THORNHILL ACTIVE TRANSPORTATION PLAN

July 2014

Regional District of Kitimat-Stikine

URBAN systems

Thornhill Active Transportation Plan

Prepared for Regional District of Kitimat-Stikine

July 2014

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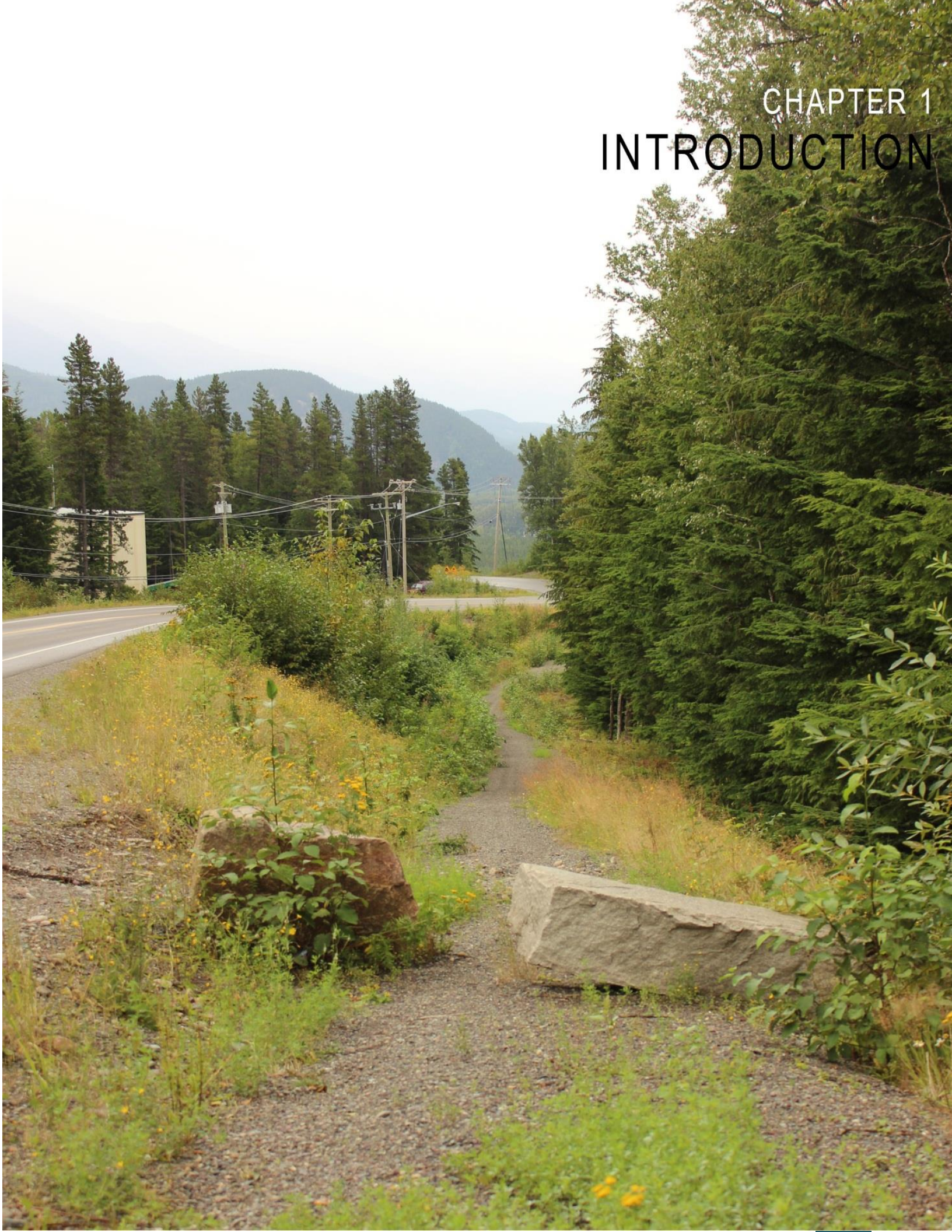


CHAPTER 1
INTRODUCTION

Thornhill is an unincorporated community of approximately 4,000 residents located within the Skeena Valley, east of the City of Terrace in the Regional District of Kitimat-Stikine (RDKS). The RDKS is committed to making walking and cycling safe, comfortable, and convenient transportation choices for residents and visitors travelling within and between Thornhill's neighbourhoods as well as to Terrace. Encouraging walking and cycling can help reduce automobile dependence, provide community health benefits, and create a greater sense of livability within Thornhill's neighbourhoods.

Growth and development in Thornhill initially occurred predominantly in the 1960s and 1970s in conjunction with ongoing economic development in the Terrace area. Local development patterns were designed primarily around the automobile, with limited consideration for facilities for walking and cycling. While Thornhill grew rapidly in the late 1960s and through the 1970s, the past two decades have seen a reduction in population in Thornhill. Today, Thornhill is largely an automobile-oriented bedroom community with limited local services or pedestrian or cycling infrastructure. This strongly influences local travel patterns, as well as regional travel and connections to Terrace. In fact, 93% of daily commute trips made by Thornhill residents are made by private vehicle, with walking and cycling accounting for only 3% of daily trips to work. However, there is significant recreational walking and cycling activity that takes place regularly in the community, and there is a significant opportunity to increase walking and cycling levels in the community for day-to-day local trips.

Due to changing demographics, economic conditions, and transportation needs and issues, the RDKS has identified the need to develop an Active Transportation Plan for Thornhill. Though the past two decades have seen a decrease in Thornhill's population, new regional industrial projects have created a renewed interest in residential, commercial, and light industrial development in Thornhill, while at the same time there is an increased interest in increasing transportation choices for moving around the community.

Several strategies and studies within the RDKS have reflected these priorities for active transportation and have provided guidance to this Plan on active transportation issues and opportunities within Terrace and Thornhill, including the RDKS' Thornhill Official Settlement Plan (1984) and, more recently, the City of Terrace's Active Transportation Plan (2009) and the Northwest Community College student report on Accessibility Issues and Solutions for Thornhill (2009).

Promoting more walking and cycling in Thornhill for both recreation and transportation supports the RDKS' overarching community goals to increase transportation choice for residents, and to support a multi-modal transportation network. In order to achieve a more efficient and safe multi-modal network, improving conditions for active transportation within Thornhill also requires consideration of key barriers and challenges – such as highway corridors, cold temperatures, wind and snow, long distances, and sometimes steep topography – that can actively deter residents from walking or cycling more. By addressing these challenges and planning for a safe and comfortable walking and cycling environment, more Thornhill residents can comfortably walk or cycle for recreation and for accessing neighbourhoods, services, and amenities.

1.1 Why Promote Walking and Cycling

The RDKS seeks to increase opportunities for active transportation in Thornhill in order to create a more balanced transportation system that supports healthy living, social equity, and cost effective infrastructure investments. In particular, creating more equitable and affordable mobility options can result in greater transportation equity and improved neighbourhood livability. In particular, the benefits to supporting walking and cycling in Thornhill include:

- **Quality of life**. A pedestrian- and bicycle-friendly community can encourage a more livable and enjoyable place to be, with a stronger sense of place and freedom of mobility. Communities that support walking and cycling can also contribute to safer streets and improved social interactions.
- **Health.** Walking and cycling for recreation and transportation are effective ways to supporting mental and physical health and building a healthier and happier community. The World Health Organization has identified physical inactivity as one of the main leading risk factors for global mortality, and as an underlying factor for many chronic diseases. Walking and cycling increase physical activity levels, which can reduce the risk of heart disease, diabetes, cancer as well as mental illness. With many families living in Thornhill, the health benefits of more walking and cycling can be experienced by residents of all ages and abilities.
- **Safety.** Improving safety, both real and perceived, is important to attracting more people to walk and cycle in Thornhill. As vulnerable road users, pedestrians and bicyclists are subject to a higher level of risk, and a lack of perceived safety can effectively discourage walking and cycling. The prevalence of automobiles and automobile-oriented street design in

Active transportation refers to all human-powered forms of travel such as walking, jogging, cycling, rollerblading, skateboarding, and the use of a wheelchair or scooter. Promoting active transportation can help reduce automobile dependence, increase physical activity levels, improve public health, reduce infrastructure demands, and create more livable communities.

Thornhill can feel threatening to more vulnerable road users, and the perceived walkability and bikeability of the community becomes inherently linked to safety. In fact, no matter the extent of infrastructure available, if people do not feel safe using the community's paved shoulders, crosswalks, or trails to get to their destination, then they will likely opt for their car.

- **Decreased costs.** Constructing pedestrian and bicycle facilities are typically cheaper per kilometre than the cost to construct many road infrastructure projects. In turn, residents receive an easy and convenient travel option and decreased congestion, roads experience less wear and tear, and MOTI/RDKS budget can benefit from financially sustainable transportation solutions.

- **Equity benefits.** Improving active transportation conditions can improve equity by providing options to non-drivers. In many communities, a proportion of the community has restricted options to drive due to disabilities, incomes or age. Having good walking and cycling (and transit) options in place tends to increase the affordability of transportation for many people, and can benefit existing pedestrians and cyclists, and attract new users.

- **Environmental quality.** Walking and cycling have many environmental benefits, as they can reduce vehicle trips, congestion, air pollution, and can help to reduce greenhouse gas emissions. Promoting walking and cycling can also help in the RDKS' efforts towards climate change mitigation.

1.2 Project Background and Objectives

With road and rail networks that are invaluable on a regional level for mobility and economic activity, the RDKS recognizes the importance of promoting more mobility options within its communities. The Thornhill Active Transportation Plan provides a framework for making walking and cycling in Thornhill more safe and comfortable for recreation and transportation purposes, particularly for local serving trips. In particular, the objectives of the Thornhill Active Transportation Plan are to:

- Provide residents with safe and convenient opportunities for use of active modes of transportation;
- Provide residents with viable alternatives to the automobile;
- Improve the health of the community;

- Improve community appeal;
- Enhance opportunities to experience the natural environment; and
- Reduce greenhouse gas (GHG) emissions.

A key focus of the Thornhill Active Transportation Plan is to improve safety and to encourage more walking and cycling for local and short-distance trips within the neighbourhoods of Thornhill, as well as for regional trips into Terrace. Safety in particular was identified as one of the top issues facing pedestrians and bicyclists in Thornhill, as many feel uncomfortable and unsafe in environments with higher traffic volumes, speeds and noise, where dedicated infrastructure for walking and cycling is inadequate or lacking, and in low-lit areas. To overcome these concerns, the Thornhill Active Transportation Plan a series of recommended improvement strategies to promote walking and cycling, including a range of engineering, education and encouragement initiatives. The approach of the Plan was inspired and directed by feedback and input received from RDKS staff, a stakeholder committee, and Thornhill residents that participated in the various public consultation activities.

As an unincorporated community, Thornhill's road network is under the jurisdiction of the Ministry of Transportation and Infrastructure (MOTI), while the Ministry of Forests, Lands, and Natural Resources (MFLNR) is involved in management of Crown lands. As such, while the recommendations set out in the Thornhill Active Transportation Plan are intended to guide the RDKS' planning and capital investments, they also serve to provide guidance to MOTI and other agencies regarding the community's aspirations for pedestrian and cycling improvements in Thornhill.

Ultimately, the success of this Plan will rely on collaboration and partnership with a number of agencies, including RDKS, MOTI, MFLNR, and the City of Terrace, among others. As such, the Plan includes a detailed implementation strategy identifying short, medium, and long-term priorities, roles and responsibilities, types of improvements (capital, policy or programming), and relative costs. This implementation strategy also provides guidance for the RDKS and its partners for "quick win" projects that can be implemented over the short-term. With a long-term vision and actions as well as short-term priorities for implementation, the Thornhill Active Transportation Plan will help to make walking and cycling safe, convenient, and attractive transportation choices within Thornhill.

1.3 Study Process

The Thornhill Active Transportation Plan has been developed over a four phase process between August 2013 and March 2014, as summarized below:

August 2013	**Phase 1: Project Initiation** involved collecting and reviewing relevant background information.
September to October 2013	**Phase 2: Inventory and Assessment** involved developing a detailed understanding of the existing pedestrian and cycling facilities in Thornhill, and defining the opportunities and challenges facing the active transportation system in the future.
October to December 2013	**Phase 3: Active Transportation Possibilities** was intended to chart the course for the future of walking and cycling in Thornhill by establishing future network plans for walking and cycling, and recommending supportive actions. This also included developing a strategy for implementing the recommendations of the Thornhill Active Transportation Plan, including short-term, medium-term and long-term priorities.
January to April 2014	**Phase 4: Reporting** included the preparation of a final Thornhill Active Transportation Plan document.

1.4 Communications & Engagement

The Thornhill Active Transportation Plan was developed based on extensive input from the public and key stakeholders, using a range of communications and engagement approaches as described below.

- A decided **project webpage** for the Thornhill Active Transportation Plan was created on the RDKS website to inform residents about the study process and opportunities to provide input and feedback.
- A **Transportation Advisory Committee** (TAC) was formed to provide input into the development of the Thornhill Active Transportation Plan. The TAC was comprised of representatives from a variety of interest groups, including RDKS staff, Thornhill Advisory Planning Commission, Terrace Off-Road Cycling Association (TORCA), RCMP, BC Transit, Coast Mountains School District #82, MOTI, MFLNR, City of Terrace, Northern Health, and Kitselas Band.

- Project-Specific **Business Cards** were dropped off at locations and businesses throughout Thornhill and Terrace to notify residents of the Plan and to direct them to the website and online survey.

- **Project Booth Open Houses** were hosted to invite residents to discuss walking and cycling in Thornhill. The project booths were hosted by RDKS staff at the 2013 Skeena Valley Fall Fair on September 7, 2013, and at the Terrace Farmers Market on September 14, 2013. Dozens of residents stopped by the booths. Residents were provided information about the study process and were able to give input to staff regarding key issues and opportunities for walking and cycling. Project business cards were also handed out to visitors to the booths.

- An **online survey** was made available to collect input from residents regarding their travel characteristics and existing issues and opportunities for walking and cycling in their neighbourhood of Thornhill. The survey was available during September and October 2013, and 75 responses were received. The survey questions are shown in **Appendix A**, while a summary of the feedback received is provided in **Appendix B**.

- **Community walkabouts** were held on October 5th, 2013 for the Copper Mountain, Upper Thornhill, and Lower Thornhill neighbourhoods. RDKS staff and consultants conducted the walkabouts to gather information about neighbourhood conditions and infrastructure.

- A **Design Charrette** was held on October 5th, 2013 at the Thornhill Community Centre and presented an opportunity for residents to provide hands-on input regarding walking and cycling issues and improvement strategies in their neighbourhood. Approximately 10 participants were involved in the Design Charrette, with the neighbourhoods of Upper Thornhill, Lower Thornhill, Copper Mountain, and Queensway all represented in participant feedback.

Thornhill Active Transportation Plan project booth at the Terrace Farmers Market (top), and participants in the design charrette (below).

1.5 Plan Framework

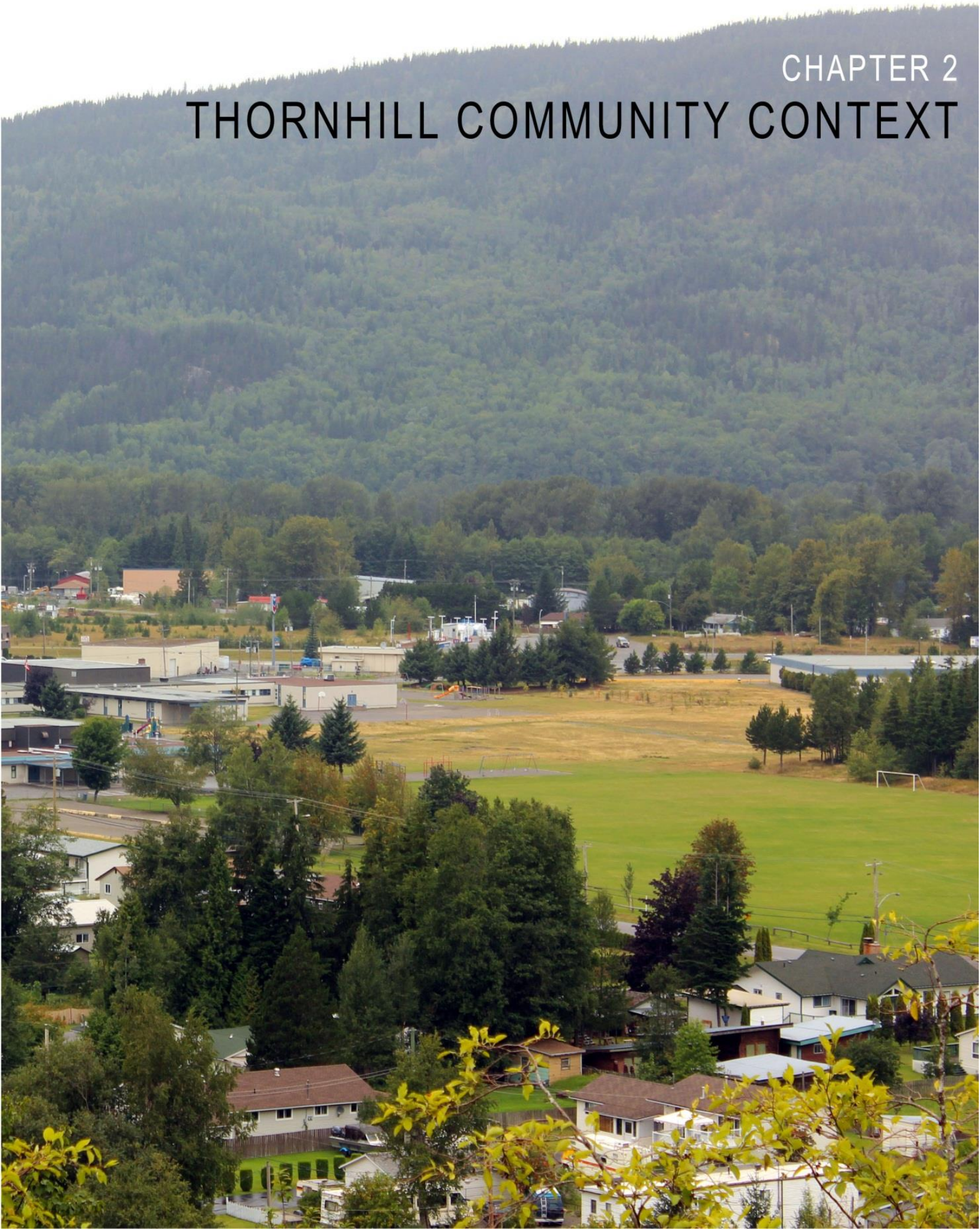
The Thornhill Active Transportation Plan includes a number of recommended improvement strategies to improve the safety and comfort of walking and cycling within and between Thornhill's neighbourhoods as well as into Terrace. The improvement strategies have been grouped into six broad Action Areas: Trails, Connections, Connections, Amenities & Accessibility, Policies, and Education & Encouragement. Within each Action Area, specific recommendations have been further grouped by theme.

ACTION AREA 1: TRAILS	ACTION AREA 2: CONNECTIONS	ACTION AREA 3: CROSSINGS
1.1 Enhance Existing Trails 1.2 New Trail Connections 1.3 Trail Information and Amenities	2.1 Enhance Shoulders 2.2 Greenways	3.1 Intersections 3.2 Bridges

ACTION AREA 4: AMENITIES & ACCESSIBILITY	ACTION AREA 5: POLICIES	ACTION AREA 6: EDUCATION & ENCOURAGEMENT
4.1 Visibility 4.2 Bicycle Parking 4.3 Transit Integration & Accessibility 4.4 Landscaping & Gateway Features	5.1 Developer Contributions 5.2 Acquire Right-Of-Way 5.3 Priority Snow Removal 5.4 Discourage Approval of Tenure	6.1 Walking and Cycling Education 6.2 Safe Routes to School 6.3 Community Events

CHAPTER 2

THORNHILL COMMUNITY CONTEXT

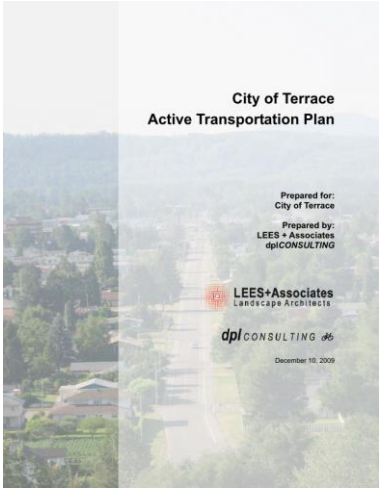


This section describes the context for the Thornhill Active Transportation Plan, including a summary of the policy context that has shaped the development of the Plan, as well as a summary of the key demographic, land use, transportation, and natural characteristics of Thornhill. This section concludes with a summary of the key issues and opportunities that have been identified through the communications and engagement conducted for this study. Together, these elements of the community context have shaped the recommended improvement strategies for the Thornhill Active Transportation Plan.

2.1 Policy Context

Several local and external studies and plans have influence the direction of the Thornhill Active Transportation Plan, including:

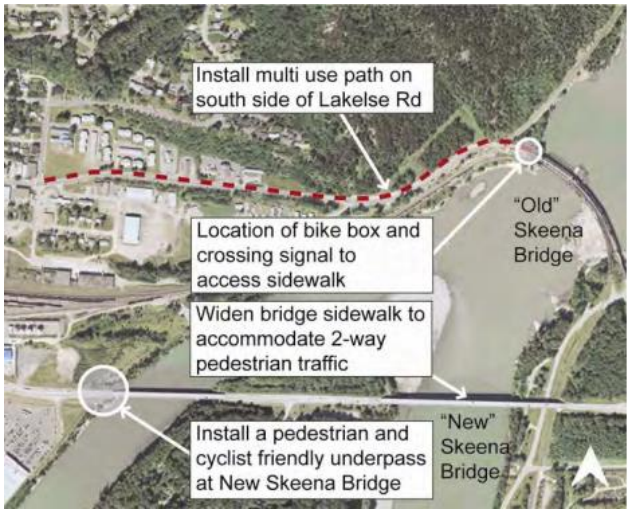
- **Thornhill Official Settlement Plan (1984)** is an overarching community policy document that governs the land use and development of residential, commercial, and industrial areas in Thornhill. One of the overarching objectives of the plan is to encourage safe and efficient vehicular circulation and transportation in developed areas of Thornhill, and to provide 'pedestrian and bicycle systems'. The relevant policies of the OSP related to transportation include:
  - ***Policy IV 5 (1)*** That adequate roadways shall be provided to allow for functional transportation circulation within Thornhill.
  - ***Policy IV 5 (4)*** That public transportation modes and terminal for use of residents in the settlement area shall be encouraged.
  - ***Policy IV 5 (5)*** That new subdivision areas shall provide pedestrian and bicycle systems which are segregated from the vehicular system, and that the provision of pedestrian and bicycle systems for presently built-up areas shall be considered in a neighbourhood plan.



- **City of Terrace Active Transportation Plan (2009)** was developed in order to uphold several key objectives, including commitments to reduce GHG emissions, make cycling and walking more convenient and safe for the public, and to increase transportation equity community-wide. One of the additional overarching objectives of the Plan is to improve active transportation connections within Terrace and to adjacent communities including Thornhill, Kitsumkalum and Kitselas. The Plan contains several strategies to improve the convenience, safety and appeal of the multi modal network, with one of the main focus areas on the barriers presented by the bridge crossings into Thornhill. The bridges, particularly

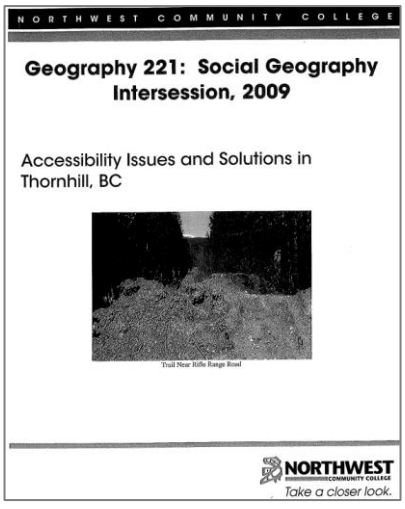
the Old Skeena Bridge, are identified as highly desirable active transportation links and improvements are seen as necessary to enhance connectivity through these links. In particular, the Plan identifies the following recommendations to improve conditions for pedestrians and cyclists accessing and crossing the two bridges:

- ***Old Skeena Bridge.*** Options included evaluating the feasibility of clip-on pedestrian and cyclist bridge, sidewalk widening to accommodate multi-use travel, and a bicycle lane with bicycle friendly surface and signal on the bridge. In addition, the Plan identified a pathway connecting to the west end of Old Skeena Bridge.
- ***New Skeena Bridge.*** Recommendations included undertaking an analysis for an underpass at the west end of the bridge for pedestrians and cyclists, and widening the sidewalk on the bridge over the long-term to accommodate two-way traffic of pedestrians, cyclists and wheelchairs.



The recommendations for the bridges require identified in the Plan working with MOTI, which owns and manages the bridges, in order to incorporate any future improvements. The directions within the Thornhill Active Transportation Plan support the directions of the Terrace Active Transportation Plan in regards to enhancing active transportation connections across the bridges.

- **RDKS Bylaw 192 (1983)** seeks to establish a 'specified area' in Electoral Area E (Thornhill) for the purpose of providing parks and recreation services. The bylaw empowers the Regional Board of the RDKS to be able to establish this specified park area within the boundaries of Thornhill (Electoral Area E). The bylaw states that the cost of providing the park and recreation area within Thornhill is to be borne by the landowners within the specified aarea through levies.
- **Accessibility Issues and Solutions in Thornhill BC (2009).** In 2009 students from Northwest Community College completed a study of the trail network in Thornhill, evaluating desire lines, areas of improvement for outdoor recreation, and transportation connections. The students studied and walked through trails in Copper Mountain, Upper Thornhill, and Lower Thornhill, accompanied by local residents, to identify current use patterns and opportunities for enhancements. Key recommendations included:


NORTHWEST COMMUNITY COLLEGE

Geography 221: Social Geography Intersession, 2009

Accessibility Issues and Solutions in Thornhill, BC

NORTHWEST COMMUNITY COLLEGE
Take a closer look.

- Enhance trails already used along Krumm Avenue, Haaland Avenue, and frontage roads;
- Designate trail restrictions by user group – primarily between pedestrians /cyclists and ATV /motocross. Encourage ATV / moto-cross to use tracks established by the Terrace Motocross Association (TMA). Ensure key routes such as the PNG right-of-way trail provide off-road tracks for ATVS to access TMA routes;
- Create a switchback trail on the hill between Upper and Lower Thornhill;
- Create a walkways / trail map with information such as grade, length, walk time and trail restrictions;
- Trail signage;
- Garbage cans at trailheads;
- Groom PNG and BC Hydro right-of-ways to accommodate more recreational users;
- Enhance the CanCel haul road as a historic walkway; and
- Preserve the ability and use of right-of-ways for recreational corridors.

Building off existing trailways, the study also identifies several trail loops in Copper Mountain, Upper Thornhill, and Lower Thornhill to serve recreational users. It also identifies Krumm Avenue, and Queensway Drive trails as important neighbourhood connector routes.

- **Sidewalk Study, Northwest Community College (2009).** As a companion study to the Accessibility Issues and Solutions in Thornhill BC study, this study evaluated the need for sidewalks or crushed gravel paths in Queensway, Lower Thornhill, and Upper Thornhill. The study looked at resident walking patterns and how additional infrastructure could enhance the safety or comfort of users. Recommendations included:

  - ***Clark Street:*** Due to the activity of pedestrians and traffic related to the school, provide a sidewalk from Old Lakelse Lake Drive to the Junior Secondary school. Provide a sidewalk on Clark Street on the north side of Highway 16, between the highway and River Drive, to provide more separation between pedestrians and industrial traffic.

  - ***Old Lakelse Lake Drive:*** Provide a sidewalk from Hemlock Street to Thornhill Street. Along the hill, place the sidewalk above the existing retaining wall to separate pedestrians completely from traffic. Also consider an alternative off-street connection between the top of Old Lakelse Lake Road and Paquette Avenue in Lower Thornhill.

- ***Queensway:*** Provide a sidewalk from Kenworth Avenue to the Skeena Bridge, on the west side to utilize the existing shoulder.

- ***Hemlock Street:*** Provide a graded and crushed gravel path between Krumm Avenue to Old Lakelse Lake Road, building off the existing trail worn into the right-of-way.

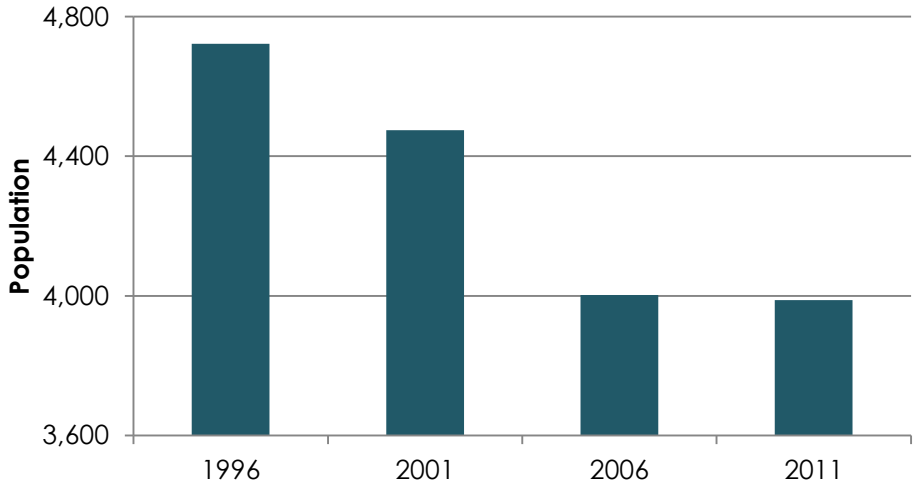
- **Terrace Regional Transit – Service Discussion Document, System Route Restructuring (2013).** This report summarizes the proposed route restructuring of the Terrace Regional Transit System for the City of Terrace. This report builds on a 2012 Service Review of the Regional Transit System, which recommends that bus routes should be restructured to improve the directness of bus trips and the system's consistency and ease of use. The recommendation in the report that impacts Thornhill service is to Route 5. The proposed changes to Route 5 are relatively minor and consist of having all bus trips route through Feeney and Kalum in both directions to access Wal-Mart and Real Canadian Superstore (instead of on request only, as is done now) and reversing direction on Haaland Avenue and Clore/Dobbie Streets in the Copper Mountain area. Reversing service on Haaland, Clore and Dobbie makes it easier for transit to route through the neighbourhood and reduces conflict with other vehicles at the Walker/Furlong/Clore intersection. This service change requires stops on Haaland Avenue, Furlong Avenue, Clore and Dobbie streets to be moved to the other side of the street. After this report, BC Transit intends to move forward with public consultation on these restructuring changes and implementation.

2.2 Demographic Context

Thornhill is a community of approximately 4,000 residents, located east of the Skeena River at the foot of Copper Mountain. Attractive and affordable properties in Thornhill, as well as proximity to amenities and scenic rural neighbourhoods have positioned Thornhill largely as a bedroom community of Terrace. This section summarizes key demographic characteristics that influence the direction of the Active Transportation Plan.

- **A relatively stable in recent years.** After years of rapid growth and development in the 1960s and 1970s, Thornhill's population had been in decline for a couple decades. However, in recent years, however, Thornhill's population has remained relatively stable, with a population of approximately 4,000 residents reported in both the 2011 and 2006 census.

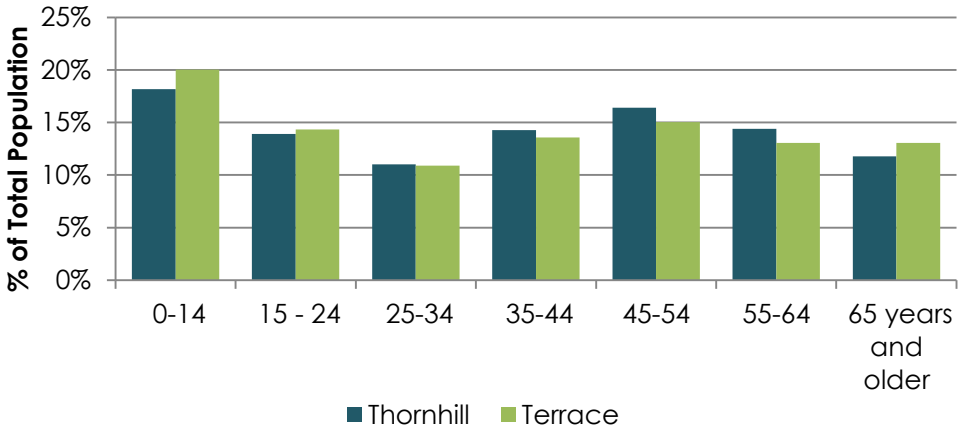
Figure 1
Population Trends 1996 – 2011
Source: Statistics Canada



- **A large youth population.** Due to its affordability, Thornhill is home to a younger demographic, as approximately a third (32%) of Thornhill residents are 24 years of age or under (similar to Terrace, where 34% of residents are under 24 years old), as shown in **Figure 2**. Improving walking and cycling can significantly benefit this age group, as younger groups may not have access to automobiles and are more reliant upon transit, walking, cycling and carpooling. In addition, by attracting youth to sustainable modes of transportation early in their lives, there is a considerable opportunity to continue these trends into adulthood, although the declining share of the youth population may present challenges in the future.

- **A growing senior population.** As shown in **Figure 2**, 12% of Thornhill residents are in the 65 years and older category, with a further 14% are in their pre-retirement years (aged 55-64). Like most communities across British Columbia and throughout North America, seniors are also rapidly growing. As Thornhill's population ages, older age groups tend to become more reliant on non-automobile transportation such as walking, cycling and transit. Safe and well-connected walking and cycling infrastructure (and transit) can make it easier for aging residents to move freely around their communities without a vehicle.

Figure 2
Age Profile of Thornhill Residents
Source: 2011 Census



2.3 Transportation Context

Thornhill is an automobile-oriented community, with the majority of trips made by automobile. This section describes travel patterns as well as transportation infrastructure in Thornhill.

- **An auto-oriented community.** According to the 2011 National Household Survey, walking and cycling together account for approximately 3% of all trips to work (2% walking and 1% cycling trips) in Thornhill, as shown in **Figure 3.** The majority of commuter trips in Thornhill are made by car, as 93% of residents use a car to get to work either as a driver or as a passenger. While the City of Terrace has higher levels of walking and cycling, general trends between Thornhill and Terrace are similar, as shown in **Figure 4**.

Figure 3
Mode Share of Commute Trips (2011)
Source: 2011 National Household Survey

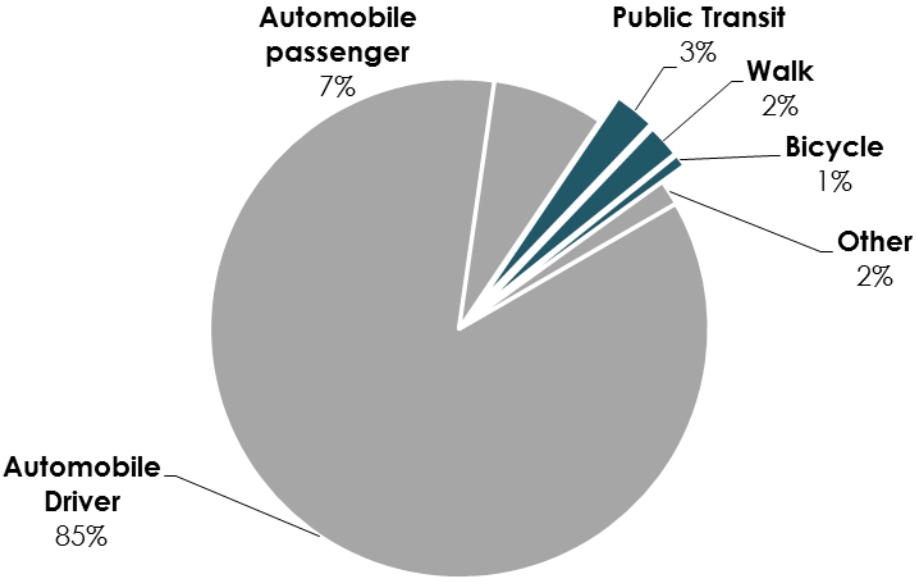
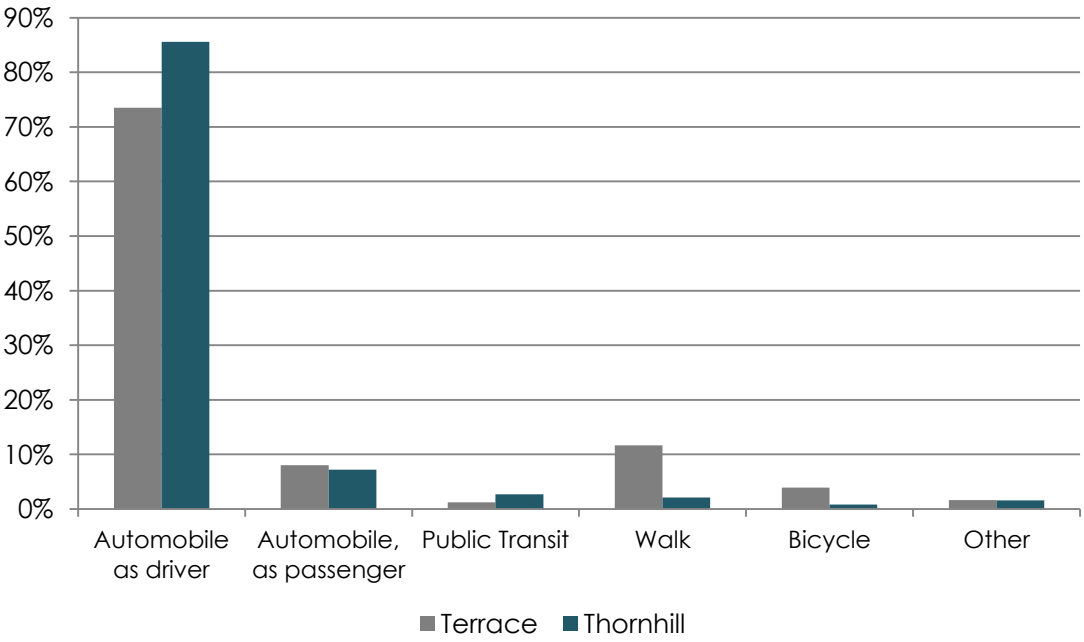
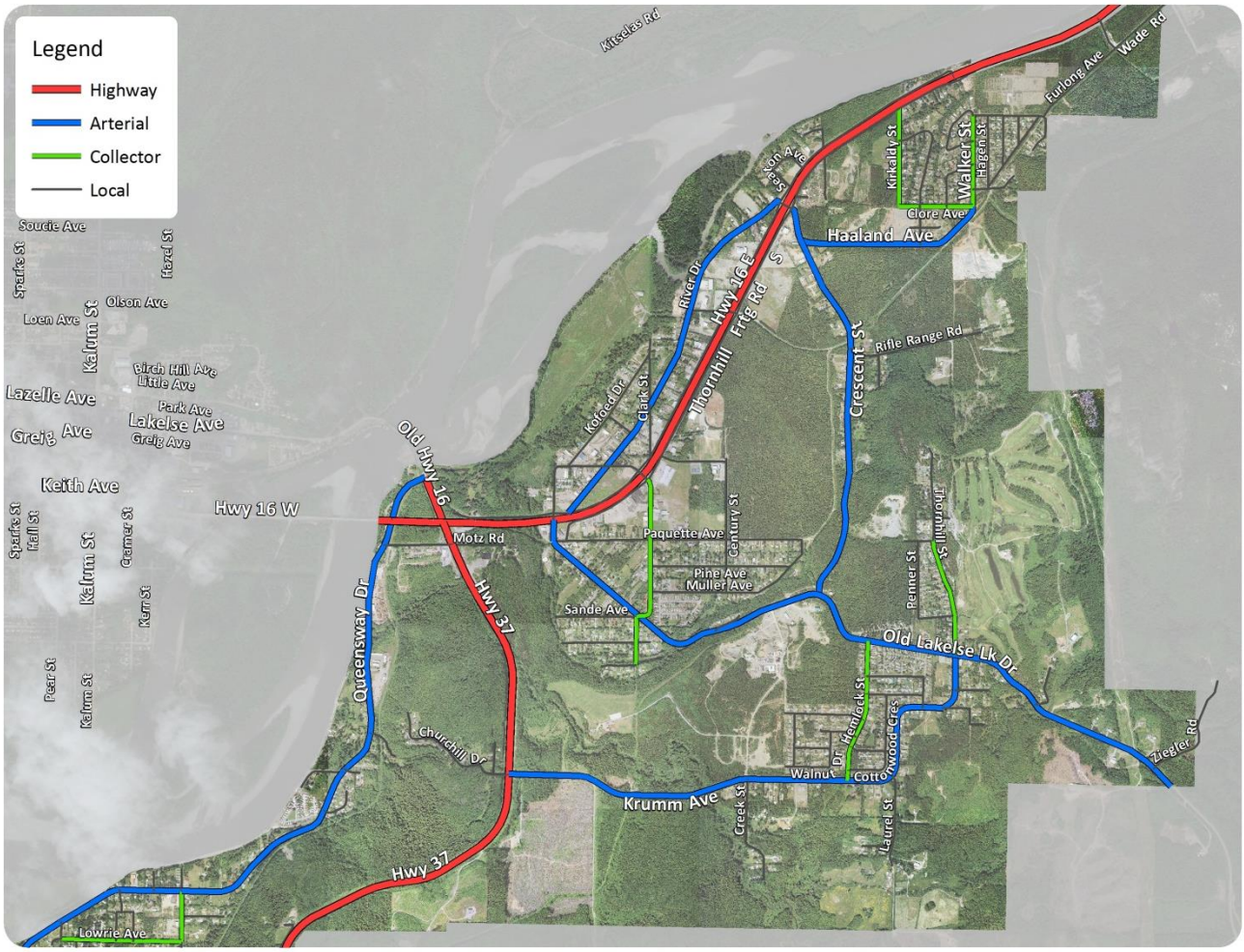


Figure 4
Mode Share of Commute Trips in Thornhill and RKDS (2011)
Source: 2011 National Household Survey



- **An extensive road network managed by the Province.** MOTI maintains and operates the local roads, highways, and bridges in unincorporated communities throughout British Columbia, including Thornhill. Thornhill has over 60 km of roadways. With the exception of Highway 16 and 37, which are classified as highways, roads in Thornhill classified as arterial, collector, or local roads, as shown in **Figure 5.**

Figure 5
Thornhill Roadway Classification



The most significant intersection in Thornhill is located at the intersection of Highway 16 and Highway 37 – known locally as the 'Four-Way'. This is not a signalized intersection, though it has overhead flashers, and currently operates as a four-way stop.

- **Bridges address barriers and provide critical regional links to Terrace.** Thornhill shares three bridge crossings – two vehicle crossings and one railway bridge - across the Skeena River to the City of Terrace. The Old

Skeena Bridge, or 'Old Bridge' as it is locally known, was built in 1925 and reconstructed in 1953. The bridge can accommodate a single lane of traffic, and traffic signals at either end of the bridge control vehicle access to the bridge. The bridge has an open grated steel deck and a pathway on the north side that is shared by both pedestrians and cyclists. The Old Bridge provides the most direct connection from Thornhill into Downtown Terrace.

The Dudley Little Skeena River Bridge, known locally as the 'New Bridge' is located 1.5 km downstream from the Old Bridge and was built in 1975. This paved two-lane bridge has a sidewalk on the north side for pedestrians, and cyclists are required to use the roadway. The New Bridge crosses through Ferry Island, a popular regional recreational destination. The third crossing of the Skeena River is a railway bridge, which was built for the Kitimat-Terrace CN railway expansion, and is located adjacent to the Old Bridge.

- **Although there are no sidewalks, most highways and arterial roads have paved shoulders.** Although there are no sidewalks in Thornhill, Thornhill has approximately 17 km of roadways with paved shoulders available on either one or both sides, as shown in **Table 1**. Although most are not currently signed or marked for use by pedestrians and cyclists, they are legally available for use by pedestrians and cyclists. The majority of these paved shoulders are located on Highway 16 and Highway 37. Paved shoulders in other locations are not consistently provided at the recommended width of 1.5 m. Paved shoulders are also sporadically available on some of the frontage roads, but are not included in the table below.

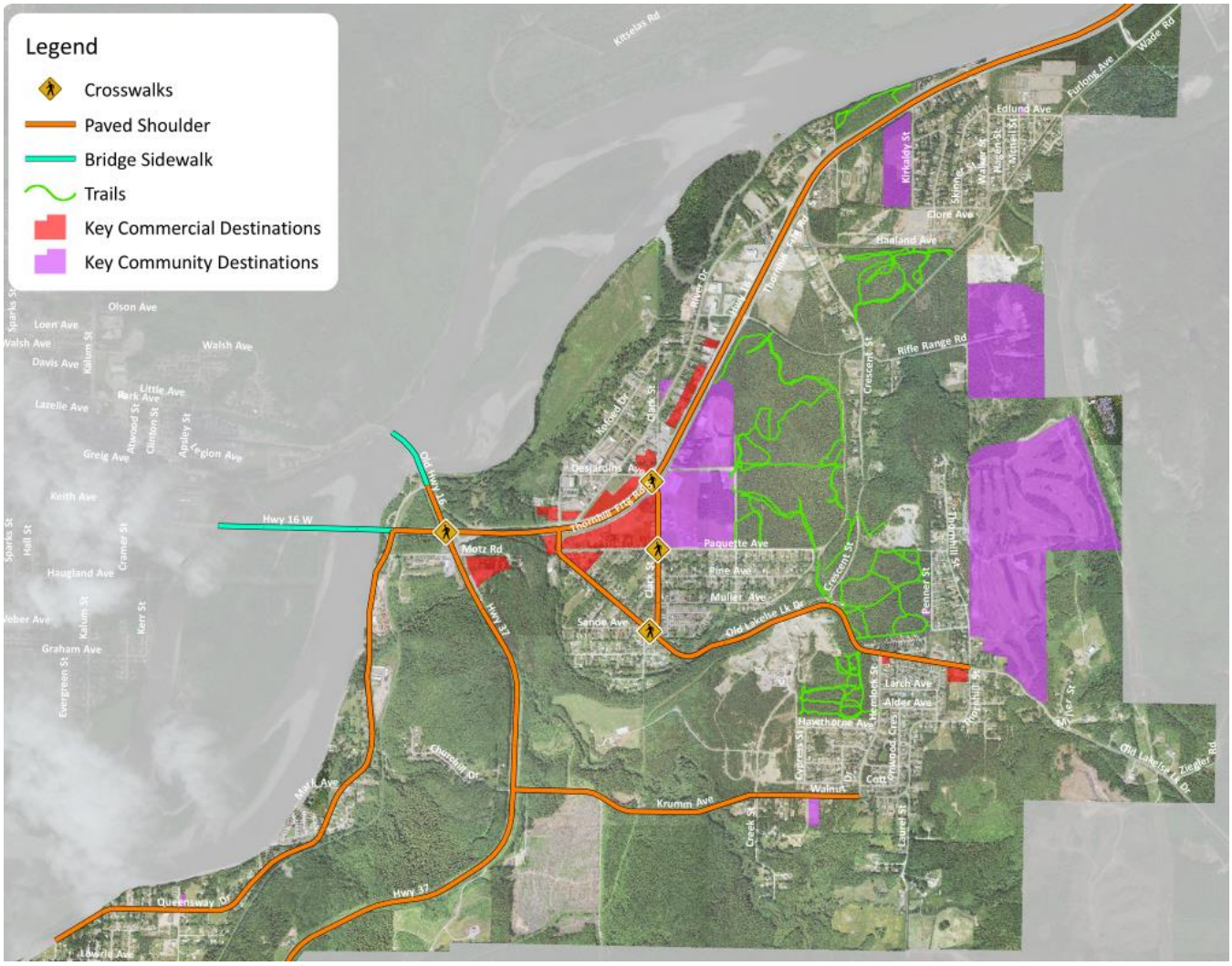
Table 1
Paved Shoulders in Thornhill

Road	Road Classification	Availability of Paved Shoulder	Length (km)
Highway 16	Highway	Both sides	4.5
Highway 37	Highway	Both sides	3.5
Old Lakelse Lake Drive	Arterial	One side (south side, from Highway 16 to Thornhill Creek)	3.1
Krumm Avenue	Arterial	Both sides (from Hemlock to Highway 37)	1.5
Queensway Avenue	Arterial	One side (west side, south of Highway 16)	4
Clark Street	Collector	Both sides (Paquette to Highway 16) One side (west side, Paquette to Old Lakelse Lake Drive)	0.3 0.4
Total			**17.3**

- **Crosswalks are located primarily in the core of Thornhill**. There are five marked crosswalk locations in Thornhill, as shown in **Figure 6**. Three are located along Clark Street, at the intersections with Highway 16, Paquette Avenue, and Old Lakelse Lake Drive, which largely support pedestrian activity associated with the schools. There is also a crosswalk across Toynbee Street at Old Lakelse Lake Drive, and there are crosswalks on all four legs of the Highway 16 and Highway 37 intersection (four-way). All crosswalks in Thornhill are unsignalized, though some have roadside signage to alert motorists. The crosswalk on Highway 16 is the only crosswalk supported by overhead signage.

- **Thornhill has an extensive off-street trail network**. As shown in **Figure 6**, Thornhill contains an extensive trail network, which surrounds residential areas, connect in between them, and run along the utility or former transportation corridors, such as the PNG right-of-way trail and the former Canadian Cellulose (CanCel) haul road. Thornhill's trail network is largely located on provincial Crown lands. More prominent regional hiking and biking trails include Thornhill Mountain Trail, the Packhorse/Lickbike trail and Ferry Island trails, along with trails in Terrace. MFLNR works with local groups to maintain certain hiking and bicycling trails in Thornhill.

Figure 6
Existing Active Transportation Conditions in Thornhill Infrastructure and Destinations



- **Transit service is provided on three routes throughout the community.** Transit service in Thornhill (as well as Terrace) is provided by BC Transit, and operates as the Terrace Regional Transit System. Funding for the Terrace Regional Transit System is cost shared among the City of Terrace, the RDKS, and BC Transit. Decisions about fares, routes and service levels are made by the City of Terrace in consultation with the RDKS, and are based on information and planning provided by BC Transit. The conventional and HandyDART transit systems in Terrace and Thornhill are operated by First Canada ULC. Currently, Thornhill is served by three bus routes, which all hub out of the Skeena Mall Exchange in Terrace. Current transit frequency and coverage is described below in **Table 2**.

Table 2
Transit Routes in Thornhill

Transit Route	Coverage	Service Frequency (Monday to Friday)		
		AM	Midday	PM
Route 5 Thornhill	Copper Mountain, Lower Thornhill, Upper Thornhill	1.5 hours	2 hours	2 busses only
Route 11 Terrace – Kitimat Connector	Highway 37, Krumm Avenue, Upper Thornhill	6:45 am, 10:50 am	3:30 pm	N/A
Route 14 Queensway Gitaus	Highway 16, Queensway, Copper Mountain	2-3 hours	12:05 pm, 4:30 pm	N/A

Transit service in Thornhill is most frequent in the morning period, with limited bus service provided in the late afternoon and evening. Most bus routes serving Thornhill operate with headways (the time between busses) of an hour or more. Transit service in Thornhill provides basic coverage, and is more directed at serving captive riders (those without a vehicle or who are unable to drive). Given the infrequency of transit in Thornhill, it is likely that many people would choose to drive to their destination if they have access to a vehicle.

2.4 Land Use Context

The most significant factor affecting how people travel is the proximity of where people live to where they work, shop and play. The type, scale and mixture of land uses along with the densities of those uses largely determine how far, and consequently what mode of transportation, people will use to get to their destinations. The closer people are to their desired destination, the more opportunities there are for them to walk, cycle, or take transit. As much of Thornhill developed in the 1960s and 1970s, it largely developed around the automobile, and today has a relatively rural suburban character with low density and dispersed land uses. This section describes key land use characteristics of Thornhill, including key destinations, neighbourhoods, and topography of the community.

- **There are a number of important destinations for pedestrians and cyclists.** Thornhill contains a variety of services and amenities that are important destinations for pedestrians and cyclists, including:
  - ***Schools.*** There are two public schools in Thornhill: the Thornhill elementary and primary schools. Thornhill Junior High School and Copper Mountain Elementary schools were both recently closed, but are still used as community facilities.

- ***Community facilities***, including three churches, a fire hall, the equestrian centre, and the Thornhill Community Centre.
- ***Commercial areas*** are mostly located adjacent or near to Highway 16 and Highway 37 in order to capitalize on the transportation connections and economic activity supported by these highways. Land uses in these commercial areas includes restaurants/pubs, gas stations, car dealerships, and motels. Some neighbourhood commercial businesses are also located in Upper Thornhill.
- ***Industrial uses*** are largely located adjacent to the highways. Some industrial uses are found within Thornhill's neighbourhoods, including the gravel operations on Haaland Avenue and Old Lakelse Lake Drive, and light industrial operations on River Drive.
- ***Parks, recreation, and open space*****.** Thornhill is home to the Thornhill Golf and Country Club, the Rod & Gun Club, and an archery range. In addition, there are various small playgrounds and tot lots, and vast tracts of crown lands used for recreational walking, cycling, hiking, motocross and ATV use.

- **Thornhill is made up of distinct neighbourhoods.** Thornhill is comprised of the following four distinct neighbourhoods, each with unique character and conditions that influence walking and cycling. These neighbourhoods are shown in **Figure 7**.

Key destinations in Thornhill include the elementary school (top); playgrounds / tot lots (second from top); commercial businesses along the highways (third from top). Hilly topography is also a defining feature in parts of the community (below).

Figure 7
Thornhill's Neighbourhoods

- ***Lower Thornhill*** contains the commercial core of Thornhill, with destinations including the elementary and primary schools, the Thornhill Community Centre / preschool, equestrian centre, fire hall, and a concentration of highway-oriented commercial uses. Skeena Landing, just off the Four-Way, is more distant from the Lower Thornhill commercial core, and contains restaurants, a café, hotel, and shops. Many of the residential areas of Lower Thornhill are within close walking and cycling distance to these services and amenities. There are also well-used trails located on the Crown lands east of Century Street, and between Lower Thornhill and the bench.

- ***Upper Thornhill / Thornhill Bench*** are separated from the rest of Thornhill by the escarpment hill and the gravel operation at the crest of the hill. Upper Thornhill is primarily residential, with future residential development potentially occurring west of Cypress Street. There are a few services and amenities in Upper Thornhill including a restaurant/pub, church, small tot lots, and a corner store. The Thornhill Golf & Country Club, to the north, is a destination that attracts people from throughout the region. Many trails allow pedestrians and cyclists to short-cut between the neighbourhood streets, with more formalized trails west of Hemlock Street and west of Penner Street.

- ***Copper Mountain***, the northernmost residential area in Thornhill, is a small-lot subdivision neighbourhood surrounded by Crown lands. Some recent residential development has occurred in Copper Mountain, with more potential development planned for the future. Some of the key destinations in Copper Mountain include a tot-lot playground on Edlund Road, and the now-closed Copper Mountain Elementary school site, which today is used by a church and other community groups. The grounds of the school site are also still used for recreation. The commercial destinations in Copper Mountain are primarily the highway commercial developments, the Rod and Gun Club, and the archery range. Copper Mountain has excellent access to trails, including the riverfront trails north of the highway, and trails on the Crown lands south of Haaland Avenue (in and around the former CanCel haul road, though some of these trails are located on leased land from the Rod and Gun Club). Many of these trails, including the PNG right-of-way trail provide recreational opportunities, as well as connections for pedestrians, cyclists, and ATVs traveling between Copper Mountain and Lower Thornhill. As noted in the 2009 study by Northwest Community College students, northerly outflow winds flow through the Copper Mountain neighbourhood, and funnel down the highway which can impact those walking and cycling. Having alternative routes away from the roadways that act as wind tunnels are important to ensure more comfortable routes for those walking / cycling around Copper Mountain.

- ***Queensway*** is a linear riverfront community on the east bank of the Skeena River. Few community destinations are located in Queensway, with the exception of a church, the Kitselas First Nation Band Office, and some light industrial operations. Kitelsas Band lands are located in south Queensway. Queensway is largely separated from other neighbourhoods of Thornhill by the Highway 37 corridor, however Krumm Avenue via Doorman and Churchill Drive, provides a key access point to Upper Thornhill. There are well-used trails located north of Churchill Drive on private lands between Queensway Drive and Highway 37, known locally as the 'Churchill lands'. Future residential subdivision development is anticipated on these privately held lands.

Other neighbourhoods include the River Drive / Kofoed Drive area, which are more linear residential areas along Highway 16, with many light-industrial and private property-based businesses. River Drive, along with the north frontage road provides a key alternative corridor for pedestrians and cyclists traveling along the Highway 16 corridor.

Commercial businesses in Lower Thornhill (top); the Penner Street tot lot in Upper Thornhill (middle); and a local street in Copper Mountain (below).

2.5 Natural Context

In addition to the factors noted above, walking and cycling in Thornhill is also influenced by the natural context, including topography, climate, and watercourses.

- **Topography is challenging in some areas of the community**. While areas such as Queensway, Copper Mountain, and Lower Thornhill have relatively flat topography that is conducive to walking and cycling, Upper Thornhill is located on an escarpment in the east of Thornhill, leading up to Copper and Thornhill Mountain. The key roadways that connect Upper Thornhill to the rest of the community, Old Lakelse Lake Drive, Krumm Avenue, and Crescent Street, all have steep inclines that were identified by residents as a barrier to walking and cycling. Residents using off-street trails and pathways to connect between Lower and Upper Thornhill must similarly navigate hilly terrain.

- **Thornhill experiences winter conditions.** In addition to hilly topography, another natural limiting factor in Thornhill is climate. While the area experiences mild spring and summer temperatures, winter temperatures often vary between 5°C and -5°C, with average snowfall of almost 4 metres. In addition, annual precipitation in the area averages about 100 cm. Residents also often note the added impact of the winter wind chill, and the presence of the wind tunnels down Highway 16 and the Skeena River that can make the experience of walking and cycling considerably uncomfortable at times.

- **Watercourses throughout the area create opportunities and constraints.** In addition to the Skeena River, Thornhill has a number of watercourses, such as Hurley and Thornhill Creeks. These can provide scenic and natural opportunities for trails and recreation, but can also create barriers to connectivity. Environmental considerations may also constrain opportunities for trail development.

2.6 Issues & Opportunities

Key issues and opportunities were identified from input received at the open house project booths held in September 2013, the design charrette on October 5, 2013, and the online survey that was available for residents to complete throughout September and October 2013. Many residents stated that they enjoy active transportation in Thornhill, with the trails, pathways, peace and quiet, and beautiful scenery often cited as favourite features. Respondents were also asked to identify key walking and cycling issues. Detailed survey findings are provided in **Appendix A**. Key issues and challenges to walking and cycling in Thornhill that were identified include:

- **Lack of separation from traffic,** including on roads such as Old Lakelse Lake Road, Krumm Avenue, Queensway Drive, and Hemlock Street make people feel uncomfortable and unsafe walking or cycling on roadways;
- **Lack of sidewalks, bicycle lanes and/or wide shoulders** make for uncomfortable walking and cycling. Places identified where infrastructure was lacking or unsafe included Old Lakelse Lake Road, Krumm Avenue, Hemlock Street, and Queensway Drive;
- **Uncomfortable sidewalks on the bridge crossings,** including sidewalks that are too narrow, lack guard railings, and are not on both sides of the bridge. The shared sidewalk on Old Bridge is too tight when cyclists / pedestrians are passing;
- **The New Bridge** requires cyclists to use roadway which feels unsafe;
- **Winter snow removal** that places snow on the shoulders where pedestrians walk, thus forcing people to walk in the road;
- **Hilly topography**, particularly on Old Lakelse Lake Road and Crescent Street;
- **Unsafe crossings or lack of crossings**, particularly noted on Highway 16;
- **Dumping of garbage** on trails and pathways; and
- **Unleashed / aggressive dogs** in popular walking and cycling areas and trails

Residents indicated that walking and cycling in Thornhill could be improved by providing the following:

- **More trails and pathways** to provide off-street routes (parallel to major routes) away from traffic wind;
- **Wider paved shoulders or sidewalks** on Krumm Avenue, Old Lakelse Lake Road, Queensway Drive, Hemlock Street;
- **Education** about vehicles and cyclists sharing the road, road safety, ATV use;
- **Trail signage and wayfinding,** better trail mapping;
- **Safer routes** (on-street and trails) to connect to the bridges; and
- **Guard railings** on bridge sidewalks.

CHAPTER 3
IMPROVEMENT STRATEGIES

This chapter outlines a number of recommendations to improve the safety and comfort of walking and cycling within and between Thornhill's neighbourhoods as well as into Terrace. The recommendations in this section have been organized into six key action areas as shown below. Within each Action Area, specific recommendations have been further grouped by theme as described in detail throughout this chapter.

Action Area 1:	Trails
Action Area 2:	Connections
Action Area 3:	Crossings
Action Area 4:	Amenities & Accessibility
Action Area 5:	Policies
Action Area 6:	Education & Encouragement

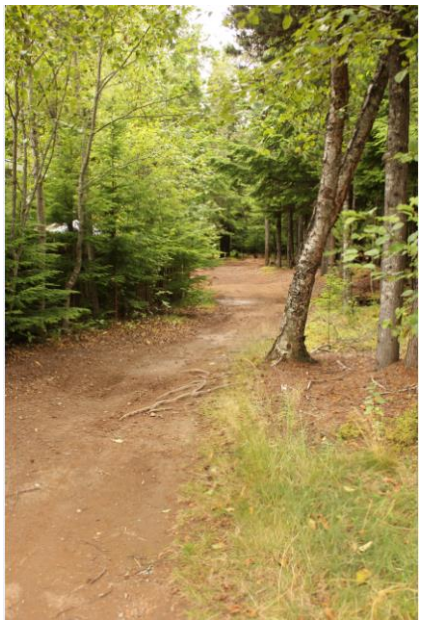
ACTION AREA 1: TRAILS

Thornhill's existing off-street trail network is expansive, serving a range of purposes as identified through public feedback. There appears to be regular use of the trail network for recreational and leisure walking and cycling, as well as equestrian use (largely on trails near the equestrian centre). Many people also use the trails for utilitarian purposes, such as for short-cutting to a destination and as alternate routes to avoid motor vehicles and busy roadways.

Enhancing the off-street trail network and improving connections to on-street facilities is fundamental to making walking and cycling more convenient and attractive travel options in Thornhill for both transportation and recreation purposes. The presence of trails can act as short-cuts which can reduce travel time and make walking and cycling more attractive options than other modes. People can also appreciate trail and short-cut connections, as there is an increased sense of safety being away from roadways, however security and comfort must be ensured through adequate visibility and lighting.

Largely located on Crown lands, well-used trails in Copper Mountain and Lower Thornhill are found south of Haaland Avenue and south of Sharples Road. In Upper Thornhill, trails branch off into the Crown lands west of Hemlock and Penner streets. Utility corridors have also created strategic opportunities for trails, with the PNG right-of-way and former CanCel haul

road providing linear off-street connections between Copper Mountain and Lower Thornhill. The BC Hydro right-of-way, at the foot of Copper Mountain, also provides a linear trail connection in east Thornhill. While the existing trails are well-used, and provide good coverage and short-cut opportunities, there are still enhancements that can improve the appeal and awareness of trails in Thornhill. In addition, many residents have noted the conflicts that arise when motorized and non-motorized users share a trail. There are many well-used ATV routes throughout Thornhill, such as the hydro right-of-way, PNG right-of-way, and the Terrace Motocross Association tracks off Highway 37 (south of Thornhill).



A safe and connected trail network can improve the ease of moving around the community, and can make walking and cycling a more attractive alternative to driving, particularly for short local trips. The following recommendations focus on both enhancing the existing trail network and establishing new trail routes, as well as providing enhanced trail information and amenities, to support residents and visitors to Thornhill to make better use of trails in and around the area. As many of these trails are on Crown lands, the RDKS must collaborate with the MFLNR when seeking improvements or enhancements to the trail system. When referring to trails, the term "multi-use" is used to indicate trails to be shared by pedestrians and cyclists and in some instances by ATVs.

The improvements to the trail network throughout Thornhill are described in further detail below.

ACTION 1.1: ESTABLISH TRAIL HIERARCHY

Existing trails provide a safe alternate route away from busy roadways for ATVs, pedestrians, and cyclists alike, it is important to continue to provide off-street connections for all types of trail users. To do so, the RDKS should pursue an additional planning process to define what existing trails comprise the ATV network. This process can include engaging with ATV / motocross groups in Thornhill (and Terrace) to identify a network and key spines for motorized trail users. This process can seek to ensure a network that keeps motorized trail users on safe routes away from roadways, while minimizing the use and impact of motorized vehicles on trails well-used by pedestrians and cyclists.

Table 3: Trail Hierarchy Guidelines

Class	Type	Context	Desired Users	Surface	Minimum Width	Grade	Amenities
1	Multi-Use Pathway	Road, Utility Rights-Of-Way	Pedestrians,Cyclists, Rollerbladers,ATVs Wheelchairs	Gravel or Paved	3 m	< 2%	Kiosk at Trailheads Route Markers
2	Primary Trail	Crown Lands	Pedestrians,Cyclists, ATVs	Woodchips or Gravel	2 m	< 5%	Kiosk at Trailheads Route Markers
3	Secondary Trail	Crown Lands	Pedestrians	Woodchips	1 m	Can exceed 5%	n/a
4	Informal Trail	Crown	Pedestrians	Informal	n/a	n/a	n/a

ACTION 1.2: ENHANCE EXISTING TRAILS AND CORRIDORS

Thornhill has many existing trails that are used for leisure and recreation, as well as for short-cutting through and between neighbourhoods. Many of the trails are located on Crown lands; however others are located on public rights-of-way, parkland, and utility corridors. While the trail system is actively used by many residents, enhancing the trails through various surface and access improvements can make them more comfortable and attractive to more of Thornhill's residents for recreation and transportation purposes.

Figure 8 Trail and Corridor Enhancements

1 CanCel Haul Road Route

The former CanCel Haul Road provides an important north-south trail connection between Copper Mountain and Crescent Street. The former haul road runs from the northeast corner of Copper Mountain (Furlong Avenue), cuts south diagonally through Crown lands to connect with Crescent Street, and continues west on what today is Sharples Road. For this report, the CanCel Haul Road refers to Sharples Road, as well as the portion of the CanCel that cuts diagonally between Furlong Avenue and Crescent Street. Now deactivated, the CanCel Haul Road is a main spine within the Copper Mountain trail network. The 2009 Accessibility Issues & Solutions Study recommended re-establishing this route as a historic walkway that incorporates Thornhill's history.

Recommended Improvements

Short-term improvements include upgrading the rough surface on both CanCel and Sharples Road to be an evenly graded and accessible gravel or dirt path for the entire corridor. In addition, recommended improvements include historic signage and trail grooming.

Long-term improvements include acquiring right-of-way access at the south end of the CanCel Haul Road onto Crescent Street, which is currently blocked by private property, to provide a continuous trail connection. Acquiring this connection can facilitate trail users to seamlessly connect to Sharples Road, Crescent Street, and the PNG right-of-way trail.

2 PNG Right-of-Way Trail

In the north, the PNG right-of-way begins in Copper Mountain and shares the CanCel haul road right-of-way from Furlong Avenue to Crescent Street. The PNG continues south on a short segment of Sharples Road, and then veers south to Paquette Avenue. The north-south spine of the PNG right-of-way that runs parallel to Crescent Street is a popular route for many trail users, as it not only connects to many Crown land trails, but also provides a direct off-street link between Copper Mountain and Lower Thornhill.

In the south, the PNG right-of-way also runs east-west along Paquette Avenue between Empire Avenue and Century Street. Currently there is an informal trail on top of this right-of-way. As a central street within Lower Thornhill, this informal trail alignment provides a natural opportunity to provide a safe connection along Paquette Avenue, and also to connect people in Lower Thornhill to the rest of the PNG right-of-way trail.

Recommended Improvements

Short-term improvements for the north-south spine of the PNG right-of-way south of Sharples Road includes upgrading the rough surface to a more

evenly graded and accessible gravel or dirt path for the entire corridor. In addition, it is also recommended to provide signs to indicate trailheads and connections from the PNG right-of-way to Century Street (and the core of Thornhill), as well as to Crescent Street, which can facilitate better connections for non-motorized users along this corridor. Likewise, trailhead signs along Crescent Street can increase awareness of the nearby parallel PNG trail, and the multiple short-cuts available. Further, as this segment of the PNG right-of-way is a key connection between the two neighbourhoods, it is recommended that it remain a shared route for both non-motorized and motorized trail users into the future. Gates are also recommended at the entrances to the PNG right-of-way to deter garbage dumping, further described in *Action 1.4*.

For the segment of the PNG right-of-way trail along Paquette Avenue, it is recommended that this be considered for a gravel or paved multi-use pathway between Century Street and Empire Avenue in the medium-term. This can provide a safe east-west facility for all users of Paquette Avenue, as well as youth and children from the school.

The PNG right-of-way along the north side of Paquette Avenue (top); Old Bridge Access Road North of Hwy 16 (below).

3 **Former Old Bridge Access Road (South of Highway 16)**

With the construction of Highway 16 and the Four-Way intersection, the former access road to the Old Bridge has long since been deactivated. However, this former road provides opportunities for pedestrians and cyclists to short-cut and avoid the Highway 16 corridor. South of Highway 16, an informal trail is currently in place of the former roadway, behind the Esso gas station. This trail provides a short-cut between Old Lakelse Lake Drive and Highway 16.

Recommended Improvements

This former roadway provides an off-street route away from Highway 16, connecting pedestrians directly into the core of Thornhill. It is recommended that this trail be cleared of brush, with surfacing such as woodchips or gravel be provided. A more stable crossing over the creek is also needed to enhance this route as a short-cut. Further, extending this trail up to the southeast corner of the Four-Way (adjacent to the park-and-ride lot) can also bring users to the marked crossings to cross the highway.

4 **Former Old Bridge Access Road (North of Highway 16)**

The former Old Bridge Access Road connects to the south end of the Old Bridge, North of Hwy 16. Now blocked off to cars, pedestrians and cyclists regularly use the old road to connect between the Old Bridge and North Frontage Road. This provides a safe alternative route for pedestrians and cyclists traveling between the Old Bridge and the core of Thornhill.

Recommended Improvements

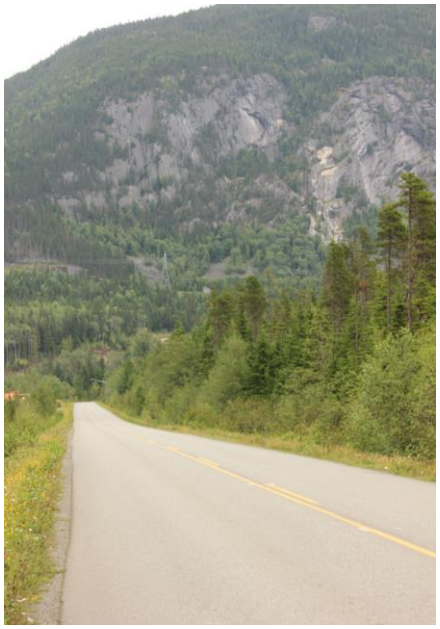
As this corridor is already paved, it is recommended that improvements at this location focus on providing amenities such as trail mapping, signs, and an information kiosk to alert pedestrians and cyclists accessing Thornhill through this location of key destinations and trail routes throughout the area (discussed further in Action Area 4).

5 **Doorman Road**

Currently Doorman Road is closed, but provides a natural opportunity for pedestrians and cyclists to connect and short-cut between Highway 37 and Churchill Drive to Queensway Drive.

Recommended Improvements

It is recommended that signage provided at the west end of Doorman Drive (on Queensway Drive) and also on the access to Churchill Drive can make this a more noticeable and safe connection between Upper Thornhill and Queensway. Signage can denote the presence of a trail, and/or direct users to Churchill Drive or Queensway Drive. Currently gates are in place to prevent vehicle traffic from entering, and it is recommended that these barriers remain in place, but that the access for pedestrians and cyclists around these gates is maintained. It is also recommended to provide a consistent gravel surface throughout the corridor. Given this is one of the only trail connections in Queensway, a short-term priority is recommended for this project.

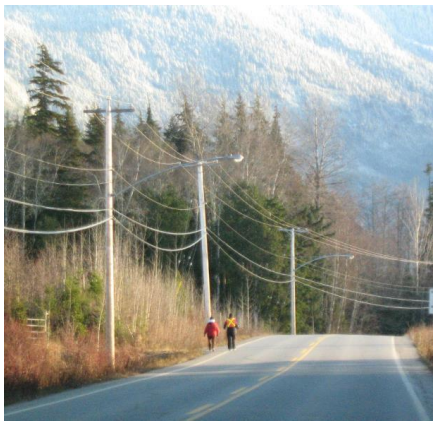


6 **Haaland Avenue**

Haaland Avenue is one of the key access points into Copper Mountain for pedestrians, cyclists (and vehicles) traveling along Crescent Street. Haaland Avenue lacks paved shoulders, often has vehicles traveling at high speeds, and lacks street lighting which can create a dangerous environment for pedestrians and cyclists in both the day and night time. On the south side of Haaland Avenue is a piece of crown land with a network of trails, and an informal and slightly overgrown trail is located on the south side of the road, running parallel to the roadway.

Recommended Improvements

It is recommended that the trail running parallel to Haaland Avenue on the south side be cleared and improved to provide either a multi-use pathway, or a primary trail with a gravel or woodchip surfacing, to facilitate a safer option for pedestrians and cyclists. Enhancing this trail can improve the comfort of people walking and cycling down this key corridor. In addition, it is recommended that, where possible, maintaining some of the trees located between the trail and Haaland Avenue can provide a more sheltered route for users, particularly from wind, which is a known issue in Copper Mountain. Formalizing this trail can also be approached as a short-



Doorman Road (top); Haaland Avenue (middle); pedestrians on Krumm Avenue (below).

7 term improvement until longer-term shoulder improvements take place on Haaland Avenue.**Krumm Avenue**

The 2009 Accessibility Issues and Solutions Study identified the opportunity to establish a walkway on the north side of Krumm Avenue from Upper Thornhill to Highway 37, building off the informal trail partially in place along the length of Krumm Avenue. This trail is used by (and likely was established by) ATVs.

Recommended Improvements

Due to the fact that this trail is likely to continue to be an ATV route into the future, surfacing improvements here may not be practical. However, it is recommended that the opportunities to extending and connecting various parts of the trail where possible can improve the connectivity of this facility. It is also recommended to investigate the feasibility of providing a structure over Thornhill Creek so that trail users do not have use the narrow bridge to cross the creek.

ACTION 1.3: NEW TRAIL CONNECTIONS

While Thornhill has many existing trails, there is also the opportunity to provide trail connections where none currently exist, in order to enhance connectivity of the off-street network throughout the area, and to provide more short-cutting opportunities for people trying to walk or cycle from A to B. More trail short-cuts can serve to reduce travel time for pedestrians and cyclists traveling through Thornhill, and can also increase opportunities for recreational trail use. It is recommended that the RDKS work with ATV users to identify an ATV network, and this should also determine which of these new connections should be part of the ATV network or not. The opportunities for new connections and trails in Thornhill are described below.

Figure 9
New Trail Connections

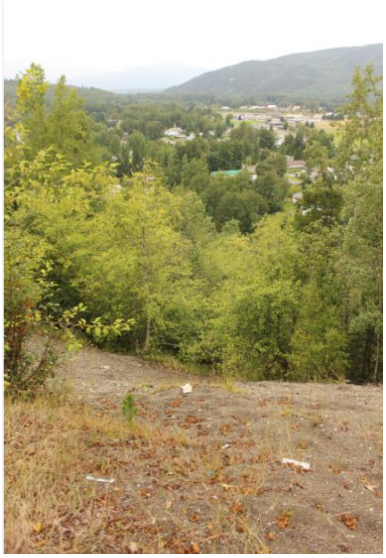
1 **Upper Thornhill – Lower Thornhill Connector**

Upper and Lower Thornhill are geographically very close neighbourhoods, and there are already informal trails in place that are used to connect the two areas. Providing a more formal and comfortable connection up the Bench can perhaps attract more residents to walk or cycle more between the neighbourhoods. There is already a small steep trail present near the water tower (at the south end of Crescent Street) going down the steep grade to Muller Avenue, indicating this area is currently used for short-cutting.

Recommended Improvements

It is recommended that the RDKS conduct a feasibility study to determine a preferred concept for the Upper Thornhill – Lower Thornhill Connector. Options can include the provision of a staircase or a switchback trail to make it easier to navigate the steep terrain of the Bench. A staircase options could include a bicycle ramp or wheel gutter down the side to allow cyclists to push their bicycle up and down the stairs. The study should also investigate options of establishing the connector on either Crown Lands or RDKS land. The RDKS owns a parcel south of Muller Avenue that could potentially be utilized for a connector, and which may also involve

cooperation with nearby property owners. The study should also examine the option of establishing a new trail along the Bench that provides lookout opportunities over Lower Thornhill.



The current informal trail that is used to connect between Lower Thornhill and Old Lakelse Lake Drive in Upper Thornhill (top); an example of a trail staircase, outfitted with a bicycle ramp (bottom).

2 **Old Lakelse Lake Drive Multi-Use Pathway – Upper Thornhill**

Old Lakelse Lake Drive is an active corridor for pedestrians and cyclists in Upper Thornhill, as it is the main east-west connection, and provides access to transit stops, trails, and some of the commercial businesses within Upper Thornhill. Many residents stated that using Old Lakelse Lake Drive can feel uncomfortable and unsafe due to high-speed traffic. Enhancing conditions for non-motorized users can improve the experience of using the corridor, and attract more people to walk and cycle within their neighbourhood.

Recommended Improvements

It is recommended that the RDKS and MOTI explore a multi-use pathway concept for the north side of Old Lakelse Lake Drive, between Crescent Street to Thornhill Street. A pathway between Thornhill Street and Crescent Street would provide a key link for pedestrians and cyclists, as it would establish a continuous off-street connection to the Upper Thornhill – Lower Thornhill Connector described above. Currently, in this segment of Old Lakelse Lake Drive, the available right-of-way between the north side of the pavement edge and the adjacent property line is approximately 4.5m between Thornhill and Hemlock streets, and increases to 12m closer to Crescent Street. Further conceptual design work would need to be completed to establish the alignment and configuration of this pathway.

3 **South Frontage Road Multi-Use Pathway**

Due to the lack of crossings across Highway 16, many people run across the highway when there are breaks in the traffic and walk or cycle across the grass boulevards (as evidenced by the many criss-crossing trails) to access the frontage roads and destinations beyond. One particular area where many pedestrians and cyclists are crossing is at the intersection of Highway 16 and Old Lakelse Lake Drive. Recommended crossing improvements for this location are described in more detail in Action Area 3, and a new pathway is identified here to facilitate people to use this crossing.

Recommended Improvements

It is recommended that a multi-use pathway be constructed to connect the southeast corner of the Old Lakelse Lake Drive / Highway 16 intersection with South Frontage Road. This pathway would be approximately 100 metres in length, and could consist of either crushed gravel or asphalt. (This pathway concept is shown later in **Figure 15**).

4 Highway 16 Multi-Use Pathway (between the Four-Way and New Bridge)

The sidewalk of the New Bridge is a key part of the journey for pedestrians traveling between Thornhill, Terrace, and/or Ferry Island. On the Thornhill side of the New Bridge, the sidewalk currently connects to a paved shoulder on the north side of Highway 16. The RDKS has recently landscaped and provided benches in the green space in the northwest corner of the Four-Way that extends to the New Bridge. Building off this recent initiative, an off-street facility should also be provided through this green space to connect the New Bridge sidewalk to the Four-Way, to make this a more comfortable and attractive route.

Landscaped area to the north of Highway 16, between the Four-Way and the New Bridge.

Recommended Improvements

It is recommended that a multi-use pathway be constructed on the north side of Highway 16 between the Four-Way and the New Bridge abutment. Recognizing the slope constraints, the pathway should be setback from the roadway, located between the roadway and the benches and forested area. The use of stairs may or may not be necessary to traverse the slope at the east end near the New Bridge.

5 Hurley Creek Trail

Currently, there is already a short trail located between the east end of Crescentview Avenue to the bottom of the hill on Old Lakelse Lake Drive, running along Hurley Creek. Extending this trail can provide enhanced connectivity for trail users to Highway 16, and can also connect in with the trail on the former bridge access road described in Action Area 1.2.

Recommended Improvements

It is recommended that this trail be extended from the west end of Crescentview Avenue to Old Lakelse Lake Drive near the Mac's Store. The RDKS owns property in this area, and through land acquisition and working with landowners, the opportunity exists to extend the trail along the length of the creek in the long-term.

6 Paquette Avenue

At peak period school drop-offs and pick-ups, Paquette Avenue experiences a busy traffic environment. Students walking or cycling to school must contend with vehicle traffic, parked cars, and school busses on their journey to and from school. Improved safety for students and families can be achieved in this high activity area by provision of an off-street facility on Paquette Avenue.

Recommended Improvements

To connect up with the informal trail (and recommended multi-use pathway) along the PNG right-of-way on Paquette Avenue, it is recommended that a multi-use pathway be established on the north side of

Paquette Avenue between Century Street and the school entrance, on the existing green space. This can allow for safer movements of pedestrians and cyclists on Paquette Avenue at peak-hours. Due to the activity on Paquette Avenue, a sidewalk may also be suitable here in the long-term.

7 **Local Trail Connections**

In addition to the new pathways noted above, the RDKS should continue to use existing rights-of-way to provide local trail connections. Many of the local pathway connections in Upper Thornhill are through existing RDKS rights-of-way. An example of an opportunity to utilize existing RDKS rights-of-way is between Old Lakelse Lake Drive and the intersection of Hemlock Street / Larch Avenue, where there are already informal trails behind the Thornhill Pub. Formalizing this connection could provide an alternate north-south connection to Hemlock and Thornhill streets.

ACTION 1.4: PROVIDE TRAIL INFORMATION AND AMENITIES

In addition to enhancing existing trails and providing new trail connections, there are support measures that can be undertaken to make using trails an even more pleasant and convenient experience for both recreational users and those using trails to get from A to B. In particular, features such as trail maps, kiosks, trail markers, and access features can improve the trail user's experience.

Recommended Improvements

- **Create a Thornhill trail map.** Currently, there is limited information available on the extent of the trail network in Thornhill. Through the Active Transportation consultation process, Thornhill residents indicated they are interested in having more access to information on local trails. It is recommended that the RDKS produce a basic trail map of Thornhill, with the map available through the RDKS website, as well as in hard copy through the RDKS office. The trail map can not only detail where the trails are located, but can also include the location of key community services and amenities in Thornhill (i.e. the Thornhill Community Centre, schools, and restaurants), as well as information such as grade, recommended routes, trail length, average travel time, and trail restrictions if applicable.

- **Identify recreational trail loops.** As identified in the 2009 *Accessibility Issues & Solutions Study*, there are several key loop trails in Thornhill commonly used for recreation. These should be identified and included in any trail mapping to increase awareness about recreational walking and cycling opportunities. Some of these loops can include the old Nursery Trail loop, CanCel Haul Road and surrounding trails, trail loops

between Penner and Crescent Street, and trail loops between Crescent and Century Streets. It is also recommended to name these trail loops to 'brand' the trails, and create recognition of the trail system. One option is to host a community competition to name the trails.

- **Provide trail signage and wayfinding**. More information should be provided to identify trailheads and trail features. Signs, trail markers, and map kiosks can make more people aware of the existence and extent of the trail network in Thornhill. Recognizing that many of these trails are on Crown land, the RDKS should collaborate with MFNLR to develop and maintain these signs. Specific recommendations are shown in **Figure 10** and are described below.
  - Providing **trail access signs**. The RDKS can provide basic signage to identify access points to trails. These types of signs could be placed at many of the trail access points along Century Street, Old Lakelse Lake Road, Sharples Road, Haaland Avenue, and Penner Street. The placement of these signs would need to be consistent and ensure that information is also provided to users once on the trail. This can include the placement of **trail posts** at key intersections and **kilometre markers** to facilitate trail use.
  - **Trailhead map kiosks** at the entrance of major trailheads should be used to provide information about the Thornhill trail network and other associated information such as route distances and lengths to allow users to see the extent of the trail network and plan their route accordingly. Other information options for kiosks can include basic trail rules/etiquette, information on trail restrictions if applicable, and QR codes for trail users to scan with their smart phone and download the online Thornhill trail map. **Recommended priority locations** for kiosks include PNG right-of-way trailhead at the east end of Paquette Avenue, the trailhead on Century Street (north of the community centre), the entrance to the Cancel Haul Road on Haaland Avenue, Hemlock Street, and the entrance point to the now-closed former access road to the Old Bridge.
- **Provide more convenience-based trail features,** such as providing bear-proof garbage cans at entry and exit points to address issues of litter and improved trail cleanliness. Other trail amenities can accommodate equestrian users, such as include hitching posts and watering areas.
- **Continue to provide gates to restrict garbage dumping.** It is recommended that the RDKS continue to install gates at locations where garbage dumping on trails is an identified issue, in order to prevent vehicles from accessing these areas. Recommended priority locations

Certain features can improve the trail environment, including signage (top), kilometre markers (second from top), and trailhead kiosk (third from top); and gates to restrict dumping (below).

include gates on Sharples Road, the PNG right-of-way trail, Century Street, Penner Street, and any other locations where residents continue to identify dumping problems.

- **Trail restrictions.** There are some popular recreational trails located north of Rifle Range Road that are on Crown land currently leased by the Rod & Gun Club (see **Figure 11**). It is recommended that the RDKS work with the Rod & Gun Club to provide fencing around their leased lands, in order to prevent any conflicts between Rod & Gun Club activities and other trail users.

Figure 10: Trail Information and Amenities

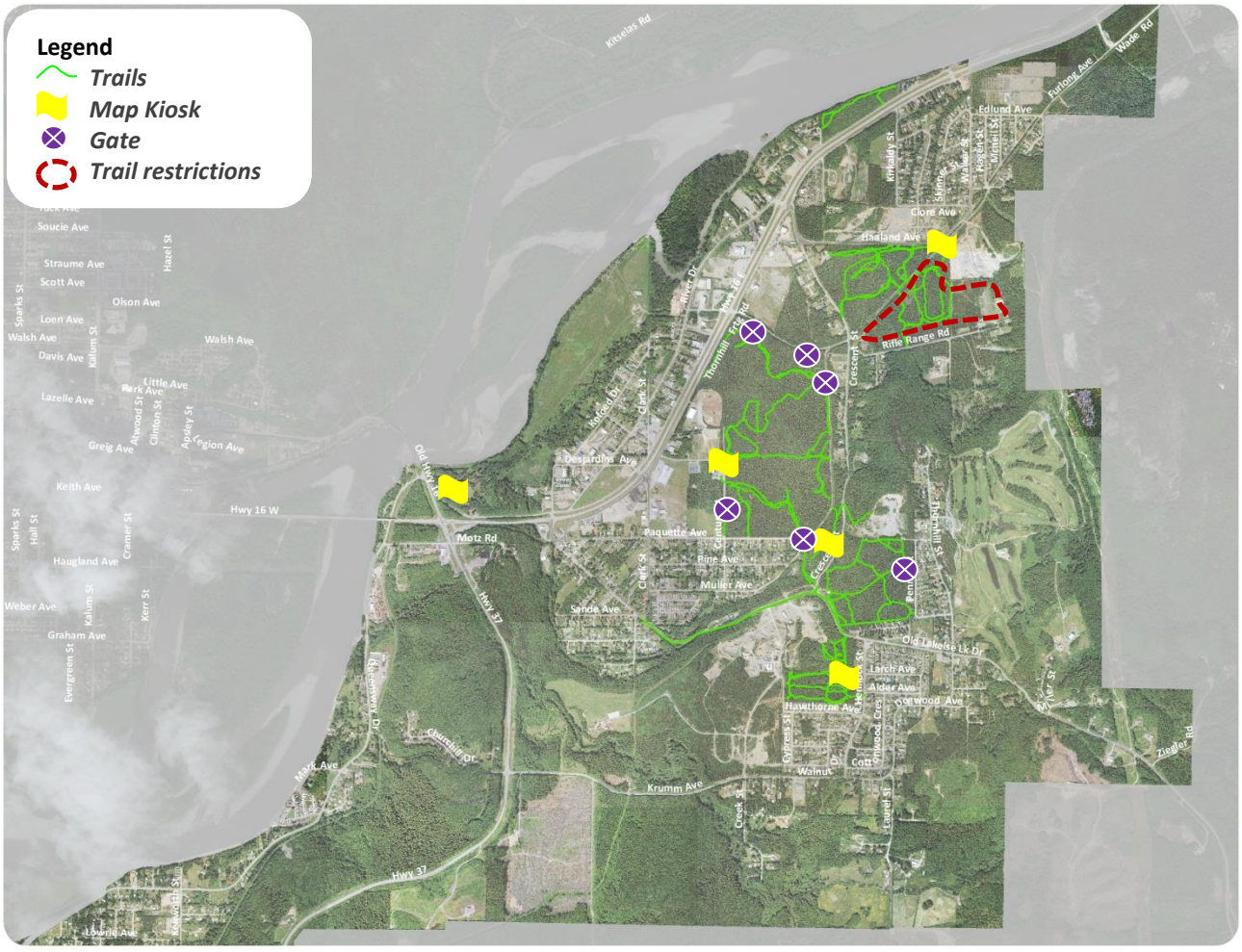
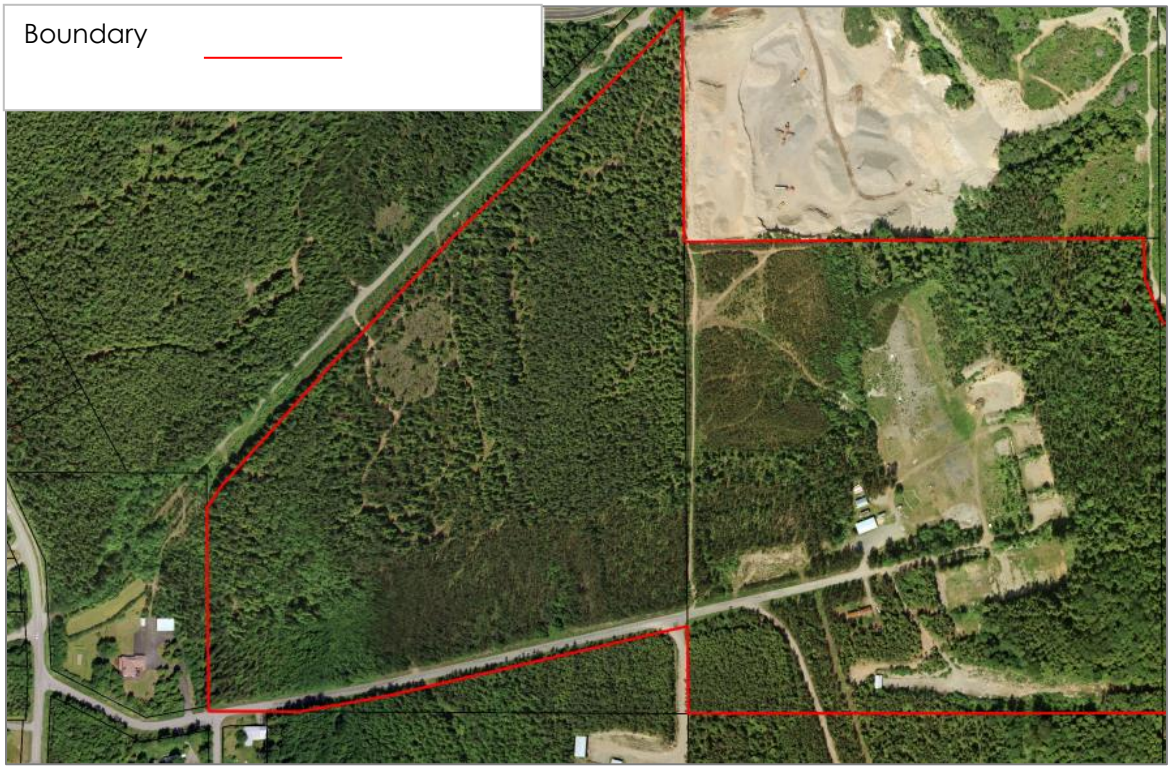


Figure 11: Extent of lands leased by the Rod & Gun Club



ACTION AREA 2: CONNECTIONS

In addition to the trails strategies discussed in Action Area 1, trails should be complemented with on-street facilities to ensure a connected and integrated active transportation network. Thornhill's on-street network for pedestrians and cyclists is generally limited to paved shoulders on some arterial and collector roads, and crosswalks at a few locations. Most local residential streets do not have dedicated walking or cycling infrastructure, but many of these streets have low traffic volumes and speeds that present relatively comfortable conditions for walking and cycling. However, there are also arterial and collector roadways within Thornhill, such as Old Lakelse Lake Drive, Krumm Avenue, and Haaland Avenue that are important routes for pedestrians and cyclists, but present less comfortable conditions.

This section describes the recommended on-street pedestrian and cycling network in Thornhill and includes enhanced shoulders on arterial and collector roads, and various treatments on local streets.

Pedestrians often use gravel shoulders when possible (above); or the roadway in the absence of paved shoulders.

ACTION 2.1: ENHANCED SHOULDERS

Thornhill's road network connects the services and amenities of Lower Thornhill with surrounding neighbourhoods. Some roads either have no shoulders or have narrow or poorly maintained shoulders, which was identified by many residents as a key issue within the walking or cycling network. There are several arterial and collector roads within Thornhill that are key routes for pedestrians and cyclists alike, but traffic conditions may require more separation from vehicles to make these routes safer. It is recommended that paved shoulder construction and improvements be done at the time of road upgrading and rehabilitation, and shoulder width should increase as posted speeds increase.

The Transportation Association of Canada (TAC) recommends shoulder widths of 1.5 to 2.0 metres depending on road speed and traffic volumes. In particular, TAC guidelines state that shoulder bikeways should be a minimum of 1.5 metres wide on roads with speeds less than 70 km/hr. When designs speeds are greater than 70 km/hr, and daily vehicle volumes exceed 5,000, a minimum 2.0 metre shoulder should be provided. When speeds exceed 80 km/hr and daily traffic volumes exceed 10,000 vehicles, a shoulder width of 2.5m should be provided. However, once speeds exceed 70 – 80 km/hr, conditions may be relatively uncomfortable for non-motorized users despite a wider shoulder, and it is recommended to consider a multi-use pathway to provide even more separation from traffic.

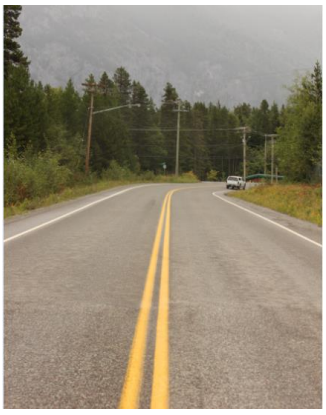
In the short-term, some lower-cost improvement options can be considered to enhance shoulders and increase separation from vehicles. This includes maintaining and repainting existing painted fog line as required. This also includes providing pathways parallel to major roadways when possible (i.e. as described previously for Krumm Avenue, Haaland Avenue, and Old Lakelse Lake Road). Another low-cost option is to provide more physical separation through the construction of curb barriers between the shoulder and roadway, which is already used in some rural BC municipalities

Recommended Shoulder Improvements (Arterial Roads)

Shoulders should be provided on arterial and collector roads that entirely lack shoulders at the time of road construction or rehabilitation, on roads such as River Drive, Haaland Avenue, Crescent Street, Laurel Street, and Dogwood Avenue. These arterial roads are important routes for pedestrians and cyclists where more separation from vehicles is necessary to improve comfort and safety. In addition, River Drive and Crescent Street provide key alternate routes away from the Highway 16 corridor where northerly winds can most acutely impact pedestrians and cyclists. Some roads with existing paved shoulders should also be enhanced at the time of road rehabilitation, including:

- **Krumm Avenue**. There are intermittent paved shoulders on both sides of Krumm Avenue, and with its relatively gentle slopes up to Upper Thornhill, Krumm Avenue can be an alternative route to Old Lakelse Lake Drive for travel between Upper Thornhill and the Four-Way. Krumm Avenue is also relatively protected from Thornhill's northerly winds. The current shoulders are narrow in sections, and it is recommended that future road improvements widen the shoulders to a more comfortable and consistent width of at least 1.5m. Until a paved shoulder is provided on Krumm Avenue, the short-term option of enhancing the trail on the north side is recommended.

- **Old Lakelse Lake Drive**. The curve on the bottom of Old Lakelse Lake Drive incorporates narrow shoulders and limited sightlines for motorists and pedestrians and cyclists alike. The shoulder on the south side of the road should be widened to provide more separation from vehicles. Until a shoulder is provided, it is recommended that MFLNR and RDKS collaborate to provide either a staircase or switchback trail up the bench (connecting Lower and Upper Thornhill) to discourage pedestrians and cyclists from having to travel on Old Lakelse Lake Road altogether.



Use of a curb to separate the shoulder area from the vehicle lanes in Saanich, BC (top); shoulder facilities on Old Lakelse Lake Drive (below).

- **Queensway Drive**. Currently, there is a wide continuous paved shoulder on the west side of Queensway Drive. Long-term improvements can include providing a shoulder on the east side at the time of road rehabilitation.

  In the short-term, it is recommended that, MOTI undertake regular repair and maintenance of the painted edge line on the west side to consistently delineate where non-motorized road users should be.

Cyclists and pedestrians often travel on the north and south frontage roads as an alternate to Highway 16.

Many of Thornhill's **local and frontage roads** also experience high walking and cycling activity, especially around key destinations. Most local and frontage roads do not typically experience the volumes and speeds of arterial and collector roads in Thornhill, and are generally safer environments for pedestrians and cyclists, even in the absence of a paved shoulder or pathway. However, several local and frontage roads are located in key areas that experience peak activity times for all types of traffic. In the long-term, provision of paved shoulders or separated pathways are recommended on several of these corridors including:

Recommended *Shoulder* Improvements *(Frontage Roads)*

- **South Thornhill Frontage Road** between Old Lakelse Lake Drive and Clark Street is a popular walkway for pedestrians and cyclists to connect to the commercial areas along the highway. The south-east side of the frontage road may be suitable for a paved shoulder or a sidewalk in the longer-term. The benefit of a sidewalk along this stretch of the frontage road can have a benefit to channelize vehicle turning movements in and out of the commercial parking lots.

- **North Thornhill Frontage Road.** Over time, more commercial development activity may occur adjacent to the frontage road to the north / west of the Highway 16. As this is a popular corridor for pedestrians from the Kofoed / River Drive area, requirements for sidewalks should considered at the time of any future development and/or redevelopment. The RDKS should work together with MOTI to capture any opportunities for the provision of sidewalks along this frontage road at the time of new development.

Recent shoulder widening on the approach to the Old Bridge on Highway 37 (top); pavement stencils in a rural paved shoulder (below).

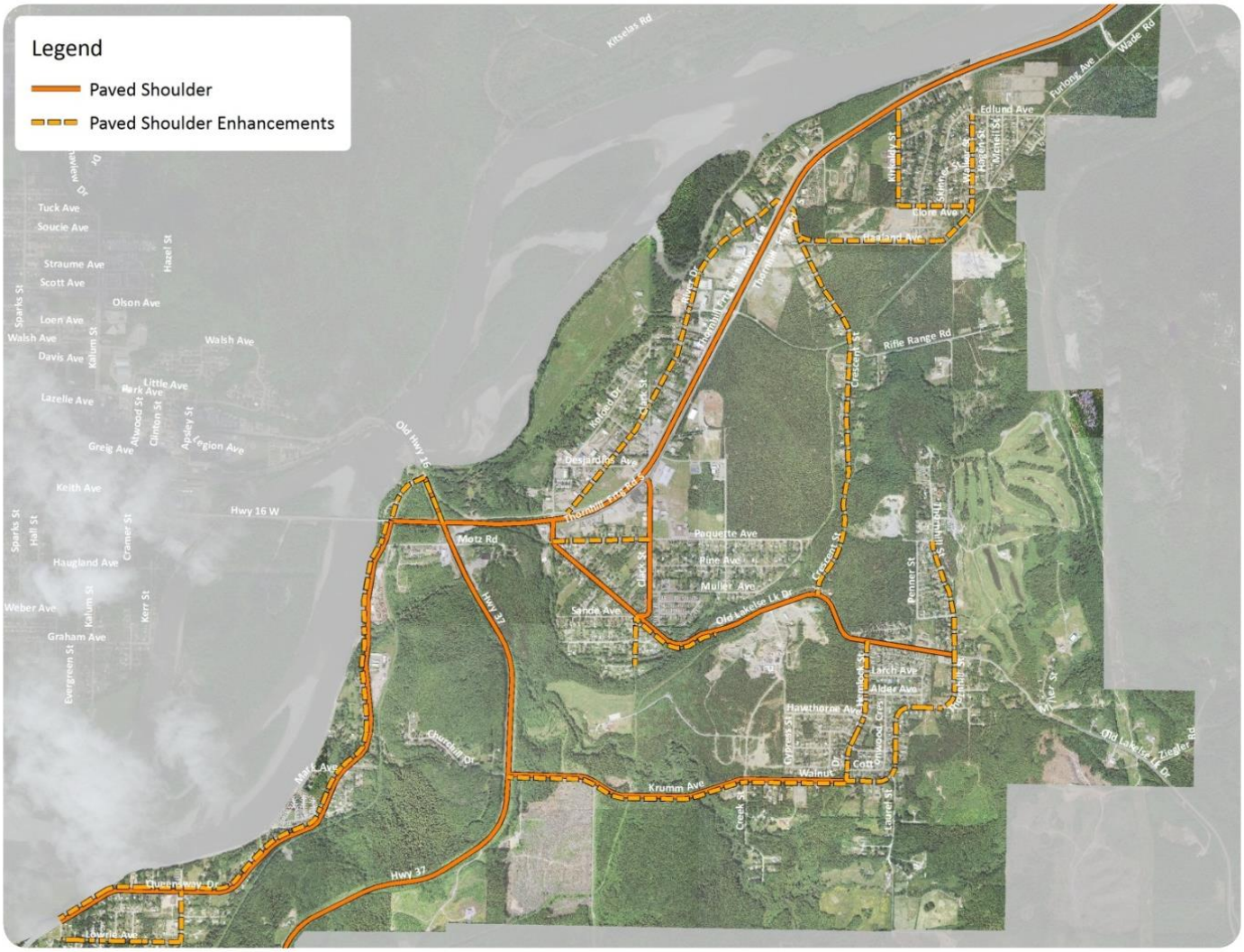
R*ecommended* Shoulder *Improvements (Highways)*

- **Highway 37** between the Four-Way and the Old Bridge. MOTI recently widened a section of the pavement on the east side of the road to provide more space for pedestrians and cyclists going to and from the Old Bridge; however it stops short of reaching the Old Bridge. Recognizing this is a critical connection for pedestrians and cyclists travelling between Thornhill and Terrace, it is recommended that this missing link be filled by widening the shoulder to the north of the Four-

Way, to connect with the sidewalk on the Old Bridge as a short-term improvement. This will provide a continuous and comfortable connection from the Four-Way.

- **Highways 37 and 16.** Given that these corridors provide direct routes to destinations along the highways and between neighbourhoods, they will still remain key routes for pedestrians and cyclists into the future. It is recommended that the shoulder areas of Highway 16 and Highway 37 be enhanced through the provision of cycling and pedestrian signage and pavement markings, "watch-your-speed" signage, and signage alerting motorists to the presence of people using shoulders.

Figure 12
Shoulder Enhancements for Arterial and Collector Roads



ACTION 2.2: QUIET STREET WALKWAYS AND BIKEWAYS

With fairly flat topography, relatively low traffic volumes, and scenic rural landscapes throughout many of Thornhill's neighbourhoods, there are significant opportunities to better accommodate pedestrians and cyclists on many of the local and frontage streets in the community, as well as parallel corridors to the highways, as shown in **Figure 13.** In particular, less infrastructure-intensive treatments such as signage and pavement markings can be used to identify corridors as walking and cycling routes, and to make motorists aware that other users may be on the roadway.

Recommended Improvements

It is recommended that at least one street be enhanced with a variety of Quiet Street improvements in every neighbourhood in the short-term.

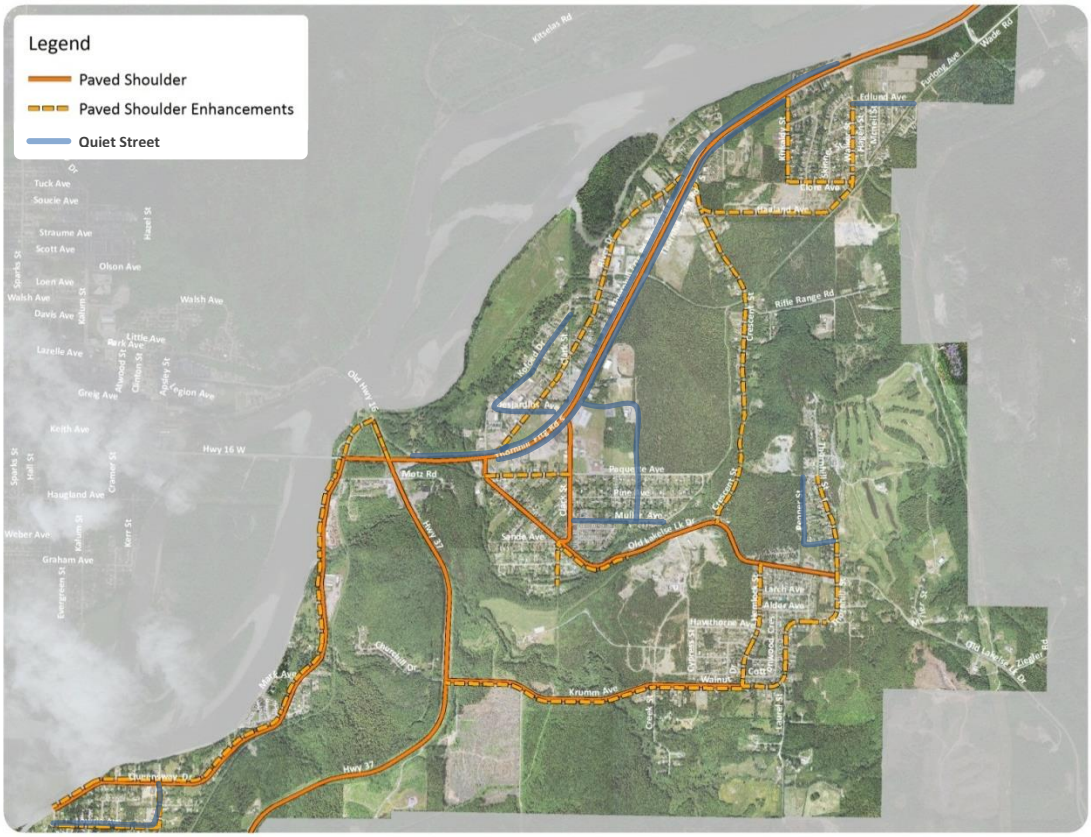
- **Signage.** On roads with no paved shoulder, it is recommended that "share-the-road" signage should be provided to indicate to motorists that cyclists and pedestrians may be present on the roadway and that vehicles must yield. Also, providing "yield to cyclists" and/or "yield to pedestrians" signage at key crossings is recommended. Generally, the assumption of 2 signs every 150m (one facing either direction) would be sufficient.

- **School and Park Signage.** Provide signage around schools and tot lots indicating that children may be present and/or on the roadway. This should include signs around Paquette Avenue and Clark Street, and around the tot lots on Edlund Street, Century Street, Desjardins Avenue, Penner Street, and on Hemlock Street.

- **Pavement markings.** Provide 'sharrows' (double chevron with a stencil of a cyclist to indicate a shared roadway) or stencils of cyclists and pedestrians on the roadway surface to indicate that these are walking and cycling routes. Roadway stencils can also include the shapes of pedestrians and cyclists, or text such as "Slow Down" or the speed limit. Design guidance from the National Association of City Transportation Officials suggests that low volume routes should have a shared lane pavement markings spaced approximately every 80m.

Examples of different signage and pavement markings to alert drivers of the presence of other road users on Quiet Street Walkways and Bikeways

Figure 13
Quiet Street Walkways and Bikeway Improvements



ACTION AREA 3: CROSSINGS

There are several intersections and crossings throughout Thornhill that are recommended to be improved in order to enhance the safety and visibility of pedestrians and cyclists crossing major roads. Currently in Thornhill there are no signalized crossings for either pedestrians or cyclists, although there are five marked crosswalks, including one with overhead signage (on Highway 16) However, some of these crossings have geometric design issues and/or have limited visibility for pedestrians and cyclists. There are additional locations where no crossing treatments are currently in place, but treatments could be applied to enhance intersection safety for all users. Additional recommendations in Section 3.2 are provided for the major crossings in Thornhill, including the Old and New Bridges, and Krumm Road Bridge. **Figure 14** below highlights the locations for crossing improvements described further below.

Figure 14
Crossing Improvement Locations

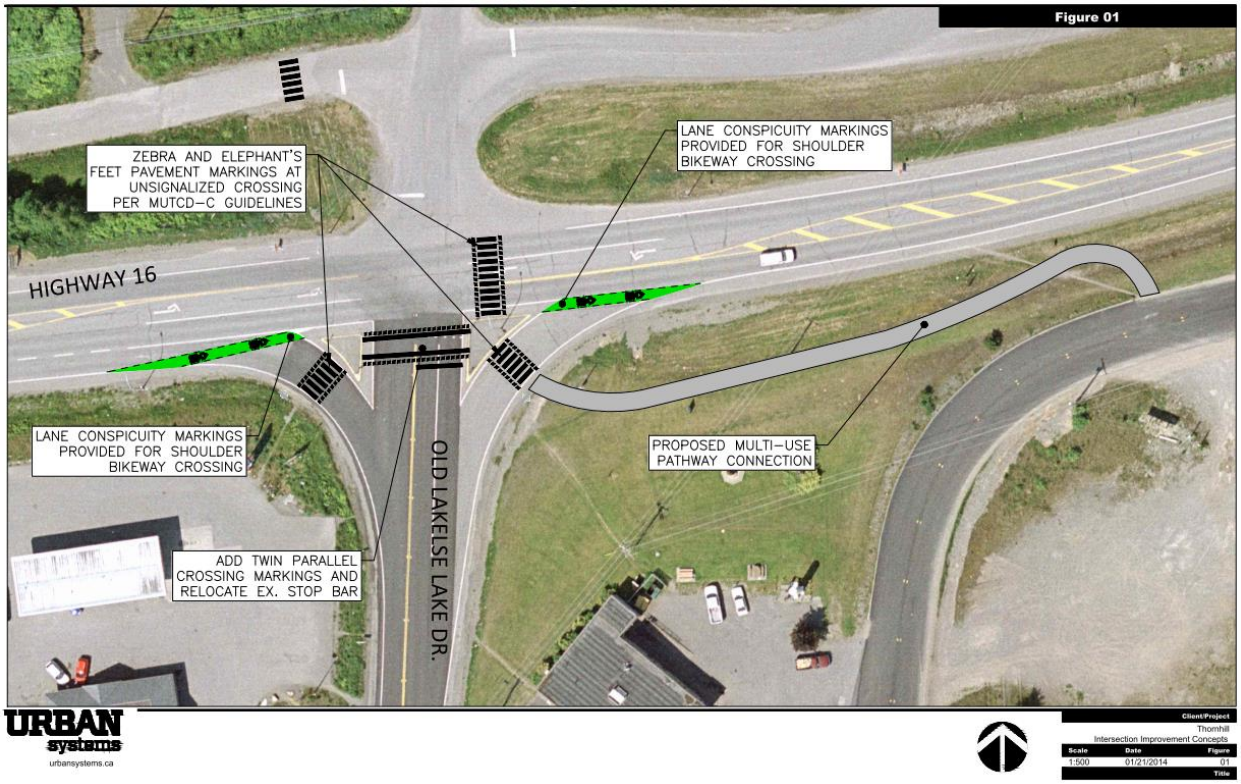
ACTION 3.1: INTERSECTIONS

1 **Old Lakelse Lake Drive / Highway 16 Intersection Improvements.** As a key crossing between the River Drive / Kofoed Drive neighbourhood and Lower Thornhill, crossing this intersection is a natural desire line for pedestrians and cyclists. A key improvement at this intersection is to provide a more visible crossing across Highway 16 so pedestrians and cyclists can more comfortably cross particularly between south Frontage Road and Kofoed Drive. As mentioned in Action Area 1, an opportunity for a multi-use path was identified to connect the southeast corner of the intersection to the South Frontage Road, with the on-street crossings tying in with this connection. A conceptual plan of potential improvements at this intersection is provided below in **Figure 15.**

Recommended Improvements

- Overhead signage to indicate the presence of a crosswalk (preferably with pedestrian / cyclist activation)
- Zebra crossing on the east leg, across Highway 16
- Longitudinal crossing on south leg, stop bar moved back
- Zebra crossings from shoulder area to raised right-turn islands
- Green conflict zone markings painting for cyclists
- Provision of multi-use pathway on southeast corner to connect to South Frontage Road

Figure 15
Conceptual Crossing Improvements – Old Lakelse Lake Drive & Highway 16



2 **Old Lakelse Lake Drive Marked Crosswalks** at Hemlock Street and Thornhill Street. It is recommended to consider the provision of marked crosswalks, as warranted, at these locations can provide better pedestrian access between residential areas on the north and south side of the Old Lakelse Lake Drive corridor.

3 **Clark Road / Old Lakelse Lake Drive Intersection Reconfiguration.** Currently this intersection provides a main access point to the core of Thornhill from Old Lakelse Lake Drive. The existing geometry of this presents safety and operational challenges, operating as a five-point intersection due to the convergence of Toynbee Street and Sande Avenue on the south leg. The lack of perpendicular access to the intersection presents safety and operational challenges for both motorists and non-motorized modes using the intersection. Although marked crossings are already in place, it is recommended that pedestrian and cyclists safety be enhanced as a part of a broader intersection reconfiguration.

Recommended Improvements

- Use of repurposed space for landscaping, pocket park / place making features

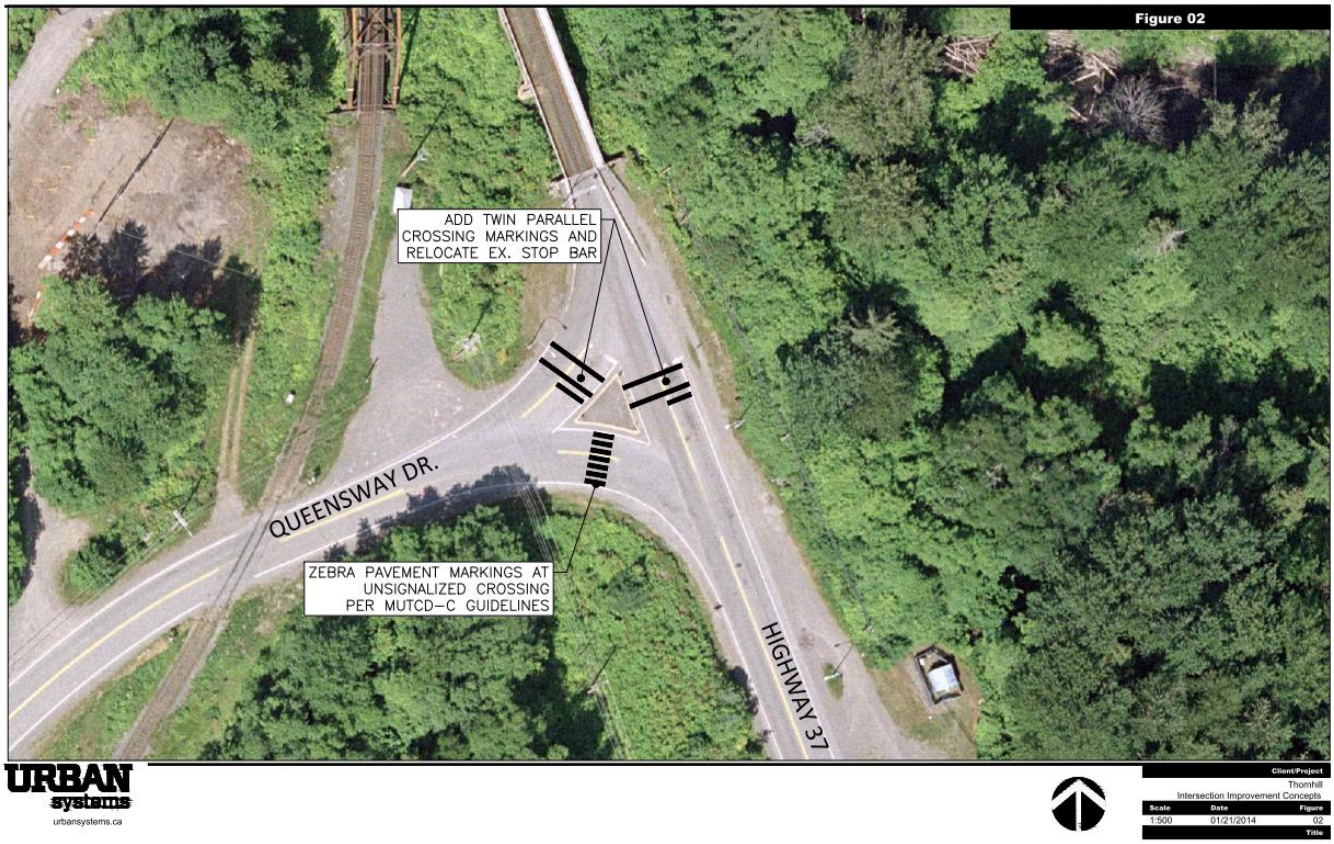
- Long-term realignment of intersection to provide more perpendicular access to Old Lakelse Lake Drive

4 **Queensway Drive / Highway 37 Intersection Reconfiguration.** This is an important connection, supporting motorists, pedestrians, and cyclists to connect across the Old Bridge between Thornhill and Downtown Terrace. Currently the geometry of the intersection presents safety and operational challenges for all users due to traffic queuing at the signal combined with challenging turning channelization islands. For those pedestrians / cyclists using the bridge sidewalk and who wish to cross between the east and west sides of Highway 37 face challenging traffic conditions. It is recommended that in the short-term, marked zebra and longitudinal crossings are put in place to increase the visibility of non-motorized users. In the long-term, further study is required to review long-term geometric and signalization improvements, including facilitating northbound left-turns from Highway 37 onto Queensway Drive. The study should also look at reconfiguring the intersection to a purpose-built three-legged intersection, reducing the complicated channelization operations, and inclusion of pedestrian/cycling activated pushbuttons. A conceptual plan of potential improvements at this intersection is provided below in **Figure 16.**

Recommended Improvements

- Longitudinal crossing on south leg, stop bar moved back
- Zebra crossing between south shoulder and raised right turn island
- Provision of pedestrian and bicycle pushbuttons to activate a phase
- Long-term reconfiguration to tighten intersection to a purpose-built three-legged intersection for safety/operational improvements

Figure 16
Conceptual Crossing Improvements – Queensway Drive & Hwy 37



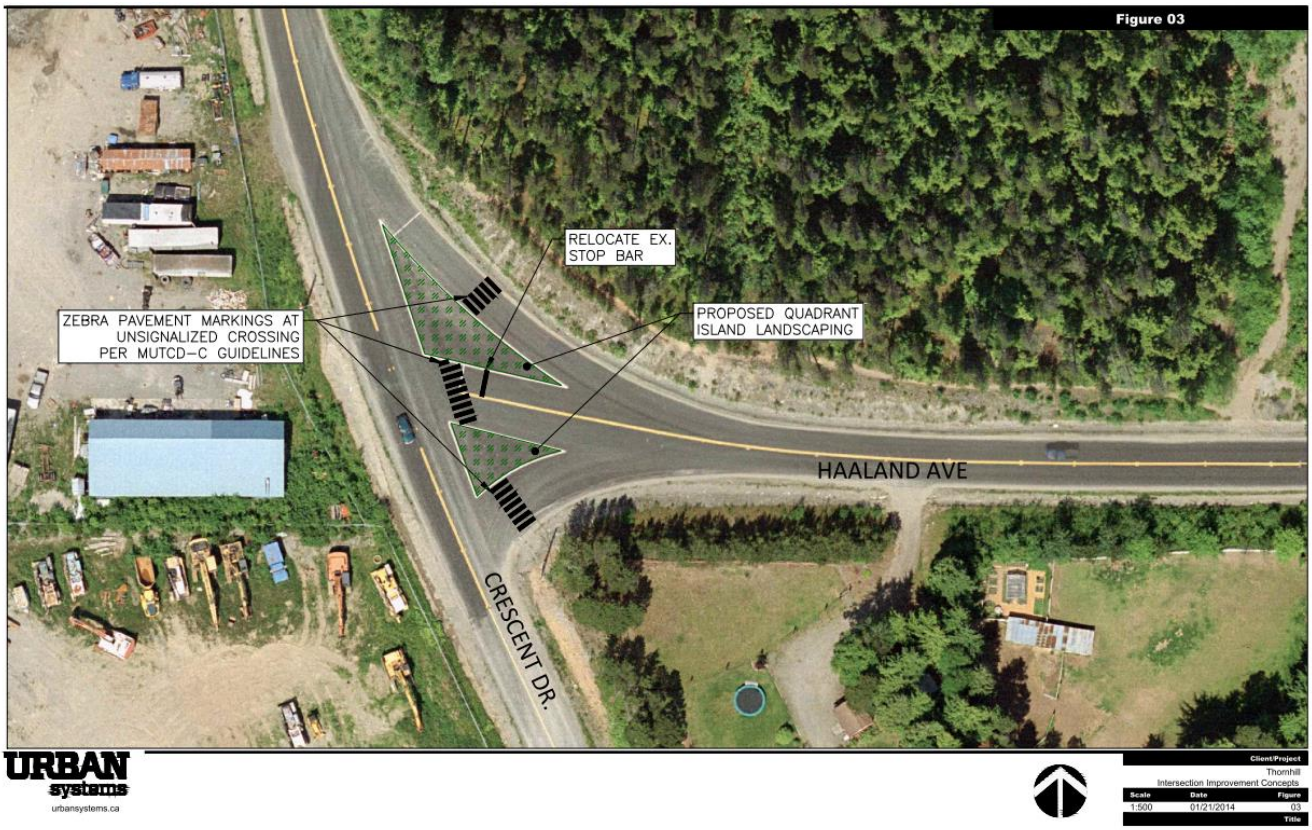
5 **Crescent Street / Haaland Drive Intersection Improvements.** This intersection is the main access point into Copper Mountain, and has wide vehicle turning radiuses and long crossing distances for pedestrians and cyclists. Short-term improvements to this intersection can include enhancing the existing painted right-turn islands to accommodate greenery and landscaping, and community gateway features (i.e. "Welcome to Copper Mountain" signs). Zebra crossings and longitudinal crossings should be provided on the east legs of the intersection. Longer-term options can include simplifying the channelization of the intersection, into a purpose-built three-legged intersection, reducing turning radii for vehicles and improving operations for non-motorized users. A conceptual plan of potential improvements at this intersection is provided below in **Figure 17.**

Recommended Improvements

- Provide landscaping, gateway features on raised right-turn islands
- Marked crosswalks on east legs
- Longitudinal crosswalk and stop bar moved back for left-turn lane

- Long-term improvements can include reconfiguration of the intersection to a purpose-built three-legged intersection for safety and operational improvements for all users.

Figure 17
Conceptual Crossing Improvements – Crescent Street & Haaland Drive



6 **Highway 37 and Highway 16 (Four-Way).** This intersection has crosswalks on all four legs of the intersection; however it is recommended that the RDKS should work with MOTI to undertake further study to explore the feasibility for intersection improvements at this intersection, including options for a traffic signal or roundabout at this intersection.

7 **Highway 16 at Clark Street/Desjardin Avenue Crosswalk Enhancements.** The existing crossing of Highway 16 adjacent to Thornhill Junior Secondary School addresses an important travel desire line for pedestrians and cyclists between the core of Thornhill and the River Drive / Kofoed neighbourhoods. However, residents have indicated concerns regarding visibility at this crossing, as vehicles may not see

pedestrians waiting to cross, particularly when it is dark. The RDKS should encourage MOTI to provide enhanced lighting around the 'waiting areas' of this crosswalk, in order to improve the visibility of pedestrians (and cyclists) waiting to cross. MOTI should also evaluate if this crosswalk should be upgraded to a 'special crosswalk' with pedestrians able to activate flashing overhead lights to indicate the crosswalk is in use.

8 **Highway 37 at Krumm Avenue/Churchill Drive Crosswalk.** Currently, there is no marked crossing in place for pedestrians and cyclists to cross Highway 37 between Krumm Avenue and Churchill Drive. As this is a natural crossing point between the Upper Thornhill / Queensway neighbourhoods, and the sole access point to the Highway south of the Four-Way, Overhead signage or a special crosswalk is recommended here.

Recommended Improvements

- Unsignalized zebra crossing, potentially with overhead signage or special crosswalk
- Marked crosswalks on east and north leg, utilizing raised right-turn island

ACTION 3.2: BRIDGES

In addition to intersections, bridge crossings to Terrace were identified as uncomfortable for pedestrians and cyclists. This includes the lack of space for pedestrians and cyclists to comfortably share the Old Bridge sidewalk, the potential for bicycle handlebars to hit the Old Bridge light standards, the lack of perceived safety for cyclists using the roadway on the New Bridge, and the lack of guard railings for the sidewalks on both bridges that meet TAC and MOTI guidelines. The Terrace Active Transportation Plan provided recommendations to MOTI to improve active transportation conditions on the Old and New bridges, and the Thornhill Active Transportation Plan supports these recommendations as described below. Additional recommendations are also provided for the Krumm Avenue bridge (over Thornhill Creek) and crossings in Terrace.

Recommended Improvements

- **Old Skeena Bridge**. It is recommended that the RDKS work in collaboration with the City of Terrace to encourage MOTI to undertake a feasibility study for pedestrian and cycling improvements at this crossing. As identified in the City's Active Transportation Plan, this can include evaluating the feasibility of options such as a clip-on cyclist bridge, sidewalk widening to accommodate multi-use travel, and a bicycle lane with bicycle friendly surface and cyclist-activated signal at the bridgehead. It is recommended that MOTI explore the feasibility of installing guard railings on the Old Bridge sidewalk that will

not impede snow removal activities on the bridge deck. To allow pedestrians to safely cross, the option of providing a pedestrian/cyclist actuated pushbutton (to activate a pedestrian phase in the current bridge signal cycle) should also be provided. These crossing improvements on the bridge, together with trail improvements, can enhance the critical link for pedestrians and cyclists between Thornhill and Terrace.

- **New Skeena Bridge.** As also identified in the Terrace Active Transportation Plan, it is recommended that the RDKS encourage MOTI to undertake a feasibility study for widening the existing sidewalk to accommodate multi-use travel. While cyclists are still required to use the roadway, consideration for sharrows and/or more bicycle signage and stencils along the bridge deck is also recommended to further enhance the visibility of cyclists to motorists. It is recommended that MOTI explore the feasibility of installing guard railings on the New Bridge sidewalk that will not impede snow removal activities on the bridge deck.

- **Krumm Avenue Bridge (at Thornhill Creek).** Recognizing that this is a narrow crossing along the Krumm Avenue corridor, it is recommended that sharrows and related signage (notifying motorists to yield to cyclists) should be considered on the Krumm Avenue bridge.

- The RDKS should also support the City of Terrace and MOTI to construct a **pedestrian overpass between Downtown Terrace and the Southside** as this can improve connectivity and shorten travel time for pedestrians and cyclists using the New Bridge from Thornhill to access Downtown Terrace.

The current shared pedestrian and cycling path (above) and the pedestrian-only sidewalk on the Old Bridge (below).

ACTION AREA 4: AMENITIES & ACCESSIBILITY

Amenity and accessibility features can be incorporated into the pedestrian and cycling environment in order to further support people choosing to walk and cycle for local trips. In particular, the provision of street lighting, places to park a bicycle, pedestrian amenities, and transit accessibility is key to going the extra mile to facilitate a better walking and cycling experience. Some of the recommendations to improve amenities and accessibility for the active transportation network are detailed below.

ACTION 4.1: IMPROVE VISIBILITY

The lack of street lighting, including on streets such as Crescent Street and Haaland Avenue, was noted by many residents as a deterrent to walking or cycling after dark. Streets with no street lighting reduce the visibility of pedestrians and cyclists to motorists, and can also impact perceived safety in and around a neighbourhood. It is recommended that the RDKS work with MOTI to install street lighting along all arterial and collector roads in Thornhill. Section 938 of the Local Government Act states that local governments may, through bylaws, regulate and require various works and services, including the provision of street lighting. As the RDKS is currently reviewing their subdivision control bylaw, requirements should be incorporated to require all future subdivision development to include street lighting on streets that serve the new development.

ACTION 4.2: PROVIDE MORE BICYCLE PARKING

Every trip by bicycle requires that the bicycle be parked at the end of the trip. The provision of safe and secure on-street parking at key locations throughout Thornhill is a significant means of encouraging cycling in addition to developing bicycle routes. The design of bicycle parking can also be used as a form of public art or civic branding. Improved facilities for bicycle parking are relatively inexpensive and can be seen as a positive "quick win".

Recommended Improvements

Additional and/or improved bicycle parking is recommended in key areas of Thornhill, including:

- **Key commercial areas**, including Skeena Landing, gas stations and motels along Highway 16, and the elementary and primary school.
- **Key community and civic facilities** including the Thornhill Community Centre, the Thornhill Pub, Equestrian Centre, and churches in Queensway and Upper Thornhill.
- **Schools**, including Thornhill primary and elementary schools, with consideration for racks at now-closed Thornhill Junior Secondary School and Copper Mountain Elementary School depending on how much community events still take place in these sites.
- **Parks,** including tot lots on Edlund Avenue, Penner Street, Hemlock Street, and Old Lakelse Lake Drive.
- At **major trailheads,** such as on Hemlock Street, Century Street, Rifle Range Road, and Old Lakelse Lake Road.

A lack of bicycle parking can result in cyclists locking up to a variety of features

The bicycle parking locations described above include locations within the public and private realm, and the RDKS will need to work with private property owners, businesses, the school district, and MOTI to encourage provision of bicycle racks at key locations. So users know where bicycle parking is located, the RDKS could include information online and on the trail map about the location of bicycle parking racks within Thornhill.

ACTION 4.3: IMPROVE TRANSIT INTEGRATION & ACCESSIBILITY

Passenger amenities and accessibility at bus stops can have a significant impact on attracting new transit users, and encouraging more people to take longer walking or cycling trips through the use of transit. Currently, all busses in Thornhill are equipped with bicycle racks, and through a provincial grant program, many of the bus stops in Thornhill have been upgraded to include shelters, benches, and at-grade access pathways that are accessible by wheelchair. However, there are still some bus stops that remain uncovered with no shelter or bench, and/or are placed far back from the roadway, such as on the far side of a ditch or within the brush. These bus stop conditions significantly reduce the visibility of the bus stop and passengers waiting at the stop. It is recommended that the RDKS continue to seek provincial grant funding to work towards upgrading all bus stops to include a shelter, bench, and wheelchair accessibility. In addition, providing customer information within the bus stops, including bus routes or schedules, can enhance the convenience of using transit.

A variety of bus stops are in Thornhill, including newer cedar shelters (above); and stops lacking shelters (below).

Recommended Improvements

In general, since all transit users are pedestrians at the beginning and end of their journey, improving pedestrian accessibility through the provision of paved shoulders and safe crossings within a short walking distance of bus stops can help make it more attractive for people to walk at either end of their transit trips. It is recommended that RDKS and/or BC Transit inventory the existing bus stops and identify priorities for shelters and accessibility upgrades, striving for 100% bus stops to be accessible and sheltered.

ACTION 4.4: INTRODUCE LANDSCAPING AND GATEWAY FEATURES

In order to create a sense of place and welcome residents and visitors to different areas of Thornhill, signage and gateway features and/or landscaping enhancements can identify Thornhill's neighbourhoods. This can be as simple as providing signage that states "Welcome to Copper Mountain", for example, or can be a welcome sign with recognizable neighbourhood features or symbols.

Recommended Improvements

It is recommended that gateway signage be installed at the intersections of:

- Old Lakelse Lake Drive and Hemlock Street (Upper Thornhill);
- Paquette Avenue and Old Lakelse Lake Drive (Lower Thornhill);
- Haaland Avenue and Crescent Street (Copper Mountain);and
- Queensway Drive and Highway 37 (Queensway).

Landscaping and the provision of benches around these gateway features, such as what has currently been implemented off of Highway 16 through the community corners program, can also enhance these areas and create more of a sense of place. In addition, creating a landscaped or seating area at the top of Old Lakelse Lake Drive (near the water tower, where the trailhead is located) where the "lookout" area is can create a feature of interest along the road, allowing pedestrians and cyclists to rest and take in the view, and can also serve to encourage use of the nearby bench trails connecting Lower and Upper Thornhill.

Examples of gateway signage (top) and landscaping improvements on asphalt islands (below).

ACTION AREA 5: POLICIES

The RDKS can use regulatory tools and requirements to shape the development of the active transportation network in Thornhill. In particular, some of the policy strategies that the RDKS can explore include:

ACTION 5.1: SEEK DEVELOPER CONTRIBUTIONS

The RDKS should seek Developer Contributions to parks and trails through an update to the Official Settlement Plan or creating a new parks plan for the Thornhill area. The RDKS is currently undertaking a review of the Thornhill Subdivision Control Bylaw No. 195. This Bylaw does not currently contain any stipulations that require developers to provide facilities for pedestrians or cyclists within new developments. However, Bylaw 192 does empower the RDKS to establish and parks and recreation services area within Thornhill. Currently in the Thornhill Official Settlement Plan, Policy IV 5(5) states:

Policy updates could result in stipulations that require park or trail dedication from private developers

"New subdivision areas shall provide pedestrian and bicycle systems that are segregated from the vehicular system, and the provision of pedestrian and bicycle systems for presently built up areas shall be considered in neighbourhood plans."

Further, Section 941 Provision of Park Land of the LGA states that through development agreements, property owners / developers are required to provide either park land (not exceeding 5% or more of the area being subdivided) or pay an equivalent fee for establishment of future parkland.

Essentially, the LGA enables local governments to require land or fees from developers at the time of subdivision for parkland, in order to develop more parks, trails, and pathways in the community. However, given that the RDKS does not have any existing parkland policies or designations regarding the location and types of future parks, the RDKS does not currently ask developers for these contributions towards park and trail amenities.

Recommended Improvements

It is recommended that the RDKS update the Thornhill Official Settlement Plan or develop a parks master plan that includes policy guidance on the location and type of future parks and trails in Thornhill. Having a policy document in place will facilitate the RDKS to require park land dedication or monetary contributions to future parks and trails when new development occurs. The RDKS can also include an update to Bylaw 192 to further strengthen its ability to establish a parks and recreation area in Thornhill. Some examples of policies that can be included are:

- Provide for pedestrian and bicycle movement and access to transit in new developments and site planning;
- Create a policy to have the ability to take cash-in-lieu of park land;
- Expand facilities for pedestrians and bicyclists throughout the community to provide safe, high quality, interconnected walking and cycling environments;
- Expand and improve the trail system and associated infrastructure;
- Provide trails and amenities to support the trail system, including benches, garbage bins, and signs;
- Acquire more parkland for neighbourhood parks and trails;
- Investigate opportunities to acquire property in the long-term to make trail connections and linkages; and
- Seek opportunities to acquire undeveloped land for parks and trail systems.

ACTION 5.2: ACQUIRE RIGHT-OF-WAY

As is currently experienced by the PNG and BC Hydro rights-of-way, utility projects can provide an opportunity to support linear trail corridors. In the future, as the RDKS explores the possibility of providing community sewer and other large-scale infrastructure projects in Thornhill, it is important to work with utility companies to explore the feasibility of incorporating a public trail on the utility right-of-way. The development of any future utility

Right-of-way acquisition at the time along utility project corridors can result in valuable public trail resources, as with the PNG right-of-way trail today (above).

corridor is likely to be used for recreation (hiking, walking, ATV) regardless of whether a public right-of-way is present, so establishing a public trail on the right-of-way can allow for collaboration between the RDKS, utility company, Ministry of Forests, Lands, and Natural Resources, and any other entities involved to manage the trail and minimize any impacts to the operation and maintenance of the utility.

ACTION 5.3: PRIORITIZE SNOW REMOVAL

A common concern among Thornhill residents is that snow clearing from the roadway often creates snow banks on the shoulders or roadside, requiring pedestrians to use the roadway itself which can feel less safe and comfortable. In unincorporated areas such as Thornhill, MOTI contracts out snow removal operations, with requirements for snow removal operators to remove snow on the full width of the vehicle travel lanes, with priority on highways and other major roadways (arterials and collectors). It is recommended that the RDKS collaborate with MOTI and its contractors to review the prioritization of road clearing in Thornhill, and seek to prioritize additional snow clearing in areas with high pedestrian activity, to better facilitate mobility in the winter.

ACTION 5.4: DISCOURAGE APPROVAL OF TENURE REQUESTS

Several segments of popular public right-of-way trail corridors in Thornhill, such as along Furlong Avenue and the former CanCel haul road, have been acquired by private property owners, disrupting the connectivity of the corridor for trail users. The RDKS should discourage the Crown from approving applications that request tenure on these public rights-of-way, even if temporary, to recognize the importance of keeping all existing and future trail / utility corridors continuous for users. This can include rights-of-way along Furlong Avenue, CanCel haul road, PNG right-of-way trail, and the BC Hydro right-of-way.

ACTION AREA 6: EDUCATION & ENCOURAGEMENT

Although "hard" measures such as pedestrian and bicycle facilities are critical to encouraging walking and cycling, a range of "soft" support measures are also recommended to encourage people to walk and cycle in Thornhill. These "soft" measures provide awareness and information about active transportation. Education and encouragement initiatives can include providing information to the public on the benefits of active transportation, information on local walking and cycling routes (such as trail maps), and programs that teach skills and awareness around road safety, walking, and cycling. Education and encouragement initiatives are

important and cost-effective measures to enable residents to feel more safe and comfortable walking and cycling throughout Thornhill.

ACTION 6.1: WALKING AND CYCLING EDUCATION

While improving infrastructure can make cycling and walking safer and more attractive, it is also important to ensure that residents have the skills, information, confidence and support they need to walk and cycle more in Thornhill. There are a number of education and awareness programs and initiatives that the RDKS can develop and support with its partners. This can include partnerships with agencies and organizations such as ICBC (i.e. road safety campaigns), RCMP, Coast Mountains School District #82, City of Terrace, Northern Health, and local groups and businesses (i.e. TORCA, McBike, Terrace Motocross Association) to deliver 'share the road' and road safety campaigns, promote bike/walk to work week, road cycling skills workshops, and walking safety seminars. Education initiatives around proper ATV use on trails and sharing trails with other users could also be beneficial. Educational information around walking and cycling can be delivered through a variety of formats, including through an online walking and cycling webpage on the RDKS' website, promotional safety brochures, radio/television commercials, skills training sessions / workshops, and in-school classes.

ACTION 6.2: SAFE ROUTES TO SCHOOL

Safe Routes to School is a term used to describe an international movement to improve children's safety as they walk and bicycle to school. The initiative is built on five program elements, called the "5 E's" of safe routes to school: engineering, education, encouragement, enforcement, and evaluation. Promotion of the Safe Routes to School program is an important initiative to support pedestrian and cyclist safety in Thornhill and it is recommended that this initiative be led by the schools in Thornhill and the School District No. 82, with support from the RDKS. Safe routes to school programming can include incorporating walking and safety as part of the school curriculum, in-school bicycle skills training, promotion/competitions for Walk / Bike to School week, and participation in International Walking Day (iWalk).

ACTION 6.3: COMMUNITY EVENTS

The RDKS can host events that bring awareness to walking and cycling in Thornhill. Some of the support programs can include:

- **A neighbourhood snow clearing program** to support physical activity and residents with mobility issues. This program can involve neighbours helping neighbours to create trails in the snow after a snowfall

(sometimes called a 'snow angel' program), so that pathways remain clear so that those who are elderly or have mobility or other health issues can still walk safely in the winter instead of being house-bound or depending on their automobile. These types of initiatives recognize the importance of walking for certain vulnerable groups, and aims to facilitate a safe walking environment year-round in Thornhill.

- **Community trail 'clean-up' day**. As garbage dumping and litter is a clearly identified problem within the trail network, the RDKS could organize an initiative to gather together residents and/or students for a community trail clean-up day. This could be an annual event where the RDKS (and/or other contributors) supply gloves, garbage bags, and litter picking sticks for people to gather in groups and walk the trail network. Volunteers would be assigned a trail area, provided proper safety information and supplies, and the event could include a volunteer recognition party or event, with prizes and giveaways.

CHAPTER 4

PLAN IMPLEMENTATION

This report provides an updated vision for active transportation in Thornhill along with a comprehensive package of actions to achieve this vision. This section presents the next steps of the Thornhill Active Transportation Plan in terms of project implementation and phasing, as well as funding options.

4.1 Implementation Priorities

The Thornhill Active Transportation Plan groups pedestrian and cycling improvements into the six key action areas of Trails, Connections, Crossings, Amenities & Accessibility, Policies, and Education. Conceptual capital costs for each of the detailed actions were developed based on the unit cost assumptions summarized in **Table 4** below.

Table 4: Unit Capital Cost Assumptions

Facility Type	Unit Rate
Paved Shoulder construction (upgrade from gravel to paved asphalt)	$200,000/km
Path resurfacing (gravel)	$50,000/km
Off-street pathway (paved)	$500,000/km
Quiet Street Bikeway or Walkway (signage and stencils)	$15,000/km
Trailhead kiosk	$2,500/unit
Bear-proof garbage bins	$1,500/unit
Trail gates	$2,000/unit
Bicycle parking (multi-bike design)	$600/unit

Based on these unit costs, **Table 5** below outlines the projects identified in the Active Transportation Plan that the RDKS, MOTI and other partner organizations can pursue in the short to long-term. Capital cost estimates provided in Table 5 are for planning purposes only and should not be used for detailed budgeting.

Projects have been identified as either a quick-win project priority (i.e. in the next 1-2 years), a short-term priority (next 3-5 years), medium-term priority (5 – 10 years), or a long-term priority (10 years and beyond). Many of the features of the Plan are the primary responsibility of MOTI, while others are the primary responsibility of RDKS, BC Transit, School District #82, or the private sector.

Short-term and quick-win priorities are mainly identified as less infrastructure-intensive projects, such as small-scale shoulder upgrades, frontage road

quiet street improvements, bicycle parking, programs, policy updates and feasibility studies. The quick-win horizon is approximately 1- 2 years, and it is estimated that the highest priority projects for implementation in Thornhill in this horizon would cost approximately $170,000 as shown in Table 5, or $85,000 / year. However, as described in the following section 4.2, there are other funding options that can be pursued to allow some of this cost to be shared with other agencies and organizations.

Table 5: Thornhill Active Transportation Plan – Implementation and Phasing

Plan Page #	Description	Responsibility			Priority				Capital Cost Estimate
		RDKS	MOTI	Other*	Quick Win (1-2 year)	Short (3-5 yr)	Medium (5-10 yr)	Long (10+)	
1.1: Trail Hierarchy									
32-33	Establish Trail Hierarchy	✓				✓			N/A
1.2 Enhance Existing Trails & Corridors									
34	CanCel Haul Road gravel resurfacing, 650m	✓		✓		✓			$32,500
34	CanCel Haul Road property acquisition	✓						✓	N/A
34-35	PNG Right-Of-Way Trail resurfacing, 1100m	✓		✓		✓			$55,000
34-35	PNG Right-Of-Way / Paquette Avenue 450m Multi-use Pathway (Empire Ave to Century Street)	✓		✓			✓		$225,000
35	Former Old Bridge Access Road improvements (south of Hwy 16) 400m	✓		✓			✓		$20,000
35-36	Former Old Bridge Access Road improvements, (north of Hwy 16) 400m	✓	✓		✓				$2,500
36	Doorman Road trail and access improvements, 300m	✓	✓			✓			$15,000
36	Haaland Avenue trail improvements, 600m	✓	✓				✓		$30,000
37	Krumm Avenue trail improvements,1400m	✓		✓			✓		$70,000
1.3 New Trail Connections									
38	Upper Thornhill – Lower Thornhill Connector feasibility study	✓			✓				N/A
39	Concept development for the Old Lakelse Lake Drive Multi-Use Pathway	✓				✓			N/A
39	South Frontage Road Multi-Use Pathway, 80m		✓				✓		$40,000
40	Highway 16 Multi-Use Pathway, 200m		✓			✓			$100,000
40	Hurley Creek trail extension (length TBD)	✓						✓	N/A
40-41	Paquette Avenue Multi-Use path, Century Street to school, 200m		✓				✓		$100,000
1.4 Trail Information and Amenities									
41	Create a Thornhill Trail Map	✓			✓				$3,000
41-42	Identify and name recreational trail loops	✓			✓				N/A
42	Provide a pilot trailhead map kiosk	✓		✓	✓				$2,500
42	Provide bear-proof garbage bins at key trailheads	✓		✓	✓				$1,500 per unit
42-43	Install more gates (i.e. Sharples Road, PNG)	✓		✓	✓				$5,000 per unit

Plan Page #	Description	Responsibility			Priority				Capital Cost Estimate
		RDKS	MOTI	Other*	Quick Win (1-2 year)	Short (3-5 yr)	Medium (5-10 yr)	Long (10+)	
43	Work with Rod & Gun Club to fence leased lands	✓			✓				N/A
2.1 Enhanced Shoulders									
46-47	Provide and enhance paved shoulders at the time of road rehabilitation on arterial and collector roads, 12km		✓					✓	N/A
46-47	Repaint Queensway Drive paved shoulder		✓		✓				$5,000
47	Provide a sidewalk on South Frontage Road near commercial areas		✓	✓				✓	$300/m
48	Complete missing link of shoulder widening between Old Bridge and Four-Way, 150 m		✓		✓				$30,000
48	Provide signage and pavement markings in shoulders on Highway 37 and 16, 8 km		✓			✓			$15,000
2.2 Quiet Street Walkways and Bikeways									
49-51	North Frontage Rd Quiet Street improvements, 4km		✓		✓				$60,000
	South Frontage Rd Quiet Street improvements, 4km		✓		✓				$60,000
	Kofoed Drive Quiet Street improvements,1km		✓			✓			$15,000
	Century / Desjardins Street Quiet Street improvements, 1 km		✓			✓			$15,000
	Muller Avenue Quiet Street improvements, 600m		✓			✓			$9,000
	Lowrie Avenue Quiet Street improvements, 600m		✓			✓			$9,000
	Penner Street Quiet Street improvements, 500m		✓			✓			$7,500
	Edlund Avenue Quiet Street Improvements, 400m		✓			✓			$6,000
3.1 Intersections									
53	Old Lakelse Lake Drive / Highway 16		✓				✓		N/A
54	Old Lakelse Lake Drive / Hemlock Street		✓			✓			N/A
54	Old Lakelse Lake Drive / Thornhill Street		✓			✓			N/A
54-55	Old Lakelse Lake Drive / Clark Road		✓					✓	N/A
55-56	Queensway Drive / Highway 37		✓				✓		N/A
56-67	Crescent Street / Haaland Drive		✓				✓		N/A
57	Highway 37 / Highway 16		✓					✓	N/A
57-58	Highway 16 / Clark Street		✓		✓				N/A
58	Highway 37 / Krumm Avenue / Churchill Drive		✓			✓			N/A
3.2 Bridges									
58-59	Old Skeena Bridge facility improvements		✓					✓	N/A
	New Skeena Bridge facility improvements		✓					✓	N/A

Plan Page #	Description	Responsibility			Priority				Capital Cost Estimate
		RDKS	MOTI	Other*	Quick Win (1-2 year)	Short (3-5 yr)	Medium (5-10 yr)	Long (10+)	
	Krumm Avenue Bridge sharrows		✓			✓			$500
4.1 Improve Visibility									
60	Install street lighting along arterial and collector roads at the time of development		✓					✓	N/A
4.2 Bicycle Parking									
60-61	Install bicycle parking at the Thornhill Community Centre	✓		✓	✓				$600
	Install bicycle parking at the Elementary / Primary school	✓		✓	✓				$600
	Install bicycle parking at Skeena Landing	✓		✓	✓				$600
	Install bicycle parking over time at commercial destinations	✓		✓		✓	✓	✓	$600
4.3 Transit Integration and Accessibility									
61	Inventory bus stops and identify priorities for shelters and accessibility upgrades	✓		✓			✓	✓	N/A
4.4 Landscaping and Gateway Features									
61-62	Upper Thornhill gateway feature	✓				✓			$5,000
	Lower Thornhill gateway feature	✓				✓			$5,000
	Copper Mountain gateway feature	✓				✓			$5,000
	Queensway gateway feature	✓				✓			$5,000
	Landscaping 'lookout' on Old Lakelse Lake Drive	✓	✓			✓	✓		$5,000
5.1 Policies									
63	Update the Thornhill OSP and/or develop a parks master plan	✓			✓				N/A
63-64	Acquire right-of-way for trails during utility projects							✓	N/A
64	Prioritize snow removal process	✓	✓			✓			N/A
64	Discourage approval of tenure on trail corridors							✓	N/A
6. Education and Encouragement									
65	Walking and cycling education and promotion	✓		✓		✓			N/A
65	Safe Routes to School	✓		✓	✓				N/A
65-66	Community events and activities such as a snow angel program or community trail clean up	✓		✓	✓				N/A

*'Other' can include Ministry of Forests, Lands, and Natural Resources, BC Transit, School District No. 82, and/or the private sector.

4.2 Funding Options

The costs of implementing the improvements identified in the Thornhill Active Transportation Plan can be significantly reduced by pursuing external funding sources and partnership opportunities for many of the identified projects. This section describes some funding strategies and potential funding sources that RDKS may consider to help leverage its investments and to maximize its ability to implement transportation improvements.

The RDKS should regularly check with all levels of government to keep up to date on current funding opportunities. RDKS should pursue all available sources of funding for transportation facilities and programs, including the programs identified below (Note: as funding opportunities change regularly, the information in this section is subject to change):

- **Provincial Programs and Initiatives.** MOTI is responsible for all roadways in Thornhill, and there may be opportunities to tap into provincial government funding for active transportation-related projects. For example, the Provincial Government administers the BikeBC program, which promotes new, safe and high quality cycling infrastructure through cost-sharing with local governments. BikeBC includes the programs below:
    - ***Provincial Cycling Investment Program (PCIP)*** focuses on strategic investments to build important cycling corridors of regional and provincial significance. Some possible projects include new bicycle trails and bicycle lanes, improvements to existing cycling infrastructure, and providing for bicycle lockers and other equipment that makes cycling a safer and more convenient option for travellers.

- **Infrastructure Canada** manages several programs that provide funding for environmental and local transportation infrastructure projects in municipalities across Canada. Typically, the federal government contributes one-third of the cost of municipal infrastructure projects. Provincial and municipal governments contribute the remaining funds, and in some instances, there may be private sector investment as well.

- **Green Municipal Funds.** The Federation of Canadian Municipalities manages the Green Municipal Fund, with a total allocation of $550 million. This fund is intended to support municipal government efforts to

reduce pollution, reduce greenhouse gas emissions and improve quality of life. The expectation is that knowledge and experience gained in best practices and innovative environmental projects will be applied to national infrastructure projects.

- **ICBC** provides funding for road improvements, including pedestrian and bicycle facilities, particularly where these have the potential to reduce crashes, improve safety, and reduce claims costs to ICBC. Funding is available through ICBC's Road Improvement Program, and other ICBC programs include the Speed Watch Program (through the Community Policing Centres), Speed and Intersection Safety Program, Counter Attack, Operation Red Node, and Road Sense Speaker Program for Schools.

- **Private sector**. Many corporations wish to be good corporate neighbours — to be active in the community and to promote environmentally-beneficial causes. Bicycle and pedestrian facilities are well-suited to corporate sponsorship, and have attracted significant sponsorship both at the local level and throughout North America. Examples in B.C. include Construction Aggregates in Sechelt, which constructed an overpass over a gravel conveyor to provide a link for pedestrians and cyclists, and 7-Eleven and Molson Breweries, which have sponsored multi-use pathways in Metro Vancouver.

Appendix A

Thornhill Active Transportation Plan
Community Survey

Thank you for your interest in the Thornhill Active Transportation Plan! We would appreciate if you could take a few minutes to give us your comments by completing this survey. Your answers will help us to further understand the range of active transportation issues and opportunities facing your neighbourhood! This survey should take 5-10 minutes to complete, and is available online until October 25, 2013. Thank you!

Part 1: Demographics

1. How old are you?

- ◯ Under 15
- ◯ 15-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65-74
- ◯ 75-84
- ◯ 85+

2. What is your gender?

- ◯ Female
- ◯ Male

3. Please indicate the neighbourhood your survey answers relate to:

- ◯ Copper Mountain
- ◯ Lower Thornhill
- ◯ Thornhill Bench
- ◯ River Drive/Kofoed Area
- ◯ Queensway
- ◯ Other

Please Specify Other

4. Are you a resident or a property owner within Thornhill?

- ◯ Yes
- ◯ No

If No, please indicate where you reside:

Part 2: Walking

5. What do you like most about walking in your neighbourhood?

6. What do you like least about walking in your neighbourhood?

7. What could be done in your neighbourhood to improve walking?

Part 2: Walking

8. How would you describe the experience of walking to other neighbourhoods in Thornhill and other communities such as Terrace? (i.e. Connections, crossings, possible barriers, bridge crossings etc.)

9. What do you think is most important for improving the walking environment in your neighbourhood? Please rank these items from 1 through 5, with 1 being the most important to 5 being the least important.

	Most Important	2	3	4	Least Important
More sidewalks	◯	◯	◯	◯	◯
Pedestrian-controlled intersections	◯	◯	◯	◯	◯
Crosswalks	◯	◯	◯	◯	◯
Trails & pathways	◯	◯	◯	◯	◯
Wayfinding & signage	◯	◯	◯	◯	◯
Better connections to Terrace	◯	◯	◯	◯	◯
Street lighting	◯	◯	◯	◯	◯
Benches and places to sit	◯	◯	◯	◯	◯
Traffic calmed areas	◯	◯	◯	◯	◯
Safe routes to school	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯

Please Specify Other

Part 3: Cycling

10. What do you like the most about cycling in your neighbourhood?

11. What do you like the least about cycling in your neighbourhood?

12. What could the Regional District do to improve cycling in your neighbourhood?

Part 3: Cycling

13. How would you describe the experience of cycling to other neighbourhoods in Thornhill and to other communities such as Terrace? (i.e. Connections, crossings, possible barriers, bridge crossings)

14. What do you think is most important for improving the cycling environment of your neighbourhood? Please rank these items from 1 through 5, with 1 being the most important to 5 being the least important.

	Most Important	2	3	4	Least Important
Bicycle lanes	◯	◯	◯	◯	◯
Wider paved shoulders	◯	◯	◯	◯	◯
Trails & pathways	◯	◯	◯	◯	◯
More bicycle parking	◯	◯	◯	◯	◯
Wayfinding & signage	◯	◯	◯	◯	◯
Crossings	◯	◯	◯	◯	◯
Better connections to Terrace	◯	◯	◯	◯	◯
Traffic calmed areas	◯	◯	◯	◯	◯
Provide cycling education	◯	◯	◯	◯	◯
Better bicycle-transit integration (i.e. bike racks at bus stops)	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯

Please Specify Other

Part 4: Tell Us About Yourself

15. How long is your typical walking and cycling trip?

	Walking (please only check one)	Cycling (please only check one)
Less than 5 minutes	☐	☐
5 to 10 minutes	☐	☐
10 to 20 minutes	☐	☐
30 minutes - 1 hour	☐	☐
More than 1 hour	☐	☐

16. How often do you typically walk and bicycle in a week?

	Walk (pleae only check one)	Bicycle (please only check one)
Never	☐	☐
1-2 times	☐	☐
3-5 times	☐	☐
>5 times	☐	☐
Other	☐	☐

Please Specify Other

17. What is the main purpose for most of your walking and Cycling trips? (Please check all that apply)

	Walking	Cycling
Going to work	☐	☐
Going to school	☐	☐
Shopping & Errands	☐	☐
Recreation / Leisure	☐	☐
Exercise	☐	☐
Not Applicable	☐	☐
Other	☐	☐

Please Specify Other

Part 4: Tell Us About Yourself

18. How often do you use the trails within your neighbourhood?

- ◯ Never
- ◯ 1-2 times a week
- ◯ 3-5 times a week
- ◯ Daily

19. Do you walk or cycle on trails in Thronhill?

- ◯ Walk
- ◯ Cycle
- ◯ Both
- ◯ Other

Please Specify Other

20. What do you typically use Thornhill trails for? (check all that apply)

- ☐ Recreation/leisure
- ☐ As a short cut to a destination
- ☐ As an off-street route to avoid vehicles
- ☐ Other

Please Specify Other

Part 4: Tell Us About Yourself

21. Do you find it easy or challenging to access information online about walking trails or cycle routes in Thornhill? Would you prefer trail/route infomration to be provided online, or hard copy maps (or both)?

22. If you do not currently walk or cycle, what improvements would you like to see that would encourage you to walk or cycle more?

23. Do you have any other comments about walking or cycling in Thornhill?

Thank you for completing this survey!

Appendix B

Thornhill Active Transportation Plan
Summary of Community Survey Feedback

1. SURVEY RESPONDENT CHARACTERISTICS

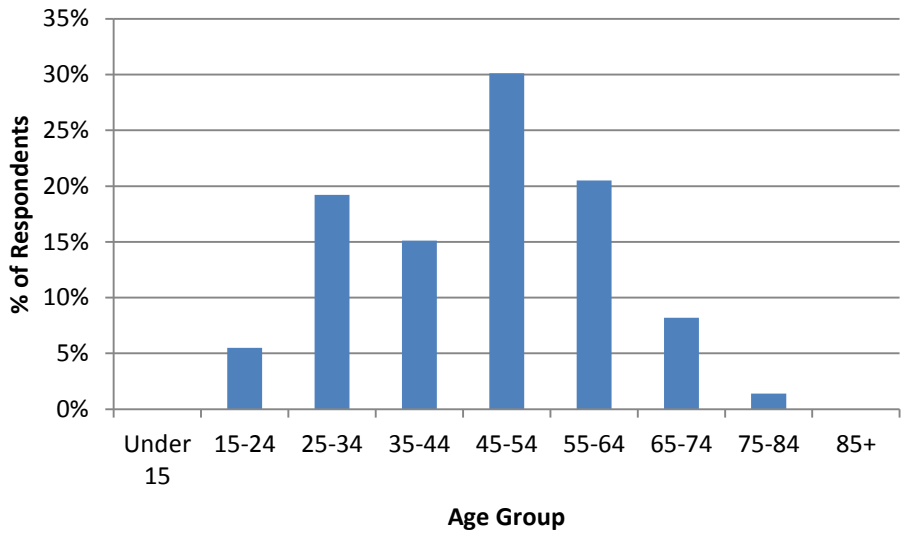
1.1 Gender

In total, 75 survey responses were received. 66% of survey respondents were female and 34% of respondents were male.

1.2 Age of Respondents

As shown in **Figure 1,** the majority of survey respondents (30%) were between 45-54 years of age. 40% of respondents were under the age of 44 years old, while the remaining 30% or respondents were 55 years and older. 5% of respondents were under the age of 24 years old, and a quarter of all respondents were under 34 years old, indicating high participation by younger / young professional demographics.

Figure 1: Survey Respondents by Age

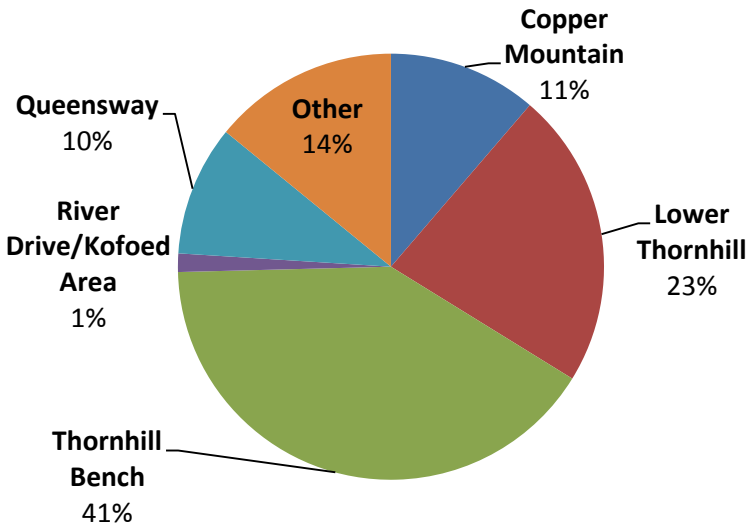


1.3 Neighbourhood

Residents were also asked whether they were a resident or property owner within Thornhill or elsewhere. 84% identified as a resident or property owner within Thornhill. The remaining 16% identified as a resident or property owner living in Terrace.

The survey asked respondents to indicate which neighbourhood their survey answers relate to, which indicates also their neighbourhood of residence. All neighbourhoods within Thornhill were represented in the survey, and responses were also provided by residents living outside Thornhill. The largest proportion of respondents were responding for the Thornhill Bench area (41%), followed by 23% of respondents who were responding for Lower Thornhill. Copper Mountain and Queensway accounted for 11% and 10% of respondents, respectively. 14% of respondents indicated 'other' for their neighbourhood, with references to Terrace Southside and Horseshoe, Jackpine Flats, Laurel Street, and Churchill Drive.

Figure 2: Neighbourhood Representation



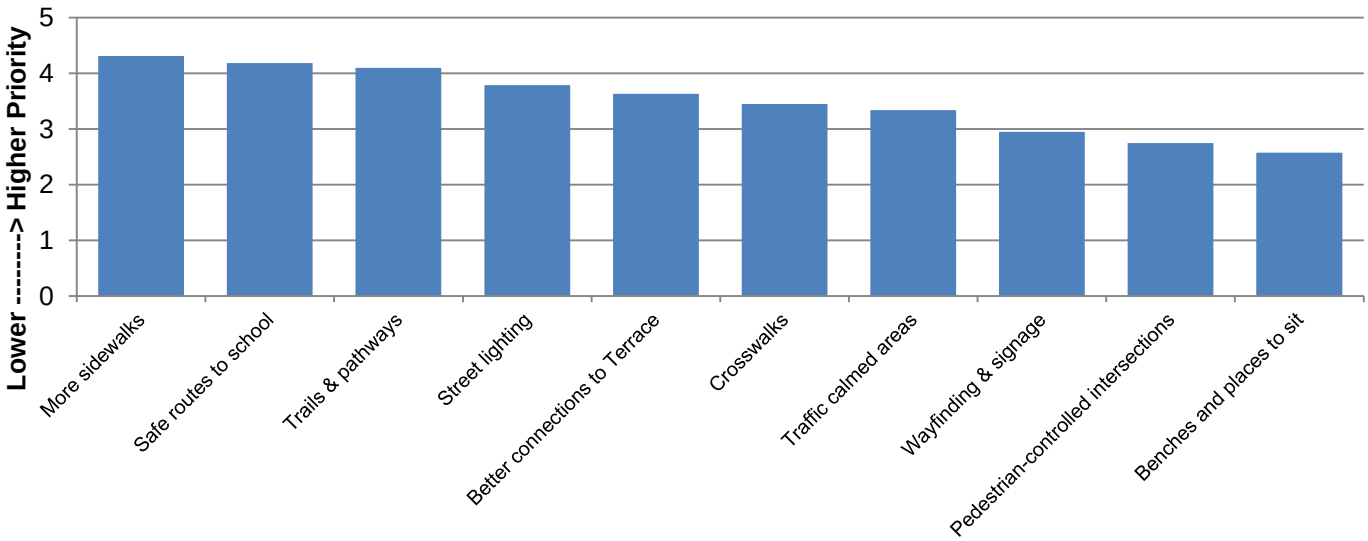
2. SURVEY RESPONDENT PRIORITIES

At the open house and through the online survey, respondents were asked to indicate which aspects of Thornhill's transportation system they think should be considered for improving the walking and cycling environment. This section summarizes the priorities of survey respondents.

2.1 Walking

Survey respondents were asked to indicate which aspect of the walking environment should be a priority for improvement. While most of the improvements ranked very highly, more sidewalks emerged as the top priority, as well as safe routes to school. These were followed very closely by priorities for trail and pathway improvements and street lighting. The least important aspects, as noted by survey respondents, were provision of benches and places to sit, as well as signalized pedestrian crossings. **(Figure 3).**

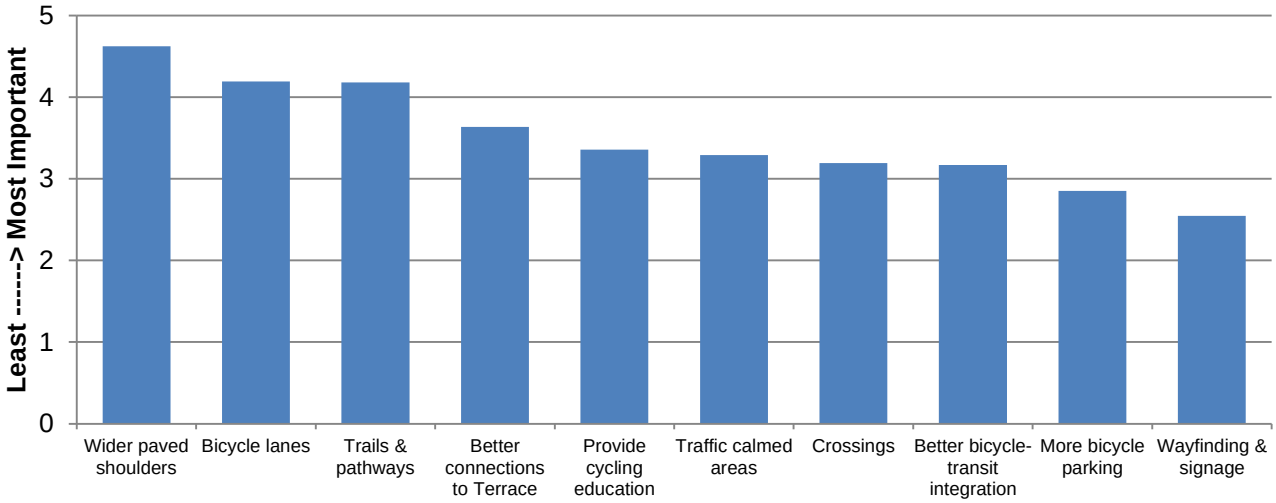
Figure 3: Walking Improvement Areas



2.2 Cycling

Respondents were also asked which aspects of the cycling environment are the most important for improvement. As seen in **Figure 4**, many identified widening paved shoulders, followed by the provision of bicycle lanes and trails and pathways as the most important priorities. Better connections to Terrace and cycling education also ranked highly. Features such as bicycle parking, wayfinding and signage were less emphasized areas for improvement.

Figure 4: Cycling Improvement Areas



3. ISSUES AND CHALLENGES

In an open-ended question, respondents were asked to indicate what they thought were issues and challenges for walking and cycling in Thornhill today. Some of the overarching themes that emerged throughout the responses are summarized below.

3.1 What do residents enjoy about walking and cycling?

- Beautiful scenery (rivers, mountains, forest) and fresh air
- Quiet areas to walk and cycle
- Walking and cycling are good recreation / healthy options
- Great forest trail network for walking and cycling
- Parks and green spaces provide excellent opportunity
- Being away from the City
- Ability to walk dogs outside in the trails

3.2 Pedestrian Network

- Lack of safe routes to walk
- Need more sidewalks / widened shoulders, including:
    - Old Lakelse Lake Road
    - Krumm Avenue
    - Queensway Drive
    - Hemlock Street
    - Clark Street
- Speeding traffic and lack of separation between pedestrians and vehicles; narrow shoulders for pedestrians, including:
    - Old Lakelse Lake
    - Queensway Drive

    - Krumm Road
    - Hemlock Street
- Lack of places to walk in the winter – snow plowed onto shoulders
- Hilly topography, including:
    - Old Lakelse Lake Road
    - Crescent Street
- Lack of safer Crossings across Highway 16
- Trails and pathways, including:
    - Need more parkland and trail connectivity with new developments
    - Need a Millenium Trail in Queensway
    - Trails sheltered from the wind
    - Trails adjacent to busy roads (Haaland Avenue, Crescent Street, Krumm)
    - Better trail lighting
    - Trail on the river dyke
- Need better street lighting for pedestrians
- Garbage cans, benches, signage

3.3 Cycling On-street Infrastructure

- Safer, designated bicycle routes
- More separation between bicycles and vehicles
- More bicycle lanes / paved shoulder, including:
    - Krumm Road
    - Old Lakelse Lake Road
    - Queensway Drive
    - Highway 37
    - Between Copper Mountain and Lower Thornhill
- Topography barriers on Old Lakelse Lake Drive
- Uneven roads / road conditions
- Speed and volume of traffic on major roads; dangerous driver behaviour
- Education about vehicles and cyclists sharing the road
- Bicycle safety courses for all ages
- More signage and wayfinding

3.4 Connectivity / Crossings to Terrace

- Need safer routes to walk and cycle between Terrace and Thornhill
- Major intersection crossings need improvement
- Better on-street and trail connections to bridge crossings;
- Safer routes to connect to the bridges
- Need more infrastructure on the Terrace side
- Lampstands on bridge are difficult for bicycle handlebars
- New Bridge has no room for cyclists to share sidewalks
- Sidewalk on Old Bridge too narrow to share / biking on road unsafe
- Sidewalks not on both sides of the bridge
- Need guard railing between the traffic and sidewalks on the bridge for more separation between traffic
- Signage for cyclists to dismount when passing

3.5 Other Walking and Cycling Issues

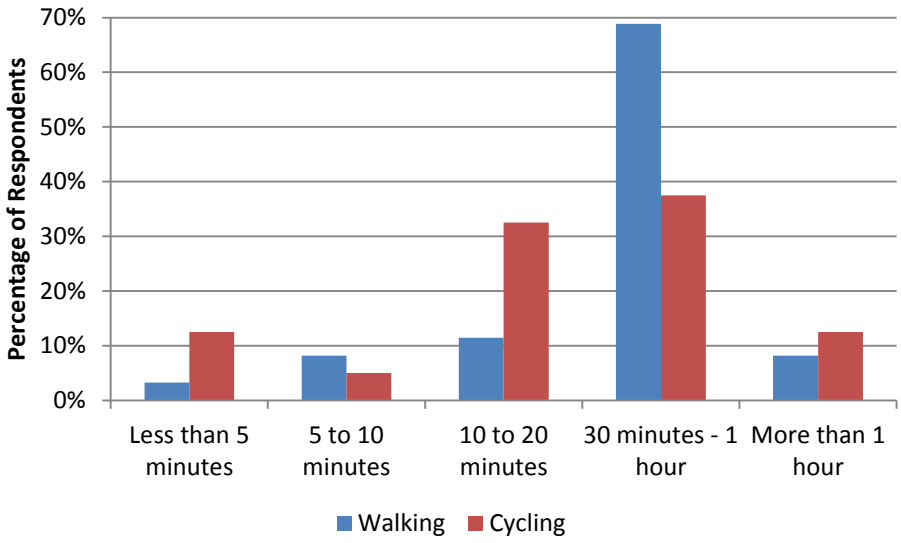
- Issue of garbage dumping on trails makes for unattractive trails and open spaces
- Aggressive dogs, unleashed dogs
- Use of ATVs on trails for walking – safety and conflict concerns

4. TRIP CHARACTERISTICS

4.1 Trip Length

Survey respondents were asked a number of questions to understand walking and cycling travel trends and characteristics within Thornhill. These questions help to understand travel patterns and needs within the community. The first question asked respondents how long their typical walking and cycling trip is in minutes. **Figure 5** illustrates the responses, indicating that most walking and cycling trips were between 30 minutes and 1 hour. This may indicate the long distances between destinations within the community and/or the prevalence of walking and cycling recreational trips.

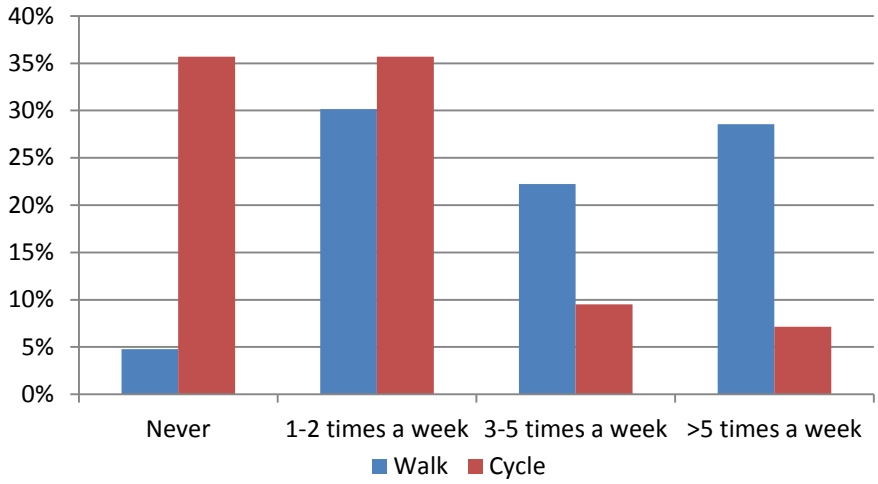
Figure 5: Walking and Cycling Trip Length



4.2 Weekly Activity

Respondents were also asked how often they walk and bicycle during a typical week. As shown in **Figure 6**, the largest proportion of respondents walk and cycle about 1-2 times a week, with walking being the most common weekly activity. This indicates that almost all respondents are a pedestrian at some point, but over a third of respondents never cycle. Ultimately, walking is a regular activity in Thornhill, whereas cycling activity is infrequent.

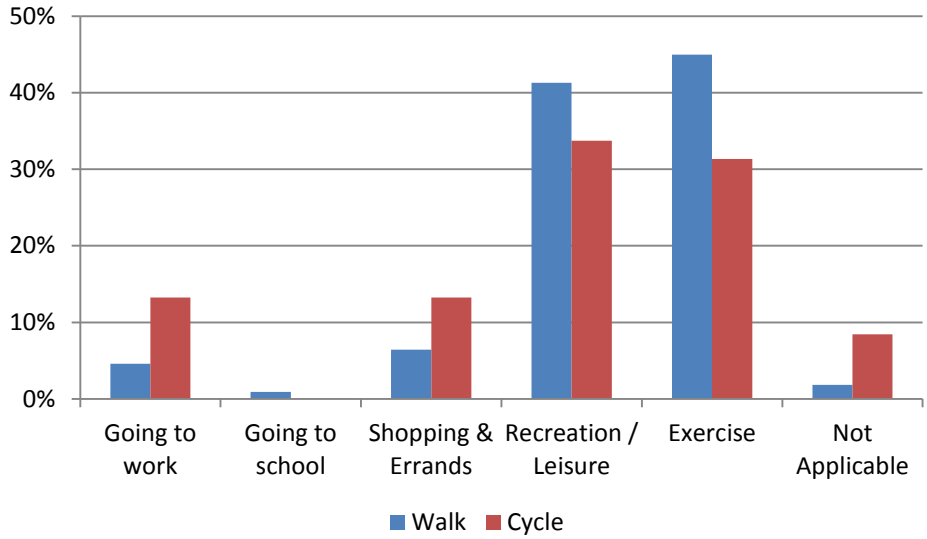
Figure 6: Walking and Cycling Activity



4.3 Trip Purpose

Respondents were asked to identify the main purpose of their walking and bicycle trips. As shown in **Figure 7**, the largest proportion of respondents walk and cycle for recreation, leisure and exercise. A smaller proportion of respondents bicycle or walk for commuting to work, shopping, and errands. Very few participants noted walking or cycling to school, however there were also no survey respondents identified within the 15 years old and under age category, those who would be going to the primary and middle school in Thornhill.

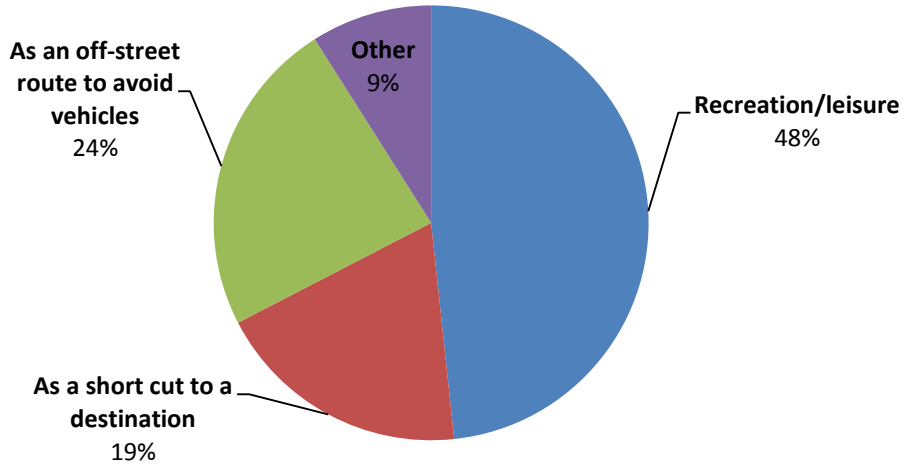
Figure 7: Walking and Cycling Trip Purpose



4.4 Trail Use

Respondents were also asked about trail use in Thornhill. 34% of respondents stated they never use the trails, while 15% stated a daily use of trails. Over one-third of respondents (36%) stated they use the trails in their neighbourhood 1-2 times per week, while 16% stated using trails between 3-5 times per week. Respondents were also asked to indicate why they use the trails, with the responses shown in **Figure 7**. 48% of respondents used Thornhill trails for recreation or leisure activities, while almost one quarter (24%) of respondents identified using the trails in Thornhill for avoiding roadways and 20% use trails to short-cut.

Figure 7: Reasons for Using Trails in Thornhill



Participants were also asked to identify whether they tend to walk or cycle on the trails. 48% of respondents walk on the trails, while 6% cycle the trails. 30% of residents indicate they both walk and cycle on the trails. 17% of respondents indicated that they use “other” modes on trails, which may indicate those using off-road vehicles on the trails.

Appendix C

Report Maps

Figure 5: Thornhill Roadway Classification

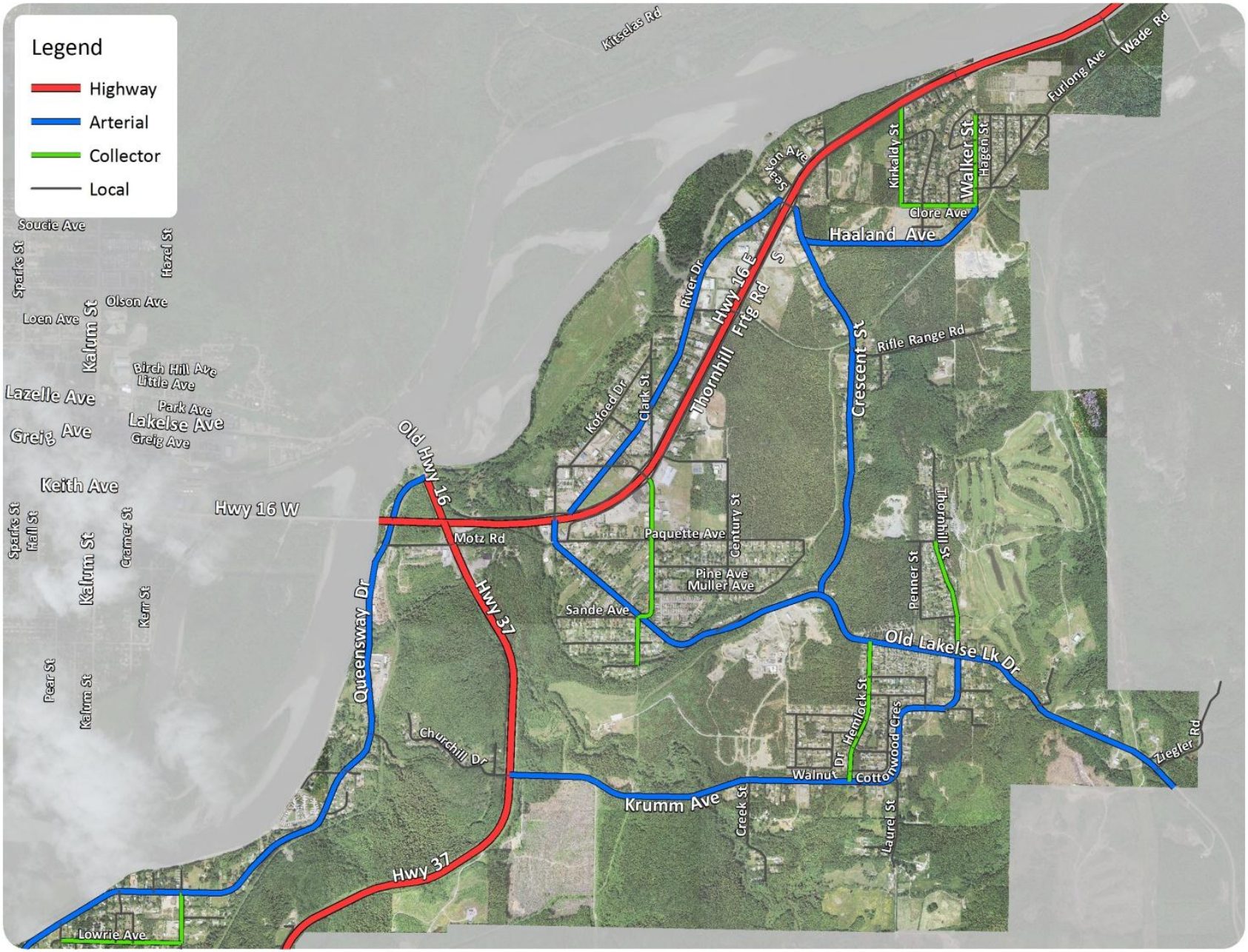


Figure 6: Existing Active Transportation Conditions

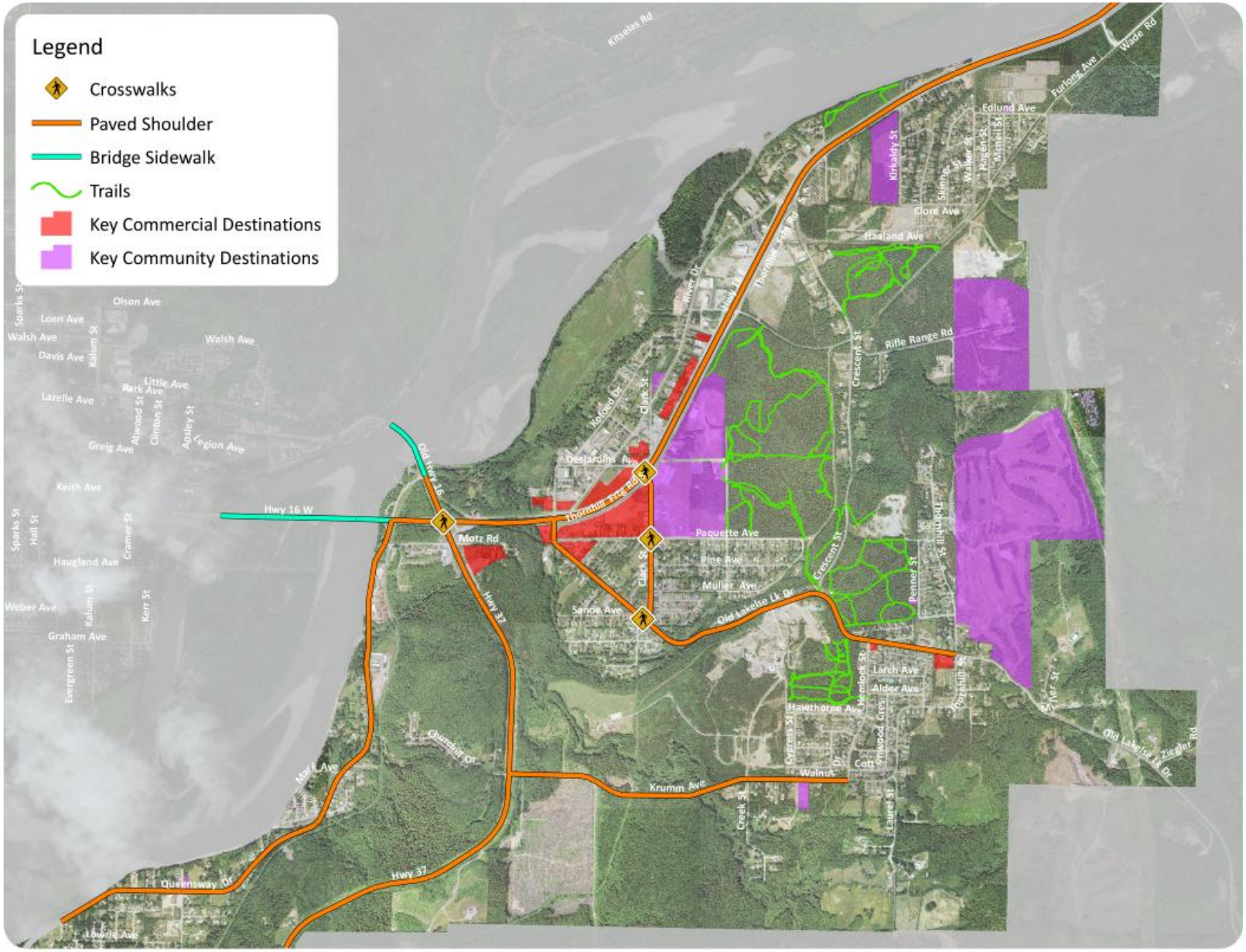


Figure 10: Recommended Trail Information & Amenities

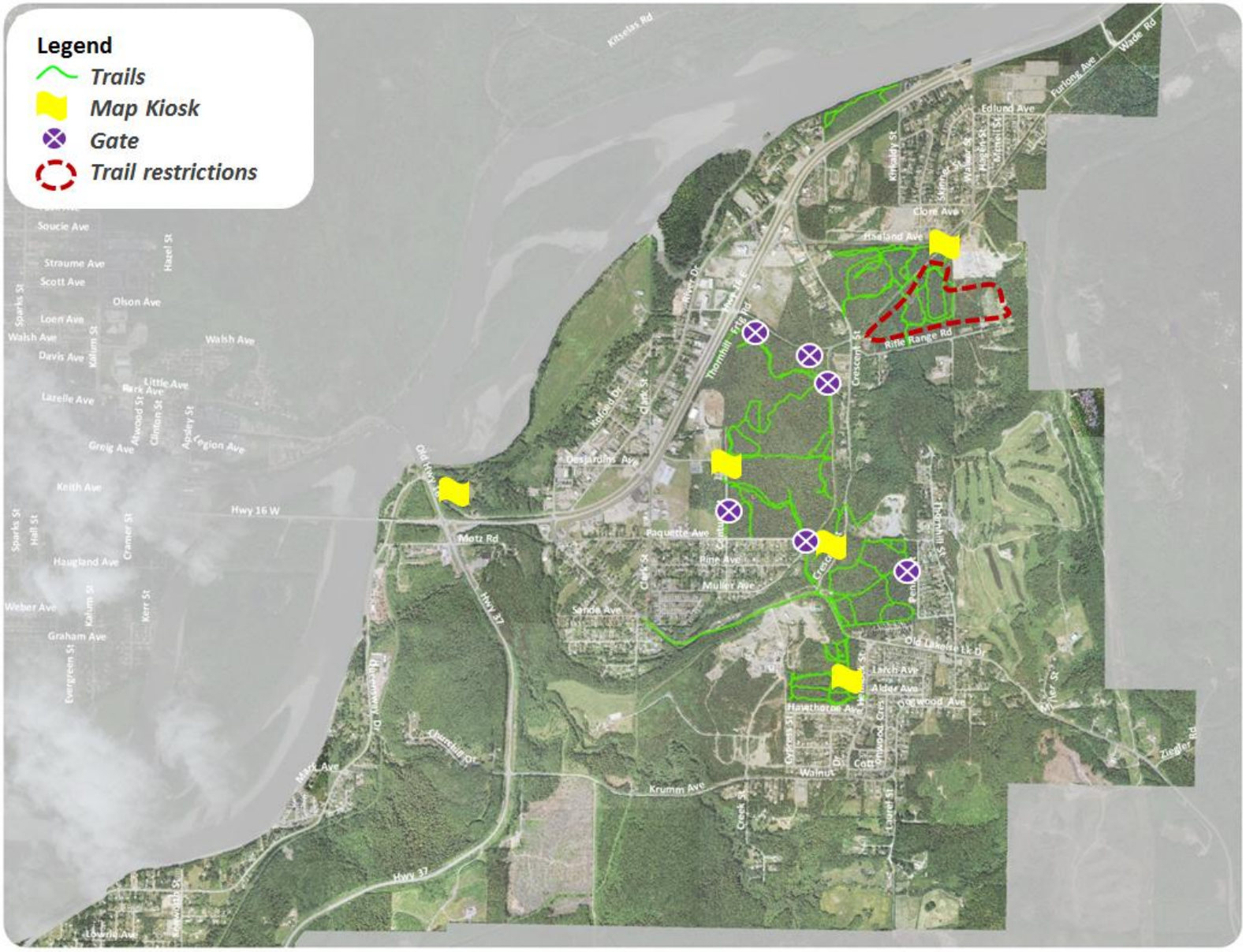


Figure 12: Shoulder Enhancements for Arterial & Collector Roads

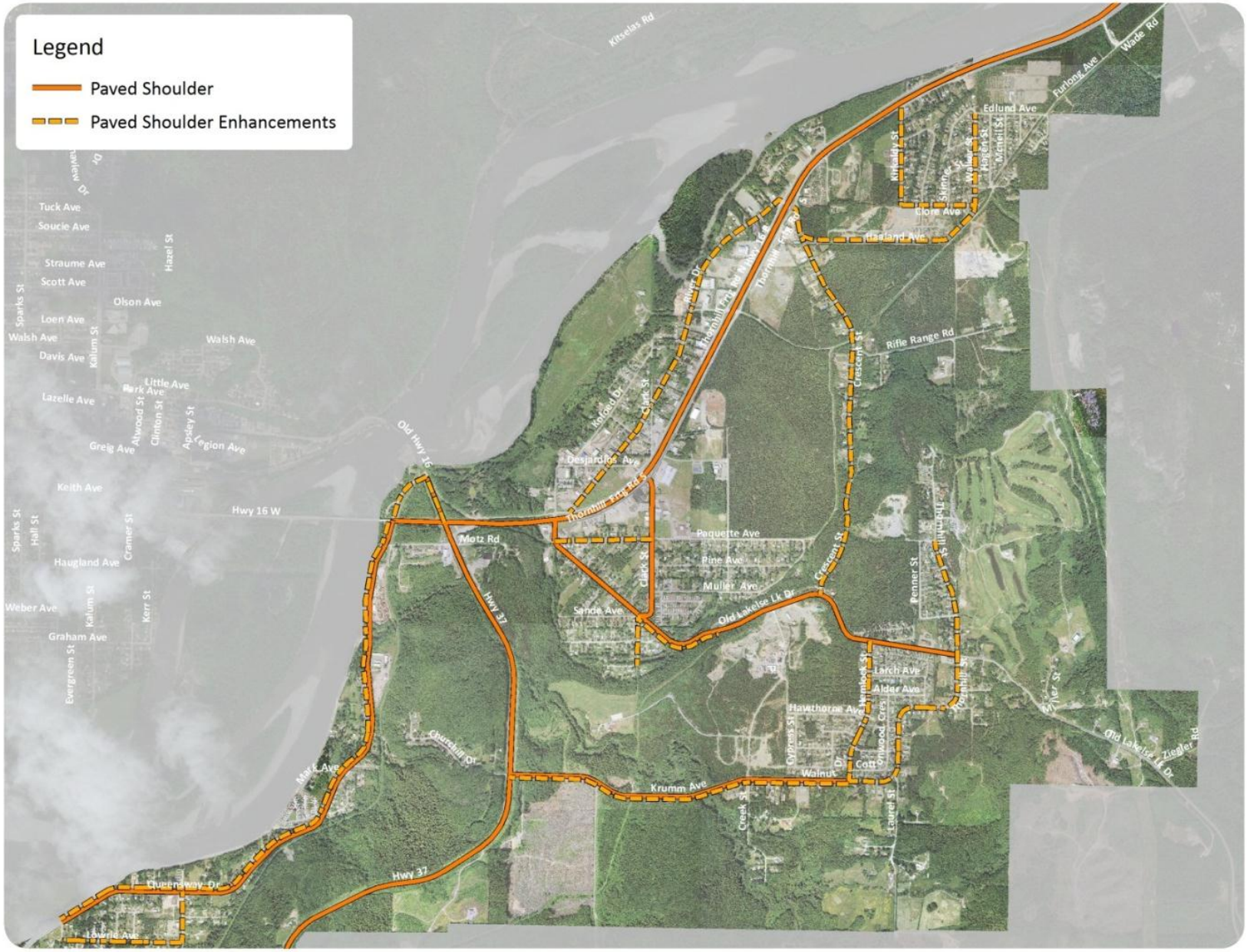


Figure 13: Recommended Quiet Street Walkways and Bikeways