collaboratively in a way that is consistent with our values. We acknowledge the work of our staff, consulting team and community.

City of Guelph Territorial Acknowledgement

Guelph is situated on traditional and treaty territories of the Anishinaabek, the Attawandaran and the Haudenosaunee. It is steeped in rich indigenous history and home to many First Nations, Inuit, Métis and Mixed Ancestry people. By having a territorial acknowledgement, we recognise the Mississaugas of the Credit First Nation as a treaty partner on whose traditional territory we live and work on today.

Beyond Land Acknowledgement

Land acknowledgments are crucial in sustaining awareness and remembrance, however, they require action and participation in order to fulfill a purpose. We each hold responsibility for participating in this process. By taking time to learn about the truths and histories, through self-reflection and building relationships with the Indigenous community, we can begin to heal.

The City is interested in seeking out partnerships with our local First Nations partners, and community members of First Nation, Inuit, Métis and mixed Indigenous ancestry, recognizing the role and interest of Indigenous communities in taking care of the land and in trail making both historically and in the present. This desire to strengthen relationships, commitment to meaningful engagement and willingness to learn will inform the implementation of the GTMP.

For more information, please see city's webpage.

Table of Contents

Chapter 1: Executive summary

The Guelph Trail Master Plan (GTMP) is a comprehensive document that refines the vision and goals for our city's trail network. It is an update to replace our 2005 Guelph Trail Master Plan as an update is needed to set new priorities in line with the Strategic Plan and to take advantage of new approaches, legislation and guidelines in trail planning.

Guelph is growing and changing

Guelph is growing at one of the fastest rates in Canada, with the population forecasted to increase from 136,600 people to 203,000 by 2051. With strong growth comes increased demand on existing infrastructure and changes to the way people use trails. Active transportation is becoming more popular as a primary mode of transportation. As neighbourhoods become denser and community concerns about environmental impacts of transportation rise, trails will help support more users who choose active transportation. A well-planned approach is needed to steer the City in the right direction and set priorities for the next 10 years.

Guelph has a robust trail system with over 150km of trails and multi-use paths. Our Citizen Satisfaction Survey (2019) shows ninety-five per cent of people are satisfied with parks and ninety per cent of people are satisfied with recreation programs and facilities. The survey also shows that these services are very important to residents and that our focus should be on maintaining the current level of service. As the City and community adapts to new challenges related to COVID-19, trails have been highlighted as essential for community health, social connection, recreation and transportation.

A renewed vision and framework for trails

Our new vision for our trail network, recognizes that trails are essential to the everyday life of many Guelph residents for recreation, health and mobility. Through the GTMP, we will support and develop an inclusive, connected, sustainable trail network that offers diverse experiences, fosters an active and healthy lifestyle, and showcases Guelph's natural and cultural assets for all.

We worked closely with stakeholders and the public in the development of the GTMP to inform the development of the plan vision, goals, and recommendations including in Chapter 2. Guelph residents and stakeholders contributed comments at three rounds of consultation throughout the planning process, with 1,700 people engaged and another 2,000 informed on the Plan. Consultation took the form of

workshops, pop-up information booths, surveys, online presentations and committee meetings, totalling 30 different opportunities to share feedback.

The framework of how we plan for active transportation in Guelph has significantly evolved since the original GTMP was completed in 2005. The GTMP now specifically focuses on trails that are outside of road rights-of-way, connecting to the cycling and sidewalk networks that are being planned in our road rights-of-way through the Cycling Plan, Transportation Master Plan (TMP), and the Active Transportation Network Study.

We developed the GTMP to closely align with our Strategic Plan and Community Plan, reflecting and building upon the directions they provide. The GTMP also reflects our goals for the Natural Heritage System and other components of the Official Plan, and complies with the requirements of our Facility Accessibility Design Manual (FADM) and the Accessibility for Ontarians with Disabilities Act (AODA) as they relate to trail planning, design and communications.

We identified five key themes to organize the goals and recommendations that we have for our trail network:

Complete – a well connected community
Inform – easy to use and navigate
Protect – natural, cultural and social assets
Celebrate – our unique community
Manage – an effective, fiscally responsible and trusted local government

Each goal includes the issue that the goal is responding to, our approach to addressing the issue, and the desired outcome.

The trail network and building new trails

The GTMP planning process involved a review and update to how we classify and design for different types of trails. The updated classification is intended to better specify how different types of trails are used, where they should be located, and how they are managed. The process involved significant work between City staff, the consultant team and feedback from the public and stakeholders.

We have improved how we recognize and map trails that are managed by community groups or other third parties in our trail network. Our goal is to help residents and visitors know where public trails are, regardless of ownership or trail manager.

Chapter 3 includes details about developing the trail network, trail classification system and future trail routes. Chapter 4 includes details about how to implement trails—design guidelines trail construction and crossing improvements.

To support our capital budgeting and planning processes, we have better defined how different trail projects are implemented, organizing them into the following categories that align to funding strategies in the City's budget:

Growth trail project

- Development in process – trails in areas with active planning files
- Future development – areas of growth without planning files

City Building trail project

- Priority project – the project is a priority for the city. These projects include some projects that are ready for construction, while others are priorities for further planning work
- Future project – the project is beyond the ten year forecast

Community led, city supported projects

- Trail projects that community partners currently have underway, and those they have identified as priorities

Priority City Building projects are identified in Chapter 5. Decision making criteria is included to help guide how new City Building trails are implemented. Priorities for Growth trail projects are not identified, as timing for development projects is difficult to predict. City staff will look for opportunities to work with developers to implement trails shortly after developments are constructed.

Operating and maintaining the trail network

Operations and maintenance activities ensure that trails are reliably and safely available for everyday use. An area of focus of the GTMP is improving existing trails and renewing aging infrastructure—this aligns to the Strategic Plan's priority of "Managing existing infrastructure." Chapter 5 includes guidelines for operating and maintaining the trail system.

As an action of the master plan, the trail system will be examined for opportunities for continuous improvement. Safety, functionality, inclusiveness and user experience will be reviewed on an ongoing basis through regular inspections and work planning.

Implementing the master plan

The implementation of the Guelph Trail Master Plan is action oriented. The master plan includes actions for how to achieve the vision for the future—through policies, infrastructure renewal, trail operation and new trail construction over the next ten years. The recommendations and actions are organized based on the plan themes in Chapter 6. Some highlighted actions include:

- Construct or advance planning of priority city projects
- Improve crossing of major barriers at key locations
- Continue to require trails be planned and built as part of new developments
- Develop and implement a signage and wayfinding strategy
- Provide easily accessible information about trails online
- Investigate new technologies to support trail users and wayfinding

- Complete natural area management plans to plan for trails
- Work with community partners on community-led, city-supported projects
- Develop programming to activate the trail system
- Establish a trail committee
- Examine the trail system for opportunities for continuous improvement
- Develop a Trails Technical Manual and Trails Acquisition Policy
- Review and expand the winter maintenance program for existing trails
- Identify a pilot project for trail lighting on a section of the Active Transportation Network (ATN)
- Develop a network approach to managing trails and active transportation routes
- Develop an Asset Management Plan for trails

In order to monitor the success of the master plan we will collect and manage data about trails. A goal of the plan is "Enhance management and use of data to support decision- making." The master plan recommends that a system to measure the success of the plan be developed as part of a data management program. The system should include key performance indicators to measure and report on the plan's success.

Implementation of the GTMP will require continued investment through both operating and capital budgets. Approval of specific annual capital investment and associated operating impacts will be included in future budget requests. Trails use the same funding strategies and accounts as parks: Growth, City Building and Infrastructure Renewal. A summary of forecasted average costs is included Chapter 7. Next steps.

Chapter 2: Overview

Introduction

The Guelph Trail Master Plan (GTMP) is a strategic document that guides how we plan, design, fund, build, and maintain Guelph's trail network.

At the City of Guelph, we review and update master plans periodically to address our community's changing needs. Our plan updates the 2005 GTMP to take advantage of new approaches, legislation and guidelines to trail planning and design, such as improved standards for:

Accessibility and universal design (Accessibility for Ontarians with Disabilities Act and Guelph FADM)

Environmental protection (Natural Heritage System policies)

Active transportation planning (Guelph's Active Transportation Network (ATN), Transportation Master Plan and Cycling Master Plan)

The GTMP has also offered the opportunity for residents to help us dive deeper into the themes and directions of our Strategic Plan that relate to trails in our community.

The GTMP is designed to help municipal staff, residents, land developers, and community groups who are involved in the use, planning, and promotion of trails. Most importantly, the GTMP is a decision-making tool.

Our plan is built around a vision statement and five connected "themes" that will guide trail planning, construction, maintenance, and management. The focus of the plan is trails in parks and public open spaces outside of road rights-of-way. The plan includes a trail classification system, with associated mapping and data, and a list of priorities coordinated with our other transportation and park development projects.

Scope of the plan

Within city limits

The study area for the plan is the entire City of Guelph. Some specific areas outside of city limits are included to explore potential trail connections to other important trails, such as the Trans Canada Trail (TCT) (rebranded to the Great Trail in 2019). Some of our maps also include references to the Wellington County Active Transportation Master Plan. We recognize that we do not have authority for trails in lands outside the city, but also understand that we are a partner in creating regional trail connections.

Connection to the right-of-way

Our plan focuses on existing and planned recreational public trails—it does not plan for trails, sidewalks or cycling facilities located within road rights-of-ways. Plans like the Transportation Master Plan, Active Transportation Network Study (see How the GTMP fits with other plans), Cycling Master Plan or the Sidewalk Needs Assessment address the ways people move along roads or within road rights-of-ways.

Sometimes trails are used for transportation purposes, so is important to consider and refer to these plans in planning our trail network. Through the GTMP we explore how trails outside the rights-of-ways may interact and support the greater transportation network.

Figure 1. Example of a trail in a road right-of-way

Secondary plan policies provide area-specific guidance for trails

There are some areas in the city that are planned through secondary plans, including the Downtown, the Guelph Innovation District and Clair-Maltby.

The purpose of a secondary plan is to develop a community vision, guiding principles, policies and establish land uses for a specific area. The need for community infrastructure, like trails, is established and direction for future planning is detailed through the plan. Secondary plans are integrated into our Official Plan to help guide future growth and development of these areas.

Each secondary plan provides direction for trail planning— so our plan does not provide detailed route planning for these areas. Wherever possible, we have included trail or active transportation routes for these areas on our maps. The specific policies of each secondary plan will guide the development of the trail network in each area. There is also further opportunity to develop local trail connections in these areas as more detailed planning is completed (e.g., block planning process).

As the trails in the secondary plan areas are implemented, it is important to refer to the specific policies and directions set out for trails. While the GTMP does not plan trails within the secondary plan areas, potential trail connections between the broader trail network and these areas are identified.

University of Guelph network of trails

The University of Guelph also has its own network of trails, pedestrian routes and cycling facilities that are not a focus of the GTMP. The University of Guelph trails and connections are important in the city network, so connections between the broader trail network and these areas are identified.

Secondary plan areas and the University of Guelph are highlighted in pink on **Map 1.** The maps represent the most up-to-date information for trails within these areas understanding that the trail networks within the secondary plan areas and the University of Guelph are subject to change.

Grand River Conservation Authority owned land

The Grand River Conservation Authority (GRCA) owns land in the city where trails are existing or planned. Some of these areas are owned by the GRCA but managed through agreement with the City—including Hanlon Creek Conservation Area and Silvercreek Park. These are included in our plan.

There are also some areas that are owned and managed by the GRCA, like the Kortright Waterfowl Park and Guelph Lake. These areas are not a focus of this plan.

Arkell Spring Grounds is primarily for drinking water protection

Arkell Spring Grounds, while located within Puslinch Township, is owned by the City of Guelph. Arkell Spring Grounds is home to multiple water sources which supplies up to 60 per cent of Guelph's drinking water and therefore source water protection is of paramount importance.

Portions of the property (marked trails) are maintained by local recreation groups, who have trail-use agreements with the City to allow for their members use. There are areas of this property which are restricted to the general public to best manage potential hazards to users and staff, while ultimately protecting Guelph's drinking water sources.

This property is not considered a public park and is not included in the scope of the GTMP.

Trail connections on or through school properties

Trails on school properties are included in this plan to illustrate connectivity through other public spaces. It is important to note that public use is not permitted all the time. The Ontario government's Community use of Schools policy only applies outside of school or school events. School activities take priority, which includes during regular or after school hours.

Third party trails

The study area includes some trails owned or managed by third party groups, such as the University of Guelph, the Guelph Trail Hiking Club and the Guelph Off-Road Bicycling Association as some examples. We wanted to include these trails as part of the citywide network to acknowledge the valuable contributions made by community groups, who create and manage these assets, and show how they connect to the rest of the city's trail network.

Study Area

Map 1

- School
- Arena
- Community Centre
- City Hall
- Hospital
- Library
- Railway
- Secondary Plan Area
- City Park
- Natural Heritage System
- Waterbody

0 1 2 km

Guelph Trail Master Plan Update

Data provided by City of Guelph.
Map produced May 2020.

Why build trails?

In the last 15 years, we have seen a growing demand for trails in Guelph. We know that trails are important for our community. They allow us to get from place to place on foot, on bike, or in other ways that keep us healthy. Some trails allow us to travel through forests, beside rivers, or around other areas of natural beauty. Other trails may pass through neighbourhoods, helping to unite communities. They act as meeting places, where people from a variety of backgrounds can interact. Trails can also attract tourists and encourage people to spend money in different areas of our city, helping to build a strong economy.

This section explores three reasons why we should build trails, based around the themes in Guelph's Strategic Plan, Community Plan, Natural Heritage Strategy, Natural Heritage and Action Plan, and economic research from the Ontario Trails Council and other sources.

Health and wellness

A priority of our Strategic Plan is to "continue to build strong, vibrant, safe and healthy communities that foster resilience in the people who live here" and to "to enhance community well-being and safety through direct service and program delivery." These goals are also reflected with "We feel well" as one of the main themes of Guelph's Community Plan. One of the key strategic directions in this theme is to build health infrastructure for the future. Trails are a key type of health infrastructure. They provide an enjoyable, convenient and affordable means of exercise and recreation and can be a critical asset for mental health.

Building our Future

Continue to build strong, vibrant, safe and healthy communities that foster resilience in the people who live here

Our health system is shifting from a focus on protecting people from hazards in the environment to a focus on developing healthy environments in which people live. The Public Health Agency of Canada and the Canadian Society for Exercise Physiology recommend that adult Canadians should be active at least 2.5 hours (or 150 minutes) per week, with short sessions of moderate to vigorous aerobic activity. Doing this provides health benefits such as reducing the risk of premature death and chronic diseases such as coronary heart disease, stroke, hypertension, colon cancer, breast cancer, type-2 diabetes and osteoporosis (Public Health Agency, 2018). According to a Statistics Canada report, however, "In 2013, just over 2 in 10 adults . . . met the Canadian Physical Activity Guidelines" of at least 150 minutes of moderate-to-vigorous activity per week (Statistics Canada, 2016). According to the same study, just over 1 in 10 children met their recommended guidelines (of 60 minutes of moderate-to-vigorous activity every day).

To help more Canadians meet these activity targets, the Public Health Agency specifically identifies using active transportation including walking, biking or running. (Public Health Agency, 2018). The most effective fitness routines are moderate in intensity, individualized and fit into our daily activities.

Trails are well suited to this type of routine. For many people, the trip to work is an ideal opportunity to satisfy their entire exercise needs for the week, while others do these activities purely for recreation. In Guelph, 6.9 per cent of workers now use active transportation as their main mode of commuting to work (Statistics Canada, 2017, Journey to Work: Key results from the 2016 Census, p. 9).

Recreational trail use can also improve mental health, self-image, and self-reliance—particularly when travelling through nature. A 2011 study entitled "Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors" evaluated eleven different trails and determined that "compared with exercising indoors, exercising in natural environments was associated with greater feelings of revitalization and positive engagement, decreases in tension, confusion, anger, and depression, and increased energy" (Coon et. al, p.1).

In the long-term, a more active population can reduce the cost of medical care, improve workplace attendance and maintain the independence of older adults, reducing the cost of institutional care.

Connectivity and travel choices

A key strategic direction of Guelph's Community Plan is to facilitate active transportation—and connection to nature—via natural trails (under the "We move around freely" theme). Over the next 10 to 20 years, the goal is for Guelph to have "Abundant trail corridors that connect neighbourhoods seamlessly, making it easy to get around the city by active modes of transportation. These corridors allow people of all abilities to experience and enjoy the benefits of wild spaces, natural areas and tree-rich environments." This aligns with the Natural Heritage Strategy objective of providing "opportunities for residents and visitors to experience nature in the City."

Navigating our Future

Investing in and promoting active transportation

Other goals include "embracing future-ready infrastructure" to make us "resilient and eliminate our carbon footprint".

Trails are one of the most cost-effective forms of infrastructure that can be built to help us to reduce our dependence on motor vehicles by giving us other options on how to get to places like work, school, or parks.

Motorized transportation is one of the largest contributors of harmful greenhouse gas emissions in Canada and is responsible for 25 per cent of all greenhouse gas emissions in the country. Emissions from passenger vehicles increased by 34 per cent from 1990 and 2016. Emissions from light trucks (SUVs, vans, and trucks) more than doubled during these years, despite improvements in fuel efficiency (Environment and Climate Change Canada (2018) Canadian Environmental Sustainability Indicators: Greenhouse gas emissions, p. 9).

In Ontario, the average light vehicle (e.g., cars and other passenger vehicles) travels 16,200 km/year or about 300 km/week (Transport Canada, 2011). The 2009 *National Personal Transportation Survey* (American) found "half of all trips are three miles or less." Short-distance motor vehicle trips are the least fuel-efficient and generate the most pollution per kilometre; however, people use motorized vehicles for 72 per cent of these trips. Short distance trips have the greatest potential of being replaced by walking and cycling trips. It only takes 10 to 12 minutes to walk one kilometre and about a third of that time to cycle the same distance.

Therefore, the Government of Canada's number one key action people can take to reduce greenhouse gas emissions is to "carpool, ride your bike, take the bus or walk more often" (Canada, 2017). "Environmentally," a Statistics Canada report states, "greater use of sustainable transportation means less pollution and road congestion" (Statistics Canada, 2017, Journey to Work: Key results from the 2016 Census, p. 1).

The number of Canadians using sustainable transportation for their daily commutes is significant; according to the same report, "nearly one-third of commuters used sustainable transportation in 2016—that is, they used public transit, walked, cycled or carpooled" (p. 3). There was a slight increase (3.2 per cent) in the number of walking commuters between 1996 and 2016. In the same time period, there has been a major increase (61.6 per cent) of people cycling to work (Statistics Canada, 2017, Journey to Work: Key results from the 2016 Census, p. 3). This growth may be attributed to improvements in cycling infrastructure, including trails, over this time period in many urban areas across Canada.

Access to nature and recreation

"We play and explore" is the third theme in Guelph's Community Plan that is relates to the importance of trails. Guelph residents continually highlighted the importance of recreation facilities and cycling trails in the Community Plan's engagement sessions. The City's Natural Heritage Strategy suggests a similar objective to provide "natural and open spaces for leisure activities and aesthetic enjoyment." People said they wanted a connected river trail network that encourages outdoor pursuits. They also emphasized the need for accessibility and barrier-free opportunities.

Sustaining our future - an environment that sustains us

Care for the local environment, respond to climate change and prepare Guelph for a net-zero-carbon future.

Plan and design an increasingly sustainable city as Guelph grows -

watercourses and other elements of Guelph's natural heritage system.

Trails also provide recreational opportunities. One of the goals under the "play everywhere" strategic direction in the Community Plan is that "we activate informal and formal spaces for play and expression across the city, both indoors and out." Another goal is for a "strong network of connected cultural nodes." Trails provide residents with free opportunities for play. They also connect different areas of the city, including cultural nodes.

Building our future - a community that supports us

Continue to build strong, vibrant, safe and healthy communities that foster resilience in the people who live here.

Working to enhance community well-being and safety through direct service and program delivery.

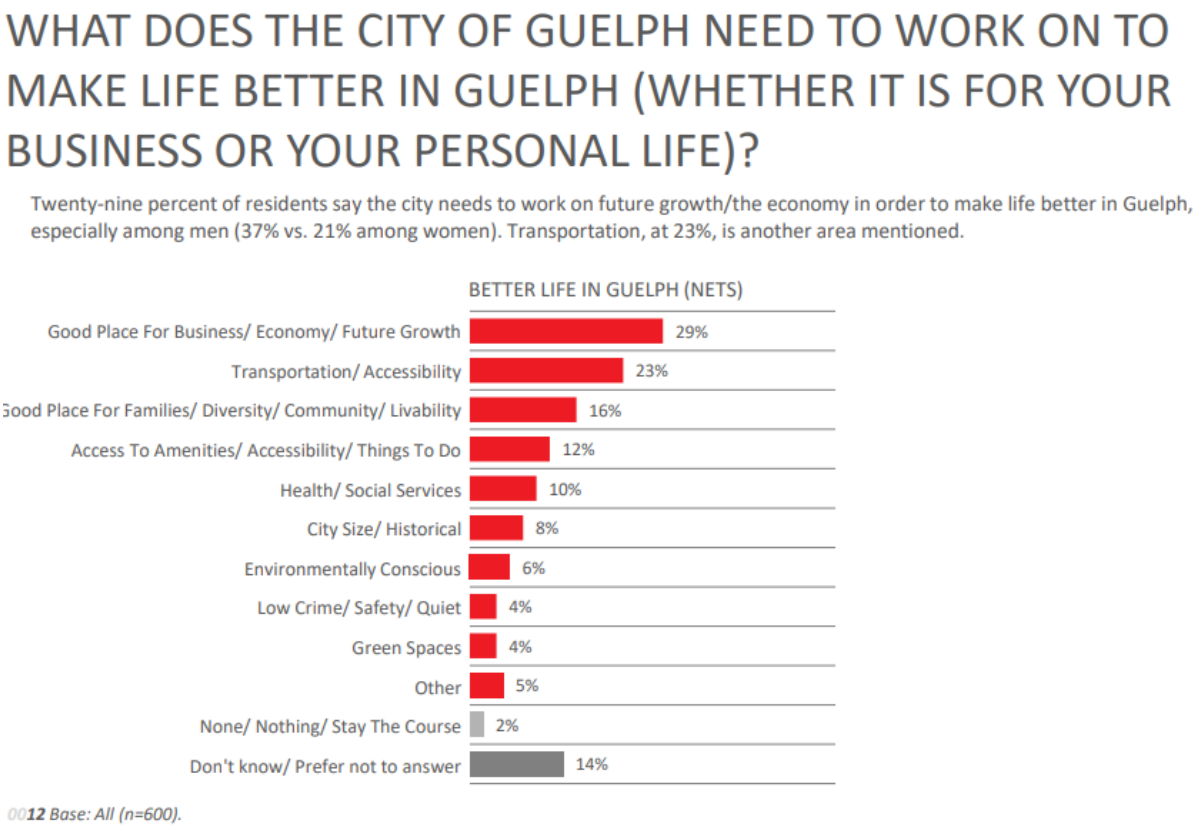
Another key strategic direction is "invest and innovate." One of the goals of this strategic direction is for "better data to help us understand the value of arts, culture and recreation to our community."

The Conference Board of Canada's 2020 Report, "Trekking Our Trails: The Benefits and Significance of Canada's Trail System," highlights the green infrastructure and environmental benefits of trails. It states, "Proximity to trails can encourage communities to be more conscious about the conservation of the environment. Trails can help to preserve green spaces while also providing habitats to local wildlife" (p. 10). The report says that trail corridors are green infrastructure systems that provide additional benefits such as "storm water retention, flood control, carbon reduction, reduction of air and water pollution, and preservation of natural habitats" (p. 10).

Economic benefits

While we might not yet know the full value of recreational facilities like trails in our city at this point, we already have data from other areas to indicate how valuable they might be. Trails can provide significant economic benefits for local businesses, workers, and home owners. The Ontario Trails Council says that trails contribute an estimated $2 billion annually to the Ontario economy (Active2010: Ontario Trails Strategy, p. 7).

Figure 2. (Better Life in Guelph, City of Guelph Community Plan: Initial Findings, p. 16)



When asked, as part of the Guelph Community Plan, "What does the City of Guelph need to work on to make life better in Guelph?" 29 per cent of respondents said that the city needs to work on future growth of the economy, while 23 per cent mentioned transportation and accessibility (see Figure 1). Trail development is an excellent investment to address these needs because trails can contribute to transportation accessibility and the economy.

Some of this economic contribution comes from tourism. In 2017, "cycling visitors spent $428 million, or 1.8% of total visitor spending in Ontario (Ontario's Cycling Tourism Plan). Cycling visitors also "generally spend more on average per trip than other visitors: $255/trip for cycling tourists compared to $171/trip for total number of visitors. Cycling tourists in Ontario stay longer than regular visitors and the majority of Ontario visits by cyclists were overnight visits (83%) (Ontario's Cycling Tourism Plan).

Trails also increase property values of nearby homes. A study in of Collingwood, Ontario showed "properties located near trails generally sell for five to thirty two per cent higher than those farther away" (Active2010: Ontario Trails Strategy, p. 7). Similar results were found in a number of studies on the impact of trails on property values from the United States (see Racca and Dhanju, Property

Value/Desirability Effects of Bike Paths Adjacent to Residential Areas and Asabere and Huffman, "The Relative Impacts of Trails and Greenbelts on Home Price.")

Powering our Future - an economy that empowers us

Contribute to a sustainable, creative and smart local economy that is connected to regional and global markets and supports shared prosperity for everyone.

It is also important to remember that trail construction itself results in direct benefits such as jobs, including the supply and installation of materials. Constructing trails over the next 10 to 20 years will be essential to helping us meet our goal of developing "arts, cultural, sport and recreational infrastructure that supports the needs of the community across the city."

How the GTMP fits with other plans

This section shows how our plan relates to some other key planning documents, including the Guelph's Community Plan, Strategic Plan, Official Plan, other master plans and strategies as well as the Natural Heritage System, Accessibility for Ontarians with Disabilities Act and the Guelph Facility Accessibility Design Manual.

Master plans help us assess the infrastructure we have to support City services today, and determine what we'll need as Guelph grows.

Looking at our city as a whole helps us evaluate options, consider a variety of community perspectives, understand possible outcomes, and make better decisions for Guelph's future. We use master plans to guide short-term projects in each neighbourhood so they all work toward achieving our community's long-term goals.

Community Plan

Guelph's Community Plan shapes what our city will look like over the next 10 to 20 years.

The Plan has six broad themes that express how we want our future to unfold:

- We are home
- We protect our environment
- We create value
- We feel well
- We play and explore
- We move around freely

Many of these themes relate to the importance of trails. Guelph residents also expressed their views on trails in the "Year of Listening'' community engagement that was a part of the Community Plan. Residents desire a bicycle- and pedestrian-friendly city that connects people to nature and to the other places they want to go. A large part of this involves trail connectivity within the city, to our neighbouring municipalities between cities, and between trails and transit.

Throughout the GTMP, we have highlighted places where the Community Plan supports specific recommendations.

Strategic Plan: Guelph. Future ready.

Guelph's Strategic Plan builds on our community vision and looks at how the City can achieve aspects of the Community Plan that fall within our areas of responsibility. It also establishes directions that will help us become a more modern, effective government and creates a foundation for our first multi-year budgeting and planning process.

The Strategic Plan has five strategic priorities and directions: Powering our future; Sustaining our future; Navigating our future; Working together for our future; and Building our future. The "Navigating our future" direction includes a goal directly related to trails, which is to "Foster easy, accessible movement through trails, paths, roads and corridors to tie the community together and connect Guelph's economy with other regions."

Under this goal, we have committed to "provide attractive, affordable and reasonable transportation options." We will do this by "investing in and promoting active transportation" and "improving the safety, efficiency and connectivity of the whole transportation system," including trails.

Official Plan (March 2018 consolidation)

Guelph's Official Plan provides a vision, goals, objectives and policies for how we manage land use in our city. It tells us how we protect and enhance natural areas, which parts of the city have residential, commercial or industrial development, and how to design neighbourhoods with parks, transportation and other amenities nearby. The Official Plan is a legal document developed through a public process that is legislated by a number of Provincial acts and policies including the Planning Act.

Master plans, like the GTMP, must be in line with the goals and policies from the Official Plan but can build on the Official Plan to define long-term objectives for specific programs and services (such as trails).

Natural Heritage System policies of the Official Plan

Guelph's Natural Heritage System (NHS) is one of our most valuable assets. It enhances the quality of life within the City by protecting natural features and ecological services, while also providing natural and open spaces for passive leisure activities and enjoyment by residents and visitors, where appropriate.

The NHS includes wetlands, woodlands, wildlife habitats, significant landforms, restoration areas and wildlife crossings and corridors. These areas attract people who want to experience all they have to offer. Many of the city's natural areas include trails.

Guelph's NHS policies, now contained in the City's Official Plan (March 2018 Consolidation), recognize that nature trails and passive recreational uses are often compatible with the preservation and protection of natural features. While trails through some particularly sensitive areas are not permitted under these policies and provincial regulations, there are other areas within the NHS where trails can be built as long as they are designed to mitigate potential damage to the natural environment.

Planning for trails in the NHS must consider suitable trail development to address anticipated uses and intensity of use, and natural heritage protection. This Plan seeks to support municipal staff with a decision-making framework for determining the appropriate trail class for trails passing through NHS lands and trails where the NHS lands are the destination. The goal is to provide a variety of trail types that meet the needs of a range of users and work together to enhance the trail network in an environmentally sensitive manner where supported by policy. This means offering more than only single-track hiking trails within some natural areas.

Transportation Master Plan

Our Transportation Master Plan is being updated. The plan will define how our transportation system will support the community as Guelph continues to grow beyond 2031.

While the Transportation Master Plan focuses on larger transportation infrastructure, such as highways and roads, it does cover some infrastructure related to active transportation, such as pedestrian crossover facilities (i.e., bridges and underpasses), and multi-use pathways within road rights-of-way. In areas where the Transportation Master Plan provides standards for trail connections, the GTMP will reference the Transportation Master Plan without reproducing those standards.

Parks and Recreation Master Plan

We are updating our Parks and Recreation Master Plan —a shared vision and strategy for how the City's parks and recreation programs, services and facilities should grow to meet current and future needs of the community.

The Parks and Recreation Master Plan will support the goals of the GTMP as we continue to build strong, vibrant, safe and healthy communities.

Accessibility for Ontarians with Disabilities Act & the Guelph Facility Accessibility Design Manual

Ontario Regulation 191/11 (O. Reg 191/11) is the built environment standard created under the Accessibility for Ontarians with Disabilities Act, 2005. The guidelines and criteria in the regulation apply to new construction and extensive renovation of trails and exterior paths of travel. Compliance with the requirements seeks to remove barriers in outdoor spaces for people with disabilities. We adopted the Facility Accessibility Design Manual (FADM) in 2015 with specific information for outdoor recreational spaces owned and operated by the City. The design manual adheres to the principles of universal design and recognizes the need to accommodate the broad diversity of people who use facilities.

We want to create a variety of great trails that are available to all residents of Guelph. The GTMP builds on the guidance in the FADM with additional information for trails outside of the right-of-way.

As noted in the FADM, "opportunities for recreation, leisure and active sport participation should be available to all members of the community. Access should be provided to playing fields and other sports facilities, including access to the site, all activity areas, outdoor trails, docks, swimming areas, play spaces, lockers, change rooms and showers. Persons with a disability may be active participants, as well as spectators, volunteers and members of staff."

Design requirements are outlined in the FADM for newly constructed and redeveloped trails that the City intends to maintain (i.e., slope, ramps, rest areas, etc.). Exceptions are provided for trails solely intended for cross-country skiing, mountain biking or the use of motorized snow vehicles or off-road vehicles; as well as wilderness trails, backcountry trails and portage routes.

The FADM also provides a process to manage situations where physical, cultural, or natural heritage conditions make complete compliance technically infeasible, and document those design decisions. This process reflects the reality that by the very nature of trails and related topography, some routes will be inaccessible to some users. In other situations, maintaining the integrity of natural heritage resources will take precedence. The overarching principle remains: trails will be accessible wherever feasible and practicable.

The proposed trail classification system (Section 3.2) serves as a tool in the decision-making process. Trails within the Active Transportation Network (i.e., primary trails) have the highest priority placed on them to be accessible. The GTMP does not label trails as “accessible” or “inaccessible”. Instead, it recommends putting in place the mechanisms to provide people with accurate and useful information about the conditions on different trails and in accessible formats. This information will allow users to make their own decisions on whether or not the trail is accessible to their abilities.

GTMP Study Process

Community engagement

Building on the work of the Community Plan and Strategic Plan we led an engagement focused process. The Community Plan was created by our community for our community with more than 15,000 residents, business and local organizations participating.

Over the course of the GTMP we engaged 1,700 people and another 2,000 people are informed on the plan. Engagement included 30 different opportunities to share feedback throughout public events, stakeholder meetings, advisory committees of Council, intercept polling, online engagement, and direct email correspondence.

Wherever possible, we have reviewed and incorporated community engagement data from related City of Guelph projects such as the 2019 Strategic Plan, the 2018 Community Plan, the 2017 Citizen Satisfaction Survey, Natural Heritage Action Plan, Urban Forest Management Plan (UFMP), Parks and Recreation Master Plan phase one data and the Guelph and Wellington County Vital Signs data.

GTMP engagement – three phases of engagement throughout the process, including:

- 5 in-person public events
- Various park and trail intercept polling
- 5 online platforms (Polldaddy, Mindmixer, Haveyoursay, social media, email correspondence)
- 5 committee meetings (Accessibility Advisory Committee, Environmental Advisory Committee/River Systems Advisory Committee, Natural Heritage Advisory Committee)
- 5 local governance week meetings with grade school children
- 4 stakeholder meetings (trail users' stakeholders)
- 3 focus meetings with Council
- 5 Agency meetings: Grand River Conservation Authority, Upper Grand District School Board, University of Guelph, Guelph Junction Railway

We have heard from the community about our trail use, trail values, issues, challenges and priorities for the Plan. Each opportunity for engagement was built on what we heard in previous opportunities to help us dive deeper. We aligned our engagement with other engagement opportunities like the Parks and Recreation Master Plan and the Transportation Master Plan.

We invited Guelph residents and other interested people to participate in developing this document. Community engagement events were organized to meet Guelph residents where they were at, including places like the Guelph Public Library, Evergreen Seniors Centre, and the Guelph Farmers' Market. Participants shared how they currently used the Guelph trail network and their ideas for how the network could be improved. They also helped to review the vision and guiding

principles of the 2005 GTMP. This information was used when considering options and opportunities for this updated Plan. Detailed information on the community engagement process and findings is included in Appendix A.

Through engagement we built a strong relationship with a number of trail user groups who are devoted to planning, designing and promoting trail use in our community. Representatives from the following user groups were engaged on a regular basis over the course of the project: Royal City Trail Committee (RTC), Guelph to Goderich Rail Trail (G2G), Guelph Hiking Trail Club (GHTC), Speed River Cycling, Guelph Victors, Speed River Gravel Grinders, Nature Guelph, Guelph Off-road Bicycling Association (GORBA) and Guelph Coalition for Active Transportation (GCAT).

Data collection and existing conditions

As part of the GTMP process, we needed to collect accurate and complete data on our trail network. This involved mapping and reviewing the existing trail network.

Our updated data gives us the ability to more accurately map where our trails are, including informal pathways that should be formalized, and to incorporate details such as trail surface and condition.

Existing conditions

There are approximately 150 kilometres of existing trails in Guelph. This includes trails that are owned and maintained by the City, as well as trails that are owned or maintained by third parties, such as the University of Guelph. The types of trails vary from paved asphalt trails to natural hiking trails. Existing trails are located throughout the City, but some areas have more complete networks, such as the Preservation Park/Hanlon Creek Conservation Area and Clairfields area. The most significant trail corridor is along the Speed and Eramosa Rivers.

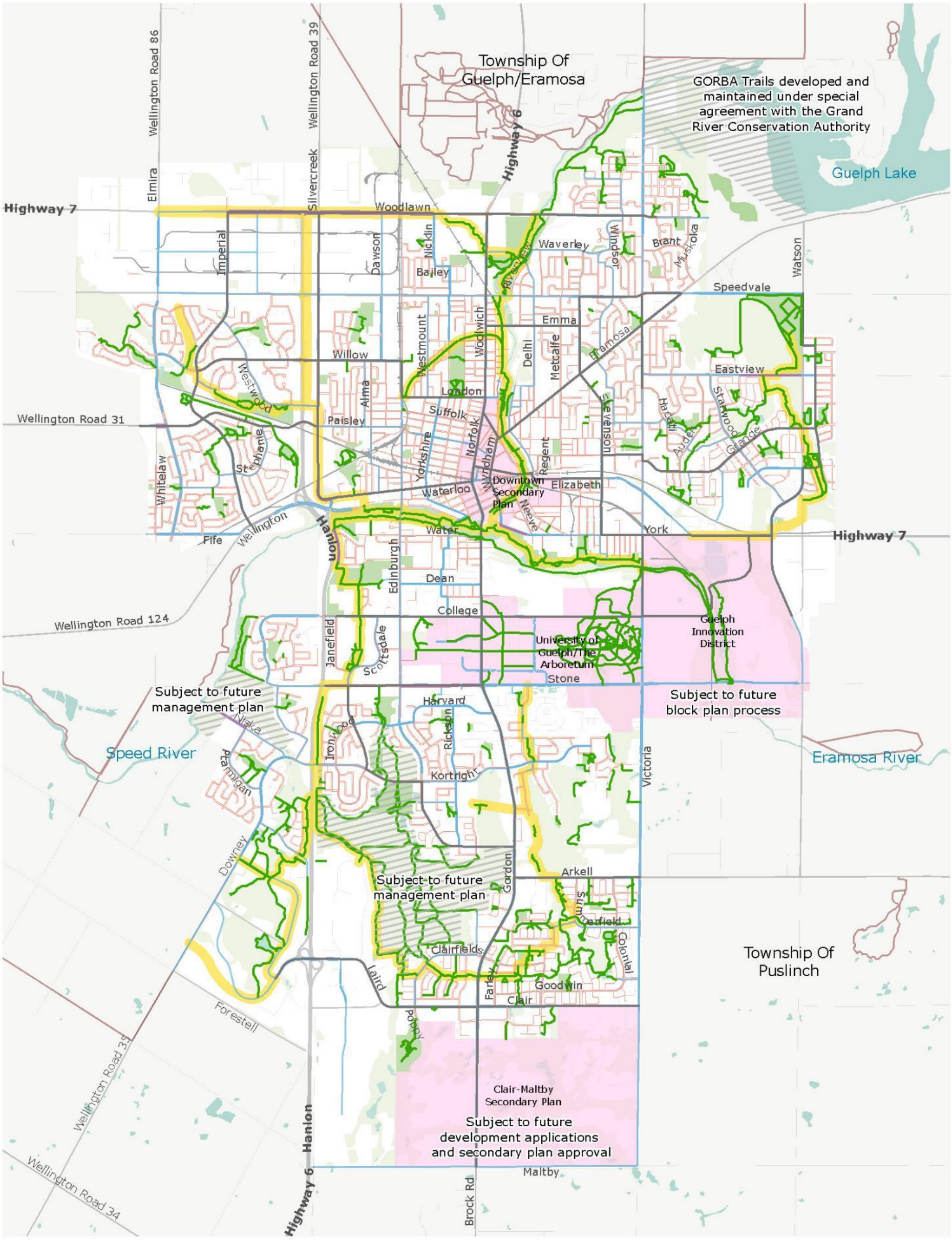
Our trails do not fit neatly into functional categories. There are 27 kilometres of existing trails that are part of the City's Active Transportation Network (ATN). There are trails that provide off-road connections through communities. Both of these examples of trails provide both active transportation and recreational uses, sometimes simultaneously. There are also trails that provide connections through parks, such as in Pollinators Park. Hiking and mountain biking trails are other examples of recreational trails that exist in the city's trail network.

The safety and convenience of trail road crossings was identified as an area that requires attention in the GTMP. Treatments vary based on the context, trail type and road classification. On trails where the intention is to continue across roads, nearby intersections are typically used, and often lack features that would support or enhance that experience for trail users.

On-road facilities provide connections to many trails where off-road trail connections are not possible. These facilities are part of the City's cycling and

pedestrian network, which is planned and managed independently of the trail network. On-road connections can include different facility types such as sidewalks, walkways, bike lanes, and in-boulevard multi-use paths. They provide access to people traveling to the trails as a destination, and a convenient link for people traveling between different trail segments.

Map 2 shows our existing trail network, along with the ATN, existing and planned cycling facilities, the existing sidewalk network, and existing active transportation facilities outside of Guelph. Together, this illustrates how the trails network is interconnected from a network perspective with facilities located within road rights-of-way.



Existing Trails

Map 2

- Existing Trail
- Active Transportation Network Study
- TMP Spine Cycling Network
- Multi-use Path or Cycle Track
- Bike Lane or Route (Existing/Planned)
- Sidewalk
- Wellington Trails and Active Transportation Routes
- Secondary Plan Area
- City Park
- Natural Heritage System

0 1 2 km

Guelph Trail Master Plan Update

Data provided by City of Guelph.
Map produced April 2021.

Chapter 3: Framework

Our vision, values, themes and goals provide the foundation for our future. Since our community is growing and changing, we need to be future-ready so we can continue to deliver responsible public services to our community. This section sets the tone for what we want to achieve over the next 10 years and potentially beyond.

Our framework includes a community-defined vision statement, a list of guiding principles and five key themes. Each theme has its own goals, approach and outcomes to guide our work.

This framework builds on the priorities and directions of our Strategic Plan and the longer-term vision of the Community Plan and Official Plan. It helps us deliver on each strategic priority in a different way. Within this framework, we have highlighted places where our GTMP goals support our Strategic Plan priorities.

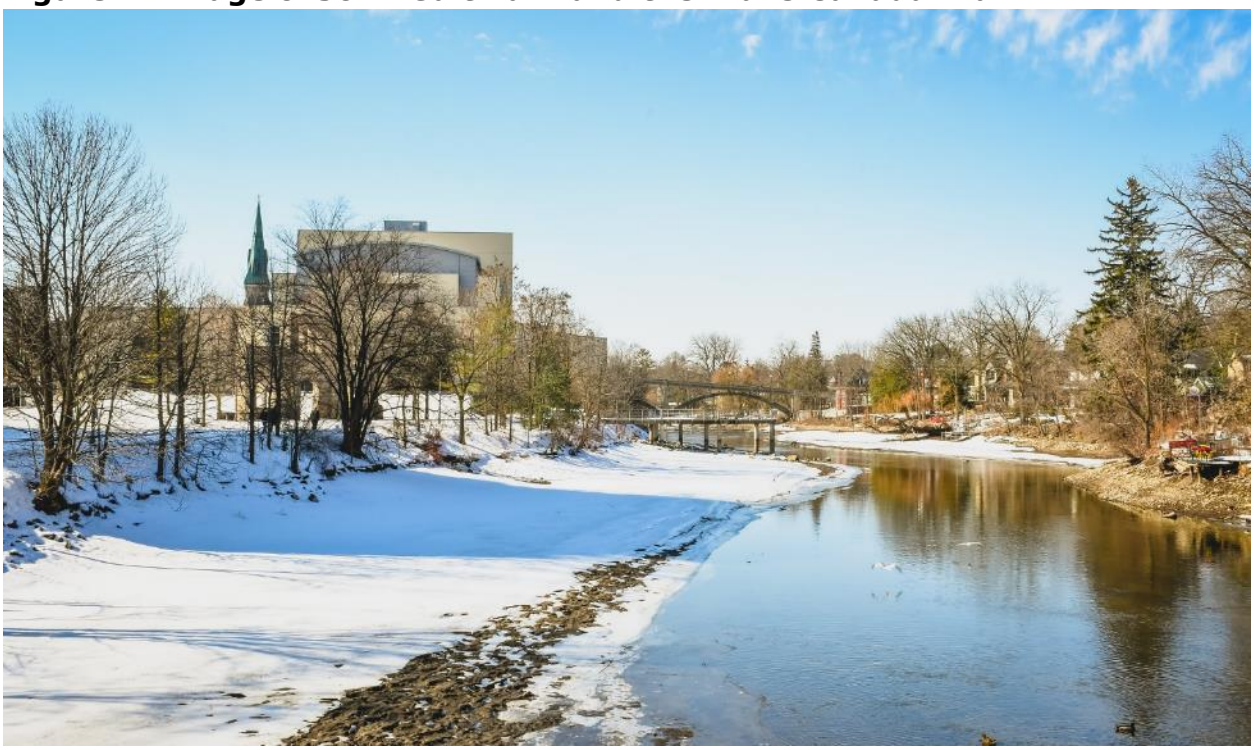
In Chapter 7 we outline the steps we can take to achieve our vision relating to the themes of our Plan.

Figure 3: Relationship between the priorities of the Strategic Plan and the Guelph Trails Master Plan Themes

Our vision for trails

Trails are essential to everyday life for recreation, health and mobility. We will support and develop an inclusive, connected, sustainable trail network that offers diverse experiences, fosters an active and healthy lifestyle, and showcases Guelph's natural and cultural assets for all.

Figure 4: Image of John Galt Park and the Trans Canada Trail



Our values

Building on Guelph's corporate values and the Strategic Plan direction to "build strong, vibrant, safe and healthy communities", our Plan is based on our corporate values as well as these values below. Values reflect our community's core beliefs:

- safe and maintained
- equitable
- sustainable
- universal design
- healthy and engaged community
- protection of the environment
- supportive of land use

Our framework

This section identifies five key themes that work together to form the overall design and policy framework for the Plan:

- **Complete** – well-connected community
- **Inform** – easy to use and navigate
- **Protect** – what is valuable
- **Celebrate** – our unique community
- **Manage** – an effective, fiscally responsible and trusted local government

Each theme includes a number of goals— broad, general statements of the long-term results needed to achieve the vision. Under each goal are outcomes that can serve as measures of success. Each goal relates back to the values and priorities of our Strategic Plan which are summarized in Table 1.

Table 1. Relationship of Guelph Trail Master Plan goals to the Strategic Plan: Guelph. Future Ready.

Strategic Plan	Guelph Trail Master Plan goals
Sustaining our future	Goal 6: Protect our natural heritage system and cultural heritage assets Goal 8: Improve comfort for trail users
Navigating our future	Goal 1: Create a complete network of trails Goal 3: Develop trails to support active transportation Goal 7: Enhance sense of security and manage risk Goal 8: Improve comfort for trail users
Working together for our future	Goal 4: Provide easily accessible information about trails Goal 5: Improve navigation of our trail network Goal 9: Work together with our community Goal 13: Enhance management of and use of data in decision-making
Building our future	Goal 2: Provide equitable access and use of our trail network Goal 6: Protect our natural heritage system and cultural heritage assets Goal 10: Accommodate placemaking along trails Goal 11: Improve branding of trails and trail materials Goal 12: Maintain existing infrastructure and improve operational efficiency

Complete – a well connected community

Goal #1: Create a complete network of trails

Connect people and places around Guelph by developing a complete, city-wide trail network that offers diverse experiences.

Opportunity

There are gaps in our trail network, ranging from awkward street crossings to network fragments, which affects the usefulness and enjoyment of our trails. Closing these gaps will create a smooth continuous network for people to travel throughout our city.

In areas of growth, we can work with developers to implement a network of trails to support recreation, health and active transportation.

Approach

We will continue to create a connected trail network so that more people have access to trails and can use them for recreation and active transportation. A complete network means that the trail network connects to other trails, sidewalks, multi-use paths and transit. It also means there is a variety of trail types and experiences. We will improve critical road crossings and close gaps in the network by obtaining easement agreements or acquiring properties to improve safety and usability for all users. We will also work with our community groups and private land owners to develop a range of trail types and experiences in the city.

Navigating our future

Improving connections to workplaces in Guelph

Investing in and promoting active transportation

The trail network will integrate active transportation facilities, sidewalks and trails, supporting the Strategic Plan's "Navigating our future" priority of "improving connections to workplaces in Guelph" and "investing in and promoting active transportation". We will measure our success through a Connectivity Index developed through implementation of the Strategic Plan.

Outcome

This work will result in a cohesive, well-integrated, connected trail network that provides active transportation and recreational opportunities. This network will positively influence community wellness, a culture of physical activity and civic pride.

Goal #2: Provide equitable access and use of our trail network

Guelph residents should be able to access and use trails comfortably anywhere in the city, with opportunities for recreation, health and mobility for all ages, abilities, backgrounds and genders.

Opportunity

There is new awareness about systemic inequity and an increased desire to create equity of opportunity, safety and inclusion for all in our community. We recognize that historically, some people or groups have not been well-represented in trails and outdoor recreation planning.

Geographically, some older built-up neighbourhoods have less access to trails within a comfortable distance of homes, schools, activities or workplaces. There are also some key trails that can be improved to be universally accessible.

In order start to understand needs of equity-seeking groups, mapped areas where they may be located with data from Statistics Canada (see Appendix B: Equity Analysis).

Approach

We value inclusion as a corporation, which makes us "stronger for our differences." Incorporating equity analysis into decision-making processes is an important step in helping to ensure that services and investments are being planned and implemented in a way that equitably serves our community.

Through the Community Plan, Employee Diversity and Inclusion Plan and our Strategic Plan, we are taking action to ensure inclusivity and equity for everyone in Guelph. This work will only be possible in collaboration with those most affected. Increasing equity in trail planning and use can involve many different initiatives, but our first step is listening and learning what systemic practices need to evolve.

We will work towards providing more equitable access to our trail network by continuing to expand our network of trails to parts of our city that are currently underserved. To link areas where trails may not be feasible due to insufficient developable space, we will make improvements to the existing pedestrian and cycling infrastructure within the road right-of-way that connect to the trail network. We will also implement new trails in existing parks where trails do not currently exist.

To make trails universally accessible, we will align our actions with Guelph's Older Adult Strategy and continue to work with the Accessibility Advisory Committee and other stakeholders to identify and address barriers affecting equitable use of the trail network, such as increasing access to benches, rest stations and washrooms near trails.

Guelph vision

An inclusive, connected, prosperous city where we look after each other and our environment

Outcome

Working with our community, we will have a better understanding of what practices need to evolve for community members most affected.

We will have a more connected network of facilities in and outside of road rights-of-way that provide connected access to neighbourhoods throughout the city. Trails will be built and maintained with amenities that enable equitable access, as appropriate, based on the trail classification.

Goal #3: Develop trails to support active transportation

Our trail network should provide access to major points of interest in the city and tie the community together through active transportation.

Opportunity

There are major destinations that are not easily accessed using trails or active transportation today. These include cultural points of interest, recreation, employment and commercial destinations. There is opportunity to better link these destinations through trails, cycling infrastructure, sidewalks and transit.

Approach

We will prioritize the construction of trails that provide access to destinations throughout the city and classify transportation-oriented trails as Primary or Neighbourhood Connectors in the GTMP's trail classification system (Chapter 3). The Active Transportation Network (ATN) is one way we link the city through a branded route that includes trails and infrastructure within the road rights-of-ways. It recommends both improvements of some of our existing trails and developing new trails. We will continue to implement the ATN as well as develop a standard wayfinding strategy to help guide people through ATN routes.

Through consultation with Guelph residents, we will work to identify key destinations that are currently not connected to the trail network. This may include neighbourhoods, schools, other community resources, parks, institutions, and commercial, service centres and transit stops. Trails can also provide shorter pedestrian or cycling routes within neighbourhoods that reduce overall trip distances or connections to transit.

Ensuring regular maintenance, especially in winter is also very important in developing trails for transportation. Prioritizing connections or maintaining connections where neighbourhood road connectivity is poor or where there is high-frequency transit is beneficial to promote year-round use.

This will help to achieve the Strategic Plan's objectives to "provide attractive, affordable and reasonable transportation options for everyone" and "improve connections to workplaces in Guelph" by "investing in and promoting active transportation."

Navigating our future

Provide attractive, affordable and reasonable transportation options for everyone

Improving connections to workplaces in Guelph

Investing in and promoting active transportation

Outcome

By considering the City's trail network from a destination focus, new and existing trails can be prioritized that provide direct links to destinations outside of road rights-of-way.

Inform – easy to use and navigate

Goal #4: Provide easily accessible information about our trails

Provide residents and visitors with better information about our trails.

Opportunity

People require information to help them assess if a trail's characteristics match their abilities or desired experience. They should have this information before they commit to entering the trail.

There are many unique places, experiences or features that can be seen along our trails. There is opportunity to help people experience our trails in a different way by providing this information in a variety of formats.

Approach

Improving how we communicate information about trails will help our residents use our trail network better or in new ways.

We will consider the variety of needs—ages, abilities, financial means, backgrounds—in our community when planning and improving trails. To provide people with the right information, at the right time, using the right media, we will regularly update the trail database with detailed information on variables relevant to them including type of experience, grade, surface material, condition, rest area spacing, and features (such as stairs). We will work with the Accessibility Advisory Committee to identify the most effective media to share this information, such as online, published maps, and trailhead signage, which will support the Strategic Plan's objective of "improving services through greater use of technology and data." We will measure our success through per cent increases in citizen satisfaction as well in measurable increases in available information online.

Working together for our future

Improving services through greater use of technology and data

Improving front-line customer service and communications

Outcome

By providing up-front information available about trail routes in the network, people will be able to make informed choices about using specific trail routes. We can improve the overall safety, inclusiveness and use of the system for existing users and attract new users.

Goal #5: Improve navigation of our trail network

Improve the quality of trail wayfinding information in the City of Guelph.

Opportunity

There is a large trail network in Guelph with limited wayfinding information. Our current system including many trail signs varying in age and state of repair, which impacts users' ability to make trip planning decisions and on-site route choices.

Since trail networks often do not follow a strict cardinal direction (east-west) or straight lines, there is a need to provide clear, consistent signage to ease navigation and encourage users to explore unfamiliar trails.

Approach

Wayfinding can help people navigate networks as they travel through them by providing information at decision-making points. Implementing a comprehensive and integrated wayfinding strategy can have a measurable impact on trail use and experience. We will develop guidance on types of wayfinding signage, placement methodology, and considerations for what information appears on the signage. We will prioritize wayfinding on transportation-focused routes, such as trails that are part of the Active Transportation Network. We will develop a hierarchy of sign types guided by design standards to maintain consistency and reinforce the coherence of the system by clearly differentiating transportation-focused routes from trails that are scenic or serve local neighbourhoods. A future wayfinding strategy should be integrated into a city-wide effort to ensure residents and visitors can easily navigate our city.

This will support the Strategic Plan's priority of "working together for our future" by "improving how the City communicates with residents and delivers services."

Working together for our future

Improving services through greater use of technology and data

Improving front-line customer service and communications

Outcome

A clear, consistent approach to where and how to implement wayfinding signage that will support a future project to develop a design standard for trail signage.

Protect – natural, cultural and social assets

Goal #6: Protect our natural heritage system and cultural heritage assets

Protect our natural heritage system and cultural heritage assets by providing appropriate trail access through a planned trail network.

Opportunity

Guelph residents and visitors want trail access to our natural and cultural areas. Increased use can impact these resources we want to protect in many ways, like changing the character of the experience through added noise or physical damage such as erosion and vegetation trampling. There is opportunity to balance providing access with managing impacts in a sustainable, context-sensitive way.

Approach

Our trail network will have the right balance between our community's desire to access natural spaces and view cultural heritage resources and managing impacts associated with increased population density and intensity of use. Building on the work of the Natural Heritage Action Plan, we will protect, maintain, restore and maybe improve natural or cultural areas as Guelph grows.

We will develop trails in ways that respect Guelph's natural heritage system policies of the Official Plan. We will identify locations where new or improved trails are desired and can be built in a manner that protects natural features identified as being part of Guelph's Natural Heritage System (NHS), while avoiding sensitive or significant areas where impacts cannot be appropriately mitigated. In places where trails can be built within or beside important natural and cultural features, it is vital to understand the sensitivity and significance of the resources we want to protect and carefully matching trail types, capacity and design features to that context. We may also identify existing trails that may need to be decommissioned or re-routed in areas that are impacting the NHS.

Using the Guelph Trail Master Plan's trail classification system (Chapter 3), we will design these trails for appropriate speeds, recognizing that many people will want to move slowly around natural and cultural heritage destinations.

Our Strategic Plan recognizes the value in Guelph's natural and cultural heritage areas and includes a goal to "Protect the green infrastructure provided by woodlands, wetlands, watercourses and other elements of Guelph's natural heritage system". These places enhance the quality of life within our city by providing areas where people can experience nature, relax, or learn about the cultural heritage of Guelph's past.

Sustaining our future

Protecting the green infrastructure provided by woodlands, wetlands, watercourses and other elements of Guelph's natural heritage system.

Building our Future

Make strategic investments that nurture social well-being, provide landmark beauty and offer a safe place where everyone belongs [e.g., connecting people to nature].

Helping prevent and mitigate the challenges associated with mental health and addictions by working to address root causes.

Outcome

Guelph's residents and visitors are able to access and experience natural and cultural heritage areas by trails. Trails in natural and cultural heritage areas are appropriate for the context, the site is not damaged by trail development or use, and the experience of the site is not weakened by an increase in the number of visitors.

Goal #7: Enhance sense of security and manage risk

Guelph's trails are safe and that trail users feel secure.

Opportunity

Guelph residents identified some physical and personal safety concerns on our trails, including pedestrian-cyclist conflicts, distracted people, safety at night, off-leash dogs, vehicle traffic at crossings, and drug-use on trails. A lack of emergency access is also an issue for trails in remote areas.

Approach

One of the goals under the Strategic Plan's "Navigating our future" priority area is to "improve the safety, efficiency and connectivity of the whole transportation system", which includes our trails.

To improve the real and perceived safety of our trails, we will keep up-to-date records on trail locations where incidents occur, establishing a system where people can report problems and share their concerns about trail safety on an ongoing basis. Using the Guelph Trail Master Plan's trail classification system (Chapter 3), we monitor trail use, users, risks or other areas of concern to help identify improvements to trail management.

We will assess locations where there are incidents of crime and unwanted behavior to guide trail planning. We will make safety concerns and vulnerable users a key criteria when prioritizing projects. We will review and update our trail code of conduct materials to educate and remind Guelph residents about appropriate and safe trail use.

Enforcement by city staff on trails exists to ensure that rules and laws are being followed. We need to ensure that enforcement is respectful and in line with our corporate values. Innovative approaches to education and enforcement should be considered to support our community well-being. We will continue to work with community organizations and stakeholders to do a better job of ensuring that trails are spaces that everyone feels welcome and safe in.

Navigating our future

Improving the safety, efficiency and connectivity of the whole transportation system

Outcome

People feel secure when using trails in Guelph, leading to increased trail use. Guelph residents feel a sense of stewardship for their trails and feel empowered to contribute towards positive change. Incidents of crime, vandalism, and other unwanted behaviour are minimized due to improved trail design and management.

Goal #8: Improve comfort for trail users

Consider the physical comfort of trail users in the design of high use and destination-oriented trails.

Issue

Trails that lack appropriate amenities, shade and shelter from the wind are limited in appeal and use. Trails may be prone to ponding, icing, deep snow, or slumping, which can make passage difficult and unpleasant.

Approach

Our approach spans trail planning, design, and maintenance. For trail planning, we will favour routes that take advantage of natural topography and vegetation for shelter. In the trail design and construction phase, we will include microclimate analysis as part of new primary and neighbourhood connector trails. Facilities can incorporate new tree planting, rest areas and other accessibility features aimed at improving equitable access. In line with the goals of the Urban Forest Management Plan, we will look for ongoing opportunities to increase canopy cover and replace trees lost due to Emerald Ash Borer.

For trail maintenance, we will invite trail users to report problem areas on the trails, such as areas prone to high winds, snow drifting, deadfall, and other problem areas. We will verify and incorporate this information into the trail database. We will assess winter maintenance on primary and neighbourhood connector trails. For trail sections prone to heaving, sliding or slumping, we will obtain a geotechnical engineer's advice on improvements to be made. Priority can be given to practices that ensure high use and destination-oriented trails are well-kept year-round.

Navigating our future

Improving the safety, efficiency and connectivity of the whole transportation system

Sustaining our future

Increasing Guelph's tree canopy

Outcome

Guelph residents feel more comfortable on trails due to better trail planning, design, and maintenance. Residents are also empowered to provide feedback on problem trail areas, which will have a meaningful effect on maintenance priorities.

Celebrate – our unique community

Goal #9 – Work together with our community

We will work with our community to listen and learn to help improve service delivery and communication.

Opportunity

We have an opportunity and responsibility to listen and learn from the community as we implement the Plan. There is also an important opportunity be more intentional and take action to address systemic inequalities to help address these issues moving forward.

Through our Plan engagement, we worked with a dedicated group of trail users and residents who are devoted to trails. We have an opportunity continue this relationship and to further empower and encourage residents and communities of underserved populations to become involved in the planning, maintenance and construction of trails.

Approach

One of our corporate values is inclusion, which makes us "stronger for our differences." By committing to listening and learning we will take an important step to ensure that services and investments can be implemented in ways that address inequity. We recognise the corporate-wide nature of this work and will embody our corporate vision, mission and values in our day-to-day work.

One of the goals of our Strategic Plan is "developing strategic partnerships with stakeholders to improve service delivery." We will work on developing policies and practices to encourage more listening and collaboration with our community.

Our approach will also enable trail groups to lead their own initiatives in ways that are safe and consistent with city by-laws and policies. We will also encourage the participation of underserved groups to participate in this process. We will develop polices and practices for entering into third party agreements or other tools to enable our partners to lead community initiatives. City staff will also support and foster community relationship through a newly formed trail committee. The mandate of the committee and how the City staff will support it will be determined with future work.

Working together for our future

Developing strategic partnerships with stakeholders to improve service delivery

Exploring new funding options, service-delivery models and partnerships to ease taxes for residents and businesses

Outcome

Working with our community, we will have a better understanding of what practices need to evolve for community members most affected by inequality. We will also be able to offer better services as we partner with our community to improve and promote our trail network.

Goal #10: Accommodate placemaking along trails

Develop trails in Guelph so that they include opportunities to reflect local culture and celebrate a unique sense of place.

Opportunity

Trails are a vital component of Guelph's public open space system and a hub for activity. Activated and interesting spaces provide opportunities for social interaction and help differentiate Guelph from other cities.

Figure 5. Time Line/Water Line (2001) sculpture by John McEwen located in John Galt Park is a good example of animating space with public art

Approach

One of the objectives of the Strategic Plan's "Building our future" strategic priority is to "continue to build strong, vibrant, safe and healthy communities that foster resilience in the people who live here." Placemaking improvements and events in public places enhance the quality of life for our citizens and visitors by allowing us to celebrate our culture and heritage, reflect our diversity, express shared values

and define our unique identity. We believe that these improvements and activities should be a part of conversations about trails and trail locations because trails are a vital part of Guelph's public realm.

We will encourage placemaking along trails by adding unique elements to our trail network. These elements can include viewing spaces in unique areas, interpretive signage, unique trail amenities or public art. The Urban Design Action Plan, volume 2, identifies the need for a city-wide public art master Plan and sustainable funding policy.

We will also enable, through policy, Guelph residents and organizations to host events that utilize and showcase Guelph's trails, such as races, festivals, "bike jams" and walking tours. Unique events and programming provide opportunities for people to experience trails in new ways and discover different areas of the trail network than they may regularly use.

Building our Future

Make strategic investments that nurture social well-being, provide landmark beauty and offer a safe place where everyone belongs

Helping prevent and mitigate the challenges associated with mental health and addictions by working to address root causes

Outcome

A richer and more inviting trail experience. By capitalizing on local assets, aspirations, and creativity, we can strengthen the community's sense of connection and stewardship toward their trail network. These features also facilitate the promotion of trails and draw residents and visitors to different parts of Guelph's trail network, contributing to tourism and economic development.

Goal #11: Improve branding of trails and trail materials

Create a consistent look and feel for signage, structures, plantings, website, promotional materials and other aspects of the Guelph's trail network.

Opportunity

It is sometimes difficult to recognize our trail network as a single, extensive system as there isn't a consistent look or feel. Through improvements to consistent use of materials, signage, wayfinding tools, amenities we can help attract residents and visitors.

Approach

We will pursue a distinct branding for Guelph's trails. Trail branding will give people a sense of the trail network as a whole, rather than as individual sections. The branding program will include graphic materials, site furnishings, structures, and planting design. While the intent is to create a unifying image for the system, individual trail segments can still portray a local identity that relates to the natural environment or cultural heritage (see the example below).

We will name major trails in Guelph's trail network. This will include consideration for continuing with names for existing trails that people recognize such as the Royal Recreation Trail. Trail naming will also recognize third party trails that pass through the city such as the Great Trail (Trans Canada Trail), Guelph Radial Line Trail etc. Names offer clear benefits beyond branding, assisting with wayfinding, adding interest, trail management, and emergency access. The names can be determined as part of the branding process, or through protocols set up by City administration.

Guelph residents can be involved in working with the brand designers to identify preferred branding elements such as size, material, and colour; font and typeface (subject to minimum height and legibility requirements); logo, sponsorship placement and design; and interactive and interpretive features (e.g., websites, mobile/QR features, geocache opportunities). The brand elements can also convey information about surface type, difficulty, or other factors.

This approach can help us achieve the Strategic Plan's goal of "Make strategic investments that nurture social well-being, provide landmark beauty and offer a safe place where everyone belongs."

Building our future

Make strategic investments that nurture social well-being, provide landmark beauty and offer a safe place where everyone belongs

Figure 6. Example of trail branding from Winnipeg, Manitoba

Outcome

An engaging new branding program that helps residents and visitors recognize the trails as part of a complete city-wide system and encourages them to explore new trails.

Manage – an effective, fiscally responsible and trusted local government

Goal #12: Maintain existing infrastructure and improve operational efficiency

Continuously improve the operation and maintenance of our trails to enhance user experience and safety.

Opportunity

Guelph residents identified a number of concerns with maintenance of existing trails and particularly expressed the need for increased maintenance in winter to improve access and usability.

Approach

"Managing existing infrastructure" is a priority in our Strategic Plan. Operations and maintenance activities ensure that trails are in good conditions and can be used throughout the year. The updated trail classification (see Chapter 3) helps to define and direct operations and maintenance tasks and prioritizes operation and maintenance activities based on trail classification. The classification system can also be used as to refine our Risk Management strategy to ensure safety of users.

We will continue to monitor capacity and response time to complete all operations and maintenance tasks to support decision-making on resource allocation and maintenance circuits. We will evaluate opportunities to provide new operations and maintenance services, such as grooming trails for cross country skiing, and whether they can be delivered by the City or in partnership with a third party. Having a network level approach that includes trails and infrastructure for pedestrians and cyclists in the rights-of-ways can also improve our operational efficiency.

We will also work to develop better tools, processes and programs for managing aging infrastructure at the end of life. Streamlined approaches will help us develop better long-term financial and resource strategies.

Building our future

Managing existing infrastructure

Outcome

Providing a structure to support trail operation and maintenance decisions will improve reliability and experience using trails. On-going monitoring and evaluation will help to support decision-making around expanding operation and maintenance activities. It can also help us understand how these practices impacts the natural environment (e.g., use of salt, size of maintenance equipment).

Goal #13: Enhance management of and use of data to support decision- making

Keep the City of Guelph database on trails current, accurate, and complete.

Opportunity

Our digital trail database has gaps and collecting better information can improve our decision-making. We need better systems in place to incorporate data on new trails as they are developed and existing trails as they are maintained. A trail schema was developed as part of this project to help organize this information. It is provided in Appendix C.

Approach

The Strategic Plan has a goal to "improve how the City communicates with residents and delivers services through greater use of technology and data". We recognize the growing role that digital information has in our world and the opportunities available for managing and sharing this data. We will put processes in place to ensure we are continually collecting and refining the data to support on-going and future planning processes. This includes ensuring that digital trail route data, trail status, condition, and other data fields are routinely reviewed and updated as part of regular trail construction and operations and management activities. We will also review trail network data and other data layers to ensure that there are no data overlaps that could result in outdated or confusing information. Where possible, we will aim to provide this information in an "open data" format for the benefit and use of Guelph trail users.

Working together for our future

Improving services through greater use of technology and data

Accelerating digital delivery of services

Outcome

We will be able to more actively manage and update our trail network to inform real-time use, track operations and maintenance, and support informed planning and implementation of other projects.

Chapter 4: Trail network development

Planned and desired connections

Based on the framework and goals for the trail network discussed in Chapter 2, we reviewed opportunities for where new trails could be implemented as part of the network. The process involved significant work between our staff, the consultant team and feedback from the public and stakeholders.

There are many trails that were planned or proposed as part of the previous GTMP that were not built. Some of these trails may now be priorities, while other previously proposed trails are no longer relevant and have been removed. New trail alignments are also proposed in this plan. These routes were identified throughout the planning process and reflect new opportunities for trails.

Figure 7. Photo of Hanlon Creek trail

Proposed trails are classified as planned trails and desired connections in Map 3:

Planned trails are generally on lands owned by the City, or other partners the City regularly works with to acquire trail access, or they are in areas where development work is already in process that may support acquisition of land for trails. These trails have either been previously studied to determine a route alignment or have few design variables that might affect implementation.

Desired connections are generally routes that require further study to determine their feasibility and alignment. Some are on lands that are anticipated to be developed in the future. These trails have a lot of design variables that may affect feasibility and route alignment.

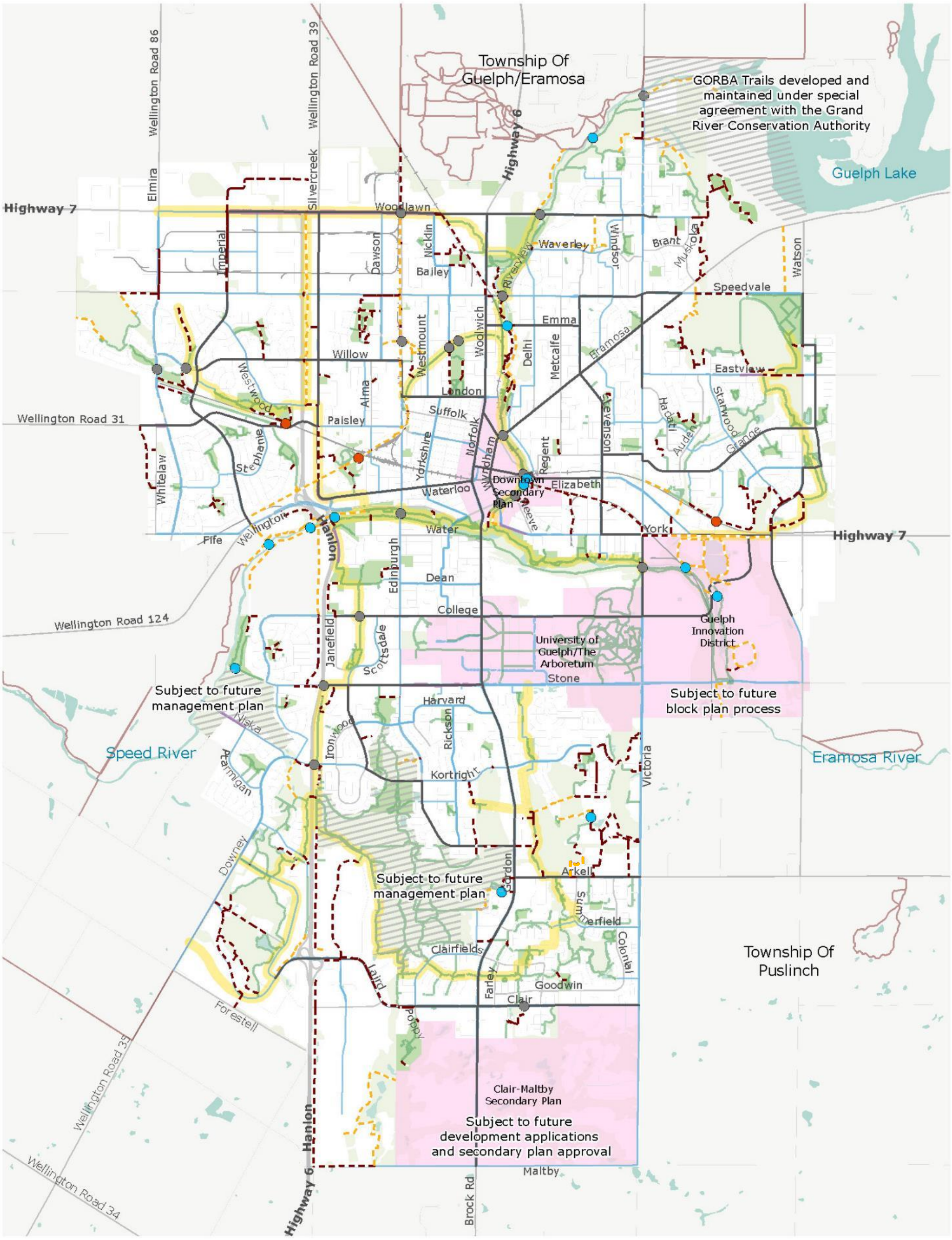
The Planned trails and desired connections are spread out throughout the city. Many of these trails are along corridors such as the Hanlon Expressway and railway rights-of-way. There are also many instances where planned trails and desired connections simply require the formalization of informal (ad hoc) routes or worn footpaths that have developed over time. An example is in Dovercliffe Park, where no formal trails have been built, but visible paths have been worn into turf on the ground across the park.

Map 3 also identifies locations for desired trail crossing improvements. These crossing locations are organized by crossing railways, water, and roadways.

Table 2. Proposed trails and crossing improvements

Proposed Trail	**Length (centreline kilometres)/Number of Crossing Locations**
Planned Trail	43 km
Desired Connection	35 km
Railway Crossings	3 locations
Water Crossings	12 locations
Roadway Crossings Improvements	20 locations

The Route selection decision making section provides the framework for turning proposed and desired connections into trails.



Proposed Trails

Map 3

Crossing Improvements
- Railway Crossing
- Water Crossing
- Roadway Crossing

- Planned Trail
- Desired Connection; route subject to change upon detailed review
- Existing Trail
- Active Transportation Network Study
- TMP Spine Cycling Network
- Multi-use Path or Cycle Track
- Bike Lane or Route (Existing/Planned)
- Wellington Trails and Active Transportation Routes
- Secondary Plan Area
- City Park
- Natural Heritage System

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Guelph Trail Master Plan Update

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Trail classification

As recognized in the existing conditions, trails can have many different attributes such as surface material, width, and other design considerations. Trail attributes should be matched to the intended use of the trail and its context. For example, if a trail goes through a designated NHS area, the trail should have attributes that accommodate the volume of people expected (use) and minimize the environmental impact (context). In order to simplify the many different attribute considerations that impact trails, the trail classification system offers standard trail types that are suitable for specific uses and contexts.

Trail users were split in their preference identify a mix of preferences between soft-surfaced and hard-surfaced trails, where a portion of people prefer the hard surface for its firm and smooth finish when new, and others favour granular surfaces as some find them easier on the joints when walking and running and have a softer, more sympathetic appearance in a park or natural setting while over time asphalt-surfaced trails can take on the appearance of a patchwork quilt of repairs that may not be consistent with the surrounding trail setting.

Classification system

The trail classification system recognizes many of the different contexts that impact the design considerations of trails. The system is intended to help plan for the design, operations, and decision-making around the trail network. Differentiating trails based on surface material is a common thread, but not a defining factor. Surface material is a variable in trail planning and design, as it has an impact on trail user types, maintenance factors, and environmental impact.

The classification system recognizes the differences between trails that have an important transportation function and trails intended primarily for recreation. The GTMP includes trails for both purposes. For transportation-oriented trails, the GTMP Plan builds on the ATN, but only considers trails outside of road rights-of-way, whereas the ATN includes routes within and outside of road rights-of-way. Primary and neighbourhood connector trails are more focused on providing transportation connections, where the trail provides a route to travel to destinations. Secondary, tertiary, and stormwater management trails have a recreational focus, where the trails are the destination that people are accessing. Parts of these trails may provide some connection to destinations, but that is not their intended purpose.

The trail classification system is a forward-looking standard. This means that what a trail is classified as may not match the existing attributes of the trail. Some existing trails may need to be upgraded to match their new classification when once they have reached the end of their lifecycle. For example, some trails that were built with asphalt that are secondary trails may just have a stonedust-surface in the future. The trail classification system also does not provide the final design of the trail. The classification system provides guidelines that are used to steer final

designs in a particular direction. Each trail has unique site characteristics that will also influence final designs.

The trail classification system is not a succession plan. This means that secondary trails are not waiting to be upgraded to primary trail standards eventually. If it is found that the use of a trail does not match its classification, it can be changed to a higher or lower classification and design treatment standard to best serve the situation.

Primary trails

Primary trails are significant cross-city trails that provide direct routes to destinations. They are designed to accommodate high volumes of diverse trails users, including walkers, runners, people using mobility devices, cyclists, in-line skaters, skateboarders, etc. Trails that are designated part of the ATN are all primary trails, but not all primary trails are part of the ATN. The ATN is a brand of primary trail meant to provide an active transportation route throughout the city through trails, and cycling infrastructure in road rights-of-ways.

Figure 8. Example of a primary trail

Neighbourhood connector trails

Neighbourhood connector trails provide connections to destinations such as schools or other community facilities. They are intended to support high volumes of neighbourhood transportation and recreational use. An example is a trail through a park that provides a more direct east-west connection through the neighbourhood. These trails have a distinct classification as they should be priorities for year-round maintenance.

Figure 9. Example of a neighbourhood connector trail

Secondary trails

Secondary trails have a recreational focus and generally have a granular surface material. This makes them most appropriate for moderate volumes of walking, running, most mobility devices, and cycling. Secondary trails may form large connected loops, connect to other trails or may form stand-alone loops.

Figure 10. Example of a secondary trail

Stormwater management trails

Stormwater management trails are portions of stormwater management service access routes that provide a recreational opportunity at a neighbourhood level, most often with loops. They are similar to secondary trails, but are classified as a separate category due to a few unique attributes. Many of these trails have paved sections and have their own defined maintenance standards. The trails' use as a service access road informs their design standard and role in the trail network.

Figure 11. Example of a stormwater management trail

Tertiary trails

Tertiary trails have a recreational purpose and are a destination. They generally have earthen/natural surfaces and are designed for hiking and/or mountain biking (where permitted). Tertiary trails should be designed sympathetically in a way that works with the topography, views, and other landscape features. They are intentionally indirect.

Figure 12. Example of a tertiary trail

Third party trails

The classification system also acknowledges that there are trails in Guelph that are not owned or managed by the City. These are classified in the trail network as third party trails. Attributes of these trails can vary, and include hiking trails, paved trails and mountain biking trails (where permitted). Including these third party trails in the network supports connectivity and reflects that people using trails often do not know who owns the trail and are more interested in where these community assets are in our city.

Third party trails can include trails maintained by the City, but are situated on lands owned by third parties, such as trails on Grand River Conservation Authority

(GRCA) lands or school properties. They can also include trails on managed by others, such as the Guelph Trail Hiking Club (GTHC). We intend to work with these trail owners and managers to ensure that up-to-date information is available to communicate closures, rerouting, allowed uses, and trail conditions. It is also important to note that we do not take responsibility for the control or maintenance of these trails and third party operators take responsibility and liability.

School property

Trails on school properties are included in this Plan as third party trails to illustrate connectivity through other public spaces. It is important to note that public use is not permitted all the time. The Ontario government's Community use of Schools policy only applies outside of school or school events. School activities take priority, which includes during regular or after school hours.

Trail classification table

The trail classifications are explained in more depth in Table 3. It should be noted that informal trails (e.g., worn footpaths) do not constitute a trail type and are not mapped as part of the network, except where they coincide with previously planned, proposed or desired connection. Informal trails may have evolved through use (e.g., a beaten footpath) or a shortcut between destinations. They may be inappropriately located (e.g., on unstable soils, through a sensitive area, or cutting across a sport field). The City does not manage these trails or encourage their use, and may use management strategies to minimize or decommission their use.

Figure 13. An example of an informal trail

Table 3. Trail classification

Trail Type:	Primary Trail	Neighbourhood Connector Trail	Secondary Trail	Stormwater Management Trail	Tertiary Trail	Third Party Trail
Example	Downtown Trail	Trail through O'Connor Lane Park, connecting to Holy Trinity CS and Ken Danby PS	Proposed trail loops in Norm Jary Park	Trail loop around Summit Ridge stormwater management facility or Loops associated with Stormwater Management facilities	Natural surface trail in the Preservation Park/Hanlon Creek Conservation Area	GHTC trail from James Street to Victoria Road, on Cutten Fields land or trails on school land
Transportation or recreational focus	Transportation focus	Transportation focus	Recreational focus	Recreational focus	Recreational focus	Recreational focus – GTHC, Arboretum Transportation focus – University of Guelph or school trails
Description	Provides primary links to move throughout the city along major corridors; provide principal access links to/from major destinations within Guelph and to communities outside the city	Provides neighbourhood links to primary system but not designated ATN; focus on Safe Routes to Schools and other local destinations outside/off the primary network	Provides neighbourhood links to primary system but not designated ATN; focus on recreational opportunities; loops in parks	Provides recreational loop without focus on providing link to primary system	May have a local neighbourhood focus, but more often are a destination for specific user groups; Provides routes in special locations or caters to specific uses that may, be in part, be dictated by the characteristics of the location; may have a local neighbourhood focus, but more often are a destination for specific user groups	Trails operated by partner organizations through signed agreement and typically on land(s) owned by (a) the City or (b) another landowner (note: trail operation, responsibility or liability not intended to be assumed by the City)
Origin/ Destination Information	Important links to major community facilities (such as community centres, colleges and universities, major commercial nodes and important municipal government buildings)	Improved access to schools; trail traffic that tends to be more locally oriented towards local destinations	Access to local points of interest; creates local neighbourhood or community recreational loop opportunities	Recreational link or loop	Directly connected to neighbourhood connector trails or secondary trails and in some cases primary trails Includes stand-alone loops	Typically passing through the city and part of a longer trail route by the operator organization. May also be destination trail networks for specific uses
Relationship to ATN	May be part of ATN designation; Not all Primary trails are part of ATN.	Not designated ATN	Not designated ATN	Not designated ATN	Not designated ATN	Maybe designated ATN (in the case of school property)

Trail Type:	Primary Trail	Neighbourhood Connector Trail	Secondary Trail	Stormwater Management Trail	Tertiary Trail	Third Party Trail
User Type /User Groups	Widest range of user abilities	Wide range of user abilities	Range of user abilities	Range of user abilities	Available to a wide range of user abilities but may not be suitable for all. (i.e., design or layout may limit user groups) Special (single or restricted) use	Depends on focus
Mode	Will be designed to accommodate multiple uses such as cycling, walking, users with mobility-assisted devices, strollers, small wheeled uses such as skateboarding, in-line skating and scooters	Will be designed to accommodate multiple uses such as cycling, walking, users with mobility-assisted devices, strollers, small wheeled uses such as skateboarding, in-line skating and scooters	Will be designed to accommodate multiple uses such as cycling, walking and running; Other uses such as mobility-assisted devices/strollers, skateboarding, in-line skating and scooters will be accommodated where possible and appropriate	Will be designed to accommodate multiple uses such as cycling, walking and running; Other uses such as mobility-assisted devices/strollers, skateboarding, in-line skating and scooters will be accommodated where possible and appropriate	Will be designed to accommodate single or restricted uses such as walking and running only, or cycling only; Other uses such as mobility-assisted devices/strollers, skateboarding, in-line skating and scooters are typically restricted by the nature of the trail alignment, width and surface types	Depends on focus
Volume of Use	Potentially high volumes of use	Potentially high volumes of use	Moderate volumes of use	Moderate to lower volumes of use	Moderate to lower volumes of use	Depends on focus
Management Responsibility	Owned or managed by the City	Owned or managed by the City	Owned or managed by the City	Owned or managed by the City	Owned or managed by the City	Typically not managed by the City, may be on City land or land owned by a separate partner
Trail Design Guideline General Standard	Highest level of design intervention. standard trail types; Refer to guidelines standards outlined in ATN for all Primary trails	Typically a high level of design intervention, may be lower Design standard will vary depending on the location of the trail	Moderate level of design intervention. Will vary Design standard will vary depending on the trail location and surrounding context location of the secondary trail	Design is based on engineering design guidance for stormwater management areas	Typically uses “low tech” design standards, methods, and materials that are appropriate for the location and volume of use. Design is highly context sensitive	To design criteria by the managing organization. Depends on focus, Not designed or owned or maintained or managed by the City

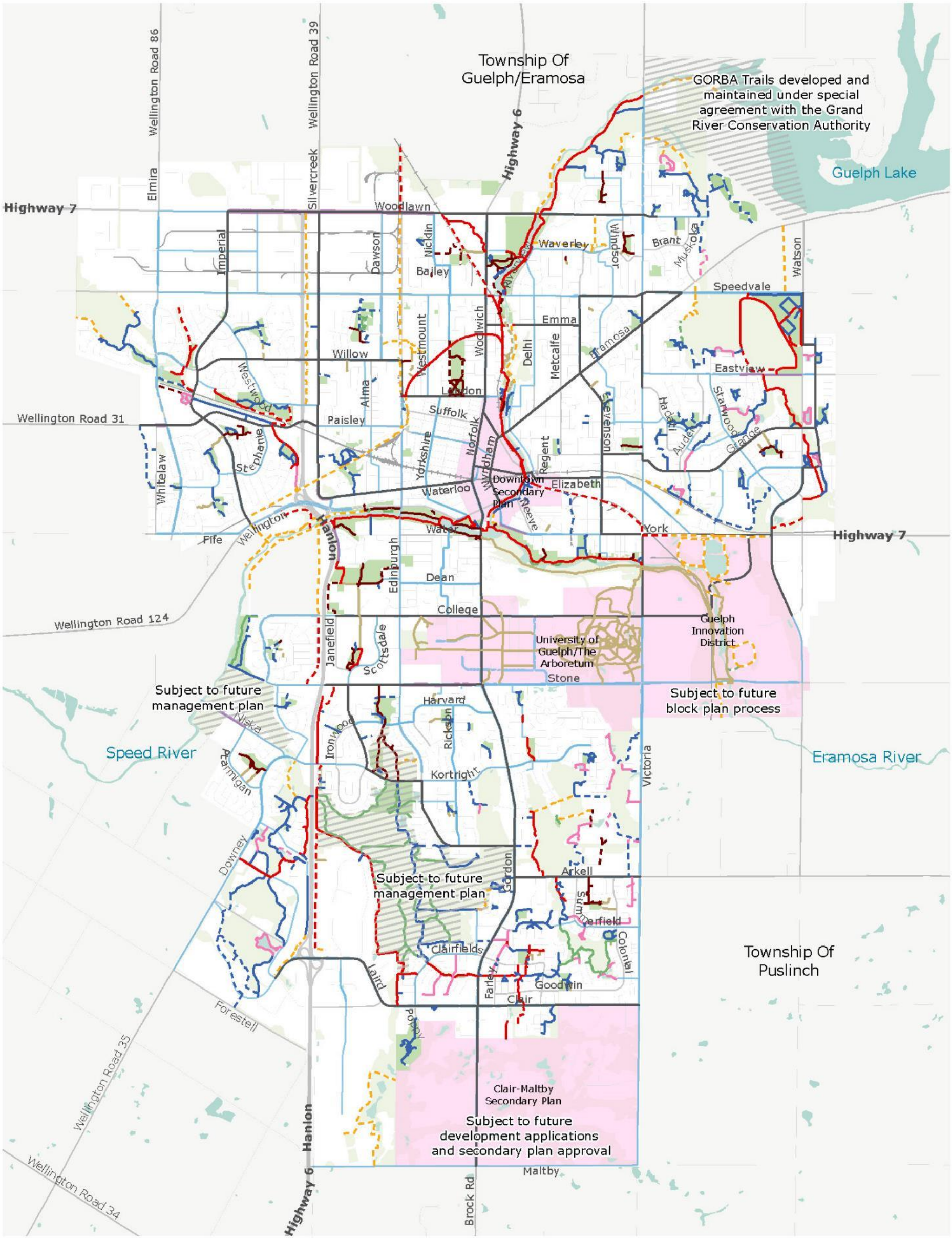
Trail Type:	Primary Trail	Neighbourhood Connector Trail	Secondary Trail	Stormwater Management Trail	Tertiary Trail	Third Party Trail
Surface	Typically hard surfaced (e.g., asphalt) Firm and stable granular surface (e.g., compacted stonedust granular) in some contexts See design standards chapter Trail surface treatment section	Typically hard surfaced (e.g., asphalt) Firm and stable granular surface (e.g., compacted stonedust) is also appropriate See design standards chapter Trail surface treatment section	May be hard surfaced or granular surfaced depending on the context See design standards chapter Trail surface treatment section	Typically hard surfaced (e.g., asphalt) due to vehicle access See design standards chapter Trail surface treatment section	Typically natural surfaced (e.g., natural earth or woodchip) See design standards chapter Trail surface treatment section	Varies depending on managing organization and site/project goals. Depends on focus
Width	Wide (refer to standard outlined in ATN) Preferred: 3-3.5 m Minimum: 2.4 m (in sensitive contexts) Maximum: >4 m for high volume Potential corridor width: 8-15m (10m preferred) Potential corridor width: 8-15m (10m preferred) See design standards chapter cross section details section	Wide Preferred: 3 m Minimum: 2.4 m Maximum: >3 m for high volume Potential corridor width: 5-10m (10m preferred) Potential corridor width: 5-10m (10m preferred) See design standards chapter cross section details section	Dependent on context Preferred: 3 m preferred Minimum: 2.4 m or 3 m if winter maintained Maximum:>3 m for high volume Potential corridor width: 10m See design standards chapter cross section details section	As required for stormwater management area access Minimum: 2.4m Typically 4-5 m (vehicle use) See design standards chapter cross section details section	Generally narrow and follow the topography quite closely Preferred: 0.75- – 2 m and 1.2m if required to meet FADM See design standards chapter cross section details	Depends on focus/responsibility of Third Party trail manager
General Maintenance	High level of priority for maintenance activities	High level of priority for maintenance activities	Average priority for maintenance activities. Trails should be clear and maintained for daily use	Low level of maintenance activities, as needed for service access to area	Trail obstructions such as deadfall trees and rocks will remain in place and be removed only where deemed necessary	To be determined on an individual project basis according to managing partners' approach Responsibility of Third Party trail manager
Winter Maintenance	Priority network for winter maintenance	Priority network for winter maintenance	Typically not winter maintained. Dependant on volume and type of use; some sections may be maintained for year-round use	Not winter maintained unless required for stormwater management purposes	Not winter maintained	At the discretion of Third Party trail manager

Map 4 shows the existing and planned proposed trails as they are classified based on the trail classification. Map 4 and Table 4 also show proposed trails that are desired connections. These trails do not have a trail classification identified, and require further study to determine feasibility, route alignment and select the appropriate trail classification. The lengths of existing and proposed trails by classification are also presented in the Table 4.

Table 4. Existing and proposed trail lengths by classification

Trail Classification	Existing (length centreline kilometres)	Proposed (length centreline kilometres)	Total
Primary	33	13	46
Neighbourhood Connector	13	5	18
Secondary	48	21	69
Stormwater Management	12	1	13
Tertiary	13	1	14
Third Party	33	2	35
Desired Connection	N/A	34*	34
Total	152	77	229

*A desired connection total is shown for planning purposes only and it does not mean that desired connections will become trails in the future. Detailed planning, feasibility and route selection will impact if they are implemented and this will affect overall totals.



Trail Classification

Map 4

Existing / Proposed

- Primary
- Neighbourhood Connector
- Secondary
- Stormwater Management Access
- Tertiary
- Third Party
- Desired Connection
- TMP Spine Cycling Network
- Multi-use Path or Cycle Track
- Bike Lane or Route (Existing/Planned)
- City Park
- Natural Heritage System

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Guelph Trail Master Plan Update

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Map produced April 2021.

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Route selection decision making

We will use the trail network illustrated in Map 3 and 4 as our guide. The network plan provides an overall vision for existing and future trails. It should be considered a blueprint or first step as it identifies what destinations or neighbourhoods we want to connect in our city. This Plan provides a map of existing trails, proposed trails and desired connections. It also shows routes between destinations that could be achieved through trails or sometimes connections within the road right-of-way.

The next step in implementing the trail network is feasibility and detailed design. The proposed and desired connection routes were developed based on the best information available at the time the plan was developed. Recognizing that new opportunities arise or that more detailed information is needed to make decisions, we will work collaboratively to implement the trail network. We will adapt as new information becomes available.

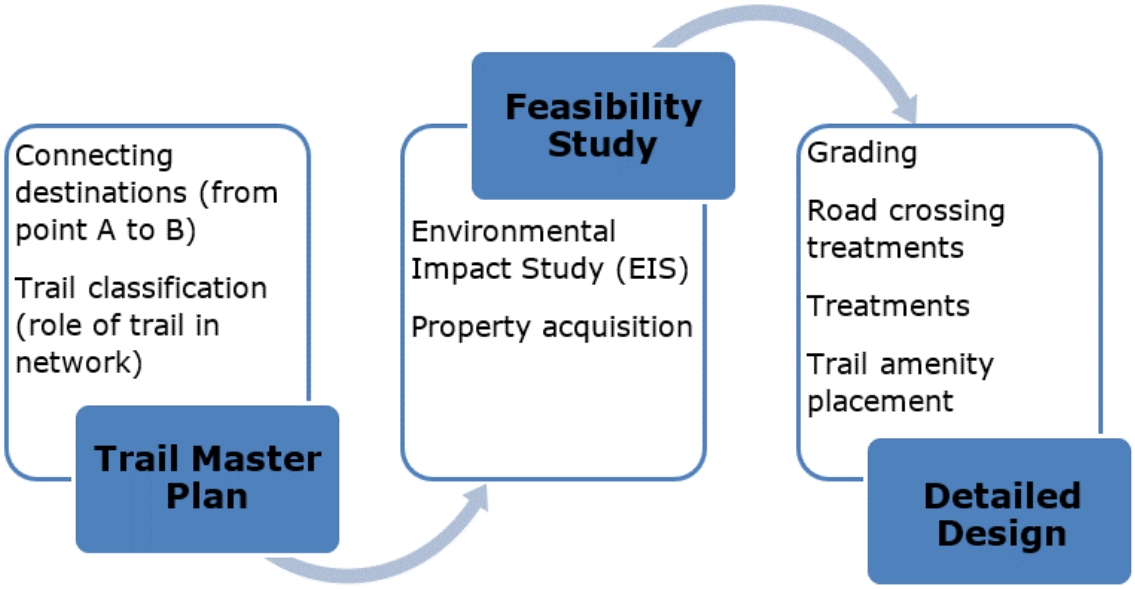
We recognize that adjustments to the trail network will occur from time to time and that this is consistent with the goal of ensuring the network plan is flexible and can respond to changes and new opportunities. There are many considerations that can impact and vary the alignment of trails including:

- Natural Heritage areas and features
- Grade and topography
- Hydrology
- Property ownership
- Planned trail type
- Road crossings and intersections
- Trail access points and trailheads
- Alternative options

When developing a trail route, the intent of the trail should be reflected in the design. The trail intent is outlined in Table 3**.** The design of primary and neighbourhood connector trails should prioritize direct routes to provide a more convenient transportation connection. Secondary and Tertiary trails can be indirect routes that include many curves or more closely provide an experience following the landscape. The intent of the trail should be a key consideration when deciding how a route is implemented.

If the trail cannot be designed in a way that reflects the intent of the trail due to other considerations, alternative routing should be considered. Alternative routing can include working with Transportation Services to develop active transportation facilities within a nearby road right-of-way that provides a link connection for the trail network.

Figure 14. Trail development process



Route planning in areas of growth

Guelph is growing rapidly. This growth includes both areas of growth and within our built up areas. In both cases, the planning of the trail network is seen as a critical component of land development. Trails are key to a successful active transportation and recreational systems.

We recognize that adjustments to the trail network may occur in areas of growth. As we receive development applications (e.g., subdivisions, site plans, committee of adjustment, building permits), we will respond to changes and new opportunities for local connections not identified in this Plan. The Trail implementation process section provides an overview as to the steps in planning and designing trails in development areas. As we develop a neighbourhood or trail network in areas of growth we will adhere to the goals of this Plan and other city policies.

Developers are expected to work through an iterative process with City staff, beginning early in the planning stages to create a trail network within areas of growth that reflects the GTMP. Providing developers with information about the network, desired connections and design expectations will only serve to strengthen this relationship.

Land for trails

In areas of growth, land for trails will need to be acquired by the City. The cross section figures, include guidelines for trail corridor widths. These are approximate sizes—anticipating the width required to accommodate a trail, trail drainage needs, rest stations, signage and amenities. The ranges provide a guide as land securement needs are context dependent.

The potential trail slope should also be considered when determining the appropriate land for a trail—understanding slope requirements to meet AODA legislation and Guelph FADM policies. If the land is not able to accommodate the appropriate trail slope, either a different route alignment or wider trail corridor should be considered.

Finally, in accordance with section 51(25)(b) of the Planning Act, land for pedestrian pathways can be required as a condition of a plan of subdivision. Land for trails may also be required as part of other planning applications.

Alternative routes

If the trail cannot be designed in its intended form due to site specific design considerations, alternative routing can be considered. Alternative routing should only be used in select cases after other suitable trail design alternatives have been explored (e.g., modification to trail design characteristics like width or site mitigations).

The alternative route should provide similar community benefit and respond to the local context. Preference will be for alternatives that meet overall design intent. Alternative routing can include developing a sidewalk connection, multi-use path, or active transportation facilities within road right-of-way that provides a link connection for the trail network.

Planning routes around major barriers

Our Transportation Master Plan (TMP) provides the big picture perspective for our overall transportation network, including the locations of at-grade crossings and intersections as well as important grade separated crossings.

Guelph is a city of railways and rivers which provide unique opportunities but also may block movement and access to all areas of the city. The Speed and Eramosa Rivers provide opportunity for recreation and there is a well established trail network that travels along it in the core of the City. Our rail lines, provided by Guelph Junction Railway (GJR), Canadian National Railway (CN), Canadian Pacific Railway and GO rail, are important for Guelph's movement of goods. The Hanlon parkway is another major barrier in the city that makes it difficult to cross east-west across the city.

The challenge with these features is that they are major barriers that often make it difficult to move smoothly through the city. For pedestrians, the average distance between formal crossings of these features is:

- Railways is a 0.5 km or about an 8-minute walk
- Speed River is 0.8 km or about a 12-minute walk
- Hanlon Parkway is 1.1 km or about a 17-minute walk
- Eramosa River is 1.4 km or about a 21-minute walk

In many of these situations a grade separated crossing may be need to help connect areas of the city and promote active transportation. Grade separated crossings include both trail underpasses and bridges over barriers such as major roads and highways, railways, and watercourses. These barriers are important landmarks for our community but in many ways that also limit route options for pedestrian and cyclists. Trail routing can be significantly impacted by the potential for grade separated crossings.

Figure 15. Artist rending of the proposed bridge linking the Downtown area to St. Patrick's Ward by Allen's Dam (a grade separated crossing)

Grade separated crossings can provide seamless connectivity across these barriers allowing for a high-quality experience for trail users. For road crossings, grade separated crossings can provide more direct, lower delay and low-stress conditions instead of requiring users to cross the road at a nearby intersection.

Building new grade separated crossings can be expensive and complicated. In many cases, a Municipal Class Environmental Assessments (MCEA) is required to understand the impacts. They often involve assessing natural heritage impacts, social/cultural impacts, technical considerations, financial impacts, engineering, and other trail development considerations. Early consultation with partner agencies (GRCA, railways, Hydro One) is strongly encouraged to ensure any potential crossing meets regulatory or safety requirements.

At the same time, grade separated crossings can be transformative for the experience of using a trail.

Special consideration should be given with planning water crossings. Guelph is situated on treaty land that is steeped in rich indigenous history and home to many First Nations, Inuit and Métis people today. The river system is especially important to Indigenous groups—the merging rivers was a meeting point for Original Peoples. Early engagement with indigenous groups to determine support should occur before detailed feasibility studies are started.

Map 3 identifies the locations where crossings may be needed to improve overall network connectively. Additional study will be required to understand the technical feasibility for creating grade separated crossings for primary trails at highway and arterial roadways, rail lines, over waterbodies and within other natural heritage

features such as wetlands. The crossings shown on Map 3 are preferred locations—in some cases they may not be feasible following additional investigation due to policy, legislation, safety requirements, or technical requirements.

Table 5 shows a potential locations grade separated crossings may improve overall network connectivity.

Table 5. Potential grade separated crossings over major barriers

Project	River, Rail or Road
Bridge connecting Emma Street to Earl Street	River
Improvements to the current underpass of the Hanlon Expressway between Hanlon Creek Conservation Area/Preservation Park and Hanlon Creek Business Area	Highway
CNR railway crossing into the Howitt Creek Flood Control facility from Howitt Creek Park/ Inkerman area	Railway
Underpass under Hanlon Expressway at Wellington Road and Speed River connecting Silvercreek Park and Wastewater Services	River/ highway
Crossing of Metrolinx railway into Margaret Green Park from Paisley Road (close to Stephanie Drive and Paisley intersection)	Railway
Bridge over Speed River east of the Hanlon Parkway from Municipal Street to Silvercreek Park	River
Underpass under Speedvale Road that connects Trans Canada to Riverside Park along Speed River	River/ road
Crossing of Metrolinx railway connecting Cityview Drive north and south	Railway

There are also a number of smaller pedestrian bridges shown that may be required to cross small creeks or streams in the city. These are also show on Map 3, but are not considered major barriers. The decision making criteria to prioritize these connections are noted in Chapter 6.

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Interim solutions

Overall, the goal will be to design and construct a complete solution for trail links when they are being implemented. A complete solution includes the full trail width and surface following the ultimate alignment, and trail amenities such as benches and wayfinding signage.

However, in some instances there may be the opportunity and desire to develop an interim solution in order to establish connectivity during the short term while work such as background studies and detailed design is being completed. Potential candidates for interim solutions include: complex trail connections where the ultimate solution requires background studies over an extended period of time, review and approval by multiple partners/agencies is required, where the design is complex and the installation is costly, and where an interim link would connect extensive trail segments together.

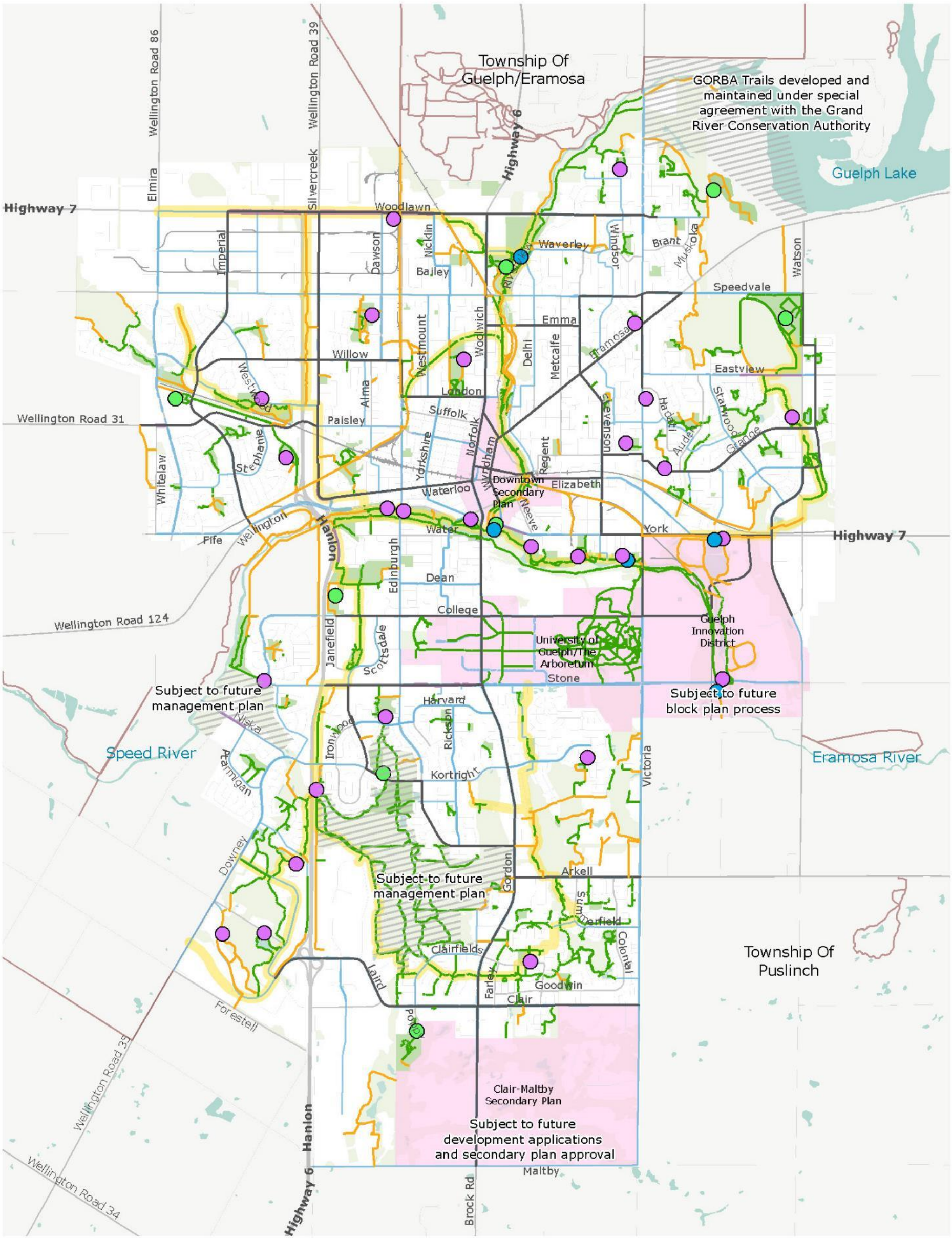
An interim solution would establish the connection with a trail designed to a lower standard, not necessarily following the ultimate alignment. Trail signage and other communications related to the interim link will clearly describe the temporary condition so users can make an informed decision prior to using the connection. The potential for interim solutions will be reviewed on a case-by-case basis to ensure that short term benefits in making the connection balance or outweigh staff and budget resources that would be expended. Interim measures will be used on a limited basis.

Trailheads

Our trail system can be accessed at many a number of locations throughout the City. Trail gateways, or trailheads, vary in scale and amenities provided depending on their context and available facilities.

Trail gateways can be classified as major trailhead or minor trailhead based on anticipated use and context of a trail entry points. Existing trailheads can also be upgraded to reflect their existing current use and needs. More information can be found in Chapter 5.

Map 5 shows locations of trailheads and canoe launches. Some of these locations are existing and some are desired. In order to establish a trailhead or canoe launch the area needs to be studied in more detail to determine volume of use, trailhead or canoe launch needs or if there are any impacts to the natural environment. Map 5 should be used as a planning tool as the trail system is developed.



Trail Network

Map 5

- Major Trailhead
- Minor Trailhead
- Canoe Launch
- Existing Trail
- Proposed Trail
- Active Transportation Network Study
- TMP Spine Cycling Network
- Multi-use Path or Cycle Track
- Bike Lane or Route (Existing/Planned)
- Wellington Trails and Active Transportation Routes
- Secondary Plan Area
- City Park
- Natural Heritage System

0 1 2 km

Guelph Trail Master Plan Update

CITY OF Guelph Making a Difference

Data provided by City of Guelph.
Map produced April 2021.

alta

Chapter 5: Design guidelines

Design guidelines

This chapter provides direction for the design of different trail elements based on best practice. The sections cover conditions that will typically be encountered during the construction of our trail network. The guidelines only consider trails that are outside of road rights-of-way. Trails that are part of the ATN will continue to use the design guidance provided in the Active Transportation Network Study.

This section is organized by topic with trail classification explored within each topic where relevant:

- User types
- Trail classification and design
- Cross-section details
- Junctions and horizontal curves
- Deign speed and horizontal alignment
- Surface treatment
- Trail drainage and erosion control
- Trailheads
- Trail Amenities
- Vehicular access control
- Trail crossings of roadways
- Grade separated crossings
- Barrier free access
- Wayfinding
- Trail closures

1. User types

It is important to understand the different groups of trail users for both the route selection and the concept of the network. People enjoy trails in different ways and different types of trails serve different user needs. A wide, hard surface trail will better accommodate people walking socially beside each other, while a narrow nature trail is intended for people hiking who are more interested in having greater exposure to nature. Design features of a trail, including signage, and the surrounding context are used to communicate the proper use of a trail.

Most trails should provide sufficient space for users to pass other trail users comfortably. Wider trails may also be appropriate for people walking a few abreast. It is also important to consider the operating width that different users may need to comfortably move unobstructed. These widths help to inform the design of trails.

The following guidance is intended to provide a summary of common user types and considerations to support designing for all user types, but is not exhaustive, particularly for uses that are traditionally ignored in design. Additional guidance such as the TAC *Geometric Design Guide* may be considered for additional information about user types as well as consultation with local communities to understand other local user types.

Walking

People walking have a variety of characteristics and the trail network should accommodate a variety of needs and abilities. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception.

Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of cognitive development. Older adults may walk more slowly and may require assistive devices for walking stability, sight, and hearing.

Key consideration: Pedestrians may use a trail for many different reasons, such as socially walking with others, running, bird-watching, or hiking as some examples. Some trail types will be more accommodating for certain uses, and some people will seek out specific trails for certain types of use, such as hiking and trail running on trails with natural surfaces through natural spaces following the landscape.

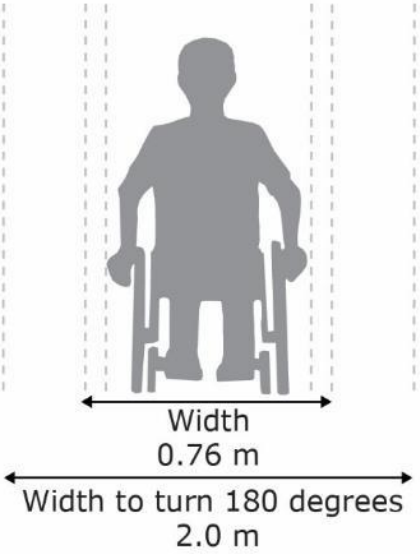
Figure 16. Dimensions of people walking

Users of mobility devices

A mobility device is designed to assist walking or otherwise improve the mobility of people with a mobility impairment. The dimension and maneuvering characteristics of wheelchairs or mobility device is as varied as the people who use them. Guelph FADM provide detailed information on the space and reach requirements for access and circulation.

Key considerations: Maneuvering around a turn requires additional space for mobility devices. Providing adequate space for 180 degree turns at appropriate locations is a required element for accessible design.

Figure 17. Dimensions of person in mobility device

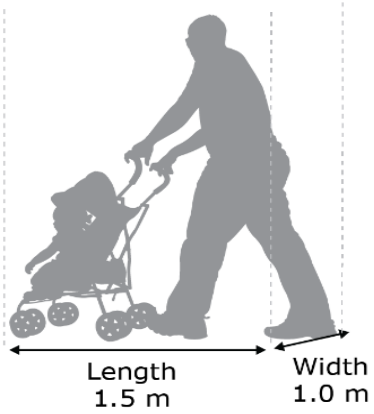


Stroller users

Strollers are wheeled devices pushed by people walking to transport babies or small children. Stroller models vary greatly in their design and capacity. Some strollers are designed to accommodate a single child, others can carry three or more. The design needs of strollers depend on the wheel size, geometry and ability of the adult who is pushing the stroller.

Key considerations: Strollers commonly have small pivoting front wheels for easy maneuverability, but these wheels may limit their use on unpaved surfaces or rough pavement. Curb ramps are valuable to these users. Lateral overturning is one main safety concern for stroller users.

Figure 18. Dimensions of a stroller user

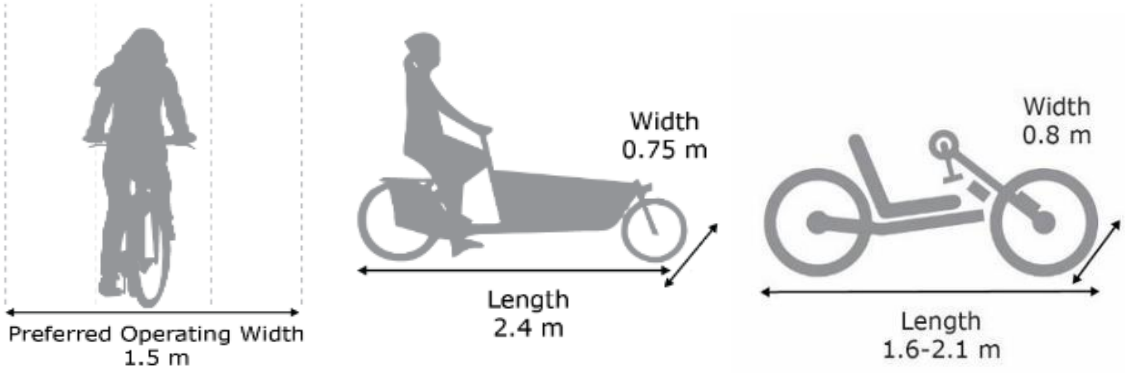


Cyclists

People cycling and their bicycles come in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, recumbent bicycle, cargo bicycle, electric assist bicycle, or tricycle), the behavioral characteristics (level of comfort), and the type of specialized cycling activities (such as mountain biking). People doing specific cycling activities will most often seek out trails that are designed for that sole purpose. The design of a multi-use path (which is intended for most cycling activity) should consider expected bicycle types on the facility and utilize the appropriate dimensions. Including curb ramps, where appropriate, are valuable to these users.

Key considerations: The expected speed that different types of cyclists can maintain under various conditions also influences the design of facilities such as shared use paths.

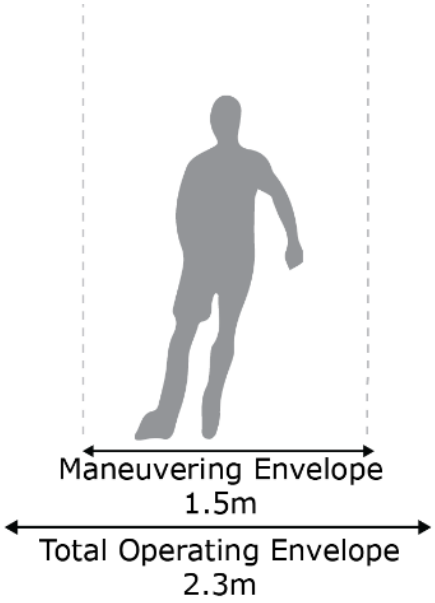
Figure 19. Dimensions of different types of cyclists



In-line skaters and other small wheeled devices

In-line skaters use similar wheels to skateboards and scooters. All these devices require hard, smooth paved surfaces to operate comfortably.

Figure 20. Dimensions of an in-line skater

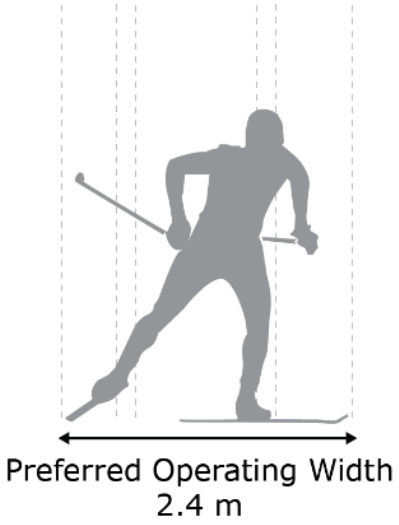


Nordic skiers

Many multi-use trails used for bicycling and walking during warm weather months are suitable for cross-country skiing in winter months.

Key considerations: Cross country skiers prefer gradual curves that allow skiers to glide through them easily. At sharp turns, provide additional trail width to allow skiers to snowplow and negotiate the turn.

Figure 21. Dimensions of a Nordic skier

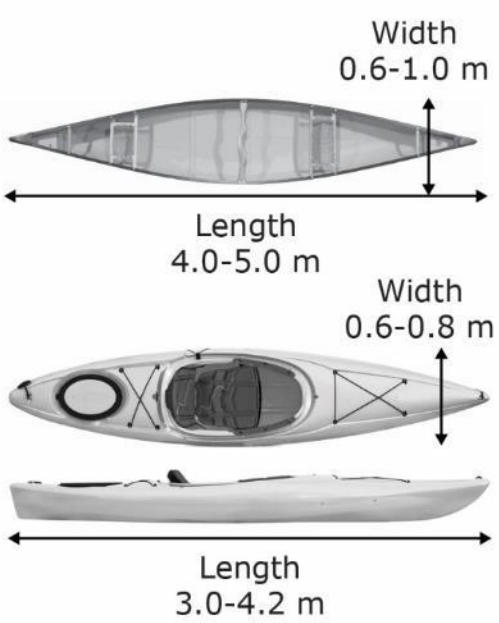


Paddlers

Some trails provide access to watercourses that people enjoy paddling. Consideration for paddlers should be given where trails are used to access boat launches.

Key considerations: The figure below illustrates physical components of a typical recreational canoe and kayak, which are the basis for typical trail selection and design. Non-motorized boat canoe and kayak access sites should be simple, low maintenance, and inexpensive. A stable riverbank or shoreline is typically adequate as long as there is a path that is flat or very gently sloping and firm enough to carry boats. Accessible boat launches have also developed in design and should be considered where feasible to provide barrier-free access to paddling activities.

Figure 22. Dimensions of paddle users' watercrafts



2. Trail classification and design

Chapter 3 provides a definition for each type of trail. Classification of a planned trail and its intended use, maintenance, and location ties directly into design decision-making. Within each design topic, recommendations are specific to trail classification where it is applicable. Throughout, preferred dimensions and design approaches are noted but it must be recognized that some adjustments may be necessary to accommodate trails in certain contexts.

Even while each planned trail will have a classification, it is expected that constraints or specific contexts will mean that trails, or sections of trails, may not fall neatly into one classification for the full length. Examples of context-specific design might be:

- A soft-surface trail (secondary or tertiary) that requires sections of hard surfacing to prevent erosion
- A trail that is primary for the majority of the route, but must be narrowed below primary trail recommended width to accommodate constraints or to pass through an established park
- Reducing or increasing the recommended trail width stated in the classification in a trail exceeding or reducing requirements of their classification for width in order to accommodate specific uses or constraints
- A trail transition area between different trail types/classifications in order to maintain overall network connectivity

The following section identifies unique contexts in addition to the trail classification system that influence approaches to design.

Natural Heritage System and Natural Area Buffers

Trails built in or adjacent to the Natural Heritage System (NHS) require additional consideration. In particular, trails within or adjacent to the NHS should be reviewed and assessed as part of a land natural area management plan or Environmental Impact Study (EIS). Additional information on the planning of trails within the context of the NHS can be found in Chapter 2.

Where trails are proposed in natural area buffers, they should incorporate additional design considerations to be compatible with the management objectives of the buffers, which are primarily intended to protect natural areas such as woodlands or wetlands from human activities, including urban development. Trails may not always be appropriate in natural area buffers. The provision of a trail should be evaluated on a case-by-case basis. The intended trail classification and design details should consider characteristics of the buffer as well as the adjacent natural area or feature being protected.

When evaluating an existing buffer for the addition of a trail, or designing a buffer with intention to include a trail, the following factors should be considered:

- **Natural area characteristics:** The significance and sensitivity of the natural area that the buffer is intended to protect should be considered. Where ecological communities immediately adjacent to the buffer are highly sensitive to disturbance, a trail may not be appropriate.
- **Buffer width:** Depending on the significance and sensitivity of the natural area, a minimum of 10-30 meters should be available for the placement of a secondary trail. It is generally recommended that trails be situated toward the outer portion of the buffer zone. Buffers that are 10 m or more may be suitable for a tertiary trail where the risk of ecological impact is low. Buffers that are below 10 m wide are not suitable for trails.
- **Buffer characteristics:** Retention of the character and function of a buffer (i.e., vegetation community composition, structure, and function) should be considered. An Environmental impact study may be required to support the construction of a trail or trail modification adjacent to a core natural area such as a wetland. A trail may be permitted in a buffer if it meets the policy tests (passive recreational use/feature-specific permitted uses) and site conditions (slope/ topography/ trees/ vegetation/ drainage) are conducive to accommodating the proposed trail without resulting in a negative impact to the natural heritage system's features and functions. If the trail does not meet these tests, it is not permitted.
- **Mitigation ability within the buffer:** The effect(s) of the trail should be manageable through mitigation within the buffer, with the result being no loss of function of the buffer (e.g., additional plantings within the buffer).
- **Mitigation ability within the natural area:** The effect(s) of the trail should be manageable through mitigation within the natural area, with the result being no negative impact to the feature or its function (e.g., providing wildlife crossing structures under trails crossing ecological linkages to facilitate safe movement of amphibians, reptiles and small mammals). Measures that would avoid or mitigate impacts within core natural areas and their buffer zones should be implemented where necessary.

Early consultation with the Grand River Conservation Authority and Environmental Planning will help ensure that policies are being followed and help streamline a successful project.

Separated or twinned trails

In some areas where trail use is high and adequate space exists, it may be appropriate to provide physically separated trails to divide uses or provide different trail experiences in the same area. This may be in the form of providing a bi-directional space for cycling separate from sidewalk or path space for pedestrians, or a transportation-oriented wide trail alongside a tertiary recreational trail closer to an environmental feature (e.g., York Road Park or Silvercreek Park Trail). Separating primary and secondary trail uses from tertiary trail uses, or creating opportunities for both faster and slower trail users to separate within the same trail corridor can address different needs in an area and reduce the potential for conflicts between users.

Where this design treatment is appropriate, separation of primary and secondary trails from tertiary trails can be created by distance, grade, or vegetated buffers. Signs to identify permitted uses for each trail are necessary to ensure the integrity of the separated system.

On-road routes

One of the objectives of our trail Plan is to develop a trail network that is off-road wherever possible. In some areas of the city, particularly the older residential neighbourhoods, public open space is confined to road rights-of-way and centralized parks. Where public land (other than the road right-of-way) is not available and access agreements for trails on private lands are not feasible, it is necessary to provide connecting links using the road network. Where this is the case, design should be based on guidelines in the governed by the Active Transportation Network Study or other appropriate Engineering standard. This may involve separating users into a sidewalk and cycle track, in-boulevard facility, or various forms of on-road facilities. The on-road facility should provide a consistent experience to the trail (i.e., providing a comfortable and safe experience).

Third party trails

Guidance for third party trails is not included in this document as there is a wide variety of possible trail types within that classification. Third party trails should be designed based on available best practices and guidance from reputable sources in accordance with the trail type. For example, the International Mountain Bicycling Association (IMBA) Canada has many resources on their website (IMBA Canada Resources) to support tertiary style third party design and maintenance for mountain biking trails that are also useable by hikers.

Water routes

In Guelph, we are fortunate to have two heritage rivers and, like most other cities, is home to a number of canoe enthusiasts. It is also important to note that our rivers and smaller creeks are also part of the Natural Heritage System. The primary function of the rivers is to support the complex ecosystems that provide habitat for

plants, fish and wildlife. Passive recreation activities, like canoeing, are secondary to this function.

Having water routes as a component of the trail network will provide our City with the opportunity to promote this asset for passive recreation. Several reaches of the Eramosa and Speed Rivers offer excellent flat-water paddling. The confluence of the Speed and Eramosa is in the heart of the city. From this location, it is a flat, easy paddle on the Eramosa River upstream almost to Stone Road and on the Speed River downstream to the dam in Silvercreek Park. Other opportunities exist from Victoria Road downstream on the Speed River to Riverside Park, and downstream of the Hanlon Expressway to Hespeler.

Few if any improvements are required to water routes in these sections. Because of their linear character and several informal access points, these sections of the Eramosa and Speed Rivers are a natural extension of the land-based trail network. Other sections such as the reaches of the Speed River between Riverside Park and its confluence with the Eramosa River contain shallower and/or faster water with obstructions that are not recommended for paddling.

Users of the water routes should be educated about their rights and responsibilities regarding the use of the rivers.

3. Cross section details

Cross section details of trails include their width, horizontal clear zone and vertical clearance, cross slope, and surface and base materials. Trail cross sections are presented in the figures below. While a cross slope is shown on the figures, a trail can be crowned or be aligned cross slope (2 per cent preferred), where the design decision is dictated by the overall grading approach on a site specific basis.

Figure 23. Primary trail cross section

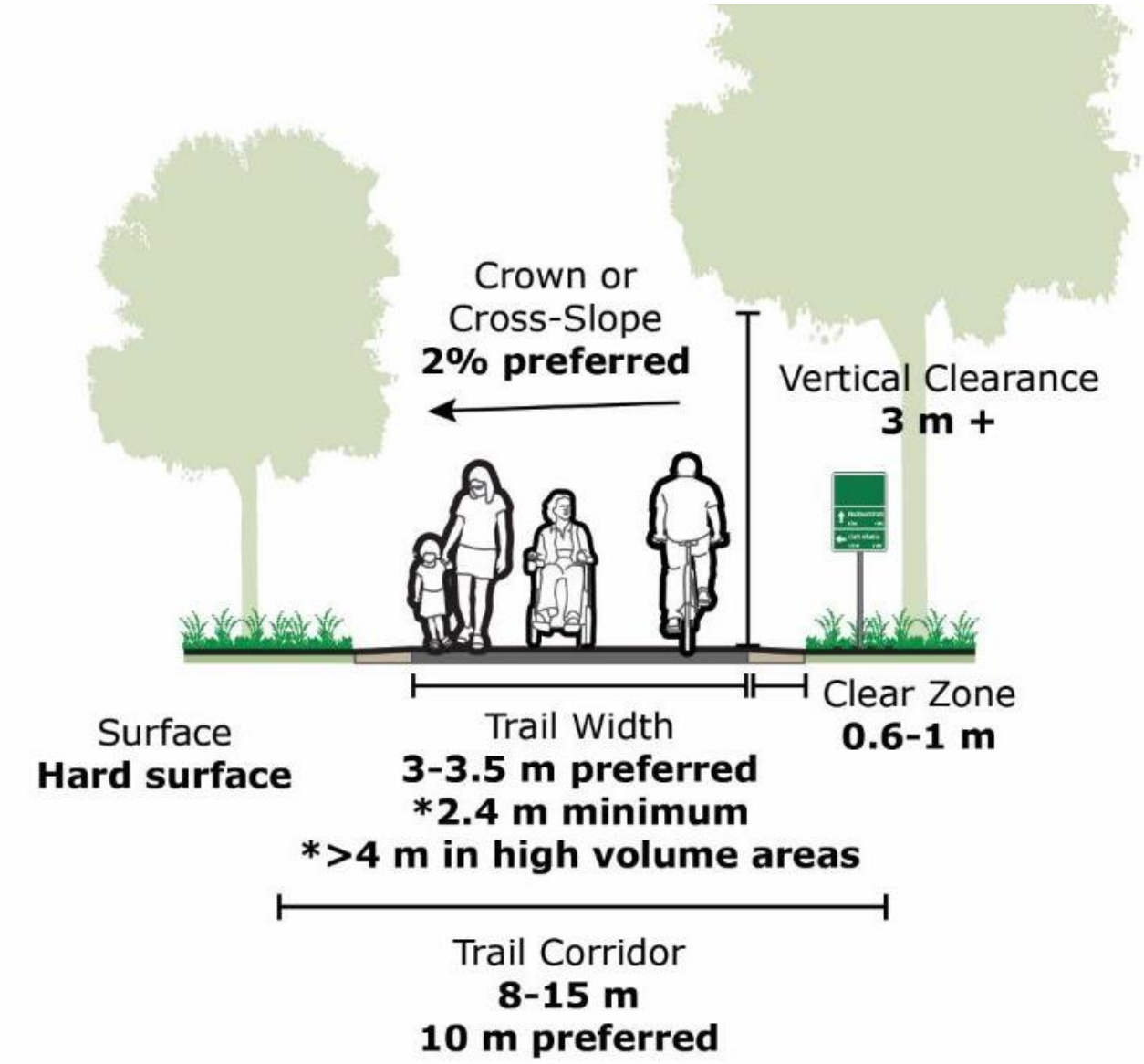


Figure 24. Neighbourhood Connector trail cross section

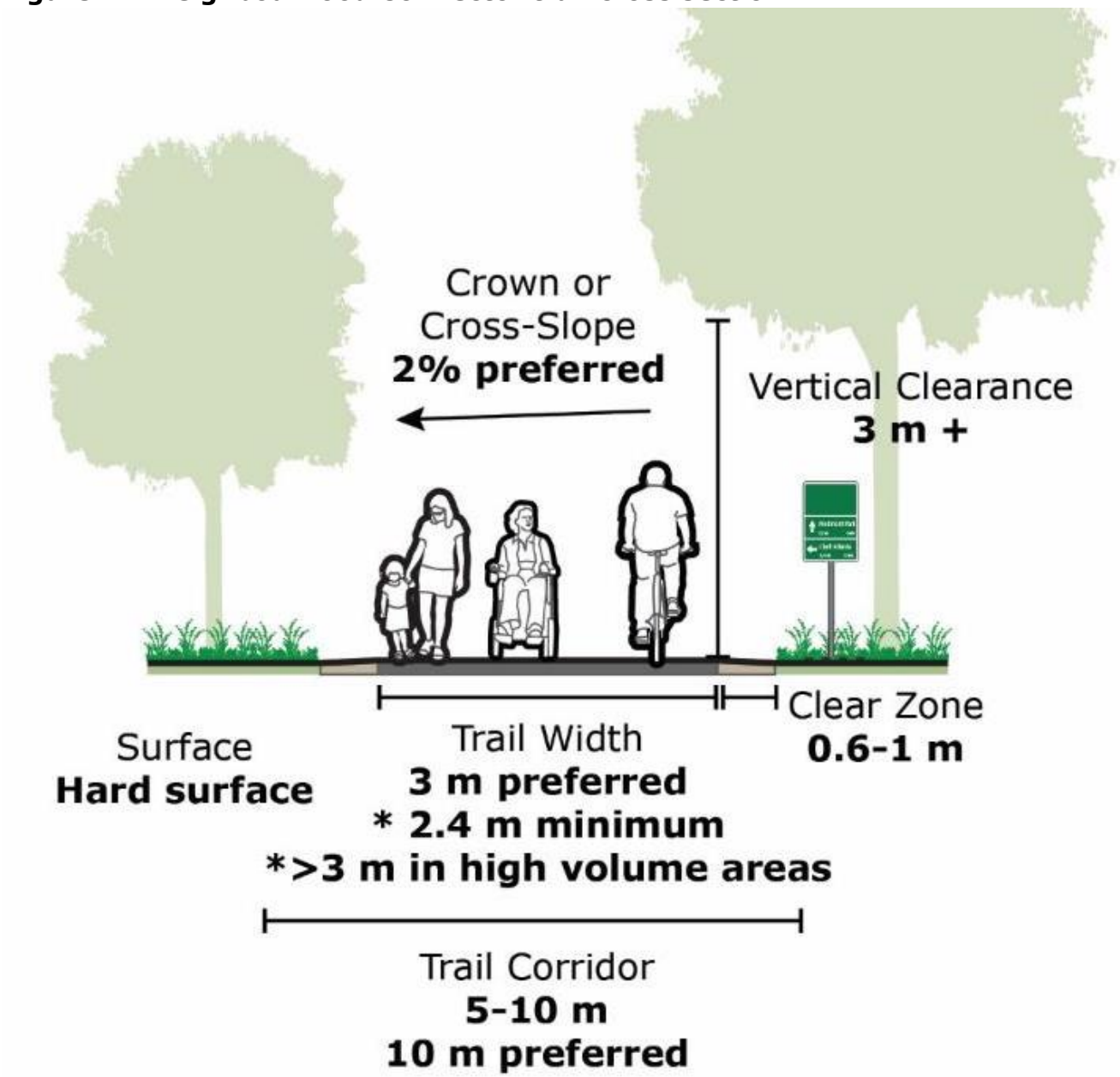


Figure 25. Secondary trail cross section

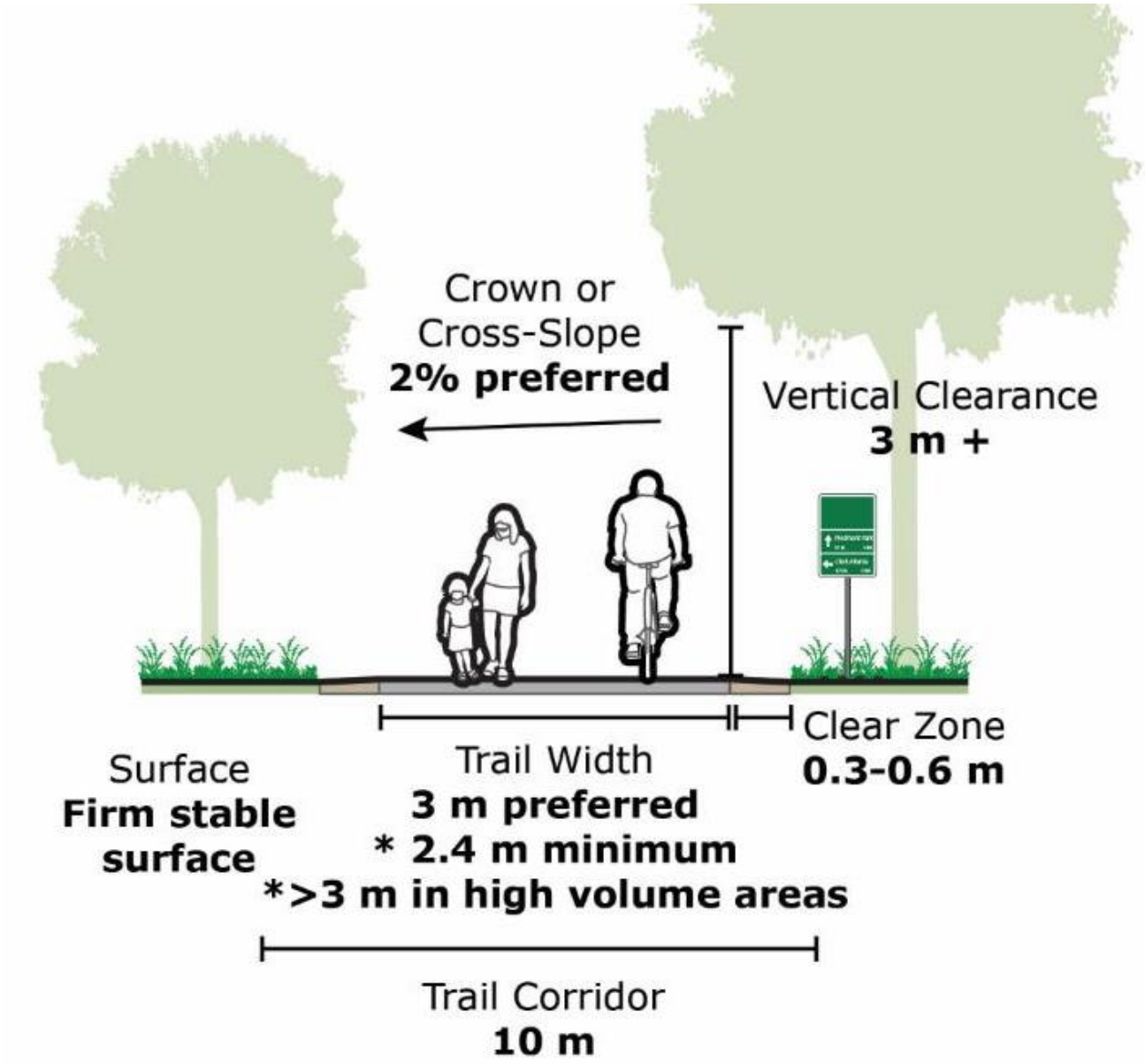


Figure 26. Stormwater management trail cross section

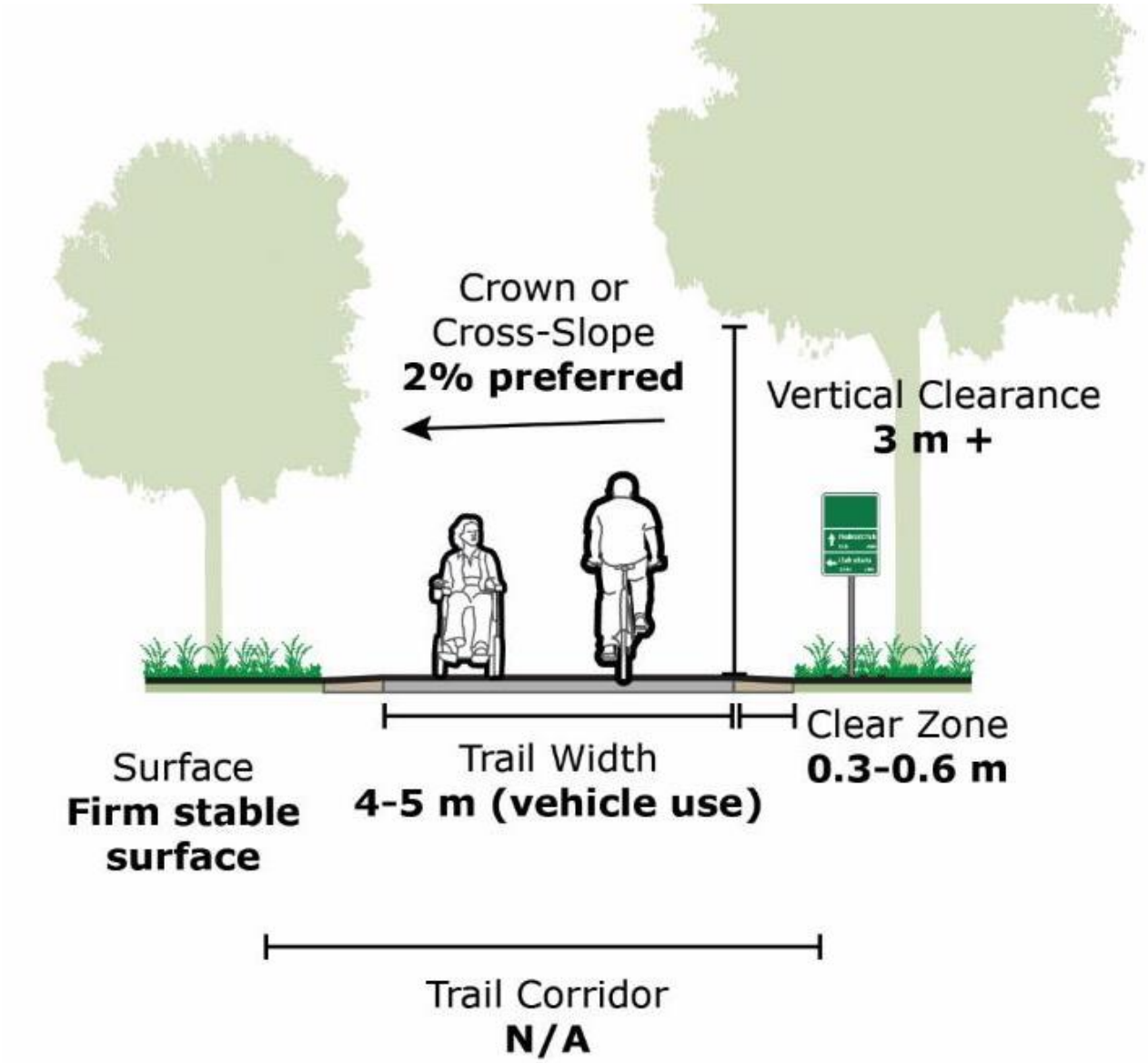
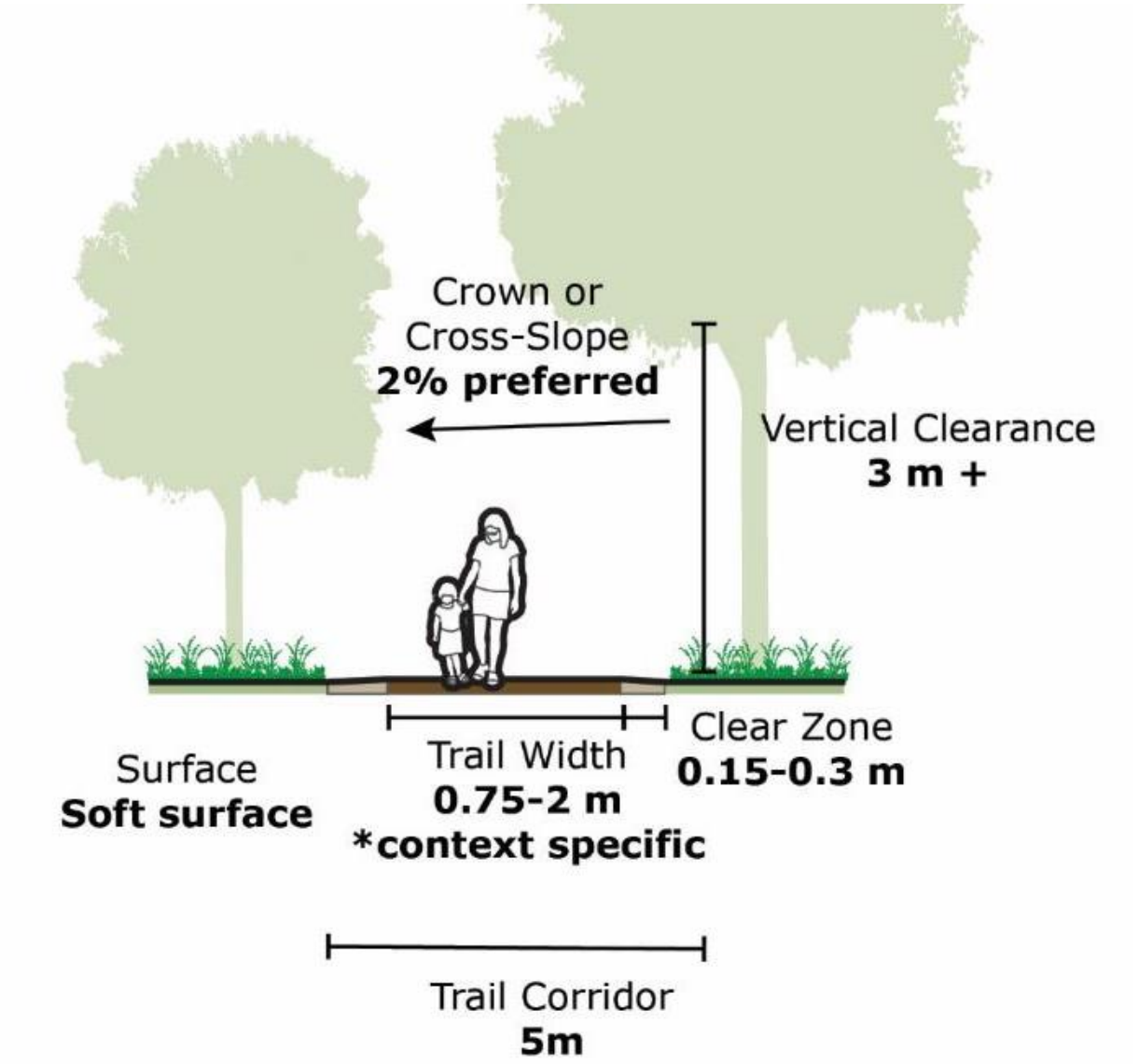


Figure 27. Tertiary trail cross section



Because the full length of a trail can cross a variety of landscapes, ranges are provided for dimensions on widths and clearances for every trail classification. Surface treatment is further detailed in Surface Treatment Section. The width of a trail will impact how a trail can be used and by whom, as well as a trail's environmental impact. For instance, a wider trail will accommodate more types of users and allow them to walk or bike side by side, but will increase the footprint of the trail which may increase heighten impact on adjacent natural areas. Providing the appropriate width and design of a trail encourages users to stay on the trail and

reduce impacts on surrounding vegetation can mitigate impacts by keeping users within its limits.

The ranges provided for dimensions intend to reflect the classification of the trail, but allow for informed decisions to be made on a site-by-site basis in consideration of the context and use of a particular trail or trail segment.

The preferred trail widths and clearances per trail classification are provided in the figures above. Generally, widths and clearances may be reduced to the lower end in a range in constrained locations or to minimize impact to the adjacent landscape. However, designers should consider wider trails in heavily used and congested areas, where there is a high volume of cycling or mixed traffic, or where there are steep slopes or curves.

Horizontal clear zone

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), especially where cyclists are users on the trail. For tertiary trails or those within environmentally sensitive areas, this can be reduced to 0.15 to 0.3 m. Where the minimum clear zone cannot be achieved, object marker signs should be considered on or immediately in front of hazards on both sides where compounding factors of high user speeds, sharp grades, or poor sightlines are present. On asphalt trails, object markers can be supplemented with a 100 mm wide white edge line or yellow centreline to alert users. Some pathways, mainly in the primary classification, may have amenity zones outside of the clear zone to provide space for lighting standards, signs, and other furnishings.

Vertical clearance

Cross sections should also account for various obstacles and vertical clearance. A 3 m minimum height clearance above ground should be maintained. Trails should be designed to have minimal shoulder embankments (3:1 slope or shallower). If adjacent to water, steep drops, or slopes, edge protection such as railings, guardrails, additional space or buffers of additional space or dense plantings zones should be provided. The design of tertiary trails will require a more context-specific and case-by-case approach that may relax guidance to match existing topography and minimize environmental impact. In these scenarios, design is subject to additional study.

Corridor requirements

The cross-section figures also include estimated corridor spatial requirements. The ranges provide a guide as land securement needs are context dependent. The guide allows for planning level expectations to be set regarding trail needs related to drainage, amenities, rest stations, and other key features to designing, building, or upgrading a trail. Consideration for compliance with AODA and Guelph FADM slope requirements should be an important consideration in trail corridor width planning.

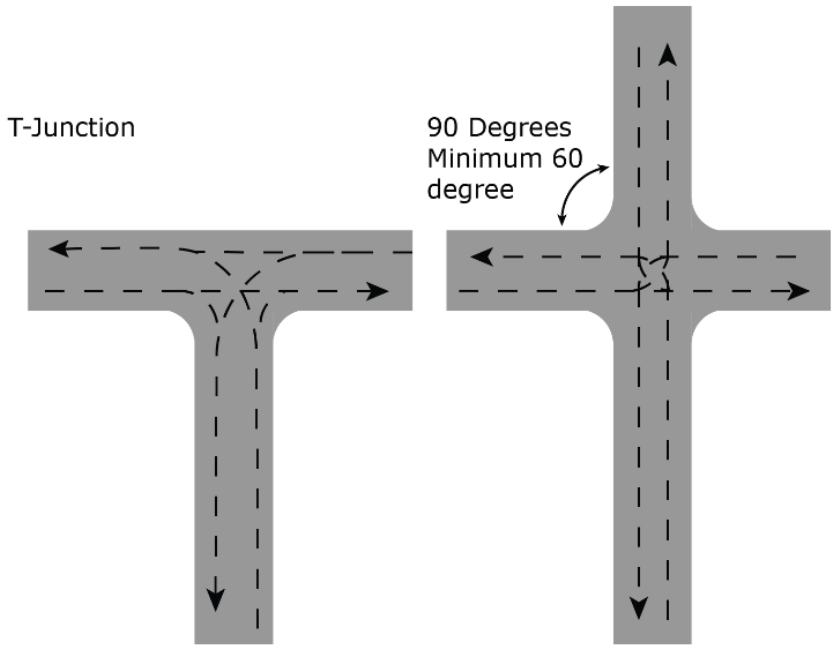
4. Junctions and horizontal alignment

Junctions are locations where trails meet. At these locations, the intended behaviour of trail users should be clear to ensure safe navigation and avoidance of potential conflicts. Tertiary trails, especially those without cyclists or other users that travel at high speeds, may have more relaxed requirements for sightlines and junction design. Junctions can function as resting points and provide opportunities for amenities and wayfinding.

Generally, junctions should:

- Intersect at as close as possible to a 90-degree angle, with trails merging at less than a 60-degree angle discouraged (with the exception of most tertiary trails)
- Provide clear sightlines through vegetation management and by removing obstructions to facilitate eye-contact between users
- Facilitate intuitive flow of users through junctions by providing consistent and clear direction to indicate right-of-way through signage and centerline pavement markings (on hard-surface trails)
- Use wayfinding or warning signage strategically to warn users of an upcoming junction, particularly where a junction occurs immediately after a tight curve or blind spot
- Where accommodating cyclists, provide a minimum corner radius of 5 m to facilitate a turn

Figure 28. Preferred trail junction design



5. Design speed and horizontal alignment

Trails designed to accommodate cyclists, such as primary, secondary and neighbourhood connector trails, should consider a design speed of approximately 20-30 km/hr should be used for primary, secondary and neighbourhood collector trails. Cyclists typically travel at speeds between 15 km/hr and 30 km/hr (up to 50 km/hr downhill). Particularly for transportation-focused routes, cyclists need to be able to maintain their momentum for a viable route. Generally, at 20 km/hr speed, a minimum inside curve radius for horizontal curves is 10 m with a 21 m stopping sight distance which should be increased on downhill sections. Appropriate stopping sight distances should be evaluated along curves and inclines with design speed chosen according to the grade and use of the trail. The **Geometric Design Guide for Canadian Roads (2017) Sections 5.5.1, 5.5.2 and 5.5.3** provide detailed guidance on designing horizontal alignment for cyclists. Where sight distances cannot be provided (i.e., due to constraints or to preserve trees and minimize impacts to the surrounding environment), warning signage (e.g., steep hill, sharp curve, speed limit) should be considered, particularly on hills with a grade steeper than 5 per cent or at locations where passing is dangerous due to space constraints and limited visibility.

Tertiary trails can have much tighter radii to minimize impact and maintain the trail experience. Some special-use trails (e.g., GORBA trails) will have very tight radii in some spots, by design.

6. Surface treatment

Surface treatments for trails can be divided between hard surface and soft surface, but also between typical treatments and those that are used in special circumstances. Overall, the goal is to provide a mix of soft-surface and hard-surface options in the network as users identify a mix of preferences, but the choice of appropriate surface treatment for a trail is dependent on a variety of factors. The chosen surface for a trail will influence accessibility and the types of users that will be able to enjoy the trail. The surface will also influence environmental impact and determine long-term and ongoing maintenance. While the classification of the trail will provide a basis for the design of the trail in terms of intended users, access, winter maintenance, a variety of other considerations will also influence the choice between a hard-surface, soft-surface, or natural-surface trail. Soft-surface trails (e.g., granular) must have a firm and stable surface to meet accessibility requirements.

Surface treatment design considerations

Considerations are described below and are consistent with the Active Transportation Network Study.

Environmental impact and lifecycle cost

Hard-surface trails require deeper excavation for their base as compared to soft-surface trails and 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 of a hard-surface trail once its service life is reached can result in more significant impacts to the surrounding natural area over time, and requires more energy and resources. However, when designing trails in open areas and outside of the NHS, excavation for asphalt trail has generally minimal impacts to surrounding vegetation, reducing the impact.

Soft surface trails are renewed through the addition of material to the surface, rather than stripping and removing materials from site, resulting in lower overall impact. Granular and woodchip surface trails have an indefinite service life by simply adding to the surface as needed.

Repairs and upkeep

Both hard- and soft-surface trails require regular repair and upkeep. Repairing hard-surface trails (i.e., asphalt) typically requires cutting and patching, where soft-surface trails (i.e., granular) require "topping-up" of the surface.

Organic and moist soil environments are more affected by freeze-thaw cycles because of higher moisture content and greater expansion during freezing, hard-surface trails in these environments are more susceptible to buckling. In wooded areas, tree roots can cause asphalt to buckle over time.

However, in open areas, hard-surface trails can reduce repair and upkeep requirements over soft surfaces by controlling encroachment by grasses and reducing requirement for regular surface grading. Hard-surfacing trails on slopes over 4 per cent is also a general practice in our city that helps to reduce erosion.

Surface dependability and access

Surface dependability is a critical performance factor providing active transportation users the confidence that they can use the trail for daily commuting, year-round. In this regard, hard-surface trails are typically easier to maintain and provide wider access to all user types, including wheeled users. Locations that are key routes and link to major destinations, or are a part of the ATN, should generally consider a hard surface to maintain access for the broadest range of to all users.

Typically, hard-surface trails are simpler to clear in the winter via available snow clearing equipment and provide a more reliable surface. While some of the City's granular-surface trails are winter maintained, more freeze-thaw cycles and longer periods of thaw are becoming the norm, resulting in more time in which soft-surface trails are wet and soft, and rendering them less accessible during longer periods over the winter.

Wet leaves and fallen branches and twigs on asphalt surface trails are more likely to result in traction issues than on granular surface trails.

Surface treatment options

With reference to the design considerations, the following section outlines typical hard- and firm and stable-surface treatments as well as other surface treatments that may be applied in special circumstances.

Typical trail surface treatments

Hard surface: asphalt

Asphalt is a hard surface typically used for primary, neighborhood connector, and stormwater trails, particularly those classified as part of the ATN and those representing a higher investment trail. In many cases, asphalt is also used for secondary trails. Because asphalt can be visually intrusive and have more significant environmental impact due to its deeper excavation, it is less commonly applied for secondary trails with exception for the purposes of trail hardening and erosion control in steep slopes. Asphalt is recommended where it is important to provide a reliable year-round experience for the widest spectrum of users, particularly transportation-oriented commuters. Asphalt is also recommended where there is anticipated to be a higher volume of users given its durability, and flexibility and reduced requirement for regular upkeep until the appropriate time for major repairs or replacements.

See ATN Network Study Figure 4.1 for detailed guidance on an asphalt trail cross section regarding surface, base, and sub-base and other details.

Installation and design notes:

- Patterned asphalt is generally not recommended. Patterned asphalt provides visual interest, but can be difficult for in-line skaters, scooters, mobility-assisted devices and small-wheeled users to negotiate. In specific situations (i.e., where urban design requires a textured surface) patterned asphalt or unit pavers may be appropriate over short distances
- Shading of the trail with trees should be considered where possible as this will help reduce radiant heat on the trails during summer months
- Asphalt’s lifespan depends on the quality of the base and the initial installation, but 20-25 years is a reasonable life expectancy

Asphalt mixes have been introduced that use recycled materials such as asphalt shingles and glass. These should be considered in Guelph after experiences are reviewed from other jurisdictions.

Soft surface: stonedust

Stonedust is typically used for secondary, stormwater, and tertiary trails with the exception of those located in the natural heritage system and environmentally sensitive areas where stone dust may be inappropriate from an ecological and aesthetic point of view. They may also be applied for to some primary or neighbourhood connector trails in specific contexts. Stonedust is best used as a top course or as a trail hardening material on trails with a low to moderate erosion potential. Stonedust is a granular material of fine particle size, which, when applied and compacted on a trail surface creates a smooth, fine granular surface. Stonedust requires more regular repair and upkeep than asphalt as it requires "topping-up" of the surface and regular grading of displaced material.

Stonedust is recommended where the trail is intended to serve most users. With the exception of some small wheeled users such as in-line skaters, stonedust provides a granular surface that most users can use with confidence. When properly graded stonedust also meets the accessibility requirement for a firm and stable trail surface. It is also important to note that persons who use mobility assisted devices have reported that shards picked up by their wheels can injure their hands unless gloves are worn, thus providing advanced warning is advised. Stonedust is preferred over limestone screenings also recommended through wooded areas or as a less environmentally impactful option through the Natural Heritage System, or where trails run through less developed or rural areas.

See ATN Network Study Figure 4.2 for detailed guidance on a granular trail cross section regarding surface, base, and sub-base and other details.

Installation and design notes:

- Limestone screenings are not suitable as a base material for wet trails or on soils with low stability and require more maintenance following heavy rainfall than hard surface treatments
- Limestone screenings should not be used in floodplain areas or where drainage flows directly to watercourses

Soft surface: natural surface and woodchips

Natural surface (in situ) is typically used for tertiary trails. It is a desirable and cost-effective solution suited to where the primary focus is protection of natural settings and following the existing topography.

A natural surface is recommended for trails where they are located in environmentally sensitive areas, as earthen surfaces blend visually with the surroundings and generally do not require additional material to be imported. Natural surfaces are well suited for trails that serve more targeted users such as (e.g., recreational hikers and mountain bikers, etc.). Natural-surface trails are not well-suited for to winter maintenance and can be soft during certain times of the year impacting reliable year-round use.

Installation and design notes:

- Poorly drained and permanently wet soils generally do not make for good trail surfaces, often leading to trail widening and/or trail braiding
- Existing soil conditions will influence the decision to use earth natural surfaces in situ or to import materials

Base course/other gravels

Gravels are best used as a base course. They can also be useful for trail surfacing, trail hardening, repair and rehabilitation in certain locations. 'A' gravel contains consists of fines (sand) and crushed stone up to about 20 mm in diameter. It can be used as a surface course on tertiary trails in locations where the stability of the trail surface requires improvement or where erosion is a problem. The use of recycled concrete material should be considered per Ontario Provincial Standards Specification 1010 for granular 'A'.

The following are some selected gravel products along with some recommended applications for each as a base product or as backfill:

- **'B' Gravel** contains fines (sand) and crushed stone or screened stone up to about 150 mm in diameter. It makes a good trail base material and is suitable for trails in low, wet areas where boardwalks are not necessary. A surface course of a finer granular should be applied
- **Pit Run** contains particles that vary widely in size and mix can vary from one load to another. It is less costly than screened or crushed materials but the particle size can vary widely. Pit run can be used to create a solid base upon which a finer surface course can be applied
- **Clear granular** is useful for backfilling retaining structures and creating drainage features along and across the trail. It is not recommended for trail surfacing because the absence of granular fines prevents the compaction necessary for a stable surface

Other surface treatments (special circumstances)

Hard surface: concrete and unit pavers

Concrete applications are only applicable in special and context-specific circumstances. Though it provides an extremely durable surface and more flexibility for aesthetic appeal, it has less surface flexibility and high installation cost. Concrete is not generally recommended for trails due to cracking, and discomfort for users due to breaks through expansion joints. Similarly, unit pavers are costly and experience differential settlement over time which may not satisfy accessibility requirements and result in poor surfaces for persons using mobility devices.

Concrete and unit pavers may be considered in the case of:

- Plazas at trailheads for a pedestrianized environment
- Urban design components for color and/or textured surfaces

Soft surface: bark mulch and wood chips

Bark mulch and wood chips may be appropriate for walking and hiking trails designated as tertiary trails. They are well suited to areas where tree roots are exposed. However, they tend to migrate under heavy foot traffic and regular maintenance (i.e., topping up) is necessary to keep an adequate cover of wood chips in place. Mulches are very difficult if not impossible to navigate for most wheeled users with the exception of mountain bicycles, therefore the use of mulched surfaces is only appropriate in specialized locations. Where only pedestrian uses are permitted, the use of wood chips and mulches can help to discourage non-permitted users.

Erosion and trail hardening with surface treatments

Trail surfaces may vary where erosion is a problem. A consolidated list of recommendations is provided below for trail surface considerations. Collecting water and diverting it from the trailbed at regular intervals is the most effective way to reduce or prevent erosion. More information on design for trail drainage is found in Erosion and trail hardening section.

- Asphalt can be used as a hard surface for secondary trails for maintenance and erosion concerns including on long or steep slopes
- It is important that asphalt extends beyond the bottom of a slope for several metres rather than stopping right at the bottom of the slope. Extending the asphalt helps to dissipate surface runoff and to control erosion and prevents ruts from forming where the asphalt meets the granular.
- Screenings can be used as a trail hardening material on secondary or tertiary trails with a low to moderate erosion problem (note, they are not suitable as base material for wet trails or on soils with low stability and require more maintenance following heavy rainfall than hard surface treatments)

Granular 'A' can be used for secondary and tertiary trails for trail hardening/maintenance/erosion concerns. Gravel drains well and provides good traction where used as a surface course. Crushed products are preferred over screened products as the angular surfaces tend to interlock, creating a more stable surface. Over time the surface gradually ages and becomes covered with leaf litter and loses its “new” look, eventually taking on the appearance of a natural trail surface. In many tertiary trail applications, gravel can be mixed with the existing natural surface material to form a solid, stable trailbed.

7. Trail drainage and erosion control

Dealing with surface runoff is one of the most significant and persistent maintenance challenges for trail managers. Two of the most common locations where trail erosion takes place are on sloped trails and in transition points between hard and soft trail surfaces. Collecting water and diverting it away from the trailbed at regular intervals, as described in the examples below, is the most effective way to reduce or prevent erosion. Overall, drainage systems provided through trail design should aim to mimic natural hydrologic processes to maintain hydrologic functions and minimize impacts associated with erosion.

A trail can be crowned or cross sloped, where the design decision is dictated by the overall grading approach on a site specific basis. However, a maximum 2 per cent cross slope should be used on all trails and shoulders to allow water to shed across the trail. The target slope for accessible routes is 2 per cent per requirements in the FADM. A maximum slope of 5 per cent can be considered for other routes but is only recommended in special circumstances. The running slope is also important for drainage. Because a flat trail or spot location will collect water, flat sections should be limited to transitions and with an adequate cross slope provided. The maximum running slope for accessible routes is 4 per cent. If a trail does not meet these requirements consultation with the Accessibility Advisory Committee is required.

An effective way to keep water from accumulating on or flowing over the trail is to include an interceptor uphill swale on the upslope/uphill side of the trail with periodic culverts to direct water under the trail. Spreader swales can be used with culverts to help preserve the existing drainage patterns and dissipate water flowing from culverts more uniformly. It is important when designing swales and culverts to preserve natural drainage patterns to minimize impacts to natural areas. French drains or cobble trenches with soak-away pits are another tool to consider when trying to keep water from eroding trails.

At low points, special attention should be paid to diverting water away from the trail surface to prevent ponding, especially on winter-maintained trails where these areas can turn to ice and pose a safety hazard. Outfalls and slopes susceptible to erosion should be stabilized with riprap or dense vegetation where appropriate. Where trail running slopes exceed 5 per cent on a firm and stable trail, a hard surface, such as asphalt, should be considered to prevent erosion of the trail. Grades above 12 per cent must be a hard surface to prevent erosion of the trail. Additional information on trail surface treatments for erosion control based on trail classification can be found in Surface treatment section.

8. Trailheads

In Guelph, our trail network can be accessed at a number of locations throughout the City. Trail gateways vary in scale and amenities provided depending on their context and available facilities. The following section describes four broad

categories of trail gateways as well as canoe launches, and provides the key features and considerations that should be incorporated into their design.

Most trail gateways are designed with a grouping of amenities. Typically, the more prominent and significant the trailhead, the more amenities and gathering space is provided. In most cases and at a minimum, the trail gateway is articulated with a sign identifying the trail. This is the first opportunity to introduce our Guelph trail brand logo and character of the trail network. This is especially important where trail gateways are at the City boundary provide a connection to neighbouring municipalities.

Trail gateways can be classified as major trailhead, minor trailhead, or minor access points in planning based on anticipated use and context of a trail entry points. Existing trailheads can also be upgraded to reflect their existing current use and needs. The decision to establish a gateway as a major trailhead, minor trailhead, or minor access point will depend on available right-of-way and property, expected or existing volumes of use, and the specific needs in an area as identified by the community or a larger planning exercise.

A detailed description of the design of individual amenities is detailed in Trail amenities section.

Major trailheads

Major trailheads are large staging areas with meeting and resting spaces and the largest suite of amenities, and occasionally viewing areas. These are significant entry points to the trail network and are generally proposed at Regional parks, major destinations, or at convergences of significant trails. Often, they are actively managed and programmed. Because of their high visibility and proximity to other recreation facilities, they help to raise the profile of the trail network. Major trailheads are designed to be used as starting points for trail 'excursions' for residents and visitors. Trail excursions are trail trips that might involve a longer distance, a route to a specific tourist destination, or loops within the City, such as to Guelph Lake, Preservation Park/Hanlon Creek Conservation Area or other surrounding communities through the Trans Canada Trail.

Key design elements for major trailheads include:

- Dedicated staging and gathering space
- Urban design improvements, such as gateways or public art features are appropriate
- Gateway signage with full suite of trail directional and interpretive signs
- Lighting (context-specific)
- Seating, picnic, and informal activity space options that provide for gathering space, architectural features and trees to provide shade
- Entrepreneurial facilities (i.e., canoe rentals, bicycle rentals, food concession stand) may also be available

- Parking in accordance with anticipated level of use and with stalls and lanes that accommodate loading and unloading of equipment but do not inhibit or reduce active transportation access to trails
- Accessible parking spaces in accordance with the Facility Accessibility Design Manual (FADM)
- Connections to the trail network from the existing street infrastructure that are intuitive and accessible (e.g., making use of curb ramps)
- Washrooms
- Drinking water/refreshments
- Secure bike parking facilities and bicycle repair stations
- Waste receptacles
- Vehicular Access Control if necessary, see Vehicle access control section

Minor trailheads

Minor trailheads areas are located throughout the City and are important access points to the system. These also feature staging areas but are less prominent and significant in comparison to major trailheads. Ideal locations include community parks and other publicly owned properties. In some locations it may be possible to share parking and with other community providers of recreation, provided shared-use agreements are executed.

Key design considerations for minor trailheads are:

- Dedicated staging and gathering space where appropriate
- Gateway signage with trail directional and interpretive signing
- Lighting (context-specific)
- Seating for resting and gathering at trailhead
- Parking for at least 3-5 vehicles, in accordance with anticipated volumes and use
- Accessible parking spaces in accordance with FADM
- Connections to the trail network from the existing street infrastructure that are intuitive and accessible (e.g., making use of curb cuts, where appropriate)
- Washrooms (permanent or seasonal temporary) where possible to direct and/or share with nearby facilities
- Drinking water/refreshments where possible to direct and/or share with nearby facilities
- Secure bike parking facilities
- Waste receptacles
- Vehicular access control if necessary, see Vehicle access control

Minor access points

Minor trail access points range in scale from limited trailheads at rural gateways to street crossings which provide access to trails. Minor access points are any formal entryways into the trail network, but do not facilitate community or meeting space.

Their role is to identify the trail and provide necessary information. On occasion, some amenities are provided but are often limited at these locations.

- Gateway signage with trail entry indicated
- Seating should be provided where possible for resting and gathering at access point
- Connections to the trail network from the existing street infrastructure that are intuitive and accessible (e.g., making use of curb cuts, where appropriate)
- Secure bike parking facilities (context-specific)
- Waste receptacles (context-specific)
- Vehicular access control if necessary, see Vehicle access control

Canoe launches

Canoe launches are access points to water routes. These locations require minimal upgrades, include parking (ideally which may be combined with existing parking areas in some locations), access to the river's edge and signage along the routes to draw attention to potential hazards. It is important to manage impacts at canoe launches by demarcating space to minimize erosion and impacts to shoreline vegetation, and to avoid serious harm to fish and fish habitat. Depending on the location, canoe launches may employ a range of amenities and may fall under the category of major or minor trailhead with associated facilities, or may be simple access points. Design must account for permitted uses within the Natural Heritage System and floodplain when considering implementation of structures. Canoe launches are to be located in areas that minimize erosion and impacts to the shoreline.

Key design considerations for the design of canoe launches are:

- Compliance with our Natural Heritage System and floodplain policies and permitted uses
- Compliance with other applicable legislation and policies such as the Conservation Authorities Act, Fisheries Act, Endangered Species Act, etc.
- Compliance with AODA and Guelph FADM
- Drop off and pick up location (e.g., time limited loading zone) should be located as close as possible to the launch point so the portage distance can be minimized, while parking can be available nearby
- Portage route between the parking area and launch ramp should be relatively straight with no obstructions
- If vehicular access control is found to be necessary, bollards or swing gates are preferred over offset gates at these locations
- A 3 to 4 m wide launch area at the river's edge will provide adequate room for canoeists/kayakers and other users to load and unload. Where necessary, this width can be reduced to 2 m

- Signing along the shoreline upstream and downstream of the launch point will help to direct users to the dedicated launch point, minimizing unnecessary damage to the shoreline in other areas

9. Trail amenities

Trail amenities in the trail network can take the form of site furnishings along the trail, at trail linkages, or at gateways. They are important features for trail users and perform a variety of duties that improve the function and operation of a trail, such as providing landmarks for wayfinding, demarcating sensitive environments, or offering community services. These elements help to create an identity for each trail and to designate trails as public spaces in our city.

Design and selection of elements along the trail should be comfortable, universally accessible, durable with low-maintenance requirements, and appropriately placed. The design of trail amenities will comply with the City of Guelph's Facility Accessibility Design Manual (Accessibility Advisory Committee consulted as required) and the Zoning Bylaw and GRCA permitting requirements. Additional information on meeting these requirements is included for each typical amenity below. This section describes the design of different amenities with guidance on placement along the trail. Guidance for selection of amenities at different types of trail gateways is located in Trail Gateways section. For guidance on signage and wayfinding, see Wayfinding section.

Washrooms and water provision

Washrooms and drinking fountains/water bottle fillers are important for trail users and should be provided in strategic locations.

There are two types of washrooms in parks and open spaces: permanent three season washrooms and seasonal portable washrooms. Washrooms have high capital and operating costs and should be used in strategic locations where they can serve a large number of people or multiple users (e.g., like trail user, sport field user or event user). Priority should be given to major trailheads or minor trailheads and making use of existing facilities such as at community centres or major parks.

As trail use continues to increase, and as the network becomes denser, it may be necessary to provide additional facilities. Where this is necessary, amenities are to be placed where they can be easily accessed for maintenance, consistent with the Zoning Bylaw, and should be designed using the Crime Prevention Through Environmental Design (CPTED) approach. Improving the availability, location and accessibility of public washrooms is a way we can make Guelph more accessible and improve overall user experience.

Waste receptacles

Waste receptacles are an absolute necessity throughout the trail network and should be provided in key strategic locations. They should be located where they

can be easily monitored, serviced and away from seating areas to avoid impacts from unpleasant smells or insects. Where receptacles are placed, they must be added to systems of monitoring for regular emptying and maintenance.

The placement of waste receptacles should be prioritized at:

- Trail entrances
- Mid-block crossing points
- Trail gateways (all types)
- Trail junctions
- Rest areas or viewing areas
- Where other amenities are placed (benches, interpretive signs, etc.)

Waste receptacles in parks and open spaces are typically large carts located on firm level pads. The carts should be large enough to contain the anticipated amount of waste, so that overflows do not cause an environmental or tripping hazard. There should be sufficient room in front of the receptacle to not reduce the width of an accessible path of travel. In key locations, alternate receptacle designs may be considered but serviceability, capacity and work safety should not be sacrificed. Similarly, there are some locations where large carts are not currently in use and should be replaced as part of regular infrastructure renewal.

Seating and rest areas

Seating provides the opportunity to pause along the trail at points of interest or just to rest. Seating areas should be located at trail entrances, trailheads, rest areas, viewing areas, trail junctions, after and throughout long slopes or where other amenities are placed. Heavily used trails and higher order trails typically require a higher density of seating opportunities.

Benches are the most common form of seating, but walls of appropriate height and width, large flat boulders, and sawn logs are some alternatives depending on the trail setting. Seating options and frequency of rest areas must adhere to the FADM and the relevant resolution published with the Accessibility Advisory Committee.

Where seating/rest areas are planned, the design should incorporate:

- Appropriate seat height
- Accessible ground surface in a contrasting ground finish material to identify functional change
- Expanded level area with a curb or other appropriate wheel stop for mobility devices (on applicable trails—for example wheel stops would not be provided at seating nodes on tertiary trails)
- Protection of existing trees and natural elements
- Offset from the edge of the trail so to avoid obstructing the path of travel
- Shade, where feasible (through trees or shade shelters)

Bike parking and end-of-trip facilities

Adequate bicycle parking facilities at key locations throughout the network will allow trail users to secure their bicycles while pausing along the trail, enjoy nearby attractions, reach their destination, or take a trail journey on foot. Key locations include trail gateways, major trail junctions, and viewing areas. Proper bicycle parking facilities should also be considered where multi-use trails intersect with pedestrian-only trails. The provision of bicycle parking facilities in these locations along with signage explaining the reasons for restricting bicycle use will help to discourage cycling on unsuitable trails, reinforce trail etiquette and encourage the proper use of the trail network.

The design of bicycle parking units varies widely. In general, Inverted U and Post and Ring racks are strongly recommended as the best options. They should be placed into a hard surface, typically 0.9 m apart (when rings/U's are parallel) and at least 0.6 m away from pathways or physical barriers and offset from the trail's lateral clearance.

When choosing a type of rack or configuration, it is important to consider the needs of all users and bicycle types as it relates to various sizes, attachments such as bike trailers, and needs. For example, cargo bicycles and adapted cycles may require additional space, or electric bicycles would benefit from charging infrastructure when parked. Preferred units are easy to use without written or pictorial instructions, support the frame of the bike, not the wheel alone, and can accommodate recumbent bicycles and/or hand-propelled bicycles. Low profile racks that support the bicycle by the front wheel only are not recommended as they can damage the bicycle.

For additional information on characteristics of well-designed bike racks, refer to **Ontario Traffic Manual Book 18: Cycling Facilities.**

End-of-trip facilities, broadly defined as dedicated places and amenities to support the use of active modes of transportation, should also be considered in key locations and where they can be paired with other City facilities. Bike repair stations or toolkits should be piloted on heavily used trails.

Lighting

Lighting for built and planned trails should be analyzed per segment context with full consideration for safety needs, wildlife habitat, trail function, cost-benefit, and maintenance commitments. Lighting design should refer to Guelph's Lighting Guidelines for Lighting Plans (May 2019). Lighting provides a viable choice for high use/primary trails especially later in fall, over winter and early spring when daylight hours are reduced. When properly designed and installed, it can be an effective tactic for extending use. Properly lit trails should be easy to observe, eliminate potential hazards at intersections or access points, attract use and enhance other environmental design techniques. Few municipalities light their entire trail

networks. Typically, lighting is not applied for remote areas, trails with low use, or where there is minimal development.

The following are circumstances where lighting could be considered:

- Where it is an important part of the urban design (e.g., the Alf Hales trail adjacent to the River Run Centre as lighting is an important aspect of the design of the space, the area is often programmed for nighttime activity, and it is relatively easy to observed from nearby roads and buildings)
- Where trails are in developed locations that function as primary connections to transit or commercial spaces (primary trails and neighborhood connectors)
- Key school routes
- At trail gateways or locations with major amenities such as parking areas or restroom facilities
- At crossings with motorists
- At trail tunnels and underpasses
- To extend use of a popular area to improve visitor experience

Where the decision is made to provide lighting, quality and intensity of lighting should be consistent with appropriate standards. Trails should not be only partially lit between access points. Where a trail is part of the ATN, see ATN guidance. The following factors may influence the decision not to light a trail and should be considered:

Cost

- The high cost to install the underground power supply and the initial installation of the fixtures (and options that do not require underground conduit and power supply such as solar lighting)
- The added operating costs to monitor, maintain lamp fixtures and replace broken and burned out bulbs on an ongoing basis

Energy and light

- Potential light pollution, especially in residential areas and adjacent to natural areas
- Potential energy consumption, though high efficiency LED and solar powered fixtures are now available, many cities and organizations are choosing solar power to light their outdoor public spaces which have become widely available in recent years and include many advantages over traditional wired lighting
- Potential effects on wildlife including potential negative effects on nocturnal and/or crepuscular wildlife, as well as migrating birds
- Lighting should be dark sky compliant

Safety

- Inability of the human eye to adapt to the high contrast resulting from brightly lit and dark shadowed areas side by side
- Lighting leading into unlit areas can lead trail users into dangerous situations (slopes, etc.)
- Properly designed and installed, lighting can be an effective tactic for reducing conflicts between users and extending use of heavily used trails

10. Vehicular access control

Vehicle access control should be used only where necessary to prohibit access by non-permitted trail user groups. The mechanism used for access control must consider service vehicle access where it is required and accessibility (see FADM) by providing required minimum clearway.

Options for vehicle access control are detailed below and organized in order of preferred implementation. The ultimate design will depend on the context of the trail access point but should consider the following guidance. Overall, physical barriers should never be a default treatment, and should not be used unless there is a demonstrated danger of access by unauthorized vehicles.

All control strategies must maintain a minimum 1.22 m of clear space to not restrict access for cyclists or people using a mobility device.

No access control

The default design approach should be no access control. Vehicular access control should only be implemented where it is necessary or where there is a demonstrated danger of access by unauthorized vehicles. Implementation of vehicular access control should not be a default strategy in design.

Alternatives to physical barriers

Where vehicle access control is necessary, the preferred and default option is to avoid the use of physical barriers. Alternative strategies use signage (e.g., standard trail rules sign) or channelization via a barrier vertical curb designed to restrict vehicles. Ensuring that a facility is clearly presented as a trail will assist with work towards preventing unauthorized vehicle access.

Single swing gate

A single swing gate is the preferred barrier option for installation in the network. This option provides ease of opening for service vehicles and ease of passage for permitted trail user groups. They should only be installed where there is a demonstrated need for a physical barrier and alternatives are not possible. The Guelph standard should be used which has been tested for cane detectability. Implementation should be site specific.

Installation notes:

- See construction detail for implementation
- Include reflective treatments for visibility during in low light conditions

Offset swing gate

This type of installation, which consists of two swing gates offset from one another, is present in several locations including Pine Ridge Estates and Riverside Park. Existing offset swing gates can remain in place provided that they are adequately spaced to allow free flowing passage by all permitted user groups and permit passage without dismounting. Offset swing gates may create conditions that are difficult to negotiate for users such as cyclists pulling trailers and users with mobility-assisted devices. These are only to be installed in exceptional circumstances (e.g., railway crossings which are regulated by Transport Canada).

Bollards

Bollards are currently installed as either fixed vertical wood posts (150x150mm pressure treated timber, or peeled cedar posts) or vertical metal posts beyond the limit of the trail and removable metal posts across the trailbed. Bollards should be replaced with single swing gates where possible during upgrades (if required). If bollards are considered, due to cost or other considerations, the need for service vehicle access should be infrequent or unnecessary because removable bollards prove difficult to maintain.

Installation notes:

- Install 400 mm from the trail end, including any intersection of the trail to another walkway
- Install an odd number of bollards (usually 1 or 3) to create even number of "lanes for trail users to follow
- Ensure bollards installed across trailbed are removable where service vehicle access is necessary
- Include reflective treatments for visibility during low light periods
- Use reflective treatments to be easily visible in low light conditions

11. Trail crossings of roads

Where trails meet roads, crossings must be safe, comfortable, and intuitive for all users. Preferably, trail alignments are directed towards existing intersections where the crossing can be integrated into the existing road intersection, especially for arterial and busy collector roads. The distance to a signalized or controlled intersection may be significant and longer than it is reasonable to expect trail users to detour. The absence of a convenient crossing may result in risk-taking behaviour. Where redirection to an existing intersection is not practical or feasible a road crossing should be considered. This section identifies design principles for crossings and guidelines to help manage where pedestrians, cyclists, and vehicle traffic intersect.

Grade-separated crossings provide the highest level of separation from conflict and considerations for their implementation are detailed further in Planning routes around major barriers section and Grade separated crossings.

Roadway crossing design requires site context analysis and must be implemented based on engineering evaluation. For detailed design guidance on the selection of crossing treatments, standard signs and pavement markings, and intersection design see **Ontario Traffic Manual (OTM) Book 18** and **OTM Book 15.**

Types of crossings

Trail crossings can be designed in a variety of configurations. They could be intersections or mid-block "controlled" where motor vehicles are required to stop for trail users while they cross, or "uncontrolled", where trail users must wait for a suitable gap in motor vehicle traffic before crossing.

The type of crossing selected depends on a number of factors including the type of road being crossed, the number of lanes, traffic volume, posted operating speeds, sightlines, the intended use and classification of the trail, destinations and connectivity, and the trail's anticipated volume of trail use.

Generally, where the crossing point is more complex and the exposure to motor vehicle traffic is higher, the crossing design should include a greater degree of design intervention. For example, the design for a low-speed, low-volume, narrow street or intersection will be different from a high-volume and high-speed regional road. In any scenario, investments in a good trail network require investment into safe crossings that give priority, convenience, and comfort to pedestrians, and cyclists and other trail users.

- In the case of arterial and collector roads, ideal trail crossing designs are "controlled", including grade separated (see Grade separated crossings), signalized (e.g., at an intersection, pedestrian half-signal, or pedestrian crossover (PXO)), or stop-controlled
- In the case of lower volume, lower speed roads, "uncontrolled" crossings can be created with effective use of signage and in some cases, pavement markings

The type of crossing treatment selected generally depends on the type of road being crossed, the number of lanes being crossed, traffic volume and vehicle operating speeds, sightlines, the intended use of the trail, and destinations and connectivity. For trail crossing types, the ATN provides general guidance on a hierarchy of crossing treatments that can be referenced by designers.

Mid-block crossing considerations

If a trail crossing of a collector or arterial road is within walking distance to a signalized intersection, or a mid–block pedestrian signal, trail users should be directed to cross at this location. Once beyond reasonable distance, trail users are more likely to ignore the protected crossing and attempt to cross at an unprotected

point. While the definition of reasonable distance will vary depending on the user and the context of the roadway, OTM Book 18 defines a maximum of 200 m for cyclists, where an equivalent distance for pedestrians on the basis of travel time can be taken as 50 m.

Where a mid-block crossing of an arterial or collector road is necessary, a decision must be made on whether to provide a controlled or uncontrolled crossing. The appropriate conditions for uncontrolled crossings can be found in **Table 6.4** of the updated **OTM Book 18**. As part of an evaluation of potential locations for a mid-block pedestrian signal, consideration should be given to:

- Proximity to the nearest controlled crossing (e.g., stop controlled or signalized intersection)
- Concerns regarding coordination of nearby signals along the road corridor, coordination issues may lead to the perception of long delays in triggering the signals to stop traffic
- The destination and desire line for trail users (is there a destination at the intersection via which users are meant to detour or is the only destination the continuation of the trail across the road?)
- Whether there are frequent gaps in traffic platoons and good sight-lines that would be appropriate for an at-grade mid-block crossing
- Opportunities for discouraging risk-taking behaviour where a mid-block crossing is deemed hazardous or not warranted (i.e., a median fence)
- Observations of behaviour at the existing crossing/facility (i.e., are risk-taking behaviours already observed at this location?)
- The classification and purpose of the trail. Recreational trails may be appropriate to weave and redirect to an intersection, whereas a transportation-oriented trails will have users that are interested in finding the most efficient route or crossing
- Cost
- Grading

Design principles and elements

Regardless of the crossing type (intersection, mid-block, controlled or uncontrolled), there are shared principles applicable to all trail crossings. In particular, when a mid-block crossing is necessary, it should be designed to provide advance warning to both motorists and trail users of the upcoming crossing. There may be different interventions applied in the form of pavement markings, signage, or geometric improvements with the goal of achieving safety and comfort. Grade changes on the trail in advance of the crossing, combined with adequate sight distance, signing, textural surface contrast, and access barriers may also be considered. In general, all crossing types should:

- **Accommodate pedestrian and cycling crossing** by ensuring controlled intersections (signalized or stop-controlled) allow for legal crossing

opportunities for cyclists without a requirement to dismount, and where possible, separating cycling and pedestrian movements to minimize conflict

- **Denote clear right-of-way for all users** by identifying clear direction of movement with pavement markings, signage, and geometric design
- Provide advance warning to both motorists and trail users of the upcoming crossing
- **Reduce motor vehicle speeds**, on approach to a crossing and around corners through measures such as reducing turning radii, implementing truck aprons, raised cycling/pedestrian crossings, narrowing the roadway, and horizontal and vertical deflection **(see Guelph's Traffic Calming Policy (July 2020))**
- **Separate high-risk conflicts at intersections** through signal phasing or geometry, including protected turns, leading pedestrian/bicycle intervals, and advanced stop-bars
- **Maximize visibility** through provision of clear sightlines and an open sight triangle at each crossing point, including measures such as a no-stopping zone adjacent to the crossing to prevent physical or sightline obstructions, and maintenance procedures for daylighting vegetation
- **Use consistent and clear pavement markings and signage** to communicate expected behaviour and right-of-way by signing along the roadway in advance of the crossing point to alert motorists to the trail crossing, and signing along the trail to alert trail users of the upcoming crossing. Note, tactile speed- reducing features should be avoided where there is downhill grade and bicycle users, as this may contact with bike tires and result in slip and fall accidents and injuries
- **Minimize delay for trail users** at crossings as high delay will increase the prevalence of high-risk behaviour and non-compliance, using strategies such as reduced cycle lengths and leading pedestrian intervals
- **Provide universal access**, curb ramps (to current City standards), tactile indicators (where appropriate) on both sides of the road, accessible pedestrian signals, and appropriately placed push-buttons must be provided
- **Minimize conflict exposure** by reducing crossing distance and ensuring perpendicular alignment of the crossing point to minimize the time the trail users are in the traveled portion of the roadway. Perpendicular crossings also contribute to achieving universal access
- **Consider strategic trail alignment before crossing** where 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 sightlines 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 design of the trail crossing may be necessary including introducing a 90-degree curve in advance of the crossing
- **Consider vehicular access barriers** only if necessary, as defined in Vehicle access control

12. Grade separated crossings

To improve trail connectivity and overcome some of the physical trail barriers throughout our city (rivers, highways, railroads, steep inclines etc.) it will be necessary to construct structures. Bridges, ramps, switchbacks, stairways, and elevated trailbeds are tools that can be used to cross waterways and wetlands, and to negotiate steep slopes. For more information on the selection of grade separated crossing priorities, see Section 3.3.2.

Bridges

Bridges are necessary for crossing rivers, streams, and on occasion high-volume and/or high-speed roadways that are not appropriate for an at-grade crossing. For example, when considering roadways, OTM Book 18 recommends the combination of 35,000 vehicles per day, 60 km/hr posted speed, and four lanes as the threshold for grade separation.

Prefabricated steel truss bridges are a practical and cost-effective solution for most situations. In some locations, higher quality materials or design elements may be needed to conform with overall public realm guidelines (e.g., the downtown area).

The design of the bridge cross section, alignment, and surface should accommodate users along the trail with considerations for surface, width, ramp connections (if applicable), and maintenance vehicle access. Further guidance on recommended widths can be found in, Table 6 consistent with OTM Book 18. When considering barrier-free access to bridges, an appropriate hardened surface should be employed on the trail approaches and bridge decking should be spaced sufficiently close to allow easy passage by a person using a mobility-assisted device. For the bridge surface, concrete and asphalt are preferred due to skid resistance when compared to steel or wood. Where planks are used for decking, gaps between planks should conform to the FADM.

Table 6. Bridge pathway widths and considerations

Bridge Type	Recommended Widths
Pedestrian Only	2 to 3 m
Cycling Only	2.4 to 3.5 m operating space, with 0.3 to 0.5 m lateral clearance on both sides Total width (railing to railing): 4 to 4.5 m (3.0 m minimum)
Pedestrian and Cycling (Shared Operating Space)	3 to 4 m operating space, with 0.3 to 0.5 m lateral clearance on both sides Total width (railing to railing): 4 to 5 m (3.6 m minimum)
Pedestrian and Cycling (Separate Operating Space)	2.4 to 3.5 m operating space for cyclists and 1.8 to 3 m operating space for pedestrians, with 0.3 to 0.5 m lateral clearance on the cycling side Total width (railing to railing): 6 to 7 m (4.5 m minimum)

Notes: For grades of 3 to 5 per cent and length < 75 m, facilities with cycling users should be widened by an additional 0.5 m

- FADM states that slopes on bridges must be under 5 per cent. In exceptional circumstances, for grades > 5 per cent or length > 75 m, facilities with cycling users should be widened by an additional 1.0 m
- Minimum widths should only be applied on short (< 25 m) structures with low-volume usage
- Additional width may be required on high-volume facilities, particularly where both pedestrians and cyclists are served
- Bridges and other structures for pedestrian and cycling use must be designed in accordance with the City's FADM, MTO Structural Manual and Bridge Office Design Bulletins and Guidelines, and the Canadian Highway Bridge Design Code (CHBDC)(CAN/CSA-S6-06) which includes parameters for maintenance vehicle access.

Figure 29. Example of trail bridge over river

Ramps and switchbacks

Providing universal access should be a priority and trail access points should seek to satisfy the most current legislated requirements. Grades, width, and alignment are key design elements that impact the comfort and safety of a ramp.

For new bridges and ramps, refer to Guelph's FADM.

Ramps that provide direct and comfortable alignment are preferred. For trails used by cyclists with people on bikes, the approach to ramps should allow them cyclists to maintain momentum with adequate turning radii and horizontal curves for the navigation of corners without having to stop or dismount. Space at landings and turns should be provided for navigating conflicts, changing speed, and changing direction, particularly where there are high volumes of both users and steep grades. In general, people riding bikes tend to sway from side to side, 0.5 to 1 m of additional width is recommended when grades are greater than 3 per cent.

A switchback may be necessary where space is constrained and grades are steep. It is one method of traversing a steep grade yet maintaining the ability for wheeled users to travel up and down the slope. They are constructed with turns of about 180 degrees and are used to decrease the longitudinal / running slope along the trail. Switchbacks tend to result in difficult manoeuvring for cyclists, long straight runs at steep grades should be avoided.

In the study of ramp options, grading requirements and environmental impacts must be considered to avoid negative impacts to the surrounding natural environment and natural hazards.

For trails, ramps and switchbacks if they are within the floodplain they cannot impact (i.e., block) flood flows. These components have to be reviewed and permitted by GRCA if they are in a regulated area. Development within wetlands is not generally supported by GRCA and may not align with the City's NHS Strategy.

Stairways

For areas that are steep with areas that are steep with inadequate room to develop a ramp and/or other fully accessible solution, it may be necessary to construct a stairway. Stairways may also be constructed in addition to a ramp for users that prefer them.

Where a stairway is the chosen solution, the site should be carefully studied so the most suitable design can be developed. Stairways should be designed to meet the FADM. These include all of the dimensional requirements for stairs and ramps as well as requirements for surfaces, guards, handrails, and most other components. During the design phase the choosing of a stairway must be considered from the perspective of accessibility in the design stage as well as communication stage regarding trail information and signage, with input from the of the Guelph Accessibility Advisory Committee is key to addressing accessibility needs. See Barrier free access section for more detail.

The following are some considerations for stairway design:

- Provide a gutter/runnel integrated into the stairway for cyclists to push their bicycles up and down (where appropriate to have bicycles)
- Develop a series of short stair sections with regularly spaced landings
- For long slopes, provide landings at regular intervals (e.g., every 8-16 risers) and an enlarged landing at the mid-way point complete with benches to allow users the opportunity to rest
- On treed slopes, align the stairway and foundations to minimize tree removals
- Use slip-resistant surfacing materials, especially in shady locations.
- Incorporate barriers on either side of the upper and lower landing to prevent trail users from bypassing the stairs
- Provide signs well in advance of the structure to inform users that may not be able to climb stairs

Boardwalks and elevated trailbeds

Where trails must pass through sensitive environments such as wetlands, areas with organic soils or shallow mineral soils, boggy soils, wooded swamps or forested areas with a proliferation of large roots that are either many exposed tree roots or near the surface, the key goal for the trail alignment and design is to minimize environmental impact and provide a stable, sustainable trail surface that users can rely on. To accomplish this, a boardwalk may be required to maintain the integrity of the trail and minimize environmental damage. Without intervention, and as trail use increases, compacted and poorly drained areas will develop in the trailbed and if left unmitigated, users will walk around these wet areas, creating a wider trail or a series of braided trails through the surrounding vegetation. The design must also aim to preserve natural seepage or drainage patterns to avoid collateral impact on the surrounding natural environment.

Early consultation with the Grand River Conservation Authority and Environmental Planning will help ensure that policies are being followed and help streamline a successful project.

Where wet areas cannot be avoided, there are a few design options to consider in wet areas, including:

- Using a boardwalk to elevate the trail above the surrounding grade and avoid any disruption of drainage patterns and constructing a boardwalk
- Constructing an at-grade trail using geotextiles overlaid with geosynthetics and free draining compactible materials to improve stability
- Raising the trail using free draining, compactible materials and rip rap or armourstone (e.g., Granular 'O' to help retain edges)

The disruption of natural seepage or drainage patterns should be preserved so there is little impact to these processes.

Low profile boardwalks have been successfully implemented on tertiary trails in the Hanlon Creek Conservation Area. Precast deck blocks used for the foundation of the boardwalk made construction simple enough that volunteers can assist with the project. Where the trail is classified primary or secondary, located in a high-profile location, intended to be fully accessible, or where the trail surface must be substantially higher than the surrounding grade by greater than 600 mm, a more sophisticated design and installation will be necessary, including and engineers' design review and certification is likely necessary. This may include engineered footings, helical piers, or abutments, structural elements, and railings. A professional who is familiar with applicable standards and legislation should be retained for these types of applications.

Refer to the Tree Technical Manual for resources regarding building near trees (within the dripline and beyond).

Figure 30. Example of a boardwalk trail

13. Barrier free access

Achieving accessible trails is a goal of the GTMP in planning, design, and operation/maintenance. In Guelph, we adopted the Facility Accessibility Design Manual (FADM) in 2015 with specific guidance for outdoor routes, spaces, and amenities that are owned and operated by the City. As noted in the FADM, "opportunities for recreation, leisure and active sport participation should be available to all members of the community." The FADM builds on Ontario Regulation 191/11 (O. Reg 191/11), the built environment standard created under the Accessibility for Ontarians with Disabilities Act (AODA), which provides the governing minimum standard for design.

Where possible and practical, trails should be designed to be accessible to all levels of ability. The trail network should provide opportunities for all users to access a variety of trail types. The FADM applies to newly constructed and redeveloped recreational trails that an obligated organization intends to maintain. All new, retrofitted, or altered trails must follow the FADM and comply with the standards of AODA. Our trail network has a variety of trail types, as defined by our classification system. The FADM is also categorized into different sections: "accessible routes"

and “recreational routes”, with each having different requirements. These are consistent with AODA’s definition of “exterior paths of travel” and “recreational trails” respectively.

FADM and trail classification

Many primary and neighbourhood connector trails and some secondary trails would fall under the category of “accessible routes” because of their design intent to serve a functional purpose in connecting facilities and destinations (i.e., transportation-oriented trails). The requirements for these routes are detailed in **Section 4.1 of the FADM**. Most trails are recreation-oriented, which are covered by **Section 4.5 of the FADM**. Section 4.5 of the FADM excludes trails that are solely intended for cross-country skiing, mountain biking, wilderness trails, backcountry trails, and portage routes. Some trails, particularly those classified as tertiary trails and those located in the Natural Heritage System, would most often fall under the category of wilderness or backcountry trails.

Whether a trail is a path of travel or a recreational facility, the design of trails must adhere to FADM standards to the extent possible. However, it is also recognized that not all trails throughout the system can meet FADM requirements, particularly in the case of retrofits. All new trails should be designed to meet FADM requirements.

The FADM provides detail with regards to exceptions to the requirements and a process for circumstances where physical, cultural, or natural heritage conditions make complete compliance technically infeasible. This process reflects the reality that by the very nature of trails and related topography, it might be difficult to meet FADM requirements. In other situations, particularly for tertiary trails, maintaining the integrity of natural heritage resources will take precedence. The overarching principle remains: trails will be accessible wherever feasible and practicable.

Where a trail cannot meet FADM requirements due to site specific constraints, an alternative route or viewing area should be provided. Viewing areas should provide information about what a person might see or experience along the trail in an appropriate media (e.g., signage or link to information available online). Viewing areas are also a good place to include detailed information about trail characteristic so that individuals can choose if the trail meet’s their expectations for level of difficulty or experience.

It is the intent of the design guidelines to provide flexibility in order to accommodate site conditions as well as take advantage of opportunities for trail users of all ability levels to experience the variety of environments through which the trail network travels.

Design for accessibility

The following section defines the parameters that impact the level of accessibility of on a trail. While not exhaustive, the list reflects required information to be communicated to users per AODA. Standards for these parameters are found in the FADM. Consultation and understanding of unique community needs may contribute additional considerations. The role of consultation and the Accessibility Advisory Committee is described in the next sub-section. Parameters include the following:

- Running grades, where steep slopes are a significant barrier and less than 5% are considered accessible
- Trail surfaces that are firm and stable which includes concrete, asphalt, and compacted stonedust are typically considered most accessible for all users
- Rest areas and seating
- Amenities, where washrooms, water fountains, etc. must all be designed per FADM/AODA
- Trail signage, where information about the characteristics of the trail should be provided in an accessible format
- Vertical obstacles, such as stairs
- Roadway crossings (i.e., curb cuts, tactile warning strips, accessible pedestrian signals)
- Edge protection, where required
- Trail clearway and accessible width

Communication and accessibility

The City does not label trails as "accessible" or "inaccessible" due the significant variation in conditions along one trail, as well as the many different factors that may influence the accessibility of a trail to a diversity of users. Instead, the City will put in place the mechanisms to provide people with accurate and useful information about the conditions on different trails and in accessible formats. This information will allow users to make their own decision on whether or not the trail is accessible based onto their own individual abilities.

Appendix A of the FADM details the principle of providing perceptible information where the design communicates necessary information to the user.

Information should be provided through a variety of formats and modes, such that users have access to information prior to visiting the trail (i.e., online or via brochure) and once at the trail (i.e., trailhead signage). For communications, AODA requires the following to be included on trailhead signage, and should be conveyed with the same information on other platforms: 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. The information conveyed should

be factual (widths, slopes) and not subjective (level of difficulty, time to complete at an average walking pace).

The role of the Accessibility Advisory Committee (AAC)

The AAC plays an important role in trail planning. The AAC provides guidance and stakeholder input on accessibility in Guelph on a wide range of matters, but especially on those mandated by the AODA for consultation before any new construction or redevelopment.

Where trail planning occurs, the Guelph Accessibility Advisory Committee should be involved. One example of the involvement of the AAC may be where an accessibility solution that is above and beyond what is normally encountered is required during the design process. Another example is in gathering feedback on the planning and implementation of a new technology or approach. The first consultation should take place early on in the process to determine if it is practical and desirable to design the specific trail to meet standards for accessibility. The City should work with AAC to create an online resource, as described in the Recommendations and Actions chapter.

14. Wayfinding

We currently have a wide variety of signs throughout the trail network. The diversity of designs, materials and condition is sometimes associated with the age of the park or trail when it was first installed. This diversity of existing signs includes wood bollard markers along the original Royal City Trail dating back to the 1980's, trail markers and kiosks along developer-built trails from the 1990's and early 2000's, and some third party trail signs at junctions with city trails and painted blazes on third party trails in the city.

Newer trailhead and directional signs have been developed as part of recent trail projects. A few locations include the Laura Bailey Trail, Northview and Dallan subdivisions. These most recent trail signs are consistent with the City brand and meet most accessibility requirements of the FADM. Other recent signage initiatives include the Downtown wayfinding signs which have been designed to capitalize on digital technologies with directory pillars and destination signage that guide users to information online.[1]

Next to the trail itself, signage may be the second most important element of the trail network, and a part of the package that Guelph trail users would like to see improved. Signs are part of the trail experience, they tell users where the trails are, where they are while on the trails, how to use the trail safely and interact with others, and what to expect on the trail. In addition to providing important

[1] Guelph Downtown wayfinding

information about the trail, sign quality, messaging and condition all reflect on the overall quality and management of the trail network.

Signage on many parts of our trail signage system should be improved to better assist users in navigating the network, improve network connectivity, meet current standards and replace aging infrastructure. If possible, trail signs should reference provincial standards. Working with other cities to develop trail sign standards is encouraged to help users across jurisdictions navigate the trail network.

Design considerations

The trail signage system includes four signs sign types:

- **Wayfinding signs** – guide users while traveling throughout the network and provide information about distance and direction to key destinations
- **Interpretive signs** - provide interpretation of local historical, cultural, natural and other resources
- **Regulatory signs** - provide instruction regarding traffic operations (for trail users and motorists and trail users where trails intersect with roads)
- **Information signs** – include warning signs and signs to manage risk - to encourage safe use of trails by alerting users about changing conditions along the route such as upcoming hazards, steep hills, sharp curves, junctions, crossings and trail closures. They also include general information such as signs to communicate trail etiquette and users' responsibilities, permitted uses, winter maintenance, and special events using the trail

Signs should be designed to with the following criteria in mind:

Provide clear and consistent messaging

- Key information including:
- trail identification / name
- direction and location (e.g., civic address and / or GPS coordinates at entrances and main trail junctions)
- relevant regulations, by-laws
- permitted, prohibited uses and trail user etiquette
- emergency contact
- whether the trail receives winter maintenance / snow ploughing
- the wording 'recreational trail' to recognize the reduced standard of care for recreational trails under the Occupiers' Liability Act, as compared to other pedestrian and cycling facilities such as sidewalks and roads
- where to find more information about trails in the city, including links to the city website
- Limit the number of messages on signs to avoid overload, and use universal symbols where possible to help to overcome language and ability barriers

Meet accessibility requirements

Signage must comply with the guidance established in the FADM and AODA. Section 4.4.7 of the FADM provides design guidance for signage of systems including:

- Preference for simple, rather than complicated design
- Use of culturally universal symbols
- High contrast between background and foreground elements (e.g., high colour contrast, minimal background pattern/texture)
- Glare-free finishes
- Use of sans serif fonts and Arabic numbers for text elements, and raised tactile lettering where appropriate
- Placed so that users can easily approach the sign and get close enough to easily read the information being conveyed. This includes clear zones allowing easy access for persons using mobility-assisted devices
- Use of reflective materials to enhance visibility in low light and at nighttime

Providing information about trail conditions, lengths and potential highlights on trailhead / trail entrance signage and online is important for people to safely and comfortably navigate the trail network. By providing descriptive information about our trails, users can choose their route based on their desired experience or ability prior to going on the trail.

Trail information that must be included on signs:

- Trail name
- Recognition that it is a 'Recreational Trail'
- Length of trail(s)
- Access points with addresses, coordinates
- Surface material
- Trail users
- Grades (average slope, maximum longitudinal and cross slope)
- Trail width and narrow trail points / minimum trail width
- Location of amenities such as rest areas, and points that may limit accessibility

Incorporate digital technology

Digital technologies should be used wherever possible to support and complement 'hard' signs. Steadily evolving, powerful and adaptable digital technologies enhance trail user experience and are very useful for providing more detailed information than can be placed on signs. Online materials can also be edited and updated very easily and more cost effectively than 'hard' signs.

For example, digital tools can be used for more detailed and interactive mapping for excursion planning and pinpoint one's location while on the trail, communicate the most current information about trail conditions, provide links to video and audio

interpretive materials, links to details about nearby destinations, services, trail events and links to social media platforms.

Enduring construction and character

Signs must be durable, functional, but also need to be well designed aesthetically.

- Carefully consider scale and integration with the landscape at the same time as ensuring they will be readily visible to users
- Consolidate signage where possible to avoid sign clutter
- Place signs at trail entrances and junctions, key decision points, and various points along trails to re-confirm and assure direction and location
- Use high quality, durable materials, finishes and fasteners that resist the elements
- Consider vandal resistance during design development (e.g., signage placement, design details)
- Choose materials and designs that will be long lasting aesthetically over more trendy designs, colour palettes and materials
- Create a 'family' of signs that relate to one another through consistent aesthetics. The sign 'family' should incorporate unifying design, material and graphic elements while each sign type should meet its intended purpose. The family of signs should also relate to other key branding already in place (e.g., corporate brand)

The recommended family of signs

Trailhead signs

Trailhead signs are a key wayfinding element found at entrances to trails and major trail junctions. They provide orientation to the trail network through mapping, geographic coordinate information, distance to main access points, symbols illustrating rules of the park, a tactile map, trail information, digital linking tool such as QR code or NFC tag, and a phone number for the City, with the information also presented in braille. The sign should be tactile and roll under, where possible.

Figure 31. Example of a trailhead sign

A simplified map of the trail on trailhead signs should show neighbourhoods and key destinations, as well as street names to help orient users. Maps on trailhead signs are complemented by maps in other formats such as digital / online and paper / hardcopy maps. The amount of information and level of detail on these maps can be tailored for the intended use and target audience.

Parks with street frontage use the Park Identification sign to mark their presence, name, and raise awareness with passing pedestrians, cyclists and motorists. Where these parks include trails intersecting the road the Park Identification sign may serve as the identifier for both the park and trail. Where trails intersect a road but are not in part of a named park the trailhead sign provides the visibility and awareness.

The most recently implemented trailhead signs have been modeled after the Park Identification signs in terms of style, layout/graphic feel, colours and branding, reflecting the "Guelph-Making a Difference" brand using high quality materials with design features that address accessibility requirements.

Trail Markers

Another wayfinding element, directional markers, are another wayfinding element that are placed beside the trail and include information about location, distances and direction to the next intersecting trail and nearby destinations. They also include emergency contact numbers and links to online information. They may also include information about what uses are permitted on the trail, and whether dogs are allowed on leash or not. Trail markers are typically located at trail junctions, but may also be placed along long uninterrupted sections of trail to reinforce messages and trail branding. Trail markers could also be used to reinforce the trail name, and include some elements or colours to highlight key spine routes such as the ATN route, Royal Recreational Trail and Eramosa River Trail.

The most recent trail designs in the city have been using the "Trail Key" which is designed with a four-sided extruded metal core and custom polymer side panels that can be removed for cleaning, repair, updating or replacement as needed.

Figure 32. Example of trail key marker

Interpretive signs

Interpretive signs provide information and further context along trails and in parks. They are commonly used to communicate the cultural or ecological significance of a location. Placement of interpretive signs should take into account the space required to accommodate a person reading, so as not to block the trails they are located on. The signs should be at an accessible height to read, and the information should be accessible through braille and/or where more information can be found.

Currently these are mostly provided through land development projects. The City does not have a standard for interpretive signs and should develop one to ensure consistency with the City's brand and other trail signs in the family.

Figure 33. Example of interpretive sign

Regulatory signs

These are typically located in, or in proximity to the road right-of-way where trails intersect or cross roads. Regulatory signs alert users and motorists about the upcoming crossing, whether the trail user or motorist has the right-of-way, and instructions to cross properly and safely. Regulatory signs should be based on the

most recent version of the Manual on Uniform Traffic Control Devices for Canada (MUTCDC) and the Ontario Traffic Manuals.

Information signs

Located along the trail beyond the road right-of-way these include:

- Warning signs to encourage safe use of trails by alerting users about changing conditions along the route such as upcoming hazards, steep hills, sharp curves, junctions, crossings and trail closures. Where possible warning signs should be designed using principles and elements found on signage conveying similar messages in road design, which are widely recognizable by adults and a good teaching tool for children (e.g., yellow background colour and diamond shape to indicate caution)
- General information signs include those that communicate trail etiquette and users' responsibilities, permitted uses, winter maintenance and special events using the trail. General information signs may be designed to include some of the branding and graphic elements found on other wayfinding signs as part of the sign family

Figure 34. Example of information sign

Third party trail signs

There are a number of third party trails that intersect with, and/or follow the city trails for a portion of their route (e.g., various named Guelph Hiking Trail Club routes such as the Rapids Side Trail and Radial Line Trail). Where third party trails are using city trails as their route the third party trail name or blaze could be incorporated into city trail markers to assist with navigation. Where third party trails intersect, but are independent of a city trail the third party trail can be identified with a smaller trailhead sign or trail marker designed according to signage guidelines. When intersecting with private property, third-party trail signage can provide the user with awareness of trail access (i.e., hours of use, maintenance etc.). The signage could also identify that these trails are not City maintained trails.

Developing a trail signage system

Our trail signage system should be improved to better assist users navigating the network, improve network connectivity, meet current standards and replace aging infrastructure. The following steps should be considered in developing a work program and scope.

- **Complete a trail signage inventory**: Complete the inventory of existing trail signage in addition to work currently underway to inventory other park signs. This should include the sign type, and whether the sign meets current information and branding standards or is outdated, and be included in the asset management database. The inventory will support planning and implementation of signs along the trail network. It will also support on-going management of signs throughout the network including updating old or obsolete signs
- **Develop templates for the family of signs**: We currently have a trailhead and trail key design template that is consistent with Guelph's brand, and generally meets accessibility requirements. The current design should be adopted as the standard and the graphic style should be expanded to a complete 'family' of signs. This should include templates for each sign type along with guidelines for their placement
- **Develop an implementation plan**: Based on the sign inventory and signage template, the implementation plan will establish a strategy and priorities for implementation, along with estimated costs. For example, implementation may mirror the trail classification with Primary Trail signs updated first followed by Neighbourhood Connector Trails, Secondary, and Tertiary Trails. An alternative approach may be to prioritize updating signs that are in poor condition or contain information that is most out of date or inaccurate. The implementation plan would also define approaches and timing to work with Third party trail managers regarding their signage for trails within the city

15. Trail closures

Trail closures may be necessary from time to time and may be temporary or permanent, as well as planned or emergency. Refer to Operations and Maintenance section for information on maintenance and monitoring procedures.

Temporary closures may restrict access to sections of trail or entire routes. These closures may occur due to inundation by water, culvert washout, or general trail construction or maintenance. Signing, temporary barricades, community notification through social media and on the City's website should all be used to inform users about temporary trail closures.

If the closure is planned (e.g., for construction), advance notices should be placed at all access points for the affected section(s) and placing signs at decision points should be considered. As part of project planning, keeping the trail open and safe for use should be considered first before closing the trail. Where this cannot be accommodated and depending on the length of planned closure, detours may be required to direct trail users safely around the closure.

In the event of an emergency closure, notices must be placed at these locations immediately following the discovery of the problem.

Permanent trail closures may be required at some point in the life cycle of the trail, especially in the case of trails in woodlands and in other places in the natural heritage system. There may also be recommendations to close trails as part of a management plan or environmental study to protect the health of the environment. It is important when closing a trail to rehabilitate the trail to match the surrounding conditions. It is also important to inform users of a permanent trail closure and provide reasons for the closure.

Chapter 6:Implementation

The strategies in this section help support how we achieve our vision for the future. To help guide our work, this section identifies policies, decision-making criteria to build new trails, funding streams and an approach to operating and maintaining existing trails.

Policies supporting trails

In order to implement the trail network and support our overall goals, we need good policies, practices and procedures. Policies outlining our approach to trails will help to provide City staff, developers, community groups and residents' clarity on how trails in established neighbourhoods or new developments will be planned, operated, and maintained:

- We will use the design guidelines described in the GTMP and other best practices that emerge in a future master plan, in the development of trails
- We will develop a multi-department working group to collaborate on city projects and develop a network-level approach to planning, implementing and operating trail and active transportation networks
- We will review our community engagement processes to help us listen better to underserved groups. We recognize that historically, some people or groups have not been well-represented in trails and outdoor recreation planning
- We will prioritize the construction of new trails in neighbourhoods and areas that are currently under-served by trails to help to address current equity issues with where trails are located. We will continue listen to equity-seeking groups to help take action to address systemic inequalities
- When developing new trails in established neighbourhoods, we will engage residents in order to:
    - understand and respond to residents' concerns
    - encourage their input into the process and determination of the trail layout
    - discuss the benefits of trails for their neighbourhood and community
    - emphasize successful examples and examples where similar problems were overcome
- We will develop a Trail Acquisition Policy and communicate any policies, practices or tools in a future Parks and Trail Development Manual or Trails Technical Manual

- We will review and clarify our trails policies in a future Official Plan update
- New trails shall be located and designed so that they achieve a balance between providing access to natural areas and protecting, restoring, improving our NHS
- New trails shall be located and designed so that they achieve a balance between providing access to and protecting heritage assets
- Policies, procedures and practices for executing third party agreements with community partners will help us manage safety, risk, liability and division of operating tasks. We will develop an appropriate work plan to complete this
- The decision making and design process to integrate trails in development areas shall include a careful examination of factors including topography and drainage, water levels, slopes, soil conditions, plant and animal communities, microclimate and human comfort, historic/cultural resources, public education opportunities, and significant views and vistas
- In new development areas, trails should be constructed prior to or concurrently with the construction of other infrastructure and homes to avoid potential conflict with new residents. Developers are encouraged to develop trails on behalf of the City as part of the Subdivision Assumption Process. Developers are required to include information for prospective buyers about where trails are to be located at the time, they are selling lots and are required erect signs or markers in locations where trails are to be constructed. A Parks and Trail Development Manual or Trail Technical Manual should be developed to communicate trail develop polices, procedures, requirements and practices to the development community
- We will follow the guidelines for operating and maintaining trails outlined in Chapter 6 of this Plan to keep trails accessible and safe for trail users. An Operations and Maintenance Plan or Trails Technical Manual should be developed to clearly define how we plan, prioritize, schedule, and track maintenance work
- Staff responsible for trail planning and design will commit to regular meetings with external stakeholder groups with an interest in trails—such as cycling and trail clubs, neighbouring municipalities, and other groups and agencies—to share information regarding trail initiatives, develop strategies to remove barriers and create trail connections between cities, and to implement and manage trails
- We will review and update the GTMP on a regular basis. It is difficult to confirm the timing of activities beyond the first five years of this Plan. A review and assessment of the Plan should be completed in 2026 to determine the status of the goals and actions and to feed into the next cycle of the multi-year budget cycle. A full update of the GTMP should be planned for 2031.

Building new trails

Trail building priorities and implementation

To implement the trail network, we need an approach to setting priorities and building new trails. This approach:

- Clearly identifies what is within the City's control
- Identifies that trails built in areas of growth (development) are implemented differently than network improvements (city building)
- Recognizes that we allocate more resources to building trails in areas of growth so that they are available for use shortly after homes are occupied
- Recognizes that there are two main sources of funding for new trail construction: Growth and City Building (see section 5.3)
- Sets up realistic expectations for what we can accomplish with available resources or any newly proposed resources
- Recognizes there is a lot of work done to coordinate efforts with other city projects and initiatives and to build the network in a logical and connected way
- Identifies priorities that are achievable within the planning horizon of the GTMP time frame identified (10 years)

Types of new trail construction projects

It is important to understand the different ways we implement the trail network in the city and how each is funded. Projects are implemented through three main streams of work:

Table 7. Types of new trail projects

Growth	City building	Community lead, city supported
These are trails planned, designed and constructed through subdivision applications, site plan applications, or secondary plans. These new trails are typically located in areas of growth or redevelopment. These projects are sometimes built by developers (although not required) and sometimes they are designed through a development application, but built by city staff.	These are typically new trails on existing city land or land managed through agreement. They include trails in parks or open space, gaps in the trail network and trails on other public land like hydro corridors or railways. These represent enhancements to the City's current service levels. Though some may be simple projects that are easy to implement, most of these projects are complex projects that are very costly, involve major barrier crossings, may have multiple landowners or jurisdictions, multidisciplinary/ innovative approaches to solutions, or projects that require detailed technical/feasibility studies.	These are a form of City Building or network improvement typically on city land or land managed through agreement. They are typically tertiary trails or passive recreation that have little impact on NHS. These projects will need staff support and resources to complete, however the intention is to rely on our community partners* to lead this work. We will need to develop policies, procedures and practices for this category of work as a recommendation of this Plan as we are only beginning to permit this type of development. There may be instances where the city leads parts of the project to support these initiatives (such as completing environmental or technical studies that might be required to implement a trail).

* Community partners are typically organized groups or groups facilitated by the City for the purpose of trail maintenance and enhancement. These are typically groups with trails as a core value or are trained in trail-building and management. Groups that do not have trails as a value or are not trained in trail building may also be considered a community partner, but additional information may be requested to evaluate a request.

Setting priorities for new trail construction

In order to better understand how each type of project is implemented we categorized the planned trails and desired connections based on how they will be implemented. The implementation categories align with the trail development processes. Map 6 illustrates the categories each trail falls into. They include:

- growth trail projects
- city building trail projects
- community led, city supported projects

It is important to note that proposed trails and desired connections have been broken into these categories and sub-categories:

1. Growth city trail projects

Growth projects are about building better neighbourhoods as they are developed. Development projects are broken into two categories:

- In process – projects that have active development files
- Future development projects – trails that are identified in areas of growth or places where the city would wait for a development opportunity to implement a trail

As timing for development projects is difficult to predict, no timelines have been identified for these types of projects. The City will look for opportunities as they arise and will work with developers to implement trails in these areas as development proposals are brought forward and resources and funding allows. These types of projects greatly benefit from adjacent land development and the level of study and analysis is typically supported by the development background work which greatly accelerates timelines and helps make the most efficient use of staff time. Even with a streamlined process, it still represents the majority of staff time spent on new trail development. Priorities will coincide with our Planning Departments' work plans and priorities.

2. City building trail projects

As we have better control over the timing and resource allocation for City building projects, we have identified priority projects. It is important to note that many of these projects are complex, are identified because of long standing gaps in the trail network, or are triggered by a significant barrier or other major trail development impediment. These projects typically require detailed planning, feasibility or technical studies in order to implement or may require purchasing of land or developing easement/partnership agreements.

A large portion of the trail work that is implemented each year is completed through development—despite the opportunities the development approval process offers it still represents a large portion of staff time. This leaves a small portion of staff resources available to complete city building projects, given their complexity.

We have the resources to tackle one or two complex projects a year. Some projects may require many years to complete.

We have developed two categories for city building trail projects to help organize their prioritization:

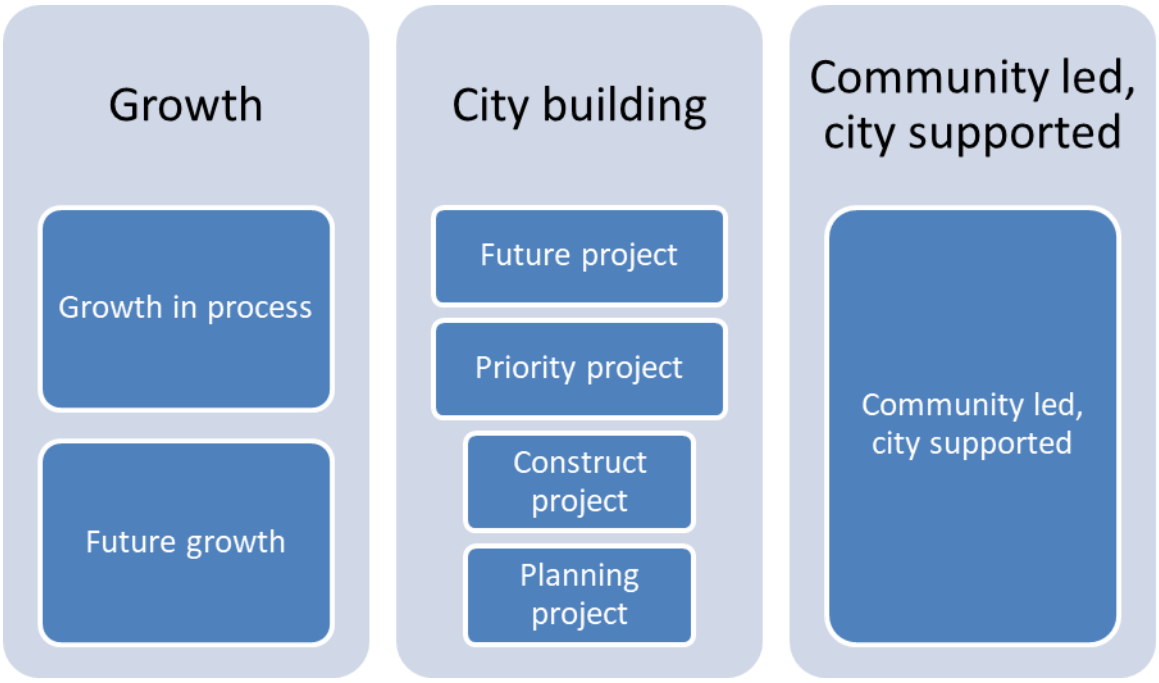
- Priority project – the project is a priority for the city. These projects include some projects that are ready for construction, while others are priorities for further planning work
- Future project – the project is not included in the ten year priority list

3. Community led, City supported projects

We have identified a small number of Community led, City supported priorities. These types of projects will typically be tertiary trails or passive recreation trails with little impact to NHS. In order to support this work, we will need to develop policies and procedures in collaboration with our community partners.

As we have few examples of this type of work, we cannot identify how many of these projects we can work with the community on each. We expect it may be one or two of these projects per year given our current staff resources.

Figure 35. The different types of new trail construction projects



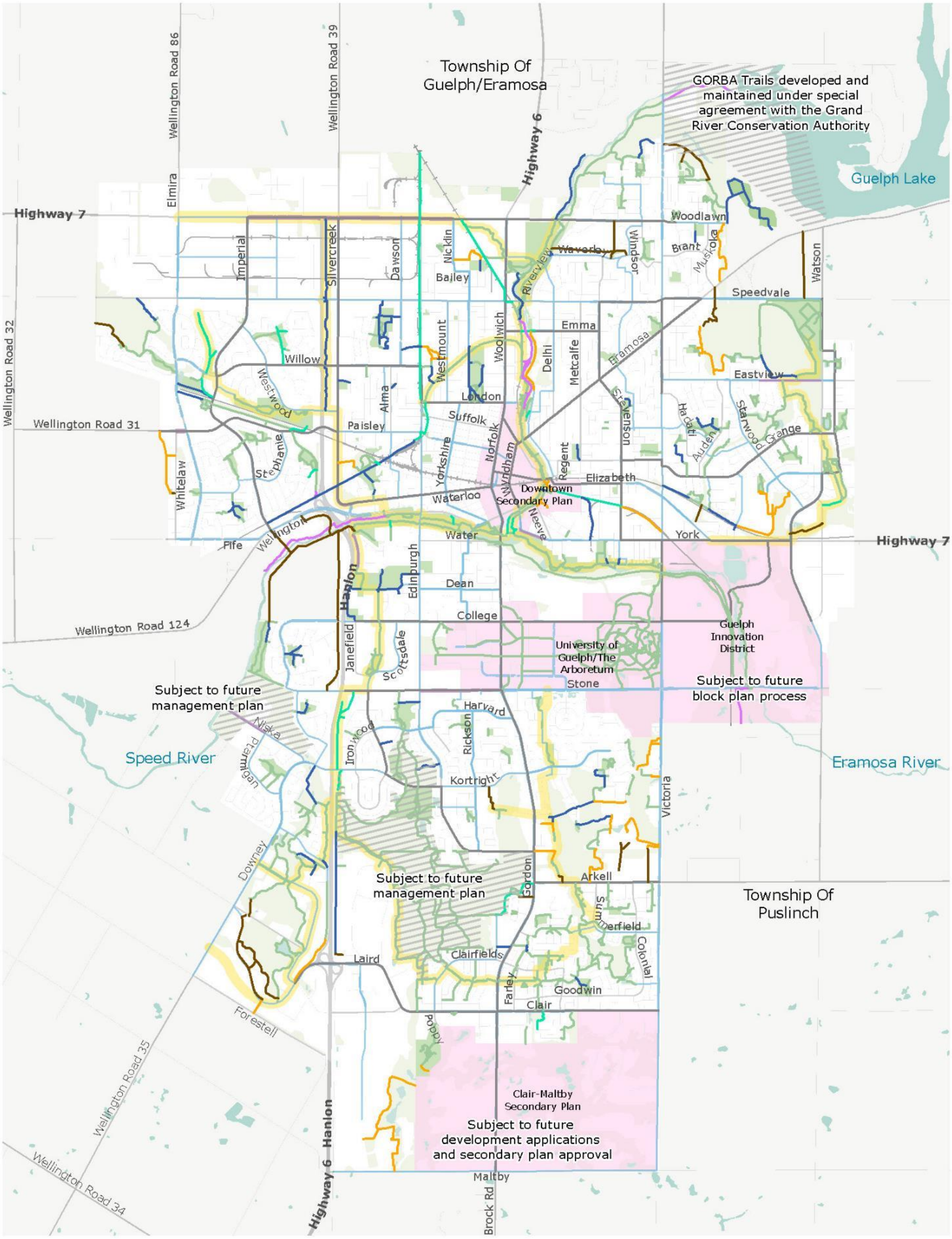
Trail priority summaries

Map 6 illustrates the planned trails and desired connections categorized by the type of trail projects described above. Projects are shown by the appropriate priority for the trail project type.

There are additional trail projects that are priorities to complete from the ATN study. These projects are not shown on Map 6 as per Section 5.2.6. The total length of trails for each type of trail implementation category is also summarized below in Table 8.

Table 8. Proposed trail lengths by implementation type

Trail Implementation Category	Length (centreline kilometres)
City building priority project	12
City building future project	25
Growth project in process	15
Growth project not in process	15
Community led, City supported project	6
Total	73



Trail Implementation

Map 6

- City building priority project
- City building future project
- Community led, City supported
- Growth in process project
- Future growth project
- Active Transportation Network
- Existing Trail
- TMP Spine Cycling Network
- Multi-use Path or Cycle Track
- Bike Lane or Route (Existing/Planned)
- City Park
- Natural Heritage System

0 1 2 km

Guelph Trail Master Plan Update

Data provided by City of Guelph.
Map produced May 2021.

Decision making criteria for city building projects

The following decision making criteria guide the priorities of this plan and will also inform future annual work plans. Priority 'City Building' projects were identified by the public, stakeholders and the project team. These are all priority projects that are important to the overall trail network. We have ranked them in order of magnitude to help us in future decision-making. Phase A are projects that we will undertake immediately in the short term; Phase B are ones that we will undertake between Phase A and Phase C either because of priority, complexity or capacity; and Phase C are projects that are more complex or have mitigating issues that prevent immediate action. In addition to the criteria in the chart, City staff will also consider these four criteria as annual work plans and capital budgets are prepared:

- Staffing resources to complete the work
- Staffing resources post construction
- Long-term life-cycling projects
- Consideration for new opportunities as they arise

Table 9. Decision making criteria evaluation

Decision making criteria	Description
Alignment with other city infrastructure projects	Projects that align with other infrastructure projects will be ranked highest as they make project implementation more efficient. There are opportunities to piggyback or find efficiencies with existing capital projects to streamline construction of multiple projects.
Adjacent to recently completed trail or active transportation routes	Projects that are beside or link to recently completed trails or active transportation infrastructure will be ranked highest. These projects may be able to find efficiencies with adjacent work and are able to complete the network in a more continuous way.
Opportunity to connect longer segments of trail by closing short gaps	There are some short gaps in the network, if completed, would create a larger continuous network. Short segments that help achieve a continuous system will be ranked highest.
Trail classification (primary, ATN, neighbourhood connector)	Investing in and promoting active transportation is a priority of the Strategic Plan, therefore routes that support active transportation will be ranked

Decision making criteria	Description
	highest. Trails that are classified as primary, ATN or neighbourhood connector will be ranked highest.
Identified need, in underserved areas, densely populated areas	Implementing the network equitably is important to ensure all areas have access to trails throughout the city. Using the equity mapping including in Appendix B and the City's intensification corridors and nodes, trails close to these areas will be ranked highest. Trail segments in areas that are underserved by trails will also be ranked highest.
Cost	Higher cost projects can significantly impact financial and staff resources. Understanding how cost affects the fundability of the plan is an important consideration. Higher cost projects will need to be assessed as part of the overall budget process. Higher cost items are balanced against other initiatives across all of Parks and therefore may end up being placed further out in the capital budget, despite being identified as important to the overall network. This will effectively rank lower than lower cost projects.
Grant funding potential	Some projects may rank higher if grants are being used to fund the work or there is an indication that federal or provincial grants will be made available for the type of project proposed. Projects supporting active transportation, community partnerships or key connections would typically rank higher on grant applications. These types of projects may be easier to fund and are ranked higher.
Connection to key city destination/ transportation systems (transit, regional connection)	Trails that provide connections to commercial areas, employment lands, schools, parks or other destinations will be ranked highest. Regional connections can also be considered as key destinations. Evaluation of trails can also include walkability of the area and how the trail will improve connections in the area.

Decision making criteria	Description
Design/regulatory complexity or feasibility	Implementing complex projects has a significant impact on staff and financial resources. Although important, complex projects will be ranked lower in order to construct some of the less complex projects first.
Community advocacy by trail user groups	Community feedback is one criteria in prioritizing work. Project with advocacy by trail user groups, council or the larger community will be ranked higher.
Willing partner and property impacts	Many trail projects require a willing partner to implement the work or to acquire the land. Projects where land may be easier to acquire or a willing partner is known will be ranked higher.

Priority projects

The intent of this section is to identify priorities to achieve through this Plan. It is not intended to be prescriptive, but rather give City staff the ability to complete work based on available budget, coordination with other departments and partners, opportunities that arise or work underway as part of other City priorities.

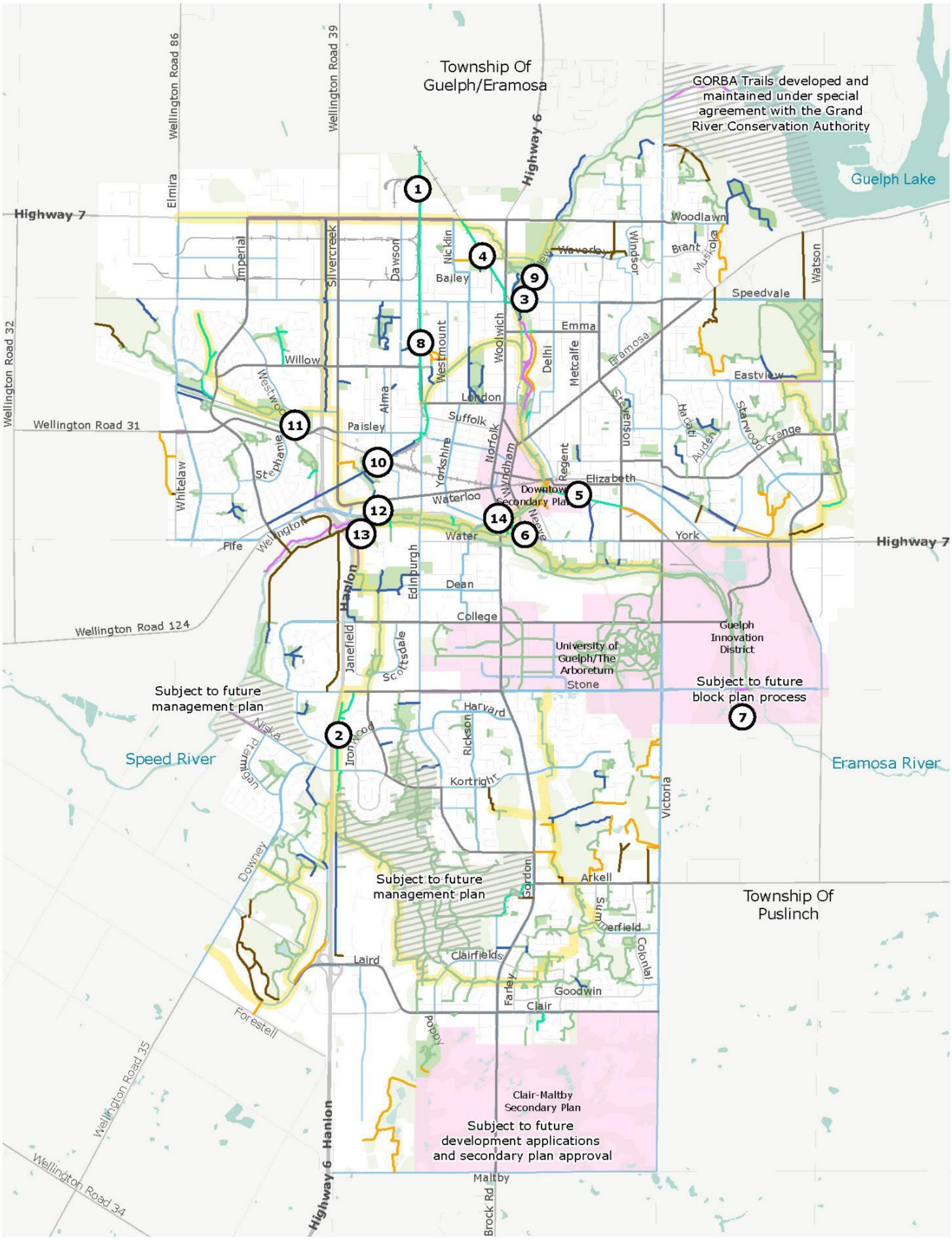
City building projects have been broken into two categories: **Construct Projects** and **Planning Projects.** A description of each is included in Table 10.

Table 10. Project types

Construct project	Planning project
Priority for building in the short to medium term	Priority to begin planning in the short or medium term to be ready for building in the to medium term or long term
These are new trails projects or significant improvements to existing trails. They are fairly straightforward to implement and involve assessment of the existing condition, the preparation of designs or simple technical studies and construction.	These are new trail or crossing projects that require a complex analysis, or feasibility and background study(ies). They are projects where we may need to engage with other public agencies, landowners, stakeholders or need detailed technical studies to understand the project. They will involve multi-disciplinary support as well as complex solutions. Studies or business case analysis for some may need to extend over several seasons (e.g., 4-season wildlife inventories)

For these two categories, we identified key priorities that can be achieved with available resources through this plan. With existing resources, we can manage 4-5 trail projects per year in the first five years and then ramp up to 6-7 projects per year should capacity increase. These projects were identified by the public, stakeholders and the project team. It is important to note that although these projects are identified as priorities, we will continue to advance and implement development trail projects which have been included for reference. Planning for some of these projects requires planning and feasibility and a costing and business case may be required to identify costs. Preparation of these projects will allow us to be 'shovel-ready' should grant funding become available.

Table 11 summarizes the priority projects as part of this Plan. The project locations are referenced on Map 7.



Trail Priorities

Map 7

- City building priority project
- City building future project
- Community led, City supported
- Growth in process project
- Future growth project
- Active Transportation Network
- Existing Trail
- TMP Spine Cycling Network
- Multi-use Path or Cycle Track
- Bike Lane or Route (Existing/Planned)
- City Park
- Natural Heritage System

0 1 2 km

Guelph Trail Master Plan Update

Data provided by City of Guelph.
Map produced May 2021.

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Table 11. Evaluation of priority projects

ID	Project	Alignment with other City infrastructure projects	Adjacent to recently completed trail/AT sections	Opportunity to connect longer segments of trail by closing short gaps	Primary or ATN routes	Identified need, in underserved areas, densely populated areas	Cost	Grant funding potential	Connection to key city destination/ transportation systems (transit, regional connection)	Design or regulatory complexity	Community advocacy by trail user groups	Willing partner and property impacts	Potential phasing
1	Complete gap in the Trans Canada Trail (north of Woodlawn Road W near Edinburgh Road). Requires consultation with private landowners, Hydro One, GJR and technical studies (rail safety, environmental) **Construct Project**	No	No	Yes. Significantly improves regional connectivity	Primary route	Not in an area of need or dense population	High	Yes, high potential	Significantly improves regional connectivity	Very complex	Noted as most important project.	Moderate but very complex. Land acquisition required	**A**
2	Trail connecting Old Hanlon Service Road to Stone Road West (ATN). Involves using the old service road as a trail and acquiring land to connect to Stone Road. **Construct Project**	No.	Alignment with planned AT route along Stone Road	Yes. Will complete gap in the ATN network	ATN	Close to an area of need and intensification corridor	Low-medium	Medium Connection to other AT routes would rank higher on grant application	Connection to Stone Road Mall and two high schools as well as connection to Hanlon Creek Business Park	Low to medium	Not identified as a trail user group priority project	Likely, would require working with Hydro One	**A**
3	Speedvale Underpass interim solution (connection from TCT to Riverside Park east) Interim solution includes moving the existing pedestrian crossing. **Construct Project**	Yes. Speedvale Avenue and bridge replacement project	Yes. Alignment with Speedvale Ave. reconstruction	Yes. Connection of TCT to a major city asset	Primary (ATN on east side of park)	Close to an area of need and intensification corridor	Medium for interim solution	Low Interim solution would rank lower on evaluation	Connection of TCT to Riverside Park and to the intensification corridor on Woolwich	Low to medium	Yes. Identified high priority	Yes. City owned	**A**
4	Trail beside Guelph Junction Railway leading from Speedvale/Woowich intersection to Woodlawn Road East (behind cemetery) Requires working with Guelph Junction Railway to acquire land. **Construct Project**	No	Alignment with intersection improvements at Speedvale/ Woolwich and connection of TCT to Downtown	Medium. Longer new connection. Provide direct connection to employment lands and TCT	Primary	Close to an area of need and intensification corridor	Medium	Medium Connection to workplaces would rank higher on grant application	Connection to service commercial and employment lands	Medium (construction beside railway) Rail Safety Audit needed	Identified priority project for connection to TCT	GJR is a willing partner. Would need to acquire land.	**B**

ID	Project	Alignment with other City infrastructure projects	Adjacent to recently completed trail/AT sections	Opportunity to connect longer segments of trail by closing short gaps	Primary or ATN routes	Identified need, in underserved areas, densely populated areas	Cost	Grant funding potential	Connection to key city destination/ transportation systems (transit, regional connection)	Design or regulatory complexity	Community advocacy by trail user groups	Willing partner and property impacts	Potential phasing
5	Trail beside Guelph Junction Railway leading from Arthur Street/Elizabeth Street to Stevenson Street. Requires working with Guelph Junction Railway to acquire land. **Construct Project**	No	Alignment with new pedestrian bridge over Speed River	Medium. Longer new connection. Provide direct connection to Downtown from Ward	Primary	Close to an area of need and can provide a connection to the York Road intensification corridor	Medium	Medium Connection to workplaces would rank higher on grant application	Connection to downtown and employment lands	Medium (construction beside railway) Rail Safety Audit needed	Identified priority project as TCT extension	GJR is a willing partner. Would need to acquire land	**B**
6	Trail gap between York Road Park and Wyndham Street (near covered bridge) (ATN). Requires working with a landowner to aquire land and environmental studies to build trail in flood plain. **Planning Project**	No	Yes. Trail being built on Wyndham Street development	Yes. Will complete a gap in the ATN	ATN	Located in the Downtown area not in an area of need	Low	Low	Medium. Alternative route available along Wydham Street	Complex. Requires EIS and GRCA review	Yes	No. Requires land owner negotiation	**B**
7	Connection from Stone Road East to Cooksmill Road Involves EIS and land acquisition. **Construct/Planning Project**	No	No	Can provide regional connection	Tertiary	No	Low	Community partnership would rank high on an application	Yes. Connection to Radial Line Trail and city trails along the River	Moderate. EIS and land acquisition may be required	Yes	Maybe	**C**
8	Trail along Edinburgh Road from Paisley to Woodlawn. Involves working with CNR and GJR to acquire land and railway safety audits. **Planning Project**	No	No	Medium. The longer trail will connect the CNR spurline trail and many areas of the city	Primary	Yes. Connects areas of needs to employment lands where there is a low concentration of trails.	High	Medium Connection to workplaces would rank higher on grant application	Connection to service commercial and employment lands	Complex. Requires working with railways	Yes	No. Requires land owner negotiation	**C**

ID	Project	Alignment with other City infrastructure projects	Adjacent to recently completed trail/AT sections	Opportunity to connect longer segments of trail by closing short gaps	Primary or ATN routes	Identified need, in underserved areas, densely populated areas	Cost	Grant funding potential	Connection to key city destination/ transportation systems (transit, regional connection)	Design or regulatory complexity	Community advocacy by trail user groups	Willing partner and property impacts	Potential phasing
9	Speedvale Underpass full solution (connection under bridge to Riverside Park west) Replacement of the Speedvale bridge allows for a pedestrian connection. Would need to investigate river retaining walls. **Construct/ Planning Project**	No. River retaining walls do not currently need replacement. Trail construction will be paired with this future work	Yes. Alignment with Speedvale Ave. bridge replacement. River retaining wall needs investigating	Yes. Connection of TCT to a major city asset	Primary (ATN on east side of park)	Close to an area of need and intensification corridor	High	High Connection to regional trail would rank high	Connection of TCT to Riverside Park and to the intensification corridor on Woolwich	Complex	Yes. Identified high priority	Yes. City owned	**C**
10	Crossing of CNR railway into the Howitt Creek Flood Control Facility trails Requires railway safety audit and EIS. **Planning Project**	No	No	Yes. This connection would connect areas to a new mixed use node and the development to Downtown	Primary	Yes. Identified area of need. Silvercreek development is a community mixed-use node	Medium	Medium Connection to mixed use node would rank higher on grant application	Connection to future community mixed use node	Complex. Requires working with railways	No. But there is a culture of use between Howitt Creek Park and the Flood Control Facility	No. Would require discussion with CNR	**C**
11	Crossing of Metrolinx railway from Paisley Road into Margaret Green Park Involves detailed technical study and working with Metrolinx **Planning Project**	No	Yes. Will align with future plans for active transportation route along Paisley	Yes. Would be a major connection in the West End connecting to ATN	Primary but connects to ATN	Yes. Area of need and currently underserviced by trails	Very High	High. Major AT connection would rank high	Yes. Connection to Margaret Green Regional Park	Very complex	No	Would need to work with Metrolinx to allow crossing in this location	**C**
12	Speed River Trail from skatepark under Hanlon Parkway to Wastewater Services Very complex and involves MTO, Dolime Quarry, technical studies. **Construct/ Planning Project**	No	Yes. Aligns to the recent completion of the Silvercreek Park Trail in front of the skatepark	Yes. Would connect GTHC trails to Cambridge into Guelph trails	Primary (tertiary as interim)	No.	Low	Community partnership would rank high on an application.	Yes. Connection to Speed River Trail and city trails along the River	Very complex as it involves Dolime Quary, MTO and a river system	Yes. Very important.	Would need to work with MTO on connection. Involves consultation with Dolime Quarry owner	~~C~~

Updated to Priority A as per Council Resolution

ID	Project	Alignment with other City infrastructure projects	Adjacent to recently completed trail/AT sections	Opportunity to connect longer segments of trail by closing short gaps	Primary or ATN routes	Identified need, in underserved areas, densely populated areas	Cost	Grant funding potential	Connection to key city destination/ transportation systems (transit, regional connection)	Design or regulatory complexity	Community advocacy by trail user groups	Willing partner and property impacts	Potential phasing
13	New bridge over Speed River from Municipal Street to Silvercreek Park **Planning Project**	No	Yes. Aligns with ATN improvements and new MUP on Municipal Street	Yes. Part of ATN network	ATN	No	Very High	High. Major AT connection would rank high	Yes. Part of ATN	Very complex. Involves EA and other technical studies	Yes from groups but requires consultation with Indigenous groups	Would need initial consultation with Indigenous groups and GRCA	**C**
14	Trail connection from the Lawn Bowling Club to Wyndham Street as an interim measure **Construct/Planning Project**	No	Yes. Aligns with ATN improvements	Yes. Would make valuable connection along the river	Tertiary	Located in the Downtown area not in an area of need	Medium	Low	Connects the river trail network	Moderate. Requires land negotiations	Yes.	Would need land negotiations	**C**
15	Building trails in parks that don't currently have them Timing depends on playground replacement program **Construct Project**	Yes. Alignment with playground replacement program	No	No	Secondary routes	Will provide access to green spaces in areas without access and underserved areas	Low	Medium Providing access to green space in underserved areas	Yes. Connection into existing parks and recreation facilities needed for accessibility	Low design complexity	No. Overall community would like improvements to existing parks	Yes. Owned by City	Will align to infrastructure replacement programs (e.g., playgrounds)

Relationship to the Active Transportation Network Study

The planned trail projects from the ATN study are included in the GTMP. We have not set priorities for ATN routes as the study document sets its own priorities. We have included the financial impacts in Section 6.3 to understand the overall financial impacts of all trails and will continue to implement the network over the next 10 or more years. The chart and Map 7 above only includes new trails. Improvements to existing trails is still planned and will continue on an annual basis as per the ATN study. These projects are already planned and budgeted for through our Capital Plan.

Road crossings

The road crossing improvements identified in the GTMP will largely be reviewed and prioritized by Transportation Planning and in on-going work. Typically, this process involves projects being prioritized and considered as part of reconstruction and resurfacing work. We have included road crossings in the Plan, because they are an important consideration for our community.

Each year the city prioritizes areas for improvement using a traffic calming policy. Residents from across the city contact us often with concerns about speeding and high vehicle volumes in residential neighbourhoods. The goals of the policy are to improve public safety for all road users, encourage streets to function as intended and encourage active transportation. A similar process will be used to prioritize these road crossings other traffic calming initiatives in a future phase of work.

Trail implementation process

The trail implementation process involves many steps with many opportunities for input from different stakeholders. In an effort to help communicate how the implementation process works, we have depicted the process for each type of trail project below in a flowchart graphic. The process is also summarized in Appendix D.

Figure 36. Illustration of growth trail project implementation processes

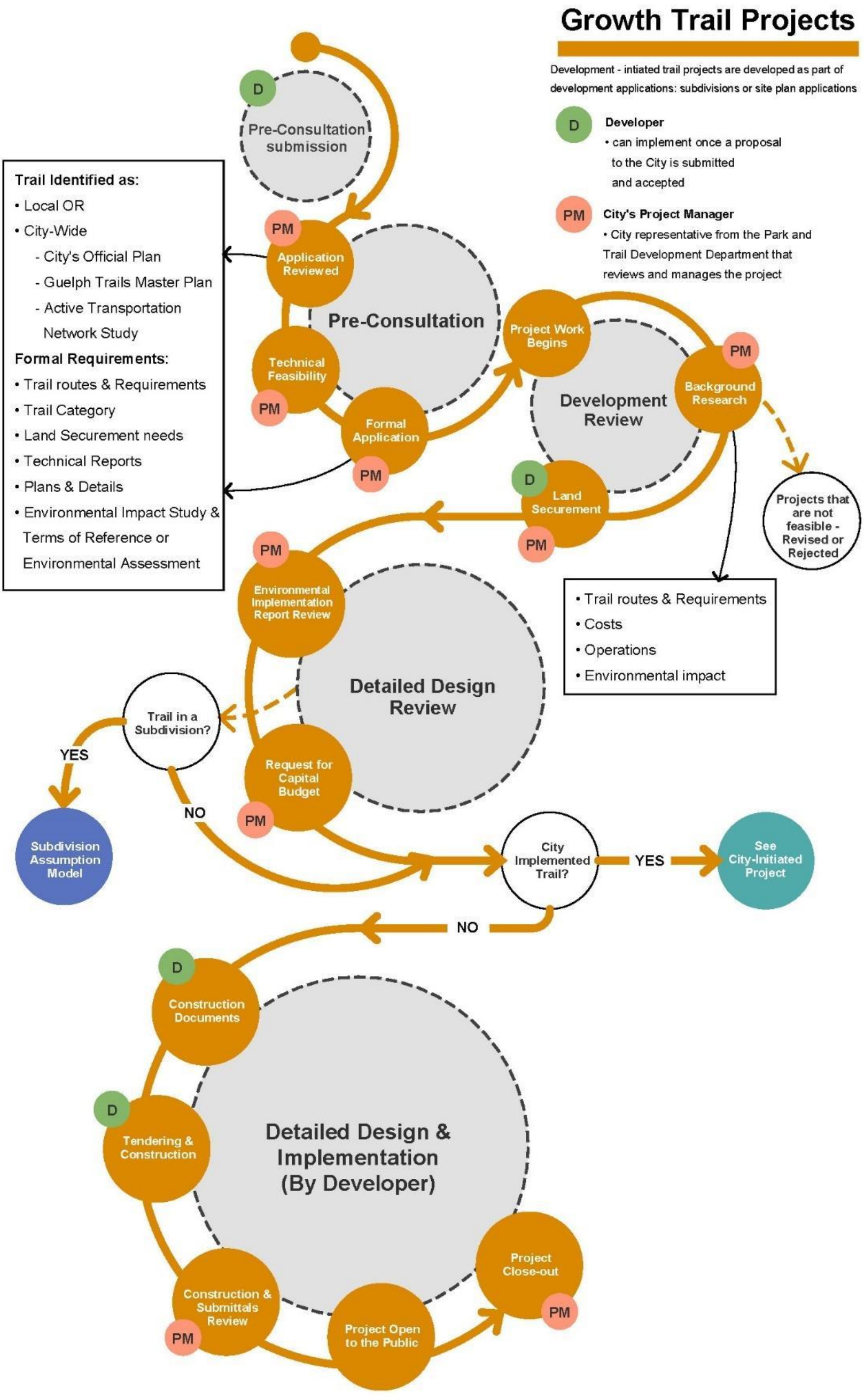


Figure 37. Illustration of city building trail project implementation process

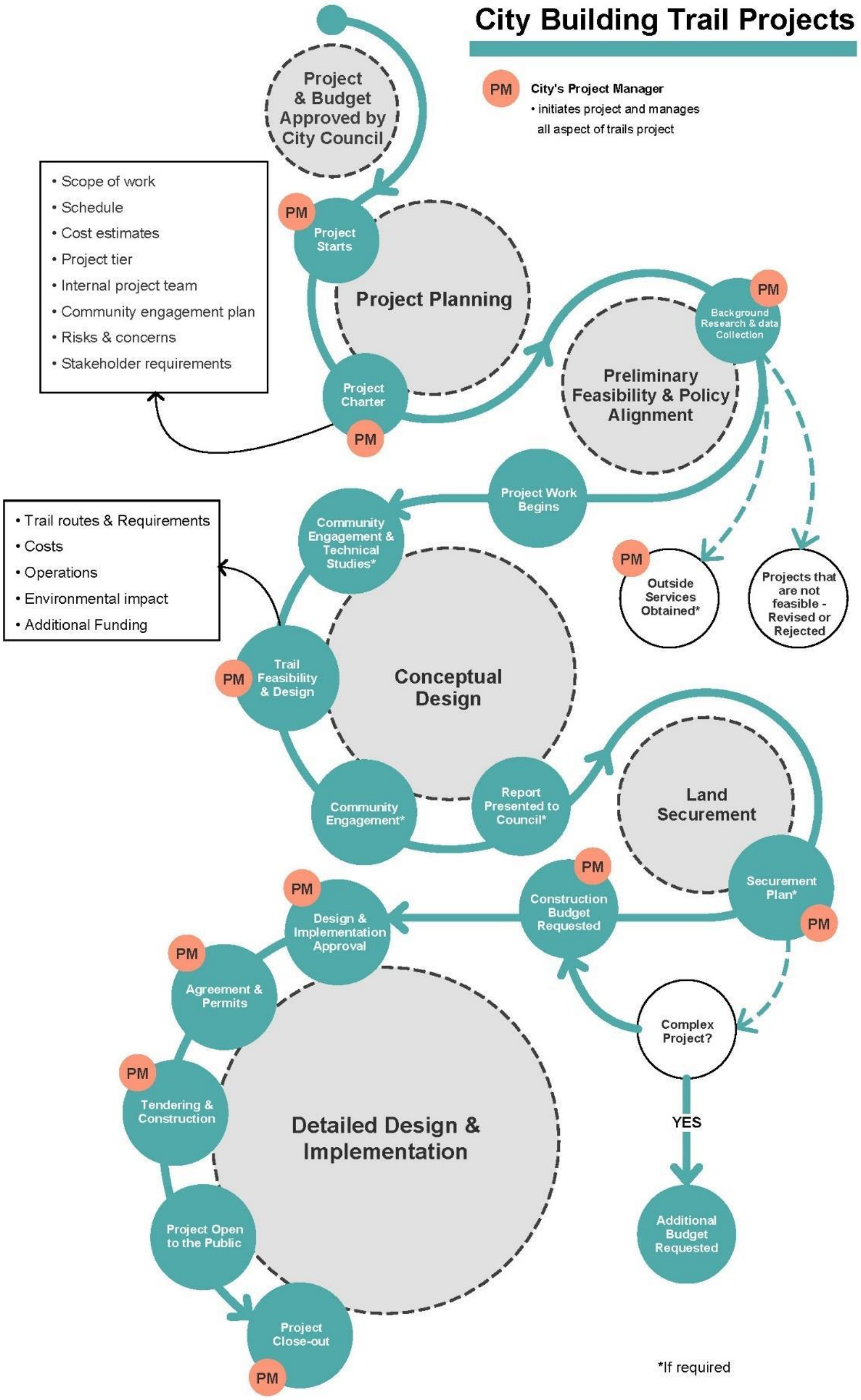
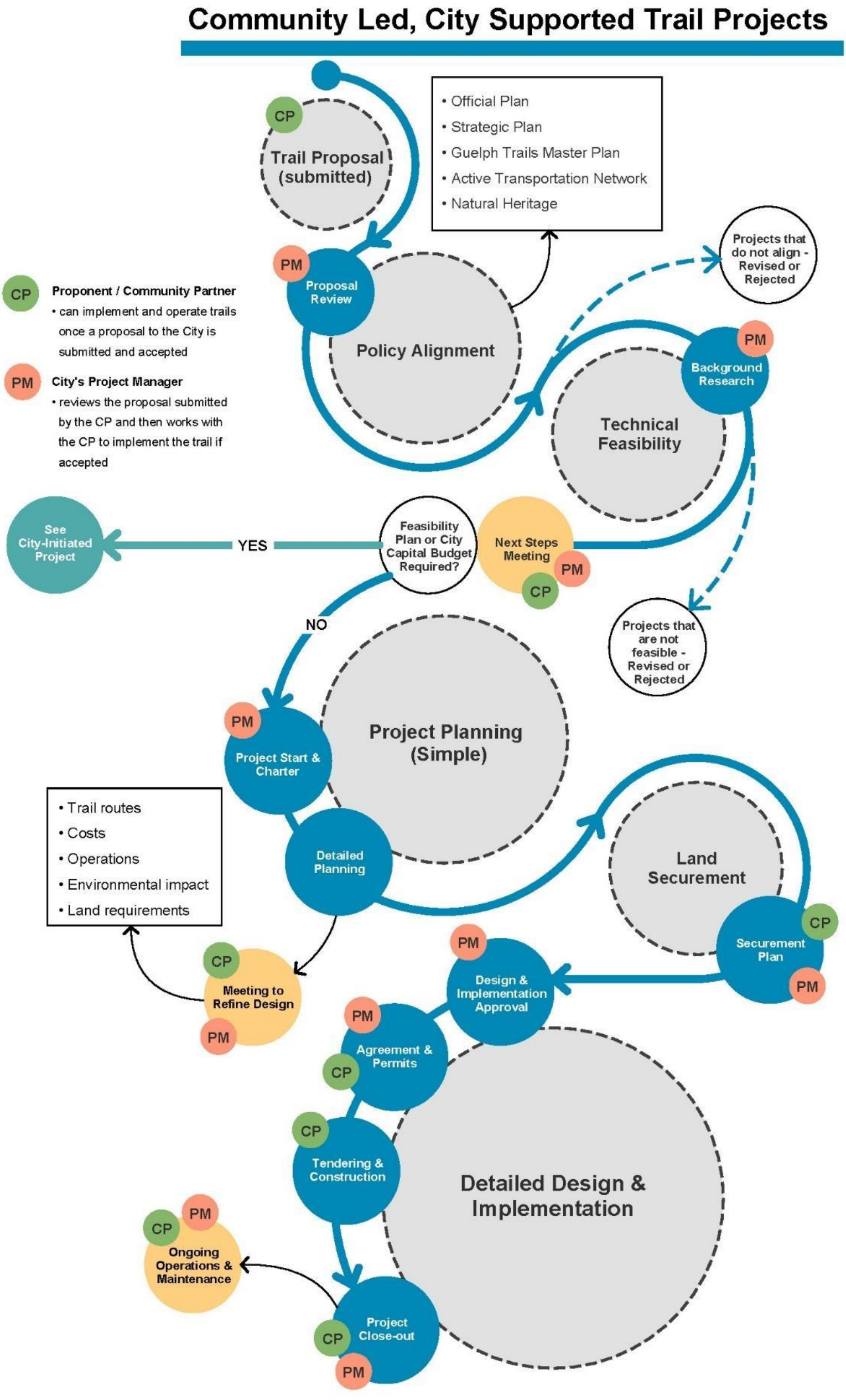


Figure 38. Illustration of community led, city supported trail project implementation process



Funding for trail development and operation

In order to be financially responsible, it is important to understand how we currently fund our work. From our city budget trail development and operation are funded mostly under operating and capital budgets. Through our budget planning we identify short and long term costs that are approved through annual budget processes. A priority of the Strategic Plan is to "develop a long-term financial and resource strategy that is achievable and affordable."

Funding new trail implementation

Growth or development

Areas of growth are either located in greenfield areas (subdivisions, secondary plans) or in the built-up boundary (redevelopment or infill development). Municipalities in Ontario use Development Charges (DCs) to recover certain costs associated with growth. Companies building houses, subdivisions, shopping centres, industrial parks and other developments help the City pay for the additional municipal services required—things like trails. Trails in areas of growth are funded almost entirely by DCs or developers.

City building or network improvement

City Building is a tax supported funding strategy that finances capital projects that represent enhancements to the City's current service levels. In the case of trails, these are new trails or infrastructure typically in existing areas. These types of projects are funded 40 per cent from tax supported capital, and 60 per cent from development charges (growth).

For every dollar invested in City Building projects, there are also increased operating costs that will require a new funding source.

Funding improvements to existing trails

Infrastructure renewal

To make improvements to our existing trails or to replace trails at the end of their useful life, we use an infrastructural renewal fund. The City's Infrastructure Renewal Strategy has one main goal, ensuring funding levels are sufficient to meet the maintenance and replacement needs of all City infrastructure.

Infrastructural renewal is tax supported and part of our Corporate Asset Management Plan.

On-going operation, maintenance and repairs

To keep our trails in good shape or to plough trails in winter this is supported by the City's operating budget. Operating budget is tax supported.

Additional funding programs

Provincial and federal government

The following are examples of funding programs available that could be used to obtain funding for trail construction and improvements. Other programs may emerge over time.

Ontario Builds - The Ontario Builds program is a provincial infrastructure funding program which has funded active transportation infrastructure such as sidewalks, trails, and bike lanes in urban and rural communities across the province.

Federal Gas Tax Fund - Gas tax is collected annually by the federal government. Jurisdictions receive a proportion of the federal dollars based on their populations. The Gas Tax Fund supports environmentally sustainable municipal infrastructure by funding a range of projects including transportation projects.

Infrastructure Canada - The programs of Infrastructure Canada are the Active Transportation Fund, New Building Canada Fund (NBCF) and the aforementioned Gas Tax Fund. Typically, the federal government contributes one-third of the cost of municipal infrastructure projects. Provincial and municipal governments contribute the remaining funds and, in some instances, there may be private sector investment as well. The NBCF supports projects of national, regional and local significance that promote economic growth, job creation and productivity. A number of active transportation projects and roadway and transit projects with active transportation elements have been funded through this program.

Other funding possibilities

Green Municipal Fund - The Federation of Canadian Municipalities (FCM) manages the Green Municipal Fund (GMF). Eligible capital projects include transportation that must demonstrate the potential to reduce vehicle kilometres travelled in a single occupancy vehicle by encouraging active transportation. Matched funds are required.

Volunteer and Private Sector - The City should continue to pursue could seek out partnerships for funding plan recommendations. Funding for improvements and ongoing maintenance could be funded partially through volunteers and donations, either from individuals or service clubs and trail groups. Advertising on trail elements or development of a program for sponsorship could also be used to fund new infrastructure and improvements.

Operating and maintaining trails

Operations and maintenance activities ensure that trails are reliably and safely available for everyday use. Our Parks maintenance staff are responsible for day-to-day operations and maintenance of our trails. Trails require regular and routine maintenance in addition to as-needed repairs, seasonal maintenance (if applicable), and scheduled repairs, improvements, and replacement. Inspection and audits, which can be carried out as part of routine maintenance are important for identifying needed trail repairs and improvements.

Trails should be designed to accommodate planned operations and maintenance. For example, trails that are intended for winter clearing need to be designed to have space for snow storage, or have appropriate turning radii for maintenance vehicles. Certain operations and maintenance activities may not be feasible on some trails due to their current design and/or potential impacts to natural heritage.

Communicating trail operations and maintenance standards can help to establish expected conditions along trails so that trail users can plan accordingly and know what to expect, especially after severe weather events and during the winter.

Trail users can support trail operations and maintenance by following trail rules of use, respecting trails, leaving nothing behind, and reporting any maintenance issues on trails to the City by calling the City hotline, using the map app, or on the website.

As-needed repairs

As-needed repairs are identified through regular maintenance activities, or from user feedback. They commonly include work after severe weather events, such as clearing fallen trees. As-needed repairs are prioritized relative to the severity of the problem, whether they pose a risk or hazard, and the classification of the trail (transportation focused trails are generally prioritized for maintenance).

Regular and routine maintenance

Regular and routine maintenance activities are performed on a regular rotation throughout the year. They include a variety of activities such as:

- Clearing vegetation, pruning trees and shrubs
- Mowing grass edges
- Sweeping and grooming trail surface of dirt and debris (i.e., leaves)
- Litter removal
- Drain clearing

Best practices for the frequency and standards for these activities may change over time based on industry standards, comparator municipalities, and intensity of use. Application of these activities is at the discretion of our staff, with the emphasis on

activities that support the health and longevity of natural heritage, trail assets, and user safety and experience.

Seasonal maintenance

Seasonal maintenance includes special maintenance activities completed during specific times of the year to support trail usability, safety, and trail asset lifespan. Some activities such as snow clearing are only done on certain trails. Seasonal maintenance activities can include:

- Spring cleaning (clearing accumulated debris accumulation post snow melt, and addressing trail surface issues such as erosion)
- Snow clearing
- Salting or sanding (minimize use of salt to the greatest extent feasible)
- Snow grooming for winter activities

Scheduled repairs, improvements, and lifecycle replacement

Scheduled repairs, improvements, and replacements are activities that are planned in cycles beyond one year over the lifespan of a trail. Examples of activities include:

- Line and symbol painting
- Surface and edge repairs (cracks, minor potholes not requiring As-needed Repair)
- Resurfacing
- Drainage improvements
- Sign repair and replacement
- Lighting replacement where applicable
- Pavement replacement
- Significant improvement or replacement

More significant improvement and replacement activities are an opportunity to potentially upgrade the current trail standards such as trail widening or surface upgrades to align with the trail's planned trail classification standard.

Operation and maintenance approaches

A maintenance plan should be clearly defined to outline how we plan, prioritize, schedule, and track maintenance work. It should be developed in collaboration with a Trails Technical Manual that ensures trails are constructed consistently and supports the long term life of the asset. The current maintenance plan should be updated to:

- Redefine specific maintenance goals and standards for levels of service
- Outline a maintenance programs to provide our level of service
- Determine how to execute maintenance programs in an efficient way (e.g., collaboration with other departments or groups, new technologies or equipment)
- Determine how to monitor and evaluate our ability to meet desired level of service
- Compile cost data to develop better budgets and standards

The maintenance plan should be evaluated and updated regularly so it remains current with other maintenance practices within the City and with best practice across the industry. Key principles of the Operations and Maintenance Plan should include the following

Develop a network-level approach to management maintenance plans by collaborating with other departments (e.g., Park Operations, Public Works, Water, Planning, Engineering, third party groups). This approach should look for efficiencies, capitalize on the different types of equipment in our fleet, and make use of logical routes. It should refine roles, maintenance practices, align construction/repair/maintenance standards, define life cycle replacement, and review budget impacts

Operations and maintenance standards should be generally set based on the trail classification and frequency of users. The trail classification sets the trail design standards and relates to the intended use of the trail. Scheduled repairs, improvements, and replacement should be implemented as they are identified and prioritized, which is not dependent on the trail classification

Table 12. Trail maintenance by classification

	Regular and Routine Maintenance	Seasonal Winter Maintenance
Primary Trail	Highest priority	Highest priority; winter cleared and maintained
Neighbourhood Connector Trail	High priority	High priority; winter cleared and maintained
Secondary Trail	Medium priority	Medium priority; Some sections may be winter cleared and maintained
Stormwater Management Trail	Medium priority	Not winter maintained maintenance unless required for stormwater management purposes
Tertiary Trail	Low priority	No winter maintenance
Third Party Trail	Not currently maintained by City staff – standards vary	Not currently maintained by City staff – standards vary

- Invest in appropriately sized maintenance equipment to lower environmental impact and enable maintenance of trails outside of the primary network (i.e., size the equipment to the trail rather than sizing the trails to the equipment we have)
- Develop natural area-specific management plans for key natural heritage areas which will further refine maintenance practices to suit these areas with unique considerations
- Continue to determine maintenance activities and requirements for any new trail project and ensure that the costs for the activities are budgeted for in annual operations budgets. This could include estimating lifecycle replacement year and potential replacement costs as new trail segments are added
- Continue to develop digital databases and technology to better track maintenance activities and observations
- Develop an asset management plan to better identify long-term lifecycle replacement needs. This should include an annual monitoring program to assist in identifying and prioritizing as-needed repairs and scheduled repairs, improvements and lifecycle replacement. The asset management plan could include monitoring for invasive species along trails

Chapter 7:Next steps

This section summarizes the recommendations and actions to help achieve the vision and goals of the GTMP.

Some of these actions will have implications for the City's operating and capital budgets, while many will have little financial impact or have already been allocated. A discussion of financial implications and staffing resourcing is found in Financial implications section.

Summary of recommendations and actions

The recommendations and actions have been organized into the themes used to guide the plan development.

Connect

Adopt the trail network as our guide

We will use the trail network illustrated in the plan as our guide. The network provides an overall vision for existing and future trails. It was developed based on the best information available at the time the plan was developed. Recognizing that new opportunities arise, additional study and planning needs to take place in some areas of the city, we will work collaboratively, with external partners, and with the development industry to implement the trail network, including adapting to new information that becomes available.

We recognize that adjustments to the approved trail network as illustrated in Map 3 will occur from time to time and that this is consistent with the goal of ensuring the network plan is flexible and can respond to changes and new opportunities.

Implement or advance planning of priority city projects

We will work through the City building trail process to implement priority projects. These are priorities that are identified as important by the project team, stakeholders and public. This list is not intended to be prescriptive, but rather give City staff the ability to complete work based on available budget, coordination with other departments and partners, opportunities that arise or work underway as part of other City priorities. We will work to implement projects as per our decision making criteria and in ways that make investments to improve inequity in our community.

Improve crossing of major barriers at key locations

There are many locations in the city where trails cross major barriers including: rivers, railways or arterial roads. Making improvements to these crossings can have an impact on safety, efficiency and connectivity of our trail network. In many cases, crossing these barriers is technically complex and may require significant capital investment to solve (e.g., overpasses, underpasses, bridges, etc.).

Road crossing improvements have been identified based on information collected through our network review and reported locations of conflict by the public. The next step will be to study these locations and prioritize them amongst other proactive improvements in the annual review of traffic improvements. Crossing improvements will be studied using the principles of the Traffic Calming Policy and process.

Work with community partners to implement community-led, city-supported trail projects

We will develop a process to review, evaluate, and prioritize requests from community partners. The process should be transparent and balance limited resources while also prioritizing projects that address community wants and needs. We will reflect on the discussion in the equity analysis and seek opportunities to hear from communities that we may not currently be hearing from. We will work with groups through the implementation process.

Continue to require trails to be built as part of new developments

The plan identifies proposed trails that are most likely to be planned, designed, constructed or acquired through a development project. We will continue to encourage developers to include trail design and implementation in the development process and provide connection to the larger trail and cycling networks. We will work with developers to create better tools to communicate, support and structure this process. We are committed to building stronger partnerships.

Where trails are not constructed as part of development projects, we will develop strategies to implement them after development occurs as resources and funding allows.

Continue to collaborate and develop a multi-department trail working group

We will develop a multi-department working group to collaborate on City projects and develop a network-level approach to planning and implementation of the trail and active transportation networks. We will continue to look for opportunities to coordinate work, pair infrastructure improvements, optimize efficiencies and identify future trail and active transportation needs.

Inform

Develop and implement a signage and wayfinding strategy

We will complete an inventory of existing wayfinding trail signage to support further development of a work plan to implement an updated system across the city's trail network. The inventory should include details on sign location, sign type, content, details about accessibility, and condition.

At the same time, we will confirm the standard wayfinding signage family. We have improved the current sign types and information iteratively, responding to feedback from trail users and stakeholders. We will confirm a preferred, standard signage family to proceed with the implementation of signage across the system.

Finally, we will develop a work plan to implement wayfinding signage across the city's trail network.

Provide easily accessible information about trails online

We will ensure that up-to-date information about the trail network is available online in an accessible format. We will collect and make available more detailed information about our trail network, including maps. Providing better information will help residents and visitors make informed choices based on their needs, abilities or desired user experience.

Investigate new technologies to support trail users and wayfinding

We will investigate ways to integrate new technology or digital information into the trail network to help with wayfinding, route planning, promotion and enhance overall user experience.

Protect

Complete natural area management plans to plan for trails

In the Natural Heritage Action Plan we identified that management plans should be developed to restore and protect our sensitive natural assets. Management plans can also be used to appropriately balance passive nature-based recreation—like trails—with the protection and restoration of sensitive natural heritage elements.

Management plans should be prepared in key areas (e.g., Hanlon Creek Conservation Area/Preservation Park) to help review the existing formal and informal trail network. The management plan will be used to develop and formalize a trail network that is compatible with the protection of natural areas—this may include decommissioning trails while improving others.

Review and clarify trail policies in a future Official Plan update

We will review Official Plan policies as part of a future update to clarify the interdependent nature of our trail network and our natural heritage system (NHS). The Official Plan should provide clarity on the relationship between the trail hierarchy and permitted uses in the NHS.

Examine the trail network for opportunities for continuous improvement

We heard from the community that the sense of security on our trails limited use in some areas. To help ensure that trails are places that people are comfortable and safe to use, we will look for opportunities for continuous improvement. Through our regular trail inspections, we will examine ways we can improve safety, functionality, inclusiveness and user experience. We will use principles of 'Crime Prevention through Environmental Design' (CPTED), 'All Ages and Abilities' (AAA) and universal design to improve areas of concern on an ongoing basis.

Celebrate

Incorporate opportunities for placemaking

We will continue to look for opportunities to create unique spaces or install public art as trails are built or improved. Trailheads, parks, major destinations and along well-used trails are all good places to highlight our unique character and build a sense of place for our trail network.

Celebrate and support trail development partners

We will investigate how to formally recognize individuals, businesses and groups who contribute to the promotion, development and maintenance of our trail network. This may be tied to larger corporate recognition programs. We will also develop a framework to support trail development partners in community initiatives.

Accommodate community to host events that utilize trails

We will create a framework to accommodate the use of the city's trail network for community events, while considering and managing the impact on the trail network and other users.

Develop programming to activate the trail network

We will continue to develop programming and work with community partners to support programs that use the trail network and promote active living. Trail programming attracts residents and visitors to get outdoors—ensuring they can experience the benefits of nature, active living and social interaction.

Explore opportunities for trail branding and promotion programs

We will explore opportunities for a trail branding and trail promotion program for key trails. Internal departments, external agencies, businesses and community partners should collaborate to promote and educate our community on the benefits of using trails.

A trail branding program should highlight our social and cultural heritage and support distinct place-making efforts along trails. This effort should be coordinated with the implementation of a wayfinding system across the trail network. This work can include reviewing existing trailheads to understand if any improvements are needed.

Establish a trail committee

We will work with the community to establish a trail committee to support the implementation of the plan. It will provide an on-going opportunity to liaise on the

city's trail network and plan for community-initiated, city supported trail projects. The scope and mandate of the committee will be determined to identify roles and responsibilities. The trail committee will include members of the public and be supported by city staff.

Manage

Develop a Trails Technical Manual and Maintenance Plan

A Trails Technical manual should be developed to guide future trail design, improvement and construction. It should outline construction standards, details and specifications.

This work can be completed in collaboration with a Maintenance Plan. The maintenance plan should be evaluated and updated regularly so it remains current with other maintenance practices within the City and with best practice across the industry.

Formalize operation and maintenance standards based on trail classification

We will formalize the operation and maintenance standards to align with the updated trail classification system established in this plan. As part of this review, we will identify where additional resources are necessary to achieve maintenance standards. We will also develop a network-level approach to maintenance by collaborating across city departments and identify any barriers that may impact operational efficiency (e.g., existing bridges that are not wide enough to accommodate maintenance equipment).

We will complete an audit of existing equipment and identify opportunities to right-size trail maintenance equipment. We will also ensure the maintenance costs for new trail infrastructure is included in operating budgets.

Develop an internal digital database to track maintenance activities and observations

We will continue to develop a digital database to track trail maintenance activities and observations—in an effort to better track, coordinate, and manage maintenance work. The database will be part of the corporate asset management database and incorporate the information we receive from the community through our 'Report a trail concern' tool.

Review and expand the winter maintenance program for existing trails.

We will continue to expand our trail maintenance program in winter. Winter maintenance provides critical access to schools, active transportation routes and

recreation opportunities. Unlike sidewalks, legislation does not legislation does not require us to clear recreational trails—we do it because our community benefits from it. Increasing our total number of kilometres, we winter maintain will require a review of existing operation practices, staffing, and funding.

Work with community to implement winter trail maintenance for specialized activities

We will work with the community to explore, support and implement opportunities for winter trail maintenance on trails for specific activities such as grooming for cross-country skiing and ice-skating trails.

Regularly maintain and update trail GIS data

We will regularly maintain and update the city's trail GIS to ensure that it contains up-to-date information and is populated with information such as significant slopes, surface material, lighting, etc.

Develop an Asset Management Plan for trails

Building on the current asset management plan for the City, develop a plan specific to trails. Asset management helps make the best possible decisions about our assets in a way that provides targeted levels of service and manages risk in a cost-effective manner. Good asset management means making decisions based on the lowest long-term cost over the entire lifecycle of the asset, rather than short-term savings, and managing assets in a way that balances service levels, risk and cost. The plan should detail how we can integrate lifecycle management into day-to-day operations and as well as long term planning.

Identify a pilot project for trail lighting on a section of the ATN

Trail lighting supports the use of trails for everyday, reliable transportation. The addition of trail lighting also relates to the Protect theme, ensuring that people feel safe and comfortable on our trails. Implementing lighting as a pilot on a section of trail will allow us to better understand considerations associated with implementing trail lighting on a broader scale.

The pilot will consider impacts to the natural heritage system, neighbouring properties, cost and energy use. We will measure the success of the pilot through data-driven processes such as trail use volume and user's perceived experience before and after the pilot. The geographic limits of the pilot project will be selected to ensure that the section connects to destinations and other cycling routes.

Monitoring success of the master plan

Collecting and managing data about trails will help monitor the plan's success. A goal of the plan is "Enhance management and use of data to support decision-making." The master plan recommends that a system to measure the success of the plan be developed as part of a data management program. The system should include key performance indicators to measure and report on the plan's success. Some key performance indicators will be measured in larger corporate initiatives identified in the Strategic Plan's Action Plan and Performance Measure Framework, including connectivity index, per cent change of auto mode share, per cent reduction in greenhouse gas emissions and per cent increase in citizen satisfaction. Other key performance indicators can be measured directly through the implementation of the plan. As part of a data management program, performance measures should be developed and tracked regularly. Potential performance measures can include:

- Number of kilometres of new trails added
- Per cent of residents located within walking distance of a trail
- Rate of new trails built compared to population growth (i.e., maintain current level of service)
- Number of kilometres of trails with improved signage and wayfinding implemented
- Number of kilometres of built active transportation infrastructure (measurement: kilometres of existing routes)
- Number of improved crossings studied or implemented
- Number of events organized by the community on trails

The success of the Guelph Trail Master Plan will be reported regularly as the plan is monitored and evaluated.

A review and update of the master plan is planned for 2026 at the five year mark. A five year review may include revisiting goals, priorities and aligning work plans with a future Strategic Plan or new opportunities. A full master plan update is recommended in 2031.

Financial implications

The Guelph Trails Master Plan is intended to be implemented over a 10-year period. This section provides estimates for capital and operating budgets and general staffing requirements over this period, based on information provided by City administration, anticipated market conditions and recommended priorities and actions. The budgets are provided to assist with long term capital planning and resource allocation. Inevitable adjustments in the pace, scale and order of recommended projects and actions over the lifespan of the plan makes later projections less reliable - it may be prudent to revisit these projections in 5 years and adjust them as necessary.

In most cases we have identified our average costs over the next 10 years instead of showing 'peaks' and 'valleys' that might be expected. We have also shown the previously approved ATN costs in the chart to show the relationship of these costs to the capital budget. The annual capital and operating budgets will be approved through the City's annual budget program.

Capital budget

Trail construction and improvements are paid for through a combination of municipal tax revenues, development charges and third party sources as outlined in Section 5.2. The funding strategies the City's capital budget are Growth, City Building, and Infrastructure Renewal. Description of each funding strategy is included below.

Growth

These are trails designed and constructed through subdivision applications, site plan applications, or secondary plans. Municipalities in Ontario use Development Charges (DCs) to recover certain costs associated with growth. Companies building developments help the City pay for the additional municipal services required—things like trails. Trails in areas of growth are funded almost entirely by DCs or developers.

City Building

City Building are trails in existing developed neighbourhoods, these trails help improve our network connectivity. City Building is a tax supported funding strategy that finances capital projects that represent enhancements to the City's current service levels. In the case of trails, these are new trails or infrastructure typically in existing areas. These types of projects are funded 40 per cent from tax supported capital, and 60 per cent from development charges (growth).

Infrastructure renewal

To make improvements to our existing trails or to replace trails at the end of service life, we use an infrastructural renewal fund. Infrastructure renewal is tax supported and part of our Corporate Asset Management Plan.

A formal asset management plan will help us make the best possible decisions about our assets in a way that provides targeted levels of service and manages risk in a cost-effective manner.

Capital budget forecast

The capital investment forecast in Table 13 and 14 will be used to support the addition of new trails and improvement of our existing trails in order to maintain our service level as our population grows. Table 13 and 14 include costs for policy creation, planning, design and construction but not does not include inflation. Inflation will be applied through the capital budget process.

Table 13. Capital investment for new trails (2022-2032)

New trails	**2022-2032** **Average annual budget forecast**	**Total over 10 years**
Growth	$1 million	$10 million
City building	$1.3 million	$13 million
City building (ATN)	$515,000	$5.15 million
Total	$2.82 million	$28.2 million

Table 14. Capital investment for infrastructure renewal (2022-2032)

Infrastructure Renewal	**2022-2025** **Average annual budget forecast**	**2026-2032** **Average annual budget forecast**	**Total over 10 years**
Improvements to existing trails	$100,000	$350,000	$2.4 million
Improvements to existing trails (ATN)	$30,000	$75,000	$645,000
Total	$130,000	$425,000	$3.05 million

Land acquisition

There may be times that we may need to acquire land or an easement for trails—for example trails along Guelph Junction Railway or on other agency land. Our forecasted value of land for trails over the next ten years is between fifteen and twenty-five million dollars ($15-25 million). This number is based on the estimated length of trails, potential size of trail corridors and current land values.

Land acquisition is currently unfunded in the city's budget. As part of a Trail Acquisition study or through other financial studies (Community Benefits Charge) we will review potential funding strategies, land acquisition tools and future policies to support acquiring land for trails.

Operating budget

Operating costs for trails are based on a number of factors including amenities, level of use, ease of access, length, equipment needs, and seasonality of services. The location can have a significant impact on the type and frequency of maintenance required, whether it is winding through a neighbourhood park or skirting the edge of the river. For these reasons, projections of future operating costs are necessarily imprecise and general. For this plan, estimated per-kilometre operating and maintenance costs are applied proportionally to the expanded trail network. Table 14 show a summary of forecasted operating budgets as well as project staffing needs.

Current base trail operations and maintenance costs are estimated at $6.75 per linear metre of trail. For trails that are winter maintained, it costs the City an additional $2.50 per linear metre. These costs represent a baseline that is likely to change as trail maintenance practices are refined based on an updated trail classification, future trails operation manual and new asset management practices. Over the next ten years, the trail network is planned to expand by 25% and a proportional increase in operating budget will be needed to manage the larger network. This is estimated at $22,750 annually.

Winter maintenance budget

As of 2020, the City clears snow from approximately 27 kilometres of trail, using three staff and three plows. Based on the recommendations in this plan to expand regular snow clearing to all primary and neighbourhood connector trails, there will be an additional 38 kilometres of trail to clear, increasing the winter maintenance requirements by $9,500 each year. Winter maintenance expansion will increase incrementally over the next ten years. This roughly translates into the addition of four new staff and four new plows. Note the location of new trails, snow accumulation patterns, variations in fuel cost, and other variables that could influence the required resources are not factored into this projection, but because this increase will be incremental over the next decade, there will be opportunities for more accurate assessment of needs from year to year.

Staffing and support

As the trail system grows there will be increasing demand for staff to help maintain the trails, beyond the staff required for snow clearing operations. This growth will not be limited to seasonal staff: additional full time staff will also be required for oversight and efficient operation. We expect over the next 10 years the current complement of full-time staff will need to increase proportionally with expansion of trail system and alignment with trail classifications; increases to seasonal workers will also increase proportionally. As with the winter maintenance crew, an informed review of these projections will be performed annually based on specific operational needs as part of the budget review process.

Implementation of the GTMP will require the creation of a permanent full-time staff position (FTE) dedicated to trail operation and management. A Trail Technologist position will report directly to the Manager of Sport and Leisure Grounds and assist in day-to-day operation and future management of trails. A dedicated position will help us maximize operational efficiency and allow for better asset and data management. A request for FTE will be taken to Council through the annual budget cycles as part of the City's operating budget for Parks.

Table 15. Forecasted Operating Budget (2020-2032)

	2020 trail operating budget	**Annual average budget increase**	**Increase over 10 years**	**Forecasted 2032 trail operating budget**
Average base maintenance	$870,000	$22,750	$227,500	$1,097,500
Winter maintenance	$75,000	$9,500	$95,000	$170,000
New full time positions	-	-	4	-

Investment in the community

One of the goals of the master plan is working with our community. Building relationships with local agencies, user groups, trail organizations and businesses on trail initiatives is a priority of the Strategic Plan. Exploring new funding options, service-delivery models and partnerships can help ease taxes and provide community ownership of the plan.

There may also be times that the City support community initiatives with funding. Policies and procedures should be developed to assist, should an opportunity arise.

Appendix

Appendix A: Public engagement summary report

Guelph Trail Master Plan update

Phase One Engagement Summary

Purpose:

The purpose of this phase of community engagement was to inform the public of project scope, outline the study process and understand the community`s thoughts and feelings about trails in the City of Guelph.

What we did:

Phase one community engagement for the Guelph Trails Master Plan update included the following activities:

- Online community survey made available at guelph.ca (October-November 2017);
- Online discussion board using Mindmixer available at guelph.ca (October 2017);
- Social media and email correspondence (October 2017);
- A public open house at Evergreen Seniors Centre (October 19, 2017);
- A landowner and developer drop-in open house in City Hall (October 18, 2017);
- A pop-up event at the Main Branch of the Public Library (October 19, 2017);
- A pop-up booth at the Guelph Farmers' Market (October 21, 2017);
- Stakeholder meeting with Environmental Advisory Committee and River Advisory Committee (joint session) (September 13, 2017);
- Stakeholder meeting with Guelph Accessibility Advisory Committee (October 17, 2017);
- Stakeholder meeting with trail groups, including: Guelph Off Road Bicycling Association, Guelph Hiking Trail Club, Guelph Bikes, and Active Guelph (October 17, 2017)
- Internal stakeholder workshops with key municipal departments such as Parks Planning, Parks Operations and Forestry, Recreation Services, Policy Planning, Asset Management, Accessibility, Engineering, Transportation, Public Works and the City management team (October 20, 2019);
- Advertising and correspondence sent to a number of key stakeholders and groups.

In total, we received feedback from 570 individuals from the 8 in-person events and 4 online platforms.

Wherever possible we have reviewed and incorporated community engagement data from other related City of Guelph projects such as the 2019 Strategic Plan, the

2018 Community Plan, the 2017 Citizen Satisfaction Survey, Natural Heritage Action Plan, Urban Forest Management Plan, Parks and Recreation Master Plan Phase One data and the Guelph and Wellington County Vital Signs data.

What we heard:

For the Guelph Trails Master Plan update, community engagement helped us understand:

- Who uses Guelph's trail system;
- What priorities they want us to focus on;
- How they feel about the trail system right now; and
- What their vision is for the future of trails in Guelph.

Both staff and community data revealed overwhelmingly how much we value our trail system. Guelph residents desire a bicycle- and pedestrian-friendly city that connects people to nature and to the other places they want to go.

- We heard common top of mind themes including:
- Difference between transportation focused trails vs. recreation focused trails
- Trail safety and trail crossings at roads or other barriers
- Winter maintenance
- Where to find relevant information and mapping
- Communicating trail conditions to help users understand level of difficulty
- Signage and wayfinding
- Protecting the environment while also providing accessible trails
- Risk management and liability of informal trails
- Funding trail improvements and expanding the trail network

Survey results:

The respondents to the online survey were 48 percent male and 49 percent female. The largest age group that participated in the online survey was between 41- 60; the next largest age group was 26-40. Specifically we heard:

- Most respondents are interested in using trails for exercising (47%), transportation 23%) and experiencing nature (20%)
- Social interaction, dog-walking, bird-watching and photography are other important reasons people use trails
- Most respondents use trails daily or more than once per week in spring and summer (85%), fall (75%) and winter (57%)
- Many respondents identified themselves as beginner and intermediate users of trails across different activities, including: walking, hiking, biking, cross country skiing, snowshoeing and jogging/running
- A small group of respondents are expert users of trails and are comfortable with surfaces and trails that are more challenging

Survey respondents helped the City prioritize trail improvements from most urgent to least urgent:

- Fill gaps in the existing trail network
- Expand the existing trail network by building new trails
- Change the surfacing (material, size, etc.)
- Focus on trail/ road/ rail crossings
- Focus on trail/ river crossings
- Build trails in new developments
- Improve trail maintenance (e.g. condition of the trail)
- Create more and better trail maps
- Add more trail related facilities (e.g. benches, garbage cans)
- Focus on trail way-finding signs (e.g. you are here and key destinations)
- Promote trails so more people use them.

Most respondents (86%) feel very or somewhat safe on City trails

Safety at night, off-leash dogs, distracted people, drug-use on trails and cycling paths on roads are the most common reasons why people feel unsafe

Most respondents feel that existing trails serve a wide variety of users and abilities, but that small changes would make it better

What we are doing:

Following community engagement in fall 2017, staff and our consultants put their time and attention into collecting and refining data on our current trails and studying future and current route connections.

We are now moving into Phase two engagement of the GTMP update. In this phase we are using the feedback gathered in the first phase of engagement to ask new questions that dig a little deeper. We want to understand the themes better and to validate what we heard.

Feedback from each phase will help us build a comprehensive master plan for trails in the City of Guelph.

What is next?

Watch for opportunities to participate in phase two, which will include information about what we do and short survey opportunities that cover specific topics.

We will be collaborating with the Parks and Recreation Master Plan to ensure our trails and parks and recreation master plans work together for people in Guelph.

Following phase two, we will be in phase three. In spring 2020, we will be reviewing potential recommendations of the plan and prioritizing which ones are the most important ones to tackle first.

Phase two engagement summary

Engagement purpose

Our phase two engagement activities validated what we heard in our first round of listening for both the Parks and Recreation Master Plan (PRMP) and the Guelph Trail Master Plan (GTMP).

Engagement for the GTMP was merged with the PRMP to make it easier to provide feedback on trails, parks and recreation together. The original GTMP work plan did not include a second phase of engagement but was added as we aligned the GTMP with the PRMP. This summary is a reflection of the two master plans and the engagement we led together.

We focused on understanding key themes better to establish community priorities. Using the feedback from the 2017 GTMP survey and 2019 PRMP survey, we asked new questions that dug a little deeper and touched on some of the themes that were top of mind for residents.

Guelph Trail Master Plan engagement

The goals, deliverables and objectives of the GTMP remain the same: plan, design, fund, build and maintain the trails of tomorrow. By aligning this work with the PRMP, we are well positioned to discuss the entire city open space system and to understand the financial impacts of both plans.

What we did

Phase one community engagement for the Parks and Recreation Master Plan update, including engagement for the Guelph Trail Master Plan update, included the following activities:

- Online community survey made available at guelph.ca (November 26-December 16, 2019);
- Intercept surveying at various city locations (November 26-December 16, 2019);Online community mapping exercise to understand opportunities and constraints in our trail system (November 26-December 16, 2019);
- Brainstorming engagement with over 300 children in grades 2-5 during the City's Local Government Week visits (October 15-25, 2019);
- Sport user group survey continued (December 20, 2019-January 28, 2020);Sport user group meeting (January 14, 2020);
- Presentation and discussion with the Accessibility Advisory Committee;

- Advertising and correspondence sent to a number of key stakeholder groups (November/December 2019);
- Internal stakeholder workshops (nine workshops from November 2019-February 2020);

In the first phase of engagement for the Parks and Recreation Master Plan update we heard from 677 individuals. In the first phase of engagement for the Guelph Trails Master Plan update in 2017 we heard from 570 individuals. During this phase we heard from 1,051 individuals or groups.

Wherever possible, we reviewed and incorporated community engagement data from other related City of Guelph projects such as the 2019 Strategic Plan and 2019 Citizen Satisfaction Survey.

What we heard

The online survey asked questions about communicating with the community, recreation facilities, recreation programing, parks, park amenities and trails. There was also a map to record what was working well and what wasn't working well in our trail system. The people who responded to the survey were mostly adults ages 31 to 55 (62.4 per cent) or adults over 55 (24.7 per cent).

Key findings for recreation

- 86 per cent of people find it easy to find information about City programs, services and facilities. People prefer to use online sources to get information like the City's website, the Guelph Community Guide online and/or the City's Facebook or Twitter. 35 per cent of people prefer a print form of the Guelph Community Guide and 21 per cent of people prefer learning about programs in-person at recreation centres.
- 45 per cent of survey participant's prefer a drop-in (pay-as-you-go) style of programming and 16.9 percent prefer drop-in (membership) based programming to fit a more flexible lifestyle or to make participating in recreation programs more affordable.
- 67 per cent of people believe that the price they pay for recreation is a good value for their money. 75 per cent of people either agree or strongly agree that registered aquatic programs are a good value and 61 per cent believe that ice programs, fitness programs and general interest programs are good value. Less than 1 per cent of people don't believe that Guelph's programs and services provide good value for money.
- 59 per cent of people believe that free satellite-based programming like Activation Stations are important for the City to offer and 64.7 per cent of people believe the City should develop more of these programs for all ages.

Only 22.5 per cent of people would be interested in paying a small fee for this service.

Key findings for parks and trails

- 88.2 per cent of people feel that they live close enough to a park and 72.9 per cent of people use the park that is closest to them most often. For 27.1 per cent of people that don't use the park closest to them the popular reasons include: they prefer destination parks, prefer larger parks, go to parks with specific amenities/features, prefer a specific type (natural or sports fields) and prefer parks with more shade.
- The top three priorities for the future of our park and open spaces are: 1) connecting parks with trails, sidewalk or greenways, 2) obtain more land for parks in the form of small pocket parks in existing areas, 3) add more trails in existing parks and natural areas.
- 92.4 per cent of people believe naturalization in parks and open spaces is important. Many people believe we should be improving our existing natural areas (NHS) and including unmown areas or more tree canopy in our parks.
- Similar to the results in phase one, almost half of people believe that adding or improving trails is the best way to provide recreation in our community to adults, youth and seniors. The other top popular amenities include: dog parks, all season rink with boards and a ninja obstacle course/outdoor fitness equipment.
- The top three tools identified for creating improved trail experiences are: wayfinding signs, dog waste bags at trail entrances, and water fountains in key locations. 39.7 per cent of people identify that the City should invest in trails for experiencing nature—narrow natural surface trails.

Ideas to make parks, recreation and trails better

- Focus our efforts on creating a healthy community that serves all ages, backgrounds, income levels and abilities
- Invest in City infrastructure to encourage daily exercise, such as on-road cycling, trails, safer streets and higher quality public spaces that are senior and kid-friendly
- Make recreation affordable to for all to provide better access to all income levels
- Install more low-cost/free park amenities for informal play like disc golf, cross country ski trails, bocce ball, pick-up sports or other similar features
- Make facilities multi-purpose and provide half-ice rinks/ice dividers to increase ice time
- Build the South End Community Centre

- Encourage all-season use including winter and provide relevant amenities year-round
- Provide more washrooms and water fountains in key locations and parks
- Plant more trees in parks to provide shade for users and contribute to other environmental benefits

In addition to the online survey, people were asked to provide feedback on the city's trail system—what was working and what wasn't working. We received 84 comments that ranged from small improvements like better winter maintenance is needed to very large infrastructure upgrades suggesting bridges or underpasses in key locations.

How we're using your feedback

Community feedback is one factor in creating a guiding plan for recreation and parks in the future. As we prepare the master plan we will also consider:

- Alignment with other plans and strategies (e.g. Community Plan, Strategic Plan)
- Overall community benefit
- Environmental sustainability
- Future trends and population changes
- Technical considerations and operating impacts
- Financial sustainability

Next steps

In the next phase, we will review the plan framework. We will also review potential recommendations of the plan and prioritize which ones are the most important to tackle first.

The next round of engagement is planned for late 2020 and early 2021. Sign up to receive updates and participate at haveyoursay.guelph.ca.

The project is proceeding with some schedule adjustments as staff balance ongoing work with responding to community needs resulting from COVID-19. An updated schedule will be posted on the City's web page shortly.

Guelph Trail Master Plan update

Summary of what we heard – Phase 3 engagement

Introduction

The third round of public engagement for the Guelph Trail Master Plan (GTMP) update took place November 24-December 22, 2020. The goal of this round of engagement was to get feedback on the proposed trail classifications, learn which proposed trails the public sees as priorities and to hear about the experience of people using Guelph's trails during the COVID-19 pandemic.

During the pandemic, engagement took place entirely online on the City's 'Have Your Say' engagement platform and virtual public and stakeholder meetings. Both forms of engagement were communicated through a public notice, roadside and trail signs, the City's website, ads in the local newspaper and on the City's social media channels.

Have Your Say engagement platform

During the engagement period, following participation was recorded:

- 1,249 aware participants – visited at least one page
- 701 informed participants – viewed multiple pages, downloaded a document, or contributed to a feedback tool
- 125 engaged participants – contributed idea, stories, asked questions, or placed pins on the interactive map

Discussion forums

There were three discussion forums created to allow for a conversation around the topics of trail surfaces, the Trans Canada Trail (TCT) route and the proposed trail classifications.

Trail surfaces

There were 56 contributors to the conversation about trail surfaces. Contributors shared their opinions and experiences with different trail surface types. Many comments focused on a need for better winter maintenance regardless of the trail surface type.

Paved trails were preferred by some contributors for the following reasons:

- Enable winter snow clearing allowing people to use the trails all year
- Allow for people with disabilities to easily use trails
- Soft surface and granular trails are not as enjoyable to use and cause wear and tear on many types of bicycles

- Stone dust trails become mucky in winter and spring

Soft surface, granular and natural trails were preferred by contributors for the following stated reasons:

- Slows "speedy" cyclists
- Better drainage of rainwater
- Easier on joints
- Paved trails have higher cost
- Lower environmental impact

Trans Canada Trail (TCT) route investigation

There were 14 contributors who commented on the Trans Canada Trail (TCT) route. Contributors all agreed that closing the gap is a major priority for connecting the TCT and Goderich to Guelph (G2G) trails, and that the least preferable route option would be along Silvercreek/County Road 39. Contributors also noted a lack of signs for the trail, or trail detours makes using the TCT and G2G confusing.

Trail classification

There were three contributors to the trail classification idea page. One contributor felt that the proposed trail classification made sense providing options for active transportation and natural surface recreational trails. Another respondent wanted a classification system that more closely follows road classifications with names such as "Tier 1, Tier 2" to make it clearer which trail type it is.

Trail map

The public could add general comments at specific pinned locations on an interactive map, as well as specific pins for comments relating to trail crossings and trail connectivity. There were 290 comments on the interactive trail map.

Most comments identified locations where respondents would like to see new trails or trail improvements. Approximately 40 of these comments focused on third-party trails. Many comments focused on specific areas of Guelph, such as Dolime (25 comments), the Guelph Innovation District (GID) (21 comments) and the Speedvale underpass (9 comments). Many comments highlighted respondents' priorities for trail improvements.

Guelph staff and the consultant team have reviewed the comments and have identified feedback to be added into the GTMP as well as feedback to be considered for other plans such as the Transportation Master Plan or future work.

Stories about trail use during COVID-19

There were 12 contributors to the stories section of the website, with stories about trail use during the COVID-19 pandemic. Multiple stories highlighted the positive

experience of using trails this past year as a way to get exercise, get around the city, and get to be in nature.

Many stories highlighted inaccessibility, lack of connectivity and barriers in the trail network. This includes a lack of curb cuts at trail crossings and stressful crossings at signalized and uncontrolled crossings, noting the positive experience of continuous trails through grade-separated crossings instead.

Three stories highlighted the work that the Guelph Trail Hiking Club (GTHC) is doing with building and maintaining trails and the positive experience of volunteering with the group.

Other stories mentioned the need for trail features such as more benches, garbage cans, and trail lighting, the need to protect the natural heritage of the City and limit impact on natural spaces, and the need to have more connections and remove barriers to visiting Guelph Lake. Specific trail requests included completing the Eastview Circle to avoid the Eastview Road hill, and a trail behind Auden Road to Starwood Drive and link with the Laura Bailey Trail.

Questions

There were eight questions submitted on the platform. Questions ranged in subject matter including:

- Wanting separation on trails between pedestrians and cyclists
- Pedestrian bridges across the Speed River to create complete loops (e.g., by the skate park)
- A trail in the Hyland/Elginfield/Glen Burnie area such as in Carter Park
- Concerns about use of electric-assist bicycles on trails
- Access to Guelph Lake
- Add lighting along the trail parallel to the Hanlon Highway in the Hanlon Creek Dog Park
- Why trail maps are not available online, and on the trail

Stakeholder meetings

As part of the public engagement effort, the project team led engagement with the following stakeholder meetings:

- Trail user meeting (representatives from local trail groups) – December 8 at 6:30 p.m.
- Natural Heritage Advisory Committee – December 9 at 6:30 p.m.
- Accessibility Advisory Committee – December 22 at 3 p.m.

The minutes from these meetings are available on the City's website at guelph.ca/trails.

Correspondence from individuals and organizations

During the engagement period, the project team received email feedback from stakeholders including the Grand River Conservation Authority (GRCA), the Upper Grand District School Board (UGDSB), GTHC members, Up and Running Guelph, Terry Fox Run, the Yorklands Green Hub and members of the public. City staff responded directly to these emails.

Appendix B: Equity analysis memo

45 Spencer Street, Unit 101
Ottawa, ON, K1Y 2P5
(613) 319-0331
www.altaplanning.com

Date: August 19, 2020

To: Tiffany Hanna

From: Ezra Lipton, Alta Planning + Design, Kate Whitfield, Alta Planning + Design

CC: Glen Manning, HTFC Planning + Design

Re: Equity Analysis

The equity analysis was written with the intention to be used as section in the Guelph Trail Master Plan (GTMP). The placement for the section is open for discussion based on the most recent table of contents, or as an appendix.

Equity analysis

Introduction

In Guelph, we aspire to be a community that is diverse, inclusive and actively working to provide services that support the health and well-being of all communities. To support these aspirations from within the planning processes, equity analyses are a key tool to explore, identify and consider patterns in the community. By studying equity we are looking for areas where there may be uneven distribution of opportunities based on privilege. Equity analyses can include three lenses to consider services, policies and programs:

- **Equality** - that people have equal resources and access to them
- **Equity** - that resources and access to them are distributed in a manner that responds to the needs of people
- **Justice** - that resources and access are responding to historical and on-going policies and process that have unfairly impacted specific communities

For this analysis, we focused on both spatial analysis and considering communities that typically experience barriers to accessing services, with specific consideration to trails. Equity-seeking and historically marginalized populations have had greater exposure to planning and design decisions of the built environment that are linked with impacts to social well-being including health, education and economic

opportunity.[2] It is important to acknowledge that this analysis is the beginning of a conversation where thinking about equality, equity and justice are more ingrained within the planning process. This analysis is intended to help identify and plan where new trails should go by adding an equity and justice lens, as well as to consider programs and policies for trails from this lens.

Understanding equity through spatial data

Spatial analysis uses statistics to map trends in specific areas like neighbourhoods, cities or regions. For example, spatial analysis would be used to understand if there are areas of the city where there are more youth or where there are lots of dog owners. Looking at how the data is different across our entire city helps find trends that we might not see if we look at just the numbers. It also allows for different types of data to be overlaid for further analysis – like where there are families that have dogs and youth. Spatial analyses are always limited by the data that is available.

Methods

We analyzed the *Canadian Index of Multiple Deprivation* from Statistics Canada to study equity and trails in Guelph.[3] The data comes from the Canadian Census and compiles information that help us analyze:

- Residential instability
- Economic dependency
- Ethno-cultural composition
- Situational vulnerability

The resulting maps helps us identify areas where there may be equity-seeking populations. Areas with a high scores are more likely to seek equity. We will look at this information to understand if there are ways we help remove barriers by strategically investing in specific areas in our trail system.

Technically speaking: the *Canadian Index of Multiple Deprivation* dataset from Statistics Canada, uses data from the Canadian Census at the dissemination area (DA) census level and compiles 17 variables that contribute to four dimensions of deprivation. Based on the variables, factor scores are calculated for each dimension, and the scores are grouped into five equally sized groups, with a

[2] BCCDC Equity Fact Sheet

[3] Statistics Canada Index of Multiple Deprivation

quintile of 1 being least deprived, and a quintile of 5 being most deprived based on the variables related to that dimension.

The quintile scores for each dimension have been mapped to show the scores on a gradient, with existing and planned trails overlaid. This allows for a discussion about areas of our city with high scores for each dimension and possible relationships or impacts that the presence or lack of trails may have.

Findings

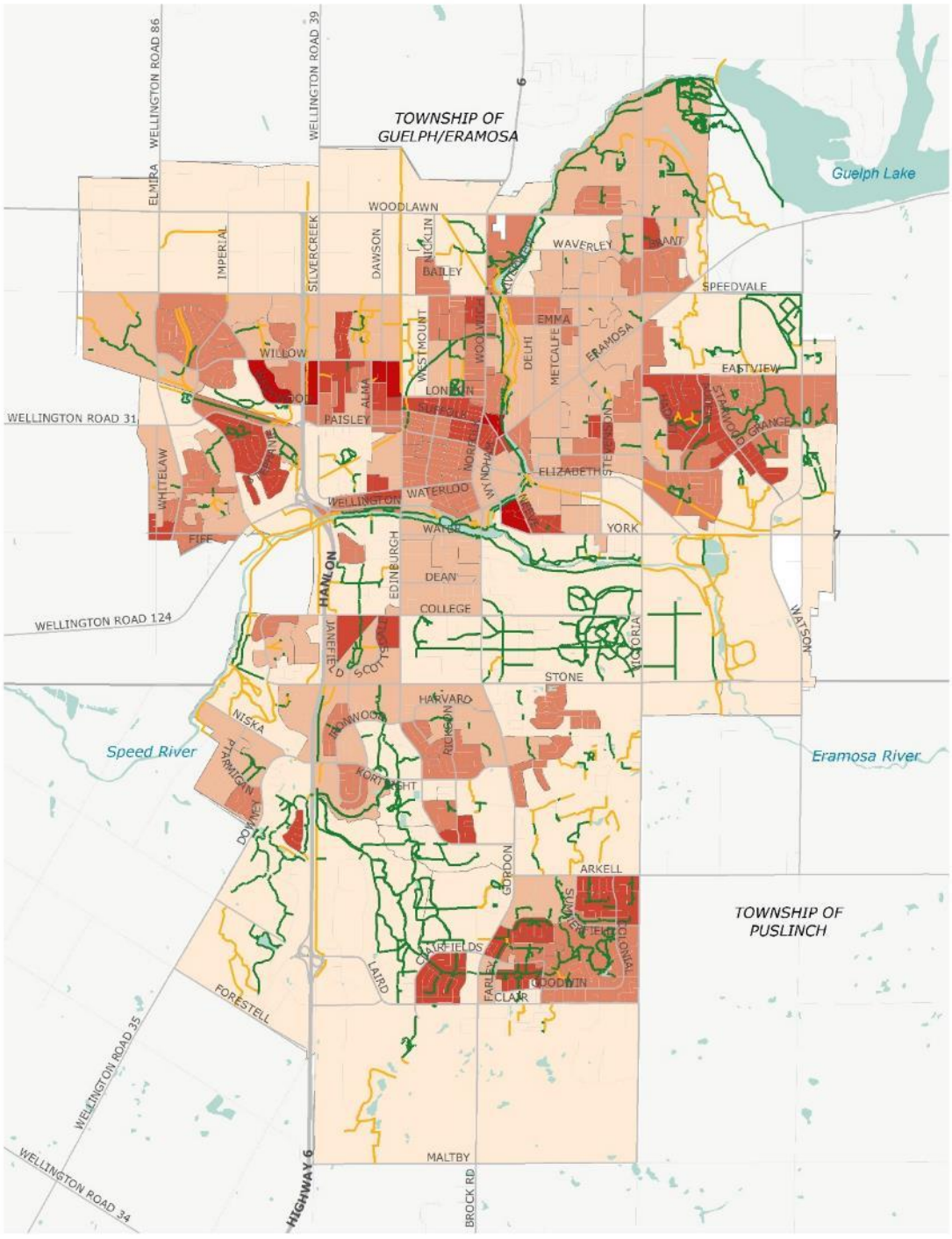
We present the *Canadian Index of Multiple Deprivation* data for each dimension and provide some context about how trails could support populations identified under that dimension as well as population density.

Population density

We mapped the population density[4] for each dissemination area in Guelph to better understand where people live in Guelph and support how we look at the *Canadian Index of Multiple Deprivation* data. By visualizing and overlaying the presence of trail and population density we are able to identify how trails are distributed throughout the City and if there are areas where trails should be prioritized to provide access to trails where people live.

As illustrated on the following map, a significant portion of the City's trail network is located within areas with lower population densities. Some new subdivisions that include trails have higher population densities. There are some individual dissemination areas around Downtown, Two Rivers, and Onward Willow with high population densities but no existing trails within the dissemination areas.

[4] Statistics Canada. (2018). Census of Canada



EQUITY ANALYSIS
POPULATION DENSITY

DRAFT - 8/11/2020

0 1 2 km

GUELPH TRAIL MASTER PLAN UPDATE

Population Per Square Kilometre

- 23 - 1401
- 1402 - 2700
- 2701 - 4225
- 4226 - 6651
- 6652 - 10336

Trails and Background

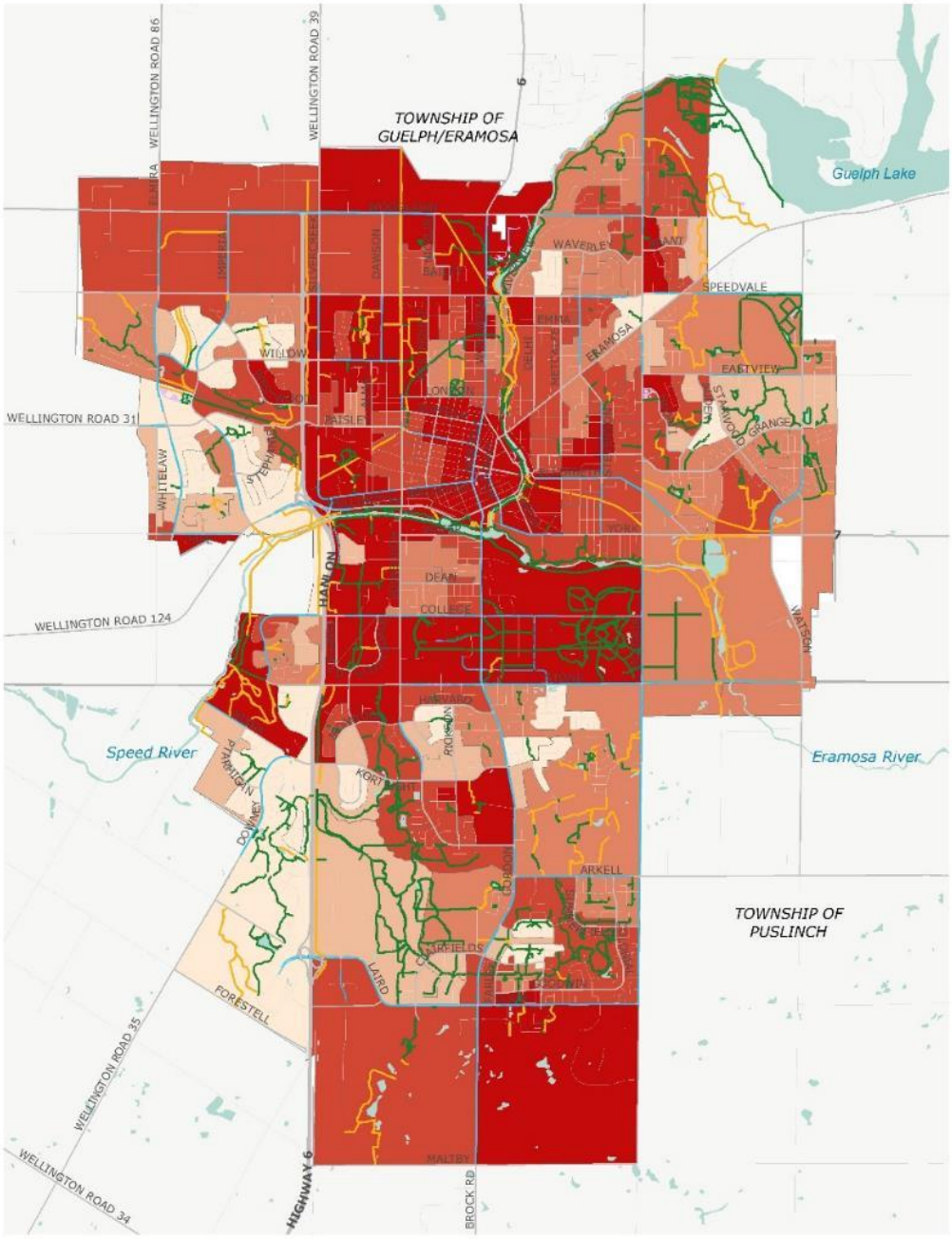
- Existing Trail
- Previously Planned or Proposed Trail
- Cycling Facility
- Waterbody

Data provided by City of Guelph.
Map produced August 2020.

Residential instability

Residential instability dimension considers how neighbourhood inhabitants fluctuate over time by considering variable such as areas with high numbers of apartment buildings, rentals, people living alone, people who moved into the area within the past five years, and the single population. These populations may need increased access to trails as they may not have as much access to recreational space within their home or backyard. They are also likely in need of space to connect with other people as they live alone or are new to the community. Trails may help to facilitate a space for recreation and community connection. Communities with high inhabitant turnover may have a harder time advocating for investment in their community.

Areas within the central and northern parts of the City have high levels of residential instability, including Downtown and around the University. Many of these neighbourhoods have existing or planned trails nearby.



EQUITY ANALYSIS
RESIDENTIAL INSTABILITY

DRAFT - 7/27/2020

0 1 2 km

GUELPH TRAIL MASTER PLAN UPDATE

Index Score

- 1 - Lowest
- 2
- 3
- 4
- 5 - Highest

Trails and Background

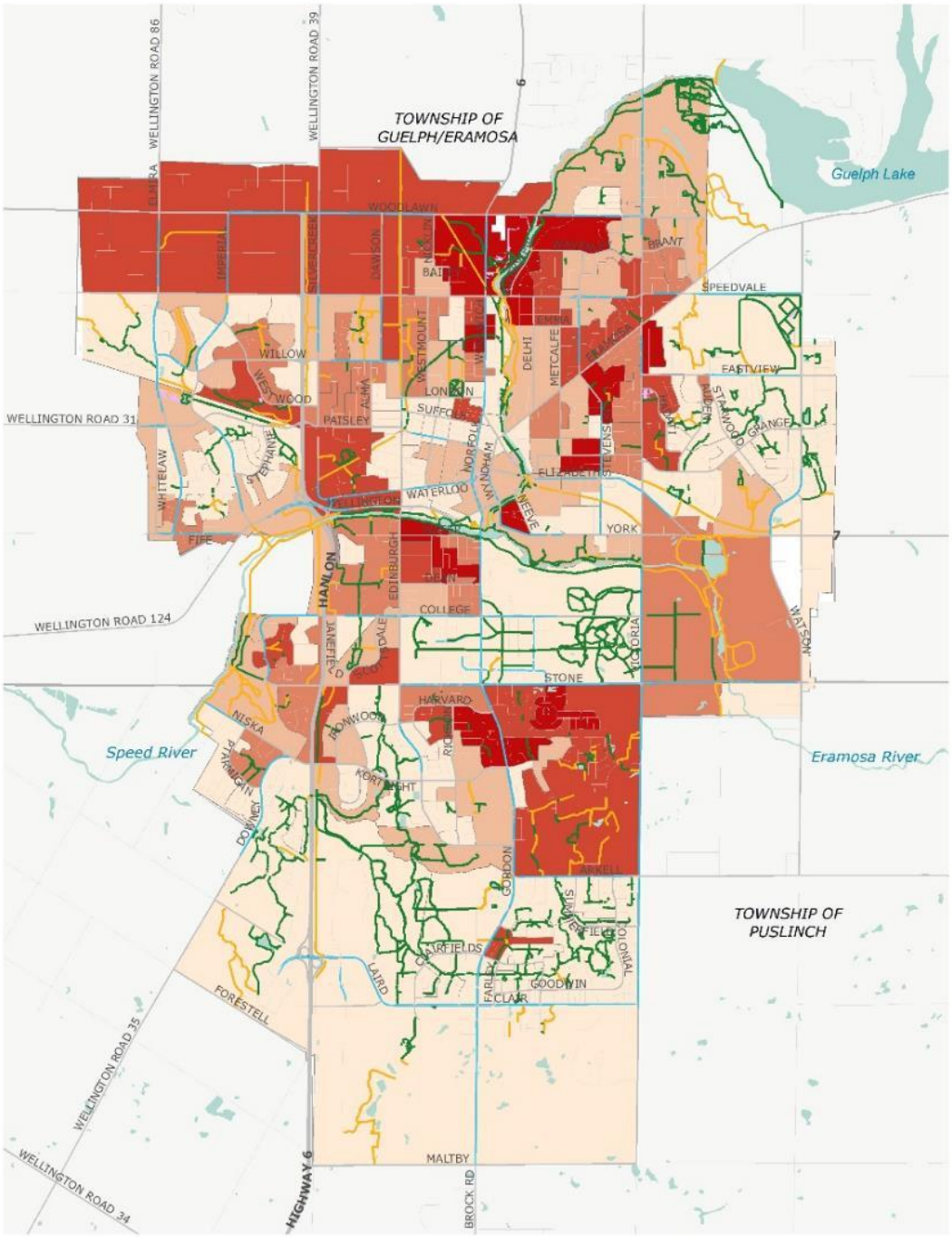
- Existing Trail
- Previously Planned or Proposed Trail
- Cycling Facility
- Waterbody

Data provided by City of Guelph.
Map produced May 2020.

Economic dependency

Economic dependency considers the proportion of the population that is: senior (65 and older), children (0-14 years), unemployed and receiving government transfer payments. These populations are more likely to need access to active transportation options as they are not able to physically drive or financially afford a car. Presence of nearby trails ensures that these populations can access the trails by walking and cycling, and are more likely to be able to benefit from the health, social and transportation safety benefits of trails.

Areas identified as having high levels of economic dependency are scattered across the city, and include Waverly and Torrance neighbourhoods. Other unique dissemination areas have high scores. Many of these unique areas do not have trails within or near the area.



EQUITY ANALYSIS
ECONOMIC DEPENDENCY

Index Score

- 1 - Lowest
- 2
- 3
- 4
- 5 - Highest

Trails and Background

- Existing Trail
- Previously Planned or Proposed Trail
- Cycling Facility
- Waterbody

DRAFT - 7/27/2020

0 1 2 km

GUELPH TRAIL MASTER PLAN UPDATE

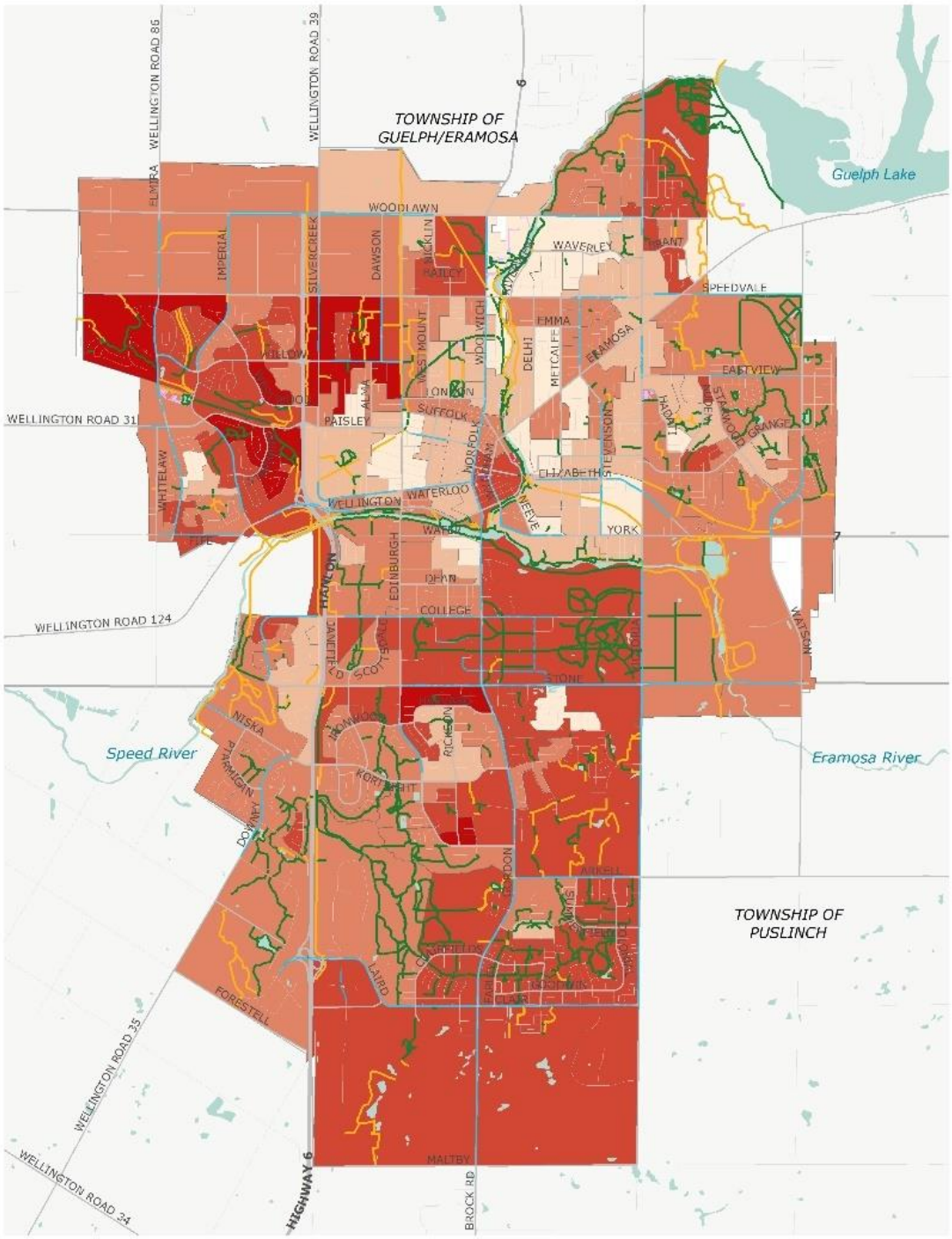
Data provided by City of Guelph.
Map produced May 2020.

Ethno-cultural composition

Factors considered in ethno-cultural composition include the proportion of the population in the area that is foreign born, self identify as a visible minority, have no knowledge of either official language and recent immigrants. These populations can experience challenges accessing programs and services. Research in other cities have found that Black, Indigenous and people of colour experience a greater proportion of pedestrian crashes and have increased risk of mortality after pedestrian injury.[5] These communities are also not commonly reflected in marketing towards outdoor recreation. Ensuring that there is access to trails in areas with high proportions of these populations can help to support better health outcomes and support social and community development. By reviewing where trails exist and have been planned, as well as the programming and communications we use to promote trails, we can ensure that we are not continuing a historical trend of underinvestment in communities where visible minorities live.

Based on the Index, areas with high ethno-cultural composition scores include West Willow Village, Onward Willow, Brant Avenue, University and Westminster. While there are existing trails in many of these areas, the building of planned trails will help to connect them to other parts of the city.

[5] Equity. *Vision Zero SF*. 2015. http://visionzerosf.org/equity/.



EQUITY ANALYSIS
ETHNO-CULTURAL COMPOSITION

DRAFT - 7/27/2020

0 1 2 km

GUELPH TRAIL MASTER PLAN UPDATE

Index Score

- 1 - Lowest
- 2
- 3
- 4
- 5 - Highest

Trails and Background

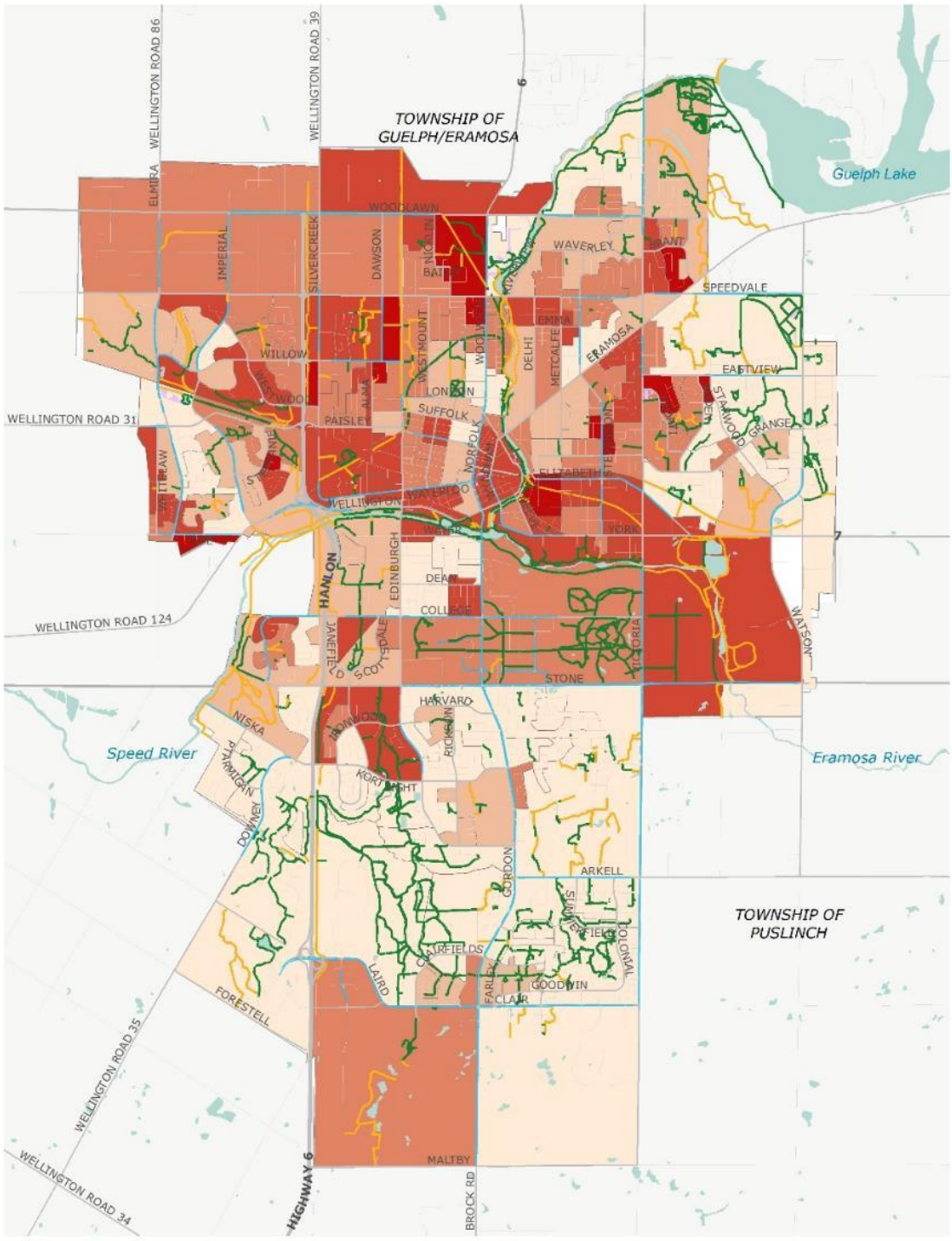
- Existing Trail
- Previously Planned or Proposed Trail
- Cycling Facility
- Waterbody

Data provided by City of Guelph.
Map produced May 2020.

Situational vulnerability

The situational vulnerability dimension considers socio-demographic conditions such as the proportion of the population that identifies as Aboriginal, aged 25-64 without a high school diploma, and proportion of dwellings needing major repairs. People within these groups are often more likely to be equity-seeking. Aboriginal populations have been systematically displaced and discriminated against since European settlement in what is now called Canada. Creating opportunities for these populations to have improved access to trails can support health, social, and community benefits. We can also ensure that we are not continuing a historical trend of systematic racism in communities where Aboriginal peoples live.

Areas with high situation vulnerability scores are spread throughout the city, including Two Rivers and St. George's neighbourhoods. Many areas with high index score do not have trails within or nearby. Some areas have planned trails within and nearby.



EQUITY ANALYSIS
SITUATIONAL VULNERABILITY

Index Score
- 1 - Lowest
- 2
- 3
- 4
- 5 - Highest

Trails and Background
- Existing Trail
- Previously Planned or Proposed Trail
- Cycling Facility
- Waterbody

DRAFT - 7/27/2020

0 1 2 km

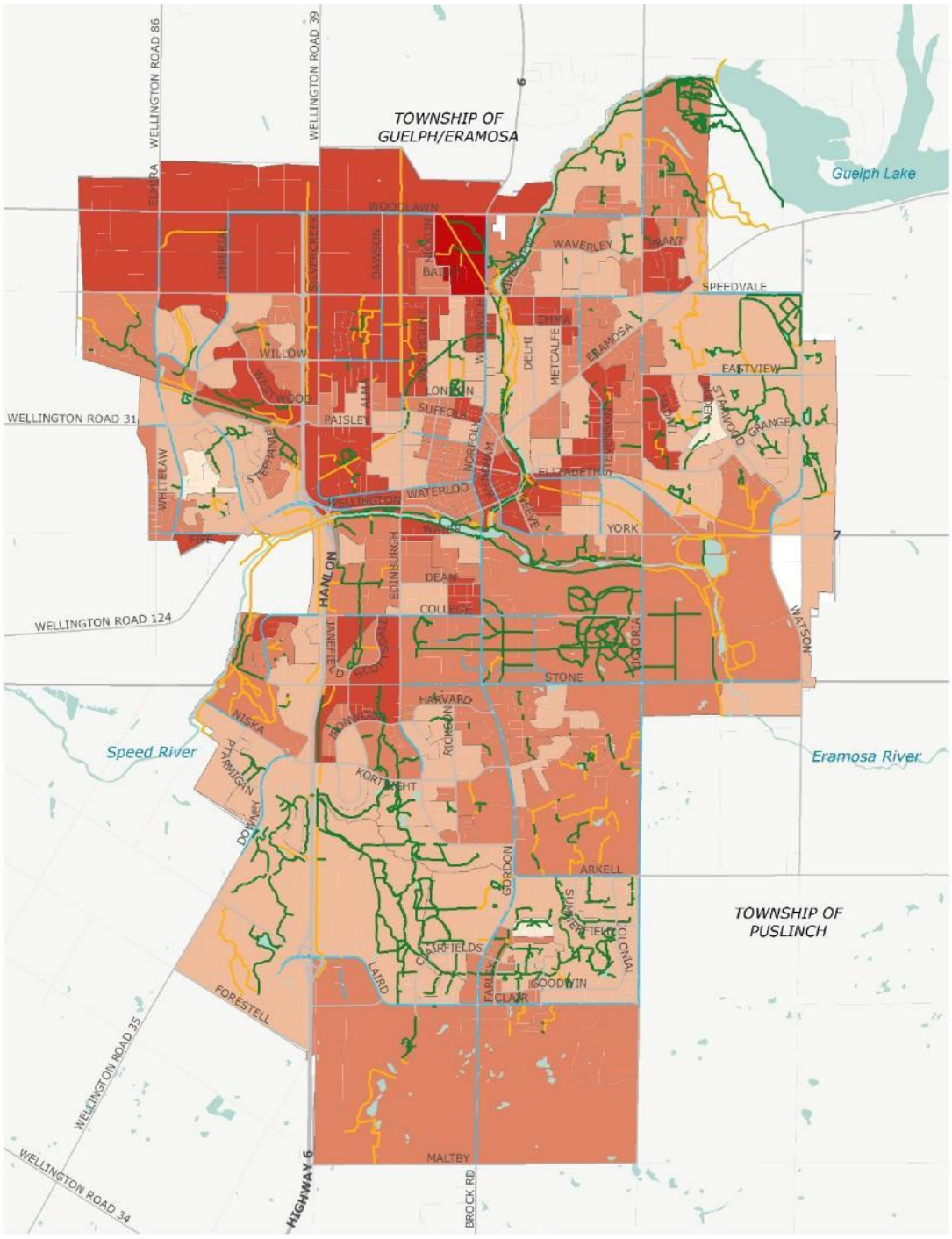
GUELPH TRAIL MASTER PLAN UPDATE

Data provided by City of Guelph.
Map produced July 2020.

Composite Index Score

The scores from each dimension of the Index can be added together, then divided by four to create a composite score using the same 1 to 5 scoring system. The composite score illustrates areas with the highest indicators for identifying areas that may have equity needs. Areas with low composite scores may have high scores in a single dimension, which is why each of the dimensions were mapped and discussed.

Overall, the Downtown, Junction, Exhibition Park neighbourhoods had higher composite scores, along with a few other dissemination areas across the city. Areas with large connected trail networks generally have lower composite scores, where as areas high composite scores have many planned trail segments.



EQUITY ANALYSIS
COMPOSITE SCORE

Index Score

- 1 - Lowest
- 2
- 3
- 4
- 5 - Highest

Trails and Background

- Existing Trail
- Previously Planned or Proposed Trail
- Cycling Facility
- Waterbody

DRAFT - 8/19/2020

0 1 2 km

GUELPH TRAIL
MASTER PLAN UPDATE

Data provided by City of Guelph.
Map produced August 2020.

Other ways we can make trails more equitable

In addition to the dimensions considered in the spatial analysis section, there are other people that experience systematic inequities that were not explicitly included in the spatial analysis data. These additional groups of people should be considered when planning and managing trails to support our goal for addressing equity and inclusion within our community.

Experiences of safety

It is important to recognize that people experience public space differently. Trails can feel like isolated spaces due to lack of lighting, people, or quick exit routes, which may cause people to feel uneasy or even that they could be targeted. While this is part of a larger cultural problem where women, BIPOC, and LGBTQ2 people are more frequently targets of harassment, trails can be designed and managed to try and mitigate feelings of isolation. Properly designed trail lighting allows for people to see around them in low-light conditions, making trails a more comfortable space to use throughout the day and year-round, when daylight hours are short. Proactive trail maintenance to improve visibility of surroundings around the trail can also help to create a more comfortable environment. Further engagement with the community could help to develop additional recommendations to support people's experiences of safety along trails.

People with disabilities

People with disabilities represent a significant and growing part of our population. Approximately 13.5 percent of Ontarians have disabilities, a figure expected to grow to 20 percent in the next decades, which represents over 20,000 people in Guelph. Disabilities include physical, sensory, intellectual and mental. The acuteness and impact of the disability affects each person differently. The types of disabilities that people experience can change or develop over the course of their lives. There are sections within the GTMP that will discuss accessibility, trail planning and design in greater detail.

People experiencing homelessness

Trails often provide access to public lands that can be common locations for people experiencing homelessness to live. Actively using enforcement and dismantling these camps could force these people to travel farther off of trails onto natural areas, further isolating them and/or reducing options while also causing greater impacts to the natural environment. Coordinated strategies are important for cities to address the root of the issue of homelessness that include working with supportive community-based groups. The City should also acknowledge and consider the role that trail and park amenities such as drinking fountains and public washrooms have in providing access to key resources for people experiencing homelessness.

People experiencing addiction

Trails can be places that attract drug use. Enforcement could lead to people moving further into natural areas that are not accessible for first responders. Providing bins for people to safely dispose of needles or other sharp items can help to keep trails clean, and protect maintenance workers when emptying garbage bins. Public health organizations can be a great partner to coordinate strategies with.

Recommendations moving forward

Incorporating equity analysis into decision-making processes is an important step in helping to ensure that services and investments are being planned and implemented in a way that equitably serves the community.

Community engagement

Creating opportunities for community feedback, that especially seeks out the opinions of people who do not regularly participate in community engagement processes is important to working with the community and hearing from these people about what their priorities and ideas for the community are. We need to think about the questions that we are asking the community and create space for feedback that may fall outside of the planning process at-hand.

Community engagement should…

- Involve reaching out to the community, instead of expecting the community to come to us
- Be accessible for people to be involved
- Not be about validation of assumptions, but instead focus on co-creation
- Not having predetermined outcomes
- Focus on communicating the limitations of project, but having a process to capture and share feedback that may fall outside of a project's scope
- Be responsive and accountable to the feedback received

Equity as a prioritization criteria

When making decisions about which trail projects to prioritize for implementation, equity should be included as a criteria. The results of the spatial analysis in this memo will be used as a factor for prioritizing planned trail routes. In future other trail programs and policies should also consider equity as a criteria when determining prioritization. Appropriate methods for identifying trails that support equity can vary, ranging from community involvement in the planning process and/or through spatial analysis.

Equity-focused trail programming

There are many ways to make the programming around trails more equitable and inclusive. Many equity-seeking communities have not been represented in trails and

outdoor recreation. Creating more equitable trail programming can involve many different initiatives.

- Information about trails available in multiple languages
- Community programs to support outdoor recreation
- Programming that responds to the needs and interests of different communities

Enforcement on trails

Enforcement on trails exists to ensure that rules and laws are being followed. However, whether implicit or explicit, enforcement, particularly by the police and City Bylaw compliance officers, is often used as a method to control Black, Indigenous, and People of Colour (BIPOC), as well as people who are experiencing homelessness, drug addiction mental health condition. We have seen enforcement called upon as a weapon against people, often used by others threatening to call the police which can make public spaces, including trails, feel unsafe. In addition, the presence of police and bylaw in spaces creates a barrier that can make people feel unsafe in spaces.

The City should work with community organizations and stakeholders to ensure that trails are spaces that everyone feels welcome and safe in.

Appendix C: Trail data schema

A significant task of the Guelph Trail Master Plan (GTMP) project was refining and updating the Geographic Information Systems (GIS) database used to show existing and planned trails in Guelph. The data required cleaning up to more accurately capture existing and planned trails in the City, and removing linework that was no longer relevant to the trail network. In addition, a standardized data schema was developed to outline the fields within the trail database, and the type of data they contain to support on-going management of the database. The schema will support planning and management of the trail network. Some data fields were not collected as part of the GTMP and may require additional assessment or field work to complete.

Field	Field Description
Trail ID	Unique numeric identifier
Trail Name	Trail name
Status	Current status of trail (existing, proposed)
Official Plan Status	Is trail designated in the Official Plan
Year Built	Year trail was built
Trail Classification	Trail Classification
Surface Type	Trail surface material
Trail Width	Width of trail in metres
Slope	Is trail slope less or greater than 5%
Shoulder Treatment	Trail has a soft surface shoulder
Lighting	Is there lighting on the trail
Shared Use Agreement	Status of current usage agreement
Marked Centreline	Does the trail have a marked centreline

Field	Field Description
Cycling Prohibited	Is cycling on this trail prohibited
In ROW	Whether trail is in or outside of the roadway right-of-way
AODA Compliant	Based on AODA standards, is the trail accessible
ATN Status	Is trail designated part of the Active Transportation Network
ATN Compliant	Does trail meet the ATN requirements
Winter Maintenance	Trail is maintained in the winter
Natural Heritage System	Trail is inside/part of the Natural Heritage System
Natural Heritage System Info	Notes regarding the Natural Heritage System
Recurring Maintenance Issue	Trail has a known and recurring maintenance issue
Condition	Observed condition of the trail
Owner	Asset is owned by
Maintained by	Trail is maintained by
Data capture method	How was the feature data captured
Data Accuracy	Accuracy of collected data
Notes	General notes about trail segment

Appendix D: Trail implementation process

Types of trail projects:

Growth

These are trails that are planned, designed and acquired through planning applications, including, but not limited to: Official Plan Amendment, Zoning By-law Amendment, Plan of Subdivision, Plan of Condominium, Site Plan Application and Committee of Adjustment. These new trails are typically located in areas of growth or redevelopment. The steps associated with development will follow the City steps for How to develop a property.

Desired trail or active transportation connections are identified through the Guelph Trail Master Plan as the public trail system. The City's role is to identify local and GTMP routes, trail standards and trail construction practices. The developer will be responsible for costs of trail planning and design that are part of an environmental study as well as costs identified in the most recent Development Charges (DC) Background Study.

"Trail" means all transportation facilities located outside of a Road Allowance that are an integral part of accommodating pedestrian and cyclist travel and the operation of active and predominantly non-motorized vehicular modes of transportation, which can include but are not limited to walking, running, hiking, cycling etc. (Development Charges (DC) Background Study)

City Building

This process can be used for:

- City-initiated trail projects (many of these trail projects are identified through the Guelph Trails Master Plan or the Active Transportation Network Study);
- Developer-initiated trail projects that the city constructs; and
- Complex community-initiated trail projects.
- These projects are included in the capital budget forecast and approved as part of the city's yearly capital budget.

There are two types of trail projects:

- **Simple Projects**: Trails projects where the outcome is fairly certain and a small number of design variables exist (e.g. standard construction projects); and
- **Complex Projects**: Trail projects where the outcome is uncertain and/or there are a large number design variables. These projects typically require a formal trail feasibility study and a number of technical studies to determine the outcome (e.g. projects that require an Environmental Assessment or a detailed solution). Sometimes the conceptual design is completed in advance and additional budget is requested once a design solution is determined.

Both types of projects are identified in the capital budget forecast. This process outlines steps for both project types. A similar process is followed for each project type, any deviation is noted below.

Parks all departments include:

- Forestry and Sustainable Landscapes
- Sports and Leisure Grounds
- Parks Infrastructure and Construction
- Park and Trail Development
- Parks Business Services

Community-led, City supported

This process can be used for projects identified by community partners or third-party providers of trails. Noted below as community partners (CP). These are typically projects that are community led, city-supported.

The City is not the only provider of trails in the city, sometimes CPs implement and operate trails on land owned or managed by the City. In order for CP to implement a trail, a proposal is submitted to the City for review.

Community partners are typically organized groups or groups facilitated by the City for the purpose of trail maintenance and enhancement. These are typically groups with trails as a core value or are trained in trail-building and management. Groups that do not have trails as a value or trained in trail building may also be considered a community partner, but additional information may be requested to evaluate a request.

Trail planning process for Growth, City-building and Community-led, City supported Projects

Phase	Growth Trail	Department	City Building	Department	Community-led, City-supported	Department
Project assignment	1. Development application is submitted for pre-consultation to the City's Planning Department. A Park and Trail Development lead (PM) is assigned to review the application.	Development Planning Park and Trail Development	1. Trail project is identified in the City's Capital Program of Work and budget is approved by Council. Project and budget are assigned to a project manager (PM).	Parks (all departments)	1. New trail or trail improvement proposal is received by the City from the community or third-party trail operator. A project manager (PM) is assigned to the project.	Parks (all departments)
Project initiation and planning	2. PM reviews application and identifies the need for a trail. Trails can be local or city-wide – these are defined by the Development Charges (DC) Background Study. PM conducts a preliminary feasibility analysis based on current policies or procedures. PM determines if refinement to the trail classification or design standards are needed to achieve a functional design. This step starts early in the process and continues through technical review of the application following the submission of a formal application. 3. PM identifies submission requirements for a complete application to the developer including but not limited to: • Need for a trail and functional trail route as part of a planning report (if applicable); • Trail study requirements for technical reports; • Any required plans or details; • Trail study requirements required for any Environmental Impact Study or Environmental Assessment (included as part of EIS or EA Terms of Reference approvals). PM may also identify: • Potential trail category and development standards; • Potential land securement or acquisition preferences/ options for consideration (trail block, expanded environmental buffer, easement, etc.); • Any other relevant comments or information.	Park and Trail Development Sustainable Transportation Environmental Planning Forestry and Sustainable Landscapes Sports and Leisure Grounds Realty & Legal Services Development Planning	2. PM initiates the project and begins project planning. PM follows the steps for project initiation and planning identified in the Project Management Policy. PM develops a project charter. This document outlines the scope of work, schedule, cost estimates, project tier, stakeholder requirements, internal project team, community engagement requirements, risks and concerns. 3. PM conducts background research and develops project goals and scope. Staff reviews and collects background research including any relevant studies, technical information or policies. PM determines what work needs to be completed to achieve the project goals and determines the direction for trail development. A preliminary feasibility is conducted to develop project scope and goals. 4. PM determines if outside services are required to complete work. If required, the City's Procurement By-law and policies are followed to obtain required services.	Parks (all departments) Environmental Planning Sustainable Transportation	2. PM reviews proposal and conducts background research. PM determines if the proposal aligns with city policies like the Official Plan, Guelph Trails Master Plan, Active Transportation Network study, Strategic Plan or any other relevant studies or policies. PM reviews and collects background data including relevant studies, technical information or policies. A preliminary feasibility is conducted to help with community discussions. 3. City staff meet with community partner (CP) to discuss proposal and determine next steps. As part of this step, the PM and CP determine if the proposal is easy and who will implement the project and operate the trail. Some proposals may require a formal feasibility study or the City to the complete the work. If this is the case, PM may need to request funding and schedule work as part of the capital budget forecast. The PM reviews this with CP and makes a recommendation to the management team. 4. If the project requires capital budget, budget is requested and the project follows the City-initiated trail development process. Otherwise it continues below. If the community proposal is simple to implement and accepted in principle by City staff, the PM initiates a project. PM develops a project charter in accordance with the Project Management Policy. The Project charter outlines the scope of work, schedule, cost estimates, stakeholder requirements, community engagement requirements, risks and concerns. 5. PM continues background research and develops project goals and scope. 6. PM notifies CP of the next steps and how the project will proceed.	Parks (all departments) Environmental Planning Sustainable Transportation

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Project execution begins	4. Complete application is received by the City's Planning Department.	Development Planning	5. Project work begins. Project planning is further refined.	Parks (all departments) Environmental Planning	7. Project work begins. Project planning is further refined.	Parks (all departments) Environmental Planning
Technical review and functional design	5. PM completes technical review. PM provides comments or requests additional information on: • Trail route plans and functional design; • Trail block or easement land shape, access, frontage, property demarcation and size (if required); • Trail design (including grading, drainage, widths, surfacing, accessibility requirements, amenities, signage, construction details, etc.) • Trail operational concerns; • Environmental concerns relating to trail design, development or operation; • Draft conditions for development; • Cost estimates and identifies developer related costs. • PM coordinates trail comments across other City Departments and external agencies (i.e. school boards) Technical review continues as part of detailed design phase. In development-initiated trail projects, the trail is designed as part of a planning, environmental study or the detailed engineering design review. There is opportunity as part of public planning meetings for City Council, citizens and community groups to learn more, ask questions and comment on the proposed development project. As a result, separate trail community engagement is not completed as part of developer-initiated trail planning, design or construction.	Park and Trail Development Forestry and Sustainable Landscapes Sports and Leisure Grounds Environmental Planning Sustainable Transportation Engineering Realty & Legal Services Development Planning	6. Technical studies begin (if required). 7. PM determines design direction for the trail and completes trail feasibility, including: • Trail route plan and functional design; • Trail design requirements; • Trail operational requirements; • Environmental Impact Study and/or Tree Inventory & Preservation Plan; • Environmental mitigation requirements or additional studies; • Preliminary cost estimates; • Additional funding streams (eg. grants, partnerships). • GRCA permits if works proposed within regulation limit For a simple project, this step this may be completed as notes in the file or an internal memo to file. For a complex project, a feasibility report may be completed. The feasibility study may need to be formally presented to Council either for decision or for information. PM will confirm any Council reporting requirements as part of project initiation. 8. If required, community engagement is completed.	Parks (all departments) Environmental Planning Sustainable Transportation Engineering Realty & Legal Services Development Planning	8. PM in partnership with the CP determines design direction for the trail, that may include: • Trail route plan and functional design; • Trail design requirements; • Trail operational requirements; • Environmental Impact Study and/or Tree Inventory & Preservation Plan • Tree Permit if tree removals required on private property • Environmental mitigation requirements or additional studies; • Preliminary cost estimates (if required); • Additional funding streams (if required). • GRCA permits if works proposed within regulation limit	Parks (all departments) Environmental Planning Sustainable Transportation Engineering Realty & Legal Services Development Planning
Land securement	6. As part of the PM's technical review, the PM works with the developer and Realty & Legal Services to determine if there are any trail land securement details that need to be addressed (conveyance, easement, purchase, dedication, donation, etc.). This is determined on a case by case basis in	Park and Trail Development Realty & Legal Services Finance	9. The PM determines if any trail land securement details need to be addressed (conveyance, easement, purchase, dedication, donation, etc.). PM develops a plan to address trail securement in consultation with the City's Realty and Legal services team.	Parks (all departments) Realty & Legal Services Finance	9. The PM and CP determine if any trail land securement details need to be addressed (conveyance, easement, purchase, dedication, donation, etc.). PM develops a plan to address trail securement in consultation with the City's realty and legal services team.	Parks (all departments) Realty & Legal Services Finance

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	consultation with the City's realty and legal services team. 7. Shortly after the land is conveyed to the city, PM requests the land and/or trail is addressed and named through the City's naming committee.	Development Planning	10. Shortly after the land is conveyed to the City, PM requests the land and/or trail is addressed and named through the City's naming committee.	Development Planning	10. Shortly after the land is conveyed to the city, PM requests the land and/or trail is addressed and named through the City's naming committee.	Development Planning
Construction Planning	8. Also as part of the technical review, the PM works with the developer to determine how the trail will be implemented. There are two options: • Option 1 - City implements the design; or • Option 2 – The developer implements the design, including trail construction and trail amenities. In this option, the city reimburses the developer for trail construction costs. To proceed with Option 2, the City and developer need to agree for it to proceed and a front-ending agreement is required. Option 2 is subject to the City's Local Service Policy, Appendix E of the Development Charges Background Study. Budget approval by Council is required to reimburse developers for work completed – therefore developers need to inform city staff in advance to ensure capital budget is requested at the appropriate time.	Park and Trail Development Realty & Legal Services Finance				
Request for capital and/or operating budget	9. PM requests any trail acquisition, construction and operating costs are added to the capital and operating budget forecasts for Council consideration.	Parks (all departments) Finance	11. For a complex project, further work may need to be added to work plans and additional budget may be required. PM may request trail acquisition (if required), construction and operating costs be added to the capital and operating budget forecasts.	Parks (all departments) Finance		
Detailed Design, Tender & Construction	10. PM reviews and approves detailed designs and any Letter of Credit costs. The application may be reviewed multiple times before all City departments and external agencies agree that it meets planning policies or other technical requirements. If trail is within a subdivision process, the construction may follow the Subdivision	Parks (all departments) Environmental Planning Sustainable Transportation Engineering	12. PM reviews and approves detailed design and confirm construction costs. 13. PM confirms if any permits are required for construction. 14. PM confirms adequate budget exists to construct the project. 15. PM recommends to City management team that the project	Parks (all departments) Finance	11. PM approves the detailed design and implementation plan. 12. Execute agreement with CP to construct and/or operate the trail. 13. PM to confirm if any permits are required for construction. 14. CP or Parks constructs the project.	Parks (all departments)

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	Assumption Model and a front-ending agreement is required. 11. If Option 1 is chosen the City-initiated trail project process is followed. If Option 2 is chosen the developer creates working drawings and tender documents. 12. Developer tenders and constructs project. PM periodically reviews work and any required submittals (geotechnical reports) at key milestones. 13. The PM completes a substantial completion review and identifies deficiencies. Following acceptance of the work and substantial completion the PM commissions the project. PM notifies other park departments the trail is ready for city operation. 14. The City reimburses the developer for the trail implementation. It is the responsibility of the developer to initiate the acceptance of the work and provide required documentation to support reimbursement. 15. The public is notified the trail is operational if in City ownership. 16. PM completes warranty review and returns any holdbacks to the developer. It is the developer's responsibility to initiate the warranty review and submit appropriate documentation to support any holdback or Letter of Credit releases. 17. PM completes project close-out.	Realty & Legal Services Development Planning	should proceed to tender and construction. 16. The project is tendered and awarded as per the Procurement By-law and Project Management policies. 17. The project is constructed. PM manages construction. 18. PM complete a substantial completion review and commissions the project. PM notifies other park departments the trail is ready for city operation. 19. The public is notified the trail is operational. 20. PM completes warranty review and releases any holdbacks. 21. PM completes project close-out.		15. Complete a substantial completion review and commission the project. 16. PM and CP complete project close-out.	