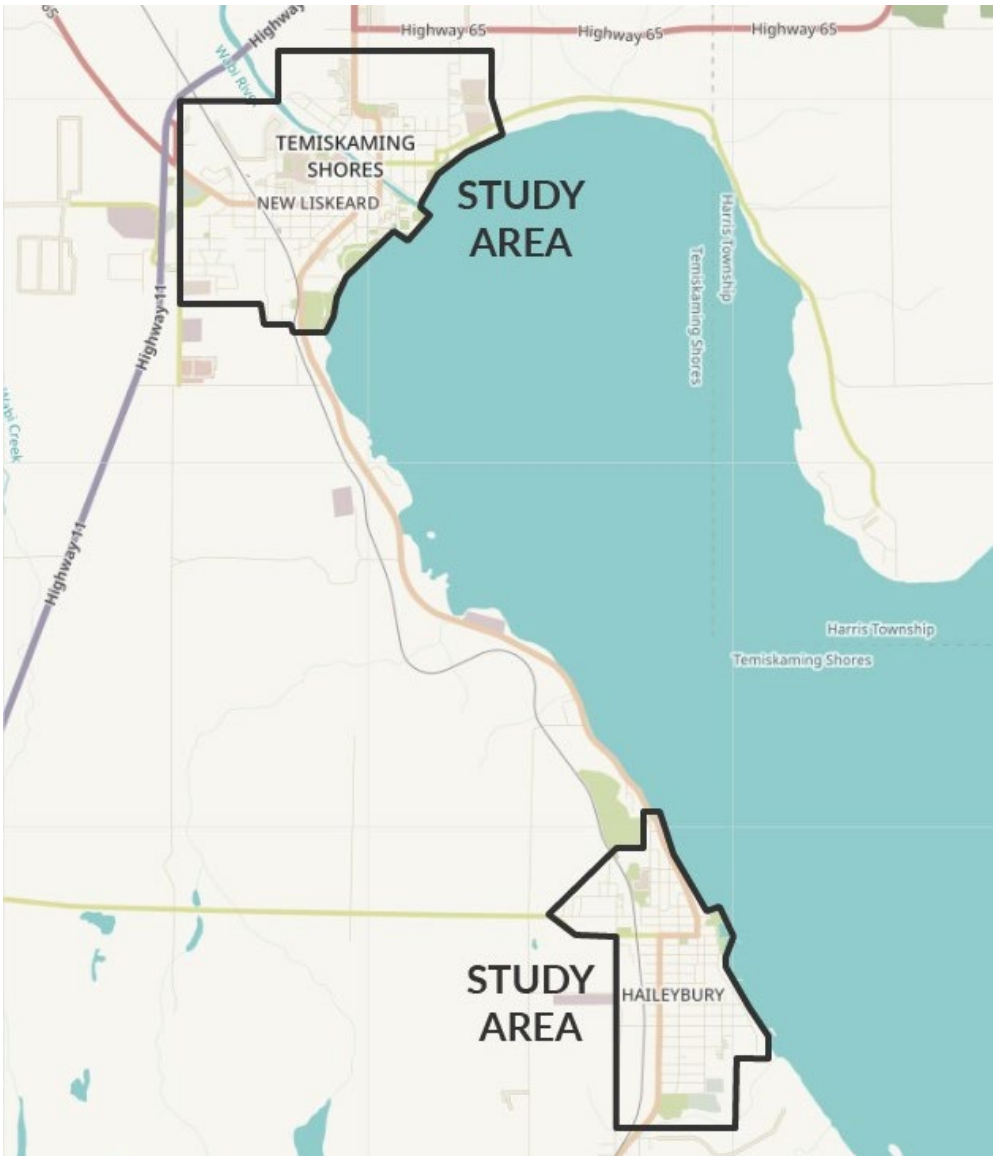

Mobility Plan Report

City of Temiskaming Shores Downtown Cores Transportation Study

Prepared: May 2024 — TYLin Contract #10777

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Glossary of Terms:

Level of Service (LOS): A measure of the average vehicular delay at a road intersection. Ranging from LOS 'A' to LOS 'F'. LOS 'A' is the 'best' level of operation for an intersection representing little or no delay and generally free flow conditions where the general level of comfort and convenience experienced by motorists is excellent. At the other end of the spectrum LOS 'F' represents an at- and over-capacity condition usually associated with heavy congestion, and occasionally severe peak period delays and queuing. It should be noted that operations measured as LOS 'A' up to and including LOS 'E' are considered 'acceptable' in most urban (and in many rural) environments.

Complete Streets: A term to define streets which contain a multitude of safety, accessibility, and sustainable features. These types of streets allow all types of users with various mobility preferences and needs to easily traverse an area. Typical Complete Streets offer features such as wide sidewalks, cycle lanes, traffic calming features, planters, and street furnishing.

Capacity: A numerical quantity defining the maximum number of vehicles which can travel on the road during a unit of time.

Arterial Road: A type of road which connects traffic from access-controlled freeways/highway onto collector roads.

Collector Road: A type of road which connects arterial roads to local roads and services transition of traffic from major to minor flows.

Local Road: A type of road which connects traffic exciting collector roads towards their final destination; usually residential private properties.

Multi-Modal: A variety of modes of travel including vehicular, transit, cycling, walking, etc.

Active Transportation (AT): Any type of non-motorized travel. Including: walking and cycling.

Origin-Destination: Term used to define the type of travel between an origin point to the destination point. Often used as measure of the flow of traffic between start and end points.

Peak Hour: An hour-long period which observes the highest traffic flow during rush hour.

Right-of-Way (ROW): A general term to define the boundary of land, road, or property, usually in a strip, acquired for and/or utilized for transportation purposes.

Shared Use Path: A path which can be traversed on by various types of transportation modes.

Access Management: Techniques for managing traffic flow in efforts of reducing congestion, increasing safety, reducing pollution. Methods include limiting highway entry/exit ramps, use of traffic signals, implementation of local by-laws and policies, etc.

Transportation/Travel Demand Management (TDM): The application of multiple strategies and policies to increase the efficiency of transportation networks. Serves the goal of reducing travel demand, redistributing demand of periods of time and encouraging a balanced modal presence within a road network.

Signalized Intersection: refers to any road intersection with at least one traffic signal to control vehicular traffic flow.

Stop-controlled Intersection: refers to any road intersection with at least one stop sign to control vehicular traffic flow.

1 Introduction

The City of Temiskaming Shores (City) initiated a Transportation Study (Study) to assess the current transportation network and identify improvements to its two downtown cores in New Liskeard and Haileybury.

This document, which is being referred to as the Mobility Plan Report will be the City's blueprint for strategic transportation planning and direction for the future. It aims to establish an improved transportation system in the City to better serve residents, employers, employees, and visitors while accommodating all modes of transportation including public transit, commuter travel, commercial vehicles, and active transportation.

There is a unique opportunity through this study to create a real sense of place, a community where people choose to meet, dine, and stay for a while instead of driving through; a city where people can safely and pleasantly travel with two feet or two wheels.

Accordingly, the existing conditions section of this report documents a thorough review and assessment of the current transportation network, including traffic travel patterns, traffic analysis, travel demand, transit, active transportation, infrastructure conditions.

Thereafter, two phases for the development of transportation network improvements are presented and recommendations for improvements to the downtown cores of the City are described.

Finally, public and stakeholder engagement was a key tool used to develop transportation solutions. Consultation is typically conducted by transportation planning agencies in collaboration with relevant stakeholders, including local governments, transportation agencies, community organizations, and the public. Inclusion of opportunities for public input and engagement helped to ensure that the report accurately reflects the needs, concerns, and aspirations of the community. This Mobility Plan Report documents the public consultation that has been undertaken for this project.

2 Vision Statement

This Study will help give direction to create and improve opportunities to connect people to businesses and community spaces in the City of Temiskaming Shores by balancing the needs of all modes of transportation throughout the City. The Study followed a Complete Streets approach, as requested by the City, and a description of principles are described in Section 5. The goals of the Study included:

- Providing the best transportation service for all users;
- Accommodating land use and urban design;
- Incorporating Active Travel; and
- Providing implementation feasibility, estimated cost of construction and phasing strategy.

3 Methodology

This section of describes the guiding principles and approach that has been used to investigate deficiencies in the current transportation network and develop solutions for the downtown cores.

3.1 Road Safety Philosophy

The road safety philosophy for this report centers around Vision Zero. The Vision Zero approach focuses on enhancing safety for all road users through strategies such as speed reduction, educational initiatives, and law enforcement to encourage safer behavior on the roads. Originating in Sweden in 1997, this approach has gained global acceptance, being adopted by numerous cities worldwide. A fundamental tenet of Vision Zero is the recognition that human errors are inevitable, necessitating the design and operation of the transportation system to minimize the adverse consequences of such errors. This approach hinges on data-driven decision-making, aiming to establish a secure and inclusive transportation network that safeguards all users, with particular attention given to the most vulnerable individuals, such as pedestrians and cyclists.

3.2 Complete Streets Framework

A Complete Streets approach is a philosophy in transportation and urban planning aimed at designing streets and transportation networks that are safe, accessible, and inclusive for all users, regardless of their mode of travel, age, ability, or socioeconomic status. This approach emerged in response to decades of prioritizing streets for motorized vehicles, often neglecting the safety and needs of pedestrians, cyclists, and public transit users. In essence, Complete Streets are those that can be safely and comfortably utilized by all road users, irrespective of their mode of travel, age, physical ability, or the time of day; this principle is applicable to various street types and physical contexts (Transportation Association of Canada, 2015). The popularity of this approach has grown as a means to address challenges like traffic congestion, road safety, public health, and the demand for more sustainable and livable communities. The concept of Complete Streets is increasingly gaining technical, political, and public significance in Canadian communities (Transportation Association of Canada, 2015). For more information on the Complete Streets Framework, please see **Section 5**.

3.3 Transportation Network Analysis Methodology

3.3.1 Traffic

Based on consultation with the City, in additional to analyzing the existing (2023) traffic operations in the City, a 5-year horizon year of 2028, and a 20-year horizon year of 2043 were selected as study horizon years for traffic operations analysis. It consisted of the following evaluations:

- A review of the existing (2023) traffic operations of the study area network;
- A summary of traffic operations under the future 5-Year Horizon (2028) and 20-Year Horizon (2043) conditions;
- A review of Signal Warrants for all stop-controlled intersections for the future 5-Year Horizon (2028) and 20-Year Horizon (2043) conditions; and

- A review of All-Way-Stop-Control (AWSC) Warrants for Two-Way-Stop-Control (TWSC) intersections for the future 5-Year Horizon (2028) and 20-Year Horizon (2043) conditions.

Detailed information on the traffic operations analysis completed as part of developing this Mobility Plan report is documented in Section 6.2. In addition, the traffic analysis reports can be found in **Appendices A, C, D and E**.

3.3.2 Safety

The comprehensive examination of speed and collision data identified critical hotspots within the existing transportation network. This data-driven approach helped identify areas with heightened safety concerns, providing valuable insights for City staff and members of the public. By leveraging speed and collision data, it offered a systematic means of addressing safety issues, facilitating targeted interventions, and enhancing overall road safety. This approach ensured that safety considerations are not only prioritized but are also addressed with accuracy, promoting a safer and more secure transportation network for all users. A summary of the road safety data review is described in **Section 0**.

3.3.3 Active Transportation (AT)

The active transportation review focused on identifying missing links and enhancing the safety, accessibility, and connectivity of infrastructure. The methodology not only prioritizes safety but also considers the accessibility needs of diverse users, fostering a more inclusive and interconnected transportation system. A review of the City's existing AT network is documented in **Section 6.4**.

3.3.4 Parking

The methodology for parking revolved around ensuring accessibility for businesses and destinations, while carefully balancing the needs of all transportation modes within the public right-of-way (ROW). This approach involved a nuanced evaluation of parking requirements to support economic activities and cater to the diverse needs of various modes of transportation. Striking a balance was crucial, as it enables efficient parking solutions that contribute to the accessibility and vitality of businesses, while also accommodating the broader spectrum of transportation options within the public realm. It aims to optimize parking configurations to meet the demands of a dynamic urban environment, promoting a balanced coexistence of diverse transportation needs. A review of the City's existing parking conditions is documented in **Section 6.5**.

3.3.5 Transit

The methodology for public transit centers on identifying missing links, improving accessibility, enhancing connectivity, and bolstering the overall attractiveness of public transportation options. The focus on accessibility ensures that public transportation is readily available to a diverse range of users, promoting inclusivity and addressing the needs of various communities. Through this comprehensive approach, the analysis strived to create a more integrated and efficient public transit network that will encourage increased ridership and contribute to sustainable urban mobility in the City. Review of the existing transit network gaps and opportunities are summarized in **Section 6.6.**

4 Planning Policy Review

This section provides a summary of the various municipal and regional policies that have been reviewed to provide context and guide the development of this Mobility Plan Report. These include the City's Active Transportation Plan (2021), the Recreation Master Plan (2020), the Official Plan (2015), and the Province's Growth Plan for Northern Ontario (2011). Other documents also reviewed for this study include the City's Zoning By-Law, the Municipal Cultural Plan, and the Accessibility for Ontarians with Disabilities Act (AODA).

4.1 Active Transportation Plan (2021)

The City has a dedicated community interested in active transportation. In 2004, community members formed STATO (South Temiskaming Active Travel Organization). A year later the City approved a multi-use trail/linear park and a by-law to establish an Active Travel maintenance program for the City was adopted. Construction of the paved bike path began in 2008 and more than 21km have been completed.

The City created its first Active Transportation Plan in 2021 with the following vision statement:

"Active Transportation in Temiskaming Shores will be safe and accessible and contribute to a healthy, sustainable, and supportive community where people of all ages and abilities can participate."

To support the vision statement, the Active Transportation Plan lays out objectives that support achieving the vision:

- **Enhance Safety**: Ensure that all trips in Temiskaming Shores, regardless of travel choice, feel safe.
- **Improve Maintenance**: Ensure that existing infrastructure for active transportation is well maintained, providing a high level of service at all times of the year.
- **Create Connectivity**: Connect the City's major population centres and destinations and fill gaps in the City's existing networks.
- **Improve Transportation Equity**: Ensure that residents of all ages, abilities, and backgrounds can move safely and conveniently through the City using any transportation mode that they choose.
- **Raise Awareness**: Leverage the strong sense of community in the City of Temiskaming Shores to develop a culture of care around active transportation.

Main goals of the Active Transportation Plan include:

- Enhance connectivity between trail networks, sidewalks, and on-road cycling routes;
- Build on guidance and recommendations of existing plans, particularly the City's Recreation Master Plan;
- Broaden the approach to active transportation;
- Provide opportunities for residents and stakeholders to help shape the City's approach

to promoting active transportation;

- Strengthen the City's reputation as an ideal tourist destination, to create new economic opportunities for existing and prospective local businesses.

The Active Transportation Plan also provides a summary of the existing AT network which shows that the highest proportion of the AT network consists of off-road multi-use trails. Overall, there are 80 km of existing active transportation infrastructure, and the plan proposes an additional 57.2 km for the network (see **Table 4-1**).

Table 4-1: Summary of Existing and Proposed 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**
Sharrow 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**

Source: Active Transportation Plan, 2021

A public survey was conducted as part of the consultation for the Active Transportation Plan, and it concluded that the major barriers for people who wish to commute using a bicycle are speed and noise of vehicles and intersection safety. The plan lists the main barriers to using active transportation as follows:

- Lack of sidewalks or trails
- Conditions of sidewalks or trails
- Speed and noise of motor traffic
- Lack of dedicated on-street cycling facilities
- Intersection safety

Based on Stakeholder interviews, the Active Transportation Plan also identified common themes concerning active transportation and presented them in a "Strength-Weaknesses-Opportunities-Threats" (SWOT) analysis in **Table 4-2**:

Table 4-2: Stakeholder Interview SWOT Analysis Summary

Strengths	Weaknesses	Opportunities	Threats
Existing STATO Trail	Speeds on connecting corridors	Bike parking and beautification in downtown areas	Road widths may limit options, particularly on rural and olde roads
Strong history of local fundraising and funding applications	Rorke, Lakeshore, Whitewood, Armstrong	Multi-modal integration: more walk/bike/transit trips	Low revenue and financial capacity mean improvements are often reliant on grants and other funding streams
Encouragement and education efforts	Few All Ages and Abilities (AAA) routes for walking and cycling	Expand bike exchange into bike hub/bike rental	Many programs rely on volunteers - staff support may need to expand
Radio, newspaper, social media, bike festival, etc.	Lack of seating, shade & bike parking in downtown areas	Broaden BFCC mandate to focus on active transportation	
Supportive staff and local stakeholders	Crossing Lakeshore in Haileybury	Traffic calming and speed limit reductions	
Local parks provide good access to nature and trails	Wabi Bridge	Introduce wayfinding and signage to encourage new ridership	
Strong transit ridership	School connectivity to existing trails	Trail apps and updated information	
Winter maintenance of sidewalks	Lack of safe access to downtowns		
Existing work done by the committee			

Source: Active Transportation Plan, 2021

Residents were also able to make their opinions known through participating online in a Miro Board session. The comments from the New Liskeard residents stressed the importance of designing active transportation networks that better service local schools, local services, and institutions. In addition, comments mentioned improving the crossing over the Wabi River, considering road diets, and applying safe design practices that are inclusive of all ages. Comments from the residents of Haileybury stressed providing active transportation connections to Northern College Campus, prioritizing facilities and connections benefiting youth, and upgrading three-way stops to all-way stop controls.

4.2 The Recreation Master Plan (2020)

The City developed this policy document to identify the City's recreation requirements and assists Council and staff in determining future recreation service delivery, investment, and development. Investing in universal access to recreation is important because it strengthens a community. Enhancing recreation for all ages across the City supports the following positive community outcomes:

- Building life-long healthy and active habits;
- Generating opportunities for social connection;
- Supporting a sense of belonging and family well-being;
- Bringing diverse populations together;
- Establishing a sense of place;
- Promoting inclusivity and equity;
- Contributing to environmental stewardship and sustainability.

Creating a strong local recreation network provides many ancillary economic benefits as well:

- Retaining residents who feel an attachment to the community;
- Attracting new residents who desire a high quality of life;
- Capitalizing on a growing economic sector that creates jobs;
- Adding value to existing properties and new developments constructed close to recreation assets;
- Bringing visitors who are interested in recreation-related tourism; and,
- Drawing people to downtowns when facilities are clustered in the core.

4.3 Official Plan (2015)

4.3.1 Town Centres

As per the 2015 Official Plan (OP), main streets are the core of the communities of New Liskeard and Haileybury. They are areas that set the tone and create the identity and image of the community to its residents and to visitors. Each of the downtown cores has a different role. New Liskeard's town centre is the City's primary commercial area with an extensive variety of commercial uses intermixed with public service and residential uses. Haileybury's town centre serves a more localized market area with a limited scope of commercial services intermixed with institutional uses (i.e., courthouse, land registry office) and residential uses.

As per the OP, Town Centres will be recognized for their different roles. New Liskeard's town centre will be promoted and encouraged to be developed as the primary central commercial district in the city. Haileybury's town centre will be recognized for providing services to a local market within a largely residential setting.

The intent of the OP is to strengthen the role of New Liskeard's town centre as key to the economic health of the City through the following policies:

- New Liskeard's town centre will be sustained as the City's primary commercial area, characterized as an area of mixed-use development dominated by a full range of retail, service commercial uses, financial, professional, and personal service uses and upper storey commercial and residential uses. Large format retail stores will be strongly encouraged to locate in the town centre;
- Existing residential and other uses will also be permitted; however, new standalone residential uses will be discouraged;
- On the western perimeter of New Liskeard's town centre, on Whitewood Avenue, new retail format commercial uses will also be permitted as well as a mixed-use node of existing commercial, residential, and industrial uses along Rokeby, Scott, and Jaffray Streets, and Whitewood Avenue. Residential buildings may be converted to professional offices, personal service uses and small-scale commercial uses between Wellington, Paget and Scott Streets provided any impacts of conversions on abutting residential uses are addressed (for example parking and access);
- Haileybury's town centre will be developed as a local commercial centre where the scope of land uses will include retail, personal and service commercial uses, residential and public service uses. Residential uses will include standalone and upper storey dwellings;
- Community improvement will be used to help create vibrant town centres through initiatives and programs to rehabilitate infrastructure; incorporate an accessible street design; enhance streetscaping (for example benches, waste receptacles, pocket parks, landscaping, boulevard shade trees, pedestrian scale or heritage lighting, public art and murals, bicycle parking); refurbish commercial façades; retrofit upper storeys for residential intensification; facilitate affordable housing; improve signage; introduce gateways at entry points to the downtown; increase off-street parking; and bury overhead wiring. Council may use financial incentives for retrofitting brownfield sites, where applicable and to encourage improvements to private properties. Property standards will apply to sustain the building stock in good repair;
- Exemptions to parking standards may be permitted, where appropriate;
- Adaptive re-use of buildings will be encouraged. New street level residential uses will be prohibited on Whitewood Avenue and Armstrong Street between the Post Office and the bridge;
- The City will encourage accessibility improvements to all buildings in the town centre;
- Redevelopment and expansions to existing developed lands will be encouraged subject to available servicing, access, and an adequate lot size for the intended use; and,
- The character of the existing street profiles will be maintained with respect to building height, architectural compatibility, zero front and side yard setbacks, and width of sidewalks.

4.3.2 Urban Design Principles

Good urban design seeks to create a safe, functional, and attractive built environment. The City is committed to achieving a high standard of urban design through applying the following urban design principles in the review and approval of development applications. The following principles from the OP have been applied in developing this Mobility Pan Report.

- Create streets and public places that are safe, lively, and comfortable:
  - Design street lighting and site lighting for clarity of night-time visibility for pedestrians, cyclists, and motorists;
  - Create play areas and public places or common areas (for examples squares, patios, parkettes, speakers corner and other public gathering points and places) which provide opportunities for social interaction, public events, and recreation or leisure activities and which are clearly accessible to all users and visible with multiple entry and exit points;
  - Provide unobstructed sight lines along pedestrian and cyclist routes and motor vehicle access and exits;
  - Encourage mixed use activity areas to create 'busy' public spaces that permit casual surveillance or 'eyes-on-the-street';
  - Separate pedestrian, cycling, and motorized activities;
  - Create gateways to neighborhoods.
- Promote pedestrian friendly design:
  - Plan for convenient walking distances to transit and parks;
  - Create dedicated walkways and pathways/trails to link activity nodes (for example home-to-work);
  - Provide sidewalk linkages and crosswalks;
  - Ensure the street network accommodates all intended users to ensure they can interact and move safely;
  - Incorporate traffic calming elements to promote pedestrian and cyclist movement;
  - Provide adequate lighting and uniform coverage in parking areas and pedestrian walkways.

4.3.3 Transportation

In accordance with the Official Plan, the City will:

- Liaise with Ontario Ministry of Transportation (MTO) to designate and integrate cycle routes on provincial highways and linkages to the City's cycling routes.
- Control access, parking, truck routes, and traffic signalization as measures to ensure

efficient movement of traffic, transit, pedestrians, and cyclists. Traffic management studies may be required for development to assess traffic impacts and needed improvements (for example road widening, taper lanes, intersection improvements, traffic calming, signalization, crosswalks, and noise/vibration).

- Where practical, the design of new streets or redevelopment of existing streetscapes will include the integration of active travel facilities for pedestrians, cyclists, and public transit.
- In the design of the street network, preference will be given to a grid pattern wherever feasible, to provide for ease of movement within the community, to encourage walkability and to avoid cul-de-sacs except where environmental features or previous development patterns prevent through streets.
- Public transit services provide an environmentally and fiscally responsible alternative to the private automobile. The City will promote transit ridership through land use policies which increase the density of development and tailor the frequency, routing, and safe use of transit services to residential neighborhoods and employment areas.

4.4 Connecting the North (2020)

The Ministry of Transportation of Ontario (MTO) completed the "Connecting the North: A Draft Transportation Plan for Northern Ontario" (December 2020), which aims to build a better transportation network for Northern Ontario. The Plan includes six goals, which are:

1. Getting people moving and connecting communities
   - This includes widening Highway 69, improving intercommunity bus service, and making progress on the passenger rail service in the North.
2. Enabling economic opportunities
   - Supporting economic recovery, advancing eight rehabilitation projects in Northern Ontario to create jobs and stimulate local economies.
3. Keeping people safe and providing reliable transportation options
   - Working with the private sector, Indigenous communities, and organizations to raise awareness of human trafficking as well as investing in rehabilitated rest areas in the North.
4. Preparing for the future
   - Transform the transportation network with new and innovative technology.
5. Maintaining a sustainable transport system
   - Encouraging economic growth and protecting the environment. Ensure transportation infrastructure considers climate change impacts and risks.
6. Reliable travel options for remote and Far North communities
   - Supporting remote and northern airports, supporting Indigenous communities.

4.5 Growth Plan for Northern Ontario (2011)

This plan was developed by the Ontario Ministry of Northern Development, Mine and Forestry in 2011 provide guidelines to align provincial decision-making and investment for economic and population growth in Northern Ontario for then next 25-year.

Most residents and industries in Northern Ontario use the highway network as their primary means of daily travel. This first goal outlined in this plan noted continued investment in highways to get people where they need to go and support economic growth. It is important not only to connect Northern Ontario with other areas of the province and national and international destinations and markets, but also to ensure people and goods can move efficiently and safely throughout the North.

This Plan is in part an economic development plan, an infrastructure investment plan, a labour market plan, and a land-use plan. It is a plan that recognizes the interconnected contribution of people, communities, infrastructure, and the environment to a successful and sustainable economy. It is a plan that recognizes and builds upon the unique characteristics of Northern Ontario, including a bilingual workforce in many communities.

This Plan has been prepared under the *Places to Grow Act, 2005*, which sets out the following purposes:

- to enable decisions about growth to be made in ways that sustain a robust economy, build strong communities, and promote a healthy environment and a culture of conservation.
- to promote a rational and balanced approach to decisions about growth that builds on community priorities, strengths, and opportunities and makes efficient use of infrastructure.
- to enable planning for growth in a manner that reflects a broad geographical perspective and is integrated across natural and municipal boundaries; and,
- to ensure that a long-term vision and long-term goals guide decision-making about growth and provide for the co-ordination of growth policies among all levels of government.

The Province of Ontario will work with communities to prepare resources and tools to assist communities to participate in regional economic planning.

5 Complete Streets Framework

5.1 Background

A Complete Streets approach is a transportation and urban planning philosophy that seeks to design streets and transportation networks to be **safe, accessible, and accommodating for all users**, regardless of their mode of travel, age, ability, or socioeconomic status as depicted in **Figure 5-1** and further described in **Section 5.4**. This approach emerged as a reaction to decades of designing streets primarily for motorized vehicles, often neglecting the needs and safety of pedestrians, cyclists, and public transit users. The approach gained popularity to address issues such as traffic congestion, road safety, public health, and the desire for more sustainable and livable communities. The concept of Complete Streets is rapidly gaining technical, political, and public importance in Canadian communities (Transportation Association of Canada, 2015).

Figure 5-1: Complete Streets Components

Source: California Bicycle Coalition, 2019

When planning for Complete Streets, all of a municipality's street- and transportation-related policies need to be considered. Planners, designers, and municipalities must also consider how streets and roads should develop over time – a clear priority for the street or road should be defined. In addition, the integration of various municipal street- and transportation-related policies is critical to achieving a cohesive and sustainable framework. As highlighted in the "Complete Streets: Best Policy and Implementation Practices" guide by the Federal Highway Administration (FHWA), the comprehensive approach involves aligning Complete Streets policies with broader land use, economic development, and public health strategies. This integration ensures that transportation planning becomes an integral part of the municipality's overall vision for community development.

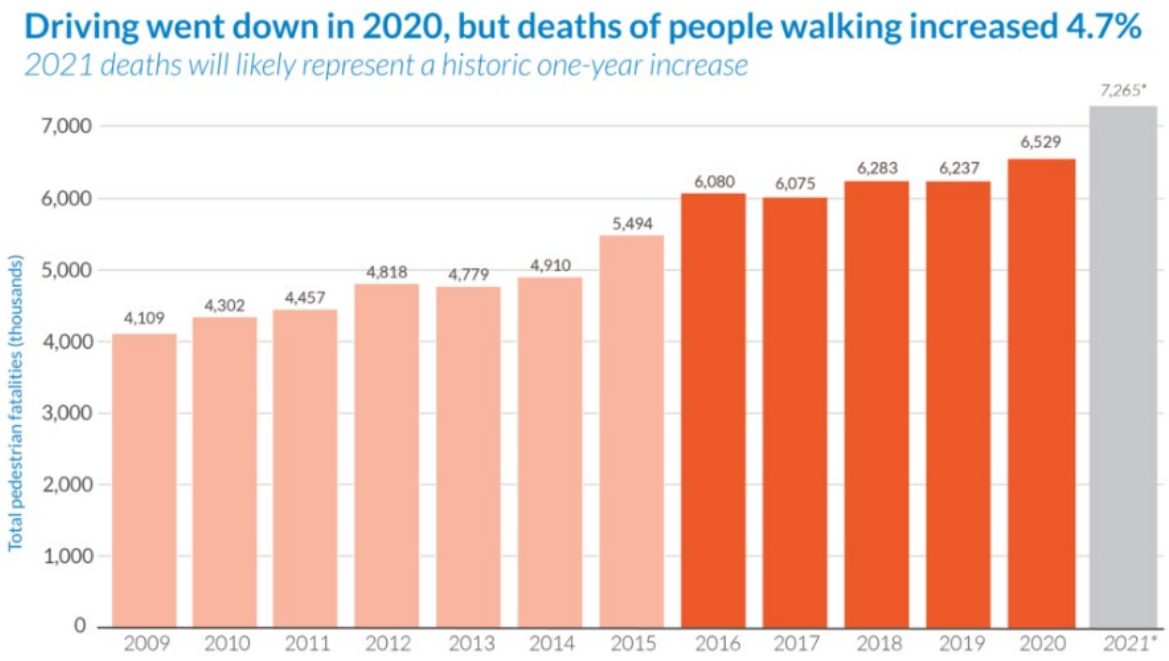
Furthermore, it is essential for planners, designers, and municipalities to consider the evolving nature of streets and roads over time. The "Complete Streets Local Policy Workbook" from Smart Growth America emphasizes the importance of defining clear priorities for each street or road, considering changing community needs, technological advancements, and environmental considerations. This forward-thinking approach ensures that the Complete Streets policy remains adaptable and responsive to the dynamic nature of communities.

5.2 Objectives

5.2.1 Complete Streets and Vision Zero

Why do we need Complete Streets? One of the main reasons is safety. There is an alarming increase in the numbers of people struck and killed while walking as shown in **Figure 5-2**. Speed is the main culprit in these fatalities. Design decisions have often prioritized speed at the expense of safety.

Figure 5-2: Number of Pedestrian Fatalities



Source : Smart Growth America, 2021

One of the best ways to reduce speeds and speeding is through a different approach to street design that prioritizes safety above all else, but especially over vehicle speed. Many design choices of Complete Streets, including continuous sidewalks and cycle tracks, protected intersections, and traffic calming measures are targeted at improving the safety and comfort of all road users. Complete Streets is therefore directly intertwined with the Vision Zero philosophy. Vision Zero aims to eliminate traffic fatalities and severe injuries, emphasizing a holistic approach to safe mobility. Complete Streets focuses on designing to accommodate various modes of transportation seamlessly. The synergy between these concepts is evident in their shared emphasis on creating streets that are inherently safe, accommodating pedestrians, cyclists, and motorists through thoughtful design and policy.

By integrating the principles of Complete Streets with the vision of Vision Zero, communities can develop comprehensive strategies that not only enhance mobility but also significantly contribute to the overarching goal of eliminating traffic-related fatalities and injuries. As the City is currently in the process of integrating their own Vision Zero strategy, this is the perfect opportunity to enhance the Vision Zero strategy by combining it with a Complete Streets approach, thereby creating a stronger framework and policy for the future safety.

5.2.2 Additional Aspects of Complete Streets

Next to safety, Complete Streets framework addresses a variety of other important aspects, including:

- **Accessibility**: ensures that streets are designed and maintained to be accessible to people of all ages and abilities, including those with disabilities. This includes features like curb ramps, tactile paving, and widened sidewalks, allowing everyone to move around comfortably and independently.
- **Health**: promotes physical activity by encouraging walking and cycling. This leads to improved public health and active transportation options also contribute to cleaner air and reduced pollution. Jurisdictions across North America reference Complete Streets as an effective preventative health strategy.
- **Sustainability**: By reducing reliance on single-occupancy vehicles and promoting alternative transportation modes, this framework helps to decrease greenhouse gas emissions, reduce air pollution, and minimize the environmental footprint of transportation. Complete Streets designs can help minimize impacts on climate and the environment through tree canopies and incorporating innovative stormwater solutions.
- **Equity**: prioritizes equity by ensuring that transportation options are available to all residents, regardless of income or mobility status. They help reduce transportation-related disparities and promote social inclusion.
- **Community Building**: fosters community building by creating vibrant, people-friendly environments. Features like public seating, gathering spaces, and street-level retail encourage social interaction, contributing to a stronger sense of belonging and social cohesion. Complete Streets animate the public realm and invite people to meet, linger, and socialize.
- **Congestion on Streets**: offers alternatives to driving, such as efficient public transit and safe cycling routes. This can lead to a reduction in traffic congestion, shorter commute times, and less stress for residents.
- **Quality of Life**: creates a more pleasant and enjoyable urban environment, enhancing the overall quality of life. They promote a sense of place and contribute positively to the local community's well-being and identity. Through green spaces, reduced noise and stress, and enhanced aesthetics, Complete Streets make communities more pleasant and vibrant.
- **Cost effectiveness**: Complete Streets can be achieved through incremental change over

time, phasing, and interim conditions. While the initial implementation of Complete Streets may require an investment, they can be cost-effective in the long run. By prioritizing multi-modal transportation and reducing the need for extensive road maintenance and expansion, Complete Streets can lead to cost savings. Moreover, they often leverage existing infrastructure and can be integrated into regular road maintenance schedules, minimizing additional expenses. In addition, the health benefits associated with active transportation can lead to reduced healthcare costs for communities, making Complete Streets an economically sound choice.

- **Economic activity**: Streets are the front door to many businesses and the quality of a street's environment can affect its economic vitality. This framework can significantly boost local economic activity. By creating pedestrian-friendly environments with amenities like wider sidewalks, street furniture, and inviting public spaces, they attract more foot traffic. This increased foot traffic can lead to higher sales for local businesses, increased property values, and a more vibrant local economy. Additionally, improved transportation options can attract new businesses to the area, spurring economic growth.

5.3 Canadian Complete Streets Projects & their Effects

Throughout the country, local, regional, and provincial governments are increasingly embracing Complete Streets framework when designing their transportation networks. The Transportation Association of Canada (TAC) has noted multiple successes from organizations involved in Complete Streets projects, which include:

- **Behavioral Impacts**: Some pilot projects have successfully encouraged sustainable travel behavior and improved safety. For instance, Ottawa witnessed increased cycling activity along the corridor due to its segregated bike lane, while Guelph's road diets enhanced cycling access and reduced rear-end collisions. In Thunder Bay, a downtown pilot project slowed vehicular traffic, creating a more pedestrian- and cyclist-friendly environment while enhancing neighborhood aesthetics.
- **Enhanced Collaboration**: Complete Streets initiatives have effectively brought together staff from various groups to address shared interests and objectives. This collaboration has streamlined discussions regarding policies, plans, and specific design elements, fostering more constructive engagement among practitioners and elected officials. Halifax Regional Municipality, for example, closely collaborated with the local health authority and Dalhousie University on its Complete Streets initiative. Thunder Bay's pilot projects showcased the potential to efficiently integrate multiple municipal strategic initiatives into single capital projects.
- **Improved Public Services**: Complete Streets concepts and projects have been recognized for serving the mobility needs of a broader cross-section of the public. They also contribute to streets becoming more integral elements of the public realm through aesthetics and public art.
- **Contextual Consideration**: Complete Streets processes have prompted stakeholders to

give greater thought to how roads align with surrounding land uses, challenging traditional one-size-fits-all design approaches.

- **Local Customization**: Delivery of Complete Streets concepts varies from one jurisdiction to another. This flexibility allows policies, guidelines, and projects to better conform to or deviate from existing objectives, principles, and practices, increasing their ability to meet evolving local needs.

5.4 Components

5.4.1 Safety and Vision Zero:

Complete Streets are closely related to Vision Zero and prioritize safety. A key design principle is that streets should be designed to serve either an access or a mobility function for vehicles – but not both (WSP, 2023). Innovative designs are used to enhance comfort and safety on streets, this is where the philosophies of Complete Streets and Vision Zero come in. Both philosophies have distinct focus areas, but they often complement each other. They share the goal of making streets safer for all users and reduce traffic-related injuries. Some of the design elements and principles of Complete Streets contribute to Vision Zero goals, these include traffic calming measures, protected bike lanes, and clear crosswalks. Overall, both philosophies are complementary and can lead to safer, more user-friendly urban environments when implemented together.

5.4.2 Multi-modal Design

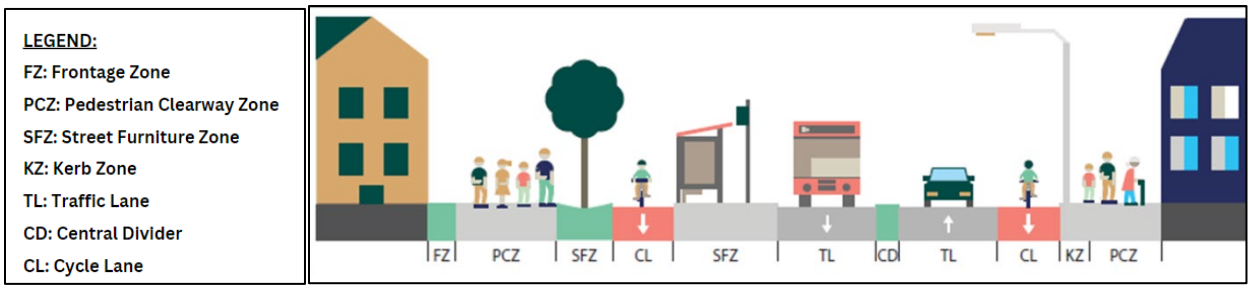
Multi-modal design is a crucial component of Complete Streets that focuses on accommodating various modes of transportation to create safer and more inclusive urban environments. A key starting point to offering multi-modal design is to understand the primary needs of each modal user. One consideration of multi-modal design is providing multi-modal transportation, meaning the provision of reliable, convenient, and attractive mobility choices. These are designed to support more efficient, active, and healthier forms of transportation and reduce vehicular congestion. This also means considerations should be given to emergency access and operations and supporting goods movement and delivery by different modes. Capacity should be analyzed from a multi-modal perspective that has a clear focus on movement of people, instead of vehicles.

5.4.3 Spatial division of streets:

Streets can be divided into zones for activity, street furniture and transport. The Oslo Street Design Manual (2020) defines these areas as the frontage zone, pedestrian clearway zone, street furniture zone, kerb zone, buffer zone, carriageway, central divider, and cycle path as shown in **Figure 5-3.** Vegetation and areas for handling stormwater may form part of the central divider, street furniture zone or frontage zone.

Using different surfaces on for example the pedestrian clearway zone and the street furniture zone/frontage zone, or providing clear edges, will make the zones more distinct and more readable. Transitions should be indicated with both tactile and visual markings, and the tactile marking should be detectable with the feet.

Figure 5-3: Spatial Division of Streets in Zones



Source: Street Design Manual for Oslo (2020)

5.4.4 Universal Design

The various people that are navigating through the City have a range of unique needs and abilities. To address this diversity effectively, it is essential to embrace universal design principles. When standard solutions cater to the broadest spectrum of individuals, there's less reliance on specialized approaches. Well-rounded, inclusive solutions that simplify navigation and create a sense of unity can encourage greater participation in the city's vibrant life and activities. Universal design is the design or layout of the physical environment, including infrastructure, transport and information and communications technology, to enable usage of transport networks by all types of users. Basing the design around the group with the greatest needs will ensure that the needs of the greatest possible number of people can be met.

5.4.5 Community Engagement

Community engagement is paramount in the success of Complete Streets projects, ensuring that the diverse needs and preferences of the local population are considered. According to the National Complete Streets Coalition, which is a program of Smart Growth America, engaging the community fosters a sense of ownership and creates streets that truly reflect the values and priorities of residents. This involvement helps identify specific challenges faced by different user groups, such as pedestrians, cyclists, and motorists, leading to more context-sensitive and effective design solutions. Additionally, community engagement in the planning process promotes transparency, builds trust between stakeholders and decision-makers, and encourages a sense of shared responsibility for the project's outcomes.

The importance of community engagement is echoed in a study published in the Journal of Planning Education and Research, which highlights those involving residents in decision-making process leads to more sustainable and equitable transportation outcomes. Community members bring valuable local knowledge and insights that might be overlooked in a top-down approach. This collaborative approach contributes to the overall success and acceptance of Complete Streets initiatives, creating safer and more accessible streets that align with the needs and aspirations of the community.

5.5 Design Elements

There are several design elements that are used to achieve Complete Streets. The key elements are summarized in this section.

5.5.1 Protected Bike Lanes

Protected bike lanes are physically separated from vehicular traffic by barriers like curbs, bollards, or planters. Studies, such as those reviewed by the National Association of City Transportation Officials (NACTO), consistently demonstrate the manifold benefits of protected bike lanes. They contribute to increased cyclist safety by providing a dedicated space, reducing the risk of collisions with vehicles. Furthermore, protected bike lanes encourage more people to choose cycling as a mode of transportation, promoting physical activity and contributing to public health. These lanes also have positive economic impacts, as they often enhance the overall urban environment, attract more pedestrians, and boost local business revenues. In the context of Complete Streets, protected bike lanes align with the philosophy of creating roadways that cater to various modes of transportation, promoting safety, accessibility, and sustainability.

Additionally, bike boxes are a feature that connects protected bike lanes to protected intersections. They help cyclists make left or right turns at intersections by placing them in front of traffic at a red light. Cyclists could also make a two-stage left-turn on roadways with high traffic volumes.

5.5.2 Continuous Sidewalks and Cycle Tracks

Places that support pedestrians are healthier, more resilient, and vibrant. Continuous sidewalks elements place the pedestrian experience in the centre of the street design. The duty to watch out for other road users is shifted from the pedestrian to motorists. Continuous sidewalks maintain a full-height, continuous sidewalk through the crossing and requires vehicles to ramp up to sidewalk level on either side of the crossing. Creating a dedicated space for pedestrians, separated from cyclists and motorized vehicles, creates a clear hierarchy of traffic, and promotes not only pedestrian, but overall traffic safety. An example of such design element from the City of Nanaimo in the province of British Columbia is depicted in **Figure 5-4.**

Figure 5-4: Continuous Sidewalk & Cycle Track under construction in Nanaimo, BC

Source: Roy Symons, @roytheplanner

5.5.3 Protected Intersections

Protected intersections are a critical component of Complete Streets, embodying the philosophy of creating safe and inclusive urban environments. These intersections prioritize the safety of pedestrians and cyclists by incorporating dedicated spaces, physical barriers, and clear ROW markings. By seamlessly integrating protected intersections into the overall Complete Streets framework, communities enhance the overall safety and accessibility of their transportation systems. An example from Netherlands depicting the features of protected intersections is shown in **Figure 5-5**. They typically include:

- **Corner Refuge Island**: A refuge island is a raised or protected area located at the corner of an intersection. It provides a safe space for pedestrians and cyclists to wait before crossing the roadway. This island increases visibility and allows for more predictable movements.
- **Curb Extensions (Bulb-outs)**: Curb extensions, also known as bulb-outs, involve extending the sidewalk into the roadway at the intersection. This reduces the crossing distance for pedestrians and increases their visibility to drivers. Bulb-outs also serve to slow down turning vehicles.
- **Separate Signal Phases**: Protected intersections often have separate signal phases for cyclists and pedestrians. This means that they have their dedicated signal timing, allowing them to cross the intersection without conflicting with vehicle movements.
- **Dedicated Bike Lanes**: Protected bike lanes are physically separated from motor vehicle lanes by barriers such as bollards, planters, or curbs. This separation provides a clear boundary and reduces the risk of collisions between cyclists and vehicles.
- **Marked Crosswalks**: Clearly marked crosswalks help guide pedestrians and cyclists safely across the intersection. These markings are often supplemented by high-visibility paint and signage to enhance awareness.
- **Advanced Stop Lines (ASLs)**: ASLs are designated areas for cyclists at the head of the traffic lane during red signal phases. They allow cyclists to move ahead of vehicles when the signal changes, giving them a head start and increasing their visibility to turning vehicles.
- **Protected Left-Turn Lanes**: In some cases, protected intersections include features like left-turn lanes that are physically separated from oncoming traffic. This improves safety for both cyclists and pedestrians, reducing the risk of conflicts with turning vehicles.
- **Clear and Intuitive Design**: The overall layout of a protected intersection is designed to be intuitive, making it easy for all road users to understand and navigate. Clear signage and road markings play a crucial role in guiding everyone safely through the intersection.

Figure 5-5: Protected Intersection in the Netherlands

Source: Urban Cycling Webinar by Marco Te Brömmelstroet for 8-80 Cities (December 12, 2023)

Protected intersections contribute to increased active transportation, promoting cycling, and walking as viable and safe alternatives to motorized transport. This not only fosters a healthier lifestyle but also addresses environmental concerns by reducing carbon emissions and traffic congestion. The design of these intersections often incorporates features such as shorter crossing distances and improved visibility, making the overall experience more convenient and appealing for pedestrians and cyclists. As a result, communities that embrace protected intersections can enjoy enhanced mobility, reduced traffic-related stress, and improved public health outcomes.

The economic benefits of constructing protected intersections should not be overlooked. These intersections often attract businesses and stimulate economic activity by creating more vibrant and pedestrian-friendly neighborhoods. The increased foot and bike traffic can lead to higher retail sales, boosting the local economy. In summary, the construction of protected intersections represents a forward-thinking approach to urban planning, offering a holistic solution that prioritizes safety, encourages active transportation, and fosters economic vitality in communities.

5.5.4 Mini Roundabouts

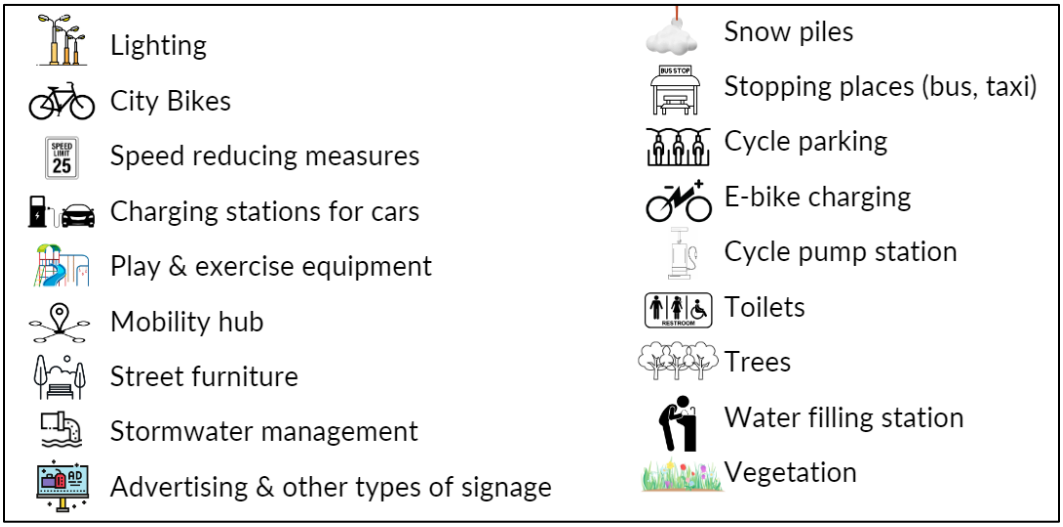
Mini roundabouts are compact traffic management features that improve intersection flow, enhance road safety, and reduce congestion in urban areas. According to research published in the "Journal of Transportation Engineering," mini roundabouts enhance safety by reducing the frequency and severity of collisions, particularly at low-speed intersections. Their efficiency in traffic calming is especially relevant in rural contexts, where they effectively manage traffic while requiring less space and maintenance than traditional roundabouts. In terms of Complete Streets, mini roundabouts align with the philosophy of creating inclusive, multi-modal road networks. They improve accessibility for all road users, including pedestrians and cyclists, and contribute to safer, more sustainable transportation systems in both urban and rural environments.

5.5.5 Street Furniture

Street furniture plays a crucial role in the design of Complete Streets, although its placement requires careful consideration. When not strategically placed, street furniture and railings have the potential to obstruct visibility between pedestrians and cyclists. However, when thoughtfully positioned, they can serve as valuable guides to encourage pedestrians to use designated crossing points. The street furniture zone, often found on both sides of a pedestrian clearway zone, serves as a space for recreation. Selection of street furniture and equipment should consider environmental and climatic factors. The specific elements to emphasize and prioritize within the street furniture zone are project-dependent and should be determined during high-level planning. In streets where speed reduction is desired, elements within the street furniture zone can be extended into the carriageway to effectively slow traffic. Additionally, when the frontage zone or street furniture zone has a paved surface, it should be differentiated from the pedestrian clearway zone through tactile and visual cues, creating a natural guideline to ensure safe passage for pedestrians while preventing collisions with open doors.

Figure 5-6 lists possible elements that can be placed in the street furniture zone. The list is not exhaustive and new elements and functions can be added when future needs arise.

Figure 5-6: Elements for the Street Furniture Zone



5.5.6 Pocket Parks

Pocket parks are small, often urban, green spaces that provide much-needed oases for relaxation and recreation in densely populated areas. According to the American Planning Association, pocket parks contribute to increased social interaction, improved mental well-being, and enhanced neighborhood aesthetics. While often associated with urban settings, pocket parks can also be valuable in rural contexts, providing serene spots for community gathering, recreation, and appreciation of nature. In the context of Complete Streets, pocket parks play a crucial role in creating more vibrant and people-centered public spaces. They contribute to the overall walkability and livability of communities, aligning with the philosophy of designing streets that cater to the diverse needs of residents and encourage community engagement.

5.6 Policy Making

All the objectives, guidelines, and design elements described in the sections above must become official through policies. Policies may be aspirational and not directly applicable to all contexts. However, implementation tools help municipalities and their consultants to implement the intent of the policy to a much wider range of contexts. In addition, Complete Streets policies can be codified in the City's engineering standards.

Smart Growth America offers a comprehensive guide for writing a strong Complete Streets policy, as well as a scoring system that can help assess how complete your Complete Streets policies are.

- The first element is about **Commitment and Vision**. Smart Growth America states that a strong Complete Streets policy establishes how and why a community wants Complete Streets. There should be a binding statement of intent.
- The second element is the **prioritization of underinvested and underserved communities**. The strongest Complete Streets policies follow this approach and allocate resources to focus on the gaps.
- The third element states that a strong **Complete Streets policy applies to all transportation projects, in every phase**. This element is essential as Complete Streets is a holistic approach and process to the overall transportation system and should not be seen as simply a series of projects or an "add-on component" to transportation projects. The strongest Complete Streets policy requires the **consideration of all users** for all new, retrofit/reconstruction, maintenance, and ongoing projects.
- The fourth element states that a strong Complete Streets policy **allows only clear exceptions**. These exceptions must be narrowly defined and require public notice prior to approval. Smart Growth America states that "Including specific, clear, and limited exceptions actually increases the strength of your policy because it prevents discretionary exceptions in the future, helping to ensure equitable implementation".
- The fifth element revolves around **coordination**. A strong Complete Streets policy requires coordination between jurisdictions, agencies, and departments.
- The sixth element stresses the adoption of **excellent design guidance**. The idea behind this element is that excellent design guidance equips engineers with the practical information they need to design streets that reflect the vision of the respective Complete Streets Policy. *"Design guidance bridges Complete Streets from policy to pavement"*.
- The seventh element focuses on **proactive and supportive land-use planning**. The policy should require the integration of land-use planning to best sync up with a community's desires for using and living on their land today and in the future.
- The eighth element revolves around **measuring progress**. It is crucial to measure progress to see if your Complete Streets policy is working. Results should be shared publicly as well. A strong Complete Streets policy requires tracking performance across a range of categories. Implementation and equity should be included in the measurements. Finally, there needs to be an appointed person to take responsibility for tracking progress.

- The ninth element focuses on **criteria for choosing projects**. The Complete Streets policy should add or update criteria that give extra weight to projects which advance Complete Streets and improve the network.
- The tenth element stresses the importance of creating an **implementation plan**. The policy should set out specific steps for implementing the policy in ways that will make a measurable impact on what gets built and where.

5.7 Implementation

5.7.1 Challenges and Approaches

Some common challenges that are being faced by municipalities implementing Complete Streets concepts include:

- **Need for collaboration** – Complete Streets approaches require a shared understanding and buy-in, as well as new forms of collaboration, among government departments (e.g. engineering, land use planning, traffic operations). Mechanisms are needed to guide integrated approaches to planning, operating, and optimizing the relationship between Complete Streets and adjacent development.
- **Public resistance** – The public can oppose Complete Streets approaches if they do not understand them, or if they perceive that their interests are being sacrificed (e.g. drivers concerned about added delay or loss of parking, as reported by the cities of Edmonton, Burlington and Guelph among others). Overcoming public resistance requires effective engagement tools, an acknowledgment of potential trade-offs, and education around how to use unfamiliar street features.
- **Resource requirements** – Innovative approaches such as Complete Streets need more staff time and effort, particularly when they are first introduced. This learning curve can be a barrier to new ways of planning and operating streets. Commitment and active support from management and elected officials can foster innovation and help ease the transition from traditional practices.
- **Competition for right-of-way** – There are competing needs for street space among users who travel with different modes, speeds, and abilities. The need to make trade-offs is inevitable, and the gains and losses of different interests (whether real or perceived) need to be understood and carefully managed. The City of Gatineau noted that the intersection of distinct facility types for different modes in the right-of-way (e.g. bicycle lanes and bus stops) can also create conflicts and demands careful resolution.

5.7.2 Barriers to Implementation

The Centre for Active Transportation (TCAT) identifies six main barriers that prevent municipalities from building more Complete Streets.

1. **Policy and guidelines**: This point stresses the importance of policies providing a strong rationale for Complete Streets and Vision Zero. There is a **clear need for guidelines**, which provide operationalizing details, resulting in internal efficiencies.

2. **Cultures of opposition**: Car culture remains the dominant perspective in the planning and designing of streets. When implementing a Complete Streets approach, one needs to be aware of a vocal minority of municipal staff, politicians and members of the public who oppose Complete Streets and Vision Zero initiatives.
3. **Staff coordination**: There is a need to facilitate **efficient communication** between municipal staff.
4. **Budgeting and resources**: The cost of maintenance for Complete Streets, the need for road widening due to car-centric road planning, and a lack of human resources can strain the budget.
5. **Balancing needs**: Given the reluctance to implement road diets, compromises must be reached on which elements are to be implemented and the location of infrastructure to be installed. The decisions that are made have **equity implications**.
6. **Data**: Insufficient means of analyzing and distributing data present an implementation burden. There is a need for better systems of management, which require greater human resources. Data collection has also faced challenges, such as those posed by COVID.

5.7.3 Lessons Learned

Municipalities that have been engaged in Complete Streets projects were asked about advice they would give to other organizations based on their own experience with Complete Streets. The respondents cited several lessons learned:

- **Engage the community** – Engaging as many stakeholders as possible from a project's early stages provides an opportunity for public education on the value of new approaches to street design. The City of Montreal noted that it can help to develop a common vision that encourages stakeholders to share their focus on a key positive outcome: the creation of roadways that better serve all users.
- **Integrate capital planning** – It is important to leverage planned investments by building Complete Streets concepts into road renewal projects, and also to allocate additional funds for elements that are outside the scope of basic street renewal. Complete streets projects are an opportunity to incorporate numerous strategic initiatives into a single capital project by involving areas as diverse as land use, transportation planning, engineering design and maintenance. Creating a multi-disciplinary team to guide the project will encourage greater collaboration and deliver better outcomes.
- **Build partnerships between sectors** – Public health leaders, in particular, have expressed a keen interest in Complete Streets. Halifax Regional Municipality cited its partnership with the local health authority and the Healthy Canada by Design organization as a supportive factor in the development of a Complete Streets policy.
- **Embrace change in transportation practices** – The transportation profession has a tremendous opportunity to help build more effective roles for walking and cycling in Canadian cities. Doing so will require practitioners to actively recognize the influence of land use context on successful roadway designs and, as noted by the City of Ottawa, to

revisit conventional approaches to managing congestion and evaluating operational effectiveness for all road users.

- **Learn from others** – The concept of Complete Streets is not one-size-fits-all. Communities need to learn from each other and tailor solutions to meet their unique needs. Openness to innovation can help in finding solutions to challenges, such as the City of Montreal's example of soil cells that enhance the viability of street trees, and retention basins that provide low-impact drainage while enhancing the landscape. Not all agencies explicitly use "Complete Streets" to identify relevant projects, so look beyond terminology when seeking similar objectives and approaches.
- **Measure, document and celebrate** – Finally, the City of Thunder Bay suggests measuring the impact of Complete Streets through before-and-after comparisons and using photos and personal stories to publicize the community value of projects. Planning launch events and giving public credit to project champions and stakeholders are good ways to celebrate success.

5.8 Monitoring and Measuring Success

Monitoring and measuring the success of Complete Streets policies in rural communities is a vital step that involves assessing various indicators to ensure the effectiveness of implemented measures. According to the "Complete Streets Guide" by Smart Growth America, successful monitoring often includes evaluating changes in safety metrics, such as reduced traffic accidents and improved pedestrian and cyclist safety. Additionally, monitoring usage patterns of alternative transportation modes, like increased walking or cycling, can be indicative of a policy's success in promoting multimodal accessibility.

Regular evaluations aligned with the principles outlined by the Federal Highway Administration's (FHWA) "Complete Streets: Best Policy and Implementation Practices" can provide valuable insights. FHWA emphasizes data-driven decision-making to inform adjustments to policies, ensuring that transportation investments fulfill the community's objectives.

Generally, the jurisdictions with the strongest Complete Streets policies take four concrete steps:

- Establish specific **performance measures across a range of categories**, including implementation and equity;
- Set a **timeline** for the recurring collection of performance measures;
- Require performance measures to be **publicly shared**; and,
- Assign **responsibility** for collecting and publicizing performance measures.

At the start of creating a Complete Streets policy, it can be overwhelming to decide what measures to focus on. Below is a list of examples that can be used:

- Number of crashes and severity of injuries
- Injuries and fatalities for all modes
- Presence of adequate lighting
- Travel time in key corridors (point A to point B) by mode

- Number of trips by walking/rolling, biking, transit, and driving
- Presence of transit facilities, biking facilities, and walking/rolling facilities
- Sidewalk condition ratings
- Number of curb ramps
- Building vacancy rates
- Access to jobs by mode
- Temporary and permanent jobs created by project
- Emergency vehicle response times
- Number of students who walk or bike to school
- Number of mode users: walk, bike, transit
- Bike route connections to off-road trails
- Number of bike share users
- Air quality
- Number of street trees
- Number of temporary and permanent art installations
- Internal policies and documents updated
- Number of staff trained
- Effectiveness of community engagement process

5.9 Complete Streets in the City of Temiskaming Shores

Adopting the Complete Streets framework in the City of Temiskaming Shores is a strategic move toward creating a safer, more accessible, and vibrant urban environment. In a city like Temiskaming Shores, where the local population has diverse transportation preferences and needs, Complete Streets provide a framework for inclusive mobility. By designing streets that cater to various modes of transportation, the city can foster a sense of community, encourage physical activity, and contribute to economic vitality and revitalization of the two downtown cores. Additionally, the adoption of Complete Streets aligns with the broader objectives of sustainable urban development, the adoption of a Vision Zero program, and can enhance the quality of life for residents while ensuring safer and more efficient transportation networks.

6 Existing Gaps & Opportunities

This section provides a review of existing transportation conditions in the City, primarily focused on the two downtown cores of New Liskeard and Haileybury. Additionally, it also documents the challenges in the existing transportation network and opportunities for various improvements utilizing the Completes Streets framework described in **Section 5**.

6.1 Vehicular Network

6.1.1 Road Network

6.1.1.1 New Liskeard

The major roadways in New Liskeard are described as follows:

- **Whitewood Avenue** is an urban two-lane roadway through New Liskeard. It is generally oriented in the east-west direction within the study area and is classified as an Arterial Road as per the City's Official Plan (March 2015). It provides a connection to Trans-Canada Highway (Highway 11) to the west and Armstrong Street to the east. There are sidewalks and on-street parking on both sides of the roadway in the vicinity of the study area. The posted speed-limit on Whitewood Avenue is 50 km/hr.
- **Broadwood Avenue** is an urban two-lane roadway through New Liskeard. It is generally oriented in the east-west direction within the study area and is classified as a Collector Road as per the City's Official Plan (2015). It provides a connection to Lakeshore Road North to the east. The speed limit on Broadwood Avenue us 40 km/hr.
- **Armstrong Street** is an urban two-lane roadway through New Liskeard. It is generally oriented in the north-south direction within the study area and is classified as an Arterial Road north of the Whitewood Avenue and as a Local Road, south of Whitewood Avenue within the Town of New Liskeard as per City's Official Plan (March 2015). It provides a connection to Highway 65 to the north which further connects to the Town of Dymond. There are sidewalks and on-street parking on both sides of the roadway, in the vicinity of the study area. The posted speed-limit on Armstrong Street is 50 km/hr.
- **Lakeshore Road** is an urban two-lane north-south roadway. It is classified as an Arterial Road within the Town of Haileybury as per City's Official Plan (March 2015). Lakeshore Road provides a connection to Whitewood Avenue to the north and Town of Haileybury to the south. There are sidewalks and on-street parking on both sides of the roadway. The posted speed-limit on Lakeshore Road/ Ferguson Avenue is 50 km/hr.

6.1.1.2 Haileybury

The major roadways in Haileybury are described as follows:

- **Main Street** is an urban two-lane roadway through Haileybury. It is generally oriented in the east-west direction within the study area and is classified as an Arterial Road as per the City's Official Plan (March 2015). Within the Town of Haileybury, Main Street is the only east-west corridor providing connection to Trans-Canada Highway (Highway 11) located west of the Community's downtown core and Lakeshore Road/ Ferguson Avenue to the east, which provides north-south connection to the Community of New Liskeard. There are sidewalks provided on both sides of the roadway and on-street parking is allowed on both sides of the roadway. There are no overhead utilities along either side of the roadway. The posted speed-limit on Main Street is 50 km/hr.
- **Lakeshore Road/ Ferguson Avenue** is an urban two-lane north-south roadway. It is classified as an Arterial Road north of Main Street and as a Local Road, south of Main Street within Haileybury as per City's Official Plan (2015). Lakeshore Road/Ferguson Avenue provides a connection to Highway 65 to the north and Main Street to the south. There are sidewalks and on-street parking on both sides of the roadway. The posted speed-limit on Lakeshore Road/ Ferguson Avenue is 50 km/hr.

6.1.2 Existing Lane Configuration

In New Liskeard there are three signalized intersections at Whitewood Avenue and Edith Street, Whitewood Avenue and Paget Street, and Whitewood Avenue and Armstrong Street. The remaining intersections along Whitewood are mostly stop-controlled.

In Haileybury all four major intersections are stop-controlled.

Figure 6-1 and **Figure 6-2** show the current lane configurations and types of intersection controls used in New Liskeard and in Haileybury, respectively.

Figure 6-1: New Liskeard Existing Lane Configuration & Intersection Control

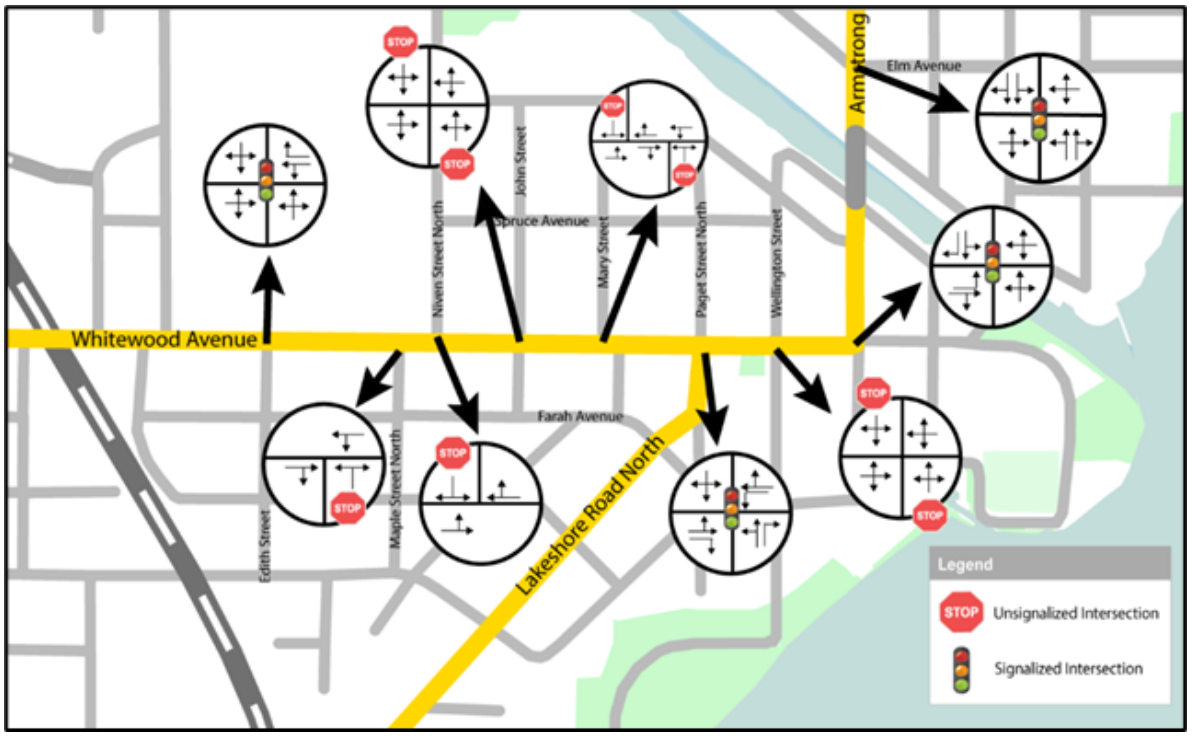
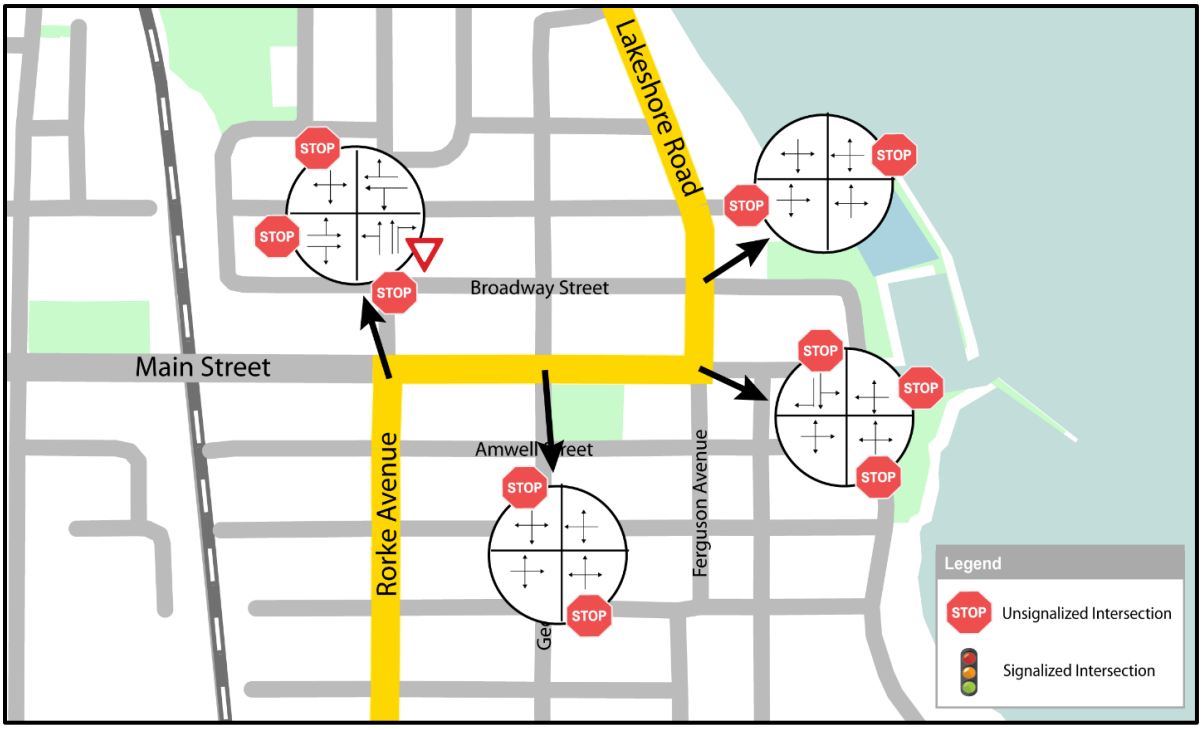


Figure 6-2: Haileybury Existing Lane Configuration & Intersection Control



6.1.3 Typical Roadway Cross-Sections

The typical cross-section for the existing right-of-way (ROW) for major study roads in Haileybury and New Liskeard, are depicted in **Figure 6-3**, **Figure 6-4**, **Figure 6-5, and Figure 6-6**.

These figures illustrate the typical right-of-way widths and elements of the key arterial roadways, which generally have allocated space for on-street parking on both sides, sidewalks, and no dedicated bike lanes, consequently giving priority to vehicular through-traffic over pedestrians.

Figure 6-3: Typical Cross-Section - Ferguson Avenue

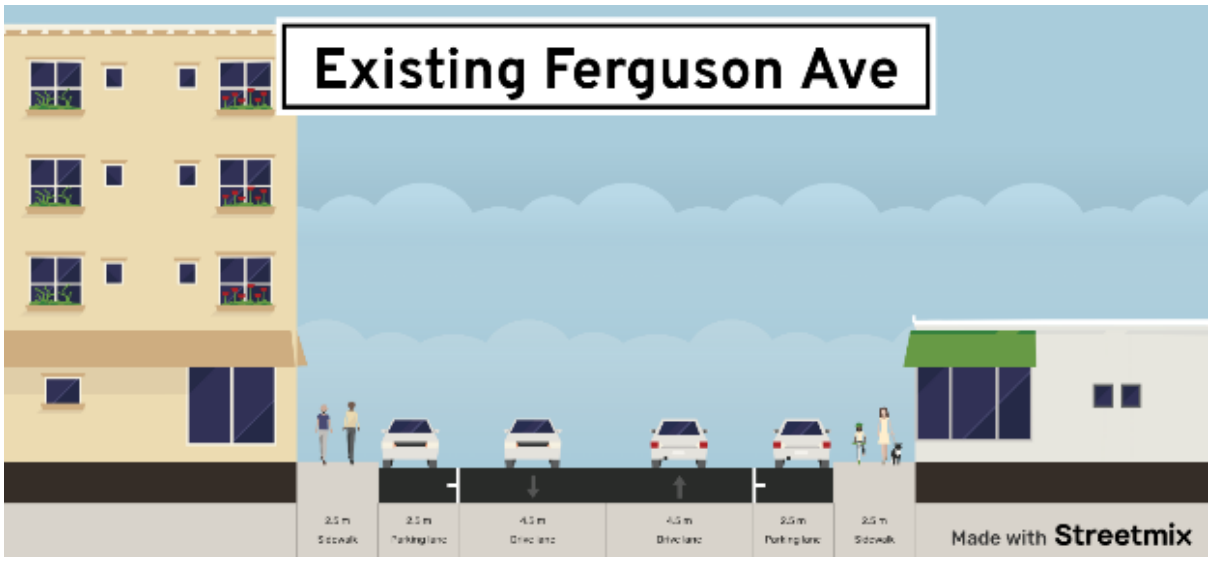


Figure 6-4: Typical Cross-Section – Main Street

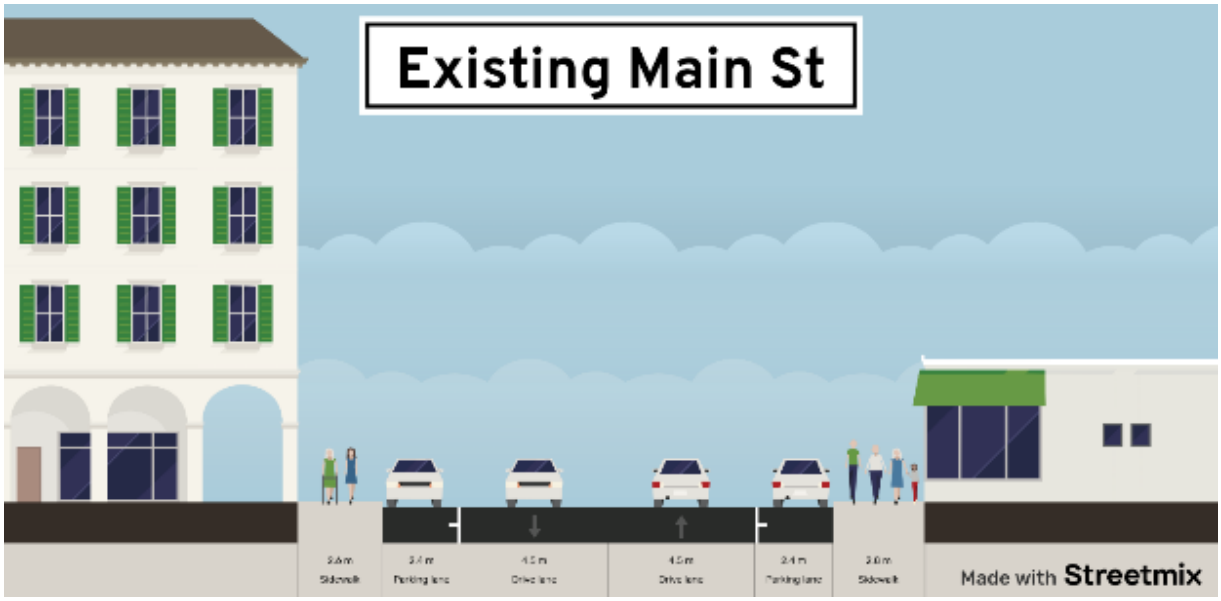


Figure 6-5: Typical Cross-Section – Whitewood Avenue

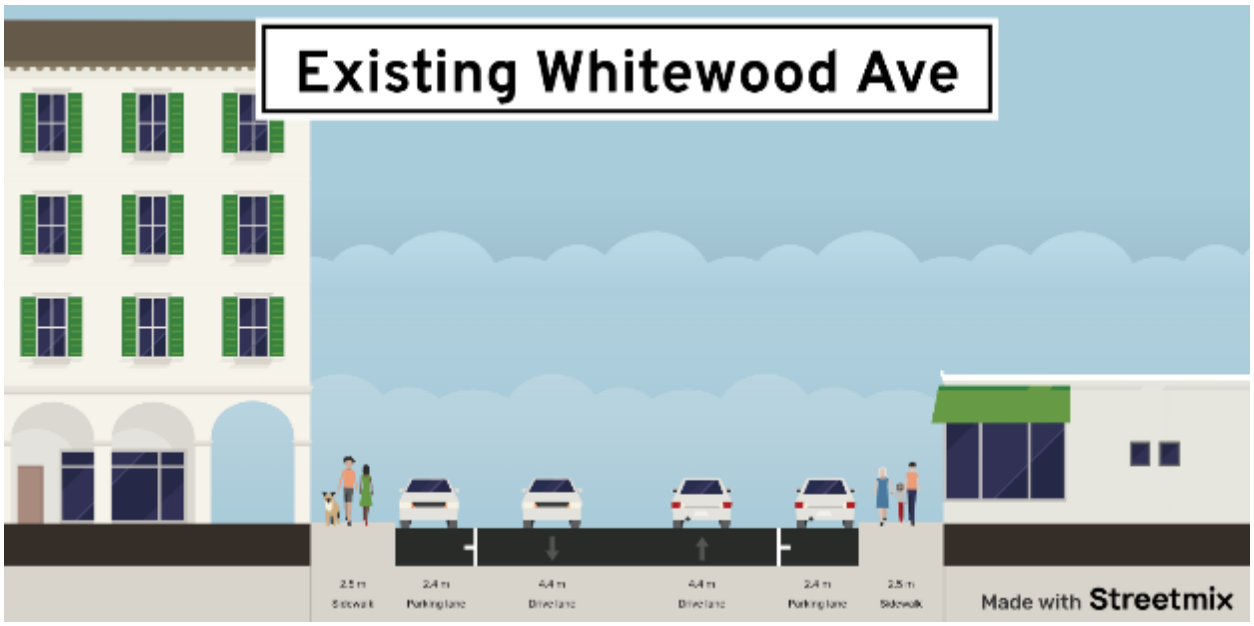
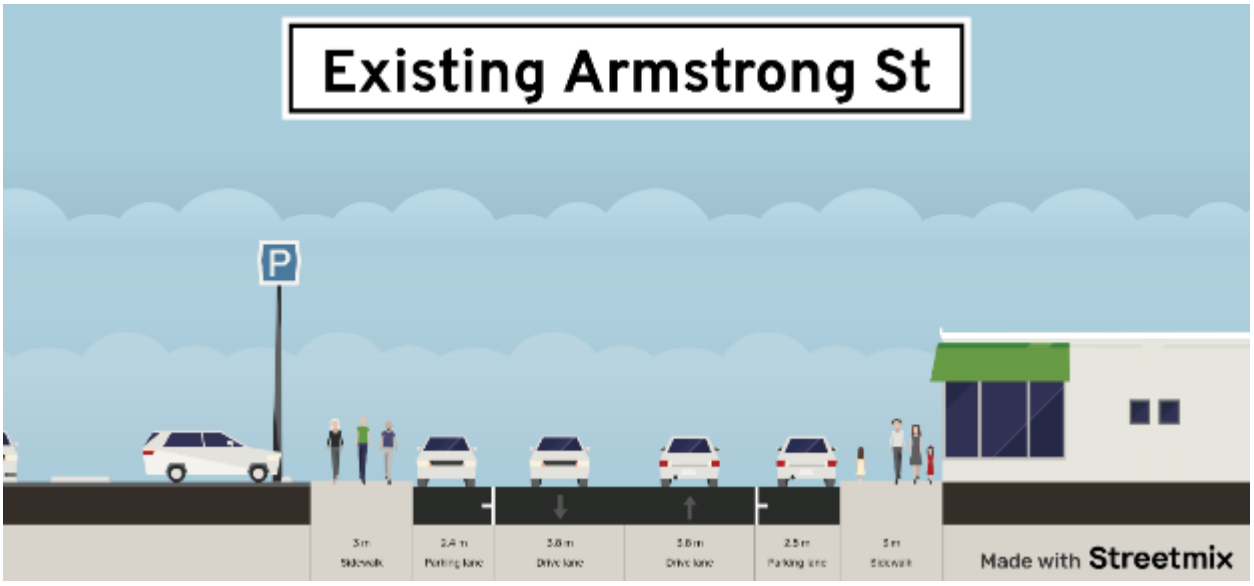


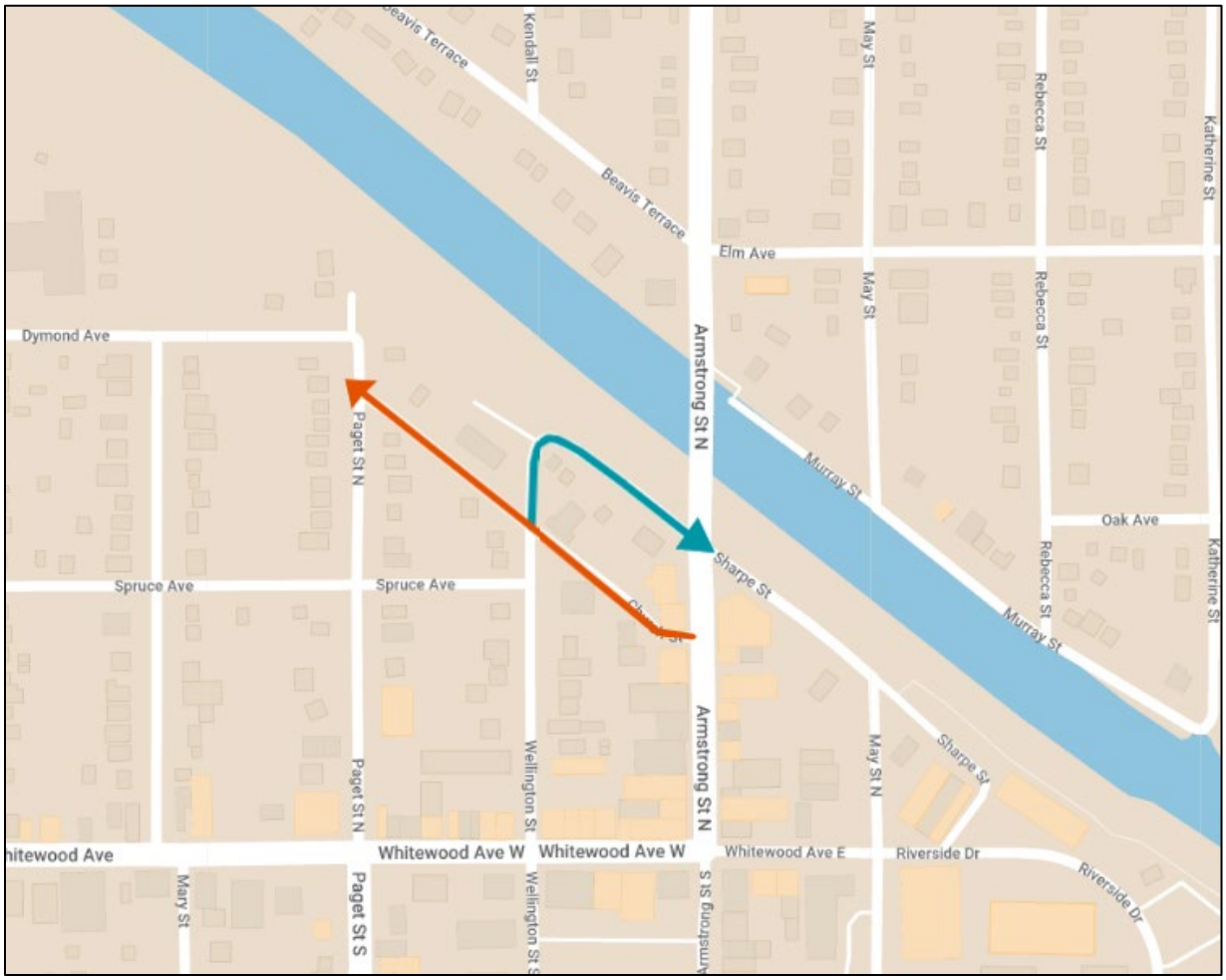
Figure 6-6: Typical Cross-Section – Armstrong Street



6.1.4 One-way Streets Review

There are currently three one-way streets across the two downtown cores: two in New Liskeard, connecting to and from Armstrong Street (**Figure 6-7**), and one in Haileybury, connecting Blackwall Street to Cecil Street (**Figure 6-8**).

Figure 6-7: One-way Streets in New Liskeard



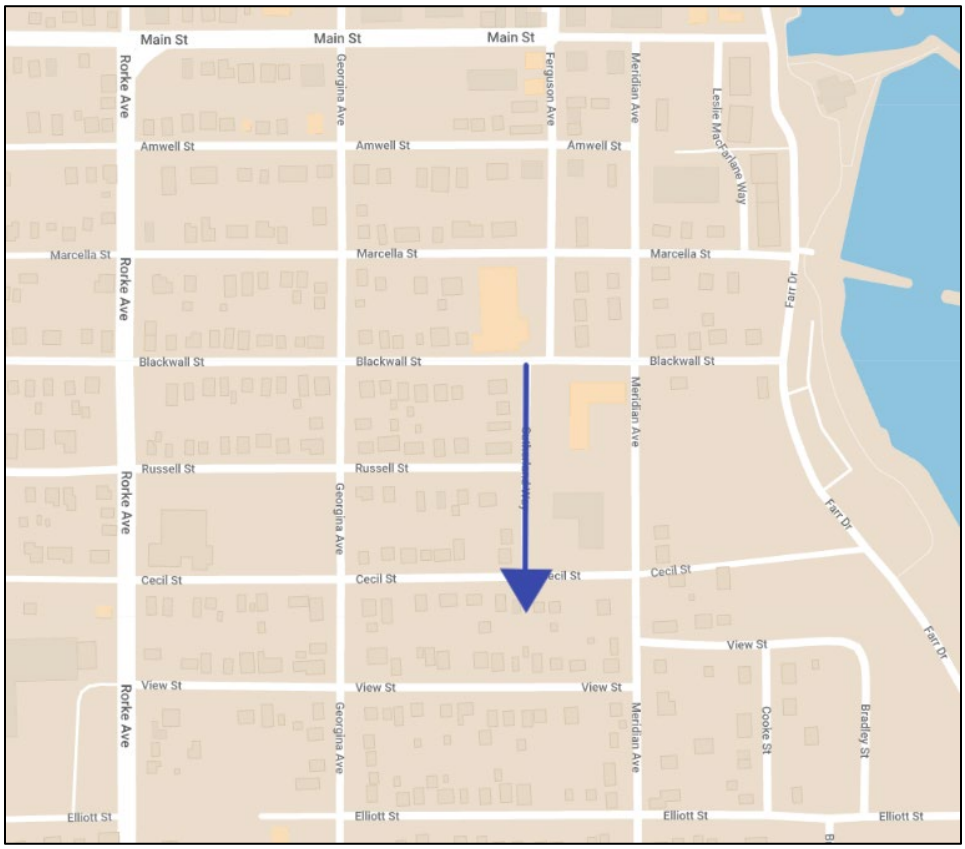
In New Liskeard, Church Street, and portions of Wellington Street/Sharpe Street, located just south of the Wabi River, exist as one-way streets and provide residential access to and from Armstrong Street, as illustrated in **Figure 6-7**.

Church Street has one-way access from Armstrong Street towards Paget Street, and it consists of a tight right turn for southbound vehicles travelling on Armstrong Street. Intersection line-of-sight analysis was conducted to assess feasibility of reversing the one-way travel direction on Church Street, and it was understood that the 3-storey building located on the north side of Church Street would obstruct sight lines – making it dangerous for vehicles to turn onto Armstrong Street. Closing off the Church Street access from Armstrong Street would also not be appropriate as the roadway currently only has one lane of travel. As a result, no changes to travel are recommended along Church Street. The line-of-sight analysis can be found in **Appendix F**.

The portion of Wellington Street/Sharpe Street currently supports one-way, eastbound travel towards Armstrong Street. TYLin has noted concerns from the City regarding potential line-of-sight obstruction at the Sharpe Street intersection with Armstrong Street and desire to assess the resulting effects of reversing the one-way direction of travel. As a result, line-of-sight analysis was conducted on the one-way portion of Sharpe Street towards Armstrong Street and no sightline issues for eastbound vehicles were found. The line-of-sight analysis can be found on **Appendix F**. Furthermore, as discussed in **Section 7** of this report, the combined resulting effects of: lane reduction on the Armstrong Street bridge crossing, curb extensions on the Armstrong Street and Sharpe Street intersection, and bikes lanes along Armstrong Street will further enhance road safety at this location.

It is recommended that the City install a stop bar along with a crosswalk on Sharpe Street to enforce the stop control and to provide a better north-south crossing to pedestrians, respectively. The City should continue to monitor road safety at this intersection following the implementation of recommended infrastructure to assess future traffic operations and safety characteristics.

Figure 6-8: One-way Street in Haileybury



In Haileybury, the existing one-way path is Sutherland Way, which limits traffic to southbound trips only. It currently provides access to three residential driveways and pedestrian access to the local church on the eastern edge of the road, immediately south of the intersection with Russell Street. The portion of Sutherland Way between Russell Street and Cecil Street has on-street angled parking in front of the church property. The one-way traffic routing on this street allows for a safer and more practical use of the angled, on-street parking.

6.1.5 Network Connectivity

The two communities in the City are connected by one arterial road; Lakeshore Road. The distance between the two communities is about 8.5 kilometers, which can be travelled by driving in 10 minutes. There is also a bus route that services the two communities, both of which have a grid-like street pattern. Grid-like street pattern is known to be easy to navigate and convenient for road users. However, pedestrian connectivity can be challenging if there are a lot of gaps in the pedestrian facility network.

6.1.5.1 New Liskeard

The New Liskeard downtown core is within proximity to points of interests and general services, but the limited pedestrian crossing opportunities along the major corridors create a barrier for pedestrians, according to **Figure 6-9.** The pedestrian crossing gaps present a clear opportunity for improvement. A better active transportation facility means that the network is more attractive for residents to walk, to cycle, and to take public transport, especially for short trips. More pedestrian crosswalks uniformly distributed along the network means safer crossing opportunities and therefore an equitable environment for all road users. Other concepts can also be considered when improving the downtown core of the City. Continuous sidewalks could greatly improve the pedestrian experience in the downtown core.

The Armstrong Street bridge crossing over the Wabi River is the only direct vehicular access to the neighborhoods north of the crossing. This poses constraints for vehicular and active transportation travel in the case of potential closures. Narrow sidewalks and instances of speeding on this crossing further indicates a need for additional crossing passages or enhanced safety features. While a separate vehicular crossing can be evaluated, it should ne noted that there is a proposed pedestrian bridge over the Wabi river at Rebecca Street, which would allow for undisturbed active transportation travel and offer a safe river-crossing alternative for pedestrians and cyclists. This additional crossing has the potential of further bolstering road network connectivity through a connection with existing and proposed biking facilities.

Figure 6-9: Limited Pedestrian Crossing Opportunities – New Liskeard

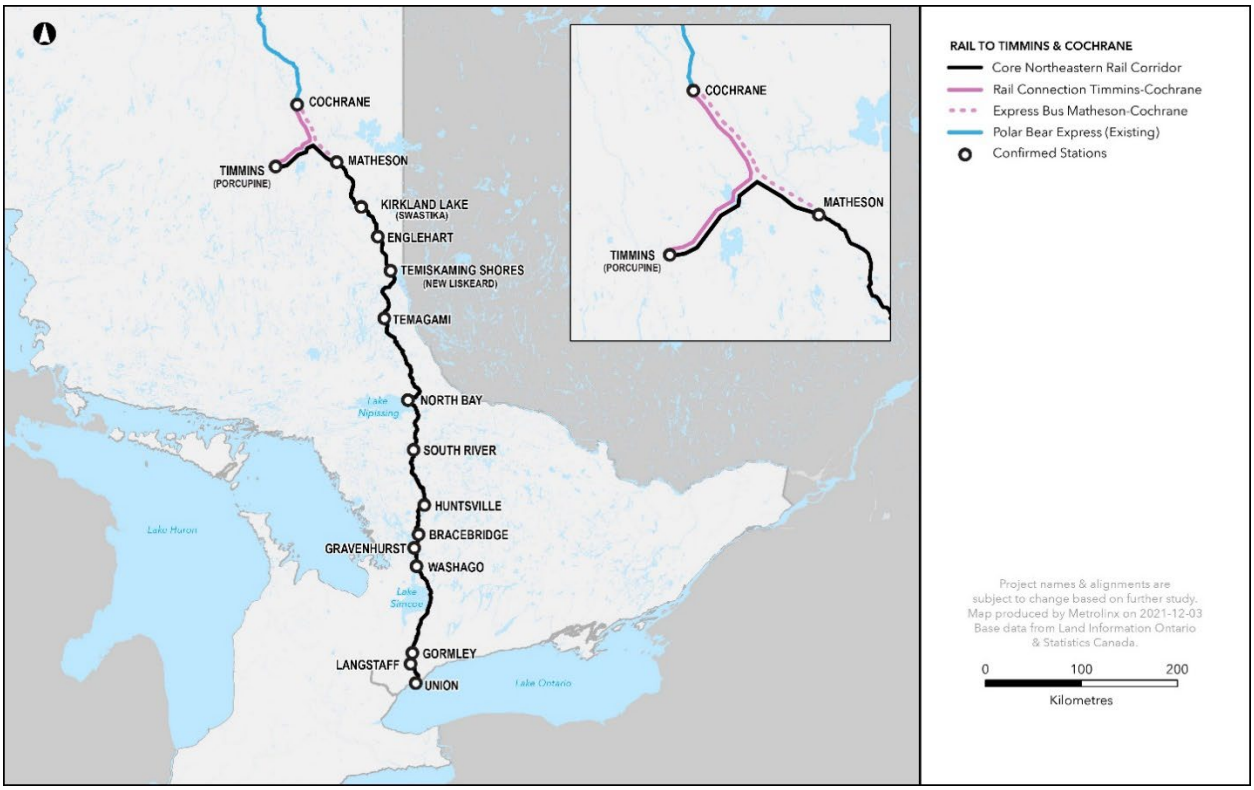
Figure 6-10: Arterial Roadway – New Liskeard

Rail Crossing

The Ontario Northland Railway corridor crosses through the City connecting Toronto to Cochrane (**Figure 6-11**) and creates two at-grade crossings in New Liskeard and one grade separated crossing on Main Street in Haileybury.

The two at-grade crossing locations at New Liskeard are located on Whitewood Avenue west of Jaffray Street and on Broadwood Avenue west of Edith Street. Both major east-west roadways play a fundamental role to the surrounding road network. As such, having at-grade rail crossing may negatively impact the vehicular traffic flow if the frequency of freight trains is high. If a train were to break down in the middle at these crossing locations, it could severely impact the transportation network, particular emergency operations.

Figure 6-11: Northlander Rail Corridor



6.1.5.2 Haileybury

In Haileybury, the major roadways are Main Street for east-west circulation, and Rorke Avenue for southbound and Ferguson / Lakeshore Road for northbound travel, as illustrated in **Figure 6-12.**

Figure 6-12: Arterial Roadways in Haileybury

Intersections

The Main Street at Rorke Avenue and Main Street at Ferguson Road intersections experience large traffic volumes. In addition, the channelized intersection on Main Street at Rorke Avenue presents issues for pedestrian crossings as the separated movement encourages higher speeds for right turning traffic. This intersection, in addition to Main Street at Lakeshore Road is currently a three-way stop-controlled intersection with a free flow movement on the westbound direction on Main Street at Rorke Avenue and on the eastbound direction on Main Street at Ferguson Road.

To improve safety for all road users and reduce speeding at these intersections, there is an opportunity to close the channelized movement at Rorke Avenue and to implement an all-way stop-control (4-way stops) at both Main Street intersections, namely at Rorke Avenue and Ferguson Road.

Notably, Main Street has a downward slope as it approaches the intersection with Ferguson Avenue, making it prone to higher speeds and increased braking distance. Implementing a 4-way stop control at the Main Street and Ferguson Avenue intersection, especially given the desire for increased active transportation, would provide a greater sense of safety to pedestrians using the crossing and cyclists using the future bike lanes on the west side of Rorke, as proposed in **Section 7.3.1**.

Pedestrian facilities

Pedestrian crossing gaps are also found to be an issue in Haileybury. According to

Figure 6-13 below, the pedestrian crossing opportunities are very limited and it is a long walk for pedestrian to find formal and safe crossings along the arterial roads. There is potential for new pedestrian crossings along **Main Street between Rorke Avenue and Lakeshore Road**.

A pedestrian crossover (PXO) previously existed at **Broadway Street and Ferguson Avenue** but was removed during a prior resurfacing of the intersection. The re-implementation of this PXO would greatly benefit local pedestrian safety and improvement circulation around businesses in the area and between the residential community and the waterfront.

Overall, a Complete Streets plan would improve road users' experience by increasing pedestrian safety and incentivizing residents to walk to their destinations. As a specific measure, the continuous sidewalk concept could be implemented as a measure in the City where the minor local roads connect to the major arterials. The continuous sidewalk concept is widely seen across the Netherlands and consists of the sidewalk to be continued at the same level through an intersection to the next block. With these measures in mind, the waterfront area, which is the major recreational destination in Haileybury, could become more attractive to residents once the area is designed to be more pedestrian friendly.

Figure 6-13: Limited Pedestrian Crossing Opportunities – Haileybury

In addition to pedestrian crossing concerns, there are some road connectivity opportunities that could be unlocked in Haileybury. Meridian Avenue provides good north-south access across the Haileybury, and with some intersection adjustments at the intersection with Main Street, could result in another alternative for connecting the southern part of the City with Lakeshore Road.

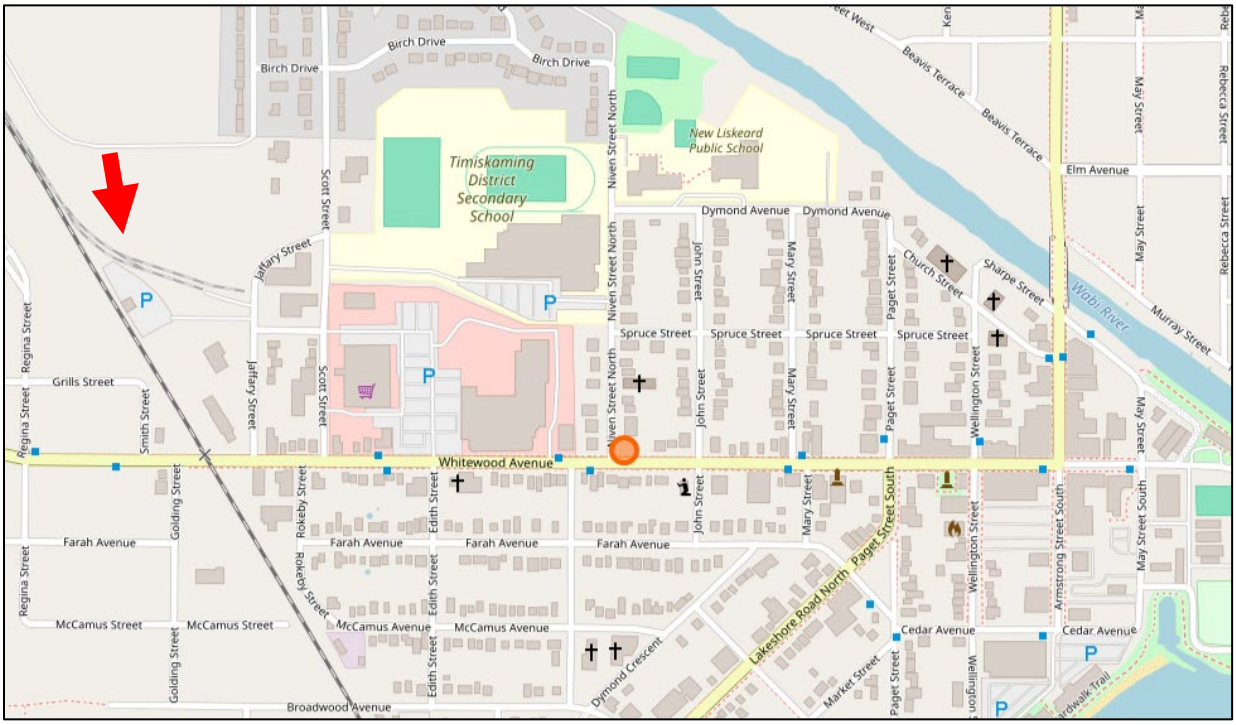
Rail Corridor

The only arterial road that has a railway crossing in Haileybury is on Main Street; however, since it is grade-separated, it is not considered to be a barrier for other modes of transportation. There are future opportunities with a special focus to the lands west of the rail which have few pedestrians and cycling connections. The nearest east-west roadway from Main Street is over 2 km away to the north outside of the downtown core and Albert Street at-grade railway crossing is 800 meters away to the south. The traffic demand on Main Street is a critical topic in Haileybury and it plays a very important role in the community as the major roadway corridor.

The railway only operates with freight trains and is important to the economy and way-of-life in northeastern Ontario. However, since 2012 there is no passenger rail service in operation between Haileybury and New Liskeard as the service was discontinued. With this gap, there is an opportunity for creating a passenger train service between the two downtown cores. There are already plans to resume the operation of the passenger service line in 2026, according to the Government of Ontario. The only train station identified in the City is located at Jaffray Street in New Liskeard (see **Figure 6-14**). It is important to ensure that the entire community is serviced by the future Northlander passenger train service. Therefore, it is recommended that further analysis be conducted to better understand the value of constructing a new railway stop in Haileybury and allows for inter-community transit. It should be noted that such as student would be dependent on Ontario Northland's passenger rail strategy and planning.

The potential of a new railway stop in Haileybury would bolder the overall transit connectivity in Temiskaming Shores. It is also important that the train station should be located near the central area of Haileybury and connectivity to public transport should also be ensured.

Figure 6-14: Location of the New Liskeard Rail Station



6.1.6 Heavy vehicle routes

The City's Traffic and Parking By-law No. 2012-101 shows the designated truck routes within the two downtown cores of New Liskeard and Haileybury, as indicated in **Figure 6-15** and **Figure 6-16**. In New Liskeard, there is a prohibited zone for heavy vehicle routes from Radley Hill Road to Lakeshore Road due to a steep incline on the road making it unsafe for goods movement. Due to this reason, the Emergency Detour Route has moved to Armstrong Street and Cedar Avenue instead.

Figure 6-15: Existing Heavy Vehicle Routes in New Liskeard

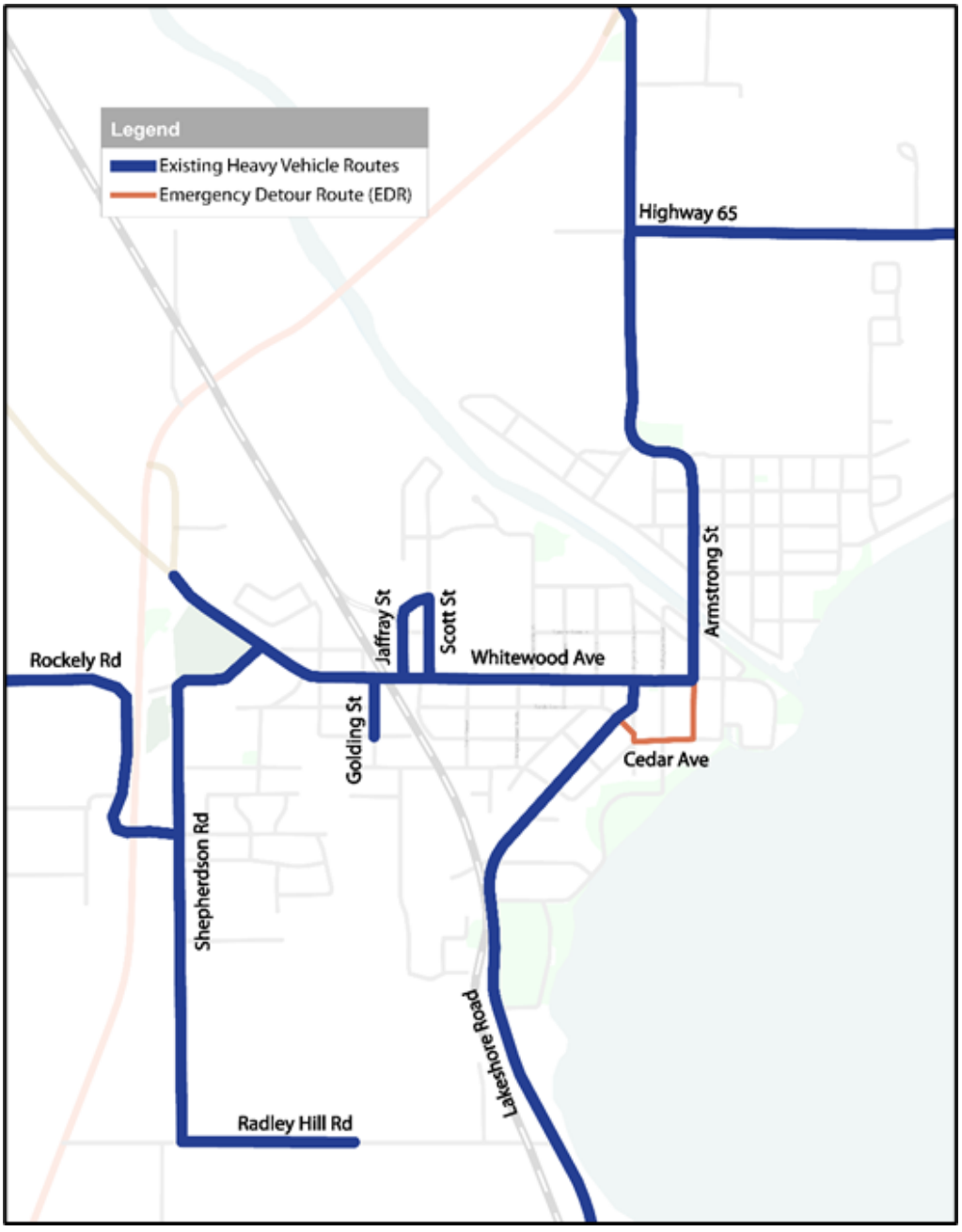
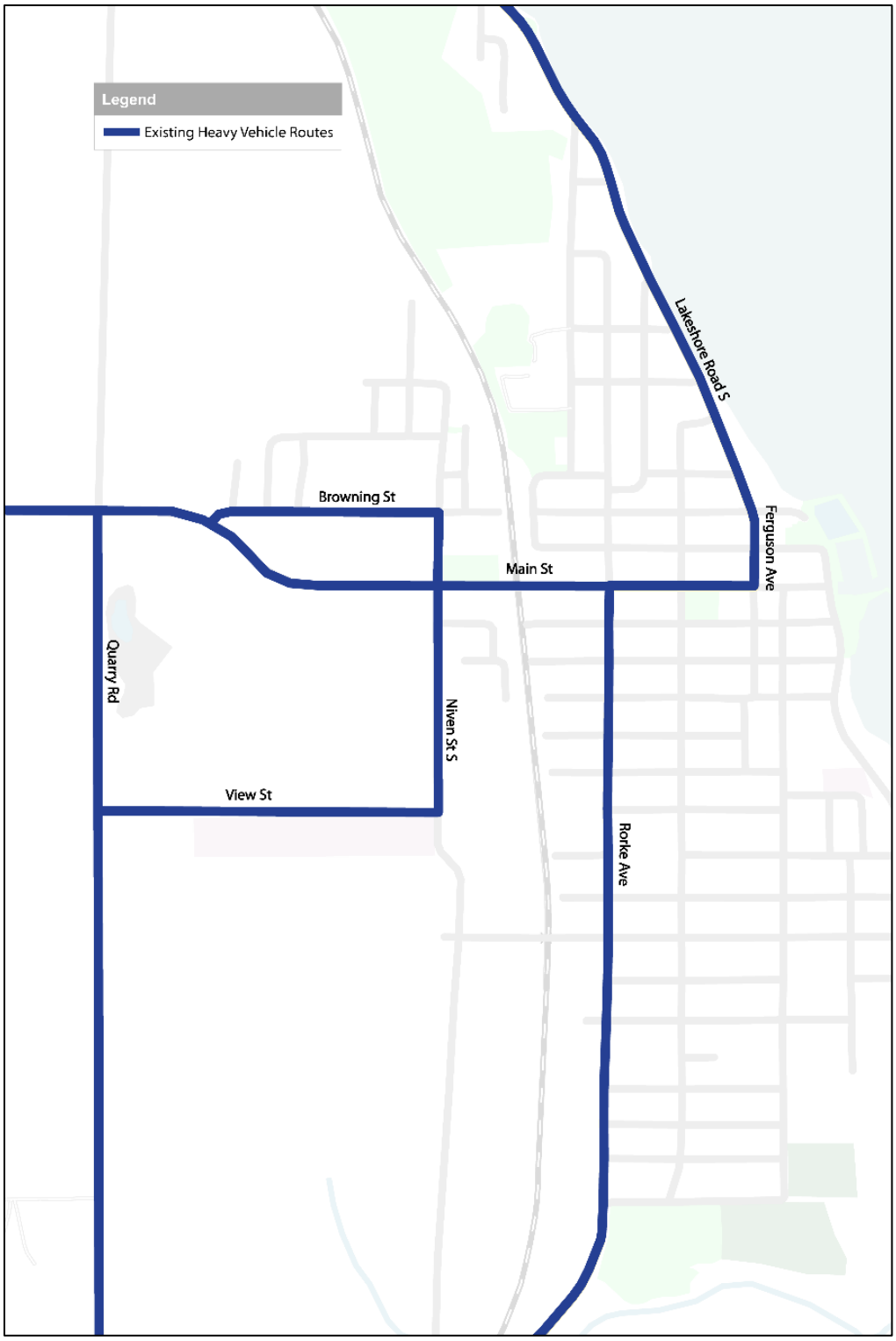


Figure 6-16: Existing Heavy Vehicle Routes in Haileybury



6.2 Existing Traffic Conditions

6.2.1 Traffic Operational Analysis Study Area

The traffic operational analysis focuses on the downtown cores of New Liskeard and Haileybury within the City. The settlement areas of New Liskeard and Haileybury are approximately 2 km and 7 km east of Trans-Canada Highway (Highway 11), respectively. These downtown cores are approximately 9 km apart and are connected via Lakeshore Road South running alongside Lake Temiskaming.

As described under methodology for traffic operations analysis in **Section 3.3**, based on pre-consultation with the City Staff, the existing year of 2023, 5-year horizon year of 2028, and a 20-year horizon year of 2043 were selected as study horizon years for traffic analysis.

The purpose of this traffic analysis is to evaluate the current traffic operations within the two downtown cores, determine the traffic growth and projected traffic volumes during 5-Year and 20-Year horizons; assess the impact of this traffic growth on the roadway network within the two downtown cores; and to evaluate any recommendations to improve traffic flow.

In New Liskeard, the traffic study area includes the following street corridors:

- Whitewood Avenue from Golding Street to Armstrong Street North
- Broadwood Avenue from Golding Street to Lakeshore Road North
- Lakeshore Road North from Broadwood Avenue to Whitewood Avenue
- Armstrong Street North from Whitewood Avenue to Beavis Terrace/Elm Avenue

The study area intersections in New Liskeard with their existing lane configurations and intersection control type are shown in **Figure 6-1**Figure in **Section 6.1.2**.

In Haileybury, the traffic study area includes following street corridors:

- Main Street from Rorke Avenue to Lakeshore Road South/Ferguson Avenue
- Lakeshore Road South from Main Street to Browning Street

The study area intersections in Haileybury with their existing lane configurations and intersection control type are shown in **Figure 6-2** in **Section 6.1.2**.

6.2.2 Origin Destination

Origin and destination data was obtained from TYLin's Big Data partner Urban SDK. The origin-destination trends in the City are based on data from March and April of 2023.

Figure 6-17 depicts the number of trips attracted per location in the City with darker red indicating a greater number of trips. It is evident that New Liskeard attracts the greatest number of trips, followed by Haileybury and Cobalt. Roads in the New Liskeard downtown core, Lakeshore Road, Rorke Avenue, Highway 11, and Highway 65 are the most heavily travelled routes.

Figure 6-17: Attracted Trips in the Temiskaming Region

Percentages of the total travel demand for all trips, either beginning or ending in the City are summarized in **Table 6-1.** Most trips are clustered within New Liskeard (18%), followed by trips from New Liskeard to Haileybury (12%) and trips within Haileybury (12%). Travel trends show that not many trips occur to or from Cobalt and Dymond. There are very few trips from outside the City coming into the City.

Table 6-1: Origin-Destination Trip Distribution

Origin	Destination	% Trips
New Liskeard	New Liskeard	0.18
New Liskeard	Haileybury	0.12
New Liskeard	Dymond	0.02
New Liskeard	Cobalt	0.03
New Liskeard	Outside Temiskaming	0.05
Haileybury	New Liskeard	0.03
Haileybury	Haileybury	0.12
Haileybury	Dymond	0.00
Haileybury	Cobalt	0.02
Haileybury	Outside Temiskaming	0.02
Dymond	New Liskeard	0.04
Dymond	Haileybury	0.01
Dymond	Dymond	0.07
Dymond	Cobalt	0.00
Dymond	Outside Temiskaming	0.03
Cobalt	New Liskeard	0.00
Cobalt	Haileybury	0.01
Cobalt	Dymond	0.00
Cobalt	Cobalt	0.04
Cobalt	Outside Temiskaming	0.02
Outside Temiskaming	New Liskeard	0.08
Outside Temiskaming	Haileybury	0.04
Outside Temiskaming	Dymond	0.04
Outside Temiskaming	Cobalt	0.03
Total		**1.00**

6.2.3 Existing Intersection Controls

Most intersections in the City are controlled by stop signs. As per the traffic operational analysis, and because of the low traffic volumes, the intersections in general have a good Level of Service, with minimal delays and significant remaining capacity on the network. There are five intersections operated by traffic signals, and they are all located in the New Liskeard community (See **Figure 6-1** in **Section 6.1.2**). They are:

- Whitewood Avenue at Edith Street
- Whitewood Avenue at Paget Street
- Whitewood Avenue at Armstrong Street
- Armstrong Street at Elm Avenue/Beavis Terrace
- Lakeshore Road North at Broadwood Avenue

Most of the signalized intersections (3 out of 5) are located along Whitewood Avenue, which is a major Arterial Road in the City, and one signal across the Armstrong Street bridge at Armstrong Street and Elm Avenue/Beavis Terrace. Intersections along Local streets are entirely controlled by stop signs as per **Figure 6-2** in **Section 6.1.2**, which show the intersection control types (stop-controlled and signalized) in Haileybury.

6.2.4 Existing 2023 Intersection Operational Analysis

The traffic operations analysis identifies how well the intersections are operating. The analysis contained in this report utilized the Highway Capacity Manual (HCM) 2000 methodology within the Synchro 11 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. The analysis is based on 4-hour Turning Movement Counts (TMCs) that were collected for all study intersections in Haileybury on June 16, 2023, and in New Liskeard on June 26, 2023. The signal timings for all the signalized intersections were obtained from the City. The original traffic counts are attached in **Appendix A**.

The analysis includes results for v/c ratios, delays, LOS and 95th percentile queue lengths. Critical intersections and movements have been identified, in addition to any queue length projected to exceed available turning lane storage at the 95th percentile. As per the MTO's General Guidelines, 'critical' movements are defined as a movement at a signalized intersection that has a v/c ratio of 0.85 or greater.

6.2.4.1 New Liskeard

As part of the traffic operations analysis, the following study area intersections were included in the Synchro analysis model:

- Whitewood Avenue at Golding Street
- Whitewood Avenue at Edith Street
- Whitewood Avenue at John Street
- Whitewood Avenue at Mary Street
- Whitewood Avenue at Paget Street
- Whitewood Avenue at Armstrong Street

- Broadwood Avenue at Golding Street
- Broadwood Avenue at Edith Street
- Broadwood Avenue at Lakeshore Road
- Lakeshore Road at Farah Avenue
- Armstrong Street at Church Street
- Armstrong Street at Sharpe Street
- Armstrong Street at Elm Avenue/Beavis Terrace

Table 6-2 summarizes the Synchro/HCM 2000 capacity for the study intersections during the weekday AM and PM peak hours under the existing (2023) traffic conditions.

Detailed Synchro reports are attached in **Appendix B**.

Table 6-2: Existing 2023 Conditions - Traffic Operations Analysis for New Liskeard

Intersection	Movement (Storage, m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Golding St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.23	0	A	0	0.23	0	A	0
	WBLTR	0.02	1	A	0	0.02	1	A	0
	NBLTR	0.10	12	B	2	0.09	13	B	2
Edith St/Parking Entrance & Whitewood Ave (Signalized)	*Overall*	0.36	8	A	-	0.40	9	A	-
	EBLT	0.37	5	A	27	0.36	7	A	29
	EBR (45)	0.01	4	A	0	0.03	5	A	2
	WBLT	0.24	5	A	17	0.34	7	A	27
	WBR (45)	0.04	4	A	3	0.07	5	A	5
	NBLTR	0.31	19	B	11	0.27	16	B	12
	SBLTR	0.36	19	B	11	0.53	18	B	21
John St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.01	1	A	0	0.01	1	A	0
	WBLTR	0.00	0	A	0	0.01	0	A	0
	NBLTR	0.02	12	B	1	0.04	13	B	1
	SBLTR	0.07	13	B	2	0.07	16	C	2
Mary St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.02	1	A	*1*	0.02	1	A	*1*
	WBLTR	0.00	0	A	*0*	0.01	1	A	*0*
	NBLTR	0.02	14	B	*1*	0.03	14	B	*1*
	SBLTR	0.06	14	B	*2*	0.06	14	B	*1*
Paget St & Whitewood Ave (Signalized)	*Overall*	0.29	14	B	-	0.32	14	B	-
	EBLT	0.34	13	B	*35*	0.38	13	B	44
	EBR (40)	0.03	10	A	*4*	0.03	10	A	5

Intersection	Movement (Storage, m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
	WBL	0.36	14	B	*21*	0.41	14	B	32
	WBTR (40)	0.33	12	B	*34*	0.30	12	B	34
	NBLT	0.18	18	B	*18*	0.19	18	B	18
	NBR	0.12	17	B	*11*	0.14	17	B	13
	SBLTR	0.13	17	B	*13*	0.12	17	B	13
Armstrong St & Whitewood Ave (Signalized)	*Overall*	0.36	16	B	-	0.52	17	B	-
	EBL	0.44	11	B	*39*	0.62	14	B	*68*
	EBTR (17)	0.08	7	A	*8*	0.07	7	A	*7*
	WBLTR	0.08	7	A	*9*	0.09	7	A	*10*
	NBLT	0.11	21	C	*12*	0.30	24	C	*28*
	NBR (15)	0.00	20	B	*0*	0.00	20	B	*0*
	SBLT	0.17	22	C	*18*	0.23	23	C	*23*
	SBR (20)	0.20	22	C	*16*	0.23	22	C	*17*
Broadwood Ave & Golding St (Stop-Controlled)	*Overall*	-	6	A	-	-	4	A	-
	EBLTR	0.00	6	A	*0*	0.00	0	A	*0*
	WBLTR	0.02	0	A	*0*	0.03	0	A	*0*
	SBLTR	0.05	9	A	*1*	0.04	9	A	*1*
Broadwood Ave & Edith St (Stop-Controlled)	*Overall*	-	2	A	-	-	4	A	-
	EBLTR	0.01	1	A	*0*	0.01	1	A	*0*
	WBLTR	0.05	0	A	*0*	0.05	0	A	*0*
	SBLTR	0.04	9	A	*1*	0.12	10	A	*3*
Lakeshore Rd N & Broadwood Ave (Stop-Controlled)	*Overall*	-	3	A	-	-	3	A	-
	EBLTR	0.12	12	B	*3*	0.24	13	B	*7*
	WBLTR	0.04	16	C	*1*	0.02	14	B	*1*
	NBLTR	0.06	2	A	*1*	0.05	2	A	*1*
	SBLTR	0.00	0	A	*0*	0.00	0	A	*0*
Lakeshore Rd N & Farah Ave (Stop-Controlled)	*Overall*	-	3	A	-	-	4	A	-
	EBLTR	0.07	12	B	*2*	0.11	13	B	*3*
	WBLTR	0.17	14	B	*5*	0.31	18	C	*10*
	NBLTR	0.00	0	A	*0*	0.01	0	A	*0*
	SBLTR	0.03	2	A	*1*	0.02	1	A	*1*
Armstrong St & Church St (Stop-Controlled)	*Overall*	-	0	A	-	-	0	A	-
	EBLR	0.00	0	A	*0*	0.00	0	A	*0*
	NBLT	0.01	0	A	*0*	0.01	0	A	*0*
	SBTR	0.16	0	A	*0*	0.19	0	A	*0*

Intersection	Movement (Storage, m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Armstrong St & Sharpe St (Stop-Controlled)	*Overall*	-	2	A	-	-	3	B	-
	EBLTR	0.09	20	C	*2*	0.31	37	**E**	*10*
	WBLR	0.07	11	B	*2*	0.21	14	B	*6*
	NBTR	0.21	0	A	*0*	0.34	0	A	*0*
	SBLT	0.06	3	A	*2*	0.04	2	A	*1*
	SBT	0.19	0	A	*0*	0.19	0	A	*0*
Armstrong St & Beavis Terr/Elm Ave (Signalized)	*Overall*	0.31	13	B	-	0.36	15	B	-
	EBLTR	0.02	6	A	*3*	0.02	8	A	*4*
	WBLTR	0.21	7	A	*12*	0.11	8	A	*9*
	NBLTR	0.50	14	B	*21*	0.70	16	B	*38*
	SBLTR	0.51	14	B	*22*	0.47	13	B	*25*

Under existing conditions, the study area intersections operate well and within capacity. All the movements operate with v/c ratios of 0.51 or less during the AM peak hour and 0.70 or less during the PM peak hour, indicating reserve capacity during both peak hours.

During the PM peak hour, the high volume of eastbound left-turning traffic at the intersection of Armstrong Street and Sharpe Street is causing a delay of 37 seconds in travel time at the eastbound left-turn movement, which is operating at LOS 'E'. However, the eastbound left-turn movement has a v/c ratio of 0.31 and operates well within capacity. Additionally, none of the 95th percentile queue lengths exceed beyond their available storage space, indicating no queue spillovers within the study area. Overall, the transportation network within the study area is functioning well, with low delays and low v/c ratios (no capacity issues) during both AM and PM peak hours.

The overall intersection LOS for all the study intersections during AM and PM peak hours in New Liskeard are shown in **Figure 6-18** and **Figure 6-19**, respectively.

Figure 6-18: Existing Conditions – AM Peak Overall Intersection LOS – New Liskeard

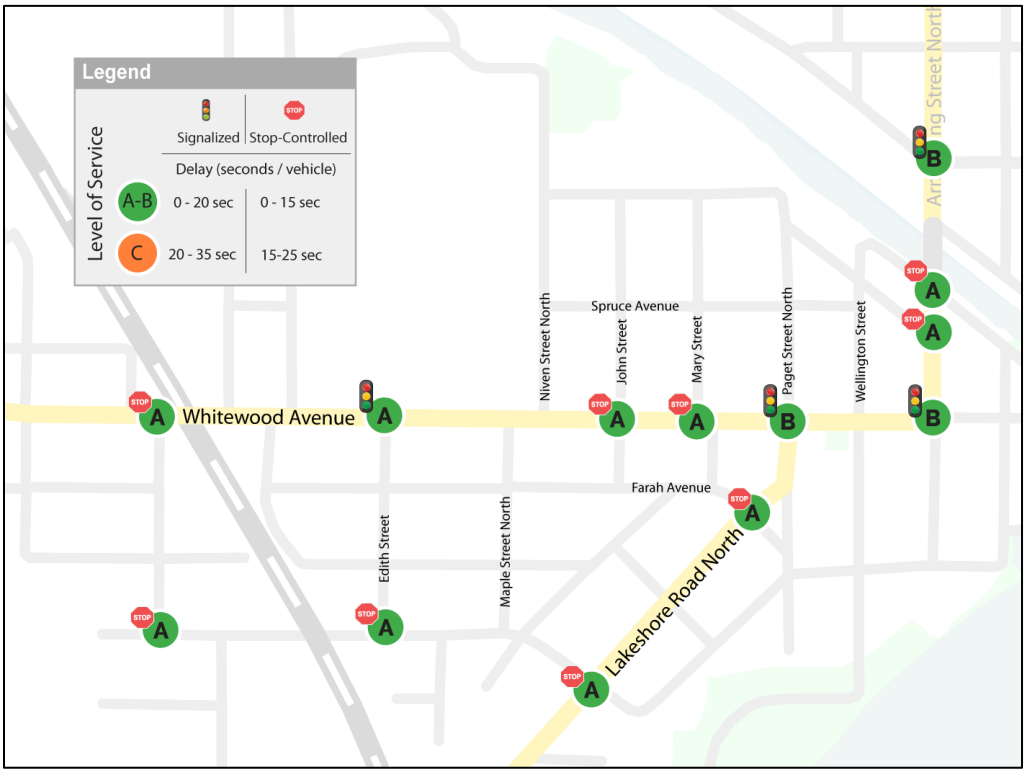
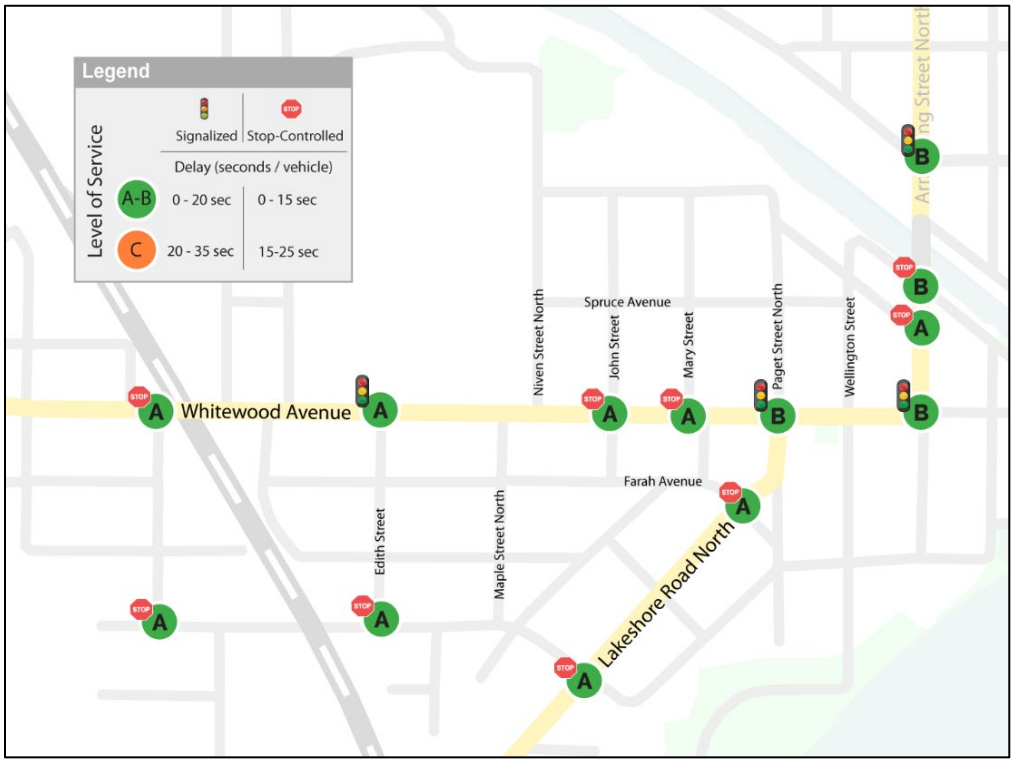


Figure 6-19: Existing Conditions – PM Peak Overall Intersection LOS – New Liskeard



6.2.4.2 Haileybury

Similar to New Liskeard, TYLin detailed the traffic operation at all turning movements at the study intersections in Haileybury as follows:

1. **Main Street at Rorke Avenue***
2. Main Street at Georgina Avenue
3. **Main Street at Ferguson Avenue***
4. Ferguson Avenue at Broadway Street
5. Ferguson Avenue/Lakeshore Road at Browning Street

Note(*): *Due to unconventional intersection signal-control (3-Way Stop-Control), the Synchro/HCM 2000 methodology could not be used to analyze the intersections of Main Street at Rorke Avenue and Main Street at Ferguson Avenue. Hence, traffic operations at these intersections have been analyzed as part of Arterial Operational Analysis in* ***Section 7.1.***

The traffic operations analysis results for the study area intersections under existing conditions in Haileybury are summarized in **Table 6-3** for weekday a.m. and p.m. peak hours.

Table 6-3: Existing 2023 Conditions - Traffic Operations Analysis for Haileybury

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
	(Storage m)	V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Main St & Georgina Ave (Stop-Controlled)	*Overall*	-	*2*	*A*	-	-	*2*	*A*	-
	EBLTR	0.00	0	A	0	0.00	0	A	0
	WBLTR	0.01	1	A	0	0.03	1	A	1
	NBLTR	0.12	11	B	3	0.08	11	B	2
	SBLTR	0.01	11	B	0	0.03	12	B	1
Ferguson Ave & Broadway St (Stop-Controlled)	*Overall*	-	*1*	*A*	-	-	*2*	*A*	-
	EBLTR	0.02	13	B	0	0.02	15	B	1
	WBLTR	0.05	11	B	1	0.10	12	B	3
	NBLTR	0.00	0	A	0	0.00	0	A	0
	SBLTR	0.02	1	A	0	0.02	1	A	1
Ferguson Ave/Lakeshore Rd & Browning St (Stop-Controlled)	*Overall*	-	*10*	*A*	-	-	*10*	*A*	-
	EBLTR	0.02	9	A	-	0.01	8	A	-
	WBLTR	0.01	9	A	-	0.02	8	A	-
	NBLTR	0.39	10	A	-	0.36	10	A	-
	SBLTR	0.26	9	A	-	0.42	10	B	-

Under existing conditions, the study area intersections in Haileybury operate well and within capacity. All the movements operate with v/c ratios of 0.39 or less during the AM peak hour and 0.42 or less during the PM peak hour, indicating reserve capacity during both peak hours.

The overall intersection LOS for all the study intersections during AM and PM peak hours in Haileybury are shown in **Figure 6-20** and **Figure 6-21**, respectively.

Figure 6-20: Existing Conditions – AM Peak Overall Intersection LOS – Haileybury

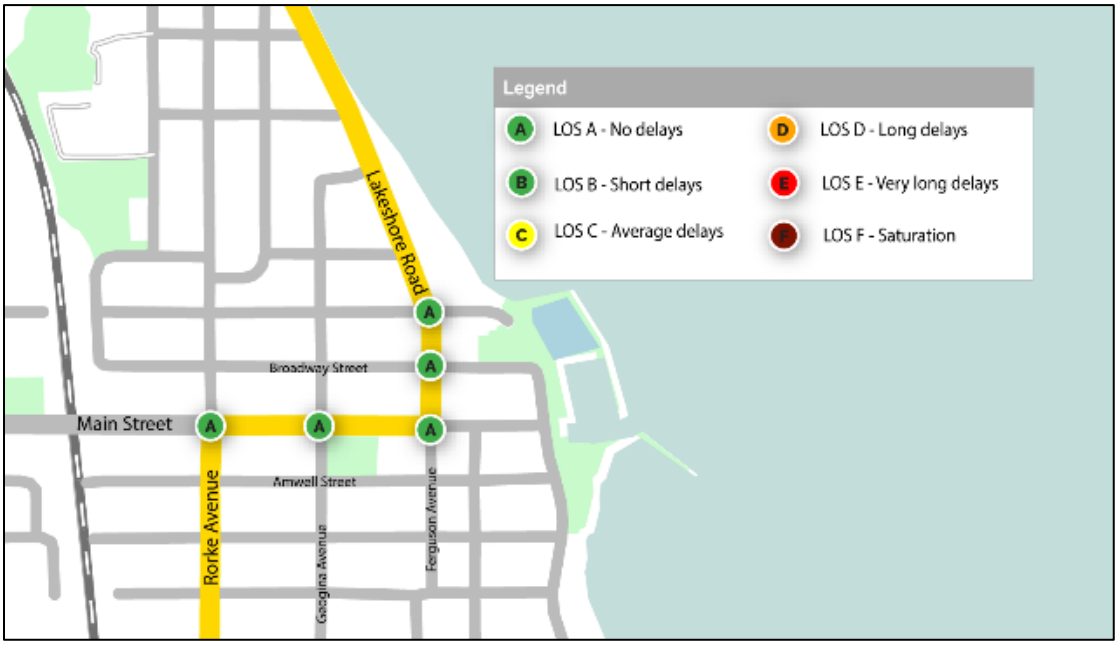
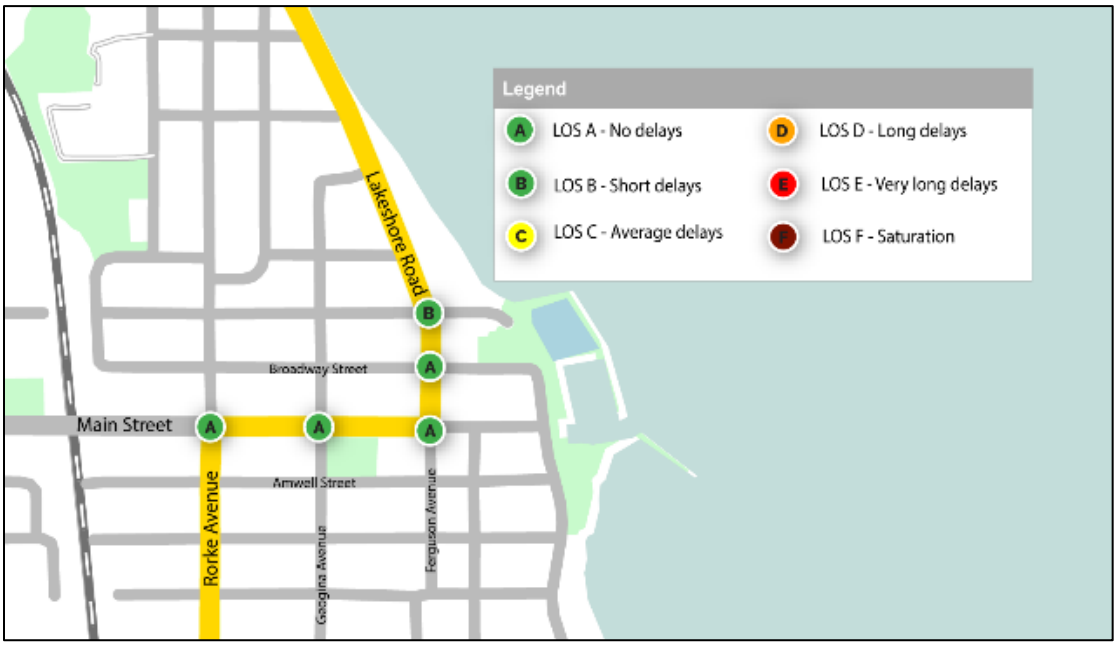


Figure 6-21: Existing Conditions – PM Peak Overall Intersection LOS in Haileybury



6.2.5 Existing 2023 Arterial Operational Analysis

Arterial operational analysis evaluates how a street corridor is operating as a whole and determines the average speed, travel time, and delay incurred by vehicles as they traverse through different intersections along the corridor.

There are two intersections in Haileybury identified earlier in **Section 6.2.4** (Main Street at Rorke Avenue and Main Street at Ferguson Avenue) which have unconventional signal-control. As such SimTraffic (version 11) was chosen as the analysis tool to evaluate Arterial Operations across the City. SimTraffic is a microscopic simulation tool which is part of the Synchro package and can be used to model a wide variety of traffic controls including intersections with unconventional geometries or signal controls. Each vehicle in the traffic system is individually tracked through the model and operational measures of effectiveness are collected on every vehicle during each 0.1-second interval of the simulation. Unlike Synchro, SimTraffic measures the full impact of queuing and blocking. The SimTraffic microsimulation software was utilized by using the following parameters: 10 minutes seeding time, one-hour recording, and 5 simulation runs.

6.2.5.1 New Liskeard

The following street corridors were identified in New Liskeard for arterial operational analysis:

- Whitewood Avenue
- Lakeshore Road North
- Armstrong Street North

The arterial operational analysis results for the corridors identified in New Liskeard are summarized in **Table 6-4** for weekday AM and PM peak hours under the existing traffic conditions. The detailed SimTraffic reports are attached in **Appendix B**.

Table 6-4 Existing 2023 Conditions - Arterial Operational Analysis for New Liskeard

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
AM	Whitewood Avenue	Eastbound	Golding Street	Armstrong Street	26	113	1.3	42
		Westbound	Armstrong Street	Golding Street	28	117	1.3	40
	Lakeshore Road N	Northbound	Broadwood Avenue	Whitewood Avenue	16	74	0.7	32
		Southbound	Whitewood Avenue	Broadwood Avenue	21	77	0.7	31

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
	Armstrong Street	Northbound	Whitewood Avenue	Elm Avenue	34	74	0.6	28
		Southbound	Elm Avenue	Whitewood Avenue	40	79	0.5	25
PM	Whitewood Avenue	Eastbound	Golding Street	Armstrong Street	30	118	1.3	41
		Westbound	Armstrong Street	Golding Street	32	120	1.3	40
	Lakeshore Road N	Northbound	Broadwood Avenue	Whitewood Avenue	15	73	0.7	33
		Southbound	Whitewood Avenue	Broadwood Avenue	21	79	0.7	30
	Armstrong Street	Northbound	Whitewood Avenue	Elm Avenue	39	81	0.6	26
		Southbound	Elm Avenue	Whitewood Avenue	44	83	0.5	24

Under existing conditions, the maximum travel time within the study area on Whitewood Avenue is 120 seconds, on Lakeshore Road North is 79 seconds and on Armstrong Street North is 83 seconds. None of the intersections along the corridors analyzed cause significant delay to vehicles.

6.2.5.2 Haileybury

Similarly, following street corridors were identified in Haileybury for arterial operational analysis:

1. Main Street
2. Ferguson Avenue

The arterial operational analysis results for the corridors identified in Haileybury are summarized in for weekday AM and PM peak hours under the existing traffic conditions.

Table 6-5 Existing 2023 Conditions – Arterial Operational Analysis for Haileybury

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
AM	Main Street	Eastbound	Rorke Avenue	Ferguson Avenue	12	49	0.5	40
		Westbound	Ferguson Avenue	Rorke Avenue	9	39	0.5	47
	Ferguson Avenue	Northbound	Main Street	Browning Street	16	36	0.3	30
		Southbound	Browning Street	Main Street	17	39	0.3	29
PM	Main Street	Eastbound	Rorke Avenue	Ferguson Avenue	10	44	0.5	45
		Westbound	Ferguson Avenue	Rorke Avenue	11	44	0.5	42
	Ferguson Avenue	Northbound	Main Street	Browning Street	16	36	0.3	31
		Southbound	Browning Street	Main Street	17	38	0.3	29

Under existing conditions, the maximum travel time within the study area on Main Street is 49 seconds and on Ferguson Avenue is 39 seconds. None of the intersections along the corridors analyzed cause significant delay to vehicles.

Further, a visual analysis of SimTraffic operations was conducted for both downtown cores (New Liskeard and Haileybury) and no queue spillovers, spillbacks or lane-blockages were observed within the study area.

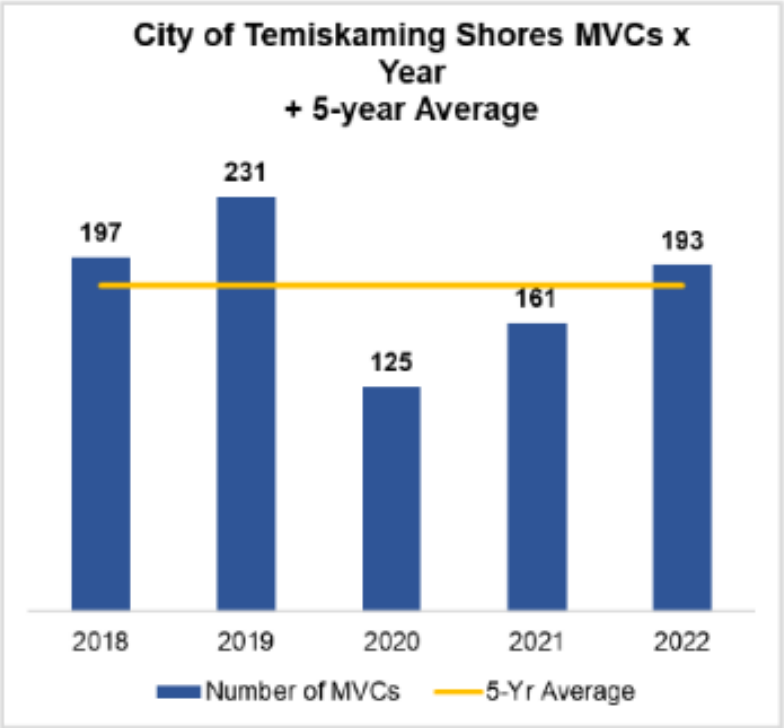
6.3 Road Safety Review

6.3.1 Collision Data Review

During the 5-year period, from year 2018 through 2022, the City of Temiskaming Shores saw a total of 907 reportable motor-vehicle-collisions (MVCs) with an average of 181 MVCs per year. The years 2020 and 2021 reported fewer MVCs than other years, most likely due to a reduced number of trips taken during the COVID-19 pandemic, as can be seen in **Figure 6-22**.

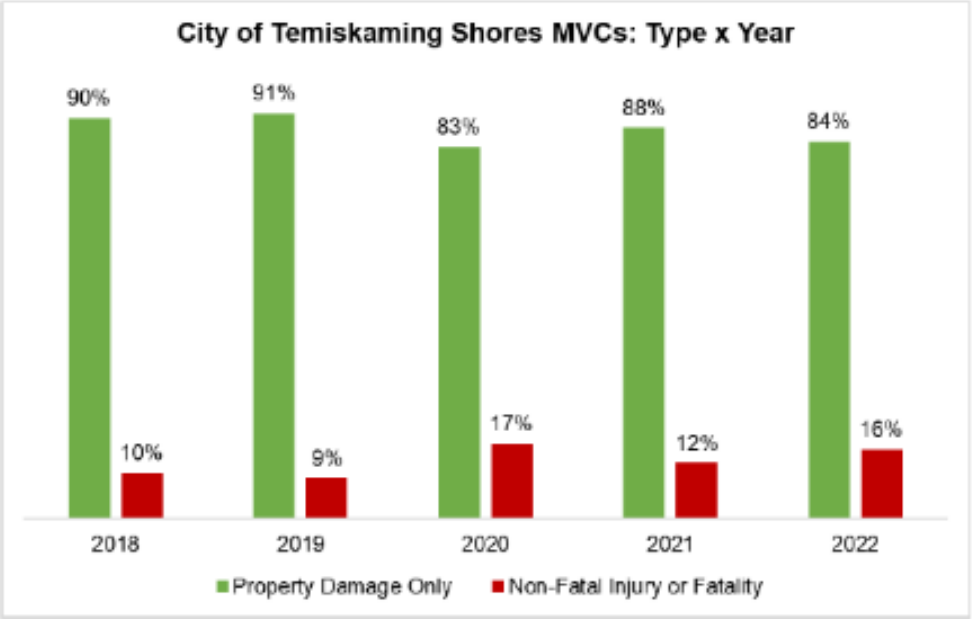
In total, 88% of the crashes (795 MVCs) resulted in property-damage-only (PDO), 12% of them (108 MVCs) resulted in non-fatal injuries, and 0.4% (4 MVCs) resulted in fatalities. In comparison, in Ontario, the fatality rate per 10,000 licensed drivers was 0.5% in 2020. However, there has been a recent decrease in PDO crashes and a steady increase in crashes involving injuries or fatalities, as depicted in **Figure 6-23**.

Figure 6-22: 5-year MVC Summary



source: Ontario Provincial Police

Figure 6-23: Collision Type



Source: Ontario Provincial Police

Figure 6-24 and **Figure 6-25** show the location and number of non-fatal crashes in the City between 2018 and 2022, overall collision heatmap, respectively. MVCs most often occurred along the heavily travelled areas of the City, including Highway 11 and Lakeshore Road. The stretch of Highway 11 between Highway 65 and Drive in Theatre Road, and Armstrong Street between Gray Road and the intersection of Highway 11 are high crash areas.

Lack of adequate pedestrian crossings, proper sidewalks, biking facilities, traffic control, proper street design and pavement markings, may be contributing factors to crashes in the City's downtown cores.

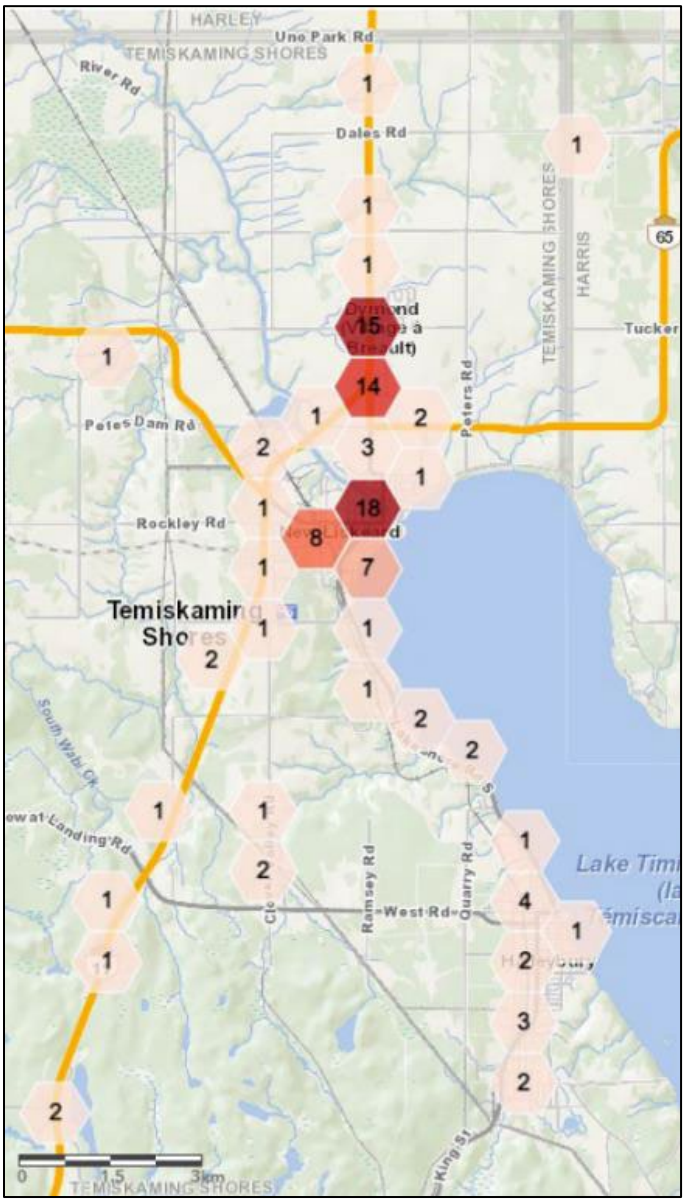
Safety Measure Considerations for Highway 11 between Tobler Road and Wabi River Bridge' report completed by the Timiskaming District Road Safety Coalition (April 2022), notes that Highway 11 is a key corridor for mobility for residents of Northern Ontario as well as a key truck route. It also noted that in the segment near Dymond, drivers (particularly of commercial vehicles) do not adjust their speed per the speed limit transition from 90km/h to 80 km/h. The report also cites anecdotal accounts from business owners and drivers that indicate that commercial vehicles occasionally jump the red signal heading south. Page 9 of the report notes that there have been numerous accounts of incidents of vehicles disregarding the traffic signals at the Walmart/Canadian Tire intersection as well as the Highway 65E intersection. The 'History of Safety Concerns' sections on Page 4 and 9 notes that residents have been concerned about speeding on this highway and there has been a history of advocacy from various groups demanding measures to lower speeds through this segment of the highway including a petition, letters to government officials, and meetings with various stakeholders, including the OPP.

Four fatal crashes occurred in Temiskaming between 2018 and 2022. **Figure 6-26** shows their location. None of them occurred in downtown New Liskeard or Haileybury.

On average, 11% of MVCs each year involve a commercial motor vehicle (CMV). **Figure 6-27** shows the percentage and numbers of collisions involving CMVs. The primary cause of 38% of MVCs were attributed to mistakes/errors made by drivers, such as improper turn, loss of control, failure to yield, etc. Another 27% were attributable to inattentive drivers, while 8.4% had 'speed-related' listed as the primary cause. Together, these three primary causes of MVCs account for 73% of all the MVCs in the 5-year period (see **Figure 6-28**).

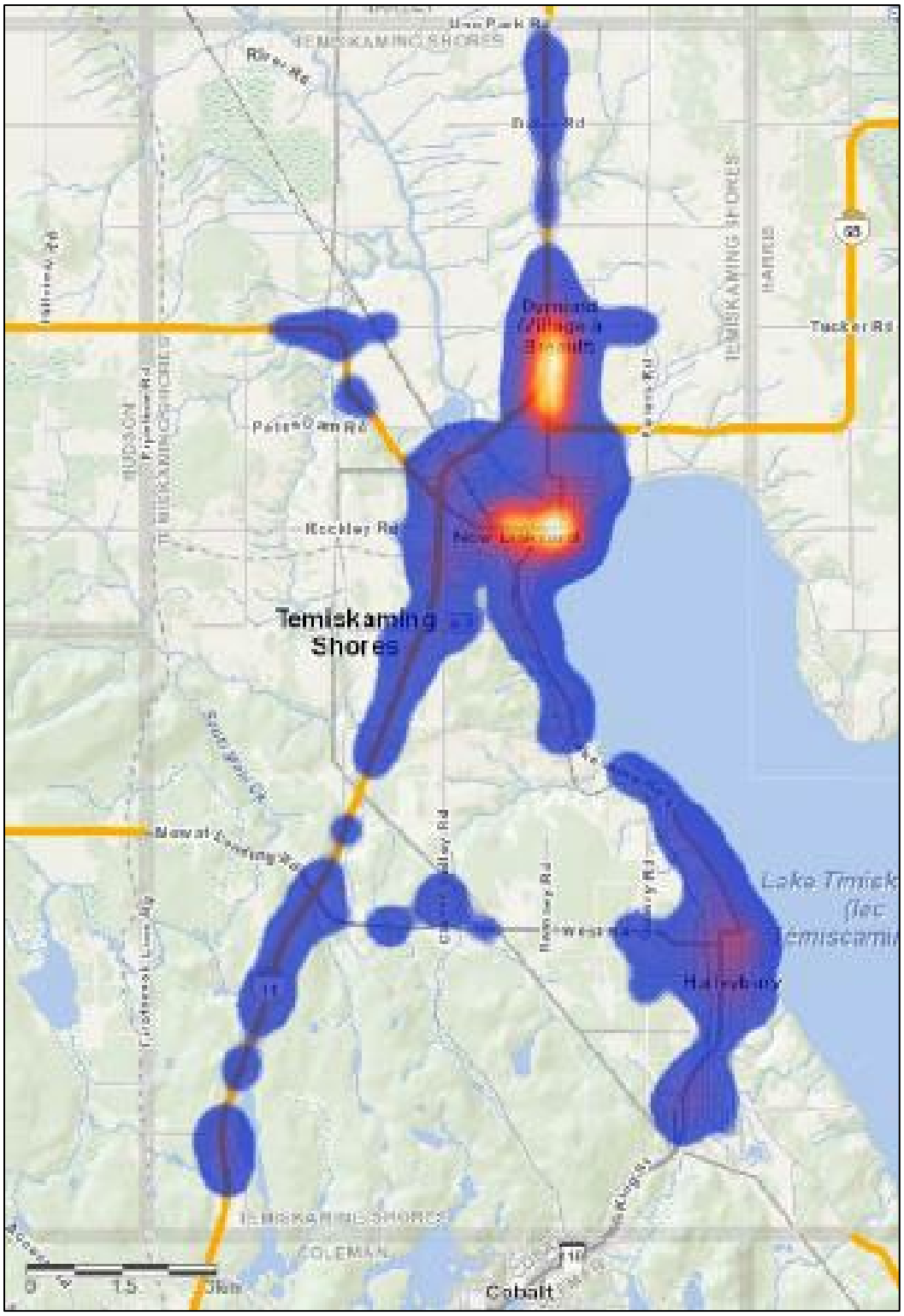
The frequency of MVCs varies by season in all years, except for 2022. Unlike the previous four years, 2022 experienced a more even distribution of MVCs across seasons. In the previous years, autumn and winter months had higher MVCs than spring and summer months, as shown in **Figure 6-29.**

Figure 6-24: Non-Fatal MVCs



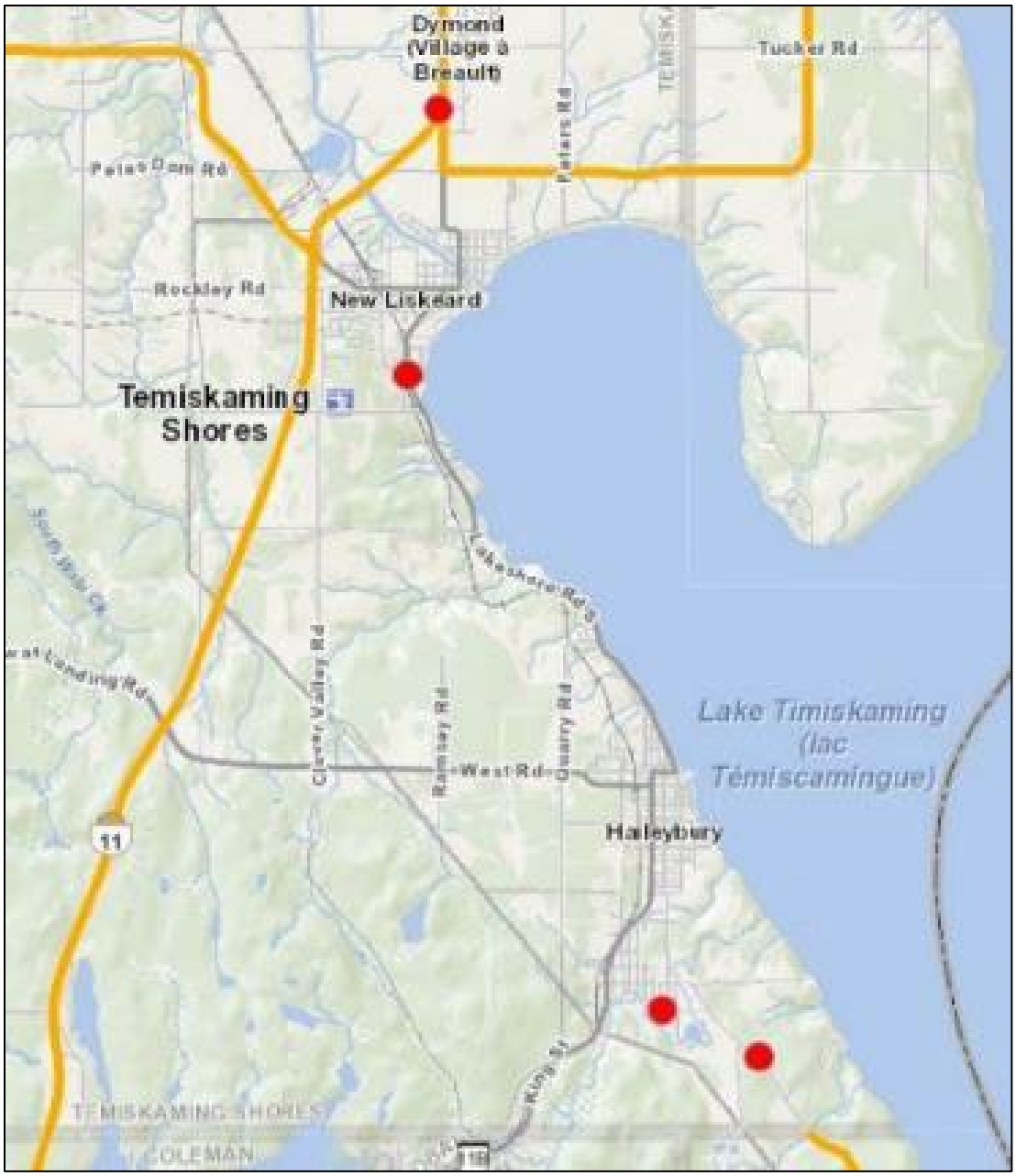
Source: Ontario Provincial Police

Figure 6-25: Collision Heat Map



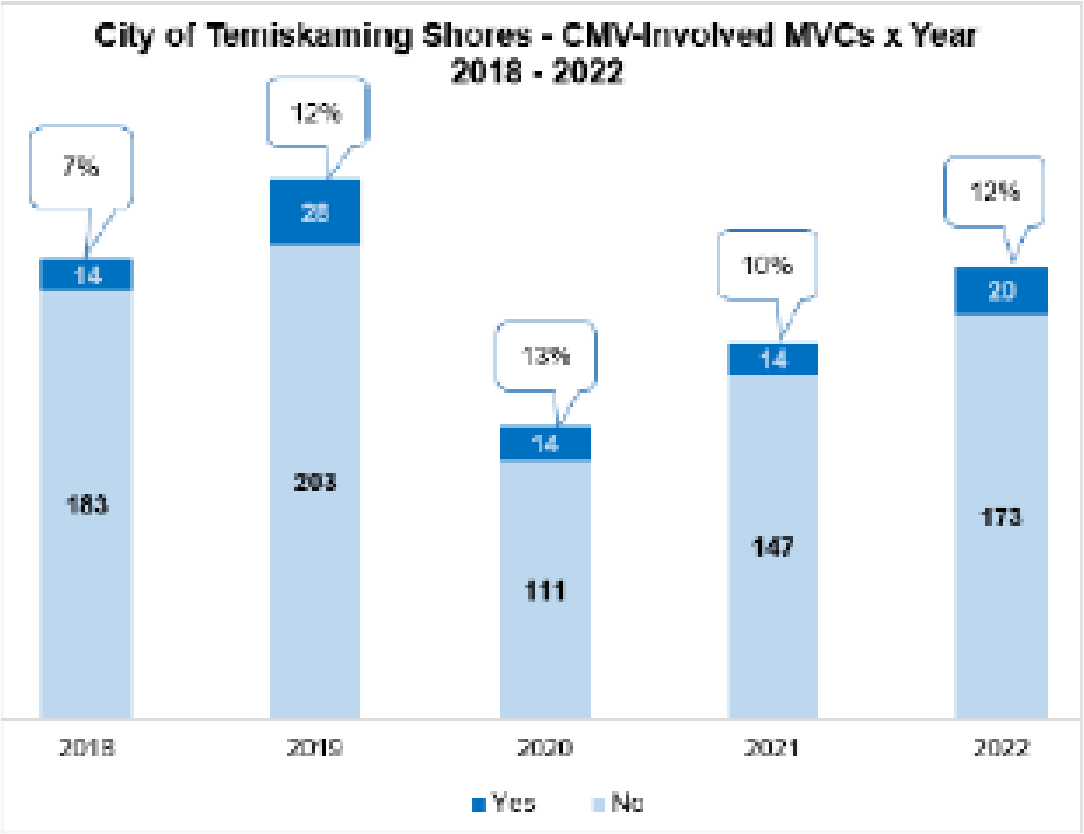
Source: Ontario Provincial Police

Figure 6-26: Location of Fatal MVCs



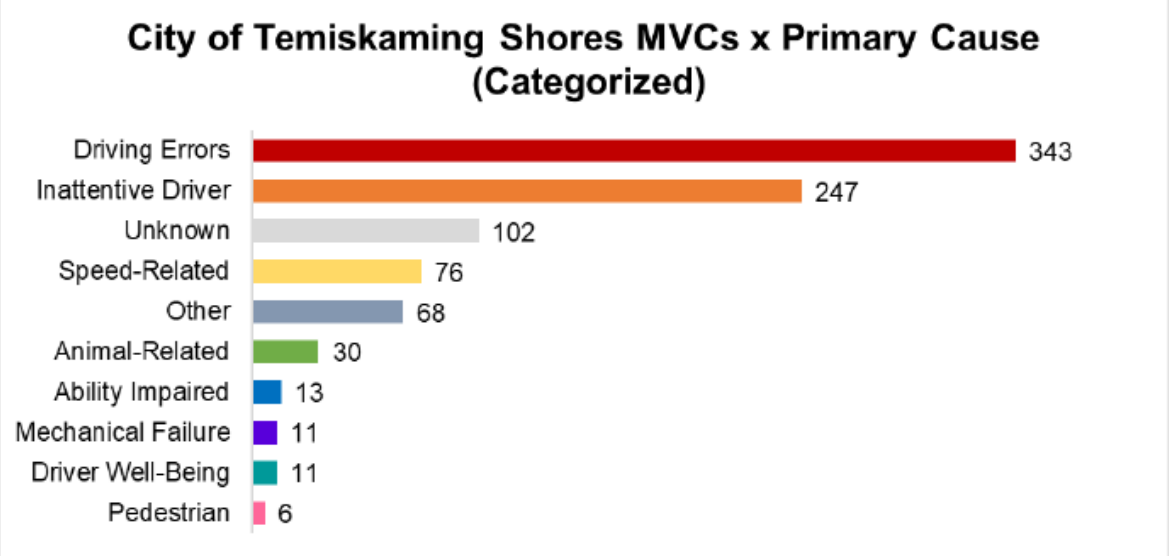
Source: Ontario Provincial Police

Figure 6-27: CMV-Involved MVCs



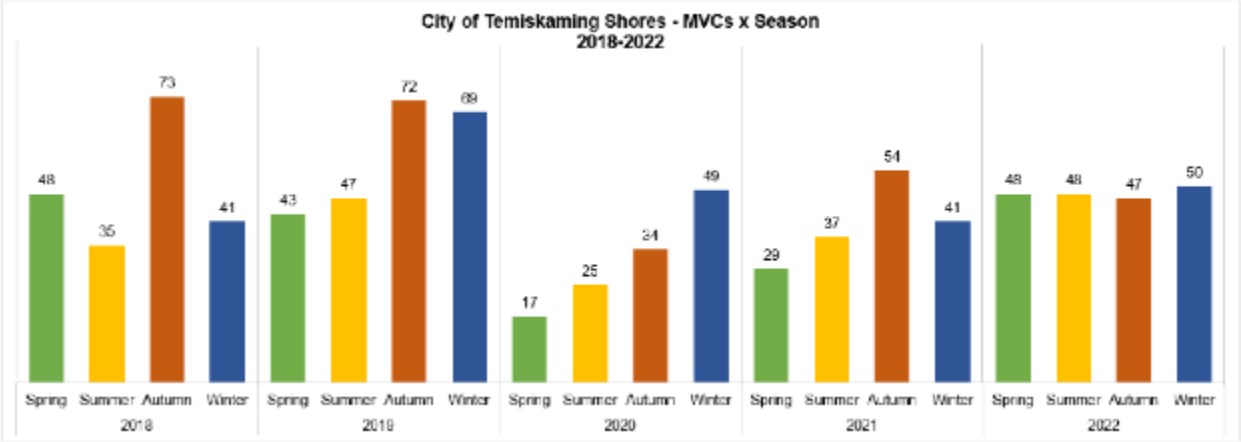
Source: Ontario Provincial Police

Figure 6-28: Primary Cause of Collisions



Source: Ontario Provincial Police

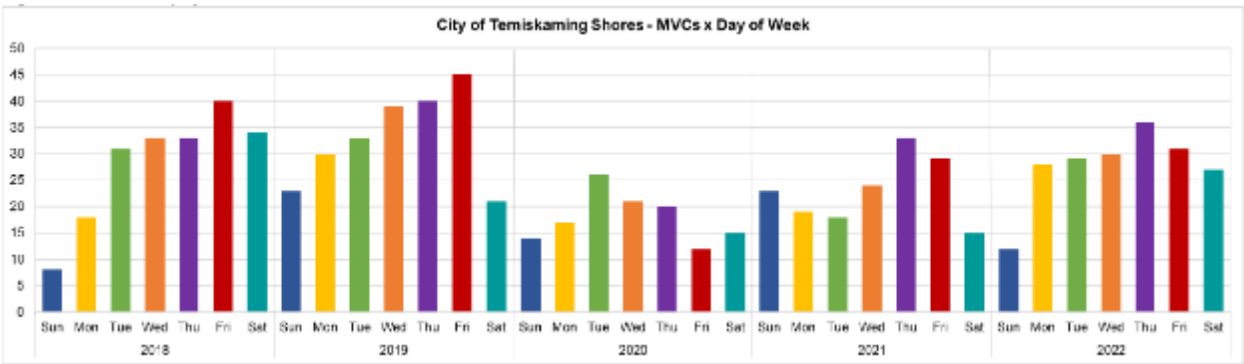
Figure 6-29: Collision Distribution by Season



Source: Ontario Provincial Police

MVCs are most frequently occurring on Thursdays, Fridays, and Wednesdays. Together, these three days account for 51% of all MVCs., as can be seen in **Figure 6-30**. There is some discrepancy from this pattern in 2020, where Tuesdays had the most MVCs. Additionally, 2022 reflects a more equal distribution across all days, except Sundays. In almost all years except 2020 and 2021, Sundays are the least frequent day for MVCs. This likely reflects less volume of traffic as Sunday is a holiday from work for most people. The deviation in 2020 and 2021 may be reflective of travel patterns during the pandemic, where weekly routines were altered considerably.

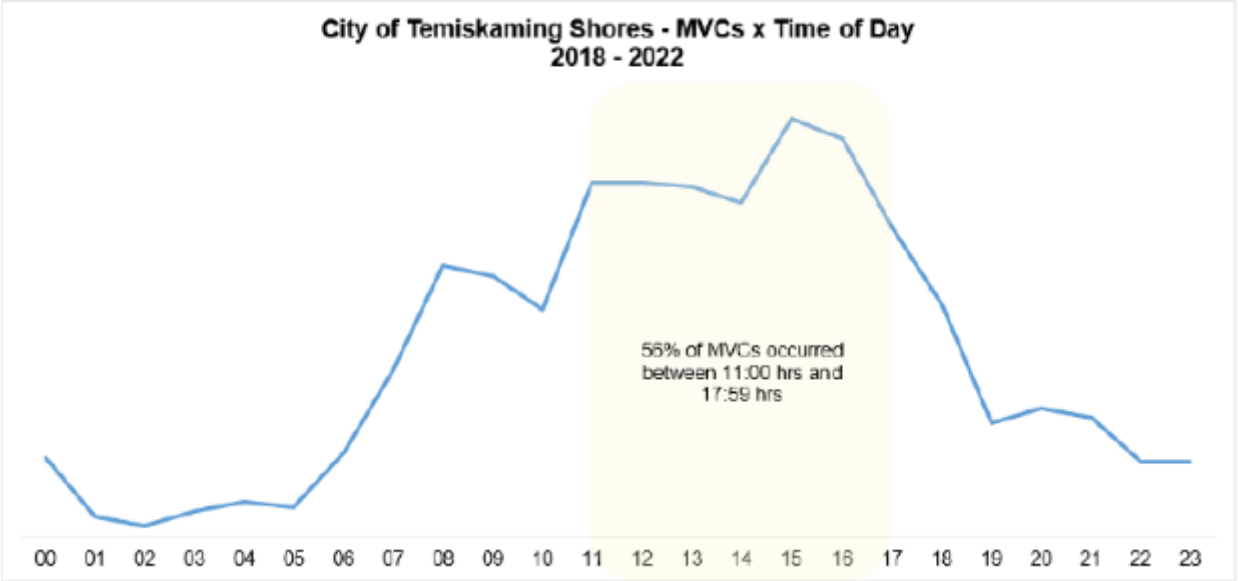
Figure 6-30 Collision Distribution by Days of Week



Source: Ontario Provincial Police

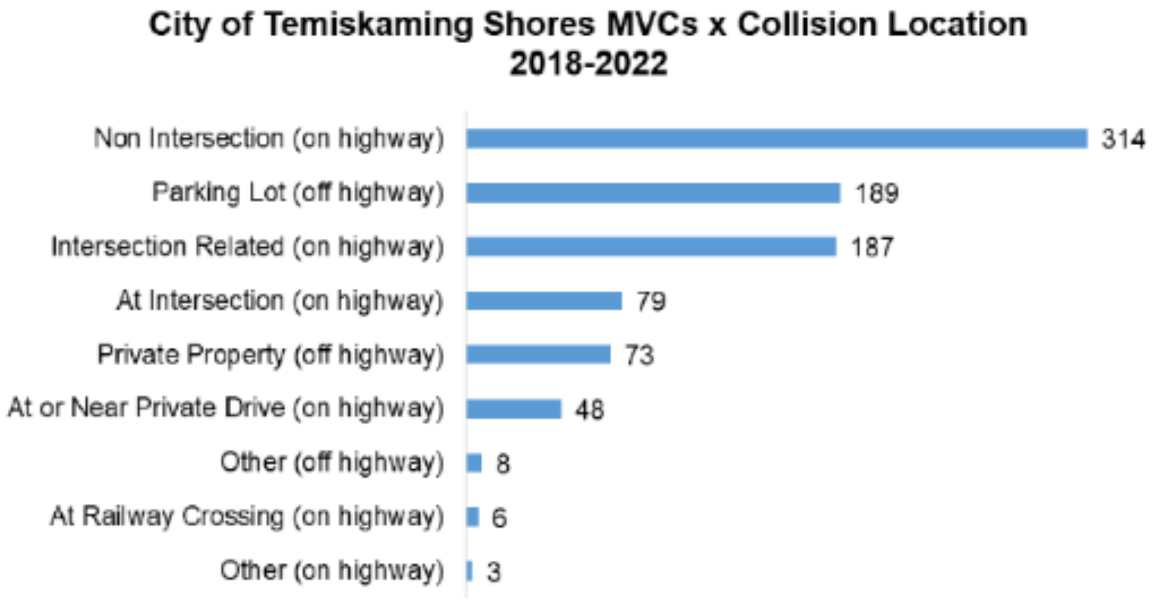
82% (747) of MVCs occurred during the 13-hour daytime period between 6 am and 7 pm. Fifty-six percent (512) of MVCs occurred between 11 am and 6 pm reflecting lunchtime movement, school pick-up times, and commutes from work to home. **Figure 6-31** shows the collision distribution per time of day and **Figure 6-32** shows the collision distribution by location.

Figure 6-31 Collision Distribution by Time of Day



Source: Ontario Provincial Police

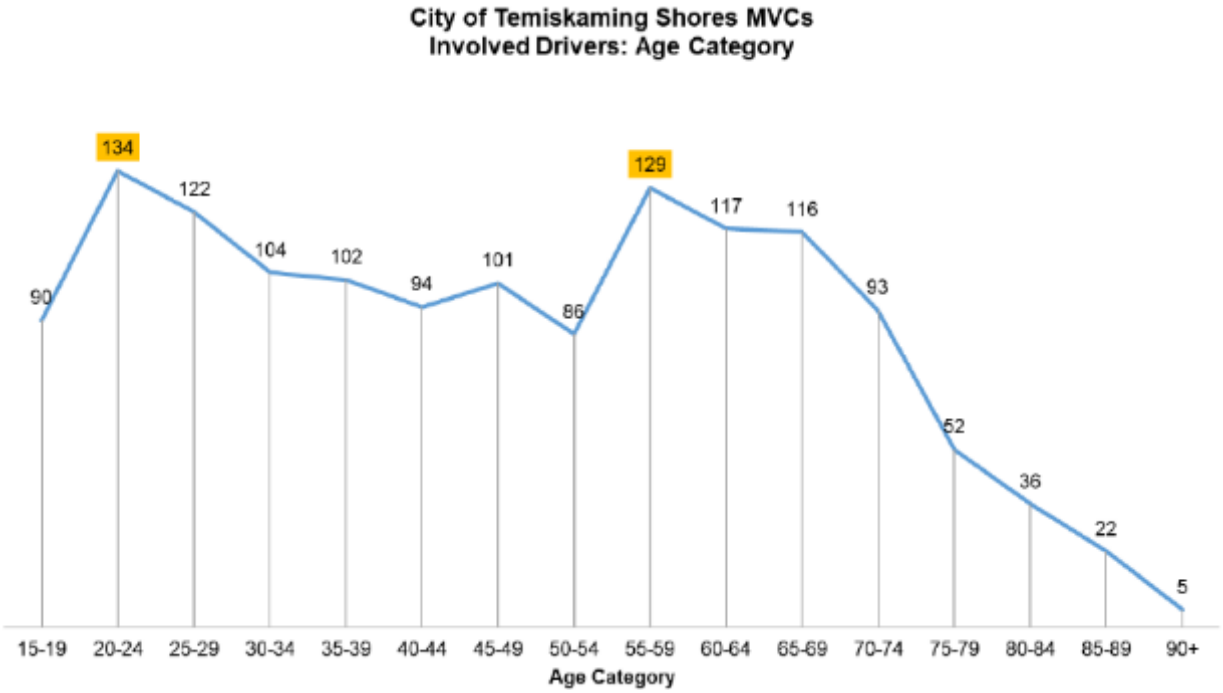
Figure 6-32: Collision Distribution by Location



Source: Ontario Provincial Police

The 907 MVCs involved 1631 drivers, of which 50% were male and 37% were female. Drivers had an average age of 47. **Figure 6-33** shows the collision distribution per the age group of the drivers involved in the MVCs. The highest peak in the graph occurs at the 20-24 years age group followed by the 55-59 years age group.

Figure 6-33: Collision distribution by Age Group (source: Ontario Provincial Police)



Source: Ontario Provincial Police

6.3.2 Speed Data

The two downtown cores generally have posted speed limits of 50 km/h or less.

The 85th Percentile speed is a statistical measure indicating the travel speed at or below which 85 percent of drivers travel at on a corresponding roadway during unobstructed, free-flow movement. These speeds were obtained for the roads in the study area from TYLin's big data partner Urban SDK. The data is from March and April 2023.

Table 6-7 compares the 85th percentile speed to the posted speed limits. However, for some roads in the study area the posted speed limits were unavailable and were assumed based on the local context. The assumed posted speed limits for these roads are summarized in **Table 6-6.**

85th percentile speeds higher than 9 km/hr or more than the posted speed limit have been highlighted in yellow. As per the table below, speeding occurs at Whitewood Avenue, Armstrong Street, Lakeshore Road, Elm Avenue, Beavis Terrace in New Liskeard and Main Street, Georgina Avenue and Lakeshore Road in Haileybury. Wide lanes, lack of pavement markings, lack of traffic calming, inadequate speed limit signage, and lack of proper traffic controls may be the probable reasons for speeding on these roads.

Table 6-6: Speed Limits Assumptions

New Liskeard	Assumed Speed Limit (km/hr)
Edith Street	40
Paget Street	40
Sharpe Street	40
John Street	40
Mary Street	40
Farah Avenue	40
Church Street	40
Golding Street	40
Elm Avenue	40
Beavis Ter	40
Haileybury	**Posted Speed Limit (km/hr)**
Ferguson Avenue	50
Georgina Avenue	40
Browning St	30

Table 6-7: Comparison of Posted Speed Limit & 85th Percentile Speed

New Liskeard	Posted Speed Limit (km/hr)	85th Percentile AM (km/hr)	85th Percentile PM (km/hr)	85th Percentile Overall Weekday (km/hr)	85th Percentile Overall Weekend (km/hr)
Whitewood Avenue (Downtown)	*50*	*54*	*54*	*55*	*59*
Whitewood Avenue- Near Hwy 65	50	64	64	63	63
Edith Street	40	37	37	37	37
Paget Street	40	36	33	37	37
Armstrong Street (Near Wabi River)	50	60	62	61	63
Armstrong Street (Near Hwy 65)	*50*	*69*	*65*	*69*	*72*
Sharpe Street	40	35	32	34	37
John Street	40	33	29	32	33
Mary Street	40	29	29	29	29
Farah Avenue	40	43	43	43	43
Lakeshore Road	*40*	*54*	*54*	*52*	*51*
Lakeshore Road (near Melville St)	50	66	66	65	63
Church Street	40	38	36	36	38
Golding Street	40	38	38	38	38
Broadwood Avenue	40	45	41	45	49
Elm Avenue	40	50	50	*50*	*50*
Beavis Terrace	40	51	51	50	50
Haileybury	**Posted Speed Limit (km/hr)**	**85th Percentile AM (km/hr)**	**85th Percentile PM (km/hr)**	**85th Percentile Overall Weekday (km/hr)**	**85th Percentile Overall Weekend (km/hr)**
Main Street	50	59	60	61	59
Rorke Avenue	*50*	*62*	*63*	*62*	*63*
Ferguson Avenue	50	56	52	55	55
Broadway Street	30	32	26	32	34
Georgina Avenue	40	50	50	50	49
Lakeshore Road	50	65	65	64	63
Browning St	30	35	28	*33*	*34*

Figure 6-34 and **Figure 6-35** visually show the 85th percentile speeds for the roads in New Liskeard for the AM and PM Peak hours, respectively. Similarly, **Figure 6-36** and **Figure 6-37** visually show the 85th percentile speeds for the roads in Haileybury in the AM and PM, respectively.

Figure 6-34: New Liskeard AM 85th Percentile Speed

Figure 6-35 New Liskeard PM 85th Percentile Speed

Figure 6-36: Haileybury AM 85th Percentile Speed

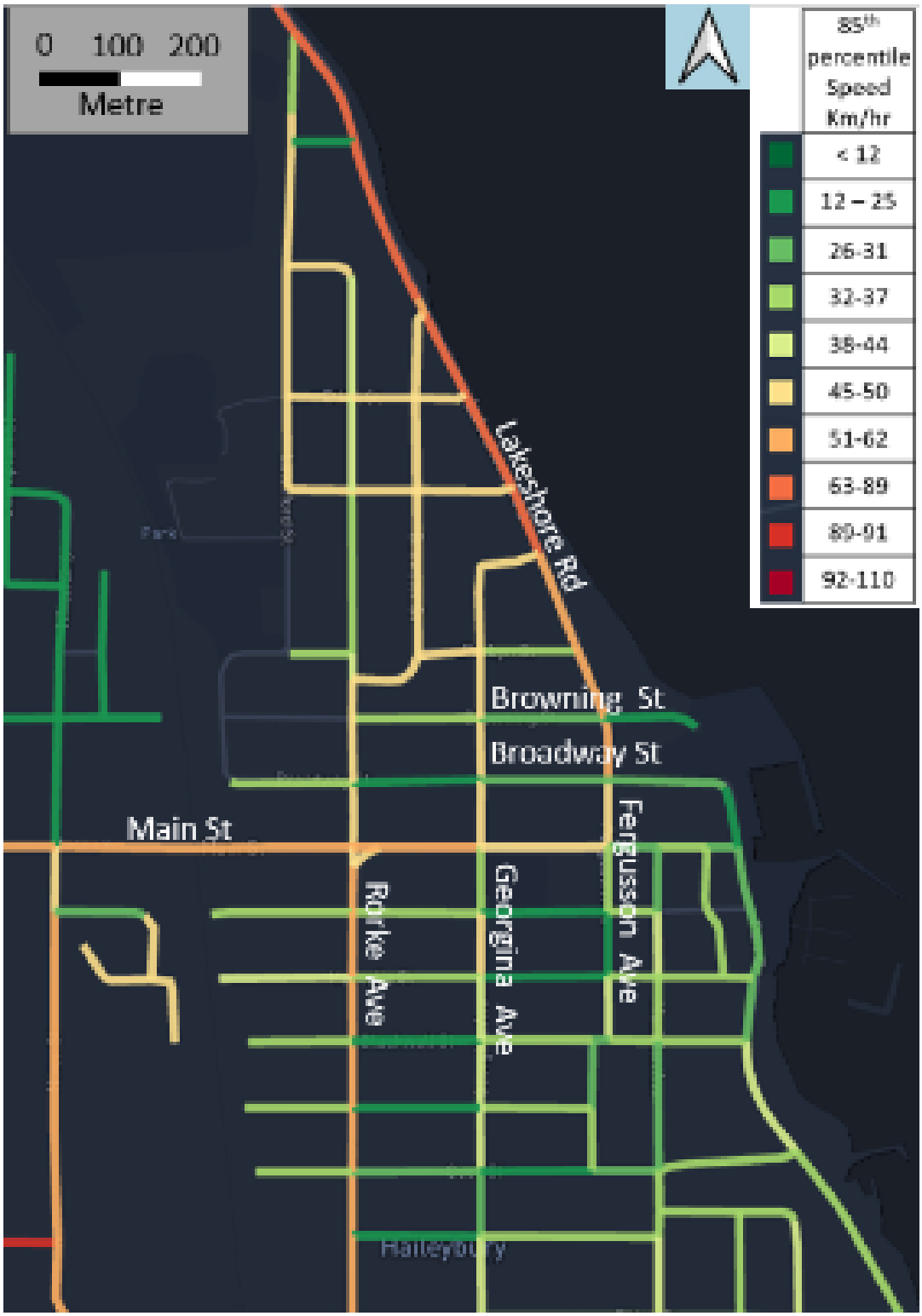
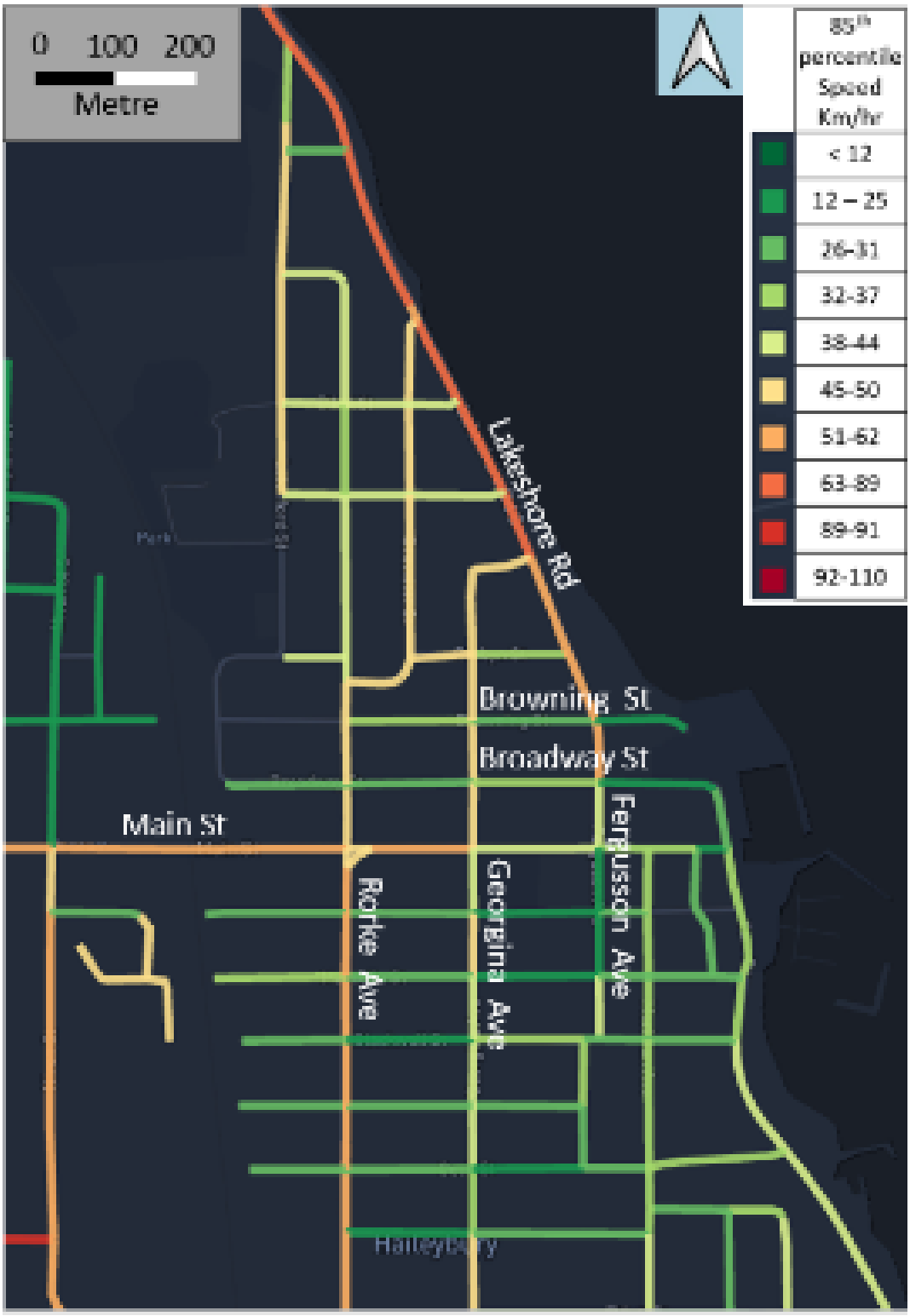


Figure 6-37: Haileybury PM 85th Percentile Speed



6.3.3 Traffic Calming

To address speeding, the City could implement a variety of traffic calming measures, which could potentially be applied in the community to protect pedestrians, cyclists, and reduce vehicular speed in each downtown core.

Currently, the City utilizes few traffic calming devices such as curb extensions around Whitewood Avenue. According to NACTO, curb extensions visually and physically narrow the roadway, slowing vehicles down, and shortening crossing distances to pedestrians. In addition, a curb extension creates a physical barrier to enclose on-street parking spaces. The intersections of Whitewood Avenue at Armstrong Street and Whitewood Avenue at Wellington Street include curb extensions. Expanding on the quantity and types of traffic calming measures used would also align with the City's efforts on implementing Vision Zero in the community.

6.4 Active Transportation (AT) Network

When compared to other municipalities of a similar size, the level of active transportation within Temiskaming Shores is impressive. About 15% of the City's population use bicycles and 27% opt for walking (Active Transportation Plan, 2021). The City recognizes the importance of active transportation infrastructure for its community.

As noted in **Section 4.3**, City's Official Plan (2015) states that the City is aiming to provide "*a range of services and facilities that are accessible by walking and cycling*". In addition, the City wants to build a "*healthy, safe and livable community that encourages active living and healthy lifestyles*". The Official Plan also considers the impacts of climate change and states the importance of implementing measures to "*support the reduction of greenhouse gas emissions through urban and rural design practices and to encourage and support green infrastructure*".

Both, the Official Plan and the Active Transportation Plan, which was presented in **Section 4.1**, show that the City is aware of the issues facing active transportation and is aiming to implement measures that improve the cycling and pedestrian conditions.

6.4.1 Existing AT Facilities

6.4.1.1 New Liskeard

Figure 6-38 shows the existing active transportation conditions in New Liskeard indicating existing sidewalks, trails, sharrows, and the existing and planned sections of the STATO trail. The exhibit clearly shows missing active transportation links, especially for cycling infrastructure, around the downtown area on Whitewood Avenue.

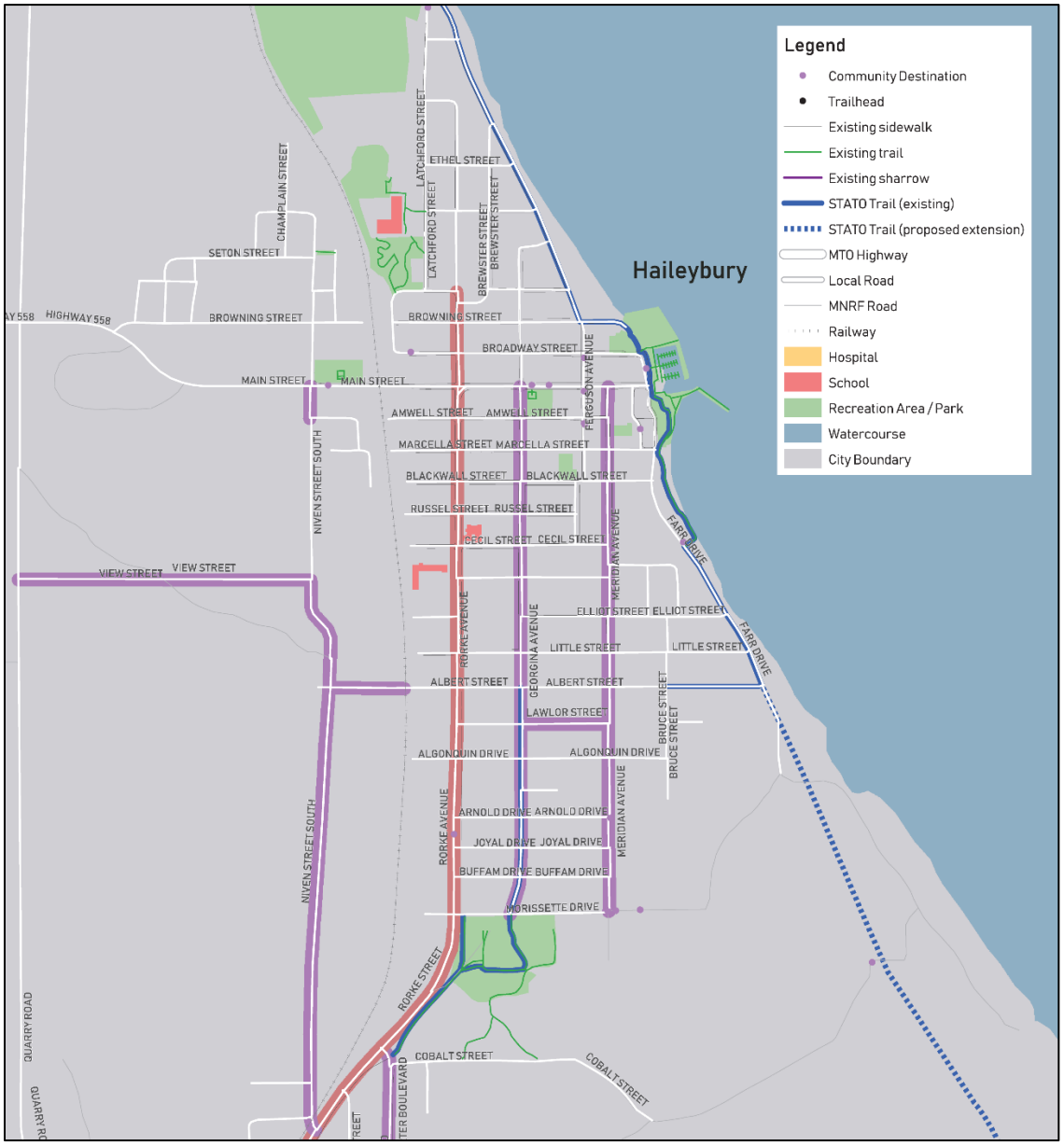
Figure 6-38: Existing AT Network in New Liskeard

Source: Temiskaming Shores Active Transportation Plan, 2021

6.4.1.2 Haileybury

Figure 6-39 illustrates the current existing active transportation network in Haileybury. The figure shows that sharrows are more extensively provided in Haileybury than in New Liskeard and mostly run in a north-south direction. However, again it is evident that AT infrastructure is lacking in the downtown area around Main Street and Ferguson Avenue.

Figure 6-39: Existing AT Facilities in Haileybury



Source: Active Transportation Plan, 2021

6.4.2 Bicycle Facilities

Trails

The main trail runs along Lakeshore Road, Farr Drive, and Armstrong Street and connects the communities of Dymond, New Liskeard, and Haileybury. This trail is called the South Temiskaming Active Transportation Organization (STATO) trail and can be seen in **Figure 6-40**. The STATO trail also services two schools in New Liskeard, called École Secondaire Catholique Sainte-Marie as well as École Publique des Navigateurs (French public schools).

Figure 6-40 Existing STATO Bike Trail

Source: Active Transportation Plan, 2021 – Clockwise from top left: STATO Trail in New Liskeard, Waterfront in Haileybury, Downtown Haileybury and STATO Trail on Lakeshore Road.

Bike Lanes and Sharrows

There is currently a lack of designated bike lanes and signage within the two downtowns cores in the City informing users of the facility. There are opportunities to improve the current bicycle network in the City with the implementation of simple cost-effective measures such as signage, road diets, sharrow lanes, paved shoulders, and other types of bicycle infrastructure.

6.4.2.1 New Liskeard

In August 2019, with support and direction from the City's Bicycle Friendly Committee, the City painted sharrows along the east and west side of the Armstrong Street Bridge and along Elm Avenue. The sharrows were intended to improve the cycling experience across the bridge and address the challenge of crossing the bridge due to narrow lanes in both directions and raised sidewalks on both sides. There is currently a sharrow on Armstrong Street North as shown in **Figure 6-41**, leading over

the Wabi Bridge shows its condition.

During the same time, the City conducted a survey in which the results showed that many cyclists were still anxious about crossing over the bridge even with sharrows and many still felt unsafe and still chose to ride on the sidewalk especially in high traffic times. The desire for further solutions to safely cross the Wabi River Bridge was evident in the expressed desire for a separate bike lane, reduced speed, and motorist and cyclist education.

Figure 6-41: Sharrow on Armstrong Street North

Source: Google Maps, 2022

6.4.2.2 Haileybury

The City's 2021 Active Transportation Plan proposed a sharrow along Ferguson Avenue. A sharrow is a type of bicycle facility that is typically an inverted V-Shape above a bicycle pavement marking which indicates to vehicles that part of the road should be shared by cyclists.

6.4.3 Pedestrian Crossing

6.4.3.1 New Liskeard

Pedestrian crossing opportunities along the two major roads in New Liskeard; Whitewood Avenue and Armstrong Street are rather limited as depicted in **Figure 6-9**Figure in **Section 6.1.5**.

The only location in New Liskeard where there is a signalized intersection and a dedicated crosswalk on all leg of the intersection is Armstrong Street & Beavis Terrace/Elm Avenue. There is a pedestrian crosswalk on the east leg of the intersection of Whitewood Avenue and John Street. As this intersection does not meet the signal warrant, the City placed a flashing light/beacon for enhanced pedestrian crossing safety.

The Transportation Association of Canada (TAC) guidelines recommend reducing pedestrian crossing distance whenever possible using various design tools such as smaller curb radius, curb extensions, etc. Reducing the crossing distance enhances pedestrian safety by minimizing the exposure time of pedestrians to vehicular traffic. The following figures indicate the approximate crosswalk length at the signalized study intersections along Whitewood Avenue and Armstrong Street.

Figure 6-42: Existing crosswalk layout at Whitewood Avenue and Edith Street

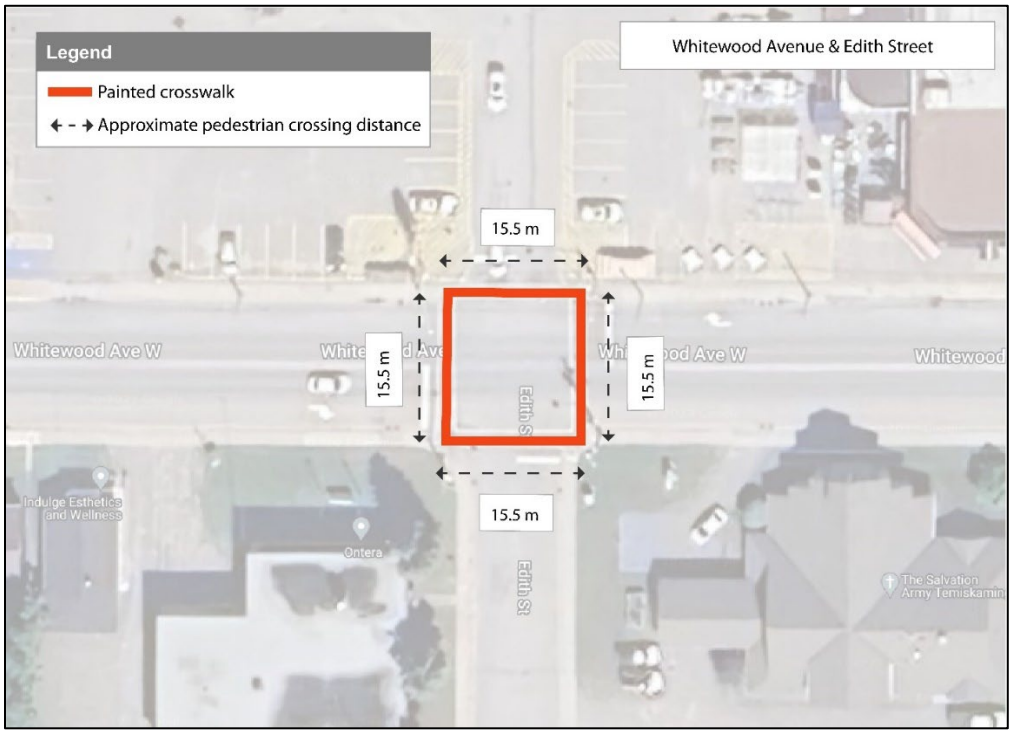


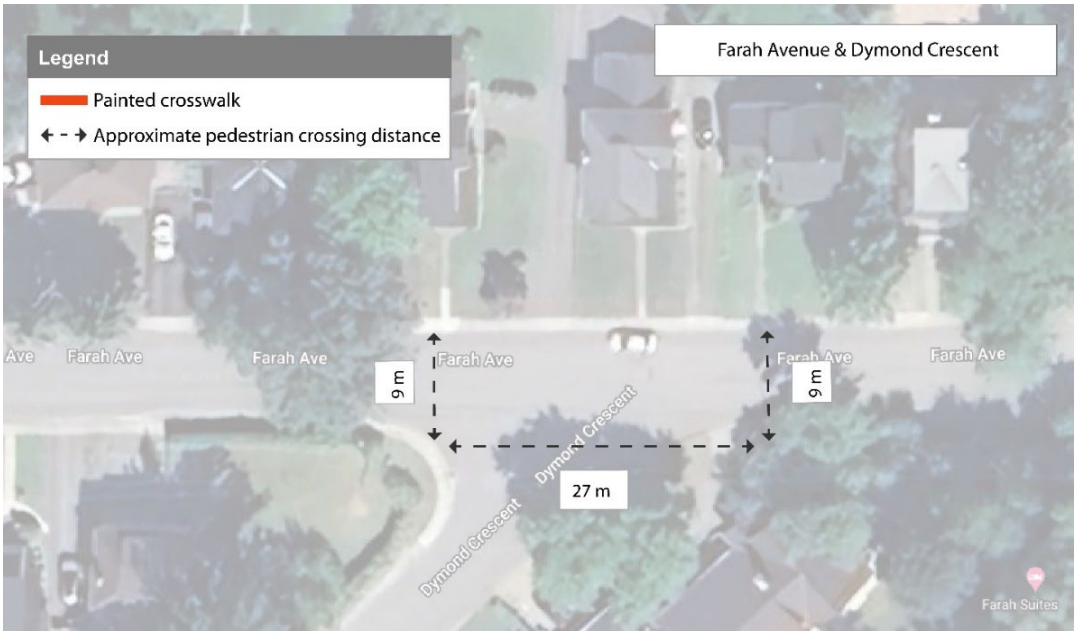
Figure 6-43: Existing crosswalk layout at Whitewood Avenue and Paget Street

Figure 6-44: Existing crosswalk layout at Whitewood Avenue and Armstrong Street

Figure 6-45: Existing crosswalk layout at Armstrong Street and Beavis Terrace

An alternative pedestrian pathway to Whitewood Avenue could be Farah Avenue, a parallel street south of Whitewood Avenue. However, it currently has disconnected narrow sidewalks on only one side of the street. Furthermore, the Farah Avenue and Dymond Crescent intersection presents a 27 m crossing distance along its southern leg, as illustrated in **Figure 6-46**, which creates undesirable pedestrian crossing conditions.

Figure 6-46: Existing crosswalk layout at Farah Avenue and Dymond Crescent



As shown in **Figure 6-47**, the pedestrian conditions at Lakeshore Road and Farah Avenue are poor due to narrow sidewalks, which do not provide enough space for comfortable walking. Additionally, the stop bar for southbound traffic on Lakeshore Road is positioned far back from the intersection, causing drivers to stop in various locations adding confusion to the crossing experience for all users. Moreover, the bus stop lacks necessary infrastructure, making it particularly undesirable during the winter months.

There is an opportunity to tighten the lane widths and widen the sidewalks to improve the crossing facilities and moving the stop bar forward to bring clarity to the driver and crossing experience.

Figure 6-47: Lakeshore Road and Farah Avenue Crossing Issues

A lack of safe pedestrian crossings makes it dangerous to cross the roads for the following reasons:

- **Visibility and Awareness:** Proper pedestrian crossings, such as marked crosswalks and signalized intersections, are designed to enhance the visibility of pedestrians to drivers and vice versa. Without these crossings, drivers might not expect pedestrians to be present in certain areas, increasing the likelihood of accidents.
- **Unpredictable Crossing Points**: Without designated crossings, pedestrians might attempt to cross the road at unpredictable and potentially hazardous locations. This can catch drivers off guard and lead to collisions.
- **Inconsistent Driver Behavior**: When drivers are not aware of designated crossing points, they might not slow down or stop for pedestrians. Proper crossings help set clear expectations for both pedestrians and drivers, promoting safer behavior from all parties.
- **Speed Differential**: Roads are often designed for vehicle traffic, which can lead to higher speeds that are unsafe for pedestrians to cross. Proper pedestrian crossings often come with traffic-calming measures to slow down vehicles, making it safer for pedestrians to cross.
- **Pedestrian Vulnerability**: Pedestrians are much more vulnerable than vehicles in collisions. A lack of proper crossings makes it more difficult for pedestrians to navigate busy roads safely, putting them at a higher risk of injury or fatality.
- **Complex Intersections**: In areas with complex intersections or multiple lanes, pedestrian crossings provide a clear structure for pedestrians to cross one lane at a time. Without proper crossings, pedestrians might attempt to cross all lanes at once, increasing the likelihood of accidents.
- **Accessibility**: Proper pedestrian crossings often include features like curb ramps and tactile paving for people with disabilities. A lack of these features can make it difficult or even impossible for individuals with mobility challenges to cross the road safely.
- **Encouragement of Safe Behavior**: Designated crossings encourage pedestrians to cross at safer locations and drivers to yield the right-of-way. This promotes a culture of pedestrian safety and shared responsibility among road users.

6.4.3.2 Haileybury

The intersection of two key arterial roads in Haileybury with high traffic volume, Main Street and Ferguson Avenue, is a key location for pedestrian activity. Ferguson Avenue runs north-south and plays an important role in connecting the two downtown cores of the City. Main Street runs east-west and is lined with restaurants, stores, and recreational offerings and is therefore at the economic centre of the Haileybury community. Main Street has a significant downhill slope toward the lake. Additionally, this key major intersection does not currently have a traffic signal and safe crossing for pedestrians. **Figure 6-48** shows a visible lack of crossing facilities and traffic signals.

Figure 6-48: Main Street and Ferguson Avenue showing a lack of pedestrian crosswalks

Source: TYLin

This location is particularly dangerous for pedestrians when considering the long crossing distances of approximately 15 metres, in a location where cars and trucks travelling eastbound down the hill are not required to stop as the intersection operates as a 3-way stop controlled intersection. High vehicle speeds and the downward slope of the road make it more difficult to spontaneously stop for pedestrians or cyclists and increase the risk of collisions. Similarly, the slope may make it more difficult to cross and require longer crossing times, especially for those with mobility challenges.

Another high-volume intersection in Haileybury is the intersection of Main Street and Rorke Avenue. It has a painted pedestrian crossing on the west side only with no other dedicated pedestrian crossings as shown in **Figure 6-49**.

Pedestrian infrastructure is fundamental when it comes to promoting pedestrian activity throughout the City. Educational institutions are a great example of places that should have strong active transportation connections to public services and facilities such as transit systems. Northern College in Haileybury currently lacks pedestrian connectivity to Haileybury downtown. Many Roads in Haileybury have a rural cross-section without dedicated sidewalks for pedestrians, which negatively influences the pedestrian level of service, safety, and comfort. This problem also highlights the difficulty of connecting the downtown area to more rural parts of the City.

Figure 6-49: Main Street and Rorke Avenue lacking pedestrian crossing facilities

Source: TYLin

6.4.4 Winter Conditions

The City's Official Plan (2015) has a section dedicated to creating a safe and livable winter city. It notes City's efforts to build safety measures to protect pedestrians from the impacts of climate such as minimizing snow drifting at entrance points to buildings and emergency exits, as well as avoiding structures which allow snow or ice to fall onto sidewalks or pedestrian pathways. It also notes that landscaping should be used to shelter from wind, maximize sun light penetration, and provide weather protected pedestrian spaces and bus shelters.

Overall, the City has an excellent winter maintenance program that ensures snow removal during the winter months. Sidewalks and all downtown cores are completely sanded and cleared, making it safe for residents year-round.

6.4.5 Topography

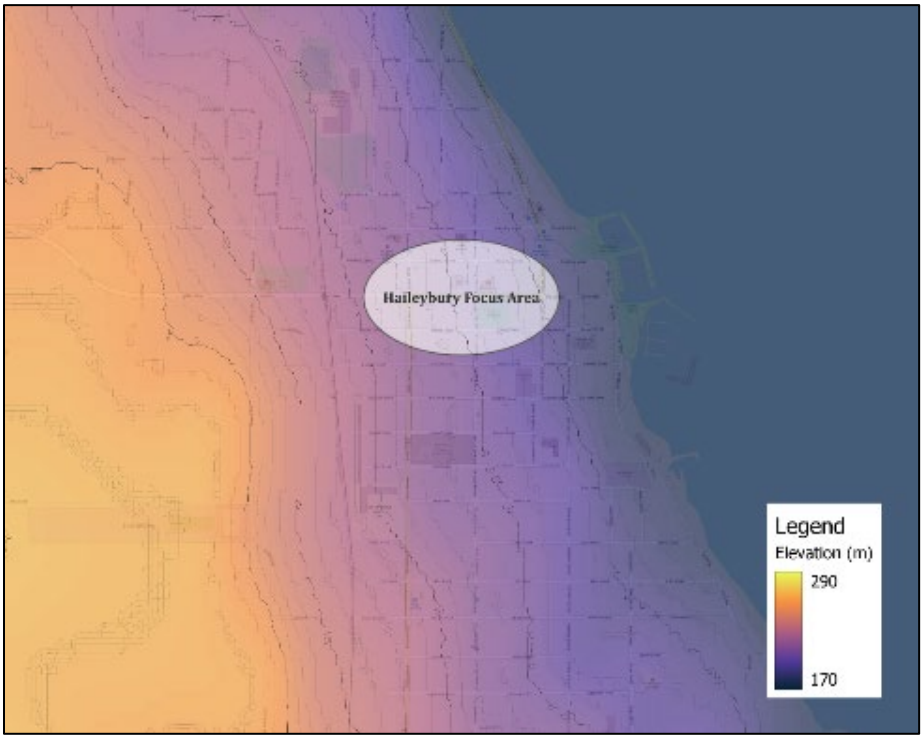
As illustrated in **Figure 6-50**, New Liskeard is mostly situated upon flat land with an elevation ranging from 175 m to 185 m above sea level in most areas across the City. Most of the New Liskeard downtown core is located within this area of low elevation while the southwest region of the City, and the areas surrounding the Temiskaming Hospital is built upon an ascending slope where the elevation increases to up to 290 m. Similarly, Dymond is also located in an uphill area but is not as elevated as the southwest region of New Liskeard. The low elevation of the study area makes promoting active transportation especially feasible in the New Liskeard downtown core, as it allows for accessibility, reduces physical strain, safety, and connectivity.

The Haileybury area is not situated on land that is as flat as New Liskeard as illustrated in **Figure**

6-51. This area experiences a descending slope when moving from west to east – as notably represented by the downward slope of Main Street towards the waterfront. Descending slopes can encourage use of active transportation infrastructure for one way travel while simultaneously posing a challenge for travel in the opposite direction. The elevation profile of this region is comparable to that of New Liskeard, as this area also has a base elevation of approximately 170 m above sea level which increase to approximately 290 m.

Figure 6-50: Topographical Map – New Liskeard & Dymond

Figure 6-51: Topographical Map – Haileybury



6.5 Parking Assessment

6.5.1 New Liskeard

A review of the existing parking supply found that on-street parking is available on all major and local streets in New Liskeard. A summary of the approximate number of the on-street parking spaces are listed in **Table 6-8.** In addition to several private parking lots fronting or in proximity to Whitewood Avenue, there is one City-owned public parking lot in the downtown core located between Wellington Street and Armstrong Street, south of Whitewood Avenue (Municipal Address: 32 Wellington Street). **Figure 6-52** shows the available public parking supply including on-street parking lanes and City's owned parking lot.

Most of the on-street parking spaces within New Liskeard exist as road-side unmarked parking areas apart from accessible parking spaces which are marked with a blue paint at a few store-front locations on Whitewood Avenue. Parking signage is also installed on sidewalks curbs to indicate allowable parking durations. The off-street public parking lot located south of Whitewood Avenue is in poor condition and is largely a gravel lot which does not have parking delineation.

Table 6-8: Approximate Number of On-Street Parking Spaces – New Liskeard

New Liskeard	Number of Parking Spaces
Armstrong Street	60
Wellington Street	73
Paget Street	65
Spruce Avenue	21
Whitewood Avenue	71
Armstrong Street Public Parking Lot	137
Total East of Mary Street	**427**
John Street	58
Niven Street	35
Maple Street	45
Edith Street	46
Farah Avenue	65
Spruce Avenue	23
Whitewood Avenue	79
Total West of Mary Street	**351**
Mary Street	74
May Street	9
Total Number of Parking Spaces	**861**

Figure 6-52: Existing Parking Supply – New Liskeard

6.5.2 Haileybury

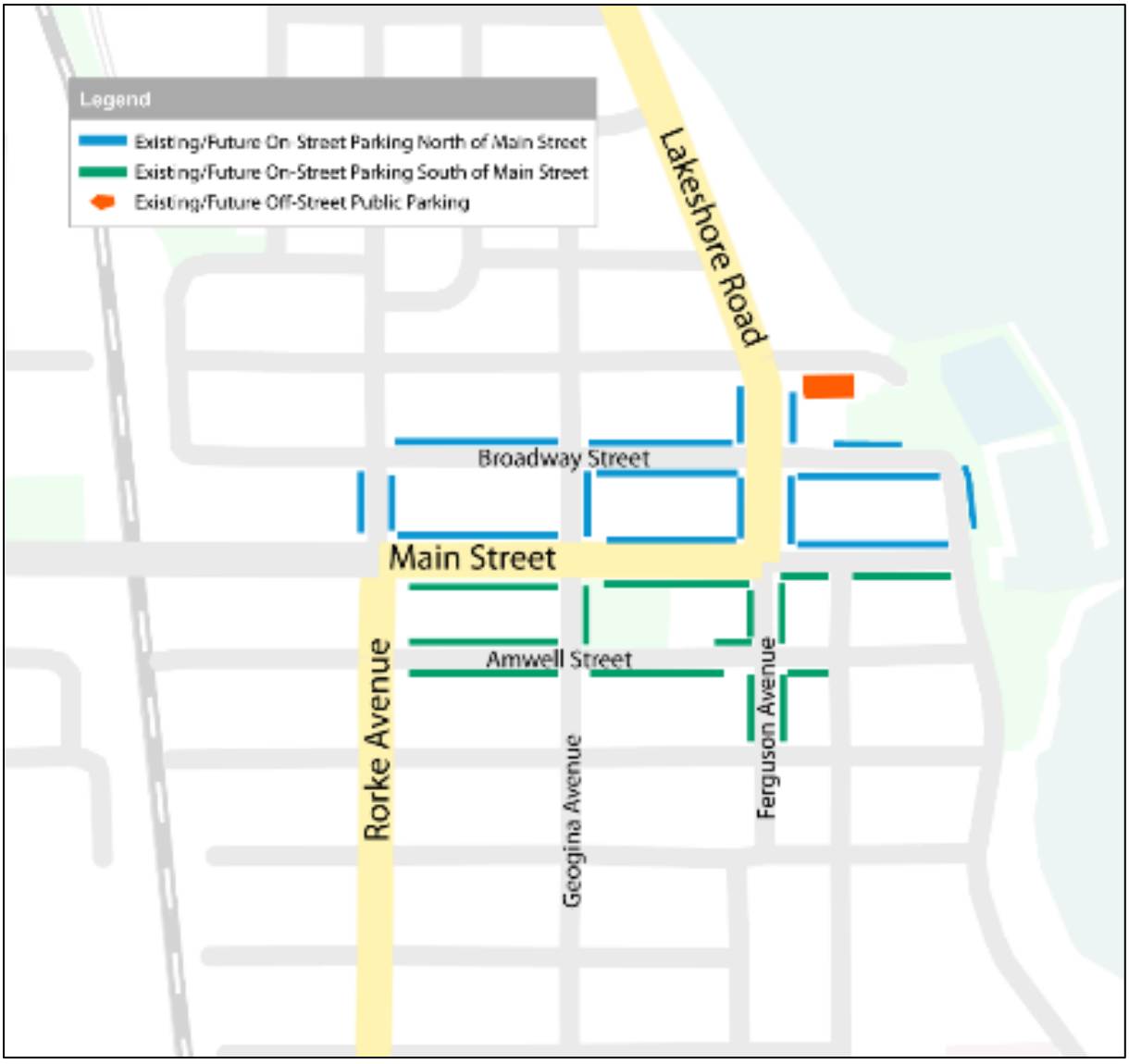
Most major streets in Haileybury accommodate on-street parking on both sides of the road, as quantified in Error! Reference source not found..

Table 6-9: Approximate Number of On-Street Parking Spaces – Haileybury

Haileybury	Number of Parking Spaces
Broadway Street	68
Farr Drive	19
Rorke Avenue	16
Georgina Avenue	7
Ferguson Avenue	40
Browning Street Public Parking Lot	18
Total Parking North of Main Street	168
Amwell Street	80
Georgina Avenue	6
Ferguson Avenue	40
Total Parking South of Main Street	126
Main Street	86
Total Number of Parking Spaces	**941**

Figure 6-53 illustrates locations of the on- and off-street parking facilities, including the one off-street public parking facility at Browning Street.

Figure 6-53: Existing Parking Supply – Haileybury



6.6 Transit Network

The City was formed through the amalgamation of three neighboring towns and townships (Haileybury, New Liskeard, Dymond). Cobalt, another neighboring town that is located south-west of Haileybury, was also part of the original amalgamation plan but did not join the merger. As a result of the proximity between these communities, a shared transit service and network currently exists, connecting the four areas. This transit network is named "Temiskaming Transit", and it exists as a linear north-south route starting from Cobalt and ending in Dymond. Temiskaming Shores has historically utilized private transit services to operate its network and has recently awarded its latest contract to Voyago Transit. There are 19 major stops and multiple minor stops across Temiskaming Shores and Cobalt. The transit service also provides an online bus tracking service for providing real-time information on time-of-arrival information to users. Furthermore, for intercity transit, Ontario Northland provides daily bus service to Cobalt, Haileybury, New Liskeard and Dymond from various transit stops in Ontario. These stops are serviced along Ontario Northland's Schedule 301-302 route which covers major Cities including North Bay, Timmins, and the Town of Cochrane.

6.6.1 New Liskeard

Within New Liskeard, the transit service currently runs on the major arterial and collector roads in addition to local routes in Dymond. A total of 23 minor stops and 7 major stops are located are serviced within this network, as illustrated in **Figure 6-54**. The major transit stops are located on both sides of the road where there is bi-directional transit travel. The minor transit stops are placed to show their approximate location on each side of the road.

6.6.2 Haileybury

In Haileybury, the one transit route is configured to support the residential communities with 400 m buffer distances, as illustrated in **Figure 6-55**. This route has a total of 12 minor and 5 major transit stops. The major stops are located on both sides of the road where there is bi-directional transit travel. The minor stops are placed to show their approximate location on each side of the road.

Figure 6-54: Existing Transit Routes & Stop Locations – New Liskeard

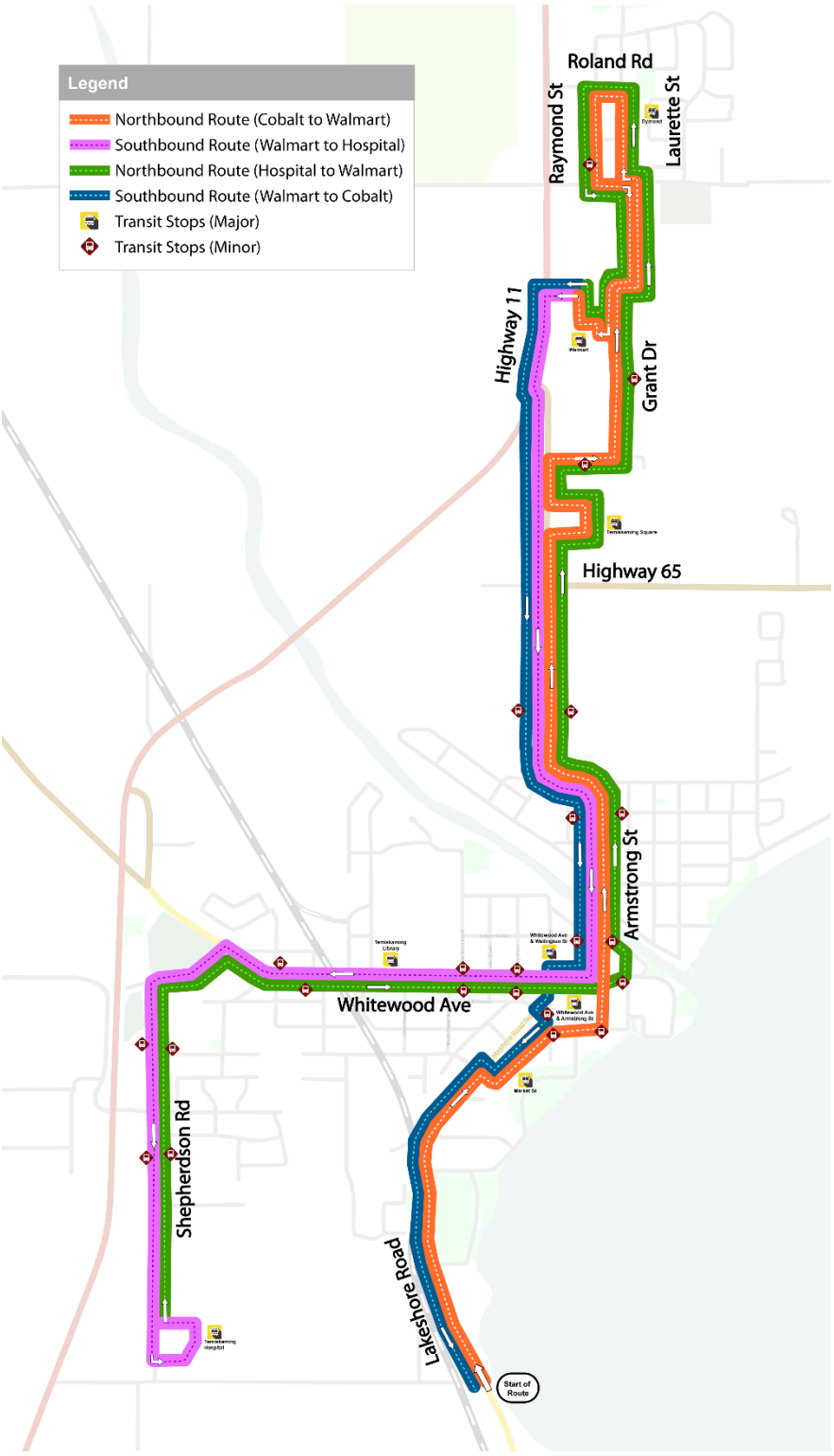


Figure 6-55: Existing Transit Routes & Stop Locations – Haileybury

Service Frequency

Northbound bus service begins in Cobalt at 6 am with the last bus departing at 9 pm on weekdays and 8 pm on weekends. The first Northbound transit route starts in Cobalt and travels towards Dymond while making stops in North Cobalt, Haileybury, and New Liskeard. The service route then extends back towards New Liskeard and to Temiskaming Hospital before making the way back towards Dymond. Finally, departing Dymond again, the service travels Southbound to Cobalt, while making stops in the four communities. Transit frequency at most bust stops is approximately one hour on weekdays, and two hours between 10 am to 2 pm. During weekends, the transit frequency is 2 hours. Public feedback indicated that the busses generally followed a reliable schedule and connected the key areas across the City. Furthermore, the feedback also indicated displeasure relating to low frequency, lack of bus shelters, and services hours during later evening periods.

The first north-bound bus starts its south-bound route at approximately 7:20 am from Walmart in Dymond and arrives back in Cobalt around 8 am - indicating a complete route duration of approximately 2 hours. Riders can purchase individual fares, bulk of 10 tickets or a monthly pass to use the service. Pre-school children are allowed to ride for free while students and seniors are provided a discounted fare of $3.50. The adult fare is priced at $3.75.

Infrastructure

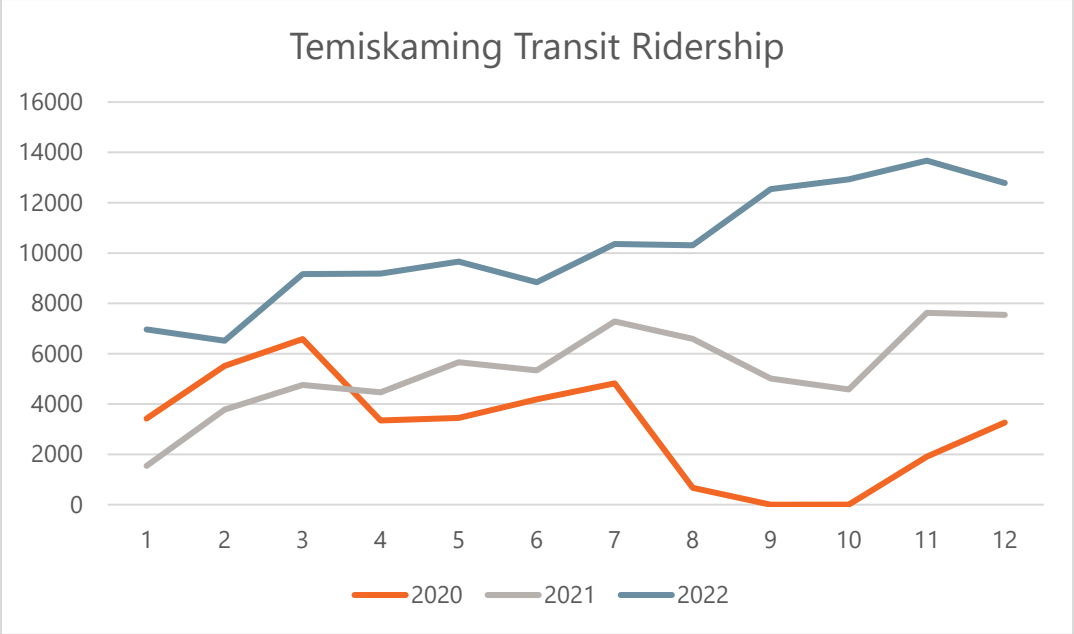
According to Google Maps imagery, with the latest available street view data collected in 2009 and some additional imagery collected in 2018 and 2022, there are very few marked bus stops with bus shelters in the transit network. There are nine installed bus shelters across the transit route as listed in **Table 6-10.** A sparse selection of stops on Whitewood Avenue are fitted with physical signs, indicating stop locations. Most bus stops are unmarked and provides no signage to transit users to indicate a stop location.

Table 6-10: Transit Bus Shelter locations within Temiskaming Shores

Bus Shelter	Location	Area	Year Installed
1	Meridian (Medical Centre)	Haileybury	2018
2	Rorke and Main	Haileybury	2021
3	Probyn and Hardy	Haileybury	2019
4	Ferguson and Browning	Haileybury HL	2013
5	Market	New Liskeard	2013
6	Walmart	Dymond	2019
7	Georgina and Little	Haileybury	2021
8	Hospital	New Liskeard	2013

Ridership data from 2020 to 2022 was obtained from the automatic passenger count measure collected by the City's transit service. As depicted in **Figure 6-56**, the 2020 ridership profile is unlike the 2021 and 2022 profile; it portrays a decreasing ridership count after the month of March, largely resulting from the onset of the Covid-19 pandemic.

Figure 6-56: Monthly onboarding passenger counts Yearly Transit Ridership



A relatively linear and steady increase in ridership counts is observed between 2021 to 2022, while maintaining an increased overall ridership as compared to that seen in 2020. The total ridership in 2021 and 2022 was a 170% and a 330% increase, respectively, from the ridership recorded in 2020. Overall, approximately 37,000, 64,000, and 122,000 passengers onboarded the City's transit busses in the years 2020, 2021 and 2022, respectively.

7 Development of Network Improvement Phases & Recommended Solutions

Following the Complete Streets methodology, a number of improvements have been identified for traffic, active transportation, and transit and parking conditions, to address issues and service gaps identified through the Existing Conditions review in **Section 6,** for both downtown cores.

This section details the baseline traffic improvements, and two recommended phases for the implementation of broader solutions that improve the safety and experience of all road users in the City. Phase 1 proposes intersection improvements and traffic calming measures which may be implemented in the short term at a lower cost, providing immediate benefit for all users. Phase 2 examines broader city-wide features and more comprehensive corridor improvements which may be phased in the short-medium-long term as required by the city.

7.1 Traffic Impact Assessment

A traffic analysis for two horizon years, 5-year (2028) and 20-year (2043) were examined to act as a baseline against the proposed improvement concepts to check the degree of benefit they could bring to the communities in the future and whether they are addressing the problems and gaps identified in Section 6.

This scenario was analyzed assuming the geometry of the existing transportation network without any physical geometric improvements. A conservative annual growth rate of 2% was assumed for all the arterial roads in both downtown cores. No growth rates were applied to the local streets. Similar to the existing traffic operations analysis (see Section 6.2), the following analyses were performed to identify any traffic improvements for the future study network:

- Intersection operational analysis
- Arterial Operational analysis
- Signal Warrant analysis (at stop-controlled intersections)
- All-Way-Stop-Control Warrant Analysis (at Two-Way-Stop-Controlled intersections)

7.1.1 Intersection Operational Analysis

The traffic operations analysis results for the study area intersections in both downtown cores for the future baseline scenarios are included in subsequent sections. The signal timings at all the signalized intersections were optimized for the future baseline conditions analysis. All the synchro reports for baseline scenario are attached in **Appendix D**.

7.1.1.1 5-Year Horizon (2028)

The traffic operations analysis results for the study area intersections in New Liskeard under 2028 future Baseline scenario are summarized in **Table 7-1** for both the weekday AM and AM peak hours.

Table 7-1: 5-Year Horizon (2028) - Traffic Operations Analysis for New Liskeard

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Golding St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.26	0	A	0	0.25	0	A	0
	WBLTR	0.02	1	A	0	0.02	1	A	0
	NBLTR	0.10	13	B	3	0.10	14	B	3
Edith St/Parking Entrance & Whitewood Ave (Signalized)	*Overall*	0.40	7	A	-	0.43	9	A	-
	EBLT	0.41	5	A	31	0.40	7	A	33
	EBR (45)	0.01	4	A	0	0.03	5	A	2
	WBLT	0.26	5	A	19	0.38	7	A	30
	WBR (45)	0.04	4	A	3	0.07	5	A	5
	NBLTR	0.31	18	B	10	0.27	16	B	12
	SBLTR	0.35	18	B	10	0.51	17	B	20
John St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.01	1	A	0	0.01	0	A	0
	WBLTR	0.00	0	A	0	0.01	0	A	0
	NBLTR	0.02	13	B	1	0.04	14	B	1
	SBLTR	0.07	13	B	2	0.08	16	C	2
Mary St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.03	1	A	*1*	0.02	1	A	*1*
	WBLTR	0.00	0	A	*0*	0.01	0	A	*0*
	NBLTR	0.02	15	B	*1*	0.03	14	B	*1*
	SBLTR	0.07	15	B	*2*	0.06	15	B	*2*
Paget St & Whitewood Ave (Signalized)	*Overall*	0.31	14	B	-	0.32	14	B	-
	EBLT	0.33	11	B	*35*	0.37	11	B	45
	EBR (40)	0.03	8	A	*4*	0.03	8	A	5
	WBL	0.37	13	B	*25*	0.42	13	B	40

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
	WBTR (40)	0.32	11	B	*42*	0.30	10	B	42
	NBLT	0.21	22	C	*20*	0.22	22	C	20
	NBR	0.13	21	C	*13*	0.15	21	C	15
	SBLTR	0.16	21	C	*15*	0.13	21	C	15
Armstrong St & Whitewood Ave (Signalized)	*Overall*	0.40	16	B	-	0.57	18	B	-
	EBL	0.49	10	A	*35*	0.67	12	B	*47*
	EBTR (17)	0.08	6	A	*9*	0.07	5	A	*7*
	WBLTR	0.08	8	A	*10*	0.10	7	A	*11*
	NBLT	0.12	22	C	*13*	0.34	26	C	*32*
	NBR (15)	0.00	21	A	*0*	0.00	22	B	*0*
	SBLT	0.18	23	C	*20*	0.26	25	C	*26*
	SBR (20)	0.22	23	C	*17*	0.25	25	C	*18*
Broadwood Ave & Golding St (Stop-Controlled)	*Overall*	-	6	A	-	-	4	A	-
	EBLTR	0.00	6	A	*0*	0.00	0	A	*0*
	WBLTR	0.02	0	A	*0*	0.03	0	A	*0*
	SBLTR	0.05	9	A	*1*	0.04	9	A	*1*
Broadwood Ave & Edith St (Stop-Controlled)	*Overall*	-	2	A	-	-	4	A	-
	EBLTR	0.01	1	A	*0*	0.01	1	A	*0*
	WBLTR	0.05	0	A	*0*	0.05	0	A	*0*
	SBLTR	0.04	9	A	*1*	0.12	10	A	*3*
Lakeshore Rd N & Broadwood Ave (Stop-Controlled)	*Overall*	-	3	A	-	-	3	B	-
	EBLTR	0.13	12	B	*3*	0.25	14	B	*7*
	WBLTR	0.04	17	C	*1*	0.03	15	B	*1*
	NBLTR	0.06	2	A	*1*	0.05	2	A	*1*
	SBLTR	0.00	0	A	*0*	0.00	0	A	*0*
Lakeshore Rd N & Farah Ave (Stop-Controlled)	*Overall*	-	3	A	-	-	4	A	-
	EBLTR	0.08	13	B	*2*	0.11	14	B	*3*
	WBLTR	0.18	15	B	*5*	0.33	20	C	*11*
	NBLTR	0.00	0	A	*0*	0.01	0	A	*0*
	SBLTR	0.03	2	A	*1*	0.03	1	A	*1*
Armstrong St & Church St (Stop-Controlled)	*Overall*	-	0	A	-	-	0	A	-
	EBLR	0.00	0	A	*0*	0.00	0	A	*0*
	NBLT	0.01	0	A	*0*	0.01	0	A	*0*
	SBTR	0.32	0	A	*0*	0.35	0	A	*0*
	Overall	-	2	A	-	-	3	B	-

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Armstrong St & Sharpe St (Stop-Controlled)	EBLTR	0.10	21	C	*2*	0.35	42	E	*11*
	WBLTR	0.08	11	B	*2*	0.23	15	C	*7*
	NBTR	0.23	0	A	*0*	0.37	0	A	*0*
	SBLT	0.07	3	A	*2*	0.05	2	A	*1*
	SBT	0.21	0	A	*0*	0.21	0	A	*0*
Armstrong St & Beavis Terrace/Elm Ave (Signalized)	*Overall*	0.33	13	B	-	0.38	14	B	-
	EBLTR	0.02	6	A	*3*	0.02	8	A	*4*
	WBLTR	0.21	7	A	*13*	0.12	9	A	*11*
	NBLTR	0.54	14	B	*23*	0.71	16	B	*41*
	SBLTR	0.54	14	B	*24*	0.48	13	B	*27*

After optimizing the signal timings, future 2028 Baseline operations for New Liskeard have stayed similar to the existing conditions (see Table 6-2).

The study area intersections will operate well and within capacity. All the movements will operate with v/c ratios of 0.54 or less during the AM peak hour and 0.71 or less during the PM peak hour, indicating available capacity during both peak hours.

Similar to existing conditions, the high volume of eastbound left-turning traffic at the intersection of Armstrong Street and Sharpe Street during the PM peak hour is expected to cause a delay of 42 seconds in travel time at the eastbound left-turn movement, which will be operating at LOS 'E'. However, the eastbound left-turn movement will have a v/c ratio of 0.35 and operate well within capacity. Additionally, the none of the 95th percentile queue lengths exceed beyond their available storage space, indicating no queue spillovers within the study area. Overall, the transportation network within the study area is expected to be functioning well, with low delays and low v/c ratios (no capacity issues) during both AM and PM peak hours.

The overall intersection LOS in the year 2028 for all the study intersections during the AM and PM peak hours in New Liskeard are shown in **Figure 7-1** and **Figure 7-2**, respectively.

Figure 7-1: 5-Year Horizon (2028) – AM Peak Overall Intersection LOS – New Liskeard

Figure 7-2: 5-Year Horizon (2028) – PM Peak Overall Intersection LOS – New Liskeard

The traffic operations analysis results for the study area intersections in Haileybury under 2028 future Baseline scenario are summarized in **Table 7-2** for both the weekday AM and PM peak hours.

Table 7-2: 5-Year Horizon (2028) - Traffic Operations Analysis (Haileybury)

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Main St & Georgina Ave (Stop-Controlled)	*Overall*	-	*2*	*A*	-	-	*2*	*A*	-
	EBLTR	0.00	0	A	0	0.00	0	A	0
	WBLTR	0.01	1	A	0	0.03	1	A	1
	NBLTR	0.12	12	B	3	0.08	12	B	2
	SBLTR	0.01	11	B	0	0.03	13	B	1
Ferguson Ave & Broadway St (Stop-Controlled)	*Overall*	-	*1*	*A*	-	-	*2*	*A*	-
	EBLTR	0.02	14	B	0	0.03	16	C	1
	WBLTR	0.06	11	B	1	0.11	13	B	3
	NBLTR	0.00	0	A	0	0.00	0	A	0
	SBLTR	0.02	1	A	0	0.02	1	A	1
Ferguson Ave/Lakeshore Rd & Browning St (Stop-Controlled)	*Overall*	-	*10*	*A*	-	-	*11*	*A*	-
	EBLTR	0.02	9	A	-	0.01	8	A	-
	WBLTR	0.01	9	A	-	0.02	9	A	-
	NBLTR	0.44	11	B	-	0.40	10	A	-
	SBLTR	0.29	9	A	-	0.47	11	B	-

Under future 2028 Baseline conditions, the study area intersections in Haileybury are expected to operate well and within capacity. All the movements will operate with v/c ratios of 0.44 or less during the AM peak hour and 0.47 or less during the PM peak hour, indicating available capacity during both peak hours.

The overall intersection LOS in the year 2028 for all the study intersections during the AM and PM peak hours in Haileybury are shown **Figure 7-3** and **Figure 7-4,** respectively.

Figure 7-3: 5-Year Horizon (2028) – AM Peak Overall Intersection LOS – Haileybury

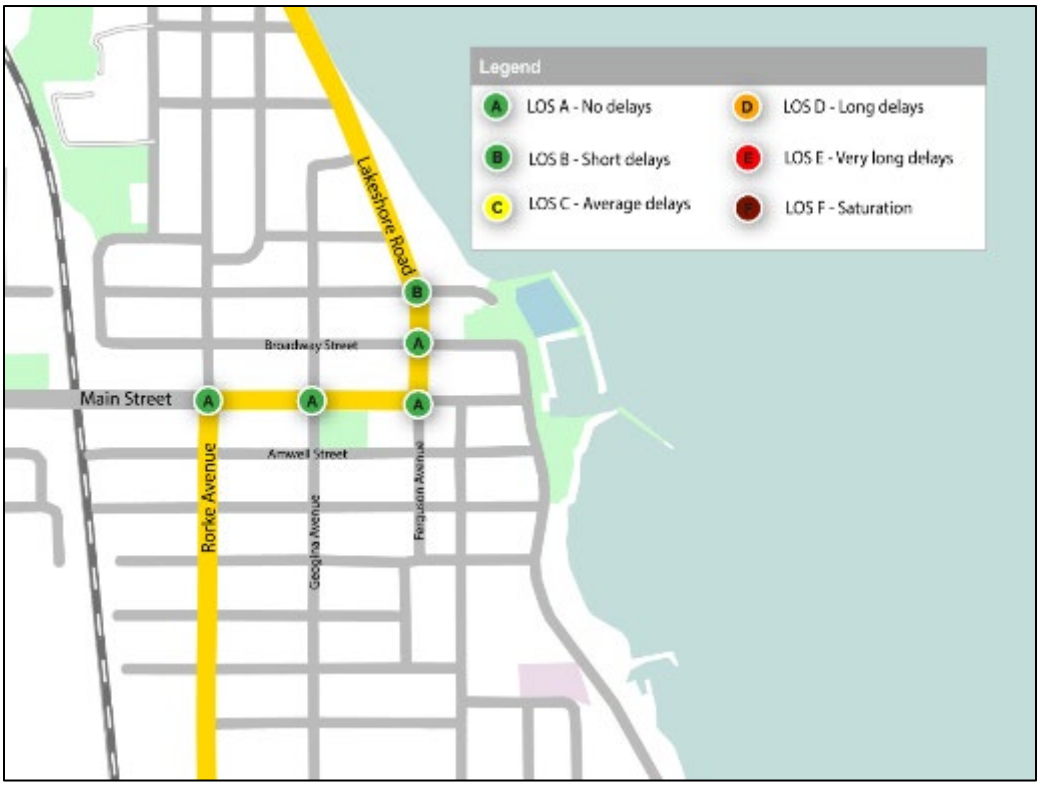
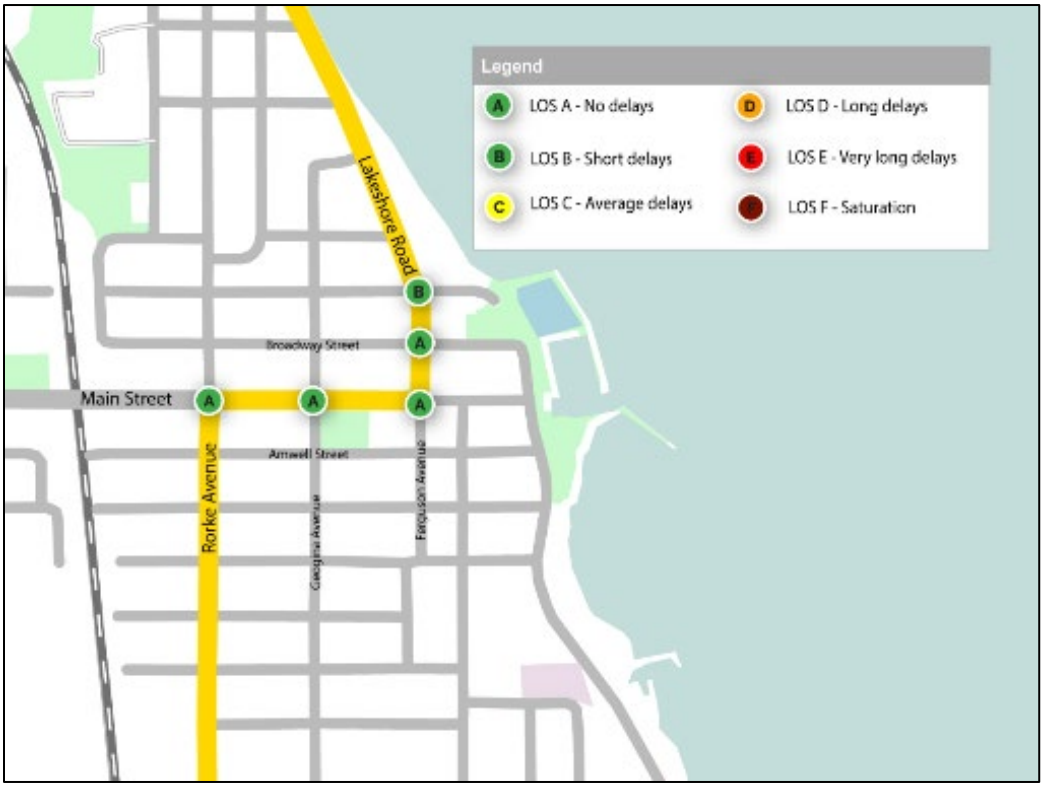


Figure 7-4: 5-Year Horizon (2028) – PM Peak Overall Intersection LOS – Haileybury



7.1.1.2 20-Year Horizon (2043)

The traffic operations analysis results for the study area intersections in New Liskeard under 2043 future Baseline scenario are summarized in **Table 7-3** for both the weekday AM and PM peak hours.

Table 7-3: 20-Year Horizon (2043) - Traffic Operations Analysis for New Liskeard

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Golding St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.34	0	A	0	0.33	0	A	0
	WBLTR	0.02	1	A	0	0.02	1	A	1
	NBLTR	0.13	16	C	4	0.14	17	C	4
Edith St/Parking Entrance & Whitewood Ave (Signalized)	*Overall*	0.49	8	A	-	0.53	9	A	-
	EBLT	0.52	6	A	44	0.53	8	A	46
	EBR (45)	0.01	4	A	0	0.03	5	A	2
	WBLT	0.34	5	A	25	0.50	8	A	42
	WBR (45)	0.04	4	A	3	0.07	5	A	5
	NBLTR	0.34	20	B	12	0.26	16	B	12
	SBLTR	0.39	20	C	12	0.51	17	B	20
John St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.02	1	A	0	0.02	0	A	0
	WBLTR	0.00	0	A	0	0.01	0	A	0
	NBLTR	0.03	15	C	1	0.05	17	C	1
	SBLTR	0.09	16	C	2	0.11	21	C	3
Mary St & Whitewood Ave (Stop-Controlled)	*Overall*	-	1	A	-	-	1	A	-
	EBLTR	0.03	1	A	*1*	0.02	1	A	*1*
	WBLTR	0.00	0	A	*0*	0.01	0	A	*0*
	NBLTR	0.03	19	C	*1*	0.04	18	C	*1*
	SBLTR	0.10	19	C	*2*	0.09	20	C	*2*
Paget St & Whitewood Ave (Signalized)	*Overall*	0.44	14	B	-	0.50	15	B	-
	EBLT	0.40	9	A	*42*	0.46	10	A	55
	EBR (40)	0.03	6	A	*3*	0.03	6	A	4
	WBL	0.51	14	B	*38*	0.60	14	B	56
	WBTR (40)	0.39	9	A	*50*	0.36	9	A	50
	NBLT	0.26	26	C	*22*	0.28	27	C	22
	NBR	0.17	25	C	*16*	0.20	25	C	19
	SBLTR	0.19	25	C	*16*	0.16	24	C	16
	Overall	0.55	18	B	-	0.78	25	C	-

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Armstrong St & Whitewood Ave (Signalized)	EBL	0.67	14	B	*48*	**0.93**	29	B	*163*
	EBTR (17)	0.10	6	A	*11*	0.08	6	A	*8*
	WBLTR	0.11	8	A	*12*	0.12	7	A	*13*
	NBLT	0.15	22	C	*15*	0.44	28	C	*40*
	NBR (15)	0.00	21	C	*0*	0.00	22	B	*0*
	SBLT	0.25	24	C	*26*	0.34	26	C	*33*
	SBR (20)	0.30	24	C	*19*	0.34	26	C	*20*
Broadwood Ave & Golding St (Stop-Controlled)	*Overall*	-	6	A	-	-	4	A	-
	EBLTR	0.00	6	A	*0*	0.00	0	A	*0*
	WBLTR	0.02	0	A	*0*	0.03	0	A	*0*
	SBLTR	0.05	9	A	*1*	0.04	9	A	*1*
Broadwood Ave & Edith St (Stop-Controlled)	*Overall*	-	2	A	-	-	4	A	-
	EBLTR	0.01	1	A	*0*	0.01	1	A	*0*
	WBLTR	0.05	0	A	*0*	0.05	0	A	*0*
	SBLTR	0.04	9	A	*1*	0.12	10	A	*3*
Lakeshore Rd N & Broadwood Ave (Stop-Controlled)	*Overall*	-	2	A	-	-	3	C	-
	EBLTR	0.16	14	B	*4*	0.32	18	C	*11*
	WBLTR	0.06	21	C	*1*	0.04	19	C	*1*
	NBLTR	0.06	2	A	*2*	0.05	2	A	*1*
	SBLTR	0.00	0	A	*0*	0.00	0	A	*0*
Lakeshore Rd N & Farah Ave (Stop-Controlled)	*Overall*	-	3	A	-	-	5	A	-
	EBLTR	0.09	14	B	*2*	0.14	16	C	*4*
	WBLTR	0.22	18	C	*6*	0.45	29	D	*17*
	NBLTR	0.01	0	A	*0*	0.01	0	A	*0*
	SBLTR	0.04	2	A	*1*	0.03	1	A	*1*
Armstrong St & Church St (Stop-Controlled)	*Overall*	-	0	A	-	-	0	A	-
	EBLR	0.00	0	A	*0*	0.00	0	A	*0*
	NBLT	0.01	0	A	*0*	0.01	0	A	*0*
	SBTR	0.41	0	A	*0*	0.46	0	A	*0*
Armstrong St & Sharpe St (Stop-Controlled)	*Overall*	-	2	B	-	-	5	B	-
	EBLTR	0.11	24	C	*3*	0.61	**98**	**F**	*21*
	WBLTR	0.09	12	B	*2*	0.32	21	C	*10*
	NBTR	0.31	0	A	*0*	0.50	0	A	*0*
	SBLT	0.08	3	A	*2*	0.06	2	A	*2*
	SBT	0.28	0	A	*0*	0.29	0	A	*0*

Intersection	Movement (Storage m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
		V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Armstrong St & Beavis Terr/Elm Ave (Signalized)	*Overall*	0.39	15	B	-	0.46	16	B	-
	EBLTR	0.02	7	A	*4*	0.03	10	A	*4*
	WBLTR	0.22	8	A	*15*	0.13	10	B	*11*
	NBLTR	0.63	15	B	*30*	0.81	19	B	*58*
	SBLTR	0.64	15	B	*32*	0.56	13	B	*37*

The future 2043 Baseline operations for New Liskeard have stayed similar to the 2028 Baseline operations with the following exceptions:

- Heavy estimated eastbound left-turn volume at the intersection of Whitewood Avenue at Armstrong Street during the PM peak hour will be causing the movement v/c ratio of 0.93, exceeding the threshold of 0.85 as per MTO's General Guidelines' 'critical' movements. However, the movement is expected to operate at a delay of 29 seconds/vehicle and LOS 'B' indicating vehicles are not expected to experience extensive delays. Further, the queue storage is sufficient to accommodate an expected 95th percentile queue length 163 m and no queue spillbacks into upstream intersections are expected.
- Heavy estimated major street (Armstrong Street) volumes at the stop-controlled intersection of Armstrong Street and Sharpe Street during the PM peak hour are expected to be causing the eastbound shared left-through-right movement to operate at a delay of 98 seconds/vehicle and at an LOS 'F'. However, the v/c ratio for the movement is expected to be 0.61 during the PM peak hour indicating reserve capacity.

All the movements are expected to operate with v/c ratios of 0.67 or less during the AM peak hour and 0.93 or less during the PM peak hour. Except for the two locations discussed above, rest of the study area interactions will be operating at reserve capacity during both peak hours. Additionally, the none of the 95th percentile queue lengths are expected to exceed beyond their available storage space, indicating no queue spillovers within the study area. Overall, the transportation network within the study area is functioning well, with low delays and low v/c ratios (no capacity issues) during both AM and PM peak hours.

The traffic operations analysis results for the study area intersections in Haileybury under 2043 future Baseline scenario are summarized in **Table 7-4** for both the weekday AM and PM peak hours.

Table 7-4: 20-Year Horizon (2043) - Traffic Operations Analysis for Haileybury

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
	(Storage m)	V/C	Delay (s)	LOS	95th % Queue (m)	V/C	Delay (s)	LOS	95th % Queue (m)
Main St & Georgina Ave (Stop-Controlled)	*Overall*	-	*2*	*A*	-	-	*2*	*A*	-
	EBLTR	0.00	0	A	0	0.00	0	A	0
	WBLTR	0.01	1	A	0	0.03	1	A	1
	NBLTR	0.15	13	B	4	0.10	13	B	3
	SBLTR	0.01	12	B	0	0.04	15	B	1
Ferguson Ave & Broadway St (Stop-Controlled)	*Overall*	-	*1*	*A*	-	-	*2*	*A*	-
	EBLTR	0.03	17	C	1	0.04	20	C	1
	WBLTR	0.07	13	B	2	0.14	15	B	4
	NBLTR	0.00	0	A	0	0.00	0	A	0
	SBLTR	0.02	1	A	1	0.02	1	A	1
Ferguson Ave/Lakeshore Rd & Browning St (Stop-Controlled)	*Overall*	-	*12*	*A*	-	-	*14*	*A*	-
	EBLTR	0.02	9	A	-	0.01	9	A	-
	WBLTR	0.01	9	A	-	0.03	9	A	-
	NBLTR	0.60	14	B	-	0.55	13	B	-
	SBLTR	0.39	11	B	-	0.64	15	C	-

Under future 2043 Baseline conditions, the study area intersections in Haileybury are expected to operate well and within capacity. All the movements will operate with v/c ratios of 0.60 or less during the AM peak hour and 0.64 or less during the PM peak hour, indicating reserve capacity during both peak hours. Additionally, the none of the 95th percentile queue lengths will exceed beyond their available storage space, indicating no queue spillovers within the study area. Overall, the transportation network within the study area is expected to be functioning well, with low delays and low v/c ratios (no capacity issues) during both AM and PM peak hours.

7.1.2 Arterial Operational Analysis

This section documents the results of the arterial operational analysis (for explanation on arterial operational analysis, please see **Section 6.2.5**), for the street corridors identified in both downtown cores for the future Baseline scenario. The signal timings at all the signalized intersections were optimized for the future conditions analysis.

Synchro reports for Baseline scenario are attached in **Appendix D.**

Similar to existing conditions, the following street corridors have been analyzed in New Liskeard:

- Whitewood Avenue
- Lakeshore Road North
- Armstrong Street North

The following street corridors have been analyzed in Haileybury:

- Main Street
- Ferguson Avenue

7.1.2.1 5-Year Horizon (2028)

The arterial operational analysis results for the corridors identified in New Liskeard are summarized in **Table 7-5** for weekday AM and PM peak hours under 2028 future Baseline scenario.

Table 7-5: 5-Year Horizon (2028) – Arterial Operational Analysis for New Liskeard

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
AM	Whitewood Avenue	Eastbound	Golding Street	Armstrong Street	24	112	1.3	43
		Westbound	Armstrong Street	Golding Street	26	116	1.3	41
	Lakeshore Road N	Northbound	Broadwood Avenue	Whitewood Avenue	17	76	0.7	32
		Southbound	Whitewood Avenue	Broadwood Avenue	20	75	0.7	31
	Armstrong Street	Northbound	Whitewood Avenue	Elm Avenue	36	77	0.6	27
		Southbound	Elm Avenue	Whitewood Avenue	44	83	0.5	24
PM	Whitewood Avenue	Eastbound	Golding Street	Armstrong Street	27	115	1.3	42
		Westbound	Armstrong Street	Golding Street	27	116	1.3	41
	Lakeshore Road N	Northbound	Broadwood Avenue	Whitewood Avenue	20	78	0.7	31

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
		Southbound	Whitewood Avenue	Broadwood Avenue	22	79	0.7	30
	Armstrong Street	Northbound	Whitewood Avenue	Elm Avenue	45	86	0.6	24
		Southbound	Elm Avenue	Whitewood Avenue	47	86	0.5	23

Due to signal timing optimizations, the travel time along all three corridors in New Liskeard under 2028 future Baseline conditions are similar or in some cases slightly better than existing conditions (See **Table 6-4**) due to the application of the signal optimization. The maximum travel time within the study area on Whitewood Avenue is 116 seconds, on Lakeshore Road North is 79 seconds and on Armstrong Street North is 86 seconds. None of the intersections along the corridors analyzed cause significant delay to vehicles.

The arterial operational analysis results for the corridors identified in Haileybury are summarized in **Table 7-6** for weekday AM and PM peak hours under 2028 future Baseline scenario.

Table 7-6: 5-Year Horizon (2028) – Arterial Operational Analysis for Haileybury

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
AM	Main Street	Eastbound	Rorke Avenue	Ferguson Avenue	10	44	0.5	45
		Westbound	Ferguson Avenue	Rorke Avenue	10	42	0.5	44
	Ferguson Avenue	Northbound	Main Street	Browning Street	16	36	0.3	30
		Southbound	Browning Street	Main Street	17	39	0.3	29
PM	Main Street	Eastbound	Rorke Avenue	Ferguson Avenue	12	50	0.5	39
		Westbound	Ferguson Avenue	Rorke Avenue	11	41	0.5	44
	Ferguson Avenue	Northbound	Main Street	Browning Street	17	37	0.3	29
		Southbound	Browning Street	Main Street	18	40	0.3	28

Under 2028 future Baseline conditions, the travel time along both corridors in Haileybury is expected to be similar to existing conditions (see **Table 6-5**). The maximum travel time on Main Street is 50 seconds and on Ferguson Avenue is 40 seconds. None of the intersections along the corridors

analyzed cause significant delay to vehicles.

Further, a visual analysis of SimTraffic operations under 2028 future Baseline scenario was conducted for both downtown cores and no queue spillovers, spillbacks or lane-blockages were observed.

7.1.2.2 20-Year Horizon (2043)

The arterial operational analysis results for the corridors identified in New Liskeard are summarized in **Table 7-7** for weekday AM and PM peak hours under 2043 future Baseline scenario.

Table 7-7: 20-Year Horizon (2043) – Arterial Operational Analysis for New Liskeard

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
AM	Whitewood Avenue	Eastbound	Golding Street	Armstrong Street	27	115	1.3	42
		Westbound	Armstrong Street	Golding Street	28	117	1.3	41
	Lakeshore Road N	Northbound	Broadwood Avenue	Whitewood Avenue	16	73	0.7	33
		Southbound	Whitewood Avenue	Broadwood Avenue	27	81	0.7	29
	Armstrong Street	Northbound	Whitewood Avenue	Elm Avenue	45	86	0.6	24
		Southbound	Elm Avenue	Whitewood Avenue	48	86	0.5	23
PM	Whitewood Avenue	Eastbound	Golding Street	Armstrong Street	34	122	1.3	39
		Westbound	Armstrong Street	Golding Street	32	121	1.3	40
	Lakeshore Road N	Northbound	Broadwood Avenue	Whitewood Avenue	21	79	0.7	30
		Southbound	Whitewood Avenue	Broadwood Avenue	30	86	0.7	27
	Armstrong Street	Northbound	Whitewood Avenue	Elm Avenue	57	98	0.6	21
		Southbound	Elm Avenue	Whitewood Avenue	55	94	0.5	21

Under 2043 future Baseline conditions, the travel times along all three corridors in New Liskeard are expected to be similar or marginally higher than 2028 future Baseline conditions. The highest travel time increase is along northbound Armstrong Street where the travel times have slightly increased by 9 seconds to 86 seconds during AM peak hour and by 12 seconds to 98 seconds during PM peak hour, compared to 2028 future Baseline conditions. These increases in travel times also correlate with

increase in delay of 9 seconds resulting in 45 seconds of delay during the AM peak hour and increase in delay of 12 seconds resulting in 57 seconds of delay during PM peak hour along the entire northbound Armstrong Street corridor within study area.

The average travel speeds also reduced by 3 seconds during both AM and PM peak hours along northbound Armstrong Street. These increased travel times and delays are because of high traffic volumes at 20-year horizon (2043). However, these are only minor increases and vehicles traversing the study area corridors are not expected to face significant delays or increased travel times.

The maximum travel time under 2043 future Baseline conditions within the study area on Whitewood Avenue is 122 seconds, on Lakeshore Road North is 86 seconds and on Armstrong Street North is 98 seconds. None of the intersections along the corridors analyzed cause significant delay to vehicles.

The arterial operational analysis results for the corridors identified in Haileybury are summarized in **Table 7-8** for weekday AM and PM peak hours under 2043 future Baseline scenario.

Table 7-8: 20-Year Horizon (2043) – Arterial Operational Analysis for Haileybury

Time Period	Corridor	Direction	From	To	Delay (s/veh)	Travel Time (s)	Dist. (km)	Avg. Speed (km/h)
AM	Main Street	Eastbound	Rorke Avenue	Ferguson Avenue	12	46	0.5	42
		Westbound	Ferguson Avenue	Rorke Avenue	12	43	0.5	43
	Ferguson Avenue	Northbound	Main Street	Browning Street	18	37	0.3	29
		Southbound	Browning Street	Main Street	15	35	0.3	32
PM	Main Street	Eastbound	Rorke Avenue	Ferguson Avenue	15	53	0.5	37
		Westbound	Ferguson Avenue	Rorke Avenue	11	42	0.5	44
	Ferguson Avenue	Northbound	Main Street	Browning Street	18	38	0.3	28
		Southbound	Browning Street	Main Street	19	40	0.3	28

Under 2043 future Baseline conditions, the travel time along both corridors in Haileybury is expected to be similar to 2028 future Baseline conditions and no significant increases in delays or travel times are expected. The maximum travel time on Main Street is 53 seconds and on Ferguson Avenue is 40 seconds. None of the intersections along the corridors analyzed cause significant delay to vehicles.

Further, a visual analysis of SimTraffic operations under 2043 future Baseline scenario was conducted for both downtown cores (New Liskeard and Haileybury) and no queue spillovers, spillbacks or lane-blockages were observed.

7.1.3 Signal Warrant Analysis

A signal warrant analysis was conducted for all the Stop-Controlled study area intersections in New Liskeard and Haileybury under future horizon years (2028 and 2043) to determine if the estimated future traffic or pedestrian volumes would justify the installation of a traffic signal. The signal warrants were conducted for the following three justifications:

- Justification 4 – Minimum 4-Hour Vehicle Volume
- Justification 6 - Pedestrian Volume and Delay (8-Hour)
- Justification 7 – Projected Volumes (Average Hour Volume)

According to Chapter 4.2 of the Ontario Traffic Manual (OTM), 8-Hour traffic and pedestrian volumes and 8-Hour pedestrian delays are needed to conduct Justification 6 - Pedestrian Volume and Delay warrant analysis. Since, only 4-Hour traffic and pedestrian counts were available, the Justification 6 warrant analysis was conducted using the 4-Hour traffic counts assuming if warrants are not met for 4-Hour volumes they will also not be met for 8-Hour volumes.

Based on Justification 4, 6 and 7 of Book 12 of the OTM, 2012, it was found that future year vehicular or pedestrian volumes do not fulfill the Justification for the implementation of a traffic signal at any of the stop-controlled intersections during 2028 or 2043 future Do-Nothing traffic conditions. Hence, installation of a traffic signal is not recommended at any of the study intersections at this time.

A detailed signal warrant summary for the study intersections is provided in **Appendix E**.

7.1.4 All-Way-Stop-Control Volume Warrant Analysis

An all-way stop control (AWSC) warrant for all the study intersections was conducted for future traffic conditions (Year 2028 and 2043) based on the volume warrant analysis methodology outlined by the OTM Book 5 "Regulatory Signs" (2021). The volume warrant analysis is based on the following criteria/inputs:

- Total vehicle volume on all intersection approaches over the highest eight or four hours (depending on the road classification);
- Combined vehicle and pedestrian volume on the minor street; and,
- Volume split of the major and minor legs.

The OTM lists three different volume-related criteria that, when all are met, indicate that all-way stop control may be considered depending on the road types involved. The criteria are summarized in **Table 7-9.**

Table 7-9: OTM Book 5 AWSC Volume Warrant Criteria

Criteria	Urban Arterials	Collectors and Rural Arterials	Local Roads
Total Volumes for Highest Hours Each Day	>500 vehicles per hour for each of the highest 8 hours	>375 vehicles per hour for each of the highest 8 hours	>200 vehicles per hour for each of the highest 4 hours
Combined Minor Street Vehicle and Pedestrian Volumes	(i) >200 units (vehicles plus pedestrians) for each of the same hours as total volume, or; (ii) >150 units for the each of the same hours as total volume with average minor street delay >30 seconds	(i) >150 units (vehicles plus pedestrians) for each of the same hours as total volume, or; (ii) >120 units for the each of the same hours as total volume with average minor street delay >30 seconds	>75 units (vehicles plus pedestrians) for each of the same hours as total volume
Major-Minor Volume Split	Volume split does not exceed 70/30 (i.e. minor street must be >30% of intersection volume), or 75/25 for three-legged intersections		

As all the major streets in New Liskeard and Haileybury are classified as Arterials and are located in the downtown cores. The AWSC Volume Warrant for 'Urban Arterials' was conducted for all study intersections. Since, 8-Hour traffic counts were not available, the warrant analysis was conducted using the 4-Hour traffic counts assuming if warrants are not met for 4-Hour volumes they will also not be met for 8-Hour volumes.

By using this methodology, none of the existing two-way stop-controlled intersections in the study area meet the AWSC Volume Warrant during the 2028 traffic scenario. Under the 2043 traffic scenario, the **Main Street and Rorke Avenue** intersection passes the peak 4-Hour volume AWSC warrant.

The detailed AWSC Volume Warrant analysis for all study intersections is included in **Appendix D**.

7.2 Phase 1 – Intersection improvements & Minor Mid-Block Traffic Calming Measures

This section presents recommendations geared towards standard geometric and traffic control improvements at intersections and minor traffic calming measures at strategic key mid-block locations in the City to improve safety and mobility for all road users in the short-term.

7.2.1 Traffic Control

It is proposed that the following two intersections in Haileybury, which currently operate as 3-way-stops, be upgraded to all-way stop control (AWSC) intersections:

- Main Street and Rorke Avenue
- Main Street and Ferguson Avenue

7.2.1.1 Main Street and Rorke Avenue AWSC

The AWSC volume-warrant analysis was conducted for both the 2028 and 2043 horizon periods, and it was determined that the AWSC is warranted at the Main Street and Rorke Avenue intersection by the 2043 horizon period.

Although not warranted by travel volumes in the 2028 horizon period, it is recommended that the current 3-way stop control intersection be upgraded to a 4-way stop in the short-term, when factoring in the safety analysis conducted in **Section 6** which identified a concentration of higher speeds and reported collisions along the Main Street corridor.

The conversion of the intersection to an all-way stop will greatly improve the pedestrian crossing experience, increasing the sense of security when crossing the intersection. Cyclists, especially those utilizing the recommended bike lanes on the Main Street, would also benefit from the predictability and reduced risk of conflicts with vehicles. Additionally, the implementation of an AWSC stop can encourage drivers to be more cautious and attentive, as they must yield the right-of-way to other vehicles and pedestrians at the intersection. This can lead to a safer environment for all road users and contribute to a more pedestrian-friendly and bike-friendly community.

This improvement is recommended in conjunction with the removal of the channelized northbound right-turn lane and installation of a transit shelter in the same location, as detailed in Section 7.3 below.

7.2.1.2 Main Street and Feguson Avenue AWSC

Based on forecasted volumes, an AWSC is not warranted for the Main Street and Ferguson Avenue intersection; however, it is recommended when considering the safety analysis conducted in **Section 6** which identified a concentration of higher speeds and reported collisions along the Main Street corridor.

The downhill slope for the eastbound movement on Main Street and Ferguson Avenue and the lack of a stop-sign currently create an uncomfortable pedestrian crossing experience, and a confusing situation for non-local drivers visiting the city.

To ensure that eastbound vehicles can easily come to a stop approaching the intersection, an oversize stop-sign is recommended at the eastbound leg. Installing an oversize stop sign at the eastbound approach of an intersection is a practical measure to enhance visibility and ensure that drivers can readily see and respond to the stop sign. Oversize stop signs are larger than standard ones, which can make them more conspicuous, especially from a distance or under various lighting/ weather conditions. This increased visibility can help to improve safety by prompting drivers to stop in advance of the intersection, reducing the risk of accidents or collisions.

Additionally, incorporating other traffic calming measures, such as pavement markings and tactile warning strips up the hill leading to this intersection will support the gradual reduction in vehicle speeds on approach to the intersection.

7.2.2 Pedestrian Crossover (PXO)

To improve pedestrian connectivity and safer crossing opportunities, it is recommended that two pedestrian crossovers be implemented in Temiskaming Shores.

In Haileybury, the PXO is recommended at the intersection of **Broadway Street at Ferguson Avenue**, where a crosswalk previously existed. Re-introducing this marked east-west crossing on Ferguson Avenue will facilitate pedestrian crossing in the area, supporting local businesses and circulation to/from the waterfront.

In New Liskeard, the PXO should be located on **Armstrong Street at Church Street**. An east-west crosswalk at this location would improve the pedestrian experience in the area, adjacent to many businesses and parking spaces. Currently, crossing in the area is dangerous because of the four-lane roadway, limited sightlines for southbound traffic coming down the Armstrong bridge, and high volume of road users. A PXO which is designed with curb extensions in the right lanes (currently parking) to reduce the crossing distances will greatly benefit pedestrians and motorists traveling down Armstrong by introducing consistency in a crossing location and slowing traffic for vehicles turning onto Church Street.

7.2.3 Pavement Markings

As identified through the existing conditions review in **Section 6**, pavement markings along the study roadways are barely visible under existing conditions. It is recommended that the City undertake re-painting program for pavement markings, which include centerlines, lane dividers, crosswalks, parking lanes, and accessible parking symbols. Re-striping lanes will help to visually narrow the roadway for drivers and naturally lower travel speeds, while parking areas may be striped to ensure maximum efficiency of the curb area within the downtown cores.

Additionally, to further improve visibility of pedestrian crossings at intersections, it is recommended that all existing crosswalks be upgraded to zebra crosswalks.

7.2.4 Curb Extensions

Curb extensions, also known as curb bump-outs or bulb-outs, are sidewalk extensions at intersections that protrude into the street. Installing curb extensions promotes pedestrian safety by reducing the time it takes to cross at intersections, improves visibility, calms traffic, enhances accessibility,

contributes to urban design, and offers additional benefits such as stormwater management and encouragement of active transportation. They are especially beneficial in areas where safety is a significant concern, such as in school zones or busy downtown areas. Pedestrians have a safer crossing experience resulting from the reduced crossing distances and slow vehicular speeds caused by narrowed roadways and reduced turning radii.

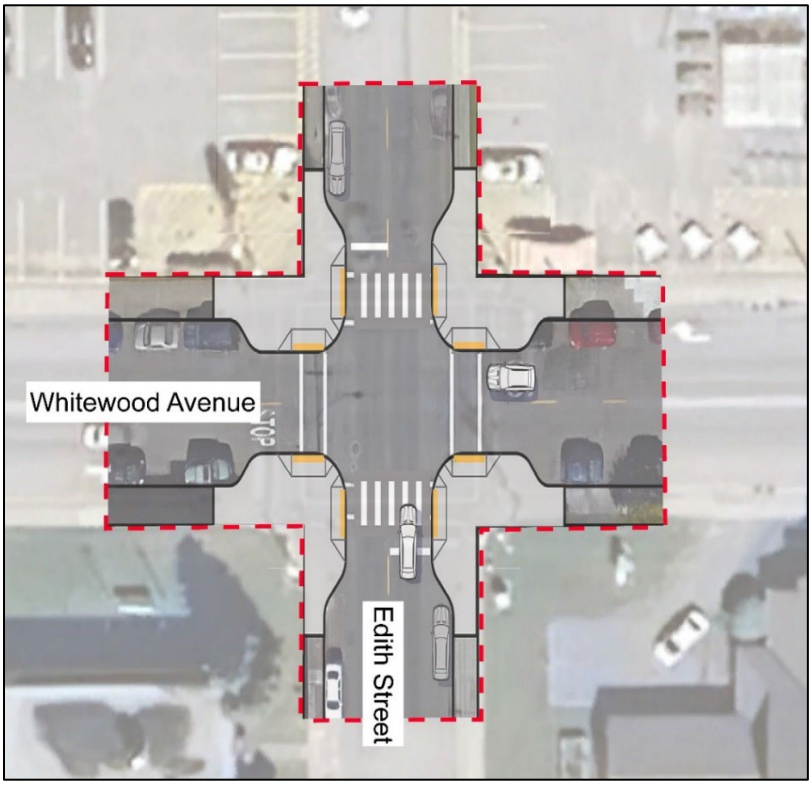
As part of Phase 1, it is recommended that the following intersections along Whitewood Avenue and Armstrong Street be reconstructed with curb extensions, based on traffic volumes, vehicle speeds, and presence of pedestrian activity:

- Edith Street at Whitewood Avenue
- Paget Street at Whitewood Avenue
- Armstrong Street at Whitewood Avenue
- Sharpe Street at Armstrong Street

Figure 7-5 depicts a potential curb extension conceptual design at the Whitewood Avenue and Edith Street intersection, which provides access into a large commercial plaza. With this implementation, vehicular traffic will naturally slow down when approaching the intersection while pedestrians will also have a shorter crossing distance and be more visible to oncoming traffic.

Key intersections are also recommended to be reconstructed as fully protected intersections as part of Phase 2, which is described further in **Section 7.3**.

Figure 7-5: Conceptual Curb Extension Design – Whitewood Ave & Edith St

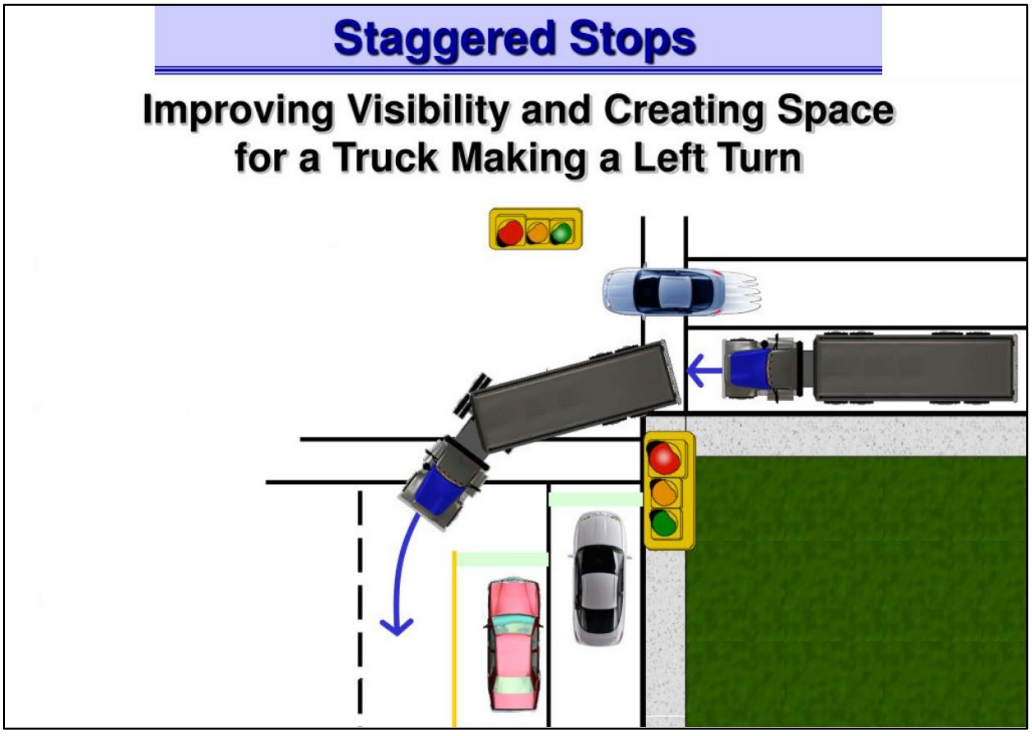


7.2.5 Additional Improvements for Consideration

Additional Improvements suggested by the public for consideration are:

- In New Liskeard, key intersections with traffic signals should be upgraded with pedestrian count down signals to assist pedestrian crossing the street and provided information on the number of seconds remaining for a pedestrian to complete their crossing.
- Advance green signal should be upgraded to the new standard of a green arrow (currently intersection have a solid green flashing light which corresponds to the old standard).
- Stagger Stops Lines (Where the stop line for the lane adjacent to the opposing traffic is pushed back) at signalized intersections to improve visibility for vehicles turning left. See image below:

Figure 7-6: Staggered Stop Lines



7.3 Phase 2 – Complete Streets & Full Traffic Calming Measures

For the second phase, a full Complete Streets framework and more robust traffic calming measures were applied to the network. This phase includes a larger scale transformation of various roads across both downtown cores and builds upon the solutions recommended in Phase 1. This section details the elements of the recommended solutions in Phase 2.

7.3.1 Active Transportation (AT) Improvements

The recommended active transportation facilities and traffic calming measures in New Liskeard and Haileybury are illustrated within **Figure 7-7** and **Figure 7-8.**

On street cycle lanes are recommended on the following roadways, with the inclusion of an appropriate buffer zone where the right-of-way permits:

- New Liskeard:
    - Whitewood Avenue from the railway/Jaffray Street to Riverside Drive
    - Armstrong Street from Cedar Avenue to Heard Street
    - Lakeshore Road North from Broadwood Avenue to Whitewood Avenue
    - Wellington Street from Whitewood Avenue to Fleming Drive
    - Sharpe Street – May Street South – Cedar Avenue
    - Dymond Avenue from Niven Street North to Paget Street
- Haileybury
    - Main Street from Rorke Avenue to Farr Drive
    - Ferguson Avenue from Main Street to Browning Street

Additionally, **Figure 7-7** illustrates the locations for traffic calming and pedestrian safety measures such as continuous sidewalks, mini-roundabouts and protected intersections, which are detailed below. Overall, features such as parkettes, repainted crosswalks and pedestrian crossovers are also proposed within the community to improve safety and increase the appeal of active transportation.

Similarly, **Figure 7-8** illustrates the recommended cycling facilities on Main Street which are an at-grade bi-directional two-way cycle track on the north side of the road, in alignment with the goal of maintaining the existing on-street parking on both sides of the road. The illustrated AT facilities at Lakeshore and Ferguson turn into the STATO path after Browning Street.

Not illustrated but considered, Georgina Avenue is an ideal road for future cycling facilities since it is traffic-calmed, offering a safer and more pleasant route for cyclists than adjacent arterial roads. The reduced vehicle speeds and volumes on Georgina Avenue minimize the risk of accidents and create a more relaxed cycling experience. A new pedestrian crosswalk and two new protected intersections are also proposed along the main corridors of the Haileybury community, as detailed below.

Figure 7-7: Proposed AT & Traffic Calming Measures – New Liskeard

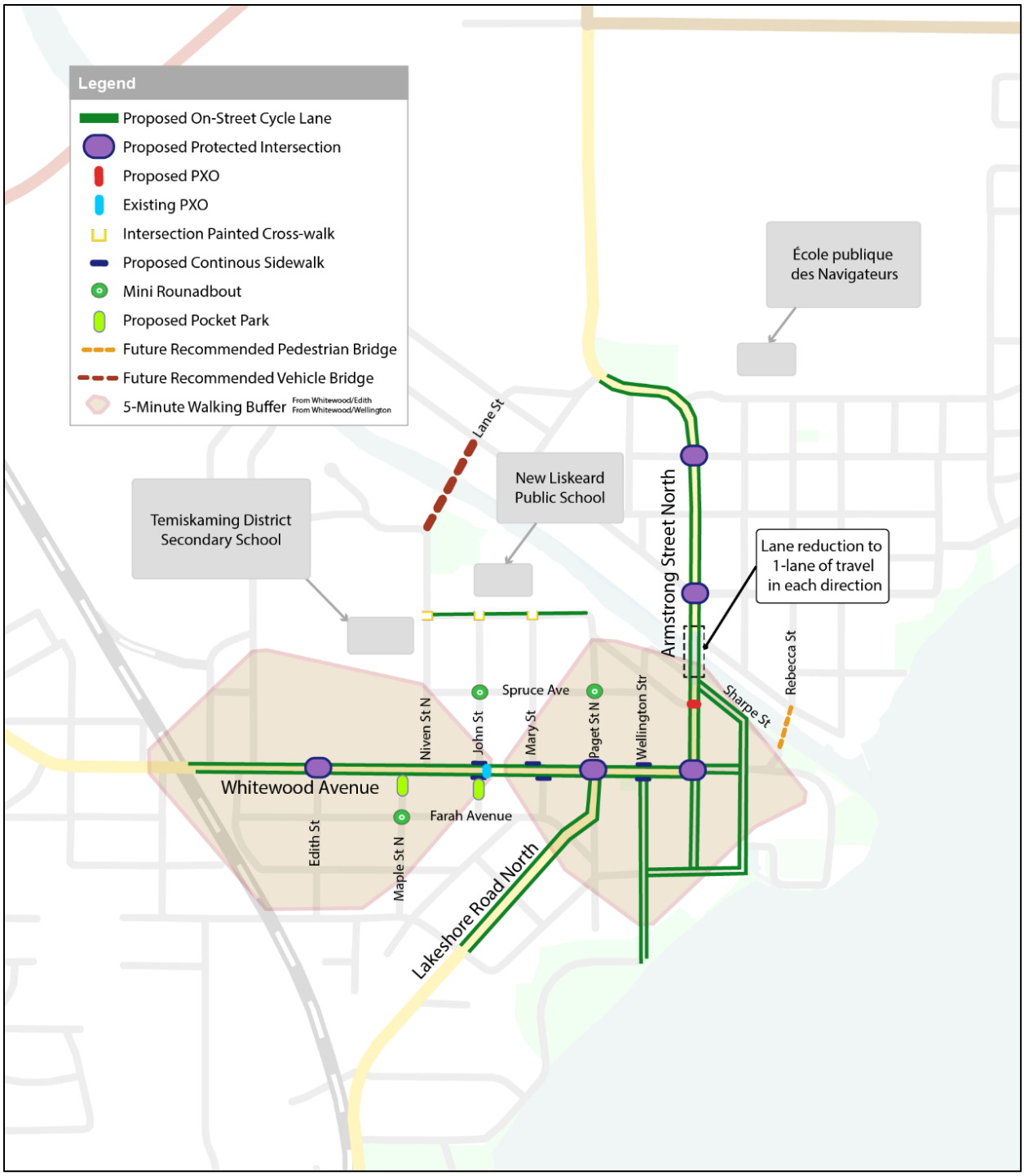


Figure 7-8: Proposed AT & Traffic Calming Measures – Haileybury

7.3.2 Protected Intersections

Protected intersections are a modern approach to urban planning and transportation infrastructure that offer a myriad of benefits for both cyclists and pedestrians as described in detail under Complete Streets Framework in **Section 5**.

At their core, these intersections prioritize safety by physically separating vulnerable road users from motorized traffic. The most notable advantage is the significant reduction in the risk of collisions between cyclists, pedestrians, and vehicles. By incorporating dedicated spaces and barriers, protected intersections create a clear and intuitive separation of paths, minimizing the chances of accidents and enhancing overall road safety.

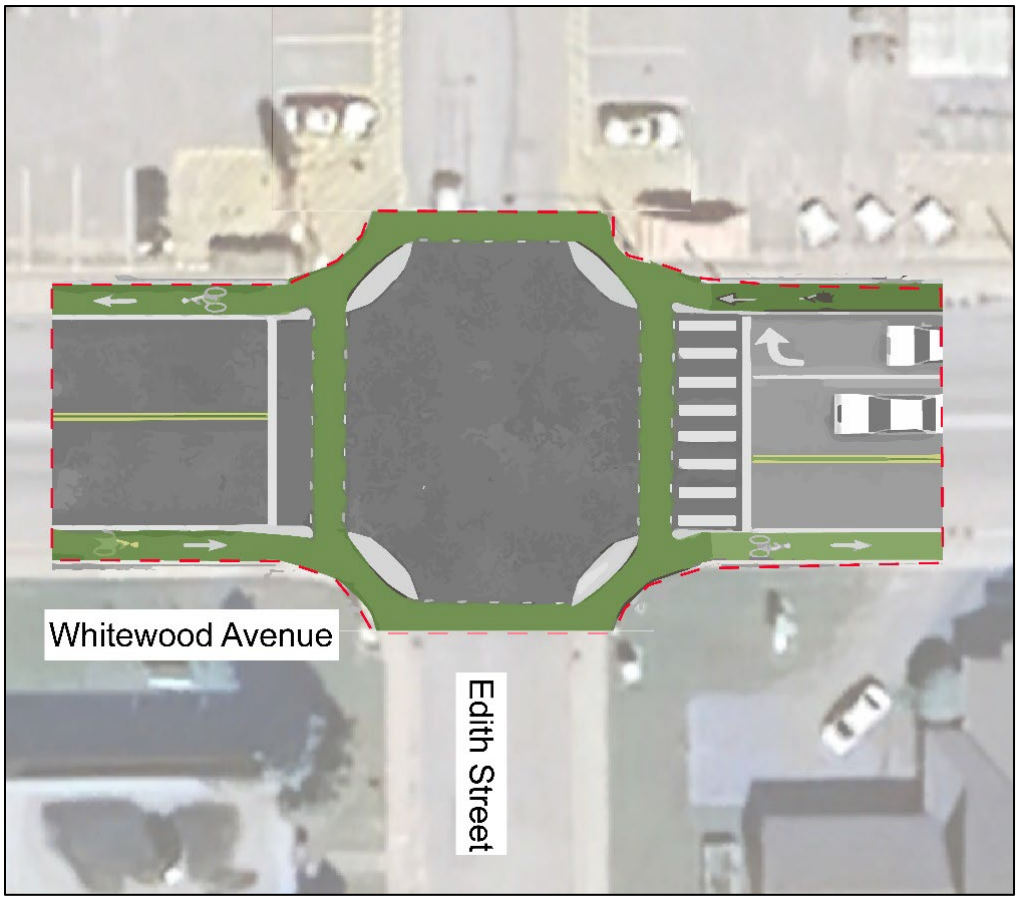
Protected intersections are recommended along the major corridors of both downtown cores at the following locations:

- New Liskeard
    - Whitewood Avenue and Edith Street
    - Whitewood Avenue and Paget Street North
    - Whitewood Avenue and Armstrong Street
    - Armstrong Street and Beavis Terrace/Elm Avenue
    - Armstrong Street and Haliburton Avenue
- Haileybury
    - Main Street and Rorke Avenue
    - Main Street and Ferguson Avenue

Along Whitewood Avenue, the recommended protected intersections at Edith Street, Paget Street North, and Armstrong Street will serve as traffic calming measures as these intersections experience the largest turning traffic volumes.

Figure 7-9 shows a conceptual protected intersection configuration at the Whitewood Avenue & Edith Street intersection.

Figure 7-9: Protected Intersection Conceptual Design – Whitewood Avenue & Edith Street



Along Armstrong Street North, two more protected intersections are also recommended at the intersections with Beavis Terrace/Elm Avenue and Haliburton Avenue where vehicle speeds are high and there is potential for increased pedestrian traffic around the local schools and to/from downtown. The Beavis Terrace/Elm Avenue protected intersection is paired with additional traffic calming measures at the Armstrong Street and Sharpe Street intersection to reduce speeding occurrences on the Wabi River bridge. Similarly, a protected intersection at Armstrong Street & Haliburton Avenue will discourage speeding and enhance pedestrian safety in an area close to a school/daycare zone.

7.3.3 Traffic Calming Measures

In addition to the measures indicated in Phase 1, additional traffic calming measures are recommended in Phase 2. This includes features such as mini-roundabouts, continuous sidewalks, and traffic calming in school zones.

7.3.3.1 Mini Roundabouts

Mini roundabouts are a type of traffic control. They have been proposed at the following locations as a physical traffic calming measure in the City:

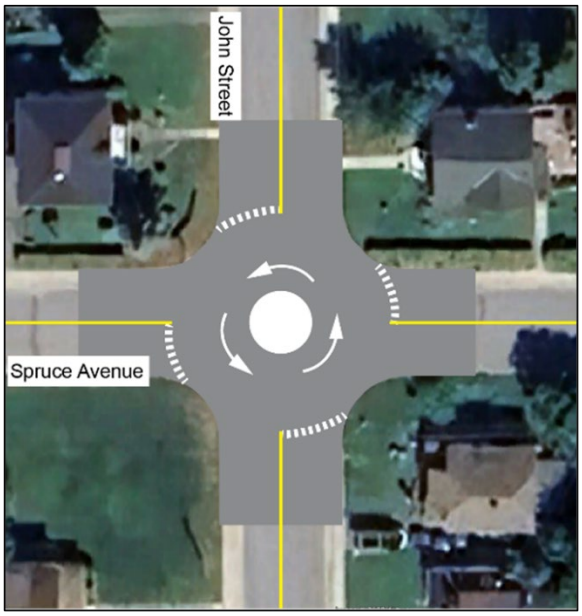
- Edith Street and Farah Avenue
- John Street and Spruce Avenue
- Paget Street North and Spruce Avenue

The two mini roundabouts are being proposed along Spruce Avenue as they are in the vicinity of school zones located near Dymond Avenue and Niven Street North. These two locations will cause vehicles to slow down due to the curvature of the travel lane from the roundabout centre island.

The mini roundabout at Edith Street and Farah Avenue will serve a similar purpose of slowing vehicular speeds and increasing safety in the residential neighbourhood south of Whitewood Avenue. It is anticipated to function as a driver deterrent to using Farah Avenue as a 'cut-through' route to avoid broader improvements along Whitewood Avenue. **Figure 7-10** depicts a conceptual mini-roundabout design at the John Street and Spruce Avenue intersection.

Additionally, a mini roundabout in Haileybury at Morissette Drive and Georgina Avenue was considered but it is beyond the study area of this Mobility Plan Report. Traffic Data was not collected as far south as Morisette Drive; however, it is understood that City staff and public would like to see a mini roundabout here. It is recommended that the City further investigate this opportunity.

Figure 7-10: Conceptual Mini-Roundabout Design – Spruce Ave & John St



7.3.3.2 Continuous Sidewalks

The continuous sidewalks, which are essential for good connectivity in the AT facilities network, encourages walking as a mode of transportation, promoting healthier lifestyles and decreasing reliance on cars, which aligns with sustainable urban development goals. The aesthetic enhancement brought about by well-designed and maintained sidewalks can improve the visual appeal of neighborhoods, contributing to a more vibrant and inviting community.

Within New Liskeard, the following intersection are recommended to be fitted with continuous sidewalks to build an attractive, connected pedestrian network in conjunction with other active transportation infrastructure such as protected intersections:

- Whitewood Avenue and John Street
- Whitewood Avenue and Mary Street
- Whitewood Avenue and Wellington Street

In Haileybury, continuous sidewalks are recommended at the following intersection to allow for a safer crossing experience for pedestrians aiming to access the Haileybury Beach:

- Ferguson Avenue and Broadway Street

The intersection of Main Street and Georgina was considered for a continuous sidewalk but was ultimately rules out due to the presence of the fire station and the downward slope of Main Street at this intersection. Curb extensions may be feasible here if traffic calming is desired.

In addition to safety and aesthetic considerations, continuous sidewalks play a vital role in fostering community connectivity and social interaction. They serve as essential public spaces where people can walk, jog, or simply gather, enhancing the sense of community. This increased foot traffic can positively impact local businesses, leading to economic benefits for the area.

7.3.3.3 Traffic Calming in School Zones

Enhancing traffic calming measures in school zones, particularly around Dymond Avenue and Niven Street, is crucial for addressing safety concerns during and after school hours. The current chaotic traffic situation in this area necessitates a reassessment of crossing improvements and traffic calming strategies. Proposed measures include painted crosswalks at key intersections:

- Dymond Avenue and Niven Street North
- Dymond Avenue and John Street
- Dymond Avenue and Mary Street

Considering congestions experienced during peak school pick-up and drop-off times, implementing a school bus-only zone during rush hour, and exploring alternative pick-up/drop-off locations are recommended. Additionally, at at-grade bi-directional two-way cycle lane is being proposed as an additional layer of safety and for promoting active transportation for school children. This bike facility is recommended to be on the north side as the sidewalk is currently on the north side of Dymond Street.

7.3.4 Armstrong Street Bridge Measures

The Armstrong Street bridge currently serves as a vital thoroughfare, accommodating high vehicular capacity with two travel lanes in both directions. However, this design, combined with the bridge's slope gradient, has inadvertently contributed to high travel speeds for southbound vehicles. To enhance transportation safety and encourage active transportation, the following measures are recommended:

- Travel Lane reduction from 2 lanes to 1 lane in each direction.
- Cycle lane on each side of the bridge tying to proposed facilities north and south.
- Protected intersection at Armstrong Street and Beavis Terrance/Elm Avenue.
- Ultimately widen pedestrian sidewalks on the bridge or increase protection from vehicles.
- Curb extensions at the Armstrong Street and Sharpe Street intersection (recommended in Phase 1).

Reducing travel lanes on the Armstrong Street bridge will facilitate the addition of cycle lanes, promoting active transportation. The inclusion of cycle lanes on both sides of the bridge aims to encourage and facilitate bicycle commuting and recreational cycling. This initiative aligns with broader urban development goals focused on sustainability and reducing reliance on fossil fuel-driven modes of transport.

Coupled with the suggested curb extensions and protected intersection on both ends of the bridge, lower travel speeds are also anticipated, further encouraging pedestrian and cyclist use. The addition of a protected intersection at Armstrong Street and Beavis Terrace/Elm Avenue is aimed to create a safer environment for pedestrians, cyclists, and motorists by prioritizing the protection of vulnerable road users and minimizing the risk of collisions. Similarly, the curb extensions at the Armstrong Street and Sharpe Street intersection will shorten pedestrian crossing distances, enhance visibility, and encourage slower vehicular speeds. These enhancements will be implemented as part of Phase 1 of the development plan, emphasizing the prioritization of pedestrian safety and comfort.

A new Pedestrian Crossover (PXO) is also recommended south of the bridge at the Armstrong Street and Church Street intersection as part of the Phase 1 development plan. This addition will provide a convenient crossing point for pedestrians while also contributing to the broader objective of reducing traffic speeds and fostering a more pedestrian-friendly streetscape.

7.3.5 New Parkettes

Parkettes, also known as pocket parks, are proposed at the following two locations:

- Maple Street North and Whitewood Avenue; and,
- John Street and Whitewood Avenue.

Both parkettes are proposed at the south side of Whitewood Avenue and would serve to create a small community gathering spot. They would likely contain some vegetation cover in the forms of trees and planters, some lights, and seating arrangements. They can reimagine the space and become a small attraction for residents that live in proximity. These parkettes would incentivise AT use and simultaneously reduce vehicular access points onto Whitewood Avenue, allowing for safer and less congested movement on this major transportation corridor**. Figure 7-11** illustrates a conceptual pocket park at the south leg of the Whitewood Avenue & John Street intersection.

Figure 7-11: Conceptual Parkette Design – Whitewood Ave & John St

Implementing Parkettes

At the intersection of Maple Street at Whitewood Avenue, turning Maple Street into a dead-end roadway south of Whitewood and replacing the northern-most part of Maple Street with a parkette would help redistribute vehicular traffic to adjacent roadways, avoiding the disjointed intersection with Niven Street. This improvement would also serve as a road safety measure on Maple Street and potentially improve the traffic operations on Whitewood Avenue. Current driveways, parking, and laneways would not be affected by the provision of a parkette, as they are located relatively far from Whitewood Avenue.

Another parkette can also be introduced at the intersection of John Street at Whitewood Avenue on the intersection's south leg while turning it into a dead-end roadway. This parkette would help redistribute traffic along adjacent roadways, and away from Whitewood Avenue. Additionally, the location of St. John's Anglican Church on the south-west corner of this intersection synergizes well with the introduction of a parkette through the combined pedestrian attraction value of both features. There would not be any negative effect on existing driveway of the property located southeast corner of the intersection as the parkette would not extend past this driveway entrance.

Figure 7-12: Neighbourhood Parkette

Source: DTAH

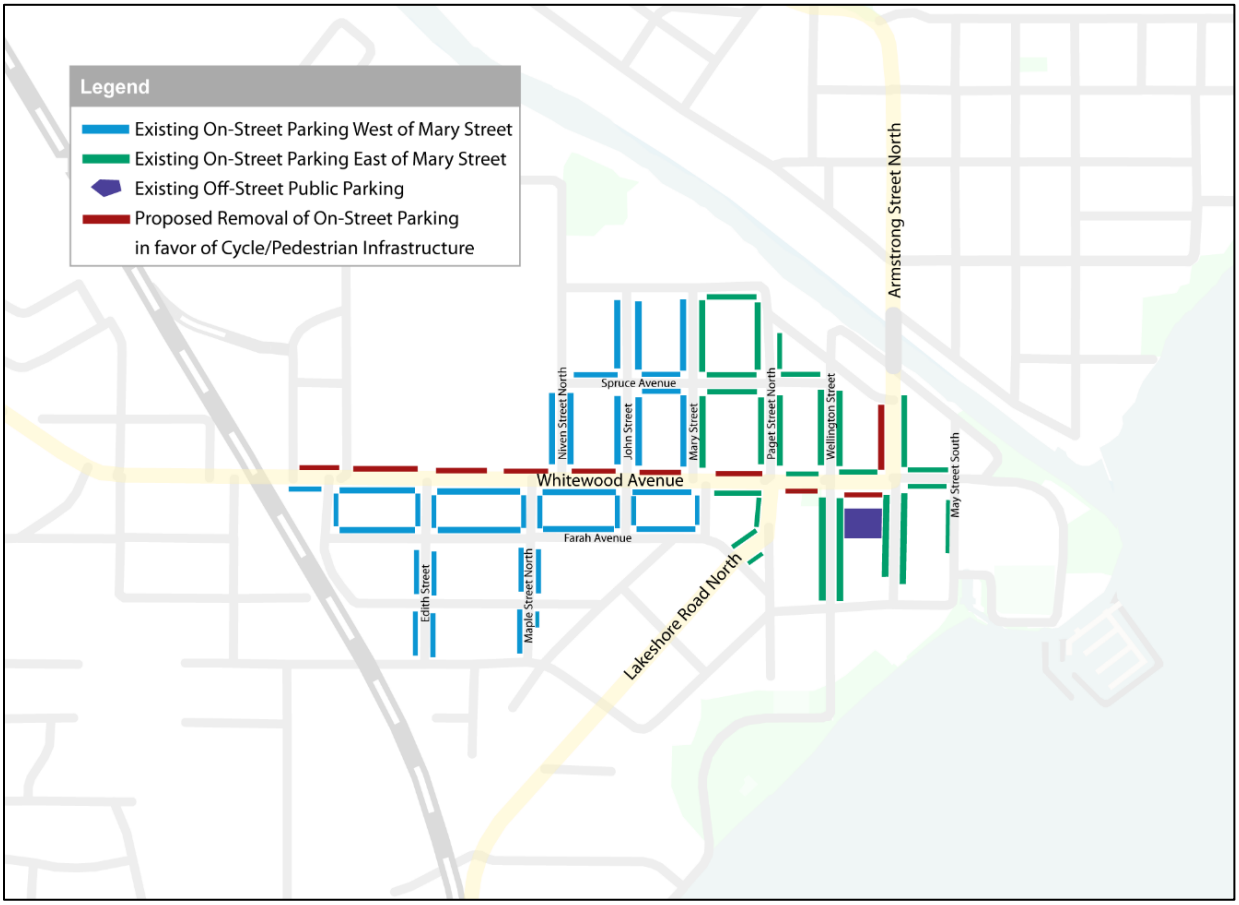
Figure 7-13: Sumach-Shuter Parkette in the City of Toronto

Source: City of Toronto

7.3.6 Parking Supply

As per City's goal to improve AT infrastructure within the City, the proposed cycle lanes along both sides of road on Whitewood Avenue, the existing parking lane on the north side of the road and a small section of Armstrong Street west side will no longer have on-street parking as illustrated in **Figure 7-14**. The existing off-street public parking lot south of Whitewood Avenue is largely a gravel lot and does not have parking space delineation through pavement markings. It is recommended that the City reconstruct this public parking lot to an asphalt pavement structure to support its increased use that is anticipated following the removal of the on-street parking on one side on Whitewood Avenue.

Figure 7-14: Proposed On-Street Parking Removal – New Liskeard



There is no change being proposed to the on- or off-street parking within Haileybury. Following consultation with City staff and with the existence of a high parking demand on Main Street, on-street parking is not recommended to be reduced in Haileybury. Unlike Whitewood Avenue, Main Street is proposed to have a singular, two-lane, bi-directional bike path on the northern edge of the road. This will allow just enough space to maintain on-street parking on both sides of Main Street. The proposed parking figure will maintain all existing parking as illustrated in previous **Section 6.5.2** and **Figure 6-53**.

7.3.7 Transit Network Improvements

The integration of the public transportation system in the City is key for promoting development, tourism, and economic growth. It is recommended that the City undertake both short- and long-term transit improvements which will enhance rider comfort, interconnectivity with other modes of transportation and ultimately increase transit ridership for shorter trips.

7.3.7.1 Short & Medium-term (1-10 Years) Improvements

The future transit network in the City is proposed to maintain the existing connection between Cobalt, Haileybury, New Liskeard and Dymond. In the short-term, all bus stops along the network are recommended to be retrofitted as sheltered bus stops for enhanced safety and year-round shelter. **Figure 7-15** and **Figure 7-16** show the proposed bus shelter locations across the New Liskeard and Haileybury transit route, respectively. The formalization of bus shelters across the City is recommended to provide weather protection barriers, appropriate illumination, wayfinding and live-transit tracking to riders. Some major transit stops can also be fitted with connecting bike parking shelters to further encourage the use of non-vehicular travel and enhance multi-modal interconnectivity.

Additionally, a minor route change is recommended in New Liskeard to connect a larger residential zone north of Wabi River; along Elm Avenue, Robert Street and Haliburton Avenue East. It is noted that this eastward expansion of the transit route is met with steep road-elevation changes, especially along Robert Street, which can affect certain vehicles' travel along the extended route.

7.3.7.2 Long-term (10+ Years) Improvements

In longer-term period, as noted in Section 0 already, there is an opportunity to reimagine the bus transit route between Haileybury and New Liskeard. The current route extends from Cobalt towards Dymond with bus stops in Haileybury and New Liskeard. This route primarily spans in the north-south direction while also extending east-west in New Liskeard along Whitewood Avenue and eventually towards the Temiskaming Hospital. In the system, the needs of inter-city (north-south) travel riders is combined with the needs of those who plan on travelling along the Temiskaming Downtown (east-west). By separating the route into two separate routes, riders on both routes can experience increased reliability in the service while also making it easier to increase service frequency for critical destinations such as the Temiskaming Hospital in New Liskeard.

Additionally, a large-scale transit route change could be facilitated through the provision of a transit hub. With the Ontario Northlander Railway bisecting New Liskeard, there is an opportunity to introduce passenger rail transit into New Liskeard and develop a larger transit hub which connects the existing New Liskeard Train Station with Temiskaming Shores' transit network. This transit hub could be connected to existing and planned AT infrastructure to incentivize the use of non-vehicular travel for relatively shorter trips.

Figure 7-15: Proposed Transit Infrastructure Improvements – New Liskeard

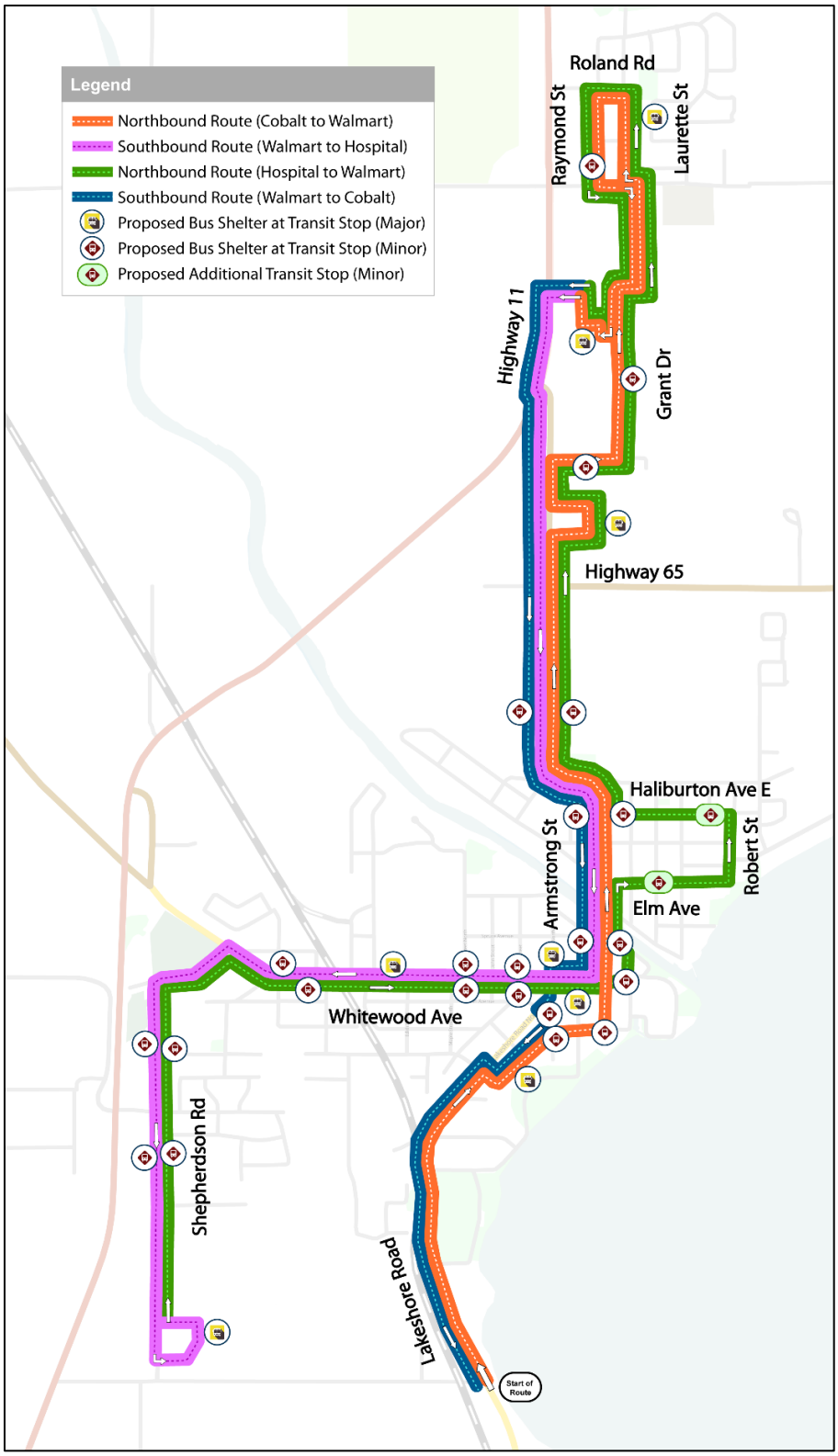
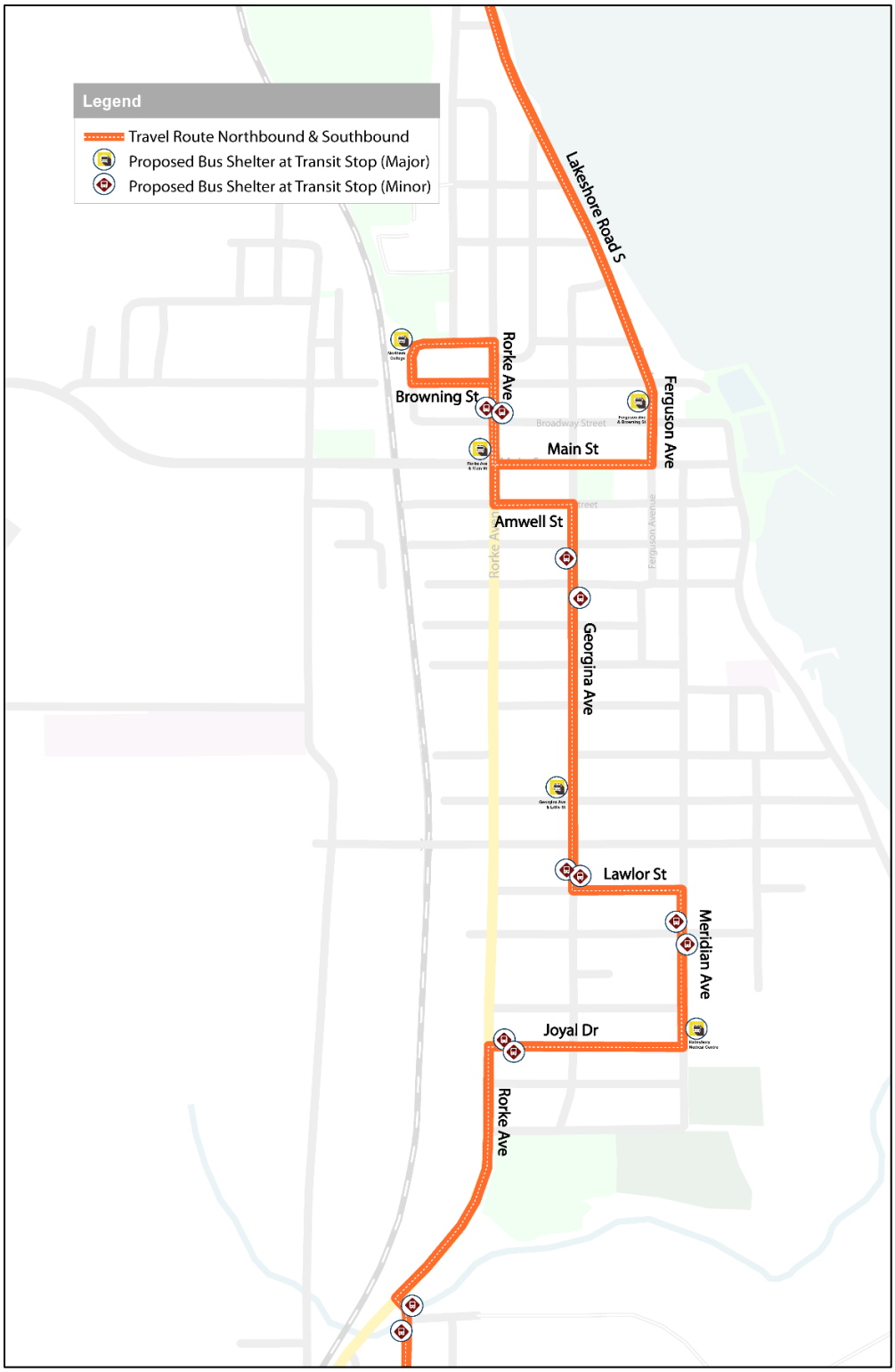


Figure 7-16: Proposed Transit Infrastructure Improvement – Haileybury



7.3.8 Recommendations Summary

TYLin recommends the full implementation of all mobility network solutions identified for the downtown cores of New Liskeard and Haileybury, outlined in **Section 7**, over a flexible period of time and at the discretion of City Council and staff.

Given the unique experiences and diverse needs of Temiskaming Shores residents, we emphasize the importance of piloting and thoroughly testing these initiatives before full-scale deployment. Piloting allows for the identification of potential challenges, the refinement of strategies, and the gathering of crucial feedback from stakeholders. We recommend a phased approach to implementation, allowing for flexibility and adaptation based on the discretion of local council and the availability of funding, as presented in **Section 10**.

By taking these measures, Temiskaming Shores can ensure that the proposed interventions are effectively tailored to the specific contexts of the City, maximizing their impact and sustainability in the long run.

7.3.8.1 Illustrating Proposed Improvements

This framework primarily applies to the future condition of the four major roadways studied (Armstrong Street and Whitewood Avenue in New Liskeard, and Main Street and Ferguson Avenue in Haileybury) as illustrated by the conceptual roadway linework enclosed in **Appendix G.**

The improvements for the main roadways are illustrated in **Figure 7-17** and **Figure 7-18** for New Liskeard in **Figure 7-19** and **Figure 7-20** for Haileybury. These figures illustrate the typical right-of-way widths and elements of the key arterial roadways, which generally have allocated space for on-street parking, sidewalks, and dedicated bike lanes, consequently giving priority to pedestrian movement. The recommended designs will maintain the traffic capacity of the study roadways across the future horizon years, while functionally slowing speeds in high-traffic zones to improve safety for all users, improving the visibility of parking spaces, and improving the pedestrian experience across the downtown cores.

By utilizing the existing right-of-way, the recommendations are economically conservative, eliminating the need for costly road widenings or property acquisitions, ultimately utilizing the Complete Streets framework to balance the needs of all road users within the space available.

New Liskeard

Figure 7-17: Proposed cross-section for Armstrong Street

Figure 7-18: Proposed cross-section for Whitewood Avenue

Haileybury

Figure 7-19: Proposed cross-section for Main Street

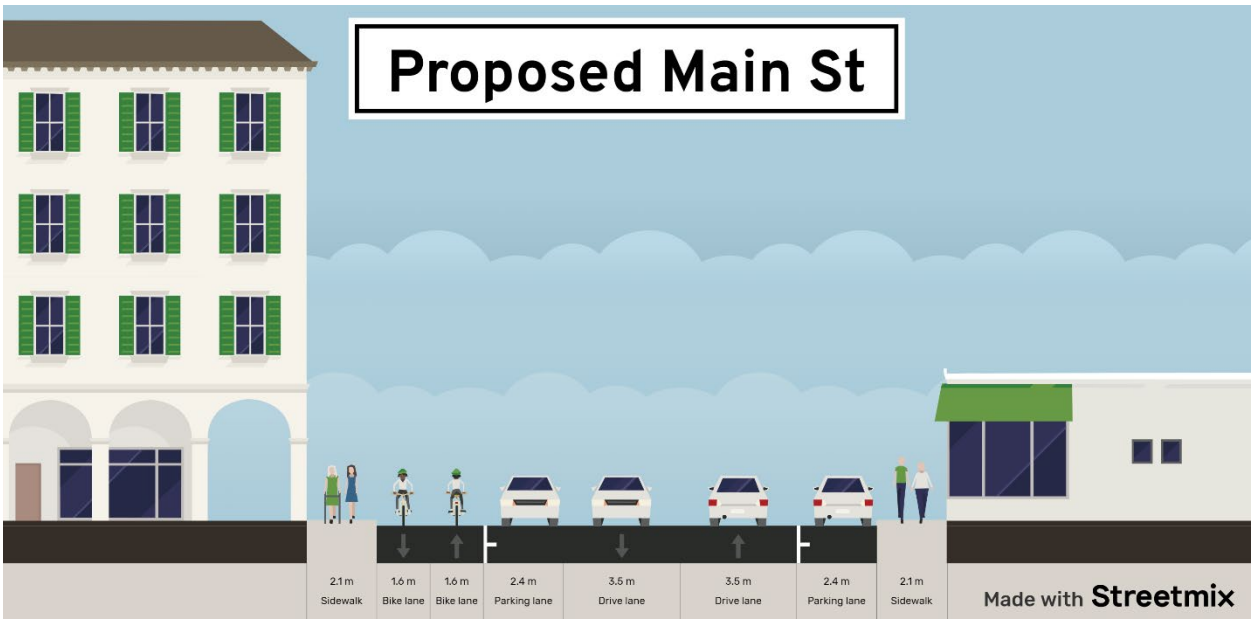
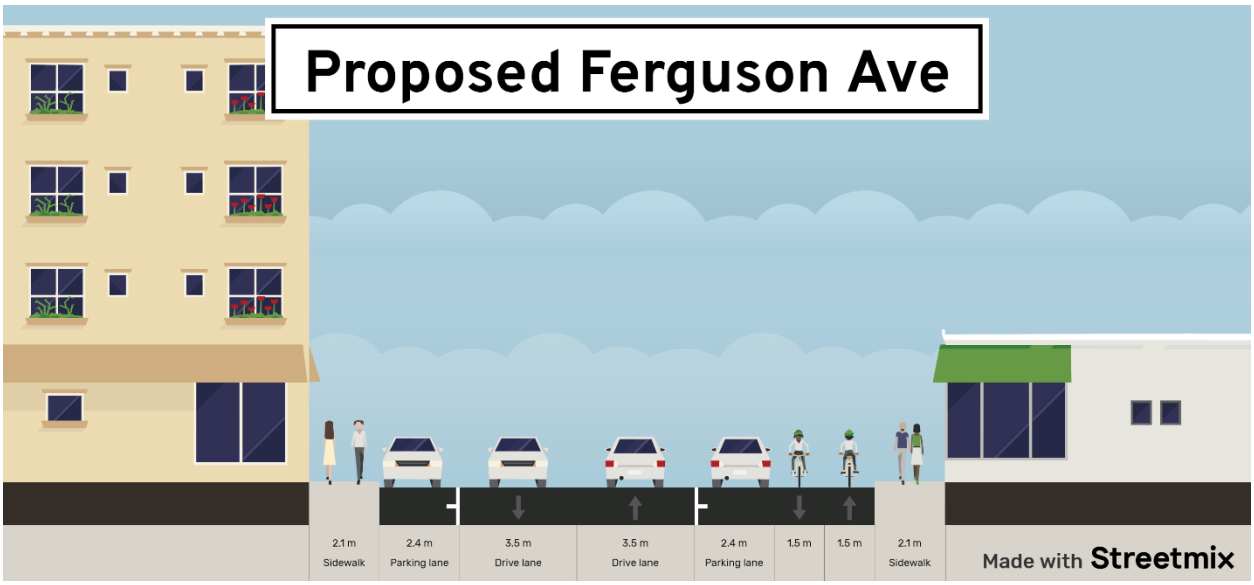


Figure 7-20: Proposed cross-section for Ferguson Avenue



Finally, **Figure 7-21 and Figure 7-22** illustrate the combination of Complete Streets measures along Whitewood Avenue in New Liskeard, which demonstrate the proposed balance of modes within the existing right-of-way.

Figure 7-21: Whitewood Avenue before proposed improvements

Source: Google Maps

Figure 7-22: Whitewood Avenue after proposed improvements

Source: TYLin

8 Consultation Summary

Public and stakeholder engagement is a key tool used to developing transportation solutions as this opportunity for public input and engagement ensures that the plan reflects the needs, concerns, and aspirations of the community. This section summarizes the consultation that has been undertaken to develop the transportation network improvement solutions for the City.

8.1 Notice of Commencement

The Notice of Commencement (NOC) for the Study was issued both in English and French language, on February 23, 2023, on the City's social media sites (Facebook, Twitter) and published on the City's website for this study at www.temiskamingshores.ca/en/resident/downtown-cores-mobility-study. The Notice contained information on what is the Study and why it is being undertaken by the City, the project contact information and how to get involved, including a link and QR code to the Online Survey. A copy of the Notice of Commencement can be found in **Appendix C**. The Notice was also emailed on the same day by TYLin to a list of stakeholders provided by the City. The stakeholder list included:

City Departments:

- Temiskaming Health Unit
- Bicycle Friendly Communities Committee / Bike Temiskaming Shores
- Downtown New Liskeard BIA
- Haileybury Business Improvement Group
- Temiskaming Shores and Area Chamber of Commerce
- GEMS (Going the Extra Mile for Safety)
- Temiskaming Shores Active and Safe Routes to School Committee
- Age Friendly Committee
- Timiskaming District Road Safety Coalition

Neighbouring Communities

- Town of Cobalt
- Township of Coleman
- Township of Harris

Local Indigenous Communities:

- Beaverhouse First Nation
- Matachewan First Nation
- Mattagami First Nation
- Temagami First Nation
- Wahnapitae First Nation

8.2 Summary of Online Survey #1

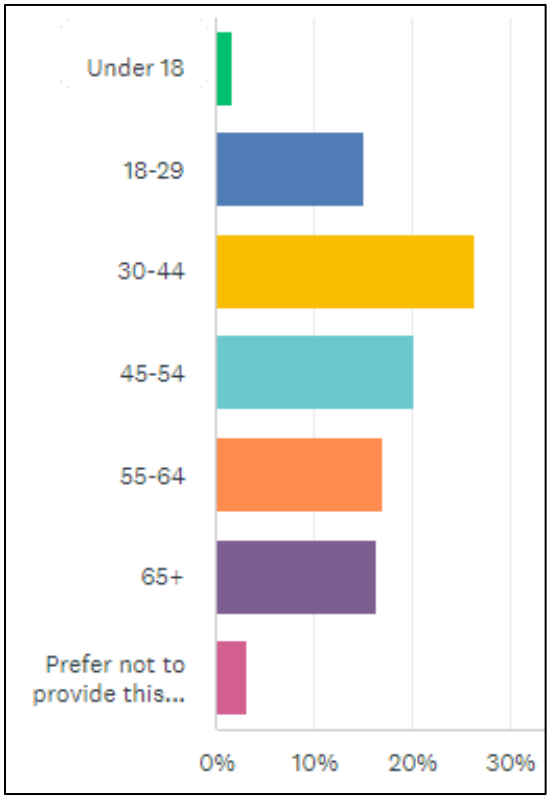
A public online survey was promoted on the City's Website, the City's social media channels, by City Councillors and staff during the summer block parties, as well as through support from the Timiskaming Health Unit (THU), who shared the survey link on their social media and with community partners who are part of the Timiskaming Community Collaborative. The survey contained 26 questions and was available in English and French. The survey was open from end of February to the end of July 2023.

The English survey was answered by 306 respondents and the French survey received answers from 19 respondents.

Of the 325 respondents 166 live in New Liskeard, 96 in Haileybury, 24 in Dymond, and 41 in another community. Around 64% of the respondents identified as female, 31% as male, about 5% indicated other or preferred not to say.

In terms of respondent's age, the age distribution can be seen in **Figure 8-1,** with the largest percentage of respondents in the 30-44 age bracket.

Figure 8-1: Age distribution of Survey Respondents

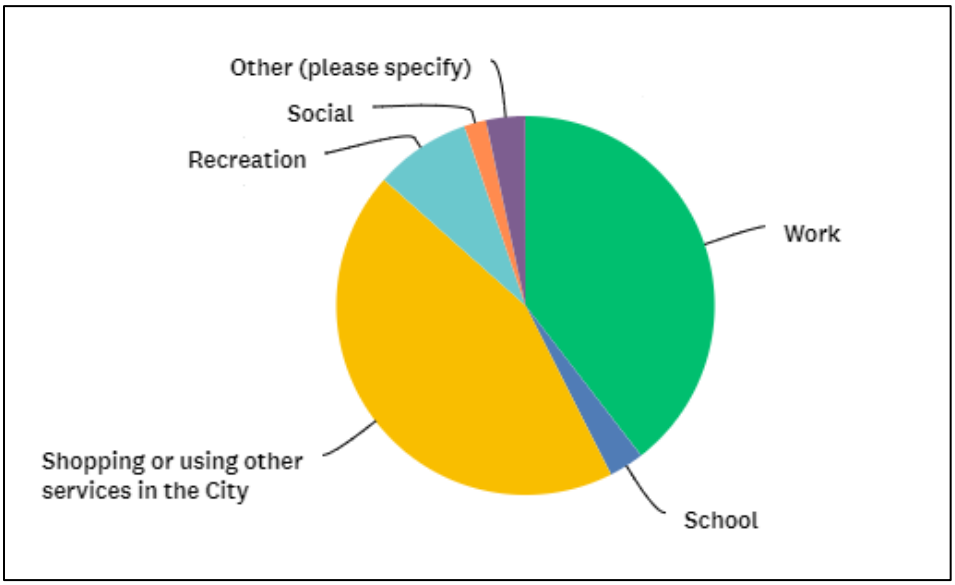


Most respondents drive a car as a primary mode of transportation to access the Downtown Cores (66%), followed by walking (30%), transit (12%), being a car passenger (10%), and biking (9%). Additionally, most respondents indicated that their household currently has access to two cars (49%), followed by one (25%), zero (11.5%), and three (8%). The vast majority of respondents live in a single

detached house (81%). Around 24% of respondents have a household income greater than $150,000, whereas 16% indicated a household income below $40,000. Fifty-six percent of respondents are employed full time, 11% part-time, and 18% are retired. More than half work exclusively or primarily in-person, with about 62% indicating New Liskeard as their typical place of work, while 19% indicated Haileybury as their typical place of work, 3% indicated Dymond, and 16% indicated another community as their typical place of work.

Most respondents travel into the city for work (38%) or shopping (45%) as can be seen in **Figure 8-2**.

Figure 8-2: Reasons for Traveling Downtown – Online Survey Results



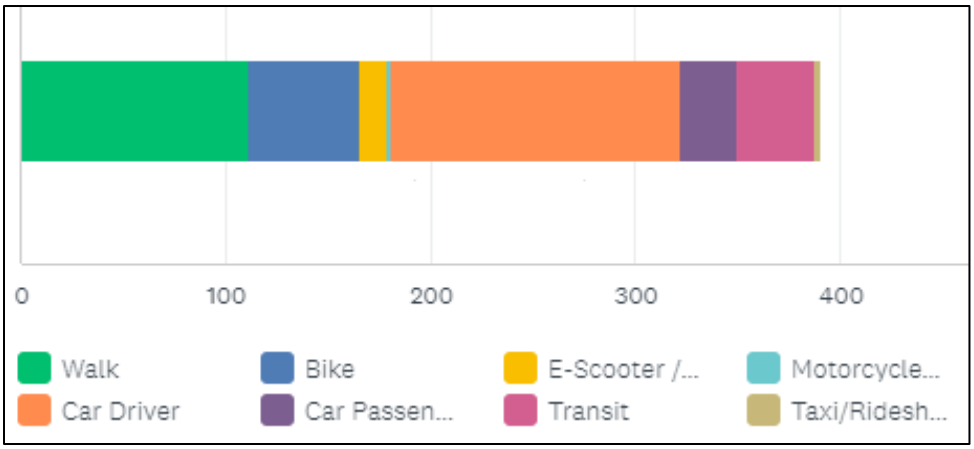
When respondents were asked to choose their biggest challenge when travelling in the city the answers were rather mixed as can be seen in **Table 8-1**.

Table 8-1: Challenges when travelling in the City – Online Survey Results

Challenges when travelling in the City	Responses
Access to sidewalks and crosswalks	16.15%
Safety	14.23%
Congestion along the route	11.92%
Cost of travel	8.85%
Access to cycling infrastructure	8.08%
Distance or time to destination	7.96%
Access to transit stops	3.46%
Convenience	1.38%
Other	19.23%

When asked what travel mode respondents would ideally prefer to use when traveling around the city 52% chose Car Driver, while 42% chose Walking, 21% biking, and 15% transit **Figure 8-3**.

Figure 8-3: Preferred Mode of Travel – Online Survey Results



Most people indicated that reasons preventing them from using their preferred mode of transportation include sense of safety, lack of active transportation infrastructure, travel time, and a lack of parking.

Around one third of respondents changed their travel behavior, while two thirds did not change their travel behavior because of the COVID-19 pandemic. Respondents ranked the following issues in order of importance to be considered for the Transportation Study: Road Safety (speeding, crossings, road design), Walking and Cycling (sidewalks, crosswalks, cycle lanes), Accessible Infrastructure (wheelchairs, strollers, mobility scooters, rolling walkers, etc.), Public Transit Services and Connectivity, Traffic Volume and Congestion, and environmental impact/climate change resilience.

Respondents ranked the following issues in order of importance to be considered for the Transportation Study: Road Safety (speeding, crossings, road design), Walking and Cycling (sidewalks, crosswalks, cycle lanes, cycle parkin), Accessible Infrastructure (wheelchairs, strollers, mobility scooters, rolling walkers, and more), Public Transit Services and Connectivity, Traffic Volume and Congestion, and environmental impact/climate change resilience.

- 58% of respondents would like to see speed reductions for traffic calming and road safety.
- 64% agree or strongly agree that their perception of safety impacts their choice of transportation routes.
- Around 60% agree that there should be more educational resources for safe driving, safe cycling practices, and “share the road” behavior.
- 65% of respondents agree that it is easy to find a parking space when shopping or dining
- More than half (56%) of respondents agree or strongly agree that the City should prioritize walking, cycling, and public transportation even if that means travelling by car could be less convenient in build-up areas.
- 57% would like to see temporary “pedestrian only” streets in the summer for open streets activities and events.

8.3 Summary of Online Survey #2

Alongside the Public Open House, a survey was conducted between November 1st and 27th, 2023 and circulated to the residents of New Liskeard and Haileybury. The survey contained 12 questions and had about 57 responses. The comments received encompass a range of perspectives regarding proposed changes to the public transit system and infrastructure in the community. There's a notable divergence in opinions, with some advocating for improvements to the transit system's frequency, stop accessibility, and scheduling to accommodate crucial appointments, while others express concerns about the impact of proposed changes on parking, traffic flow, safety, and the perceived necessity of certain alterations.

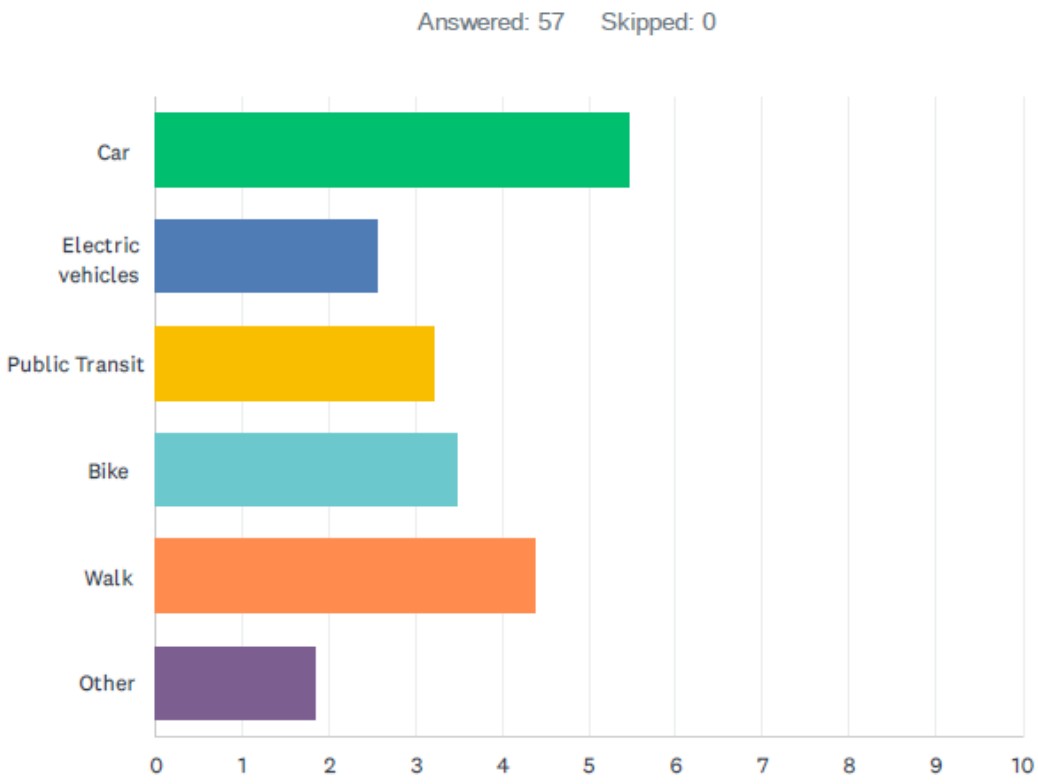
Feedback highlights:

- **Transit System:** Concerns were raised about the inadequacy of the current transit system, particularly in meeting the needs of individuals with crucial medical appointments like dialysis. Suggestions for increased bus frequency and more accessible stops were prominent.
- **Infrastructure Alterations:** Proposed changes such as pedestrian and bike lanes, bridge constructions, and adjustments to parking arrangements generated mixed responses. Some supported these alterations for safety and environmental reasons, while others expressed concerns about their impact on traffic flow, parking availability, and business operations.
- **Safety and Traffic Flow:** Safety considerations were a common theme, including worries about pedestrian crossings, speeding, road accessibility during winter months, and potential disruptions caused by infrastructure changes.

Our survey had a clear aim: engaging the public during the open house by presenting proposed enhancements and gathering invaluable feedback as a crucial part of our consultation process. We tailored our questions specifically to address proposed improvements for active transportation and the envisioned implementation of the Complete Streets framework detailed in **Section 3.2**.

When asked what the preferred mode of transportation is within the city, the consensus in **Figure 8-4** revealed that most respondents rely on their cars, followed by biking and walking.

Figure 8-4: Preferred Mode of Travel



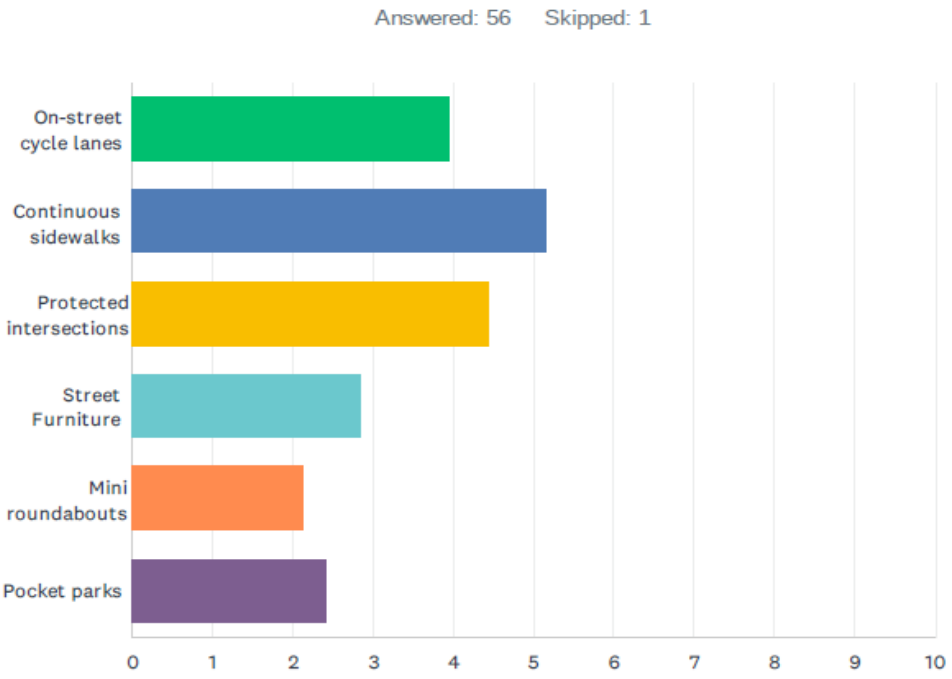
The current inadequacy of transit options leads residents to prefer using private vehicles for commuting. The second most preferred mode is walking, followed by biking. These preferences align with our city's plan to enhance active transportation facilities.

Similarly, regarding proposed transit infrastructure improvements, 89% of respondents (49 out of 55) agree that the proposed enhancements meet their needs.

Additionally, respondents were in favour of Complete Streets features that we proposed and ranked their preferences. As shown in **Figure 8-5**, the vast majority ranked continuous sidewalks with the highest priority, followed by protected intersections and on-street cycle lanes.

Overall, the feedback reveals a diverse range of opinions and concerns, highlighting the need for comprehensive consideration and a balanced approach to address the community's varying needs and preferences regarding proposed transit and infrastructure changes.

Figure 8-5: Priority for Complete Streets Elements – Online Survey Results



8.4 Summary of Email Comments

In addition to answering the survey, residents also had the opportunity to email City Staff directly to provide their comments, concerns, and ideas for the Transportation Study. Below are some of the comments received:

- A local driving instructor identified several deficiencies from a new driver's perspective that could be remedied from simple improvements such as increased line markings, as well as the potential changing of directions to some current one-way streets.
- One resident noted that there is a need for more traffic in downtown Haileybury to support the existing businesses and improve the potential for new businesses.
- This resident also explained that "a single marina in the south end of the city would bring traffic and strengthen the south end downtown core for the summer months. There is space to relocate the north end boat slips to the south end marina. This would reduce the city's operating and capital expenses etc."
- The inclusion of equity dimensions (i.e., gender, income) in the survey is great, as the collection of these data is important to determine who the survey did and did not reach. For example, those who are most affected by the built environment may not have had a chance to complete the survey due to barriers such as technology, literacy level, etc. We suggest that this should be recognized when considering survey results.

All consultation materials and anonymized responses will be included in **Appendix E**.

8.5 Public Open House

The project team organized a public consultation on November 1st, 2023, held at City Hall. There were two time slots for the public open house, the first one between 2 p.m.- 4 p.m. and the second one between 6 p.m. – 8 p.m. Notice was disseminated through social media channels and emails to key stakeholders, offering an opportunity to review the proposed changes and initiatives.

This event served as a platform for community members to engage with one another, offering valuable comments and suggestions regarding the proposed alterations **Figure 8-6** shows the public open house. Subsequently, a survey was distributed to gather comprehensive feedback, and a summary of these insights can be found in **Section 0** and **Section 8.4**.

Figure 8-6: Public Open House, November 1st, 2023

Source: TYLin

In reviewing the Public Open House feedback, several key themes and suggestions emerged across various aspects of urban development and transportation:

- **Traffic Calming and Safety Measures:** The community expressed interest in traffic calming measures, advocating for enhanced safety near TDSS and NLPS schools. There were differing opinions regarding the necessity of 4-way stops at specific intersections, with some suggesting alternative traffic calming solutions.
- **Bike Lanes and Pedestrian Infrastructure:** Strong support was voiced for proposed bike lanes and continuous sidewalks, along with specific recommendations for enhancing connectivity, like bike lanes on Sharpe to link downtown with the waterfront. Concerns were raised about potential conflicts between bike lanes and sidewalk patios.
- **Road Design and Lane Changes:** Feedback included opinions on lane configurations, proposing changes like the removal of lanes on Rorke in favor of bike paths and considering the elimination of on-street parking in certain zones.
- **Pedestrian Crossings and Safety:** The community urged for enhanced pedestrian safety measures, suggesting pedestrian lights and PXOs at various locations. Concerns were highlighted about busy streets like Paget Street and solutions for safer traffic flow.
- **Downtown Development and Amenities:** Suggestions ranged from adding greenery and seating to enhancing aesthetics with decorations and public art installations. Calls were made for increased infrastructure like garbage cans, recycling bins, and bike racks.
- **Public Transportation and Infrastructure:** Some voiced concerns regarding separate services for communities, emphasizing potential drawbacks such as complexity and decreased ridership support.
- **Miscellaneous Concerns:** The community raised specific concerns about traffic issues stemming from a gas station at Sharpe and Armstrong and suggested alterations to parking arrangements to better support local businesses.

These insights gleaned from the Public Open House comments provide a comprehensive understanding of community needs and desires, forming a valuable foundation for future urban planning and development initiatives in the area.

Public Support

During this Public Open House, existing conditions and future recommendations were presented to community members, and a prevailing sentiment emerged largely in favor of implementing the proposed solutions. The public expressed a collective desire for an assertive revitalization effort, signaling a shared commitment to embracing change and enhance mobility infrastructure. This enthusiastic response underscores the community's active engagement and willingness to support progressive measures that align with their aspirations for a more dynamic and accessible urban environment. The insights gathered from this open house and the online surveys serve as a valuable foundation for a mobility plan that not only meets the community's expectations but also catalyzes a vibrant and sustainable local activity.

9 Implementation & Phasing Strategy

Based on recommendations provided in **Section 7.3.8**, the phasing of the project should be approached gradually, ensuring a balanced and methodical progression. Items that can be quickly and economically implemented should be prioritized first, allowing for immediate benefits and adjustments as needed. An initial phase should address the most straightforward and readily achievable elements, based on available funding and impact to manage traffic and improve road safety objectives.

Subsequently, items that require more detailed design and extensive study are recommended in later phases. These items should be closely monitored by staff to determine the appropriate timing based on availability of funds and allowing for continuous assessment and improvement. This approach ensures that more complex and resource-intensive aspects are provided the necessary time and attention to develop thoroughly.

By balancing quick wins with thoughtful planning, and by closely monitoring progress, this phased strategy aims to optimize resource allocation, manage risks effectively, and achieve sustained, long-term success.

The following tables (namely **Table 9-1**, **Table 9-2**, **Table 9-3**) provide the recommended project cost breakdown for each phase as well as overall estimates.

A detailed costing framework is enclosed in **Appendix H.**

9.1 Phase 1 Components & Cost Estimates

Table 9-1: Phase 1 Cost Estimates

Phase 1 (1-5 years)		
Category	**Item**	**Cost**
Traffic Controls, Intersection & Pavement Design	Stop Signs	$700
	Pedestrian Crossovers (PXO)	$40,000
	Pavement Markings	$9,870.04
	Subtotal	*$50,570.04*
Traffic Calming Measures	Curb Bump-Out	$60,000.00
	Subtotal	*$60,000.00*
Total		***$110,570.04***

9.2 Phase 2 Components & Cost Estimates

Table 9-2: Phase 2 Cost Estimates

Phase 2 (5-10 years)		
Category	**Item**	**Cost**
Active Transportation	Concrete Sidewalk Construction	$27,847.89
	Crosswalk	$67,905
	Painted Bike Lanes	$4,833,020
	Protected Intersection	$9,100,000
	Pocket Park	$1,064,000
	Subtotal	*$15,092,772.89*
Transit	Bus Pad	$110,925
	Bus Shelter	$1,170,000
	Bike Rack	$9,800
	Wayfinding Signage	$910
	Subtotal	*$1,291,635*
Traffic Calming Measures	Mini Roundabout	$750,000
	Subtotal	*$750,000*
Parking & Placemaking	Parking Lane Marking	$2,030
	Parking Lot Paving	$104,400
	Subtotal	*$106,430*
Total		***$17,240,837.89***

9.3 Overall Cost Estimates

Overall Cost Estimate represents Phase 1 and 2 combined.

Table 9-3: Cost Estimates for Phase 1 and Phase 2

Overall Cost Estimate	
Category	**Cost**
Active Transportation	$15,092,772.89
Transit	$1,291,635.00
Traffic Controls, Intersection & Pavement Design	$50,570.04
Traffic Calming Measures	$810,000.00
Parking and Place Making	$106,430.00
Total	***$17,351,407.93***

10 Funding

10.1 What is the Green Municipal Fund (GMF)?

The Green Municipal Fund is a $1.6 billion program funded by the Government of Canada. Its aim is to accelerate local governments' transition to sustainability through a unique mix of funding, resources, and training, empowering municipalities to enhance resilience and improve the lives of Canadians.

The GMF targets five sub-sectors for change, which are the following:

1. Energy
2. ***Transportation***
3. Land Use
4. Circular Economy
5. Water

Under the Transportation sub-sector for change, GMF aims for net-zero transportation emissions in municipalities through demand management, affordable transit, and active transportation, utilizing zero-emission vehicles. Investments also prioritize resilience in infrastructure and equipment.

10.2 Net-Zero Transformation Initiatives

The GMF offers four funding initiatives under their Net-Zero Transformation program. The funding is open to the following:

- Canadian municipal governments
    - Towns, cities, regions, districts, and local boards
- And Municipal Partners
    - Private sector entities
    - Municipally owned corporations
    - Regional, provincial, or territorial organizations delivering municipal services
    - Non-governmental organizations
    - Not-for-profit organizations
    - Research institutes (e.g., universities)
    - An Indigenous community is an eligible lead applicant if they are partnering with a Canadian municipal government on an eligible project, or if they have a shared service agreement with a Canadian municipal government related to municipal infrastructure, climate change or adaptation.

The Net-Zero Transformation program has four funding opportunities. Each of these initiatives have goals for which are described below:

- **Planning Studies:** A plan that sets a high standard for municipal planning exercises and sets the stage for a net-zero future.
- **Feasibility Studies:** A feasibility study that assesses in detail new approaches and solutions to bring your community closer to net-zero.
- **Pilot Projects:** A pilot project that evaluates innovative GHG reduction solutions in real-world conditions.
- **Capital Projects:** A capital project that has the potential to result in a significant contribution to net-zero.

Table 10-1 is a summary of the GMF's funding information:

Table 10-1: GMF funding information

Planning Studies	• **Grant for up to 50 percent of eligible costs** • **Up to a maximum of $175,000**
Feasibility Studies	• Grant for up to 50 percent of eligible costs • Up to a maximum of $175,000
Pilot Projects	• Grant for up to 50 percent of eligible costs • Up to a maximum of $500,000
Capital Projects	• Combined grant and loan for up to 80% of eligible costs • Loan up to a maximum of $10 million • Grant up to 15% of total loan amount.

For more information about the above funding opportunities, please refer to the Green Municipal Fund website.

10.3 Emerging Opportunity – Spring 2024

TYLin's discussion with the GMF indicate that the typical grants for studies and pilot projects cover up to 50%. However, a new offer launching this spring may allow certain applicants to receive grants covering up to 80% of project costs.

These applicants include:

- Municipalities (or their partners) with a population of 10,000 or under (The City of Temiskaming Shores had a total population of 9,634 in the Canada 2021 Census).
- Regional governments or groups of municipalities where the average population of the member municipalities is 10,000 or under.
- Eligible Indigenous communities.
- Northern communities.

An exciting aspect of this offer is that Northern and eligible Indigenous communities applying to the GMF for the first time may qualify for grants covering up to 100% of eligible costs. As a Northern community, Temiskaming Shores could benefit greatly from this opportunity.

11 Conclusion

In conclusion, the Downtown Cores Mobility Plan for the City of Temiskaming Shores can serve as a cornerstone guiding document, poised to shape the trajectory of the transportation network for years to come. Developed in harmony with broader city objectives, this comprehensive plan provides a blueprint for a sustainable transportation system within and around the downtown cores of New Liskeard and Haileybury. It stands as a robust framework for enhancing the existing network, addressing present challenges, and preparing for future demands as the City continues to grow and the downtown areas attract more activity.

The phased implementation of solutions, contingent upon council discretion and available funding, ensures a pragmatic approach to realizing the strategic vision for this plan. With a focus on creating complete streets, the Mobility Plan prioritizes improved pedestrian accessibility and proposes bold road design changes aimed at increasing road safety and multi-modal connectivity. Following a robust public engagement effort and with the support of identified funding sources, the City is poised to cultivate a safer, more efficient, and interconnected transportation system that enhances the quality of life for all residents and visitors to the downtown cores of New Liskeard and Haileybury in the City of Temiskaming Shores.