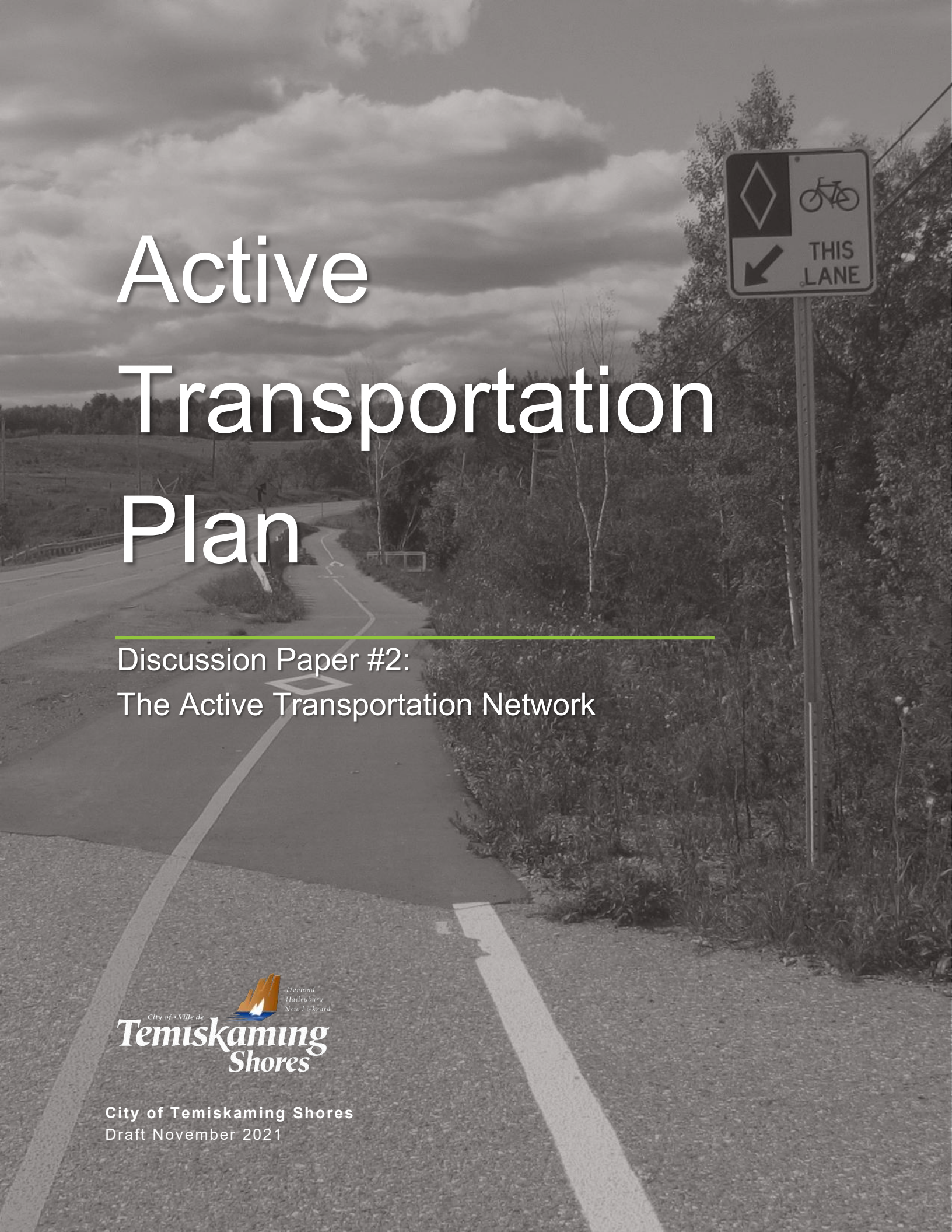

Active Transportation Plan

Discussion Paper #2:
The Active Transportation Network

Diamond
Haileybury
New Liskeard

City of • Ville de
Temiskaming
Shores

City of Temiskaming Shores
Draft November 2021

Temiskaming Shores Active Transportation Plan
Prepared by:

wsp

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1 INTRODUCTION AND DEVELOPING THE FOUNDATIONS

The City of Temiskaming Shores is a picturesque destination located in Northern Ontario. An amalgamation of the former Towns of Haileybury and New Liskeard and the Township of Dymond, the City now has a population of 9,920 and is home to many natural features and tourism opportunities (Figure 1).

The City is a leader and positive example of how a small, northern community can reap significant benefits related to active transportation. The City's long-standing support for active transportation is best illustrated by the STATO Trail, a unique 21 km route consisting of on-road active transportation infrastructure and off-road trails that connects all three of the City's key settlement areas. As the STATO Trail builds out new connections across the City, interest and awareness about active transportation is growing, providing the City with an opportunity to establish itself as one of the leading communities in Northern Ontario when it comes to supporting and encouraging active transportation. This Active Transportation Plan (ATP) is a long-term strategy to guide future planning and decision-making to set Temiskaming Shores on the road to becoming a place where people of all ages and abilities can move safely through the community, and where walking, cycling and wheeling are accessible activities for all.

This network paper is the first step towards building the ATP. The proposed network was developed through a well-defined process informed by technical analysis, community and stakeholder feedback and best practices in design guidance. This will guide the City in achieving its future aspirations for active transportation by developing the tools, strategies and framework for how to implement recommended changes.

Figure 1 | Existing conditions in Temiskaming Shores. Clockwise from top left: STATO Trail in New Liskeard, Waterfront in Haileybury, Downtown Haileybury and STATO Trail on Lakeshore Road.

2 DEVELOPING AN ACTIVE TRANSPORTATION NETWORK

The process to develop the City's active transportation network is based on a combination of technical assessments and consultation with key stakeholders, City Staff and members of the public. An overview of the network development process including the steps and the outcomes of each step to date is presented in **Table 1** and is consistent with new Ontario Traffic Manual Book 18 (2021).

This discussion paper will cover steps 1 to 7 of the network development process, producing a network map that will show the desired active transportation network once the ATP has been fully implemented. The next discussion paper will explore the proposed phasing for the projects, helping to deliver projects in a manner that aligns with capital construction schedules and meets the needs of the residents of Temiskaming Shores.

Table 1 | Cycling Strategy Network Development Process

NETWORK DEVELOPMENT PROCESS

Step		Outcome
1	Identify existing conditions and routes that have been proposed in past planning documents.	Map 1 – Existing Active Transportation Conditions
2	Identify priority gaps and missing links through community engagement	SWOT Analysis and feedback for Candidate Route Selection
3	Identify a set of criteria to help select, assess and refine routes to form part of the preferred active transportation network.	Route Selection Criteria
4	Identify potential candidate routes to be investigated that could form part of the City's active transportation network.	Map 2 – Candidate Routes and Proposed Improvements
5	Undertake field work to investigate existing routes and locations for potential new routes.	Field work documentation
6	Verify candidate routes with City Staff and key Stakeholders to validate feasibility	Additional input into preferred network and proposed facility types
7	Confirm the City's preferred network including the proposed facility types.	Map 3 – Proposed Facility Types and Improvements
8	Identify a proposed phasing plan for the City's preferred active transportation network.	To be completed
9	Verify proposed phasing with Stakeholders, City Staff and members of the public to produce a final network development plan for the ATP	Short, Medium and Long-term plans for the City's active transportation facilities

2.1 STEP 1: EXISTING CONDITIONS

Information was gathered from the City of Temiskaming Shores to develop a geographic information systems (GIS) database of spatial information. The database included information regarding existing conditions and routes that were previously identified in approved planning documents including the City's Official Plan (2015) and the Recreation Master Plan (2020). The GIS database was updated on an on-going basis to reflect the iterative approach of the network development process.

It is important to note that not all previously proposed routes form part of the City's AT network. These routes were used as a starting point of the network development process and further investigated during each step of the process.

In total, the existing active transportation network for Temiskaming Shores is approximately 80 kilometres, including 44 kilometres of routes that accommodate cycling and 36 kilometres of sidewalks. A summary of the existing active transportation network is provided below within Table 2.

Table 2 | Summary of the Existing Active Transportation Network

Off-Road Multi-Use Trails	Sharrows Markings / Signed Routes	Sidewalks
		
Locations: *STATO Trail System (Lakeshore Rd S, Waterfront Boardwalk Trail, Armstrong St N)*	*Locations:* *Wabi River Bridge Crossing*	*Locations:* *New Liskeard, Haileybury, Cobalt*
Total km: *43.5*	*Total km:* *0.1*	*Total km:* *36.5*
Total		***80.1***

STATO Trail

Serving as the backbone of Temiskaming Shores' existing active transportation network is the South Temiskaming Active Transportation Organization (STATO) trail system. Comprised of both on-road and off-road facilities, the corridor was first formally identified back in 2004 by a group of community members interested in promoting active transportation within the area. Since then, the STATO trail system has been continually developed, with the addition of new facilities, enhancements to existing routes and the adoption of a seasonal maintenance program (excludes winter maintenance). Today, the corridor stretches 21.4km long, connecting key settlement areas and destinations across the City and offering scenic views of Lake Timiskaming, the Wabi River and surrounding natural areas. All segments of the network are also designed to be wheelchair accessible, with rest areas, lighting and other basic amenities provided at key junctures.

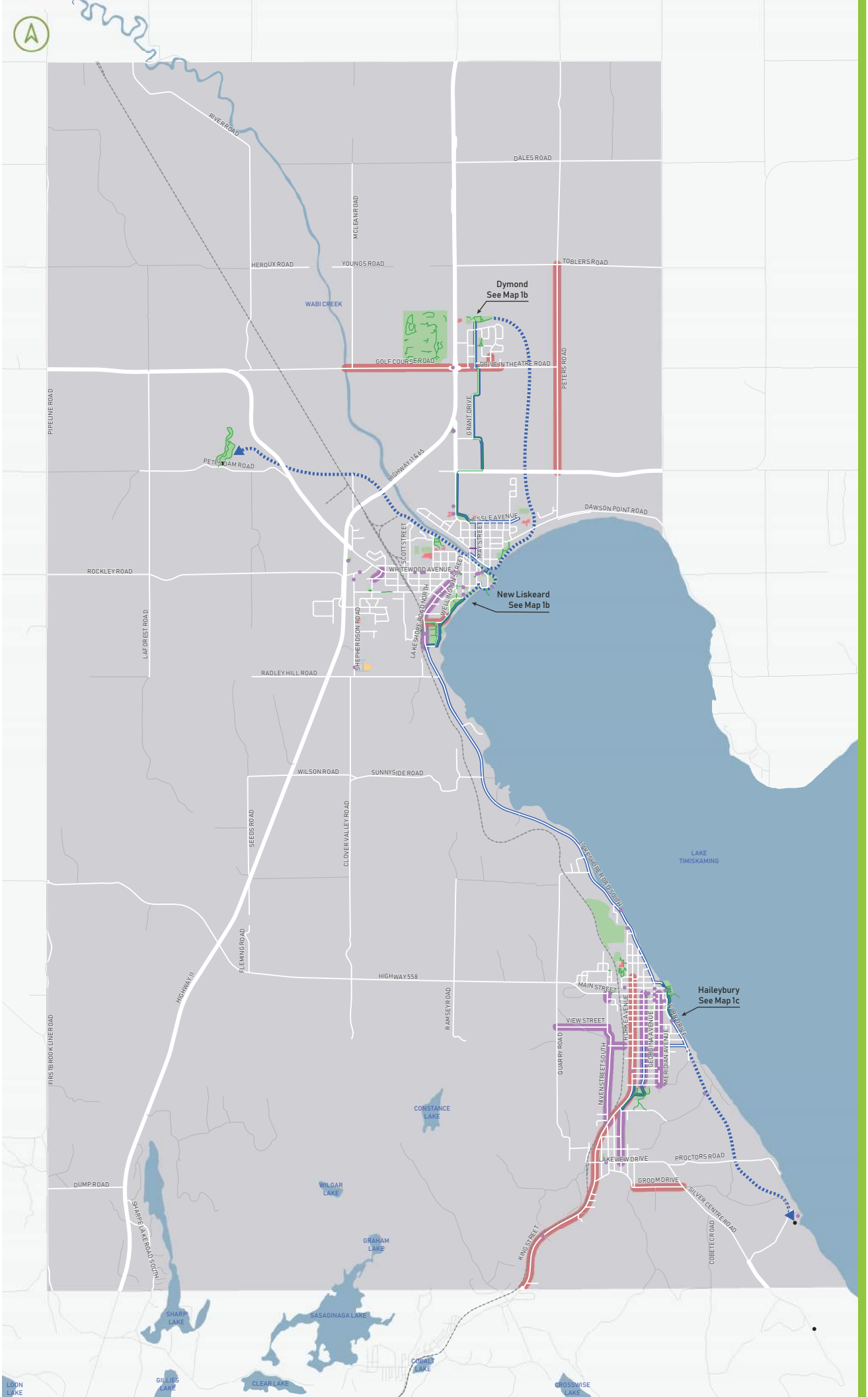
The significance of the STATO trail is not only measured in its cultural value to the local community but how it connects the communities that make up the City of Timiskaming Shores. The corridor serves as a vital active transportation connection between New Liskeard, Haileybury and Dymond. Building upon this existing trail, through expansions, upgrading existing segments, or connecting new destinations to the trail through the construction of high-quality active transportation infrastructure is a cost-effective way to expand the city's active transportation network. As new investments in the trail and the routes that connect to it are made, preference should be given to alignments that further enhance connectivity and access to the City's natural settings as well as its commercial destinations. All new investments should also be designed with all user abilities in mind, to uphold the trail system's existing reputation as a fully accessible facility.

Armstrong St N (Cycle Path)

New Liskeard Waterfront Boardwalk Trail (Multi-Use Path)

Lakeshore Rd S (bidirectional cycle path)

Haileybury Beach (cycle path)



Map 1a.

Existing Active Transportation Conditions

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- Existing sharrow
- STATO Trail (existing)
- STATO Trail (proposed extension)
- MTO Highway
- Local Road
- MNRF Road
- Railway
- Hospital
- School
- Recreation Area / Park
- Watercourse
- City Boundary

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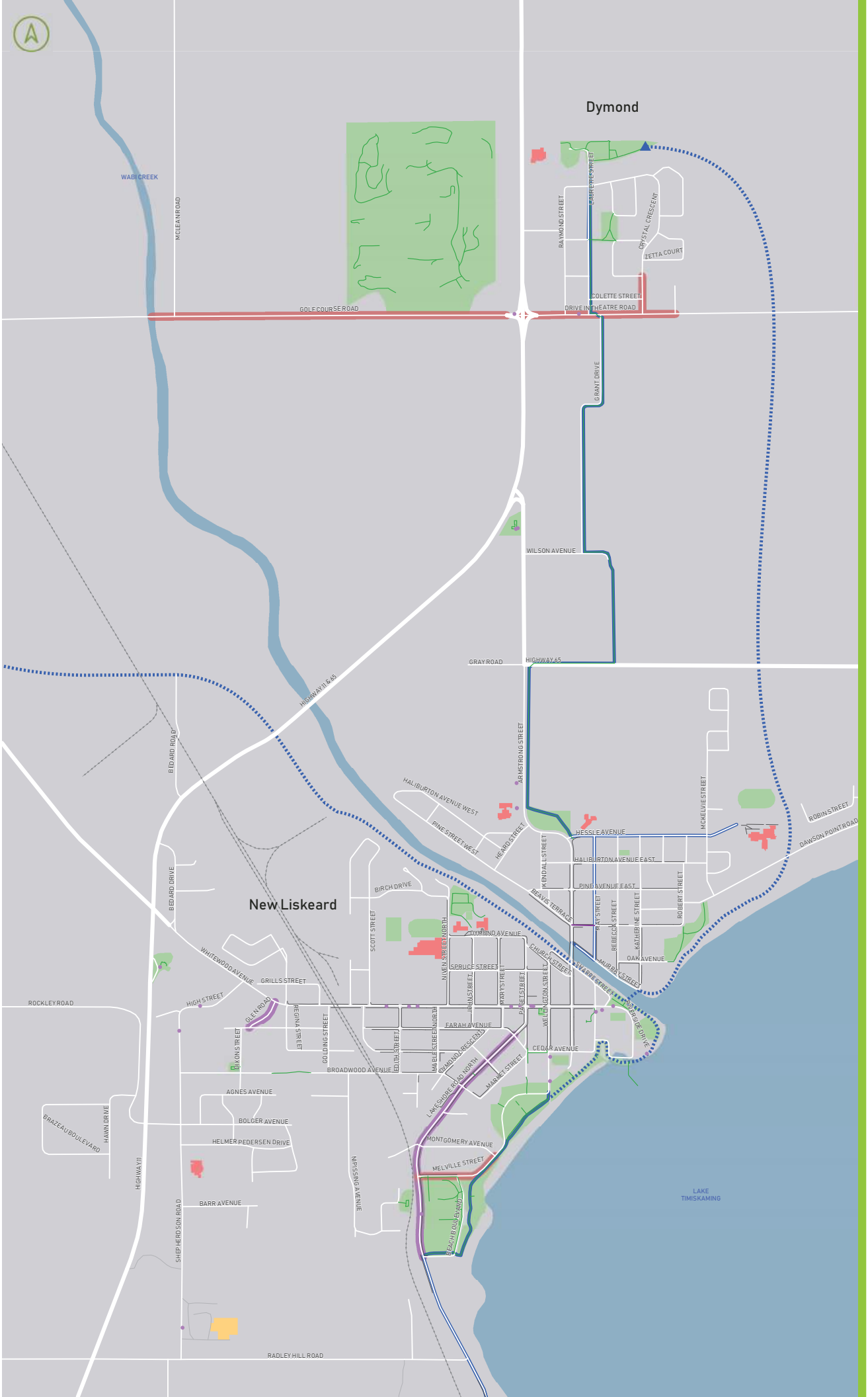

Map 1b.

Existing Active Transportation Conditions

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
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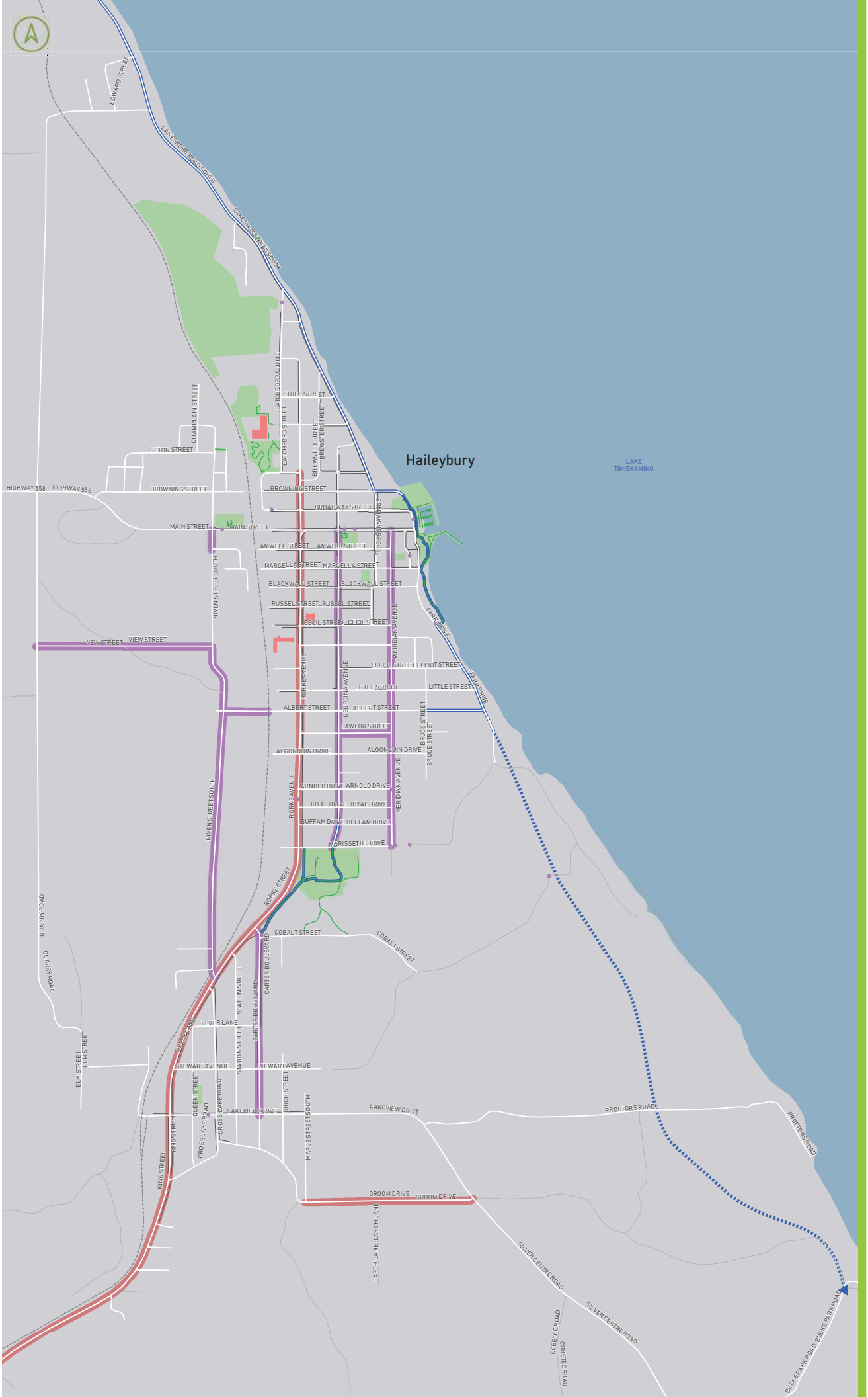

Map 1c.

Existing Active Transportation Conditions

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

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- Existing sidewalk
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2.2 POLICY FRAMEWORK

In addition to the physical assets that were reviewed as part of the existing conditions review, the City's existing policy conditions were also assessed to identify areas where support for active transportation already exists and where it could be strengthened. In Temiskaming Shores, policies at the federal, provincial and municipal level will all have an impact on how the ATP looks, feels and is implemented. These prior planning documents provide guidance on the planning, design, implementation and operations of active transportation facilities. They also offer a sense of the city's overall goals and culture, which are important elements for the active transportation plan to consider as it moves forward.

A policy review highlights where there are existing supports for active transportation within the community and helps to identify policy gaps that could be filled by this plan. A more detailed summary of the relevant policies relating to the ATP can be found in Discussion Paper #1 – Policy Review and Vision, but what follows here is a summary of the key existing policies at the local level which relate to active transportation within Temiskaming Shores.

Temiskaming Shores Official Plan (2015):

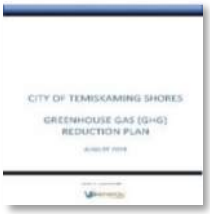
The Temiskaming Shores Official Plans is a core functional document which articulates how the city is to grow and develop for years to come. The plan recognizes the importance of designing facilities that accommodate walking and cycling to both support healthier lifestyles and reduce greenhouse gas emissions as the City grows.

Recreation Master Plan (2020):

The Recreation Master Plan is a recently adopted document which both identifies the city's unique recreational needs and outlines a 10-year plan to address those needs. This plan includes investments into new active transportation facilities, including new on-road linkages and expansions of the existing STATO trail system.

Age Friendly Community Plan (2016):

The Age Friendly Community Plan strives to better accommodate and support people as they age through a series of equity seeking initiatives. While not specific to active transportation, the plan emphasizes the importance of an all ages approach to designing new infrastructure.



Greenhouse Gas (GHG) Reduction Plan (2019).

The Greenhouse Gas Reduction Plan actualizes the city's commitment to combatting climate change through a series of strategic measures to reduce local emissions. Among those listed include through the promotion of active transportation to decarbonize the City's transportation sector.

The Policy review offered important context and direction for the development of the ATP, shaping the document's overall goals and objectives (see Chapter 1 – Policy Review, Vision and Objectives). The remainder of the network development process was informed by technical evaluations, public consultation and in-depth conversations with City Staff. The Policy review helped to inform the route selection criteria and provided the rationale for the Vision and Objectives for the ATP, ensuring that this plan aligns with the City of Temiskaming Shores' broader policy goals.

2.2 NETWORK ENGAGEMENT

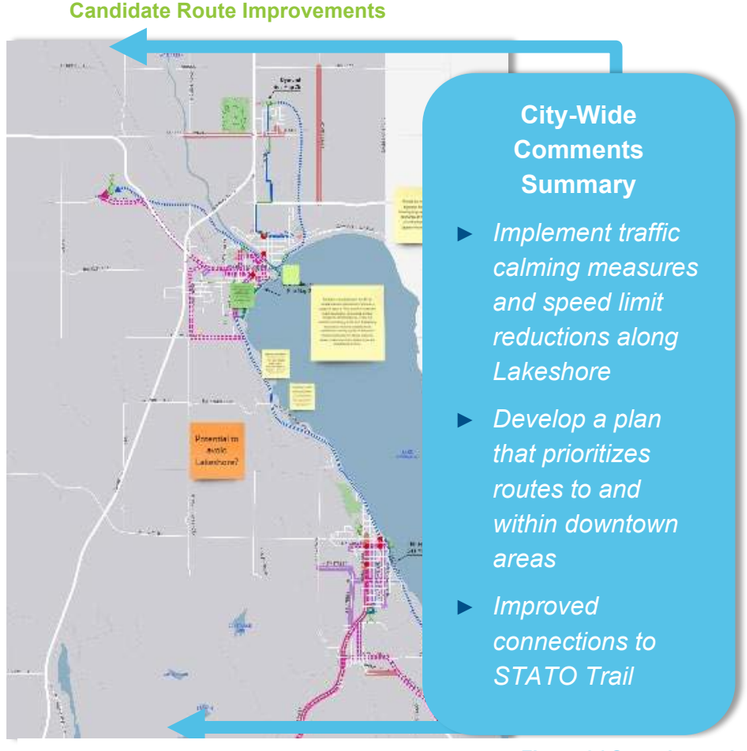
To gain a stronger understanding of the existing conditions and gaps within Temiskaming Shores' active transportation network, a robust community engagement plan was implemented to gather public input across all stages of the development of the plan. This included a range of opportunities for local stakeholders to inform the development of a proposed active transportation network. Public input was important to identify existing travel patterns and facilities that define active transportation use today while also identifying barriers and the potential for new routes that can be developed in the future.

Community engagement focused on both the **physical** infrastructure and the **social** infrastructure necessary to support active transportation in Temiskaming Shores. While a more comprehensive discussion of engagement activities will be found in the Community Engagement Discussion Paper, this section will focus exclusively on some of the high-level feedback relating to the development of the active transportation network that was received during community engagement.

Stakeholder Group Workshop #1

The first stakeholder group workshop brought together a wide range of local decision makers to outline priorities and directives related to the future of active transportation within Temiskaming Shores. Key members present include City staff, City Councillors, local committee members and Health Unit staff. Using Miro, an interactive online whiteboard tool, attendees were invited to identify candidate routes for active transportation facilities and improvements and potential quick win projects. Listed below within **Figure 2** are key outcomes of these two exercises:

Candidate Route Improvements



City-Wide Comments Summary

- *Implement traffic calming measures and speed limit reductions along Lakeshore*
- *Develop a plan that prioritizes routes to and within downtown areas*
- *Improved connections to STATO Trail*

New Liskeard Comments Summary

- *Design active transportation network to better service local schools*
- *Improve crossing over Wabi River*
- *Design a active transportation network that services local services and institutions*
- *Consider new active transportation facilities through road diets*
- *Apply a safe design that is inclusive for all ages*
- *Steep terrain and private property are issues for proposed Wabi River trail system*

Haileybury Comments Summary

- *Provide connection to Northern College Campus*
- *Upgrade three-way stops within settlement area to all-way stop control*
- *Prioritize facilities and connections that benefit youth*
- *Preference towards off-road trails over on-road facilities*

Figure 2 | Snapshots taken of the Miro boards used to record feedback on the City's draft proposed active transportation network, with key themes highlighted

Quick Win Projects

In addition to a series of candidate active transportation routes, the working group session also identified a list of quick-win initiatives that would yield a considerable benefit to active transportation users immediately. Among the examples listed include those which directly contribute to the proposed active transportation network.

Increasing connections to schools and other public facilities

Adding traffic calming tools in designated residential and downtown areas to improve safety for people crossing the road

Improving cycling and pedestrian facilities along the Wabi Bridge

Stakeholder Outreach

In addition to the Stakeholder Workshop, 1-on-1 interviews were held with representatives from key stakeholder groups to gain a deeper understanding of the concerns, considerations and priorities that should guide the direction of this Plan. Interviewees were asked a series of 10 questions, which provided an opportunity to explore the history of active transportation in Temiskaming Shores, the priority areas where work still needs to happen and the potential for improvements and partnerships in the City.

"The [STATO] Trail is well designed and well used. Seniors, kids, parents' families, racers, - they're all on the STATO Trail";

"I'd like to see us expand upon what we've done already – we already have this great linear route in the STATO Trail, so we should complete those missing links and then lay out a plan to connect the trail to other areas.

1. What is your vision for active transportation in the City?
2. What are the top 3 network priorities for an active transportation network?
3. Who is the network serving and who is it not?
4. What are some successes in the City?
5. What are some of the challenges?
6. Is there anything else you would like to add?

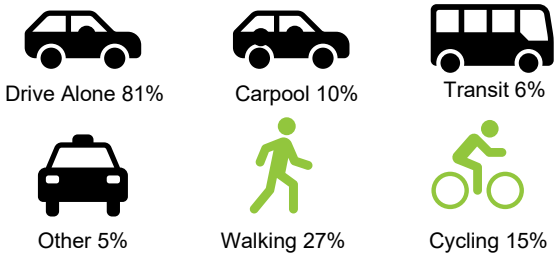
"I think adults more than kids are being served well in terms of comfort, especially downtown. Commuters are well served generally. Leisure riders who aren't afraid of riding outside of the trail – experienced riders are well served. I've heard from other people who would ride more, but they don't feel comfortable riding in traffic, so they are being left behind. Students are really being left behind too because we only have one school that we can get to from the trail. Most of our schools have nothing to connect them, so students are on their own";

"More green paint on the roads to help delineate the cycling facilities";

Public Survey

To support the stakeholder outreach, a public survey was also launched to capture how the public relates to active transportation. With a total of 283 responses, the survey's results provided information useful to developing both a plan for physical infrastructure to support active transportation as well as ideas for new programs and policies to help to develop improved social infrastructure to make active transportation more common and acceptable in the City.

Mode Share



Main Active Transportation Recommendations

1. Build more paved trails or multi-use paths
2. Build more on-street cycling facilities
3. Improve maintenance on existing sidewalks, multi-use paths, cycling facilities etc.

Main Active Transportation Barriers

Lack of sidewalks or trails

Condition of sidewalks or trails

Speed and noise of motor traffic

Lack of dedicated on-street cycling facilities

Intersection Safe

Speed and noise of motor traffic

2.3 STEP 2: ROUTE SELECTION CRITERIA

A comfortable, connected system of active transportation infrastructure is the most important determinant when it comes to shifting transportation behaviour. For a community to unlock the potential demand for walking and cycling, each trip made on foot, by bike or using a mobility device should be direct, seamless and comfortable. Achieving a network that meets these criteria begins with a careful review of all candidate routes to decide which are best suited to form an active transportation network. Based on the Vision and Objectives of the ATP and informed by community engagement, a series of Route Selection Criteria were developed to evaluate candidates routes based off a consistent set of metrics, helping to prioritize future investments into active transportation projects that will make the biggest impact within the community. Based off established best practices, criteria were refined through the lens of the unique context of Temiskaming Shores, ensuring that criteria meet the needs of the City. While these criteria form the foundation of the candidate route evaluation, they do not preclude projects that have a high level of public demand, nor those that have been identified in previous planning processes, from moving forward.

The route selection criteria identified in **Table 3** are meant to serve as a tool to evaluate projects as the ATP moves forward into the implementation phase – they can provide guidance when new projects are proposed, or when conditions within the City change.

Table 3 | List of route selection criteria applied to identify candidate active transportation routes

Safety	Active transportation networks must enhance the safety, both real and perceived, for people walking and cycling. Active transportation routes were prioritized based on their degree of safety improvement compared with current conditions.
Community Connections	Temiskaming Shores is a community of communities, so the proposed active transportation network should serve to connect the communities of Dymond, New Liskeard and Haileybury to enhance community cohesion.
Feasibility	Given the constraint of a limited financial budget, projects were prioritized by their cost effectiveness. This included those which either align themselves with existing capital works or can be implemented more quickly or inexpensively.
Services Demand	To enhance use, active transportation facilities should be prioritized in areas with greater populations or greater trip making potential.
Connections to STATO Trail	As the cornerstone of the City's existing active transportation network, it is vital that recommended expansions strive to either connect to or extend the existing STATO trail system.
Scenic Routes	Active transportation facilities should offer new ways to both reach and travel through scenic natural areas. Key examples include the Lake Timiskaming Shoreline, Devil's Rock and other surrounding natural areas.

2.4 STEP 3: CANDIDATE ROUTES

With the goals and objectives of the City's active transportation network now outlined in the route selection criteria, the next step is to apply those criteria to a list of candidate routes for improvement. By applying the criteria to the various roads and trails connections within the City, it becomes clear which routes should be prioritized for implementation to develop a connected network of active transportation infrastructure around the City. Candidate routes serve as a "first draft" of a network – a series of potential routes that need to be refined and confirmed through technical assessments, conversations with City Staff and consultation with the community. Within Temiskaming Shores, candidate routes were distinguished within three categories: **Potential STATO Trail extensions, Potential Candidate On-road Routes and Proposed Sidewalk Expansion.**

Potential STATO Trail Extensions

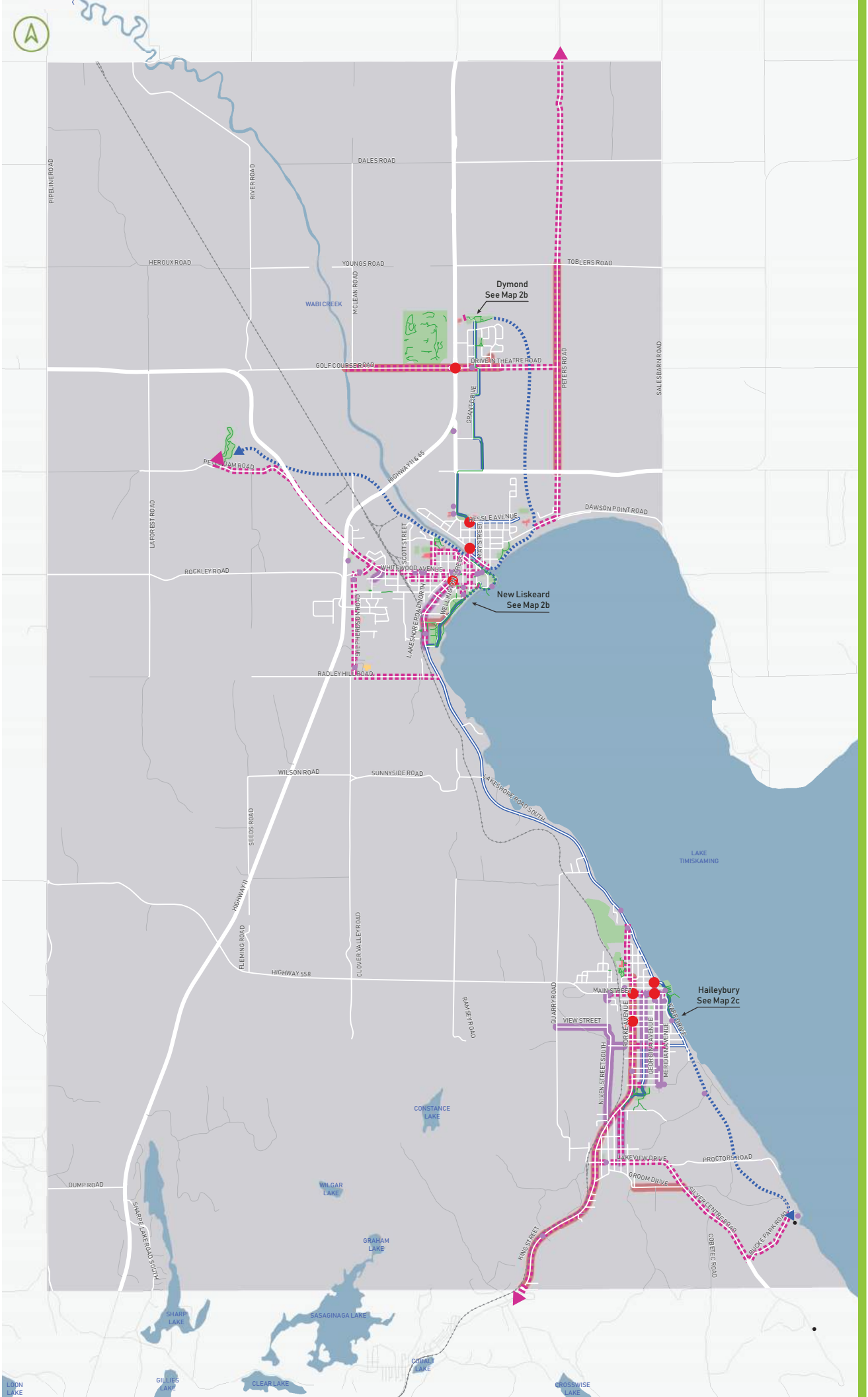
As the existing backbone of the City's active transportation network, the STATO trail remains a logical starting point for further network expansions. These candidate routes were identified directly from the City's Recreation Master Plan (2020) which proposed routes to connect the City's settlement areas and its key parks spaces, particularly Pete's Dam and Devil's Rock.

Potential Candidate On-Road Routes

On-Road Cycling Routes are vital to provide connectivity between the City's existing off-road trails network and the key destinations within the City. On-road routes provide connectivity to schools, commercial areas, employment areas and more, helping to enhance access and safety for all road users.

Proposed Sidewalk Expansions

With almost all trips involving some portion made as a pedestrian, it is vital that improvements to the existing sidewalk network be included as a key recommendation. Like the Candidate On-Road routes, most sidewalk expansions are recommended within settlement areas, where there is a higher anticipated demand. Preference was also given to facilities that improve access to sites and areas with higher amounts of vulnerable users, such as older adults and youth.



Map 2a.

Candidate Routes and Proposed Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- STATO Trail (existing)
- STATO Trail (proposed extension)
- Potential candidate route
- Proposed crossing enhancement
- MTO Highway
- Local Road
- MNRF Road
- 2021 Scheduled Road Project
- 2022 Scheduled Road Project
- Railway
- Hospital
- School
- Recreation Area / Park
- Watercourse
- City Boundary

Note:
1. Route alignment for the proposed extension of the STATO Trail is based on information contained in the City's Recreation Master Plan (2020).

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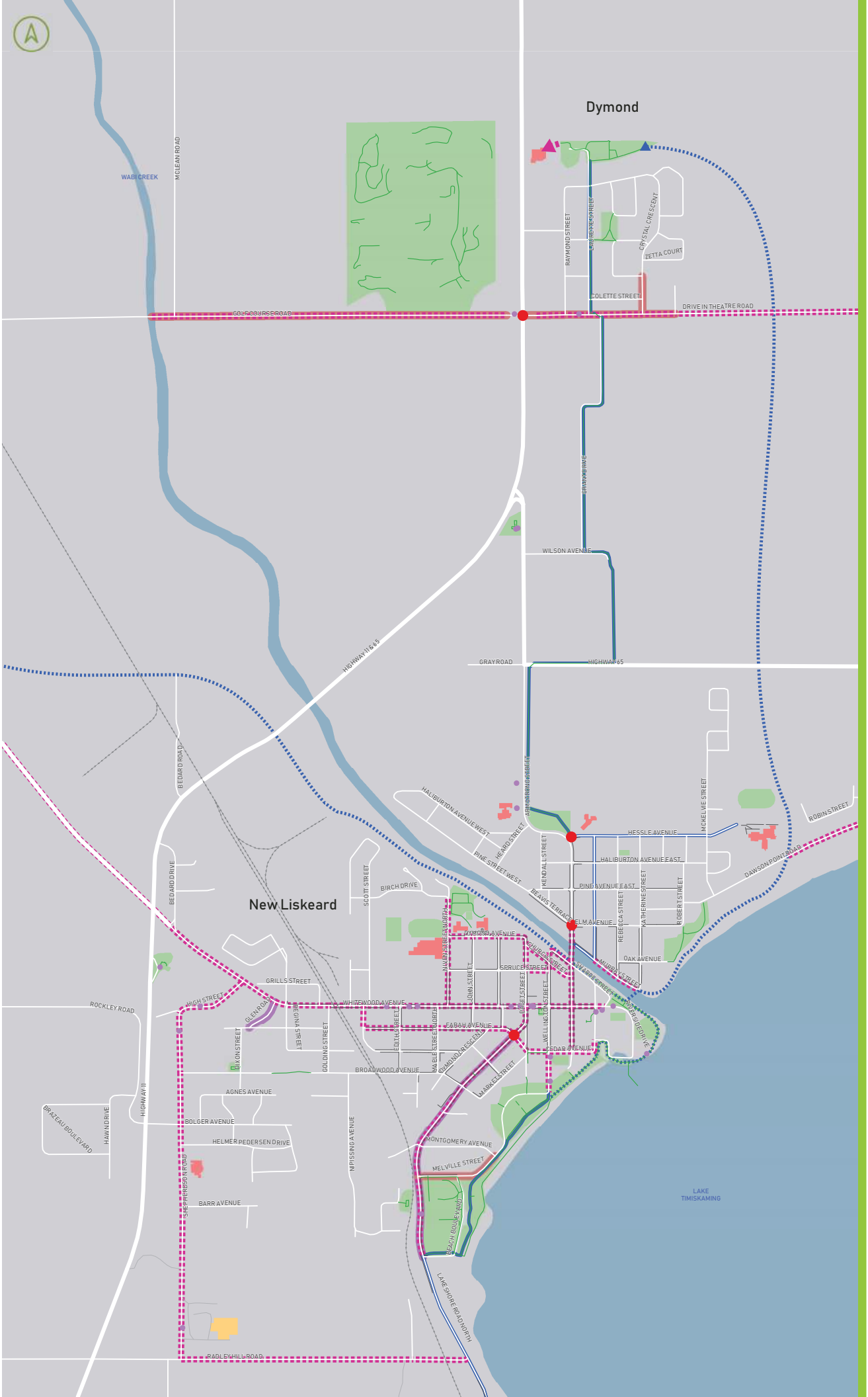

Map 2b.

Candidate Routes and Proposed Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

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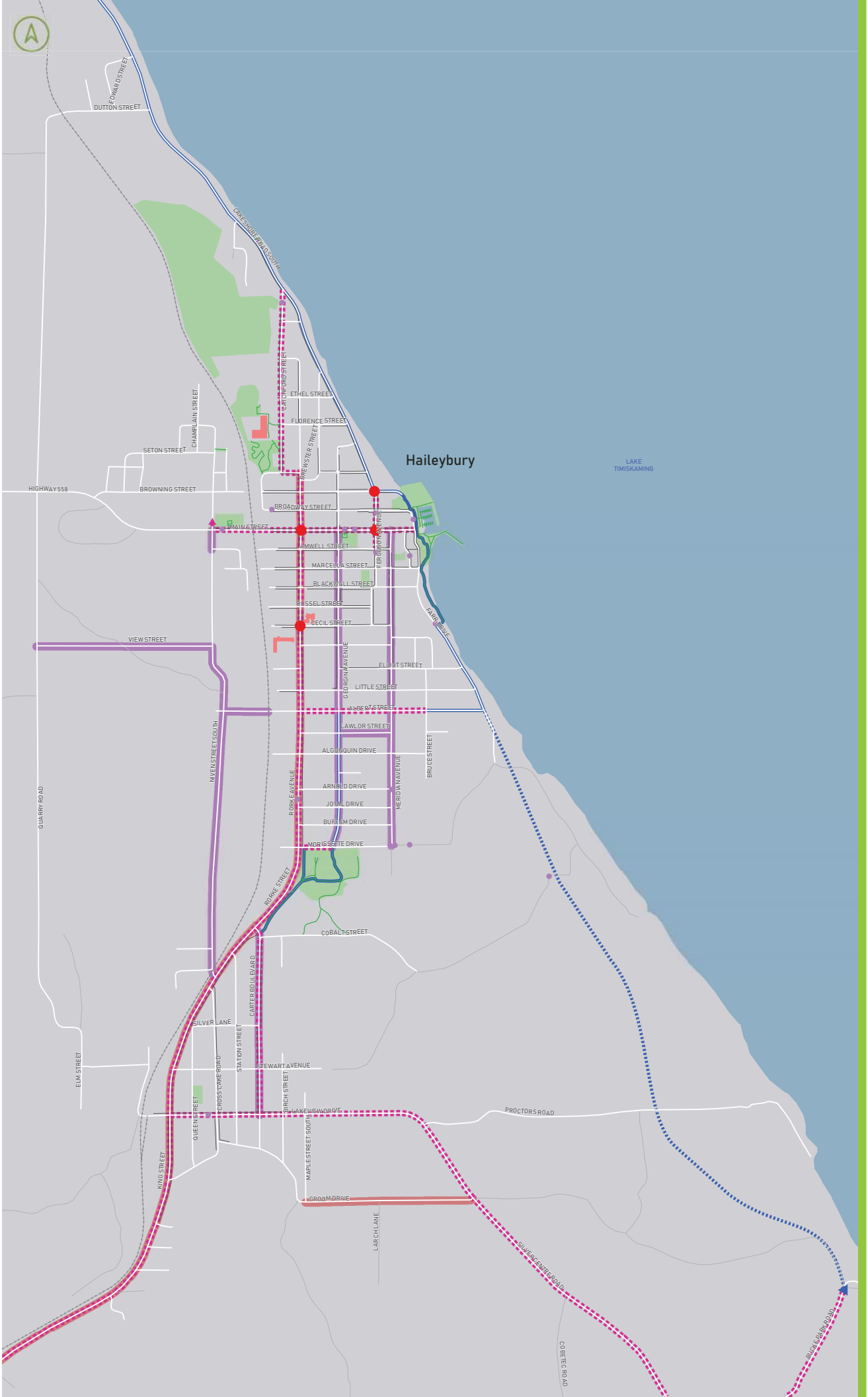

Map 2c.

Candidate Routes and Proposed Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

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2.5 STEP 4: DESKTOP AND FIELD INVESTIGATIONS

To confirm the preliminary recommendations of steps 1-3 of the network development process, an extensive desktop analysis of the selected candidate network was performed. This work built upon the findings of our initial existing conditions review, seeking to both clarify and expand understandings of the candidate network's immediate and surrounding contexts. Using maps and satellite imagery provided from the City and Google Maps, the following details were identified for each candidate route:

- Available road width (based of visual observations and use of the measurement tool)
- Street function and design (i.e. lane widths, presence of on-street parking)
- Utility constraints (i.e. existing hydro poles, light poles, signage)
- Surrounding land uses (i.e. proximity of major trip generators, including businesses, schools, community centers, parks etc.)
- Scenic value (presence of scenic views, proximity to key natural amenities such as water bodies, forests or elevation changes)
- Presence of informal active transportation facilities (i.e. desire lines, vegetation clearing)
- Safety concerns (i.e. observations of heavy trucking, poor site lines etc.).

Depicted within the two images below are the outcomes of a desktop analysis performed along two travel corridors within Timiskaming Shores, Whitewood Avenue in New Liskeard (**Figure 3**) and Rorke Avenue in Haileybury (**Figure 4**)which are listed within the City's proposed active transportation network:

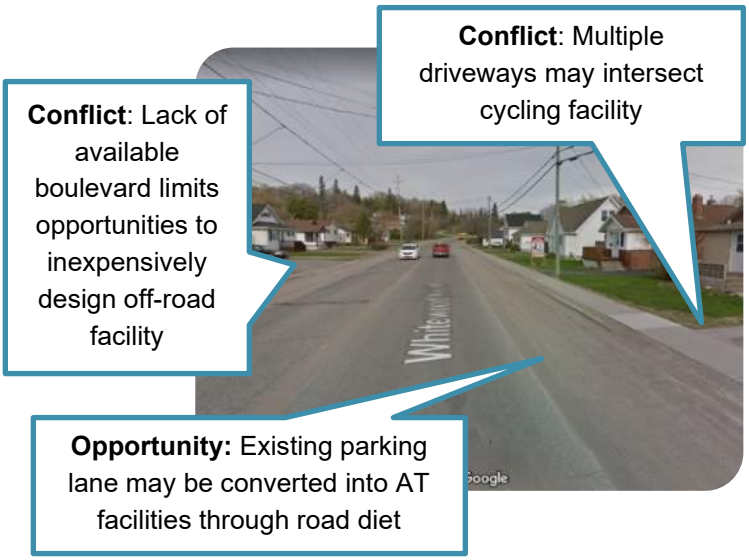


Figure 3 | Marked up photo image of Whitewood Avenue in New Liskeard, which was carefully reviewed for opportunities to implement enhanced active transportation facilities [Source: Google Streetview, 2021]

Figure 4 | Marked up photo image of Rorke Avenue in Haileybury, which was carefully reviewed for opportunities to implement enhanced active transportation facilities [Source: Google Streetview, 2021]

Complimentary to our desktop analysis, a series of field invesitgations were completed at key locations across the City. These sites represented either exising facilities where conditions needed to be updated or candidate routes, whose surrounding context needed to be verified. Key aspects documented within each visit included: slope gradings, surrounding lane uses, road and or trail surfacing, provision of supporting amenities (i.e. directional signage, trailheads, lighting) and facility widths. Overall a total of 184 strategic locations were visited, within the areas of Dymond, North Cobalt, Haileybury, New Liskeard, Pete's Dam and Devil's Rock. For each site visit, an accompanying photo was taken to properly capture all observations and to provide an accurate record for later review. A preliminary map of the site visit locations can be found within **Figure** 5 below:

Field Visits (Photos)

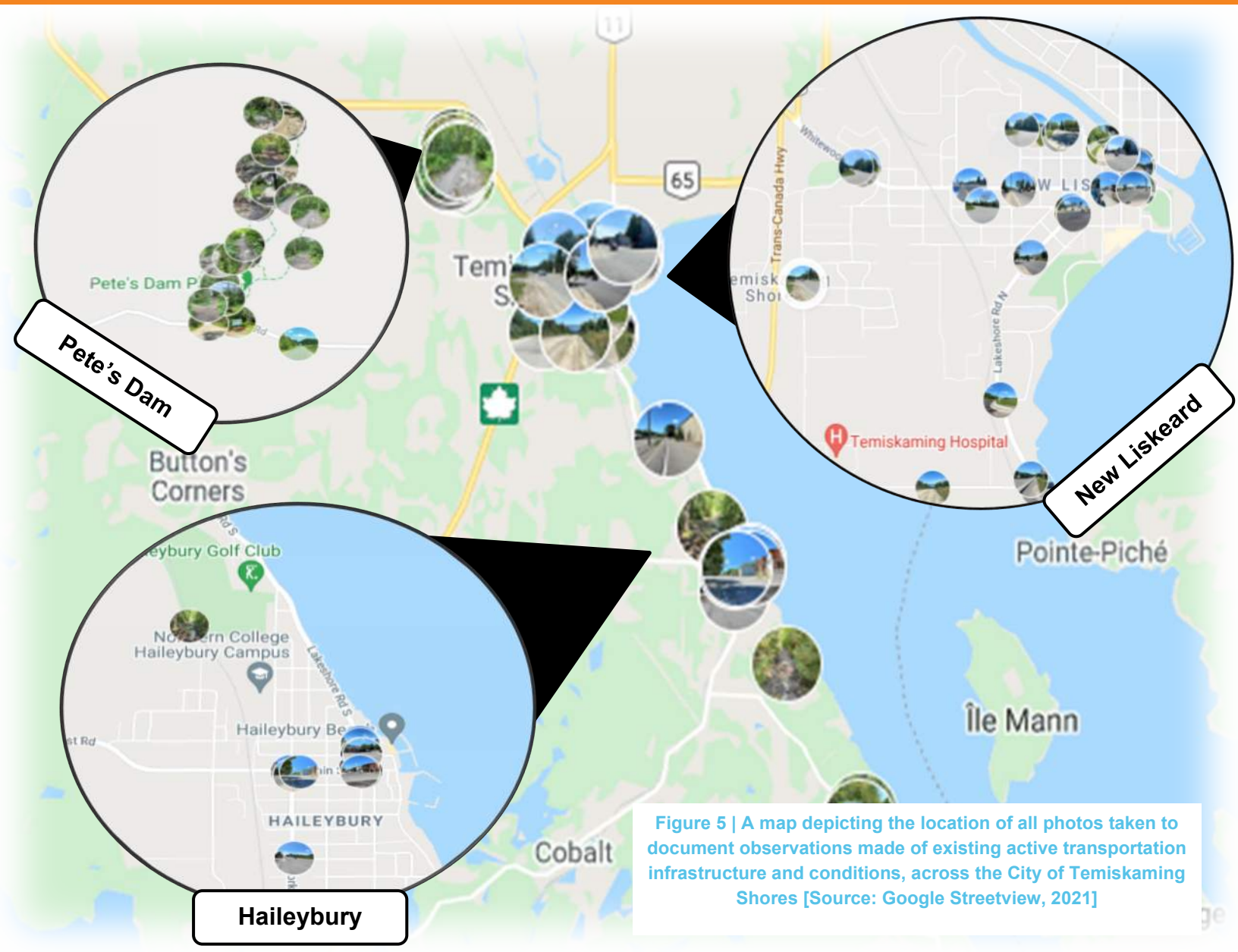


Figure 5 | A map depicting the location of all photos taken to document observations made of existing active transportation infrastructure and conditions, across the City of Temiskaming Shores [Source: Google Streetview, 2021]

2.6 STEP 5: CONFIRM THE ACTIVE TRANSPORTATION NETWORK

Using findings generated from steps 1 through 4 of the network development process and feedback collected from key project stakeholders, the cycling network and preferred routes were then confirmed. Once confirmed, the roadway conditions for each candidate route were assessed to determine the most appropriate facility type based on current best practices and design standards. All facility type recommendations rely on guidance from the newly updated OTM Book 18 (2021), with consideration given to the local context in Temiskaming Shores. Facility recommendations are based on OTM Book 18's 3-step facility selection tool, which is outlined below.

Step 1 of OTM Book 18's 3-step facility selection process involves an assessment of all candidate routes based on the road's posted speed limit (how fast motor vehicles are travelling on the road) and recorded traffic volumes (how many cars are on the road) to determine an appropriate level of separation for an on-road facility. To better account for relevant aspects of the roadway's surrounding context, separate assessment tools are provided depending on whether the facility is located along a rural or urban/suburban roadway. The graphics shown in **Figure 6** illustrate the nomographs applied in step 1 of the facility selection process.

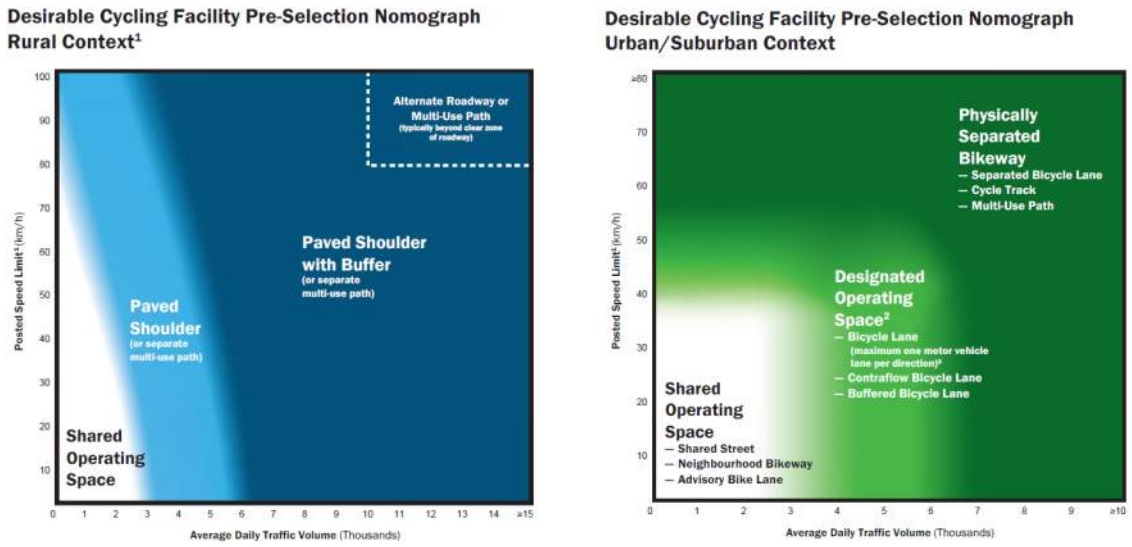


Figure 6 - OTM Book 18 Facility Selection Nomographs (2020 Draft)

Once preliminary facility assignments have been made based off the nomographs, ***Step 2*** *of* the OTM Book 18 facility selection process then involves revisiting the findings of previously conducted desktop reviews and field investigations to better understand the context of the corridor. This step is meant to provide additional context to the recommendations made in step 1 to confirm the desired level of separation – for example, if a roadway provides an important connection to a school or popular community destination, it may be desirable to design the active transportation facility to provide a higher level of comfort to those more hesitant users. The list of characteristics below, while not exhaustive, provides an example of the types of conditions a practitioner may wish to assess as part of their Step 2 Assessment:

Roadway Characteristics

- Speed
- Volumes
- Function
- Vehicle mix
- On-street parking
- Pedestrian activity
- Intersection frequency
- Operations

Availability

- Available space
- Project type

Attractiveness

- User skill level and stress tolerance
- Level of bicycle use
- Cycling route function

Finally, in ***Step 3*** practitioners should detail and justify facility decisions by following these steps.

a. If the result of Step 2 differs from the level of separation and facility type options in Step 1, prepare a rationale for selecting a different facility type or separation option.

b. Identify the specific elements of the roadway that were reviewed, the desired outcome of the facility type and the constraints that were considered when deciding facility types. Identify similar locations or other examples where the proposed facility type has been implemented, either within or outside of the project's jurisdiction.

c. Identify potential design treatments and enhancements that may mitigate potential issues identified through the review of the local context and the implementation of similar facility types.

The results of Steps 1-3 in Temiskaming Shores resulted in the creation of a proposed facility type map, which is summarized in Map 3. This draft network has been reviewed and confirmed through public and stakeholder consultation, as well as through conversations with City Staff.

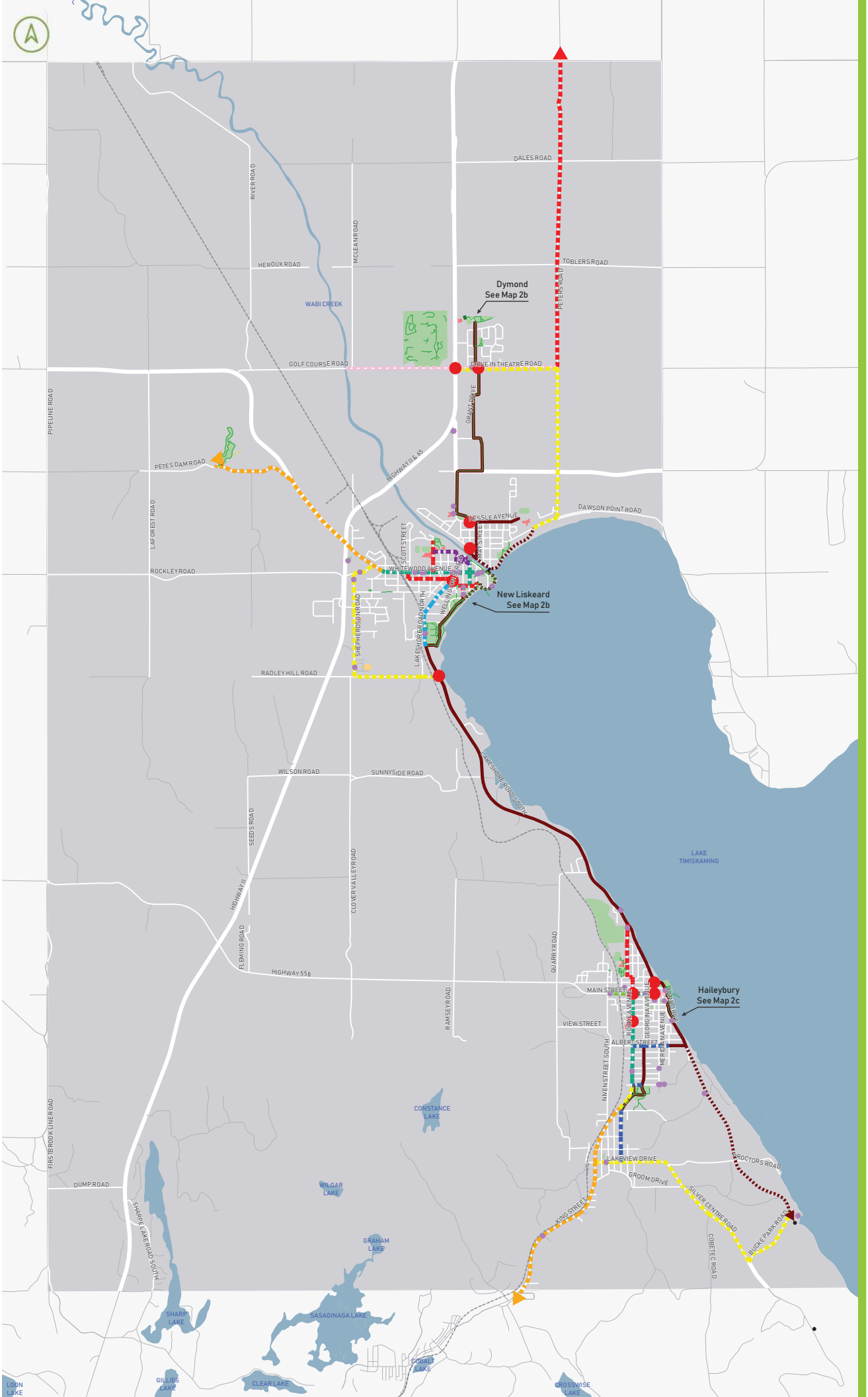
Currently, the City's active transportation network stretches approximately 80km, which includes off-road multi-use trails and sidewalks. For the purpose of this analysis, we are including all segments of the STATO Trail (including those that are on-road) in the Multi-Use Trails category.

The ultimate active transportation network as envisioned by this Plan would see Temiskaming Shores add an additional **57km** of active transportation facilities. The new facilities consist of approximately **13km of new sidewalks**, **7 km of new multi-use trail or in boulevard multi-use paths**, **5.5 km of new Bike Lanes** in urban areas, **19km of new Paved Shoulders** or buffered paved shoulders and **13km of new shared facilities**, including signed routes, traffic calmed corridors and sharrows.

Once completed, the active transportation network would stretch 137km, and would provide safer walking and cycling connections to nearly every area of Temiskaming Shores. A summary of the active transportation network is summarized in **Table 4** and shown in **Map 3 (A, B & C)**. The proposed and existing sidewalk networks for New Liskeard, Dymond and Haileybury are shown **Map 4 (A & B)**.

Table 4 | Summary of the Existing Active Transportation Network

Facility	Existing KM	Proposed KM	Total KM
Off-Road Multi-Use Trails	43.5	5.5	**49.0**
In-Boulevard Multi-Use Path		1.6	**1.6**
Buffered Bike Lane		3.7	**3.7**
Buffered Bike Lane or Two-Way On-Road Facility		1.4	**1.4**
Bike Lane		0.4	**0.4**
Buffered Paved Shoulder		6.6	**6.6**
Paved Shoulder		12.3	**12.3**
Sharrows Markings	0.1	1.1	**1.2**
Signed Route		8.0	**8.0**
Candidate Locations for Pilot Projects		0.2	**0.2**
Candidate Locations for Traffic Calming Measures		3.6	**3.6**
Pedestrian Bridge		0.1	**0.1**
Sidewalks	36.5	12.7	**49.2**
Total	**80.1**	**57.2**	**137.3**



Map 3a.

Proposed Facility Types and Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- STATO Trail (existing)
- Existing sharrow
- Proposed bike lane
- Proposed buffered bike lane
- Proposed buffered bike lane or two-way on-road AT facility
- Proposed buffered paved shoulder
- Proposed in-boulevard multi-use path
- Proposed off-road multi-use trail
- Proposed pilot project
- Proposed paved shoulder
- Proposed sharrow
- Proposed signed route
- Proposed traffic calming measures
- Proposed pedestrian bridge
- STATO Trail (proposed extension)
- Proposed crossing enhancement
- MTO Highway
- Local Road
- MNRF Road
- Railway
- Hospital
- School
- Recreation Area / Park
- Watercourse
- City Boundary

Note:
1. Route alignment for the proposed extension of the STATO Trail is based on information contained in the City's Recreation Master Plan (2020).

Temiskaming Shores

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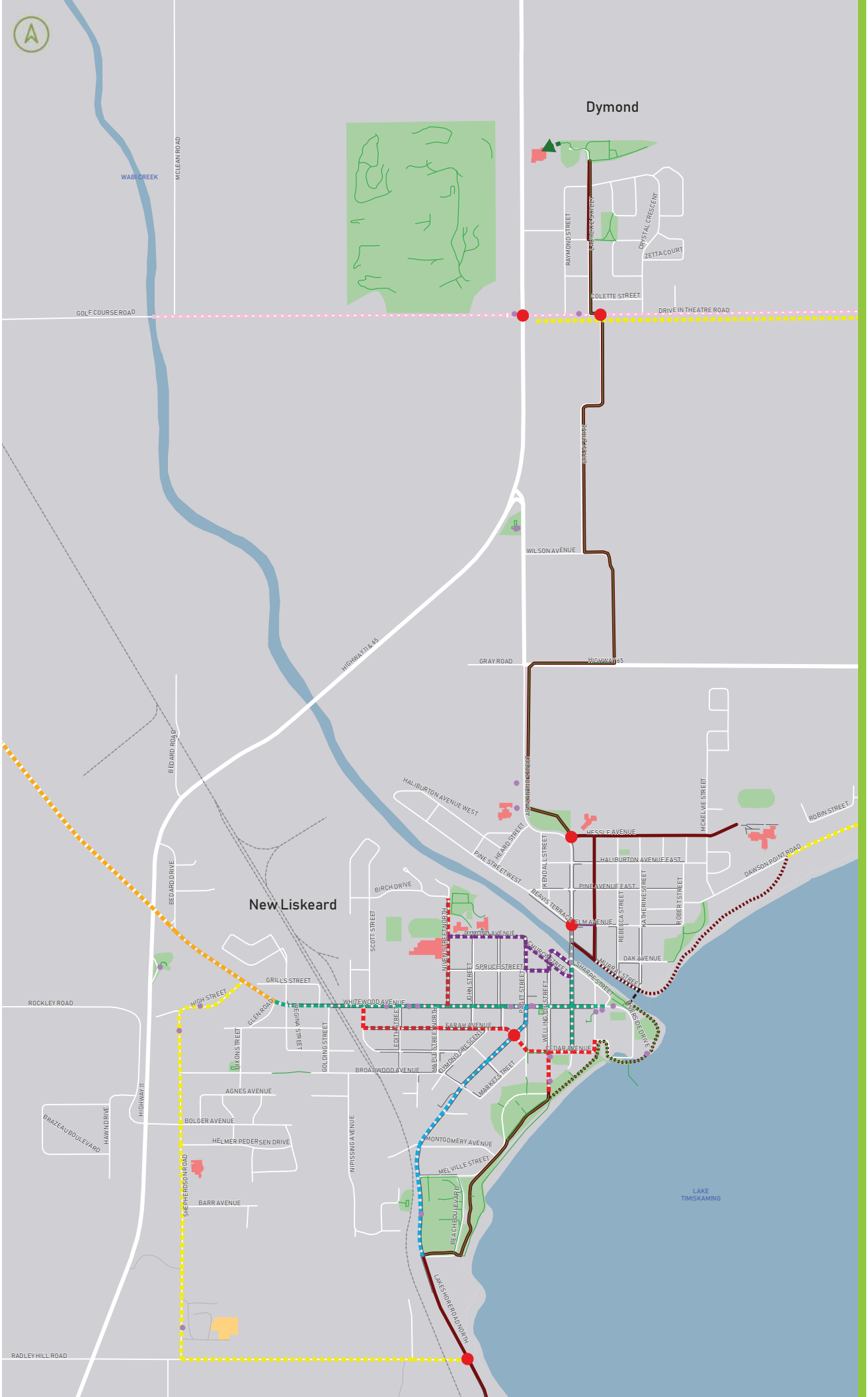
0 0.475 0.95 1.9 KM



Map 3b.

Proposed Facility Types and Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- STATO Trail (existing)
- Existing sharrow
- Proposed bike lane
- Proposed buffered bike lane
- Proposed buffered bike lane or two-way on-road AT facility
- Proposed buffered paved shoulder
- Proposed in-boulevard multi-use path
- Proposed off-road multi-use trail
- Proposed pilot project
- Proposed paved shoulder
- Proposed sharrow
- Proposed signed route
- Proposed traffic calming measures
- Proposed pedestrian bridge
- STATO Trail (proposed extension)
- Proposed crossing enhancement
- MTO Highway
- Local Road
- MNRF Road
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- School
- Recreation Area / Park
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- City Boundary

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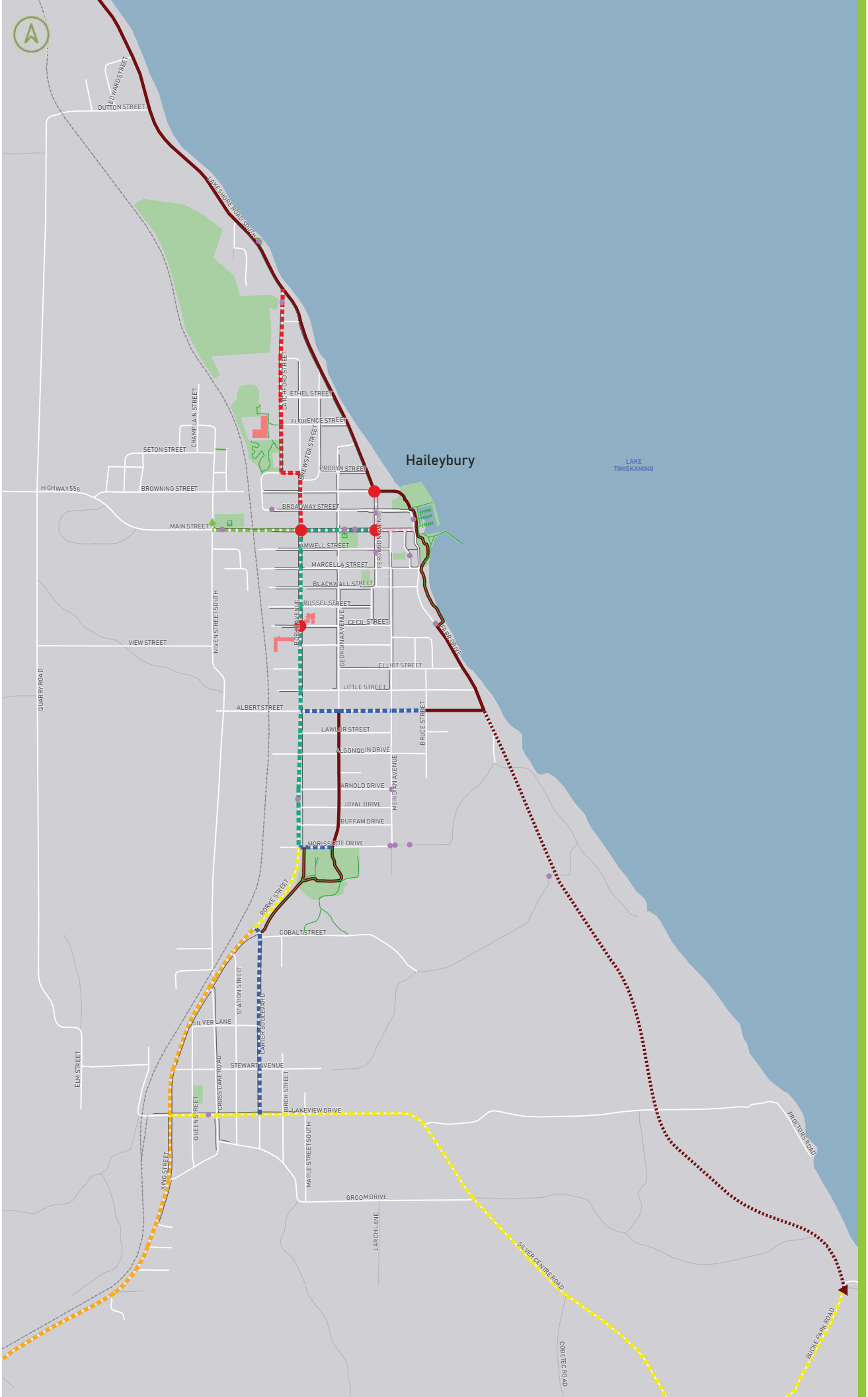

Map 3c.

Proposed Facility Types and Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- STATO Trail (existing)
- Existing sharrow
- Proposed bike lane
- Proposed buffered bike lane
- Proposed buffered bike lane or two-way on-road AT facility
- Proposed buffered paved shoulder
- Proposed in-boulevard multi-use path
- Proposed off-road multi-use trail
- Proposed pilot project
- Proposed paved shoulder
- Proposed sharrow
- Proposed signed route
- Proposed traffic calming measures
- Proposed pedestrian bridge
- STATO Trail (proposed extension)
- Proposed crossing enhancement
- MTO Highway
- Local Road
- MNRF Road
- Railway
- Hospital
- School
- Recreation Area / Park
- Watercourse
- City Boundary

Note:
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 Date Published: Draft July 2021

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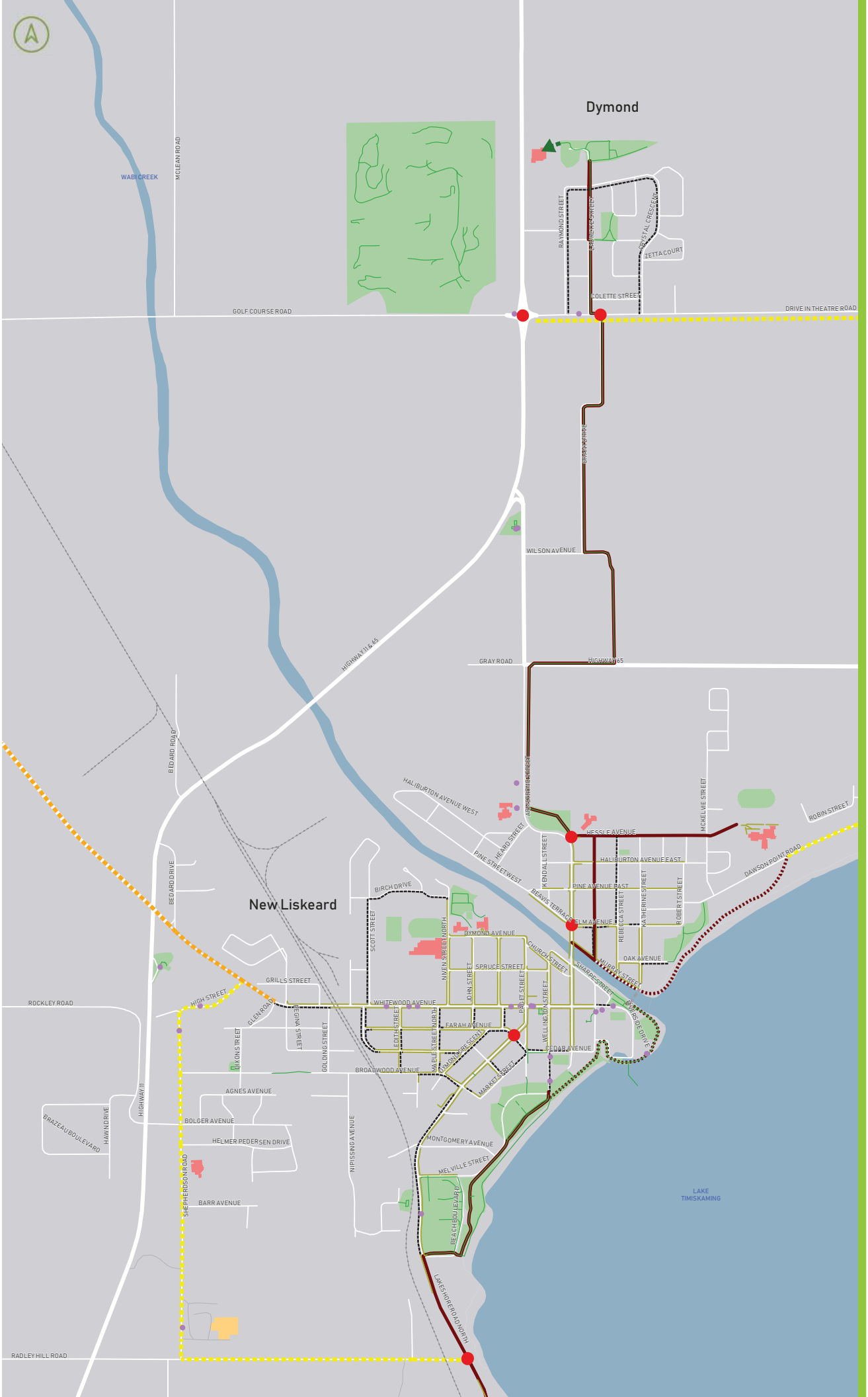

Map 4a.

Proposed Priority Sidewalk Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- STATO Trail (existing)
- STATO Trail (proposed extension)
- Proposed sidewalk improvement
- Proposed buffered paved shoulder
- Proposed in-boulevard multi-use path
- Proposed off-road multi-use trail
- Proposed paved shoulder
- Proposed Pedestrian Bridge
- Proposed crossing enhancement
- MTO Highway
- Local Road
- MNRF Road
- Railway
- Hospital
- School
- Recreation Area / Park
- Watercourse
- City Boundary

Note:
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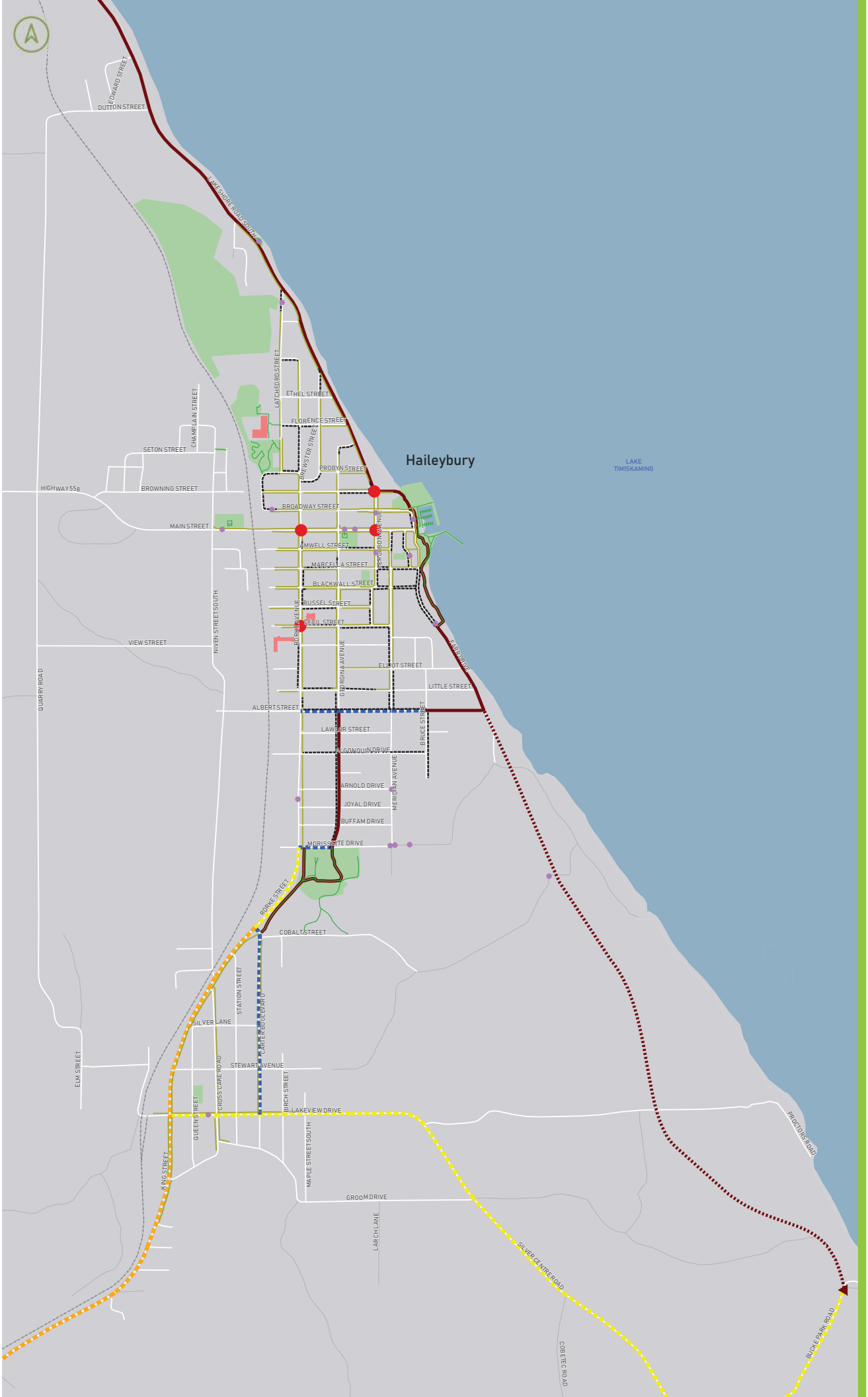
0 0.125 0.25 0.5 KM



Map 4b.

Proposed Priority Sidewalk Improvements

CITY OF TEMISKAMING SHORES
ACTIVE TRANSPORTATION PLAN

Legend

- Community Destination
- Trailhead
- Existing sidewalk
- Existing trail
- STATO Trail (existing)
- STATO Trail (proposed extension)
- Proposed sidewalk improvement
- Proposed buffered paved shoulder
- Proposed in-boulevard multi-use path
- Proposed off-road multi-use trail
- Proposed paved shoulder
- Proposed Pedestrian Bridge
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0 0.125 0.25 0.5 KM

2.7 STEP 6: PHASING PLAN

To conclude the network development process, a phasing plan will be developed create a rough outline of when each aspect of the network could be constructed. While beyond the scope of an ATMP to finalize specific project construction dates, forecasting implementation timelines at a relatively high level provides the types of support needed to develop the network. Developing a phasing plan for the active transportation network also supports longer-range budgeting and allows projects to be bundled with nearby capital projects, which can often reduce implementation costs.

Like other parts of the network development process, developing a phasing strategy for the plan requires a broad understanding of the local context and conditions. Proposed timelines can be based on alignment with capital works such as road rehabilitations or replacement of below-grade infrastructure like sewers, a connection's significance to the overall network (more important connections can be prioritized for earlier implementation), public demand or safety concerns.

Additional details on the Phasing Plan associated with Temiskaming Shores proposed active transportation network, including phasing horizons and costing estimates for individual projects will be discussed in the Phasing and Implementation Discussion Paper.

2.7.1 PROPOSED PHASING

While the phasing of all network recommendations will be determined in later stages of the ATP process, it is important to establish proposed implementation horizons early on to inform these later discussions. Key to developing these horizons is an understanding of both the network recommendations themselves as well as the way that the City implements infrastructure enhancements. Recognizing that circumstances change, phasing assignments within these horizons should not be considered a strict commitment but a list of recommendations that can be discussed and refined by City staff and Council on an ongoing basis. In particular, the items included in the short-term phasing horizon should be reviewed by City staff annually to confirm that projects vital to the completion of a safer, connected active transportation network are moving forward at a pace that is reflective of their significance.

For this Plan, the horizons for construction are defined as short term (0-5 years) and longer term (5 years and beyond). While this time horizon presents fewer categories of implementation (many plans will have a 0-5 year, 5-10 and 10-20 year horizon), the relatively small number of projects and the high degree of constructability for the majority of the high-impact projects outlined in this Plan lend themselves to a more ambitious program of **completing the network** during the early parts of the implementation of this Plan, with the longer-term priorities serving to **expand the network** and connect to some of the destinations that lie outside of the settlement areas of Temiskaming Shores. A brief explanation of some of the considerations that will lead to the categorization of each element of the network is included below in Table 5.

Table 5 | High level criteria used to distinguish recommended facilities scheduled within either a short-term (0-5 years) or long-term (5+ years) implementation horizon.

Short-Term (0-5 years) Completing the Network	Long Term (5+ years) Expanding the Network
– Accounted for within existing plans/projects – High priority projects vital to achieve active transportation connectivity – Meet all or most of the network criteria at a high level	– Outside of capital considerations that are already scheduled – Don't meet as many of the network criteria but remain worthy aspirational projects – Challenged by geometric constraints and implementation costs.

3 DESIGNING THE NETWORK

3.1 DESIGN PRINCIPLES

When selecting routes and facility types to create a network that is considered safe, equitable and accessible, it is important to clearly define the principles that will guide the network development. Based on guidance provided in current design standards and the input received through the ATP Process, the network being proposed for the City of Temiskaming Shores is based on the following principles, which complement the network development priorities and could be used beyond the lifespan of this plan to inform future decision making.

DESIGNING FOR ALL AGES AND ABILITIES (AAA)

AAA refers to the planning and design of transportation networks and public realms that are considered safe, comfortable and equitable by the community. Historically, active transportation facilities in North America have favoured confident, able bodied users. An AAA approach considers the needs of populations that have been traditionally under-served when it comes to active transportation, particularly: children; seniors; women; people of colour; low-income users; people with disabilities; and people moving goods or cargo. Where possible, this plan strives to provide AAA facilities to open active transportation to the entirety of Temiskaming Shores' population, creating new opportunities to grow the community of active transportation users in the City. In practice, this means ensuring that road users are provided with physically separate space where possible and reducing vehicle speeds and volumes where separation cannot be achieved.

MOTOR VEHICLE SPEED INFLUENCES CYCLIST SAFETY

When designing for an interested but concerned user, practitioners should strive to provide as much physical separation between motor vehicle lanes and the facility as possible. However, it is recognized that it may not be possible or practical to design all facilities to an all ages and abilities standard. As assessment of design criteria of the roadway context should be undertaken to inform the selection of routes and facility types.

WHEN IN DOUBT, DESIGN FOR SAFETY

In some cases, a segment of road in Temiskaming Shores may be "on the edge" when it comes to recommended facility type based on the OTM Book 18 guidance. In these instances, this plan tends to select the higher comfort option (for example, recommending a separated cycling facility such as a protected bike lane rather than a designated facility like a painted bike lane) to generate a network that is future ready and will also encourage the highest number of new riders.

INTEGRATION OF COMPLETE STREETS PLANNING AND DESIGN

Complete Streets are streets for everyone – they are roads that are designed to balance the needs of all road users including pedestrians, cyclists, transit users, and motor vehicle. Active transportation is considered a key element of Complete Streets as walking and cycling infrastructure can offer greater transportation choice, accommodate people at all stages of life and facilitate equal access to goods and services.

It is important to note that using a Complete Streets lens doesn't mean that every road needs to accommodate every user type – it is a flexible, context specific approach that recognizes that different roads serve different purposes. For example, Main Street areas primary function is to provide access to local businesses, and to provide a positive experience for people visiting the area. This leads to very different design considerations when compared to an arterial road, where mobility of people and goods is the primary objective. This plan takes a Complete Streets approach to the development of the network, ensuring that all road users have access to a direct, connected network of transportation routes, regardless of how they move or where they are going.

PROVIDING EQUITABLE MEANS OF TRANSPORTATION

Research shows that enhancing opportunities for affordable and reliable transportation options is a key determinant to an equitable transportation system. Transportation equity refers to the ability to provide social and economic opportunities through equitable levels of access to affordable and reliable transportation options based on the needs of the populations being served, particularly populations that are traditionally underserved.

Traditionally underserved groups include individuals in at least one of the following categories: low income, minorities, elderly, immigrant populations, person(s) with disabilities, and/or youth; however, within each community there are unique and geographically specific groups and conditions that need to be considered and addressed. Active transportation is an affordable transportation mode which can help to provide transportation equity and support the diverse needs of all community members, especially when paired with reliable, affordable public transit.

SUPPORTING ECONOMIC DEVELOPMENT AND TOURISM GOALS

It is a goal of this plan to provide the City of Temiskaming Shores with an active transportation network that will highlight the City's natural beauty and connect residents and visitors to the City's unique amenities and local businesses. The plan prioritizes connections to the STATO Trail, the shoreline of Lake Timiskaming and the local conservation areas that have the potential to draw new tourism investment in the community.

In urban areas and neighbourhood main streets, it is important to consider how implementation of a route would impact local businesses and to leverage opportunities to improve the public realm through the development of new active transportation facilities. These efforts can support the City's existing initiatives to support small businesses such as the bump-out patios on Whitewood Ave, while also improving safety and access to local amenities for people who walk, bike or wheel.

The proposed Temiskaming Shores active transportation network is comprised of a variety of facility types, as assigned through the network development process. To support safer, comfortable and more convenient active travel, each facility type has their own design standards and considerations which reflect the needs of the end user. Listed within **Table 6** below are some key guidelines that inform both the selection and design of different active transportation facilities. The table also identifies applicable leading industry references, where additional guidance can be provided.

Table 6 | High-level design guidance for facilities listed within the proposed active transportation network

Facility	Two-way Traffic Volumes (ADT)	Operating Speed	Facility Width	Applicable References
Off-road Multi-Use Trail	N/A	N/A	3.0 – 4.0 metres	MTO Bikeways Design Manual, section 5.0 AODA – Built Environment Standards, section 2.2
In-Boulevard Multi-Use Path	≥6,000	≥40 km/h	3.0 – 4.0 metres + 1.5 metres desired offset from back of curb (0.6 m min offset)	OTM Book 18, section 4.3.4
Buffered Bike Lane	≥2,500	≥40 km/h	1.5 – 1.8 metres + 0.3 – 1.0 m buffer	OTM Book 18, section 4.4.2
Two-Way On-Road Cycle Facility			3.0 – 4.0 metres + 0.3 – 1.0 m buffer with physical separation treatment	
Bike Lane	≥2,500	≥40 km/h	1.5 – 1.8 metres	OTM Book 18, section 4.4
	Maximum one motor vehicle lane per direction, otherwise consider a buffered bike lane at a minimum			
Buffered Paved Shoulder			1.5 – 2.0 metres + 0.5 – 1.0 m buffer	OTM Book 18, section 4.5.4
Paved Shoulder	≥1,000	≥40 km/h	1.5 metres – 2.0m	OTM Book 18, section 4.5.4
	At higher volumes and speeds, consider a buffered paved shoulder			
Sharrow Marking	≤2,500	≤40 km/h		OTM Book 18, section 4.5.2, 4.5.3
Signed route	≤2,500	≤40 km/h[1]	3.0 – 4.5 metre travel lane	OTM Book 18, section 4.5.2, 4.5.3

Note:
In locations where traffic volumes are very low (e.g. less than 1,000 cars per day), the threshold for speed could be higher. Practitioners are encouraged to reference the OTM Book 18 facility selection process to help identify the desirable level of separation for a facility based on traffic volumes and posted speed. The facility selection process includes three steps. It is important that practitioners complete each step to identify the best possible facility type based off the specific context and roadway characteristics.

3.2 REDESIGNING MAIN STREETS

It is important to recognize that Temiskaming Shore's active transportation network is designed to compliment the City's existing transportation system. Designing for active transportation must balance the many roles and functions that streets already serve. Arguably some of the most important decisions in this Plan will need to be made as it relates to the City's downtown areas, which serve as both important transportation corridors as well as commercial main streets. Balancing the needs of sidewalks, public spaces, traffic movement, on-street parking and cycling facilities within a narrow right of way presents many challenges. Based on the feedback received throughout the process of preparing this Plan, the fundamental objective of the Downtown Streets in Temiskaming Shores should be to **foster a stronger sense of place through the creation of a more human-scale public realm**. It is therefore important to consider how to balance the mobility of all road users with the provision of space to linger and explore, ensuring that these important areas of the City meet the needs the community.

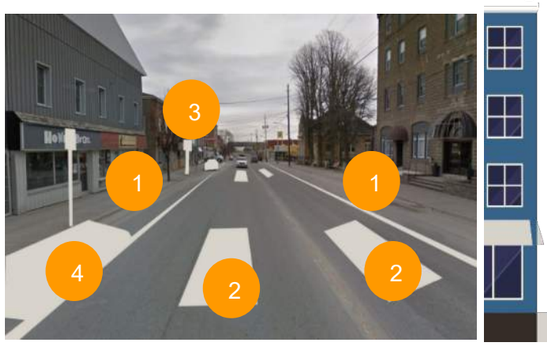
Recognizing that the City's Main Streets may not come up for a roadway reconstruction for several years, this Plan provides options for high quality active transportation and placemaking infrastructure in the City's downtown areas without relying on extensive reconstruction. Given that the available pavement width in both downtown New Liskeard and Haileybury is relatively wide, this Plan offers some potential design solutions that would provide an enhanced environment for walking and cycling without significantly impacting vehicular operations or parking capacity in the Downtown areas. Using traffic calming measures, expanding the available space for walking and cycling and enhancing wayfinding and signage can help to reduce vehicle speeds in these corridors, providing a more comfortable environment for people walking or cycling in the area. These interventions would complement the City's existing "bump out" program, enhancing the urban environment in these important retail corridors. Based on the feedback received and the importance of the Downtowns to this Plan, proposed cross sections for Whitewood Avenue in New Liskeard and Ferguson Avenue in Haileybury (**Figure 8**) are presented here. The Whitewood design places a higher priority on mobility, with new parking-protected bike lanes added, which the Ferguson design places a higher priority on placemaking and traffic calming.

Suggested Design Treatments/ Interventions

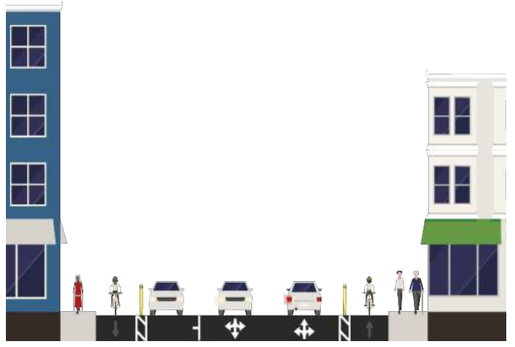
1. Remove one or both sides of on-street parking and reallocate road space towards separated cycling lanes or curb extensions
2. Place additional pavement markings within the roadway, such as sharrows to communicate the intention for a shared roadway
3. Install new signage to improve wayfinding and awareness about active transportation. Consider using a distinctive design template to build awareness around the community's local AT brand
4. Implement a variety of traffic calming measures which slow motorists and make the road safer for active travel. This can include measures such as bulb outs, curb extensions or speed humps

Whitewood Avenue (New Liskeard)

Existing Conditions



Suggested Transformation



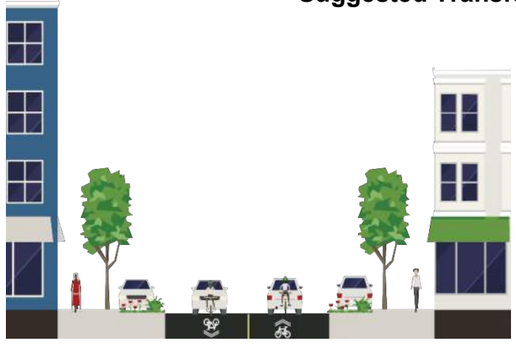
*This redesign places a priority on **mobility** along the Whitewood Corridor, providing safe space for all road users. By adding parking-protected bike lanes, the corridor helps to connect people on bikes into the Downtown and provides additional separation between traffic and the sidewalk.*

Figure 7 | Marked up photo and series of cross section diagrams illustrating the existing streetscape of Whitewood Avenue and suggestive design treatments to better accommodate active transportation [Source: Google Streetview, 2021 & Streetmix]

Ferguson Avenue (Haileybury)

Existing Conditions

Suggested Transformation



This redesign prioritizes placemaking, with additional space allocated for wider sidewalks, curb extensions, planters and additional street furniture that enhance the streetscape. By adding visual interest and complexity along the corridor, vehicle speeds should also decrease.

Figure 8| Marked up photo and series of cross section diagrams illustrating the existing streetscape of Ferguson Avenue and suggestive design treatments to better accommodate active transportation [Source: Google Streetview, 2021 & Streetmix]

3.3 SEPARATION TECHNIQUES FOR ON-STREET FACILITIES

In circumstances where on-street facilities are adjacent to higher speed traffic (generally 60km/h and above), physical separation is preferred to improve the safety and comfort of people on bikes. Separation techniques can vary widely, from flex bollards mounted directly to pavement to curb-separated facilities located away from the roadway. Choosing an appropriate level of separation relies on the context of the roadway and the goals of the proposed facility. Ideally, physically separated facilities should be designed to support the safety and comfort of people who would fall into the “interested but concerned” group of cyclists to maximize their impact on ridership within the community.

One common approach to creating physical separation is through reallocating space previously used for motor vehicle lanes to create a buffer for on-road cycling facilities. Often referred to as a “road diet”, this method is a well-proven, cost-effective intervention that is shown to improve safety for all road users. The method is also known to have minimal impacts on traffic operations in most contexts where traffic volumes are under 20,000 vehicles per day. Road Diets often rely solely on restriping the existing pavement to create space for cycling, meaning that the cost of implementing them is relatively low. In some circumstances, creating separated cycling space may require the removal of one or both sides of on-street parking. In circumstances where parking is required, it either a wide buffer between the parked vehicles and the bike lane (to reduce the instances of “dooring” collisions) or, placing the bike lane against the curb to create physical separation and protection using parked cars to enhance safety, is recommended.

Emerging best practice and guidance stresses that physical separation should be considered as often as is feasible and practical when designing cycling facilities. Providing a physical barrier between people cycling and people driving can enhance both real and perceived safety, encouraging more people to ride. Physical separation can come in a variety of styles and formats, most types can be distinguished as either temporary or permanent. Listed below are some common types of each, as well as general guidance on where they are most appropriately applied:

Temporary

Temporary physical separation is preferred along roadways with lower traffic speeds but greater amounts of manoeuvring traffic (i.e. on street parking, delivery drop offs). Their ability to be installed and removed also make them ideal in places where specialized equipment for winter maintenance is not readily available.

Common examples: Hatched buffer (Figure 9) or Bollards

Permanent

Permanent physical separation is preferred for on-road facilities that receive high ridership and are located on roadways with more hazardous traffic conditions (i.e. heavy trucking). They are more expensive to implement but are more durable and offer greater protection to facility users.

Common examples: Pinned Pre-cast curbs (Figure 10) or Low Concrete Wall Barrier

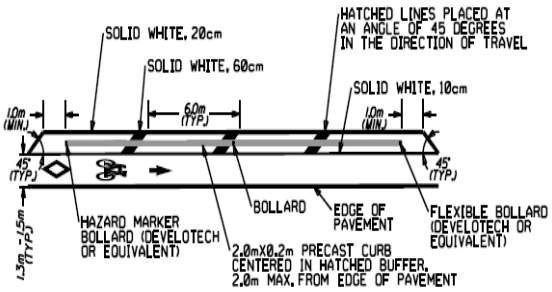


Figure 9 | Technical drawing of potential hatched buffer treatments [Source: Vodden Cycle Tracks Project, 2021]

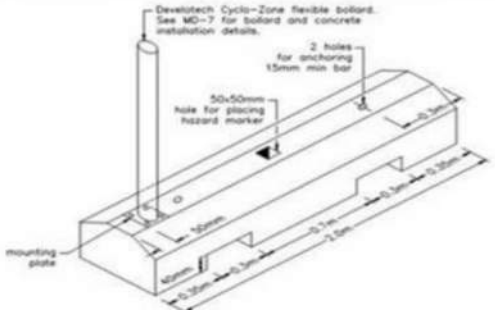


Figure 10 | Technical drawing of potential pinned pre-cast curb treatment [Source: Colborn St Cycle Tracks Project, 2018]

Figure 11 - Example of Bollards and Planters used for physical separation on a bike lane [Source WSP]

Figure 12- Example of permanent physical separation using rolled curbs [Source WSP]

3.4 INTERSECTIONS AND TRAIL CROSSINGS

Proper intersection and trail crossing design is a key component of the creation of a safer, connected network of active transportation infrastructure. Given the potential for collisions at these locations, it is important that best practices in design be referenced whenever a trail or cycling facility crosses a roadway. Intersection treatments can vary widely, with a variety of pavement markings, lighting options, signage and physical infrastructure changes being available to designers through OTM Books 18 and 15. While every crossing will be unique given the context of the crossing, facility types can generally be categorized into one of four options:

- Setback crossings, where a trail crosses an intersecting roadway
- Adjacent crossings, where a trail crosses an intersecting roadway
- Controlled mid-block crossings, where a trail crosses a roadway at a perpendicular angle
- Uncontrolled mid-block crossings, where a trail crosses a roadway at a perpendicular angle

General design guidance for Setback Crossings (**Figure 13**) and Adjacent Crossings (**Figure 14**), are provided here – these are the crossing types that are most applicable to the types of crossings that are proposed for Temiskaming Shores. Additional detail on each intersection treatment type can be found within sections of OTM Book 18 referenced.

3.4.1 INTERSECTION TREATMENTS

Setback Crossings (OTM Book 18 Section 6.3.2)

In this condition, the cycling facility or multi-use trail crosses the intersection set back from the adjacent motor vehicle travel lanes. Also known as a "protected intersection", this treatment does not remove all potential conflict, but it does increase the user's level of comfort and safety through partial physical separation and by encouraging slower motor vehicle speeds when turning. In a setback crossing, the cycling facility is offset from the parallel travel lane by 4 to 6 metres (desired). Applicable for in-boulevard facilities such as cycle tracks and MUPs.

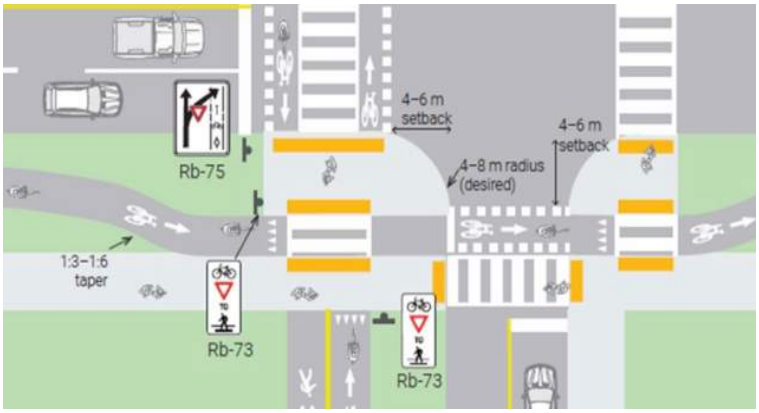


Figure 13 | Components of a possible setback crossing intersection [Source: OTM Book 18]

Adjacent Crossing (OTM Book 18 Section 6.3.3)

In this condition, the cycling facility crosses the intersection adjacent to (or with minimal setback from) motor vehicle travel lanes, either on-road or directly adjacent. Adjacent crossings can be applied for both on-road (bike lanes, paved shoulders) and in-boulevard cycling facilities (multi-use pathways).

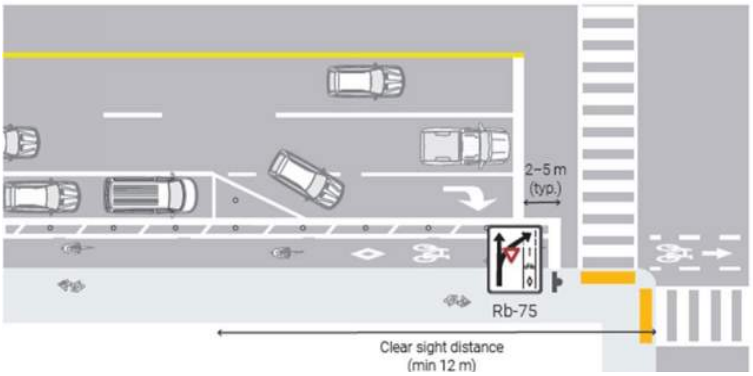


Figure 14 | Components of a possible adjacent crossing intersection [Source: OTM Book 18]

3.4.2 MIDBLOCK CROSSING TREATMENTS

In some circumstances within Temiskaming Shores, trails facilities directly intersect roadways at a location where there is no other crossing present. At these locations, it is important that both trails users and people driving understand their role in ensuring safety, which can be achieved through proper crossing design. Within Temiskaming Shores, grade-separated crossings (such as tunnels or bridges) would be prohibitively expensive, so this Plan is recommending a mix of controlled (**Figure 15**) and uncontrolled traffic crossings (**Figure 16**). In most instances in Temiskaming Shores, the combination of trail use volume and traffic volumes would likely lead to the selection of uncontrolled crossings, although there are several locations within the City where a controlled crossing could be warranted. Listed below is an overview of each crossing type's design, with additional details available in OTM Book 18.

Controlled crossings

Figure 15 | Diagram illustrating the design elements of a signalized mid block crossing and a photo of a sample application [Source OTM Book 18]

Controlled crossings are defined by the inclusion of some for of formal traffic control. This can include stop or yield signs, intersection pedestrian signals (IPS), mid-block signals or full traffic control signals. To control and separate the movement of cyclists and pedestrians across the intersection, controlled crossing can feature a crossride – a delineated space for people cycling to cross without dismounting.

Uncontrolled crossings

Figure 16 | Diagram illustrating the design elements of an uncontrolled mid block crossing and a photo of a sample application [Source OTM Book 18]

Uncontrolled crossings lack any form of traffic control and require active transportation users to safely yield to passing motorist traffic. These facilities typically incorporate specific signage and geometric design elements to reinforce proper traffic behaviour. As active transportation users do not maintain the right-of-way, cross rides or any other form of pavement markings should not be applied along the crossing. Traffic calming measures, however, are recommended to enhance safety by reducing the operating speed of motor vehicle traffic and minimize the crossing distance of active transportation travels.

3.5 ACCESSIBILITY

As a vital form of public infrastructure, it is essential that all active transportation facilities be planned and designed to accommodate the needs and abilities of all potential users. This maximizes the utility of investments while also affirming broader municipal imperatives related to supporting diversity and inclusion. Within Ontario, these requirements are not only encouraged but codified under provincial law through the Accessibility for Ontario with Disabilities Act (AODA). Through the legislation, a specific target has been set of making the entire province accessible to people with disabilities by 2025.

"The people of Ontario support the right of persons of all ages with disabilities to enjoy equal opportunity and to participate fully in the life of the province." The stated goal of the AODA is "to make Ontario accessible for people with disabilities by 2025." (Accessibility for Ontarians with Disabilities Act, 2004)

To action AODA in practice, the Government of Ontario has also adopted The Accessibility Standards for the Built Environment. This accompanying document serves as a key technical reference which prescribes specific guidelines and standards needed to support universal barrier-free access. Forms of public infrastructure to which these standards apply include both on-road and off-road active transportation infrastructure such as multi-use pathways and multi-use trails. While these standards only apply to projects involving either new construction or extensive renovation, the creation of a more accessible, equitable transportation system should be a goal of the City as this Plan moves into the implementation phase.

For multi-use trails, the AODA provides guidance on a wide range of design considerations. The City should apply guidelines outlined in the Built Environment Standards as a minimum unless the trail's location, surrounding environment or desired user experience warrants their exceedance. Following these guidelines is not only a legislative requirement but is vital in preserving the STATO trail's current designation as a fully accessible trail, amidst future expansions or enhancement projects. Sections 80.8 and 80.10 of the Accessibility Standards for the Built Environment provide the technical requirements for off-road multi-use trails, which includes the following:

- Minimum clear width 1.0m
- Minimum head room clearance of 2.1m above trail
- Surfaces are to be firm, stable with minimal glare
- Maximum running/longitudinal slope of 10%
- Maximum cross slope of 2%
- High tonal or textural changes to distinguish the edge
- Standards also address changes in level, openings in the surface, edge protection (e.g. near water)

In addition to adhering to AODA, all active transportation network signage and wayfinding should be easily understood and detectable by users of all abilities. This includes using simplified text, visual icons and clear and contrasting colours which help create signage and mapping / messaging that is informative, legible and visible. Wayfinding and signage systems should also clearly communicate which trails are accessible so that users can make an informed personal decision about which pathways they will use.

3.6 OFF-ROAD TRAIL DESIGN

In addition to on-road facilities and off-road multi-use pathways, Timiskaming Shore's proposed active transportation network features several off-road trails. This includes trail facilities found within the City's many local natural areas and parks, including Devil's Rock and Pete's Dame and Uno Park (**Figure 15**). Like all other facility types, it is vital that all trails be designed to reflect leading applicable technical guidance as well as local priorities and concerns, including an all ages and abilities approach. This guarantees a more streamlined and standardized process to better inform the implementation of new facilities and, refurbishment of existing ones. Additionally, identifying a clear set of trail design standards and guidelines also offers a more predictable travel experience for trail users. With few new trails recommended as part of the proposed network, guidelines listed below were tailored context and condition of those already found across the City.

3.6.1 TYPICAL TRAIL DESIGN STANDARDS

WILDERNESS TRAIL DESIGN STANDARDS

- **Width:** 1.2 – 2.0m width
- **Surfacing:** Compact dirt or woodchip
- **Maintenance:** Annual/reactive service (i.e. tree hazard removal, erosion repair). Includes topping up of mulch surface as necessary, keeping trail envelope free from obstacles (e.g. pruning to maintain clear zone).
- **Accessibility:** Maximum of 5-10% Slopes (AODA recreational trail standards), signage to inform level of challenge/conditions to users.
- **Grading/Drainage:** 1-2% cross slope to minimize longitudinal drainage. Culverts, swales, or water bars to manage overland flow crossing the trail.

Figure 17 | Photo of an existing wilderness trail facility within Timiskaming Shores

- **Lighting/Security:** No lighting, future considerations for 'refuge' lighting at trailheads.
- **Amenities:** Low frequency of amenities in rural areas. Examples: trash receptacles at trail entry points. Seating at key locations (e.g. top of long climb, viewpoint). Natural materials used for seating opportunities.

URBAN TRAIL DESIGN STANDARDS

- **Width:** 2.5 – 3.5m width
- **Surfacing:** Limestone screenings or asphalt
- **Maintenance:** Regular inspections to identify and repair trip hazards and debris (e.g. garbage, pruning to maintain clear zone).

- **Accessibility:** Maximum of 5% slopes, with minor occurrences of maximum of 5-10% (AODA recreational trail standards), signage to inform level of challenge/conditions to users.
- **Grading/Drainage:** 1-2% cross slope to minimize longitudinal drainage. Culverts, swales, or water bars to manage overland flow crossing the trail.
- **Lighting/Security:** Considerations for 'refuge' lighting and full lighting for trails in higher volume urban/ urban tourism areas.
- **Amenities:** High frequency in urban areas. Examples: trash receptacles at trail entry points and high-volume areas where litter is observed. Seating at regular intervals (e.g. every 200m on average, every 50m in select areas where there is a higher potential for users with mobility impairments). Formal bench seating with arm rests and back rests, augmented with natural materials for additional seating opportunities.

Figure 18 | Photo of an existing urban trail facility within Timiskaming Shores

3.6.2 REMOVING BARRIERS AND PROMOTING USE

Just as people with disabilities experience social and environmental barriers to full participation in society, they can also experience barriers to full participation and enjoyment of parks and trails. Creating parks and trail networks that support people of all abilities is based on the fundamental right to quality of life, individual empowerment, respect and dignity for all people, and the guarantee of equal access to and participation in society.

Barriers are not only physical, and future trail design and programming needs to consider mechanisms for mitigating barriers to use. Barriers can be derived from differing cognitive abilities and mental processes experienced by potential trail users. Barriers can be socially based and stem from issues related to income, language, race, religion, sexual orientation, health, and gender.

Examples of common barriers to use related to trails include:

- Concern or fear of a new trail experience for reasons of accessibility and/or other anxieties.
- Fear for safety after sundown and/or in secluded areas.
- Unavailability or unknown locations of rest areas and distances when selecting a route.
- Inability to read English for navigation and trail information purposes.
- Access in areas where people live and work, in particular low-income areas and factory/industrial employment areas.
- Worry over judgement and/or suspicion when using the trail.
- Concern over access to amenities such as washrooms, water

Temiskaming Shores should consider prioritization of upgrades, maintenance and programming that addresses barriers to usage as the plan is implemented. Below is a sample of specific strategies for areas of improvement that the network would benefit form.

WILDERNESS TRAILS & ACCESSIBILITY

Wilderness trails often present a challenge to users that can be perceived as both benefits and barriers to participation. It is important to offer various levels of challenge within a trail system, while making provisions to enable a wide range of users.

- Trailhead and wayfinding signage should clearly communicate level of challenge at discussion making junctions. Information to include; elevation gain, severity and length of slopes, surfacing, width and length of trail, and location of seating/other supportive amenities.
- Surfacing modifications to create smoother walking path including removal or infill around rocks and roots, installing geogrid/geocells to stabilize earthen surfaces over rocky terrain.
- Minor grading to improve surface and drainage/erosion that cause rutting.
- Rerouting of select trail sections to reduce slopes or need for stairs by meandering alignment.
- Adding railings, bike trough along stairs, and mid-rise landing breaks with seating provide a respite along stairs and slopes.

Figure 19 | Photo of sloped trail with rustic barrier/ handrail to protect aid users.

REST AND REFUGE

It is important to incorporate places for people to rest and take refuge. It is recompensated that trails strive for some form of informal or formal seating every 200m, in particular located at points of entry and vistas. This metric is based on accommodating the average user. In areas where there is a higher potential for users with mobility impairments, such as near seniors' homes or amenities, along transit routes, or trails within tourism destination locations, rest seating is recommended every 50m. Formal bench seating with arm rests and back rests are recommended for areas where accessibility is of greater need, however provision of seating outweighs the priority for quality and substitution or augmentation with natural materials such as flat-topped stones is always welcomed.

Figure 20 | Photo of informal rock seating wall in Simcoe County. Stones can be singular free standing, or small clusters.

Consider the provision of shelter in similar areas where accessibility is important, as well as areas where gathering is desired such as vistas, interpretive/commemorative nodes and where distances from point of entry/vehicular parking area significant.

LIGHTING

Lighting is often debated when assessing trail infrastructure. Women and people with young families are more likely to use a trail if lighting is provided, especially when daylight hours are reduced. Lighting a trail, in part or full, and remove barrier to recreational and commuter trail use. Consider lighting all urban trails, in particular those that facilitate connections to transit, amenities and community services. If full lighting is not feasible, consider 'refuge' lighting key areas is regular intervals to provide safe landing points. Solar lighting options are increasing in function and decreasing in cost, with options to delay light activation to concentrate seasonally limited battery function when needed most. Solar is an excellent solution for remote trailheads and short sections of trail that present safety/vandalism concerns.

ACTIVITIES & PROGRAMMING

Figure 21 | Photo of small shade structure along trail in Guelph.

Recreational and web-based programing for trail systems provides ample opportunity to draw in users, promote overall trail use, and remove user barriers which may have existed within the trail system. Incorporating programming activities into the trail experience can help draw in a multitude of users to the trail system in a dynamic and interactive way. These programs can be pivoted to target and attract specific user groups to the community's trail system and promote opportunities for people in the community to share experiences and connect with one another. This is especially useful in reducing barriers for different age demographics, like teenagers, to get outside and benefit from collective social experiences, fitness opportunities, and educational resources. Targeting trail use from different demographics can be as simple as creating walking groups for specific age groups, genders, and interests. Walking groups can include storytelling walks for children, self-esteem walks for teenaged girls, mom and stroller walks, or walks for people new to the community.

Programing can be leveraged to shift users from busy sections of a trail and encourage use in underutilized areas where increased traffic is desired. Interaction can be further encouraged through the implementation of physical permanent or temporary signage along a trail that links users to activities on a municipal website, social media group, or other app platform. A 'spot and share' program, for example, can encourage the documentation of seasonal nature photos and social media sharing along the trails. Photo sharing can target themed educational opportunities, like the documentation of migratory birds, and can vary seasonally to attract users throughout the year. Fitness programming can also be used to encourage off season use of trails. Trail users can be encouraged to log and share location specific fitness achievements and photos as they travel throughout the trails.

Activities and programing can be used to remove barriers to participation and help to form social connections with other members of the community. Activities can be themed to respond to different seasons, or to other events and activities that are occurring within the community. Trail tourism can be a multi-disciplinary approach that combines the expertise of the City's different departments to determining the best means to attract users through specific trail programming. For example, a partnership between

the Recreation & Culture and Parks and Facilities departments may find combined programming opportunities to attract atypical trail users and provide them with a reason to experience local trails. Activities could include the temporary installation of game or challenge stations throughout the trail system. Stations can be based on nostalgic games and include oversized lawn components, spray lining on turf, or provide signed or digital signage to describe the intention of the challenge.

3.6.3 SUSTAINABLE DESIGN APPROACHES

Maintenance burdens and exposure to liability risk can be greatly reduced by implementing more sustainable design approaches. Examples of successful application of design techniques and materials have been provided below.

Before looking at engineered solutions, trail alignment should always be reassessed for possible modifications to remove the trail from the situation that is causing the problem. 'Avoid' is one of the best means of mitigating risk. Areas of extreme slopes and low-lying areas that flood are key examples of areas that may not be best suited for trials. Consider the following:

- Meander trails to reduce the degree of slope and mitigate erosion. Alignment adjustments can make a big difference. Avoid tight switch back style ramps where possible with longer deviations. Note, natural obstacles will need to be placed to force users onto a more indirect path.
- Move trail alignments away from running parallel with watercourse and cliff edges. Instead create destination vistas where the trail periodically leads users, directly or through off shoot trails. Pete's Dam is a good example of where this approach could be applied. Many of the problematic sections of trail are located along the desirable watercourse vistas. By relocating the trail further from the watercourse, select sections can come to the water's edge and be reinforced/elevated accordingly to focus engineered mitigation approaches to select areas only.
- Improve trail drainage through minor grading, elevation of trails with import of materials and/or provision of small culverts to convey water. Make efforts to redirect water around or under the trail.

ADDRESSING TRAILS ON SLOPES

Pedestrian and some self-propelled users are capable of ascending grades of 30% or more whereas some users are limited to grades of less than 10%. Once trail slopes exceed this threshold and slopes are long (i.e. more than 30m) it is important to consider alternative methods of ascending slopes, such as switchbacks and stairs, or alternative locations for the trail.

Where construction is feasible, switchbacks are generally preferred because they allow wheeled users such as cyclists to maintain their momentum, and there is less temptation to create shortcuts, as might be the case where stairways are used. Switchbacks are constructed with turns of about 180 degrees and are used to decrease the trail's longitudinal slope. A switchback with a trailbed that is properly "benched" also provides outlets for water runoff at regular intervals, thus reducing the potential for erosion. Switchbacks typically require extensive grading and are more suited to open locations where construction activity will not cause major disruption to the surrounding environment. Switchbacks can be difficult to implement in wooded areas without significant impacts to surrounding trees.

Figure 22 | Photo of rolling grade dip method to mitigate longitudinal slope rutting. Buried log used to create drain break hump (Mount Nemo, Burlington).

When designing switchback and stair structures on trails the following should be considered:

- Use slip resistant surfacing materials, especially in shady locations.
- Incorporate "corral" barriers on either side of the upper and lower landing to prevent trail users from bypassing the stairs; and
- Provide signs well in advance of the structure to inform users that may not be able to climb stairs.

Temiskaming Shores should consider realigning and/or modifications to select sections of trails to reduce negative impacts of drainage and decrease severity of slopes. The following figures illustrate approaches to slope management on recreational trails.

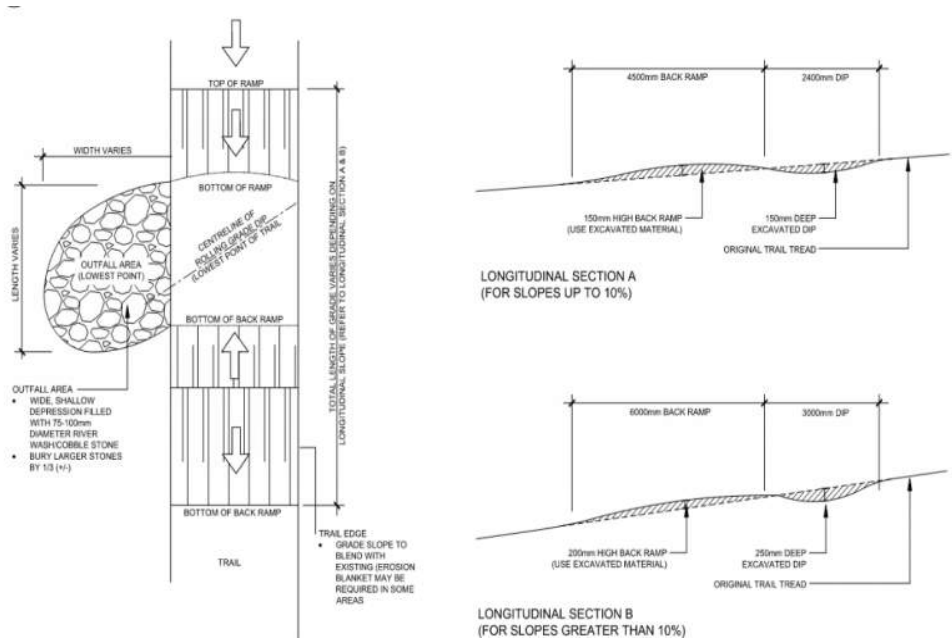


Figure 23 | Rolling Grade Dip Approach

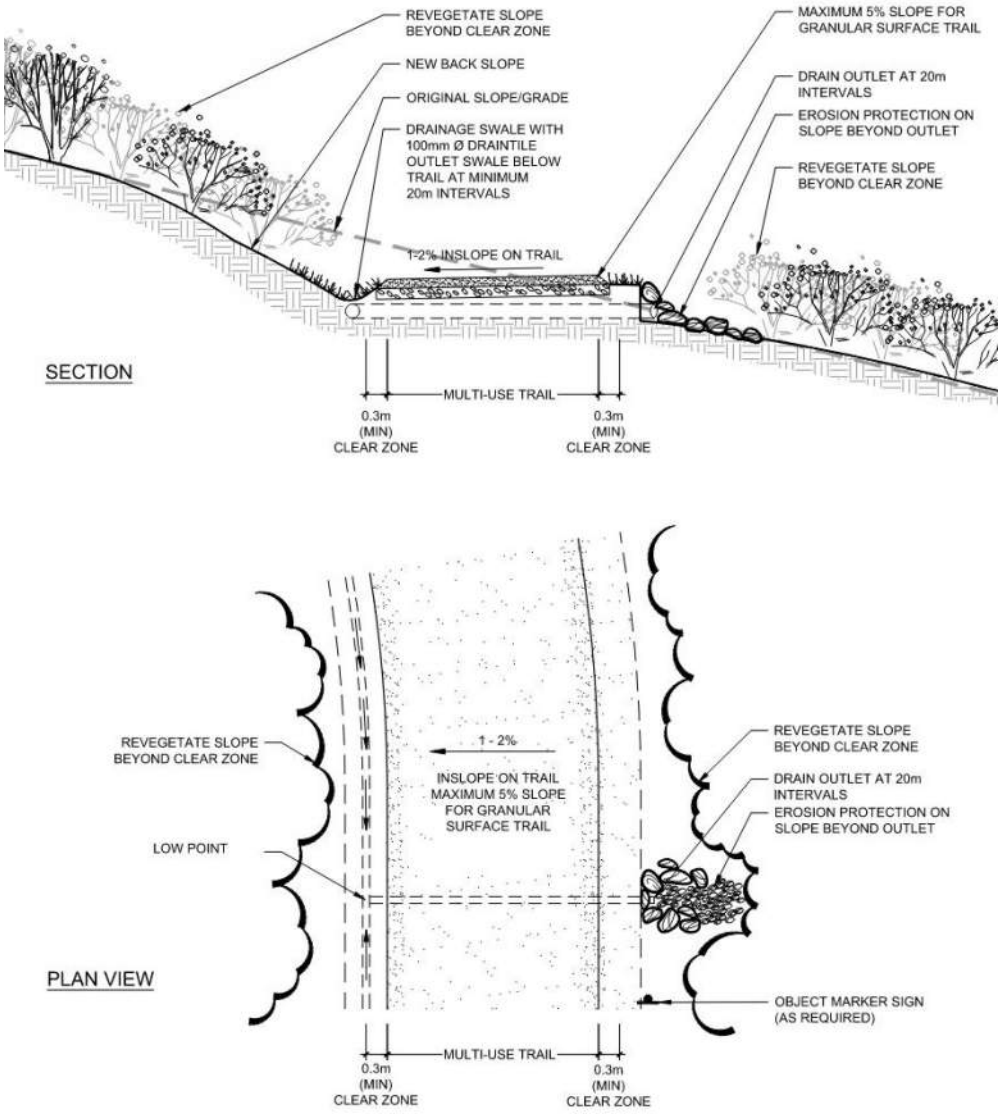


Figure 24 | Trail On Slope with Drainage Pipe

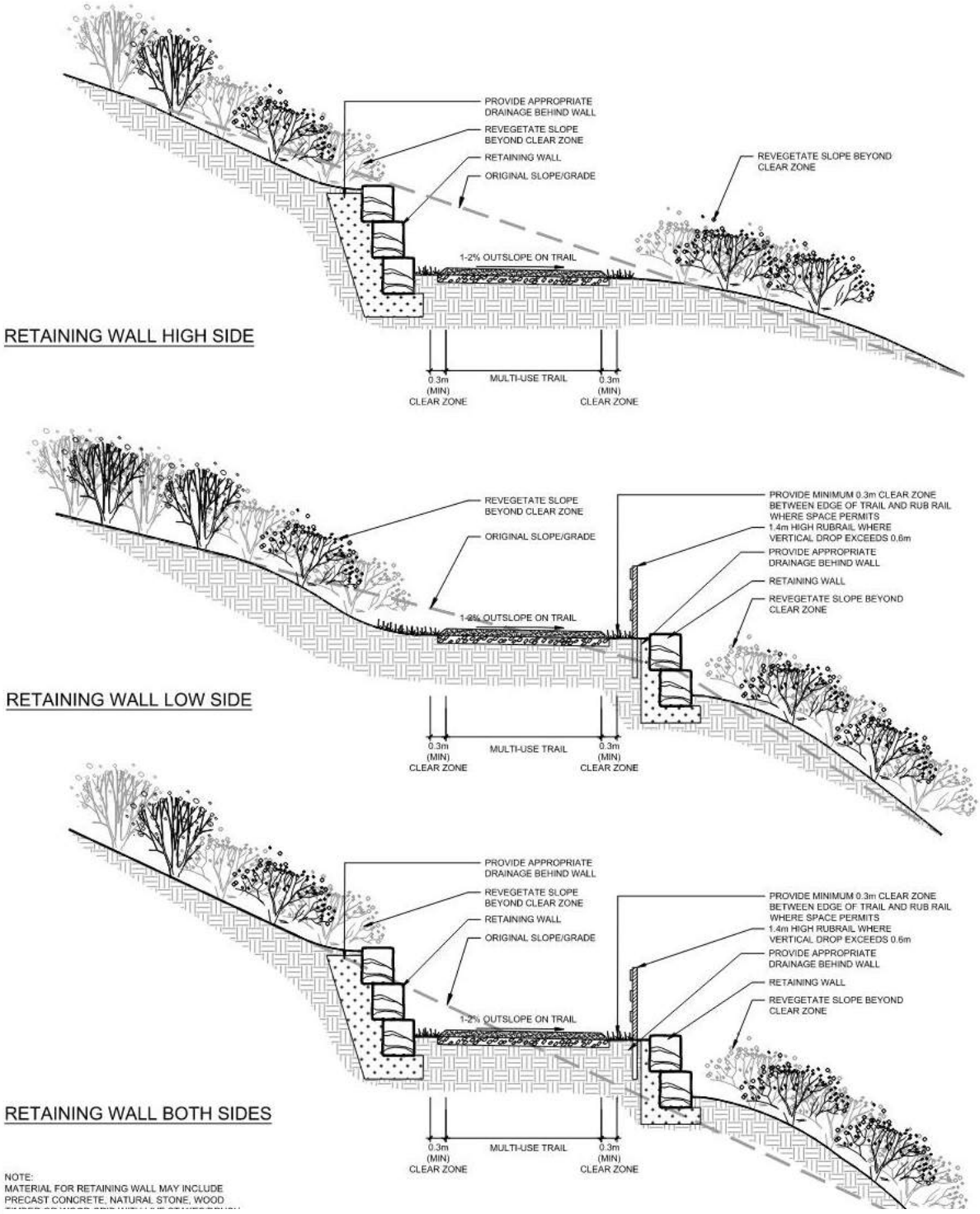


Figure 25 | Trail On Slope with Retaining Walls

STRATEGIES FOR REOCCURRING EROSION AND INSTABLE SURFACING

For trails that are frequently eroded or unusable due to seasonal flooding and unavoidable drainage patterns, geogrid systems will provide a more sustainable solution – reducing maintenance, increasing safety, extending seasonal use of a trail. These systems lock together and can be filled with soil, granular screenings or seeded for turf growth. Products such as Ecoraster shown, can support vehicular loads and provide traction on slopes. Typically these systems are installed with a granular base, however can be laid on existing compacted earthen surfaces. Reinforcing trail sections at Pete's Dam, would stabilize areas that struggle with flooding, erosion and hard to traverse slopes. Geogrids could also be selectively applied to rustic wilderness trails such as located at Devil's Rock where rocks and roots create difficult to traverse sections of trail. Note, geogrids should be considered for parking areas where increased surface stability is desired and/or demand for maintenance is high.

Figure 26 | Photos of Ecoraster (a product manufactured in southern Ontario. Grid structure can be filled with earth, granular or turf and can support maintenance vehicles.

Figure 27 | Photos of trail under water at Pete's Dam

BRIDGE STRUCTURES & BOARDWALKS

Prefabricated pedestrian bridge structures, in particular those that utilized weathering steel and wood decking, are the most cost-effective structures provided by the market. A 'pony truss' or 'H-section' bridge style can span up to 55m and are the most economical design choice. For larger spans, a full 'box truss' is required and can span up to 80m. Alternately, custom bridges can offer more flexibility for architectural design features and are less limiting in maximum free span, however tend to cost exponentially more in design and installation costs.

When spanning greater distances, assess both the material costs and design/approval costs for structures. This can help determine whether it is best to add an in-water pier or design a more extensive structure for a single span. Typically, the use of piers and prefabricated structure is a more cost-effective solution over a costume large spanning structure, however there are several variables such as environmental sensitives and aesthetic/tourism considerations that can influence a decision.

Figure 28 | Photos of Pedestrian Bridges (Left: Etobicoke Creek Trail, 35+/-m) and (Right: Craig's Crossing in Galt, two sections 55m+/- long)

Where trails pass through sensitive environments such as marshes, swamps, or woodlands with many exposed roots, an elevated trail bed or boardwalk is usually required to minimize impacts on the natural feature. If these areas are left untreated, trail users tend to walk around obstacles such as wet spots, gradually creating wider or multiple meandering footpaths through the surrounding vegetation, resulting in vegetation trampling and damage.

On trail build sensitive natural areas, sections with challenging surface (rocks and roots) or erosion/flooding issues, a low-profile boardwalk may be appropriate and requires modest engineering to develop an appropriate design. For trails with more frequent usage, cyclist traffic, and maintenance vehicle access, a more sophisticated design and installation is necessary. This is likely to include engineered footings, abutments, structural elements and railings.

Helical piles are an alternative foundation methodology that is cost effective and a low impact installation compared to concrete footings. Piles are drilled into the ground with a small skid steer or mini excavator then left in place to serve as the foundation. Helical piles allow for a narrower disturbance area and reduced numbers of trips to haul in concrete and haul out fill generated by pier excavations. Where finished boardwalk surfaces are less than 60cm above the surrounding grade a curb along the edge of the boardwalk will prevent users from rolling off the edge. Where the difference in grade exceeds 60cm, a railing should be provided.

Figure 29 | Photo of Board Walk Trail (with helical piles) at the University of Guelph Arboretum.

Timiskaming Shores should consider prefabricated pedestrian bride structures or boardwalks for highly problematic areas at Pete's Dam where flooding and bank erosion are not compatible with sustainable trail programming. Long term, the cost for investment will be returned through reduction in repair maintenance and liability risk mitigation, not to mention the user and natural heritage conservation benefits.

3.6.4 TRAILHEADS AND OTHER TRAIL AMENITIES

The implementation of trail amenities at key points along an off-road trail can remains an integral component of the City's commitment to design safe, comfortable active transportation and more accessible trail facilities. When addressing trail amenities, common examples include seating / rest areas, parking areas, signage, bicycle parking, loading or unloading areas, garbage receptacles, washroom and amenity buildings and gates / access barriers.

TRAILHEADS

As trailheads are an important aspect to improve a trail user's experience and function as a marketing agent for the greater trail system, it is critical that the appropriate maintenance protocols and procedures be adopted to maintain their state of well repair. Trailheads are often the busy hubs of most trail systems

making them more suspectable to wear and tear, waste accumulation, and vandalism accustom with general use. Identifying and managing the level of maintenance required is influenced by the frequency of use, type of user, and size/complexity of trailhead programming. While dependent on the City's available resources, depicted in **Figure 16** below are some suggested guidelines to inform the proper maintenance of trail facilities:

Figure 30 | Image of a trailhead facility along Prince Edward County's Millennium Trail System [Source Prince Edward County CMP, 2021]

Table 7 | Benefits, Life Cycles, and Maintenance Considerations of Various Trail Amenities

Amenity	Benefits	Life Cycle	Maintenance Considerations
Parking, Drop off Areas & Loading zone	Improves access to trail facilities	5-10 years	Annual infill of potholes and ruts (gravel), repaving or power washing (asphalt).
Rest area	Provides greater accommodation and comfort to those with limited mobility	15-25 years	Annual inspection for defects, basic landscaping
Lighting	Enhances trail safety (CPTED) and reduces potential crime	10-15 years (bulbs) 35-45 years (poles)	Monitoring for bulb replacement and repairs due to vandalism
Signage	Improves facility wayfinding and reinforces facility's brand identity	5-25 years (depending on changes to posted information)	Monitoring for vandalism or expiration of posted information
Waste Management	Minimizes facility upkeep	10-25 years (depending on chosen model)	General inspections for waste pick-up or damages
Gates	Enables temporal access restrictions, including during periods of facility maintenance	15-25 years	General inspections for damages (i.e. weather degradation or salt erosion)

Shelter	Provides protection from inclement weather Provides greater accommodation and comfort to those with limited mobility	15-35 years (depending on chosen construction material)	General inspections for damages and potential touch-up painting
Potable Water	Improves comfort of trail experiences	N/A	Fall decommissioning to empty lines and spring reactivation and quality testing
Washroom	Improves comfort of trail experiences	30-40 years	Daily to weekly inspections and cleaning, nightly locking and daytime opening

SAFETY BARRIERS FOR SLOPES & CLIFFS

Barrier fencing is necessary to provide safety and mitigate risk. It can also play a design and placemaking role for destination vistas, offering a place to lean while viewing and mounting space for interpretive signage. Barriers along landscapes such as Devil's Rock are not mandated by the building code, however, should be a priority in locations frequented by trail users. Barriers do not need to detract from views or become a maintenance burden. There are several options for prefabricated products and custom designs that will permit views and accentuate vista nodes.

Figure 31 | Image of Devil's Rock lookout

Figure 32 | Image of wood barrier fence, British Columbia.

Figure 33 | Image of Barrier Fence [Source Jakob sire fencing solutions]

ACCESS & CONTROL

Access barriers are intended to allow free flowing passage by permitted user groups, and restrict access by users groups that are prohibited. Barriers typically require some mechanism to allow access by service and emergency vehicles. Depending on site conditions, it may also be necessary to provide additional treatments between the ends of the access barrier and edge of the multi-use trail right-of-way to prevent bypassing of the barrier altogether. Additional treatments may consist of plantings, boulders, fencing or extension of the barrier treatment depending on the location.

There are many design alternatives for trail access barriers and some have proven to be more successful than others. They can generally be grouped into three categories:

- Bollards;
- Offset Swing Gates; and
- Single Swing Gates.

Each access point throughout the Temiskaming Shores trails network should be evaluated to determine which type of barrier is the most appropriate and what additional treatment(s) may be required to discourage unauthorized users from bypassing the barrier.

Figure 34 | Image of trail bollard (left) and access gate (right)

3.6.5 LEVERAGING TECHNOLOGY (CHARGING STATIONS, WASTE SENSORS, WIFI)

There are several emerging technologies and innovations that can be incorporated into the design of new trails and improvements to existing trails that can enhance the user experience, promote use and widen inclusivity of the trails network. Technology is a tool to be leveraged to address a problem and implementation needs to result in specific outcome. Recognizing that technology-based applications can have high capital, staffing, and training investments costs, the benefits need to be tangible and in magnitude with the problem they are addressing. There is no denying technology is fun and the enthusiasm for technology-based solutions will garnish a high impact amongst current and future generations of young trail users. Consider how technology can expand the traditional parameters of a trail function and programming – reaching more people in meaningful ways, while reducing demands of maintenance and operational practices.

Figure 35 | Image of ESL E-Mobility solar charger

Below are examples of how technology can be incorporated into a trail system.

- Waste and parking management through sensors and dashboard systems to enable 'as needed' maintenance service with strategic deployment and better track frequency of use. Companies such as eleven-x in Waterloo Ontario offer wireless real-time data solutions that are adaptable to existing amenities/systems.
- Charging stations that offer USB ports (for phones, tablets), E-bike rapid charge ports. Stations can be solar or hardwire powered. Charge stations come in stand alone towers or can be found integrated with multi-function site furnishing.
- Wi-fi can draw users to a trail system and enable accessibility aid devices. Small cellular broadcast devices require little power and can be stand alone units or integrated with furnishings such as those made by Seedia which collect data from and output directed messaging to users.
- Digital mapping such as Google Street view for trails and 360-degree imagery will allow users to preview the challenges ahead and participate virtually in the beauty of Temiskaming trails when they are unable or for education purposes.
- User count displays, such those offered by Eco-Counter provide data that will inform operational management while promoting the success of the trail system.

Figure 36 | Image of Landscape Forms outdoor charging station.

3.6.6 MAINTENANCE MANAGEMENT

Guiding next steps in the management and maintenance of trails, Timiskaming Shores should consider adopting a trail maintenance log to document maintenance activities. The log should be updated when features are repaired, modified, replaced, removed, or when new features are added.

Accurate trail logs also become a useful resource for determining maintenance budgets for individual items and tasks, and in determining total maintenance costs for the entire trail. In addition, they are a useful source of information during the preparation of tender documents for trail contracts, and to show the location of structures and other features that require maintenance.

Leveraging technology to collect managing data is can be a powerful tool to finding efficiencies and more accurately budgeting for need. Digital dashboard style programs can be an effective interface for staff to organize inputs and action items. This type of technology can be linked to digital trail logging, user reporting systems, and on-site sensors (such as waste bin sensors) to create the ability for **on-demand service and strategic deployment of resources**. On demand service styles can replace regular maintenances practices and reduce overall demand on resources.

Reducing maintenance through strategic infrastructure investments, including trail realignment, surface treatment and use of structures should be considered for areas of reoccurring maintenance issues.

Using the maintenance strategies outline within the trail plan as well as any existing trail infrastructure maintenance practices should be a starting point from which a trail specific maintenance plan and budget be developed. In addition, annual maintenance budgets should be refined to accommodate the maintenance of trail facilities. As the proposed trail network is implemented the trail budget should increase to address the increasing number / length of trail facilities that have been implemented.

Table 8 | High-Level Overview of Trail Maintenance Tasks Over Time

FREQUENCY	MAINTENANCE TASK
IMMEDIATE **(within 24 hours of becoming aware of the situation through a app reporting system, email or other notification or observation)**	– As a minimum, mark, barricade and sign the subject area to warn trail users or close the trail completely until the problem can be corrected. – Remove vegetation and/or windfalls, downed branches etc., where traffic flow on the trail is being impaired or the obstruction is resulting in a sight line issue. Remove hazard trees that have been identified. – Repair or replace items that have been vandalized or stolen/removed. This is especially important for regulatory signs that provide important information about trail hazards such as road crossings, steep grades, and sharp curves. – Removal of trash in overflowing containers or material that has been illegally dumped. – Repair of obstructed drainage systems causing flooding that poses a hazard to trail users or that is resulting in deterioration that poses an immediate safety hazard. – Monitor trail areas and structures that are prone to erosion after severe summer storms and repair as required. – Repairs to structural elements on bridges such as beams, railings, access barriers and signs.

REGULARLY **(weekly / biweekly / monthly)**	– **Trail patrols/inspections should review the trail conditions (as often as weekly in high-use areas), to assess conditions and prioritize maintenance tasks and monitor known problem areas.** – **Mow grass along edges of trails (in parks and open meadow settings only). Depending on trail location this may be done weekly, biweekly or monthly and the width can vary according to the location (typically 0.5 to 1.0m). This helps to keep the clear zone open and can slow the invasion of weeds into granular trail surfaces. Not all trails will have mown edges. In woodland and wetland areas, pruning and brushing is typically the only vegetation maintenance to be undertaken.** – **Regular garbage pickup (10-day cycle or more frequent for heavily used areas).** – **Repair within 30 days or less, partially obstructed drainage systems causing intermittent water backups that do not pose an immediate safety hazard, but that if left unchecked over time will adversely affect the integrity of the trail and/or any other trail infrastructure or the surrounding area.**
ANNUALLY	– Conduct an annual safety audit. This task can be efficiently included with general annual safety audits for parks and other recreation facilities. – Evaluate support facilities/trailside amenities to determine repair and/or replacement needs. – Examine trail surface to determine the need for patching and grading. – Grading/grooming the surface of granular trails and topping up of wood chip trails. – Pruning/vegetation management for straight sections of trail and areas where branches may be encroaching into the clear zone. This task is more of a preventative maintenance procedure. Cuttings may be chipped on site and placed appropriately or used as mulch for new plantings. Remove branches from the site unless they can be used for habitat (i.e. brush piles in a woodlot setting) or used as part of the rehabilitation of closed trails. Where invasive species are being pruned and/or removed, branches and cuttings should be disposed of in an appropriate manner. – Inspect and secure all loose side rails, bridge supports, decking (ensure any structural repairs meet the original structural design criteria).
EVERY 3 TO 5 YEARS	– Cleaning and refurbishment of signs, benches and other trailside amenities.

EVERY 10 TO 20 YEARS	– Resurface asphalt trails (assume approximately every 15 years). – Major renovation or replacement of large items such as bridges, kiosks, gates, parking lots, benches etc.
COST EFFECTIVE	– Patching/minor regarding of trail surfaces and removal of loose rocks from the trail bed. – Culvert cleanout where required. – Top up granular trail surfaces at approaches to bridges. – Planting, landscape rehabilitation, pruning/beautification. – Installation/removal of seasonal signage.

3.7 SIGNAGE & WAYFINDING

The design and construction of the network should incorporate a hierarchy of signs each with a different purpose and message. This hierarchy is organized into a "family" of signs with unifying design and graphic elements, materials and construction techniques. The unified system is immediately recognizable by the user and can become a branding element. The details for specific types of signage are provided in the following pages.

WAYFINDING

Wayfinding design must be universally understood to truly be affective and inclusive for all visitors. Trails should be open and welcoming to people with varying levels of mobility, hearing, vision and language. In short, all levels of ability and understanding should be taken into consideration when designing wayfinding features such as signage and maps.

Some examples of wayfinding features that can be utilized to increase accessibility include:

– Non-visual cues such as audio signals or material change at intersections can improve safety for visually impaired people
– Clearly delineating between accessible routes and non-accessible routes can improve usability and safety for people with mobility restrictions
– Using universally understood symbols or icons on wayfinding features can make it easier for people who speak a different language to find their way around.

TRAILHEAD SIGNS

Typically located at key destination points and major network junctions. Trailhead signs provide orientation to the network through mapping, other appropriate network information as well as any rules and regulations. Where network nodes are visible from a distance, these can be a useful landmark and should include municipal "911" addressing for positive location identity. Trailhead signs can also been used as an opportunity to sell advertising space. This not only provides information about local services that may be of interest to trail users, but it may also help to offset the cost of signs and/or trail. At minimum, entrances should have clear signage that uses good colour contrast and a readable font, and details:

– Trail length
– Trail width

- Location of amenities
- Slope steepness
- Surface types
- Hazards
- Trail difficulty

Accessibility rating (i.e. accessible by wheelchair, walker, scooter, etc.)

DIRECTIONAL AND DISTANCE MARKER SIGNS

Directional signs should be used throughout the trail at regular intervals of uninterrupted segments and at pathway intersections. Directional signs provide users with reassurance that they are following the designated trail network. Coupled with directional signs, distance markers placed incrementally along a trail can enhance the user's experience if they are using the trail for exercise. Frequent and accurate markers can also help in the case of an emergency, especially if they are recorded with a GPS device and incorporated into a digital mapping format.

INTERPRETIVE OR INFORMATIONAL SIGNS

Interpretive or informational signs can be used in combination with directional signs or on their own to educate users of points of interest along the trail, such as natural and cultural heritage features. These signs provide specific educational information about points of ecological, historical and general interest, as well as current land uses along the corridor depending on the interpretive program and complexity of information to be communicated.

REGULATORY SIGNS

Regulatory signs are intended to restrict aspects of travel and use along the trail. Signage restricting or requiring specific behavior is not legally enforceable unless it is associated with a provincial law or municipal by-law, etc. Where applicable, it is recommended that authorities discreetly include the municipal by-law number on signs to reinforce their regulatory function. Standard regulatory signs are aluminum plate blanks of varying dimensional size with a painted or reflective sheeting surface. Regulatory signs call attention to a traffic regulation concerning a time or place on a route and are installed in an optimal location most visible to trail users. Generally, these signs are rectangular shape except for stop and yield signs. For most trail applications the size can be reduced from the specified size for signs used along roads (i.e. 50% smaller). Typically, they are individually mounted on a metal post or custom wood post; grouped on a metal post or custom wood post; or grouped on a custom sign board, so long as the sign message is clearly visible.

WARNING SIGNS

Warning or cautionary signage should be used throughout the trail system on an as-needed basis. Where traffic control signs are needed (stop, yield, curve ahead etc.), it is recommended that scaled-down versions of recognizable road traffic control signs be used.

These caution signs may be location or purpose specific and will need to be customized. For example, the trail system will provide access to destination features in parks including playgrounds. Children will be playing and not always paying attention to their surroundings while actively using playgrounds, and portions of trails surrounding playgrounds may also be promoted as tricycle / bicycle loops for very young riders. Caution signage should be placed at the approaches to these areas to alert faster moving trail

users such as cyclists they are approaching a playground area and remind them to slow to 10km/hr. and be aware of children playing and possibly crossing the trail.

Another example is the temporary closure sign. Some locations along the trail network will also be used by festivals and events that attract large numbers of users, some of whom use the trails to travel to the event which may result in congestion on the trails themselves. Additionally, within the event space some activities may overflow onto trails, and depending on the event and number of participants it may be appropriate to temporarily close the trail to through cycling traffic, and require cyclists to dismount and walk their bicycles through the event area.

INTERPRETIVE, COMMEMORATIVE & PLACEMAKING SIGNS

Interpretive, commemorative and placemaking signs are a key tool in telling the stories of your community, the land and the histories along the way. Such signs should be graphic in design, augmented with QR links to information on web platforms to provide additional detail. Temiskaming Shores is rich with such stories and the trail system offers an excellent opportunity to share with local residents and visitors. Material selection is important and should include anti-graffiti and UV protective coatings if using a standard sign board material. Etchings on granite and tempered glass are increasingly popular and very resistant to degradation/damage.

3.8 WABI RIVER BRIDGE

The recommended facility for the Wabi River crossing consists of a bi-directional cycle track in place of the easternmost northbound vehicle lane. The intention of a bi-directional cycle track along the eastern edge of the bridge is to encourage continued use of the STATO Trail along Sharpe Street and Elm Street, rather than having cyclists continue along Armstrong Street North where no cycling facilities currently exist. Isolating the cycling facility along one side of the bridge will allow for safer and more comfortable turns from Armstrong Street North to Sharpe Street on the south side and Elm Street on the north side. This facility proposal will effectively bridge the gap in the existing trail system along the 4-lane section of Armstrong Street crossing the Wabi River. However, it should be noted that this bi-directional intervention is only meant as a temporary measure until cycling facilities are installed on Armstrong Street North, south of the bridge. At that point, uni-directional cycle tracks should be installed on either side of the street to increase continuity throughout the cycling network.

Based on a review of the traffic volumes and roadway capacity on Armstrong Street, particularly the northbound traffic patterns leaving downtown New Liskeard, significant delays or queuing due to increased traffic are not expected. It is anticipated that the reduced excess space and capacity on the bridge will have a traffic calming effect, improving safety on this key corridor for all road users. An overview of complete streets transformations implemented by municipalities in Ontario and North America found that, on roads carrying under 20,000 vehicles a day, operational impacts for vehicular traffic were minimal, frequently resulting in improved operations along the corridors. User safety – for all road users – improved significantly. Complete streets conditions result in a lower level of serious collisions among people driving, in addition to enhanced safety and comfort for people cycling and people walking. By reallocating space on existing roadways to enhance mobility choice and improve safety, complete streets transformations are a proven countermeasure to reduce collisions and injuries, improve cycling safety and promoting road infrastructure being used in an efficient, cost-effective manner.

The figure below demonstrates an example of the proposed Complete Streets approach to the Wabi River Bridge with the cycling facility in place.

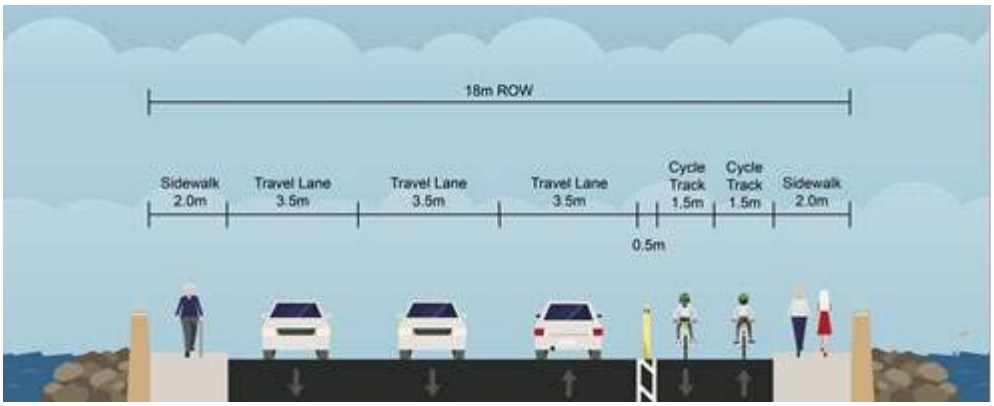


Figure 37 | Proposed road diet with bi-directional cycle tracks on the eastern portion of the bridge

Cycle tracks with a minimum width of 1.5 metres are recommended as per Book 18 of the Ontario Traffic Manual (OTM); a combined 3.0 metre lane with a 0.5 metre buffer is the desired width in Ontario for a two-way physically separated bicycle lane. A combined lane width of 2.7 metres with a 0.3 metre buffer is the suggested minimum where the desired width cannot be met.

Bollards mounted on pre-cast curbs or planters are recommended to provide physical separation between cyclists and vehicle traffic. Given that this bidirectional intervention is meant as a temporary measure until cycling facilities be implemented on Armstrong Street south of the bridge, planters or bollards are an appropriate intervention that are easy to install and uninstall that may also help increase the safety and comfort of cyclists. While flex bollards mounted on pre-cast curbs do not offer the highest level of protection from vehicles, they are easy to implement and relatively cost effective. Planters may offer more protection and beautify the roadway, however they may cost more than bollards and may not fit the proposed buffer width on the bridge. Both options are recommended on streets with speeds under 60 km/h.

INTERSECTION OF SHARPE STREET AND ARMSTRONG STREET NORTH

Sharpe Street currently does not have bi-directional or protected cycling infrastructure. While the STATO Trail is signed in this area, field investigations indicate that the trail is often obstructed by parked vehicles, and is not a consistent, comfortable facility for cycling. The preferred solution for this corridor would be the addition of a fully separated multi-use trail along the river (north of the existing parking lot and roadway) to connect to the remaining STATO Trail facilities to the south and east of the bridge. In the interim, however, directional sharrows should be installed on the north and south side of the street to direct eastbound and westbound traffic. In this interim configuration, a direct right turn for westbound riders to turn North on Armstrong and a two-stage turn box is recommended for cyclists turning onto Sharpe Street from Armstrong or wishing to continue south on Armstrong to travel towards Church Street. A two stage turn allows cyclists to continue straight through the intersection and turn on the far side in order to align with the sharrow on Sharpe, and provides them with a space to queue while waiting to cross Armstrong if they wish to continue southbound.

An in-boulevard two-stage queue box is recommended on the far side of the intersection. This provides space for cyclists to queue if pedestrians are crossing at the same time. The desired dimensions for the queue box is 3m in width and 3m in length to provide comfortable queuing space for two to three cyclists. Green paint is recommended to highlight the queue box to surround vehicle traffic. Bollards on the south side of the queue box are recommended so as to provide additional protection from vehicle traffic and to increase visibility.

A pedestrian crossing is also recommended on Armstrong Street for those crossing Sharpe Street. For cyclists turning right from Sharpe Street onto the bridge, yield line markings, also known as "shark's teeth," should be placed in front of the proposed pedestrian crossing. These markings help to visually reinforce a requirement to yield. When implemented on a cycling facility to indicate a requirement for cyclists to yield to pedestrians, the markings typically have a base of 300mm and a height of 450mm.

The figure below demonstrates the interventions recommended for this intersection.

Figure 38 | Proposed left turn intervention at the intersection south of the bridge. (Yellow dots represent bollards, preferably mounted on pre-cast concrete curbs)

INTERSECTION OF ELM STREET AND ARMSTRONG STREET NORTH

At the intersection of Elm Street and Armstrong Street North, just north of the Wabi River crossing, a two-stage queue box is recommended to help guide cyclists turning left from Elm onto the proposed cycle track on the bridge. OTM Book 18 (2021) recommends a direct left turn at intersections of low-volume and low-speed streets where cyclists are operating in a shared environment. Given the location of this intersection, and the volume of motor vehicle traffic on Elm Street, it is anticipated that a direct left turn onto the cycle track will be possible in many circumstances. But for riders who are less confident, when they arrive at Elm and Armstrong from the east, they may desire to wait for through traffic on Elm to come to a stop before proceeding. A queue box provides the option for cyclists to make a two-stage turn, proceeding on the green signal phase on Armstrong Street to connect into the cycle track heading south.

Queue boxes provide a designated queuing space between the pedestrian crosswalk and the vehicle traffic stop bar at a signalized intersection. This enables cyclists to wait outside the path of through

vehicles on the green phase on Elm, providing them with a signalized movement southbound along Armstrong. This designated area significantly increases the visibility of people riding bikes and reduces their exposure to through traffic while trying to make a left turn onto Armstrong. More confident cyclists can still make a direct left turn onto the cycle track, but this configuration provides additional options for less confident riders. It is recommended that the queue box be protected with bollards to prevent vehicle encroachment, and that a right turn on red restriction with a bicycle exemption be implemented at this intersection so as to limit any conflicting turns between vehicles and cyclists.

Queue boxes should be typically 2 to 3m in depth. Green paint is recommended to minimize encroachment from motor vehicles. The following figure demonstrates the proposed intervention for the Elm Street intersection.

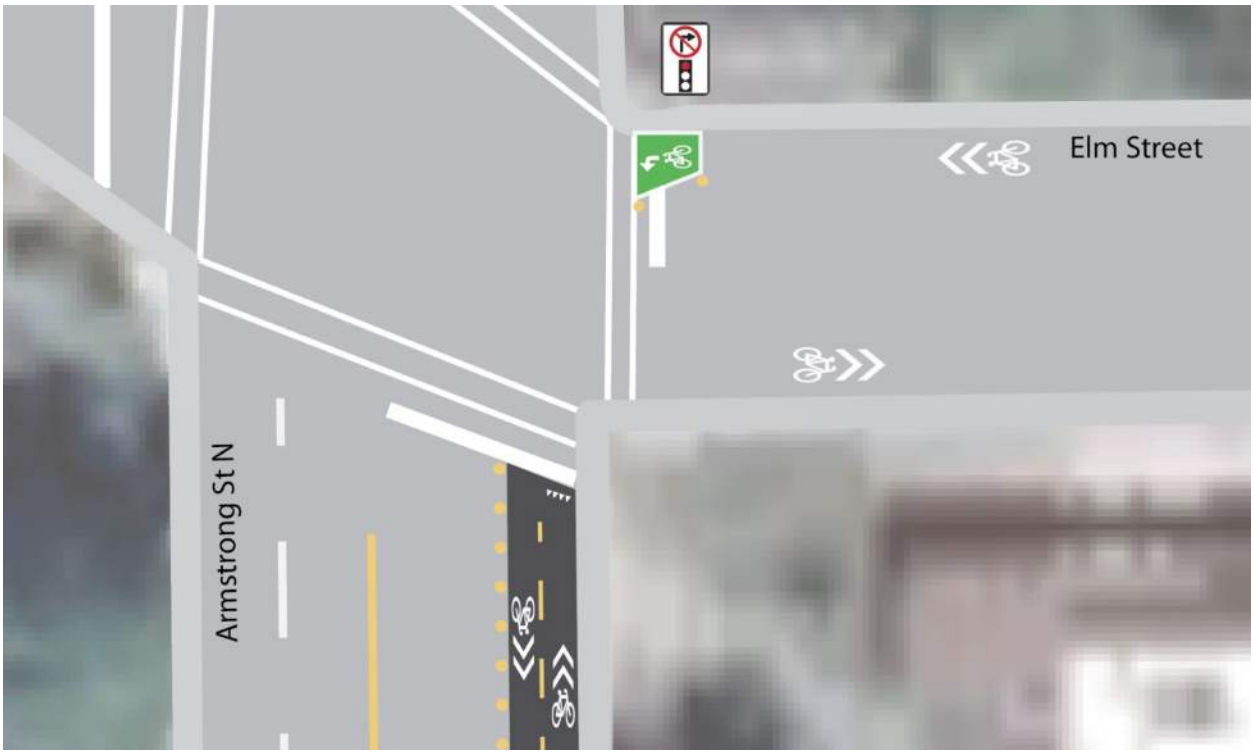


Figure 39 | Proposed left turn intervention at the intersection north of the bridge

The crossing of the Wabi River has historically been one of the most challenging areas for active travel in Temiskaming Shores. With limited options to traverse this significant barrier, it is important to provide people walking and cycling with a safe option to better connect the City of Temiskaming Shores' current and future active transportation infrastructure.

4 RECOMMENDATIONS

Developing a network of active transportation facilities is vital to the development of a stronger culture of active transportation for Temiskaming Shores. In order to create a network of comfortable, accessible on and off-road facilities for walking, cycling and wheeling, the City should adopt the following recommendations.

1. Incorporate the proposed active transportation network illustrated in Maps 3a, 3b, 3c, 4a and 4b as a Schedule in the City's Official Plan when next updated.
2. Reference should be made to OTM Book 18: Cycling Facilities (2021) to inform and guide the design and implementation of cycling and in-boulevard facilities.
3. Reference should be made to OTM Book 15: Pedestrian Crossings to inform and guide the design and implementation of pedestrian crossing treatments.
4. The City should continue to identify opportunities to implement active transportation routes / facilities in conjunction with capital infrastructure projects to achieve economies of scale and cost savings.
5. As part of the annual capital budget review process, City staff should use the ATP to inform prioritization and implementation of active transportation infrastructure.
6. As part of scheduled roadway projects and Capital budget forecasting, the City should allocate funding to construct the Short-Term Active Transportation Network (See Maps 5b and 5c) by the end of the 2027 construction season.
7. When capital reconstruction projects are scheduled for the downtown areas of Haileybury and New Liskeard, priority should be given to expanding spaces for walking, cycling and amenities by narrowing vehicle lanes and parking facilities.
8. The City should implement a 2-way protected cycle track over the Wabi River Bridge as a pilot project to close a key gap in the existing STATO Trail
9. The City should continue to explore external funding sources and partnerships to help fund implementation of the ATP.
10. The City should adopt the Trails design and amenities standards presented in this plan to improve access to the trails at Devil's Rock and Pete's Dam Parks