Esquimalt
Active Transportation Network Plan

Township of ESQUIMALT

WATT Consulting Group

February 2022

ACKNOWLEDGEMENTS

In collaboration with the Township of Esquimalt, WATT Consulting Group would like to thank all those citizens, elected officials, municipal staff, and stakeholders who provided their feedback and ideas into this process. We would also like to acknowledge with respect that the Township within the Traditional Territories of the Esquimalt and Songhees First Nations.

PROJECT TEAM

WATT Consulting Group

Thomas Thivener, M.Sc.
Active Transportation & Regional Lead

Tim Shah, RPP, MCIP
Senior Transportation Planner

Filippos Gkekas, RPP, MCIP, MCRP
Transportation Planner

Township of Esquimalt

Joel Clary, P.Eng, PMP
Engineering Manager

Tara Zajac
Manager of Communications

Jeff Miller, P.Eng
Director of Engineering and Public Works

EXECUTIVE SUMMARY

Overview

Esquimalt's Active Transportation Network Plan (ATNP) is the Township's first comprehensive plan that identifies how active transportation can play a multifaceted role in achieving Esquimalt's broader strategic priorities including a healthy, livable, and diverse community. Active transportation is also an important part of the Township's broad community planning direction; the Official Community Plan directs the community to develop a pedestrian network that provides a safe, enjoyable, and continuous network to promote its use. Further, the Township envisions a cycling network that can encourage increased use of cycling for recreational and commuting purposes and encourage the inclusion of bicycle facilities in new developments.

Beyond the Township's strategic planning direction, active transportation is an important part of the community's fabric and valued by its residents. This was evident in the public engagement process that relied on virtual engagement methods to understand the key barriers to the community's active transportation network and the specific opportunities that could be pursued to make walking, cycling, and rolling a safer and more enjoyable mode of transportation.

Using the Township's *Engaging Esquimalt* website, the engagement process included two community-wide surveys, an online mapping exercise, and an online ideas forum, which allowed residents to share their vision for Esquimalt's active transportation network. The engagement feedback was critical for not only understanding the active transportation barriers residents experience on a regular basis, but the key priorities that they want to see in the ATNP.

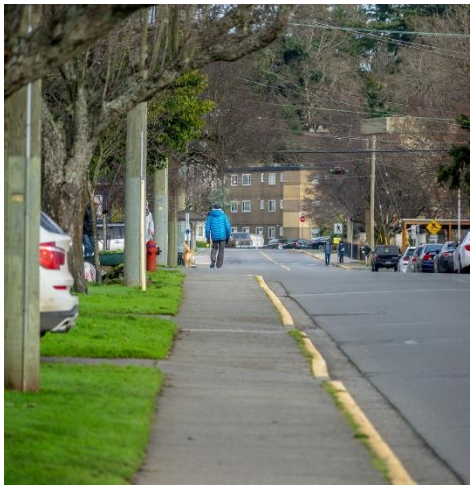
The year-long process of developing the ATNP was documented in three documents, all of which were made available on the *Engaging Esquimalt* website. The three documents are summarized below.

- **Baseline Conditions Report (March 2021)** | This report was prepared to better understand the existing active transportation conditions in the Township and the potential opportunities for improvements. It included analysis on several aspects of the active transportation network under the following topic areas: [a] Increased Demand for Active Transportation, [b] Accessibility and Comfort in the Sidewalk Network, [c] Moving Toward an All Ages and Abilities Cycling Network.
- **What We Heard Report (June 2021)** | The Esquimalt community was invited to share their thoughts and feedback on current concerns, challenges, and opportunities surrounding the active transportation network. The report captures all of the engagement feedback from the first phase of the project.
- **Plan Summary Report (August 2021)** | The plan summary report provided a "sneak peek" into the overall ATNP. It includes the key directions and a high-level summary of the recommendations for the Township's active transportation network plan.

Vision + Goals

Esquimalt's active transportation network offers all residents, regardless of age, ability, or socio-economic status, greater protection from motor vehicle traffic so that all trips—regardless of purpose— can be done safely and comfortably by walking, cycling, or rolling. Esquimalt's overall transportation network has roads that are designed for slower motor vehicle speeds and its active transportation facilities are well connected, allowing residents to complete a larger share of trips without a car and reducing overall greenhouse gas emissions in the Township.

The vision is supported by four planning goals that set the stage for Esquimalt's long-term active transportation network and guide the recommendations in this planning document.



1. **More Protection from Motor Vehicles**

   Provide dedicated and protected space to people walking, biking, and rolling on all Major Roads and Residential Collectors to improve safety and comfort.

2. **Reduce Climate Impact**

   Increase the share of trips made by active transportation to align with the greenhouse gas emission reduction targets in the Official Community Plan.

3. **Better Active Transportation Facilities**

   Improve the quality of walking and cycling facilities to meet the needs of residents and visitors of all ages and abilities.

4. **Regional Collaboration**

   Work with neighbouring jurisdictions to improve the connectivity of the active transportation network to make it easier for residents and visitors to travel within, to, and from Esquimalt.

The overall recommendations are organized into three distinct topic areas including (1) Pedestrian Realm (2) Cycling Realm and (3) Complete Streets, Complete Intersections. Combined, a total of 43 actions are recommended to put Esquimalt on course to achieving the vision and goals.

Big Moves for the ATNP

All of the actions are critical and should be implemented to increase the share of people walking, rolling, and cycling. Recognizing resource, financial, and staffing limitations, the ATNP identifies five big moves that are expected to yield the greatest benefit to Esquimalt's active transportation network.

1. **Implement a Quick-Build Cycling Network**

   Over the next five years, Esquimalt will develop a 5.3 kilometer quick-build cycling network on three major roads that allow residents and visitors to travel around the community in a safe, connected, and efficient manner.

2. **Lower Speeds**

   Speeds are a major factor in creating a pedestrian and bike friendly environment and reductions to speed limits on Township roads can lower vehicle operating speeds, improve road safety, and improve neighbourhood livability.

3. **Short-term Intersection Reviews & Improvements**

   There are several intersections and crossings in the community that do not safely accommodate people walking and cycling. Improvements to intersections and crossings are a critical part of the overall active transportation network.

4. **Fill in Sidewalk Gaps**

   Esquimalt is a walkable community and an even higher proportion of walking trips could be achieved by filling in sidewalk gaps and by improving the overall accessibility of these facilities.

5. **Dedicated Active Transportation Staff**

   The Active Transportation Network Plan cannot be implemented without adequate staffing. A dedicated active transportation coordinator is required to ensure this plan can be achieved as envisioned.

Next Steps

Achieving the vision and goals of the ATNP will require significant financial commitments from the Township and securing external funding opportunities. Monitoring and evaluating the ATNP will also be required to see how successful the Township is in achieving its goals.

TABLE OF CONTENTS

Section 1 – Introduction

1.0 INTRODUCTION

The Township of Esquimalt is an active and recreational community owing to its proximity to the ocean, access to regional trails and parks, and its compact geography. Its compact geography and short distances between origin and destinations help explain why the community has one of the highest walking mode shares in the Capital Region. Yet, despite its high walkability, the community has several challenges in its pedestrian network including inaccessible intersections and disconnected sidewalks. Further, cycling in Esquimalt is not currently comfortable—or safe—for all, making it harder to reach destinations both within the Township and in adjacent municipalities.

Over the last 10 years, Esquimalt has undertaken several technical studies to evaluate its active transportation facilities; however, many of these studies focused on select streets or corridors and did not comprehensively look at the larger network. The Township's Active Transportation Network Plan (ATNP) is the first comprehensive plan that identifies how active transportation can play a multifaceted role in achieving Esquimalt's broader strategic priorities including a healthy, livable, and diverse community and building and enhancing partnerships across the Capital Region.

The ATNP provides an overall vision, goals, and guiding principles for Esquimalt's future active transportation network. By following through and implementing the recommended projects, programs, and policies identified in this document, Esquimalt future active transportation network will reduce the community's climate impact, address the needs of vulnerable road users, and enhance overall quality of life for residents and visitors alike.

1.1 What is Active Transportation?

This section largely draws from Chapter B of the BC Active Transportation Design Guide (BCATDG), which includes a detailed overview of active transportation and its benefits. According to the guide, active transportation is defined as follows:

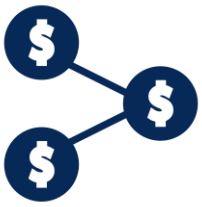
"Any form of human-powered transportation, including walking, cycling, or rolling using a skateboard, in-line skates, wheelchair, or other wheel-based forms of human-powered transportation. It also includes winter-based active modes, water-based active modes, and horseback riding, although these modes are typically more recreational in nature."

Active transportation users are a diverse group and include those who are walking, cycling, rolling (e.g., skateboarding, longboarding, scootering) and people using mobility devices such as wheelchairs, walkers, and strollers. All of these forms of active travel are pursued for a variety of reasons; some people may choose to walk for recreation, others may bike to work, some may use active transportation due to the lack of a personal vehicle, and others may be choosing to travel this way because of the environmental benefits. The reasons to travel by an active mode are multi-fold and so are the benefits, discussed below.

Benefits of Active Transportation

Environmental Benefits

Township Council has set a corporate target of reducing greenhouse gas (GHG) emissions by 45% by 2030. The transportation sector currently accounts for 33% of total community emissions (2020 data), which is consistent with other municipalities in BC. Active transportation can cut GHG emissions and air pollution and is a critical part of lowering overall emissions in the Township's transportation sector.



Economic Benefits

The economic benefits of active transportation are multifold. Neighbourhoods and destinations that are more accessible and attractive for people using active modes can attract more visitors and tourists, who contribute to the local economy. Using active transportation as the main way of getting around is also more economical compared to owning a vehicle.

Health Benefits

Hundreds of academic papers and technical reports have found that active transportation is associated with healthier communities. This includes physical activity lowering the risk of early death and chronic diseases including obesity and cardiovascular issues along with mental health benefits.

Societal Benefits

Active transportation facilities can help make a community more accessible, affordable, and equitable. It can encourage social interactions and create opportunities for face-to-face meetings, helping build trust, respect, understanding, and a sense of community.

Safety Benefits

Active transportation facilities that are well designed enhance the overall visibility of active transportation users, helping to reduce the risk of collisions and fatalities. This can create a safer transportation system for all road users.

1.2 Approach

Undertaken from January 2021 to February 2022, the Esquimalt Active Transportation Network Plan was guided by a collaborative process involving staff from the Township of Esquimalt, municipal staff from neighbouring municipalities, community stakeholders, and the consulting team—all of whom played an important role in reshaping the future of active transportation in Esquimalt. **Section 3** provides a summary of the public engagement process and how the feedback helped shape the key directions of the ATNP.

The Plan encompassed four distinct phases that are presented briefly below:

- **Phase 1** – Network Summary & Baseline Conditions Assessment initiated the project and undertook the analysis of past plans and the existing conditions.
- **Phase 2** – Public Engagement included the online consultation to involve the public, stakeholders, and others to gather input, understand the challenges and opportunities, and craft the vision, direction, and goals for the ATNP.
- **Phase 3** – Network Analysis & Cost Estimates pulled from the ideas gathered in Phase 2 and conducted detailed technical analysis to determine the key directions for the plan and the preliminary options for the pedestrian and cycling networks. Further engagement was undertaken to receive feedback on the options and to confirm the ATNP vision and goals.
- **Phase 4** – Finalize Plan and Cost Estimates included the recommended actions based on the public feedback along with cost estimates for the pedestrian and cycling infrastructure and included an implementation plan to move forward.

Section 2 – Our Community

2.0 OUR COMMUNITY

2.1 Community Profile

2.1.1 Location

The Township of Esquimalt conducts its business on the traditional territory of the Lekwungen speaking peoples and is located on the unceded territory of the Songhees and Esquimalt Nations. The Township is a growing, diverse, and highly recreational community.

With 17,533 people (as of 2021 census), and a total land area of 7.08 km^2, it has the second highest population density among Capital Regional District municipalities with 2,494 persons per square kilometre (second to the City of Victoria). Its compact geography lends itself well to easy access to parks and green space, recreational facilities, walkways, trails, and various commercial and institutional amenities in the core of the community including libraries, schools, restaurants, and retail outlets. The Township is also next to the Canadian Forces Base (CFB) Esquimalt, which is Canada's Pacific Coast naval base.

Figure 1 illustrates the geographic boundaries of the Township.

Figure 1. Township of Esquimalt Context Map

2.1.2 Demographic Summary

Esquimalt has experienced growth over time with an increase of 8.9% between 2011 to 2016, reaching a population of 17,655.[1] Esquimalt's population growth over this time period was slightly higher than that was seen across the Capital Regional District, which grew 6.5%. However, based on the most recent 2021 census, Esquimalt and Oak Bay were the only CRD municipalities whose populations decreased from the 2016 census.

Based on the 2016 census, Esquimalt's median age of 43.4 years old is slightly younger than the CRD's median age of 45.5 years old. Despite that, about 26% of the population in Esquimalt is above the age of 60. This is a significant portion of the total population, who also has unique transportation needs and travel patterns. On the other end of the spectrum, roughly 30% of Esquimalt's population is under the age of 30, who are more likely to rely on active transportation. The Township will need to ensure that the transportation network provides an array of mobility options that are safe and comfortable for all ages and abilities.

[1] Statistics Canada (2016). *Census Profile, Esquimalt*. Available online at: https://tinyurl.com/y27dyl9f

2.1.3 Transportation Mode Share

From 2011 to 2016, the proportion of work trips made by bicycle increased from 6 to 9 percent, while commuting by vehicle decreased by two percent.[2] The data shows that the total percentage of commute trips by active travel is 36%, which is the second highest active travel mode share in all of Greater Victoria after the City of Victoria (49%).[3] The share of commute trips by walking, public transit, and as a vehicle passenger did not change from 2011 to 2016. See **Table 1**.

Table 1. Esquimalt Journey to Work Mode Share, 2011 vs. 2016[4]

Mode	2011	2016
Vehicle (Driver)	58%	56%
Vehicle (Passenger)	6%	5%
Public Transit	16%	16%
Walk	11%	11%
Bike	6%	9%
Other	3%	3%

Note: The Statistics Canada and CRD Origin-Destination Household Travel Survey data were collected before the COVID-19 pandemic. Further, since the data were collected, there has been significant housing development in Esquimalt. Therefore, these data may not represent the latest transportation trends in the Township.

The 2017 CRD Origin-Destination Household Travel Survey provide data on resident travel patterns throughout the Capital Region. The survey reported that approximately 76,190 trips are made to, from, or within Esquimalt daily. Each day, approximately 30,050 trips leave Esquimalt, 30,070 trips enter Esquimalt, and 16,070 trips both begin and end in the Township.

[2] At the time of writing this report, the 2021 census journey to work data was not available by Statistics Canada.
[3] Capital Regional District. (2020). 2020 Housing and Transportation Cost Estimate Study. Available online at: https://tinyurl.com/y4f4fe4c
[4] Statistics Canada. 2017. Esquimalt, DM [Census subdivision], British Columbia and Capital, RD [Census division], British Columbia (table). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017. Available online at: https://tinyurl.com/y9uscpcn

Figure 2 provides a summary of the mode split for all trips taken to, from, and within Esquimalt. In summary, Esquimalt's mode share trends are as follows:

- Auto driver (i.e., single occupancy vehicle travel) is the dominant mode of travel to and from Esquimalt;
- The highest share of transit trips is to the Township (11%), which might be explained by the employees commuting to the community's largest employers including CFB Esquimalt and Esquimalt Graving Dock;
- Bicycle mode share is at 5% for all types of travel (over a 24 hour period). The bicycle mode share from the District is higher in the AM peak and PM peak at 11% and 6% respectively; and
- Walking mode share is relative low to and from Esquimalt; however, it represents 35% of all trips within Esquimalt making it the second highest in the Capital Region (after City of Victoria).

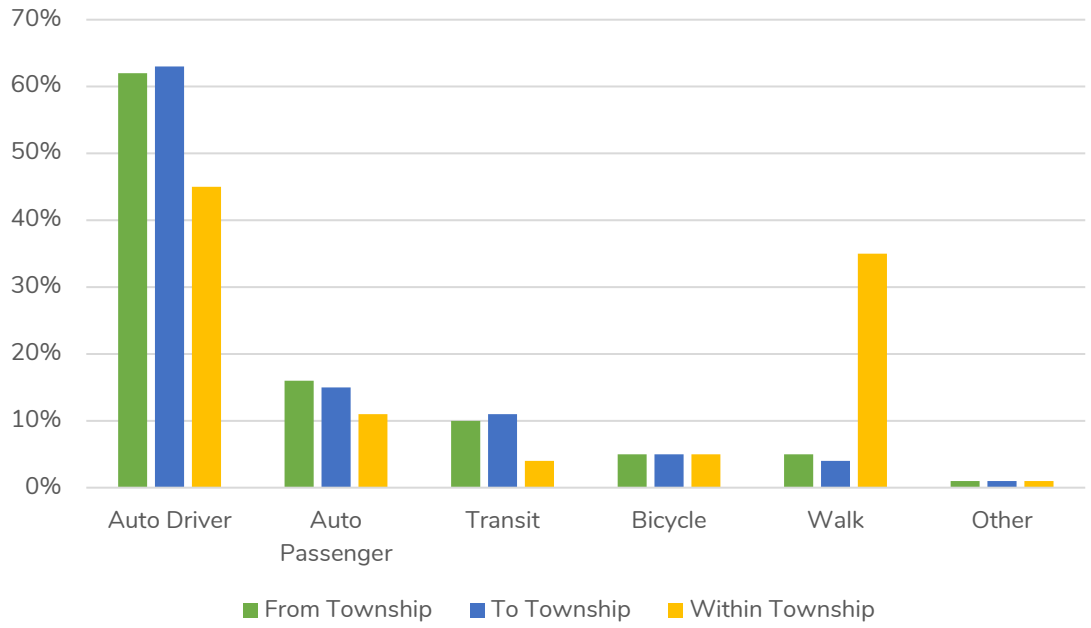


Figure 2. Mode Split by Travel Mode[5]

According to the 2017 CRD Household Origin Destination Survey, after the City of Victoria, Esquimalt has the lowest daily trips and vehicles per household among all Core municipalities. The average annual household transportation cost is $8,730, which is among the lowest among all municipalities in the Capital Region.[6] See **Table 2**.

[5] Malatest. (2017). 2017 Capital Regional District Origin Destination Household Travel Survey. Available online at: https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/transportation/crd-2017-od-survey-report-20180622-sm.pdf?sfvrsn=4fcbe7ca_2

[6] Capital Regional District. (2020). 2020 Housing and Transportation Cost Estimate Study. Available online at: https://tinyurl.com/y4f4fe4c

Table 2. Household Transportation Profiles, Core Municipalities

Core Municipalities	Daily Trips Per Household	Vehicles Per Household	Bikes Per Household	Avg Annual Household Transportation Cost
Esquimalt	3.23	1.20	1.14	$8,730
Oak Bay	6.98	1.60	1.54	$12,115
Saanich	7.06	1.67	1.48	$12,294
Victoria	5.64	1.08	1.13	$7,921
View Royal[7]	6.51	1.54	1.35	$11,808

Esquimalt's active transportation patterns have been changing over the last 10 years. From 2011 to 2017, the Township's overall active transportation mode share (walking, cycling, transit) has increased, particularly for trips within the Township growing from 36% in 2011 to 44% in 2017 (see **Table 3**).

[7] Data includes Esquimalt Nation and Songhees Nation.

Table 3. Active Transportation Trips 2011 vs 2017[8]

Year	Active Transportation Mode Share (from Township)	Active Transportation Mode Share (to Township)	Active Transportation Mode Share (within Township)
2011	13%	16%	36%
2017	20%	20%	44%

In addition to an overall increase in the share of active transportation trips, the number of vehicles per household decreased over this time from 1.4 to 1.2, which helps explain why Esquimalt has among the lowest rates of household vehicle ownership in the Capital Region.[9]

Figure 3 presents the travel mode share of trips within a municipality for the 'Core' communities in the CRD. Compared to other 'Core' municipalities, Esquimalt's share of active transportation trips within the Township is second only to Victoria with 44% of all trips are made by foot, bike, or transit. Esquimalt's 'auto driver' mode share (45%) is comparable to Oak Bay and View Royal and just below the average for the Core municipalities (50%). The Township's transit and bicycle mode share are just below the average for Core municipalities at 4% and 5%, respectively.

[8] Note: this data is derived from the 2017 CRD Origin-Destination Household Travel Survey. It is showing trips over a 24 hour period. Active transportation includes walking, cycling and transit.
[9] Capital Regional District. (2020). 2020 Housing and Transportation Cost Estimate Study. Available online at: https://tinyurl.com/y4f4fe4c

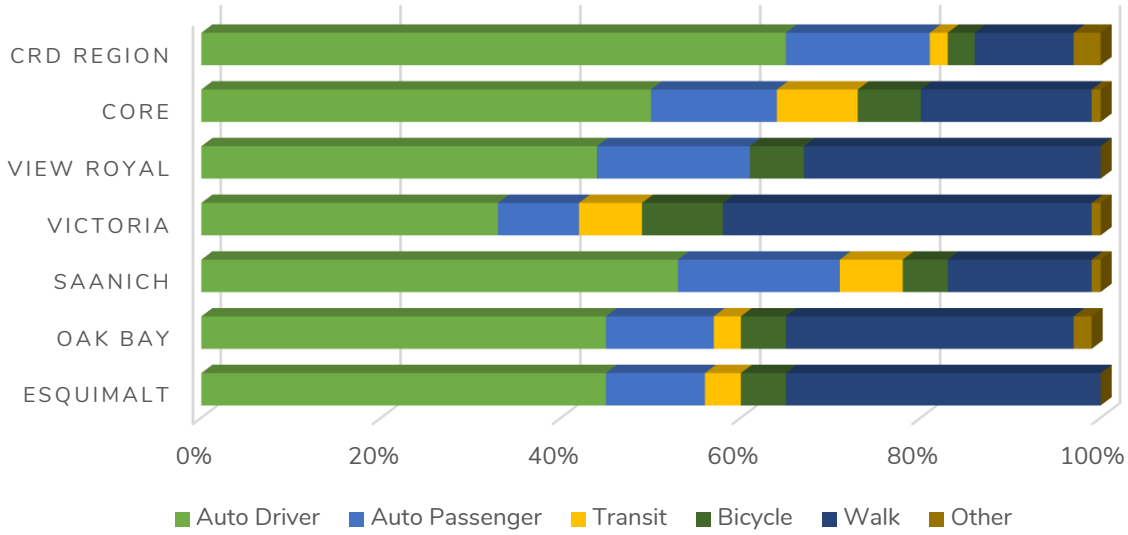


Figure 3. Mode Split by Travel Mode, Core Municipalities[10]

[10] Note: this data is derived from the 2017 CRD Origin-Destination Household Travel Survey. It is showing trips 'within' the municipality over a 24 hour period.

2.1.4 Land Use & Key Destinations

Esquimalt offers access to several community and employment destinations that attract a significant number of trips. The key destinations that are considered trip generators are discussed in this section to ensure they are considered in the analysis of the active transportation network. Barriers to accessing these destinations will be discussed in latter sections of this document. See **Figure 4** for a visual summary of the land uses and key community destinations in Esquimalt.

Major Commercial Hubs

Esquimalt Town Centre is Esquimalt's principal commercial area encompassing a mix of commercial uses as well as other land uses, constituting a vibrant mixed-use centre. It is anticipated that in the future high density mixed-use developments will take place within that area and as such considerations should be made to the type of infrastructure that should be provided. In addition, Esquimalt Road has several commercial mixed-use developments and is considered a commercial corridor that already attracts several trips. Lastly, Esquimalt has designated 'Neighbourhood Commercial Mixed-Use' areas to identify pockets of commercial activity in various parts of Esquimalt. These include: Head Street and Esquimalt Road, West Bay, Tillicum Road and Craigflower Road.

Major Employment Hubs

Esquimalt is home to major employment hubs with commuters travelling to/from various parts of the Capital Region. The Esquimalt Business Park is home to many industrial and business uses that provide employment to people across the Capital Region. Similarly, a significant part of land in Esquimalt is owned and regulated by the Federal Government. CFB Esquimalt is another major employer with thousands of employees. In tandem with CFB Esquimalt, the Public Services and Procurement Canada Land is supporting its operations and provides additional employment opportunities.

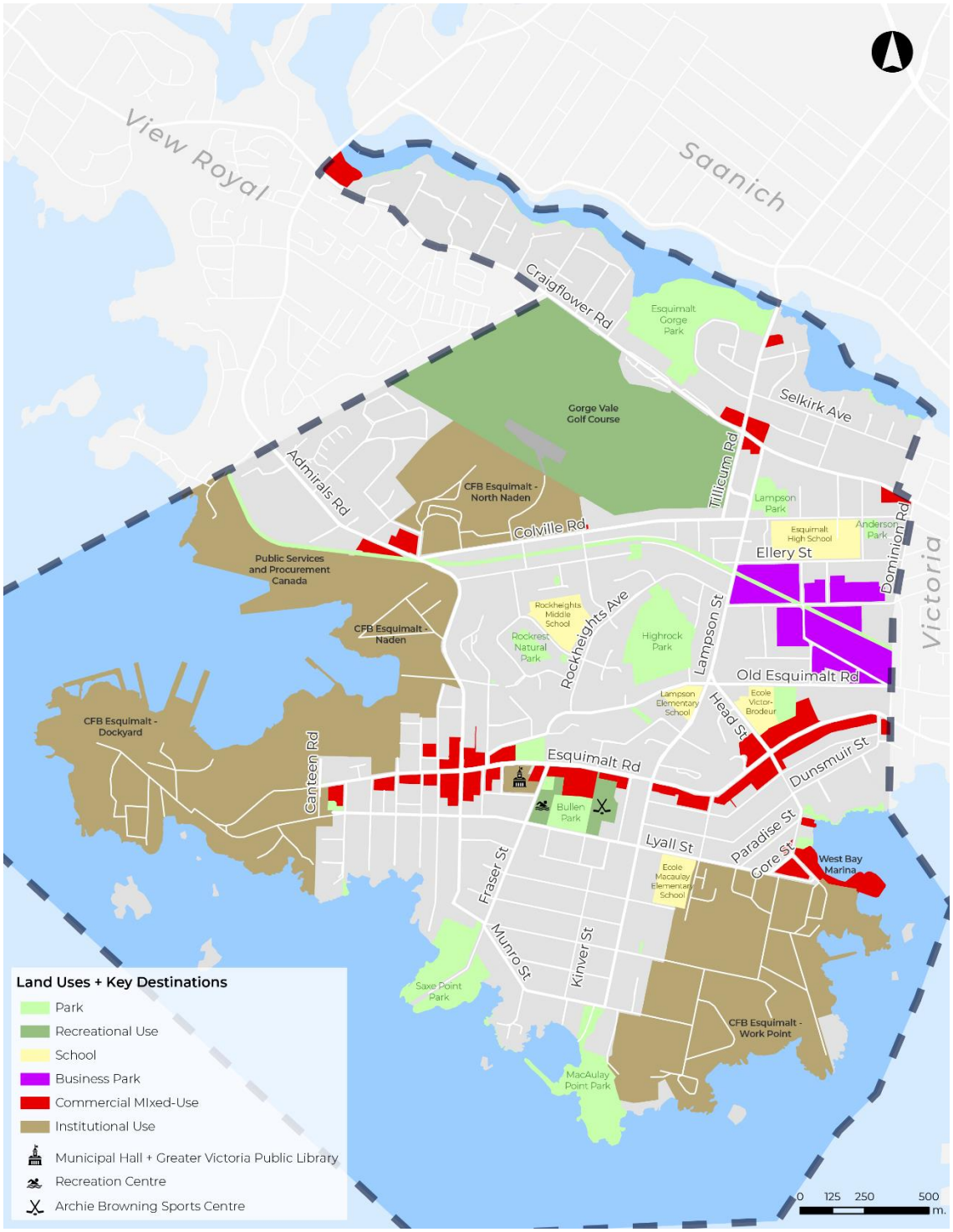


Figure 4. Land Use + Key Destinations

Education

Schools have the potential to generate a significant number of active transportation trips. However, if the active transportation infrastructure is limited, parents often resort to driving for drop-off and pick-ups. Given the potential of increasing the share of trips made to/from school by an active mode, it is critical to ensure that the infrastructure is in place along with ongoing education to school aged children—and their parents—about the benefits of active transportation. The following public and private schools are located in Esquimalt:

- Ecole Macaulay Elementary School
- Ecole Victor – Brodeur
- Esquimalt High School
- Lampson Elementary School
- Rockheights Middle School

Culture

Esquimalt has several venues that host various cultural events. Those venues include:

- Greater Victoria Public Library
- Esquimalt Community Arts Hub
- CFB Esquimalt Naval and Military Museum
- The Esquimalt Town Square Plaza

Recreation

Recreation facilities are important community facilities that see a large proportion of active trips from their users. Recreation facilities in the Township include:

- Esquimalt Recreation Centre
- Archie Browning Sports Centre
- Bullen Field
- Lacrosse Box
- Brodeur Field
- Lampson Ball Field (Lampson Park)

Parks

Esquimalt has several parks across the community that attract local and regional trips. Parks contribute positively to the quality of life of Esquimalt's residents by encouraging active living and fostering community connections, and as such should be accessible by everyone. Parks have great potential to connect locations through their own off-street paths and play a vital role in an active transportation network. Parks include:

- Gorge Park
- Lampson Park
- Anderson Park
- Highrock Park
- MacAulay Point Park
- Saxe Point Park
- Bullen Park
- Memorial Park
- Rockrest Natural Park
- West Bay Walkway, Captain Jacobsen Park & Paradise Park

Higher Residential Density

Esquimalt's Official Community Plan (OCP) supports the development of compact, efficient medium and high density residential developments that can reduce the single occupancy vehicle use and support active travel. Pockets of medium and high density residential uses are found along Esquimalt Road, Craigflower Road, and on the east side of the Township, adjacent to the boundary with the City of Victoria. Further, in recognition of the many advantages of walking to work, the OCP has designated a significant area of land as High-Density Residential north of Esquimalt Road between Admirals Road and CFB Esquimalt to provide more housing opportunities for people who work at CFB Esquimalt to walk to work. This help contribute to enhancing work-life balance, physical and mental health, economic well being, and reduction in greenhouse gas emissions.

2.2 Planning & Policy Context

This section is organized into three sections. The first section includes relevant Township plans that provide policy direction on active transportation. The second section outlines relevant planning and policy direction from Esquimalt's neighbouring municipalities. Lastly, policy guidance is summarized from regional plans.

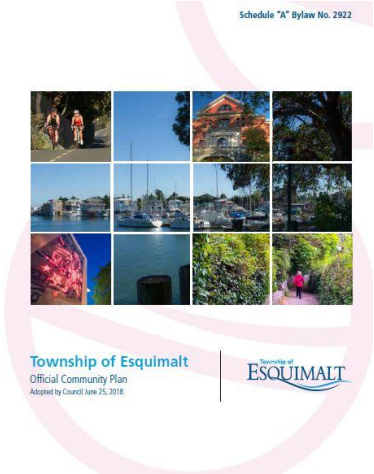
2.2.1 Township Plans & Studies

Strategic Priorities (2019-2023)

The Township's Strategic Priorities 2019-2023 outline the vision, mission, core values, goals, and operational strategies that Esquimalt would like to achieve by 2023. Among the five strategic priority areas, two have direct relevant to the Active Transportation Network Plan including:

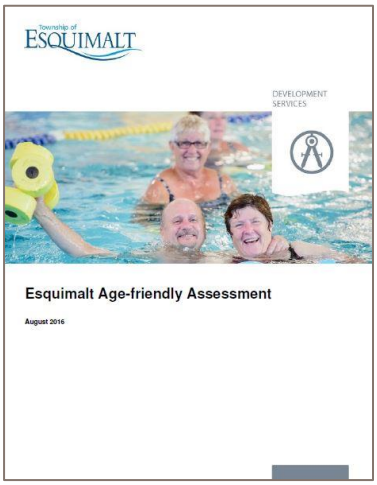
- Healthy, Livable and Diverse Community
- Local Services and Infrastructure

The document also indicates that the Township will "support ongoing improvements to transportation corridors", which includes [a] evaluating transportation corridors and options for enhancement and [b] developing an Active Transportation Plan.



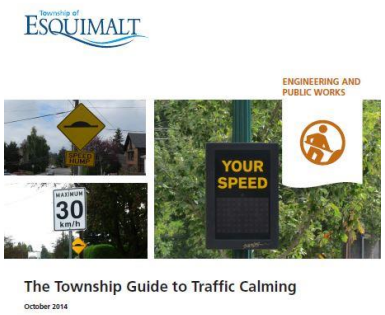
Official Community Plan (2018)

The OCP contains policy direction on several topic areas spanning housing, transportation, infrastructure, economic development, climate change, and parks, recreation, and trails, among other areas. The OCP provides direction to develop the pedestrian network into the road corridor infrastructure that provides a safe, enjoyable, and continuous network to promote its use. It also provides direction for the cycling network to encourage increased use of cycling for recreational and commuting purposes and encourage the inclusion of bicycle facilities in new developments.



Esquimalt Age-friendly Assessment (2016)

The Township's Age-friendly Assessment was undertaken to better understand the existing issues facing its older demographic (55+) and the actions required to make the community more age-friendly and supportive. Section 7 of the report (Mobility & Transportation) provides a summary of current transportation conditions and challenges along with recommended policies to address them. Among the assessment's key findings, the pedestrian network has narrow sidewalks in some sections, which are too narrow to accommodate mobility scooters, and that the cycling network lacks safe facilities.



Township Guide to Traffic Calming (2014)

The Township's guide to traffic calming describes its approach to neighbourhood traffic calming as well as funding and implementation policies. It contains considerations for when traffic calming is appropriate, the speed limits in the Township, and education and enforcement tools, among other sections.

In addition, the guide contains information about the types of traffic calming measures that are supportable on Township roads along with the general process for how traffic calming is implemented. The guide does not explicitly state when traffic calming is appropriate for supporting the cycling network or specific cycling facilities.

2.2.2 Surrounding Jurisdictions

District of Saanich Active Transportation Plan (2018)

The District of Saanich released its Active Transportation Plan (Moving Saanich Forward) in 2018. The ATP will guide Saanich's investments in active transportation over the next 30 years and will have implications for Esquimalt's long-term bike network that will require coordination between both jurisdictions. Saanich's long-term bicycle network priorities for the south-west area of the municipality include all ages and abilities bike infrastructure on Admirals Road and Tillicum Road, both of which connect to the Township.[11] The plan does not specify the bike facility type on Admirals Road or Tillicum Road; however, it will be important that Esquimalt's long-term bike network provide bike facilities along these corridors to provide connectivity for its residents travelling between municipalities. The plan also identified a pedestrian bridge over the Gorge.

In addition, Action 1D.8 in the Saanich ATP is titled "provide safer and more convenient walking and cycling facilities on bridges, underpasses, and overpasses". This particular action directs the District to Saanich to continue to work with its partners to provide safer and more convenient walking and cycling facilities on bridges, underpasses, and overpasses. This includes ensuring facilities meet current design standards in terms of width, clearance, and appropriate railings.

City of Victoria All Ages & Abilities Bike Network (2015 to present)

Since 2016, the City of Victoria has been developing its network of all ages and abilities (AAA) cycling infrastructure. The City's goal is to have 32 km of AAA bicycle infrastructure completed by the end of 2022.[12] The completed AAA bike network will benefit residents and visitors of Esquimalt, given the Township's proximity to the City of

[11] District of Saanich. (2018). Moving Saanich Forward: Active Transportation Plan. Available online at: https://www.saanich.ca/assets/Local~Government/Documents/Engineering/Active%20Transportation%20Plan%20FINAL%20(Web).pdf

[12] City of Victoria. (No date). Victoria's AAA Cycling Network. Available online at: https://www.victoria.ca/EN/main/residents/streets-transportation/walk-roll-transit/cycling/victoria-s-aaa-cycling-network.html

Victoria. One of the AAA projects that will directly benefit both commuting and recreational cyclists from Esquimalt is the Kimta Road / E&N Connector, which is slated for completion in 2022. The proposed design for this AAA facility includes the following:

- Off-street cycling facility south of Esquimalt Road from Robert Street to Catherine Street
- Two-way protected bike lane on the north side of Kimta Road from Catherine Street to Tyee Road.

See **Figure 5** for the proposed cross-section of Esquimalt Road (Robert Street to Catherine Street). This proposed facility, and the larger Kimta Road / E&N Connector project, will make it safer for Esquimalt residents to travel to and from downtown Victoria. However, this cross-section does not foresee how cycling traffic will navigate Esquimalt Rd west of the E&N connection.

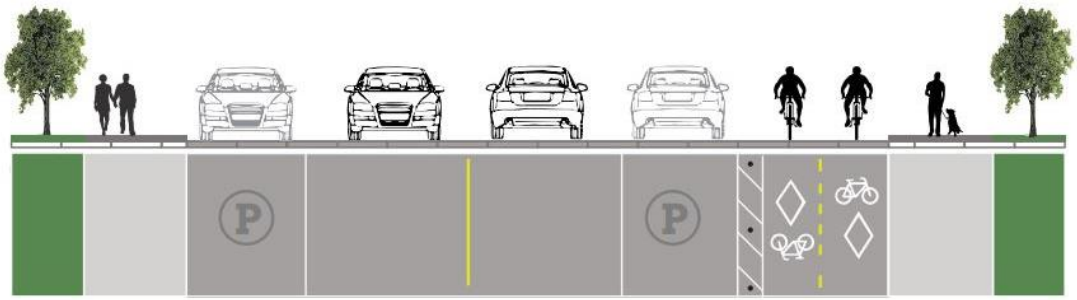


Figure 5. Cross-section of Esquimalt Road (Robert Street to Catherine Street).

2.2.3 Regional & Provincial Context

CRD Regional Transportation Plan (2014)

The Regional Transportation Plan (RTP) guides any transportation planning and development in the Capital Region for a 25-year span. The RTP identifies immediate priorities and long-term strategies to guide planning and development of a regional multi-modal transportation system that meets future growth demands and is focused on sustainability.

Regional Outcome Statement 2 of the RTP directs the CRD to work with municipalities to establish 'mobility hubs', which are locations of regional activity and regional destinations where transportation modes will integrate seamlessly and efficiently, and where both the traveler environment and urban form will encourage transit, active transportation and other alternatives to driving alone. They will give priority to walking, cycling and public transit to, from and within Mobility Hubs. Exhibit 4.9 in the RTP identifies an 'Activity Hub' in the heart of Esquimalt. Activity hubs are unique locations that serve as key regional destinations with larger catchment areas and high trip volumes due to large employers and/or institutional centres. Hubs that meet this criteria include hospitals, universities/ colleges, large shopping centres and major regional employers.[13]

CRD Pedestrian and Cycling Master Plan (2011)

The Pedestrian and Cycling Master Plan[14] provides strategic direction on how the region can achieve a significant shift in transportation. Specifically, the plan sets a cycling mode share target of 15% for the entire Capital Region. According to Map 8 of the plan (Recommended Facility Separation on PIC Bikeway Corridors – Core), the following bike facilities are recommended in Esquimalt:

- 'Bicycle Lane / Shoulder Bikeway' on Esquimalt Road
- 'Separated On-Street' on Admirals Road (Esquimalt Road to E&N Trail)

Both facilities have been implemented in the Township.

[13] IBI Group. (2014). Capital Regional District Regional Transportation Plan. Available online at: https://www.crd.bc.ca/docs/default-source/crd-document-library/plans-reports/planning-development/rtp-july2014.pdf?sfvrsn=531855ca_2

[14] Alta Planning + Design. (2011). Capital Regional District Regional Pedestrian & Cycling Masterplan. Available online at: https://www.crd.bc.ca/project/regional-transportation/pedestrian-cycling-master-plan

CRD EV & E-bike Infrastructure Planning Guide (2018)

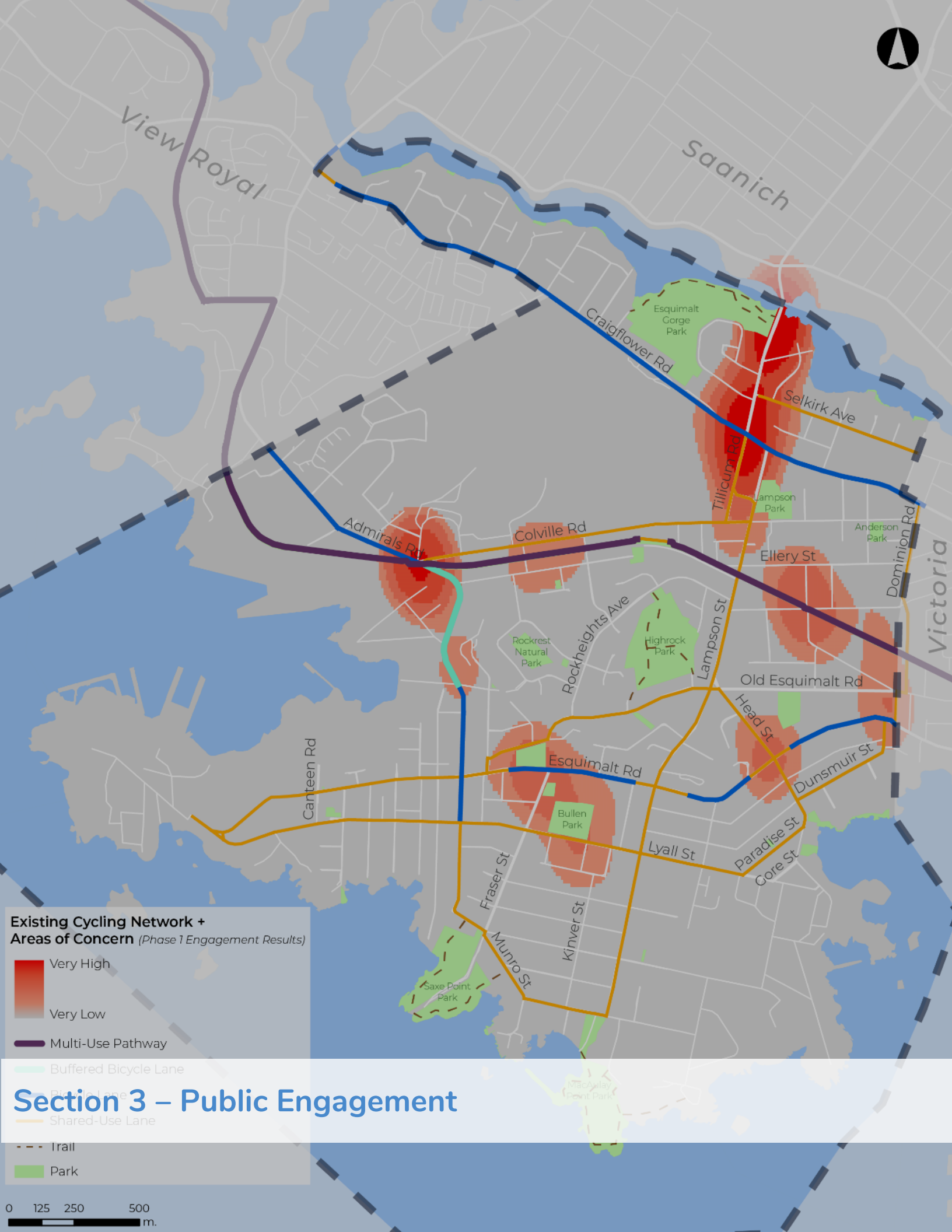
The Capital Regional District Electric Vehicle + Electric Bike Infrastructure Planning Guide[15] contains strategies for local governments and electoral areas, as well as private development, to expand EV and E-Bike charging infrastructure in the Capital Region. It provides [a] an overview of existing EVs and E-bikes, charging station technology, trends in EVs and E-bike ownership in the Capital Region and elsewhere, and key barriers to uptake; [b] prioritized locations for future installation of public EV charging infrastructure and improved management of public EV charging stations; [c] opportunities to increase EV and E-Bike charging infrastructure in new development; and [d] recommended approaches for retrofitting existing buildings for EV charging.

The Infrastructure Planning Guide contains detailed recommendation regarding electric bike parking to alleviate bike theft, which was identified as one of the top barriers to e-bike ownership. It provides the following relevant direction for the ATNP and could be incorporated into the Township's Parking Bylaw or into the design of public bike parking:

- **Security** | E-bikes are more expensive than conventional bicycles, and as such, require secure facilities to prevent theft. General anti-theft measures can include ensuring all bicycle racks are of material and gauge that cannot be altered, ensuring racks are securely fastened, controlling access to bicycle rooms, and effective lighting. Additional security considerations can include the provision of individual bicycle lockers, locating bicycle parking along busy roads, and installing video surveillance (CCTV) and associated signage near bicycle parking areas.
- **Size** | The pedal assistance provided by an electric bike makes larger bicycles capable of carrying cargo and/or multiple passengers more appealing. As a result, a greater proportion of E-Bikes are larger bicycles and can be as long as 2.5 metres. Therefore, bicycle parking should include a proportion of spaces that are 2.5m in length and 0.9m in width.

[15] WATT Consulting Group. (2018) Capital Region Local Government Electric Vehicle + Electric Bike Infrastructure Planning Guide. Available online at: https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/infrastructure-planning-guide_capital-region-ev-ebike-infrastructure-project-nov-2018.pdf?sfvrsn=d767c5ca_2

- **Electrification** | Electric bikes require access to an electrical outlet to facilitate charging, which is typically achieved in one of two ways:
    - Charging infrastructure may be incorporated directly within the bicycle parking rack / mounting apparatus. This typically requires purpose-design placement of electrical conduit / receptacles in or adjacent the floor.
    - E-Bike parking may be located no more than 2 metres from a standard 110V wall receptacle. Attention should be given to ensuring the E-Bike parking location relative to the wall receptacle will not result in a tripping hazard or impede bicycle maneuvering.



Section 3 – Public Engagement

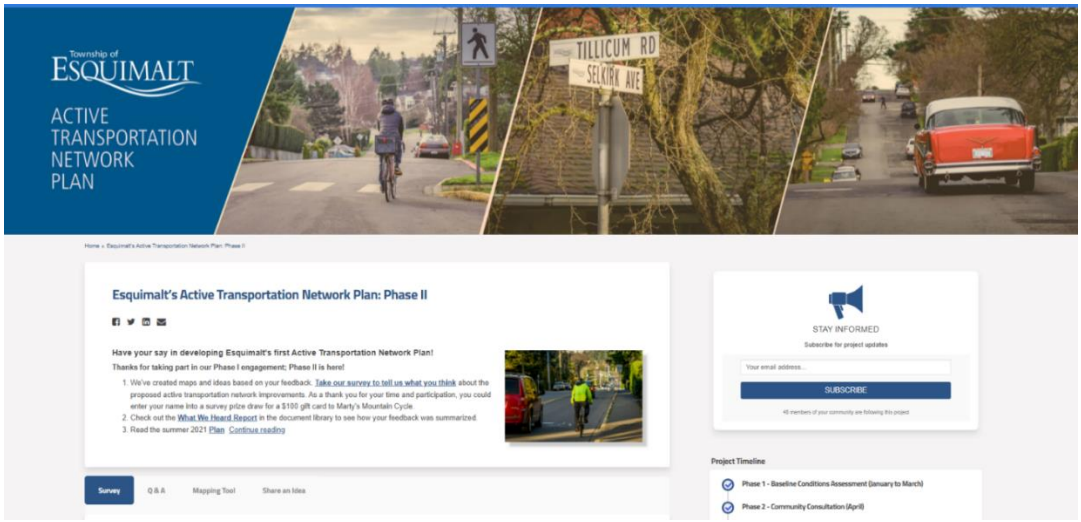
3.0 PUBLIC ENGAGEMENT

3.1 Overview

The public engagement process included two distinct rounds of feedback, as follows:

- Round 1 – the Esquimalt community was invited to share their thoughts and feedback on current concerns, challenges, and opportunities surrounding the active transportation network. The first round of engagement was also intended to inform the community about the Esquimalt Active Transportation Network Plan process and obtain specific feedback from the community about barriers and challenges they currently face when using active transportation in Esquimalt.
- Round 2 – the Esquimalt community was invited to share their feedback on the draft pedestrian and cycling networks along with the draft vision and goals for the ATNP.

Due to the COVID-19 pandemic, all of the engagement for the ATNP was done virtually on the Township's *Engaging Esquimalt* website.[16]



Home page of the Engaging Esquimalt website.

[16] *The Engaging Esquimalt website is available here:* https://engagingesquimalt.ca.engagementhq.com/

3.2 What Was Done

The following tools were utilized on the Engaging Esquimalt website to generate feedback.

Online Survey No.1 – Feedback on Barriers and Opportunities

The first online survey was intended for Esquimalt residents and those who work in the Township; however, other members of Greater Victoria were able to provide feedback, as well. The survey was available from Thursday March 18 to April 19, 2021. It included several closed-ended questions intended to better understand the existing barriers, issues, and opportunities surrounding the community's existing active transportation network.

Interactive Online Mapping Tool

There were two interactive maps available on the *Engaging Esquimalt* website. The first map asked participants to share their experience as a pedestrian and the second map asked for feedback about their cycling experience. Participants were able to drop pins on the map to identify specific barriers they face as a pedestrian and/or as a person cycling. For pedestrians, this included missing sidewalks, unsafe crosswalks, and accessibility issues, for example. For people cycling, this included the lack of bike facilities, unsafe intersections, and the lack of bicycle parking, among other pins.

Ideas Tool

The ideas tool is open-ended activity that allowed residents to share a specific idea about what they would like to see in the ATNP. This included specific areas of the Township that could be better designed for active transportation and examples from other communities that could be applicable to Esquimalt. See an example below.

Online Survey No.2 – Feedback on Options, Vision & Goals

The second online survey, much like the first, was intended for Esquimalt residents and those who work in the Township; however, other members of Greater Victoria were able to provide feedback, as well. The survey was available from October 14 to

November 5, 2021. It included specific questions to receive feedback on the draft vision and goals for the ATNP along with draft network plans and cross-sections.

By the numbers...

3,200 Total Visits to Engaging Esquimalt Website

253 Responses to Public Survey no.1

351 Interactive Online Mapping Submissions

35 Ideas Submitted

485 Responses to Public Survey no.2

3.3 What We Heard

A high-level summary of what we heard in both rounds of engagement is presented below. A more detailed summary is available in the *Round 1 Engagement What We Heard Report*. The results from the second online survey are summarized throughout Sections 5.0-7.0 to provide an overall indication of the community's level of support for the pedestrian and cycling networks.

3.3.1 Walking & Rolling

The top barriers to walking and rolling were identified in the following order of priority:

- Lack of sidewalks and pathways
- Speed of motor vehicle traffic
- Sidewalks and pathways are too narrow
- Lack of space / buffer between sidewalk and motor vehicle traffic
- Lack of safe crossings

Examples of narrow sidewalk (left) and gap in sidewalk network (right), which were the top walking/rolling related barriers identified in the online survey and mapping tool.

Example of pedestrian walking along Lampson Street with no buffer between sidewalk and motor vehicle traffic. Lampson Street is a Major Road signed at 50 km/h and this section of the road sees approximately, 11,350 vehicles per day, making it uncomfortable to walk for most pedestrians.

The top desired improvements to the pedestrian network were in the following order of priority:

- Filling in gaps in the network to improve connections to destinations
- More separation from motor vehicle traffic
- Improve sidewalk condition (e.g., fixing cracks, trip hazards)
- Improve crossings (e.g., signalized crossings)
- Improve accessibility of sidewalks (e.g., fixing deficient curb ramps)

> *"I enjoy walking to the library and rec centre but don't enjoy having to walk on a busy road like Admirals to get there."* – Comment from Online Survey No.1

3.3.2 Cycling

The top five barriers to cycling in Esquimalt are in the following order of priority:

- Lack of comfort cycling on major roads without painted bike lanes
- Lack of comfort cycling on major roads with painted bike lanes
- Bike lanes on corridors that end before an intersection
- Speed of motor vehicle traffic
- Lack of protection at intersections (e.g., conflicts with rails or turning vehicles)

Example of bike lane ending before intersection (top) and person cycling forced to share a lane with no separation from motor vehicle traffic even (bottom). These are the types of barriers to cycling that were reported in the engagement.

The top desired improvements to the cycling network are in the following order of priority:

- More separation from conflicts (e.g., rails, turning vehicles, parked vehicles)
- Bike lanes that are physically protected from motor vehicle traffic
- Lower the posted speed limit
- No improvements
- Improve maintenance of bike facilities

We cycle daily with our children and want to make sure there is infrastructure in place for them to ride safely along with us once they are old enough. This plan should include all levels and abilities." – Comment from Online Survey No.1

Existing bicycle lane on Esquimalt Road at Fernhill Road. Bike lanes that are physically protected from motor vehicle traffic was among the top desired improvements identified by the community. Section 6.0 identifies improvements to cycling corridors such as Esquimalt Road to make them more suitable for all ages and abilities.

Section 4 – Looking Ahead

4.0 LOOKING AHEAD

4.1 Vision

A vision statement has been developed based on the extensive feedback shared by the community. The vision aligns with Esquimalt's Official Community Plan and Climate Action Plan and highlights the importance of active transportation in shaping community well-being, the environment, and the overall transportation system.

Esquimalt's active transportation network offers all residents, regardless of age, ability, or socio-economic status, greater protection from motor vehicle traffic so that all trips—regardless of purpose— can be done safely and comfortably by walking, cycling, or rolling. Esquimalt's overall transportation network has roads that are designed for slower motor vehicle speeds and its active transportation facilities are well connected, allowing residents to complete a larger share of trips without a car and reducing overall greenhouse gas emissions in the Township.

4.2 Goals

Esquimalt's future active transportation will ultimately be shaped by the plan's goals and whether they can be achieved. The goals set the stage for Esquimalt's active transportation network to be developed over time with a focus on the short-term improvements. The goals guide the recommendations in this planning document.

Esquimalt ATNP Goals

1. More Protection from Motor Vehicles

Provide dedicated and protected space to people walking, biking, and rolling on all Major Roads and Residential Collectors to improve safety and comfort.

2. Reduce Climate Impact

Increase the share of trips made by active transportation to align with the greenhouse gas emission reduction targets in the Official Community Plan.

3. Better Active Transportation Facilities

Improve the quality of walking and cycling facilities to meet the needs of residents and visitors of all ages and abilities.

4. Regional Collaboration

Work with neighbouring jurisdictions to improve the connectivity of the active transportation network to make it easier for residents and visitors to travel within, to, and from Esquimalt.

4.3 Guiding Principles

The future active transportation network will only be successful if it provides facilities that are comfortable, convenient, safe, and attractive for ***all*** residents of Esquimalt, regardless of age or ability. A list of guiding principles from the BC Active Transportation Design Guide have been included below to reflect the plan's visions and goals, and, more importantly, provide a framework for the recommendations in the sections that follow.

WHAT IS ALL AGES AND ABILITIES?

'All ages and abilities' has become a buzz word in transportation planning and is often not well defined. Building on the definition of the National Association of City Transportation Officials (NACTO), many existing bicycle facilities do not feel safe for people who might otherwise ride. Designing for all ages and abilities must consider the safety, comfort, unique circumstances, and needs of a broad range of potential users including children, seniors, women, racialized communities, persons with a disability, and people moving people, cargo and goods.

- **Equitable** | Well designed and maintained active transportation facilities make access to transportation more equitable by allowing active modes to travel safely and comfortably.
- **Inclusive** | An active transportation system should be designed to be inclusive to everyone, irrespective of their socio-economic or demographic background. This includes Indigenous communities, new immigrants, and low-income populations.
- **Age-Friendly** | Esquimalt is a demographically diverse community with children, young people, older adults, and seniors. Both children and seniors have unique travel needs and are especially vulnerable active transportation users. Age-friendly active transportation facilities can help to provide older adults and seniors with the option to age in place while continuing to access community destinations. Similarly, providing safe facilities make it easier for children to walk or bike to and from school.
- **Accessible** | An accessible active transportation system is one where the built environment is accessible to people of all ages and abilities, regardless of any type of physical or cognitive impairment. An accessible active transportation system is based on universal design, which refers to the design of products, environments, programs, and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.
- **Safe** | Safety issues, whether real or perceived, can ultimately determine whether an active transportation network is used or not. Safer active transportation facilities can increase safety for all road users.

Section 5 – Pedestrian Realm

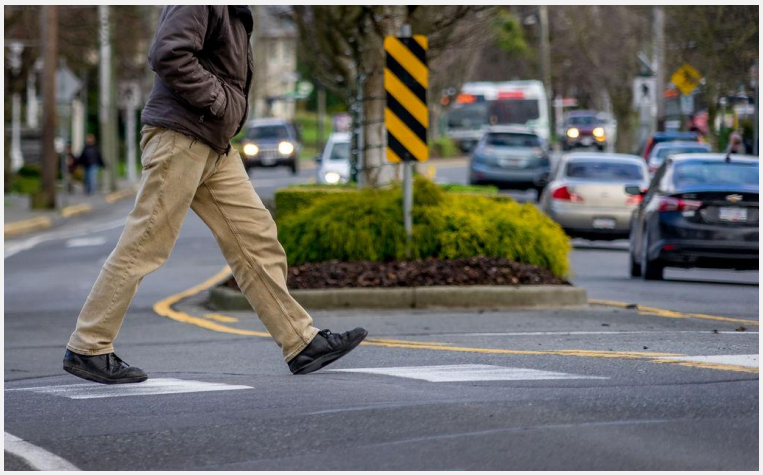
5.0 PEDESTRIAN REALM

5.1 Existing Network

Esquimalt is a walkable community. This is supported by the fact that 35% of all trips within the Township are completed by foot.[17] Walking has and continues to be an attractive transportation mode due to the Township's compact geography and the proximity of key destinations. In addition to geography, the Township has a connected sidewalk network and safe crossings on most of its busier roads, which help support walking for a variety of trip purposes including recreational and commuting.

WHAT DOES THE OCP SAY ABOUT WALKING?

The OCP's policy direction on walking is "*to develop the pedestrian network into the road corridor infrastructure that provides a safe, enjoyable and continuous network to promote its use.*" The OCP objective is supported by several policies including (1) Improve existing sidewalks, street furniture, crosswalks, and other street amenities to make walking a safer and more enjoyable choice for people of all ages and abilities; (2) Plant trees along the public boulevards to reinforce the role and value of sidewalks as well as to provide shade.



[17] Malatest. (2017). 2017 Capital Regional District Origin Destination Household Travel Survey. Available online at: https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/transportation/crd-2017-od-survey-report-20180622-sm.pdf?sfvrsn=4fcbe7ca_2

5.1.1 Sidewalk Network

Esquimalt's high walkability is due in part to its extensive sidewalk coverage. The overall sidewalk network consists of approximately 58 km of sidewalk facilities. All of the Major Roads have sidewalks on both sides including Esquimalt Road, Lampson Street, and Admirals Road, among others. Most of the Residential Collectors have a sidewalk on least one side including Colville Road and Fraser Street, for example. **Figure 6** presents the existing pedestrian network showing sidewalk coverage and pedestrian crossings.

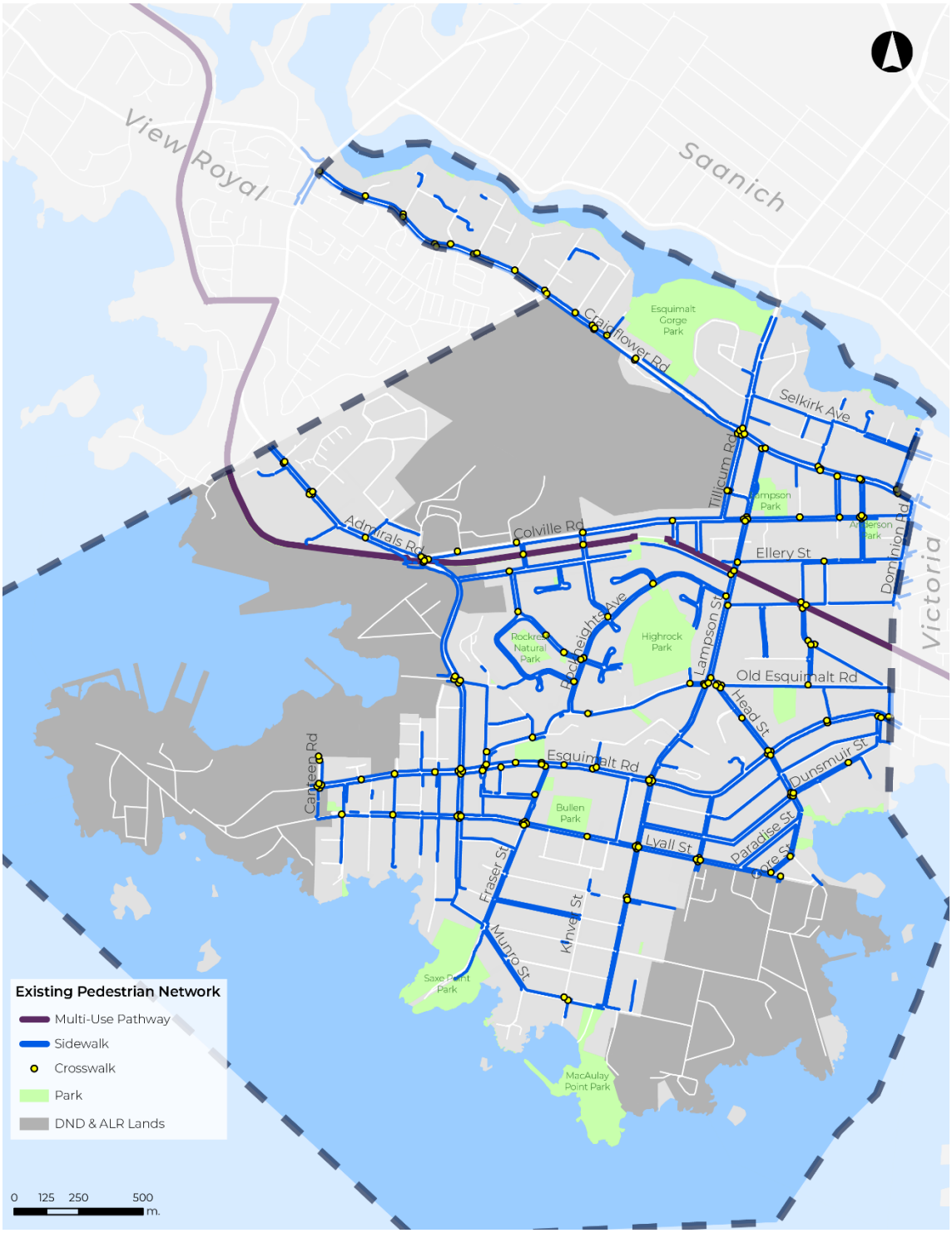


Figure 6. Existing Pedestrian Network

The Township also collects data on the overall condition of its sidewalks. A detailed sidewalk assessment methodology is followed to evaluate distresses in the sidewalk network and to rate each sidewalk segment. The rating is calculated based on the quantity, type (e.g., aggregate loss, cracking, surface distortion, general uplift, and tree uplift), and severity of distresses on a sidewalk. Approximately 80% of the existing sidewalk network (47 km) are in good or excellent condition. Streets and street segments that meet these conditions include:

- Esquimalt Road (Head St to Dominion Rd)
- Fraser Street (Lyall St to Esquimalt Rd)
- Colville Road (Lampson St to Carrie St)

ESQUIMALT'S SIDEWALK ASSESSMENT INDEX

The Township's sidewalk assessment evaluates the overall distresses of the sidewalk including cracking, aggregate loss, uplift, and surface distortion. Sidewalk segments are rated on a scale from 0-100 with anything less than 55 considered poor or serious, and anything above 70 considered good or excellent.

About 14% of the existing network (8 km) are designated as "fair" condition. This includes segments of Esquimalt Road and Lampson Street. Lastly, about 7% of the existing network (4 km) are designated as "poor", "very poor" or "serious" condition.

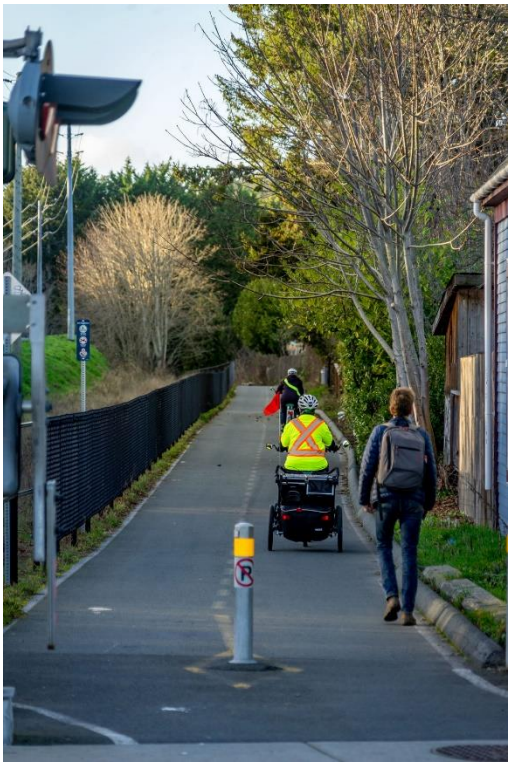
Even though the Township has an extensive sidewalk network and over 80% of its sidewalk is in good or excellent condition, there are still gaps that make walking less attractive including the lack of separated sidewalks on Major Roads. The online survey in the first round of public engagement reported that the top barriers facing pedestrians including the lack of sidewalks and pathways in certain locations (24% of survey respondents), the speed of motor vehicle traffic (14% of survey respondents), and sidewalks / pathways being too narrow (13% of survey respondents). All of these barriers warrant further attention and are discussed in greater detail in the following sections.

Tillicum Road (left) emerged as an area of concern for pedestrians in the public engagement citing the lack of separation between the sidewalk and motor vehicle travel lane and challenges crossing the road. Segments along Lyall Street (right) have discontinuous sidewalks. In this photo, a person using a mobility device (e.g., walker, wheelchair) would have challenges access the crosswalk.

The Township has approximately 180 crosswalks. Crosswalks are dispersed throughout the Township but are largely found on Major Roads. Most of the crosswalks are marked crossings, which means they include pavement markings ("zebra crossing") and signage. Some locations on the Major Roads have pedestrian activated flashers and rapid rectangular flashing beacons to better alert motorists to the presence of pedestrians.

5.1.2 Trail Network

While less extensive than the sidewalk network, Esquimalt residents benefit from access to trails and waterfront walkways. The West Bay Walkway is located on the southern edge of the Township. It is a walking path and boardwalk that connects Esquimalt (from Head Street at West Bay Marina) to downtown Victoria (Johnston Street Bridge). The walkway is approximately 5 kilometres in length and is a popular recreational route for people walking and running. People are not permitted to cycle on this trail.



The Township also has access to the E&N Rail Trail-Humpback Connector, which is a regional multi-use pathway that is currently 12 kilometers in length linking Victoria to the Western Communities through Esquimalt. A segment of the trail (2.8 km) crosses the Township and supports recreational travel along with commuting to and from Esquimalt.

5.2 Future Network

5.2.1 Short-term Improvements

The Township has an existing Capital Sidewalk and Asphalt Upgrade Program (2021-2025) based on the Sidewalk Master Plan. Even though the master plan is already in place, there are other short-term improvements that are required for the pedestrian network to fill in missing sidewalk connections and provide greater safety for pedestrians. Based on the technical analysis and feedback in the second public engagement survey, the following sidewalk facilities have been identified as the short-term improvements in order of priority:

1. North side of Old Esquimalt Road west of Lampson Street
2. West side of Archie Browning Sports Centre parking lot from Lyall Street to north end of Bullen Park
3. Munro Street from Fraser Street to Lampson Street
4. East side of Kinver Street / Swinford Street from Lyall Street to Munro Street
5. Bewdley Avenue from Fraser Street to Macaulay Street
6. Wychbury Avenue from Fraser Street to Kinver Street
7. Wollaston Street from Lampson Street to Macaulay Street

All of these sidewalk facilities are shown in **Figure 7** and described in more detail in **Table 4**. Some of these facilities overlap with the Sidewalk Master Plan. The priority should be to construct these facilities first in the short-term, then revisit the facilities identified in the Sidewalk Master Plan. The recommended facility is a non-separated concrete sidewalk for all of these projects. The short-term network will also include crosswalk / intersection improvements, which are described in **Section 7.0**.

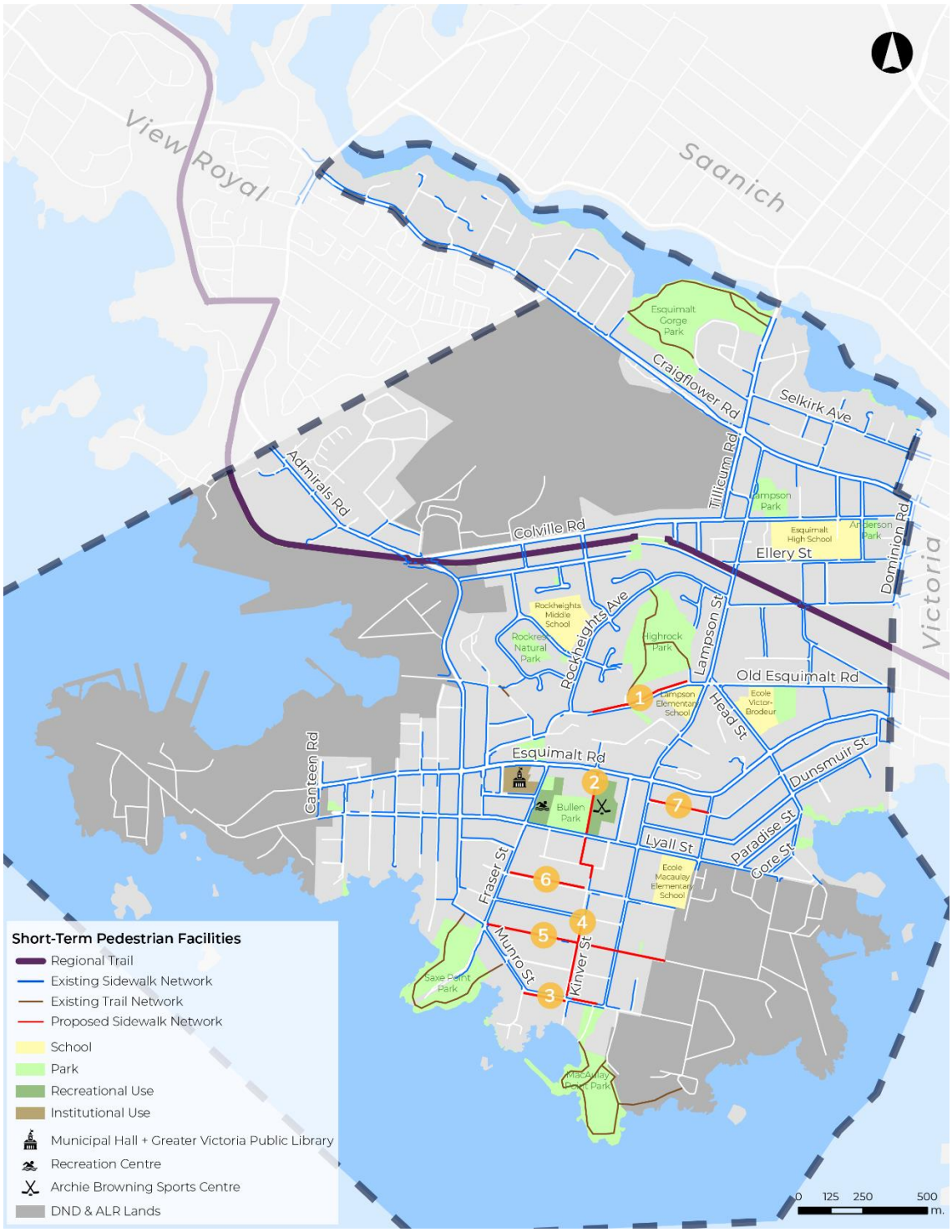


Figure 7. Short-term Pedestrian Improvements

Table 4. Recommended Short-term Sidewalk Facilities

Sidewalk Facility	Rationale	Length (m)
1. Old Esquimalt Road North side, west of Lampson St	There is already an existing sidewalk on one side of the road. However, providing an additional facility would enhance walkability for students walking to Lampson School and residents of the Rock Heights area.	390
2. Archie Browning Sports Centre West side of parking lot from Lyall St to north end of Bullen Park	Pedestrians currently walk on the edge of the driveway to access Bullen Park and the Esquimalt Plaza with no separation from motor vehicles.	140
3a. Munro Street South side, Plaskett Pl to Kinver St	Pedestrians currently accessing MacAulay Point Park and bus stops on Munro Street do not have a continuous sidewalk connection and are forced to walk on the road for part of the trip. A sidewalk facility would create a continuous sidewalk on both sides of Munro from Fraser Street to Lampson Street.	144
3b. Munro Street North side, Kinver St to Lampson St	Pedestrians currently accessing MacAulay Point Park and bus stops on Munro Street do not have a continuous sidewalk connection and are forced to walk on the road for part of the trip. A sidewalk facility would create a continuous sidewalk on both sides of Munro from Fraser Street to Lampson Street.	100
4. Kinver Street / Swinford Street East side from Lyall St to Munro St	Provides a continuous pedestrian facility for residents in south Esquimalt to access Bullen Park, MacAulay Point Park, Esquimalt Plaza, and Esquimalt Road. The section from Munro Street to Hadfield Avenue is slated for completed in 2022.	390
5. Bewdley Avenue North side, Fraser St to Macaulay St	Provides a pedestrian facility for residents in south Esquimalt. The Township's Sidewalk Master Plan also identifies a new sidewalk in this location.	760
6. Wychbury Avenue North side, Fraser St to Kinver St	Provides a continuous pedestrian facility for residents and a safer and more comfortable experience for parents and children walking to École Macaulay Elementary School. The Township's Sidewalk Master Plan also identifies a new sidewalk in this location.	300
7. Wollaston Street North side, Lampson St to Macaulay St	Consistent with Sidewalk Master Plan. A pedestrian facility would provide a safer connection for residents to Esquimalt Plaza and other destinations.	215

5.2.2 Ultimate Network

The ultimate pedestrian network is intended to provide people walking with even more separation and protection from motor vehicles. **Section 5.3** (Design Guidelines) provides more information about the different design considerations that should be considered for the Township's pedestrian network. The following outlines two recommendations that should be pursued as part of the ultimate pedestrian network.

Separated Sidewalks

Most of the sidewalks in the Township are considered "non-separated". The BC Active Transportation Design Guide defines these facilities as sidewalks that are located directly next to the roadway and are physically separated from the roadway by a curb. Non-separated sidewalks are found on most of Esquimalt's Major Roads including Esquimalt Road, Lampson Street, and Craigflower Road, among others. The Design Guide advises against non-separated sidewalks on collector, arterial, or industrial roads with motor vehicle speeds greater than 30 km/h. On these roads, a separated sidewalk is recommended. Higher motor vehicle speeds and volumes can negatively impact pedestrian safety and comfort.

The Design Guide defines a separated sidewalk as one where the furnishing zone (which provides space for utilities, street, furniture, landscaping, street trees, etc.) separates the sidewalk from the roadway. The Guide indicates that separated sidewalks:

- increase the safety and comfort for people walking due to the larger buffer from motor vehicles
- provide space in the Furnishing Zone for utilities and sidewalk amenities such as benches, bicycle racks, street trees, and landscaping, while maintaining an unobstructed sidewalk
- provide an adequate slope area for driveway ramps between the curb and sidewalk

Separated sidewalks take up more right-of-way and can also be more expensive to construct and maintain due to the addition of a furnishing zone. However, the lack of these facilities in Esquimalt may impact the overall pedestrian experience and result in less walking as a result. For example, the Design Guide recommends separated sidewalks in all school zones, yet none of the schools in Esquimalt have these facilities, which can make it less safe and less desirable for children to walk to/from school.

Example of a separated sidewalk on Craigflower Road.

The Design Guide also includes details on 'enhanced separated sidewalks', which are more suitable in downtown commercial areas, along main streets, and near major transit hubs. The greater sidewalk width offered by an enhanced separate sidewalk allows for increased pedestrian volumes, pedestrian passing movements, and more pedestrian amenities. As the Township implements the missing sidewalk connections outlined in **Section 5.2.1** and looks to retrofit existing sidewalk facilities through the development process, it should consider the pedestrian facilities and widths in alignment with the Design Guide (see **Section 5.3**). Separated and enhanced separated sidewalk facilities will require higher capital costs and the Township should budget accordingly.

Regional Connections – Active Transportation Accommodation on Bridges

In March 2021, the municipalities of Esquimalt and Saanich partnered on implementing pedestrian infrastructure upgrades on the Gorge Bridge. Implemented as a pilot project, the western most vehicle travel lane was removed and turned into additional space for walking with concrete barriers. In the short-term, the Township should capitalize on this lane closure and seek to also improve conditions for people cycling. Refer to Section 6.2.1 for additional detail on this short-term recommendation.

In the long-term, both municipalities should consider an additional active transportation connection between the Gorge Bridge and the Craigflower Bridge. Currently, the two bridges are 1.8 kilometres apart as the crow flies, which is too far based on best practices. The CROW Design Manual recommends network spacing of 300 to 500m for cycling to flourish in built-up areas and other organizations such as NACTO recommend crossings every 100 metres.[18]

To encourage more active transportation trips and recreational trips by foot or by bike, a future (long-term) active transportation crossing of the Gorge should be considered to better connect Esquimalt to Saanich. The introduction of a bridge that will be accessible to people walking, rolling, and cycling will boost active transportation connections, improve regional connections, enhance walkability for the community, and ultimately support recreation and a more active lifestyle. The District of Saanich first identified a crossing at this location in their 2018 Active Transportation Plan that is halfway between the existing bridges between Dysart Road in Saanich and Garthland Road in Esquimalt. The recommended north-south cycling spine will connect to improvements that Saanich has made on Tillicum Road at the Gorge Bridge.

[18] NACTO. (No date). Global Designing Cities Initiatives: Pedestrian Crossings. Available online at: https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-pedestrians/pedestrian-crossings/

5.3 Design Guidelines

The following sections outline the relevant design guidelines that should be considered as the Township implements the short-term improvements. The guidelines below are largely derived from Chapter C (Pedestrian Facilities) and Chapter G (Intersections + Crossings) in the BC Active Transportation Design Guide.

5.3.1 Universal Design

The BC Active Transportation Design Guide defines universal design as a built environment that is "accessible to people of all ages and abilities, regardless of any type of physical or cognitive impairment." Esquimalt residents may have a range of challenges that make it harder for them to move around the community. This can include mobility impairments but also include a broader range of challenges including vision, hearing, strength and dexterity, and comprehension. Data at the national level has found that one in seven Canadians currently lives with a disability that impacts their mobility, vision, or hearing and this this projected to rise to one on five as the population continues to age.[19]

As discussed in Section 5.1.1, even though close to 80% of the existing sidewalk network is in good or excellent condition, there are still parts of the network where sidewalk distresses are present, which makes it harder for those with mobility impairments to move around. Further, there are many intersections in the Township where existing active transportation facilities are not meeting the definition of universal design. The following design elements should be considered as part of the minor and major intersection reviews undertaken by the Township. The elements are derived from the "Universal Accessibility Design Toolbox" in Chapter B of the BC Active Transportation Design Guide.

[19] Rick Hansen Foundation. (No date). Accessibility Matters. Available online at: https://www.rickhansen.com/become-accessible

Mobility

- To meet the needs of people using mobility devices such as wheelchairs, walkers, canes, and mobility scooters:
- Providing accessible slopes and grades, with appropriate landing areas and resting spots
- Providing accessible ramps where applicable
- Ensuring that surfaces are smooth, firm, slip resistant, and free of tripping hazards
- Providing curb ramps for road access
- Maintaining the sidewalk and ensuring it is clear of vertical and horizontal obstructions
- Providing year-round monitoring and maintenance

Visual

Visual tools can include signage, pavement markings, and wayfinding. Countdown timers could also be considered as part of Major Intersection Reviews to show pedestrians how long they have to cross the road.

Audible

Very few intersections in the Township have audible pedestrian signals, which are designed to make sounds to indicate when to cross a road to help visually impaired people safely navigate intersections.

5.3.2 Facility Types

The BC Active Transportation Design Guide identifies five distinct pedestrian facilities, as shown in the figure below. The pedestrian facilities of most relevance to Esquimalt include:

- Off-street (multi-use) pathway
- Enhanced separated sidewalk
- Separated sidewalk
- Non-separated sidewalk

Pedestrian Facility Spectrum. Source: BC Active Transportation Design Guide, Chapter C.

As discussed in Section 5.2.2 (Ultimate Network), it is recommended that the Township work towards wider and separated sidewalks as part of the ultimate pedestrian network. **Table 5** below includes the recommended widths for pedestrian facilities based on land use context and road type. It is recommended that the Township work toward these designs as part of its ultimate pedestrian network.

Table 5. Recommended Pedestrian Facility Widths[20]

OCP Land Use Designations *(Proposed)*	Road Type	Separation	Desirable (m)	Constrained (m)
Low– Medium Density Residential	Local	Non-Separated or Separated	1.8	1.8
High Density Residential	Local	Non-Separated or Separated	2.1	1.8
	Major Road / Collector	Separated	2.4	1.8
Business	Any	Separated	2.1	1.8
Neighbourhood Commercial Mixed-Use	Any	Separated	2.4-3.0	1.8
Commercial/Commercial Mixed-Use	Any	Separated	2.4-3.0	1.8

5.3.3 Curb Ramps

Deficient curb ramps were identified as one of the barriers to accessibility in the *Baseline Conditions Report*. A curb ramp, also referred to as "curb cuts", "accessibility ramps", and "sidewalk letdowns" are a smooth, graded transition from the sidewalk to the road and are required for people using wheelchairs, power scooters,

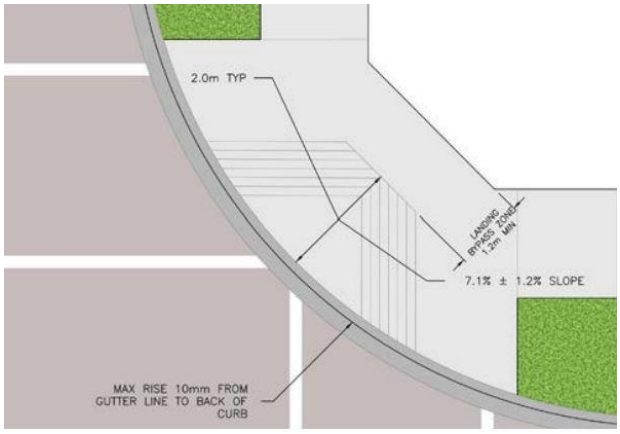
Example of deficient curb ramp in the Township.

[20] Table adapted from Table C-5 in Chapter C of the BC Active Transportation Design Guide. Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_c_rfs.pdf

and other mobility devices, but also benefit people with strollers, baggage, and delivery carts. They are also used as a navigational tool by people with visual impairments.[21]

While curb ramps are provided at most intersections in the Township, particularly on the Major Roads and Residential Collectors, there are some that do not meet the recommended design guidance in the Design Guide. For example, some of the critical components of curb ramp design that are outlined in the Design Guide include:

- The desired curb ramp width (exclusive of flared sides) is 1.8 metres, with a constrained limit width of 1.5 metres. The absolute minimum curb ramp width is 1.2 metres.
- The bottom landing area is the receiving space in the road at the base of a curb ramp. Steep counter slopes can be difficult to navigate for wheelchair users, as the counter slope may catch footrests or cause a loss in wheel traction. The maximum recommended counter slope is 1:20 (5%). The bottom landing area should be prioritized for maintenance to ensure that the surface remains in good condition and to prevent the accumulation of debris such as gravel and leaves.
- To provide full universal access, changes to the curb ramp design used in Esquimalt may be required.



Example of a combined curb ramp. They allow people using wheelchairs to enter the crosswalk along a straight trajectory, unlike a single curb ramp that is located at an angle to the road.
Source: BC Active Transportation Design Guide.

[21] Government of BC. (2019). Active Transportation Design Guide, Chapter G: Intersections + Crossings. Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_g_rfs.pdf

5.3.4 Integration with Transit

There are a total of 112 bus stops in Esquimalt. However, the type and quality of bus stop ranges across the municipality with some stops offering passenger amenities and others only a sign and pole. According to BC Transit data, the majority (over 50%) in Esquimalt have a bench and shelter, which provides a more comfortable transit experience for the user with weather protection and seating.

One of the policies in the Township's OCP is to enhance the universal accessibility at transit stops and pedestrian connections to them. Not all of Esquimalt's stops have universal accessibility according to BC Transit's Design Guidelines. These stops include concrete pad dimensions, curb ramps, tactile walking surface indicators, and provide adequate spacing between the furniture zone and the pedestrian through zone. This makes it easier for transit users who require the support of a mobility device including those on scooters or wheelchairs.

The Township should continue to work with BC Transit to ensure that all of the bus stops in Esquimalt meet the guidelines for an accessible bus stop.

BC Transit Design Guidelines for Accessible Bus Stops.
Source: BC Transit Infrastructure Design Summary 2018

5.4 Policies & Programs

In addition to the recommended infrastructure improvements outlined in the preceding sections, the Township will also need to consider "softer" solutions including education, programming, and policy changes to help promote walking.

5.4.1 Pedestrian Wayfinding

Consistent wayfinding and signage are important for orienting residents and visitors to Esquimalt about the key destinations in the community. Wayfinding can provide simple, clear, and intuitive information to help people navigate spaces effectively and intuitively. It helps people identify how they can navigate a community, neighbourhood, or active transportation network effectively from their present location to their destination. Wayfinding should [a] connect places [b] be predictable and [c] be simple and easy to follow.

Example of a pedestrian monolith in the City of Victoria. Source: City of Victoria.

There is currently limited pedestrian wayfinding in the Township. Based on best practices and guidance from the BC Active Transportation Design Guide, there are two types of wayfinding signage that could be considered in Esquimalt, as follows:

- Pedestrian Monolith | A pedestrian monolith sign provides support to pedestrian at key decision points. They include the name / address of the current location, directions to nearby destinations, an overview map, community branding, and other supporting information.
- Pedestrian Fingerposts | Fingerposts provide directional information to proximate destinations as a final step in a pedestrian's journey. They include times or distances to destinations and include recognizable brand identity.

The BC Active Transportation Design Guide recommends the following criteria for placement of pedestrian wayfinding signage:

- On streets with high levels of pedestrian traffic (e.g., Esquimalt Road, Lyall Street).
- At intersections or junction points to help with route decision-making.
- Where there is lighting to ensure the information is readable in darker conditions and in the winter months.

It is recommended that the Township undertake a wayfinding strategy to review pedestrian wayfinding opportunities more comprehensively in Esquimalt.

5.4.2 Ready, Step, Roll

The Capital Regional District's "Ready, Step, Roll" program is an annual Active School Travel Planning initiative that partners with a cohort of five schools and their respective local governments, throughout the Capital Region, to help students and their families walk and wheel to and from school more often.[22]

There are five schools currently participating in the program for the 2021-2022 school year including École Macaulay Elementary School. The Township should support and work with the CRD and École Macaulay Elementary School to help ensure that the active school travel activities continue at the school following the school year.

Source: CRD Ready, Step, Roll

[22] Capital Regional District. (No date). Ready Step Roll. Available online at: https://www.crd.bc.ca/project/regional-transportation/active-school-travel-planning

In 2018, the CRD released its first comprehensive report on the Active and Safe Routes to School program. The program included 20 schools from all over the region including urban and rural geographies. The CRD found that after a year of data collection and evaluating the impact of activities such as “Drive to Five”, there were several positive findings:

- About 16% of parents were driving less for school travel since the beginning of the Active and Safe Routes to School program
- At the start of the program, 47% of parents stated their usual form of school travel was driving, while at the end of the program this had decreased to 43% of parents
- There was a significant increase in students using active transportation, including part of their trip, as their usual form of transportation.

It is recommended the Township continue to participate in the Ready, Step, Roll program and ensure that elementary schools have the resources required to continue to support active travel for children.

5.4.3 Township Walking Map

Maps are a useful communications and educational tool that almost every walkable community has to encourage people to walk more. They also help people understand what the best routes are to destinations or if there is a recreational loop that can be accessed in their community. The Township should work with regional partners to develop a digital map that highlights destinations, routes, loops, and other amenities. Paper copies should be distributed widely at public facilities, shops, and destinations since many people prefer hard copies over digital means. Maps can also communicate safety reminders and show how short and easy it is to connect to the broader region with a focus on trips about 4 km or 1 hour out.

5.5 Action Items

The following table summarizes the recommended actions for the pedestrian network. The costing for Actions 1A-1G is found in **Section 8.2**.

Action		Description
1A-1G	Construct short-term sidewalk facilities. A minimum of one new sidewalk facility is recommended each year.	Construct sidewalk facilities in the following order of priority: • North side of Old Esquimalt Road west of Lampson Street • West side of Archie Browning Sports Centre parking lot from Lyall Street to north end of Bullen Park • Munro Street from Fraser Street to Lampson Street • East side of Kinver Street / Swinford Street from Lyall Street to Munro Street • Bewdley Avenue from Fraser Street to Macaulay Street • Wychbury Avenue from Fraser Street to Kinver Street • Wollaston Street from Lampson Street to Macaulay Street
1H	Undertake improvements to the ultimate pedestrian network.	As part of the ultimate pedestrian network, separated sidewalks are recommended to align with best practices. These facilities can be paid for through the development process and/or through capital planning.
1I	Undertake a feasibility study of a future active transportation bridge.	In partnership with the District of Saanich, undertake a study to determine the feasibility of an active transportation bridge over the Gorge to better connect Saanich and Esquimalt.
1J	Undertake a pedestrian wayfinding strategy.	Undertake a pedestrian wayfinding strategy to connect residents and visitors to services and attractions.
1K	Continue to support the Ready, Step, Roll program.	Continue to participate in the Ready, Step, Roll program and ensure that elementary schools have the resources required to continue to support active travel for children.
1L	Develop a Township walking map.	Lead the creation of a walking map to encourage more trips by foot.

Section 6 – Cycling Realm

6.0 CYCLING REALM

6.1 Existing Network

Esquimalt's compact geography and short distances to key destinations help support cycling as a mode of transportation. Cycling accounts for approximately 5% of all trips within Esquimalt today, which is comparable to other Core municipalities in the CRD. Even though cycling accounts for a smaller share of all trips within Esquimalt, the share of commute trips by bike increased from 6% to 9% between the 2011 and 2016 census periods. The decision to cycle is influenced by several factors and even though the distance between destinations is short in the Township, the overall quality of the existing bicycle facilities and connectivity to key destinations requires improvements.

WHAT DOES THE OCP SAY ABOUT CYCLING?

The OCP's policy direction on cycling is "*to encourage increased use of cycling for recreational and commuting purposes.*" The OCP objective is supported by several policies including (1) Consider improving and expanding cycling infrastructure to an All Ages and Abilities standard to encourage cycling as a healthy form of transportation and (2) Follow Canadian and International best practices in expanding and improving Esquimalt's cycling infrastructure

6.1.1 Cycling Facilities + Infrastructure

There are four distinct cycling facilities in the Township, as shown in **Table 6** and discussed below. The total length of the Township's cycling network is 20.6 kilometers. See **Figure 8** for the existing cycling network.

Table 6. Summary of Bicycle Facilities

Bicycle Facility	Length	Percentage
Multi-Use Pathway	2.8 km	13.5%
Buffered Bike Lane	0.5 km	2.5%
Bicycle Lane	4.8 km	23.5%
Shared Use Lane	12.5 km	60.5%
Total	**20.6 km**	**100%**

The shared use lane or "shared lane" is the most dominant facility type. The *Baseline Condition Report* discussed how this type of facility is generally not appropriate in Esquimalt. Further, the BC Active Transportation Design Guide does not include shared use lanes as a recommended facility type. Many people cycling are not comfortable using these facilities and the Transportation Association of Canada only recommends this facility on lower speed/lower volumes roads and if insufficient space is available to provide a more appropriate bike facility.

The E&N Rail Trail is a multi-use pathway.

Buffered bike lane on Admirals Road.

A painted bike lane on Esquimalt Road.

A shared use lane on Selkirk Avenue.

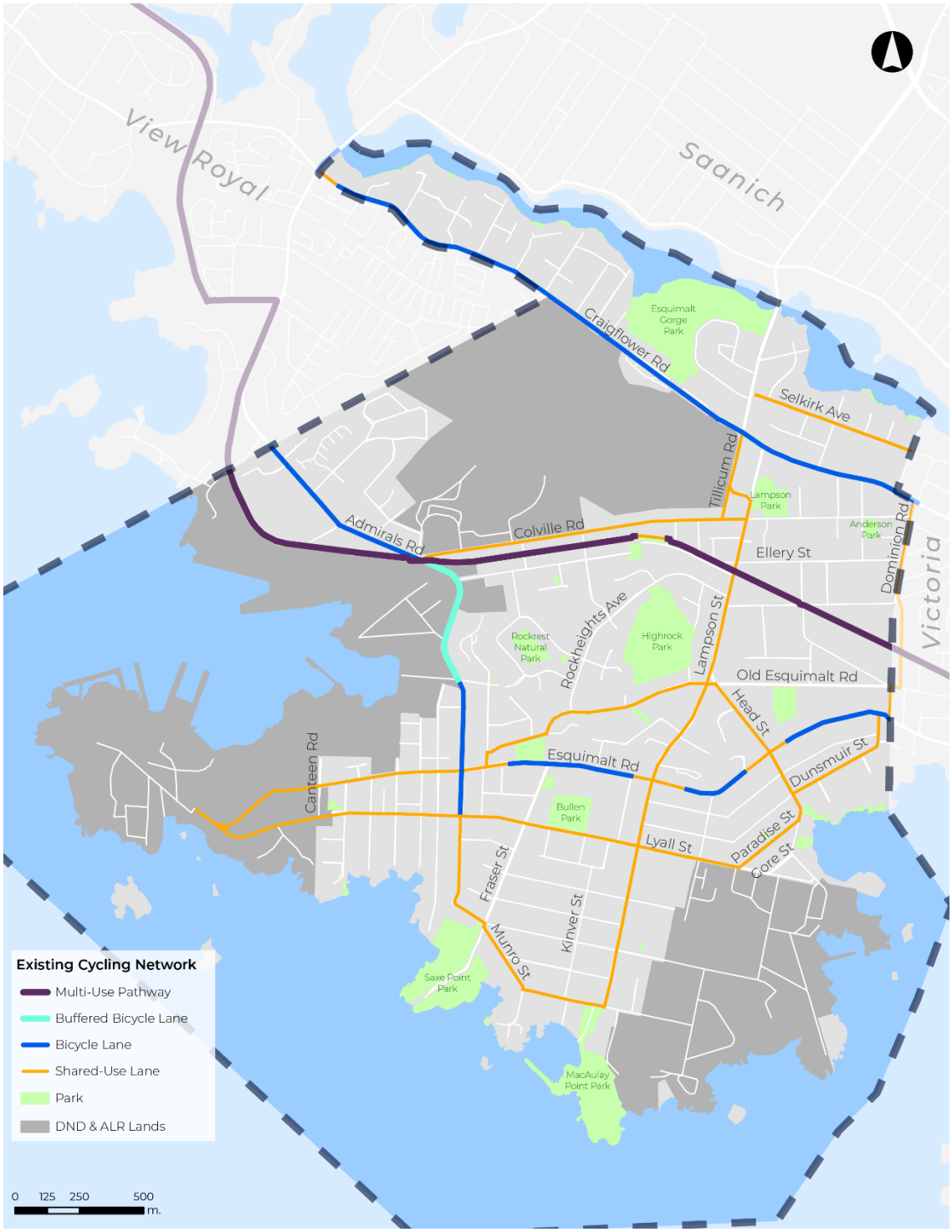


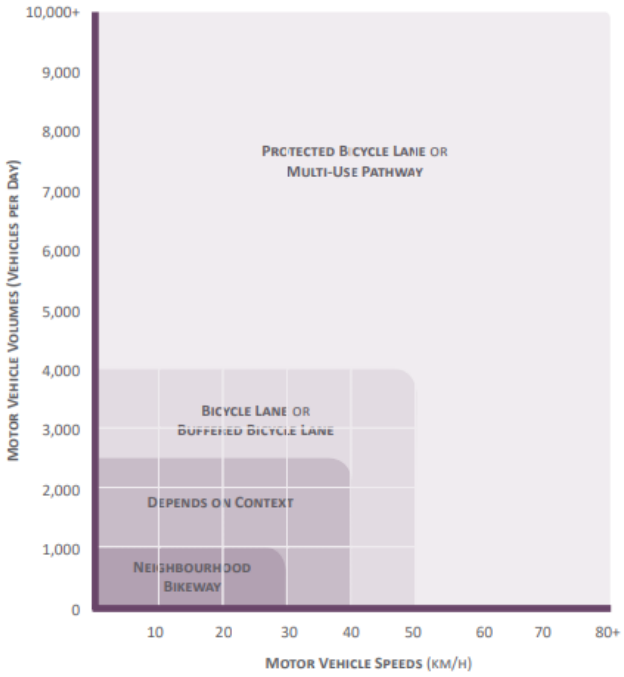
Figure 8. Existing Cycling Network

6.1.2 Gaps in Network

The largest barriers facing Esquimalt's existing cycling network are [a] inadequate cycling facilities that do not meet the needs of all ages and abilities [b] lack of connectivity and [c] a lack of accommodation at intersections. A brief discussion of each barrier is described below.

Cycling Accommodation

According to the BC Active Transportation Design Guide, traffic volumes above 2,500 vehicles a day justify a bike lane and above 4,000 vehicles a day necessitate strong consideration of facilities that physically separate people cycling from motor vehicles. For major roadways, this means that better bike facilities such as protected bike lanes or multi-use pathways are more appropriate, especially if the roadways are posted 50 km/h or greater.



Bicycle Facility Selection Decision Matrix found in the BC Active Transportation Guide.

Several of the Township's existing cycling facilities are not providing the desired facility type based on best practices. This includes the following:

- **Admirals Road Buffered Bike Lane** | traffic volumes exceed 12,000 vehicles per day (posted speed limit is 50 km/h)
- **Esquimalt Road Bicycle Lane** | traffic volumes exceed 11,000 vehicles per day for most of the corridor (posted speed limit ranges but is 50 km/h for most of corridor)
- **Lampson Street Shared Use Lane** | the posted speed limit is 50 km/h and traffic volumes are over 11,000 vehicles per day

- **Tillicum Road** | there is no existing bike facility on Tillicum Road where the posted speed limit is 50 km/h and traffic volumes exceed 17,000 vehicles per day

Person cycling on Lampson Street—classified as a shared use lane—with no separation from motor vehicle traffic.

Even though a bicycle lane is provided on Esquimalt Road, with over 11,000 vehicles per day for most segments of the corridor, a protected bike facility is more suitable to meet the needs of all ages and abilities.

Connectivity Gaps

As shown in **Figure 8**, the existing cycling network provides connections to most places and destinations in Esquimalt. However, most of the Township's cycling facilities do not meet the needs of all ages and abilities. Even though there are east-west and north-south cycling connections, there are some notable gaps in the network, as follows:

- **Tillicum Road & Lampson Street** | The only viable cycling route option for people cycling north of Colville Road is to use Tillicum Road, which is a busy corridor with over 17,000 vehicles per day. This makes it challenging for residents who need to access destinations both north and south of this busy corridor. Further, for people cycling south, Lampson Street is the only viable option but with no separation from traffic and volumes over 11,000 vehicles per day, it is an uncomfortable and unsafe connection for most.
- **Fraser Street** | Fraser Street is a Residential Collector Road that connects residential neighbourhoods with key destinations including Saxe Point Park, Esquimalt Recreation Centre, and Esquimalt Road. The lack of a bike facility, however, makes it more challenging for people cycling to access these destinations.
- **Lyall Street** | Lyall Street is a Residential Collector Road that connects residential neighbourhoods with schools, commercial, and recreational destinations. The posted speed limit changes along the corridor and there is no formal bike facility.

Fraser Street (left) and Tillicum Road (right) both lack cycling facilities and present gaps in Esquimalt's overall cycling network.

Intersections

As reported in the *Baseline Conditions Report*, four out of five cycling collisions in BC happen at intersections.[23] Very few intersections in the Township currently provide any cycling accommodation at and through the intersection. The photo at-right illustrates a shared use lane "sharrow" at the intersection of Esquimalt Road and Admirals Road. The person cycling has no protection from vehicles at the intersection and is at risk of a right-hook collision from vehicles turning right.

There are many examples of where bike facilities end before an intersection or crossing, which forces people cycling to merge into the vehicle travel lane. The rationale for this design is typical of design guidance just a decade ago where intersection accommodation for people cycling seemed optional particularly when trying to accommodate turning vehicles was a greater priority.

[23] ICBC. (2020). *Cycling Safety*. Available online at: https://www.icbc.com/road-safety/sharing/Pages/cycling-safety.aspx

According to an analysis completed by the University of Victoria and BikeMaps.org, there are several cycling incident "hotspots" in the Township, where collisions or near misses have been reported. The locations are shown in **Figure 9**. Some of the locations include:

- **Craigflower Road / Island Highway & Admirals Road** | Westbound bike lane on Craigflower Rd (approaching Admirals Rd) ends before the intersection, forcing cyclists into the right turn lane. There have been several near misses at this location.
- **Craigflower Road & Tillicum Road |** Conflicts with turning vehicles at intersection and at the northeast corner gas station. Vehicles cross painted bike lane to turn right from Craigflower Road onto Tillicum Road and to turn into the gas station.
- **Selkirk Avenue & Tillicum Road** | Conflicts as cyclists and vehicles turn on/off Selkirk Ave. There has been an ICBC crash and a BikeMaps.org near miss at this location.
- **Admirals Road & Colville Road** | There have been many injuries due to cyclists crossing train tracks (especially during wet conditions). There are also conflicts with turning vehicles at intersection. For people traveling along the E&N Rail Trail, this intersection can be daunting and confusing.

Examples of problematic intersections for people cycling. People cycling on Craigflower Road and turning right on to Tillicum Road have no protection from vehicles. The Admirals Road / Colville Road intersection is confusing and challenging to navigate for people cycling and there have been several injuries at this location.

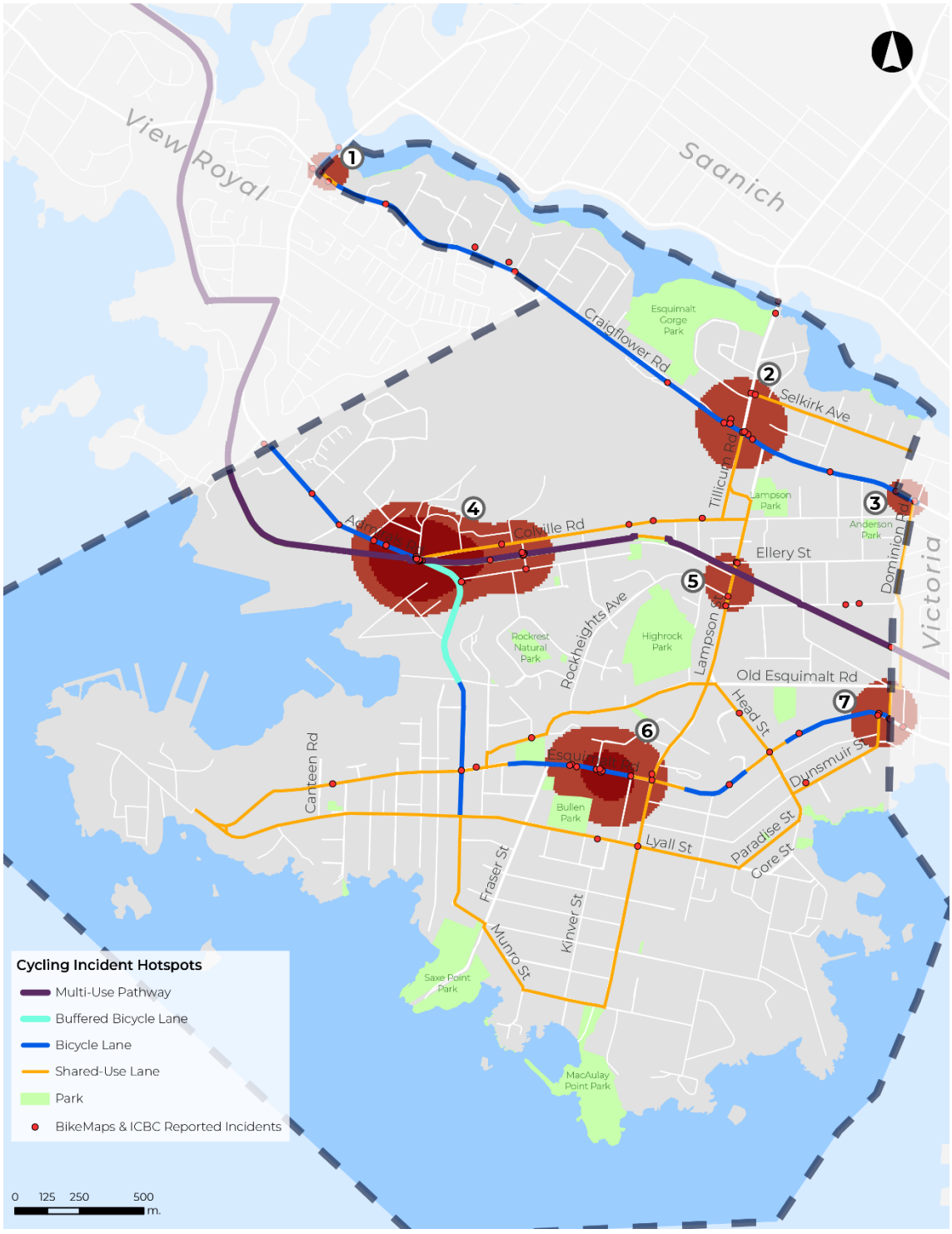


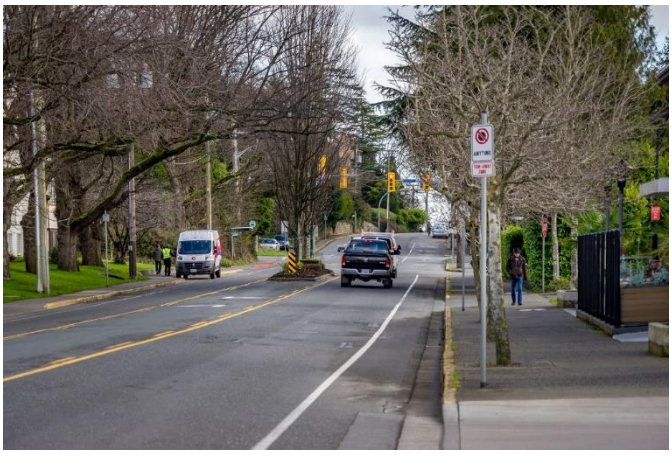
Figure 9. Cycling Incident Hot Spots (Adapted from UVic / BikeMaps.org)

6.2 Future Network

In line with the vision in this plan, Esquimalt's future cycling network will offer greater protection from motor vehicle traffic so that all trips—regardless of purpose— can be done safely and comfortably by people cycling. To achieve this network, Esquimalt will have to prioritize a series of cycling facility improvements in the short-term, followed by the larger build-out of the entire network.

6.2.1 Short-term Improvements

Esquimalt's short-term cycling improvements will be delivered through a 'quick-build' cycling network, described in detail on the following page. Quick-build facilities are temporary in nature; they include materials that are flexible, inexpensive, and allow for adjustments to be made after implementation. **Figure 10** shows the short-term quick-build cycling network. The total length of the quick-build cycling network is 5.3 kilometres. A discussion of the recommended facilities is provided in the pages that follow.

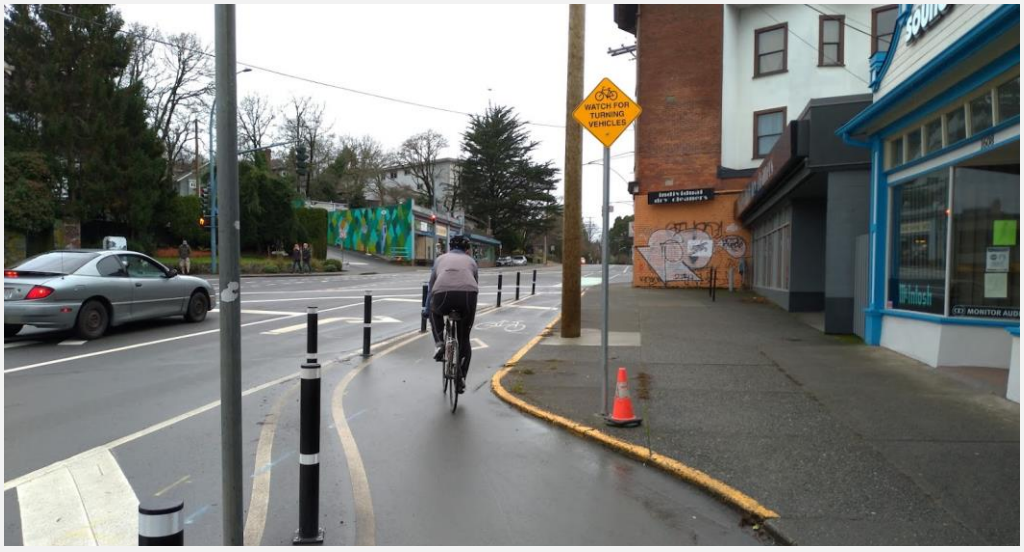


Esquimalt Road (left) and Tillicum Road north of Craigflower Road (right) were identified in the second public engagement survey as the highest priorities for the short-term quick-build cycling network.

WHAT IS A QUICK-BUILD CYCLING NETWORK?

Over the next five years, Esquimalt will develop its quick-build cycling network. The quick-build network is temporary in nature and can be treated as a pilot. Quick-build materials are flexible and inexpensive, which allow adjustments to be made after implementation if the need arises. This could make it easier for residents and businesses to test infrastructure changes before the Township has allocated enough capital to pursue more permanent infrastructure. Quick-build networks have many advantages over longer and more permanent buildouts: (1) they do not need to remove existing infrastructure, (2) the current geometric layout of the streetscape does not require any changes, and (3) they do not significantly impact utilities or drainage.

As an example, the City of Calgary constructed 6.5 km of quick-build cycling facilities in 2015 as part of a two-year pilot project. The pilot enabled Calgary to move quickly to install inexpensive, comfortable, protected facilities on three corridors to encourage more people to cycle, quickly adjust elements of the design based on feedback, and prove their worth before deciding if the network holistically worked. Calgary's network led to a doubling of cycling trips into the downtown and broad support from businesses, residents, and stakeholders. An example of a quick-build facility on Fort Street in Victoria is shown below.



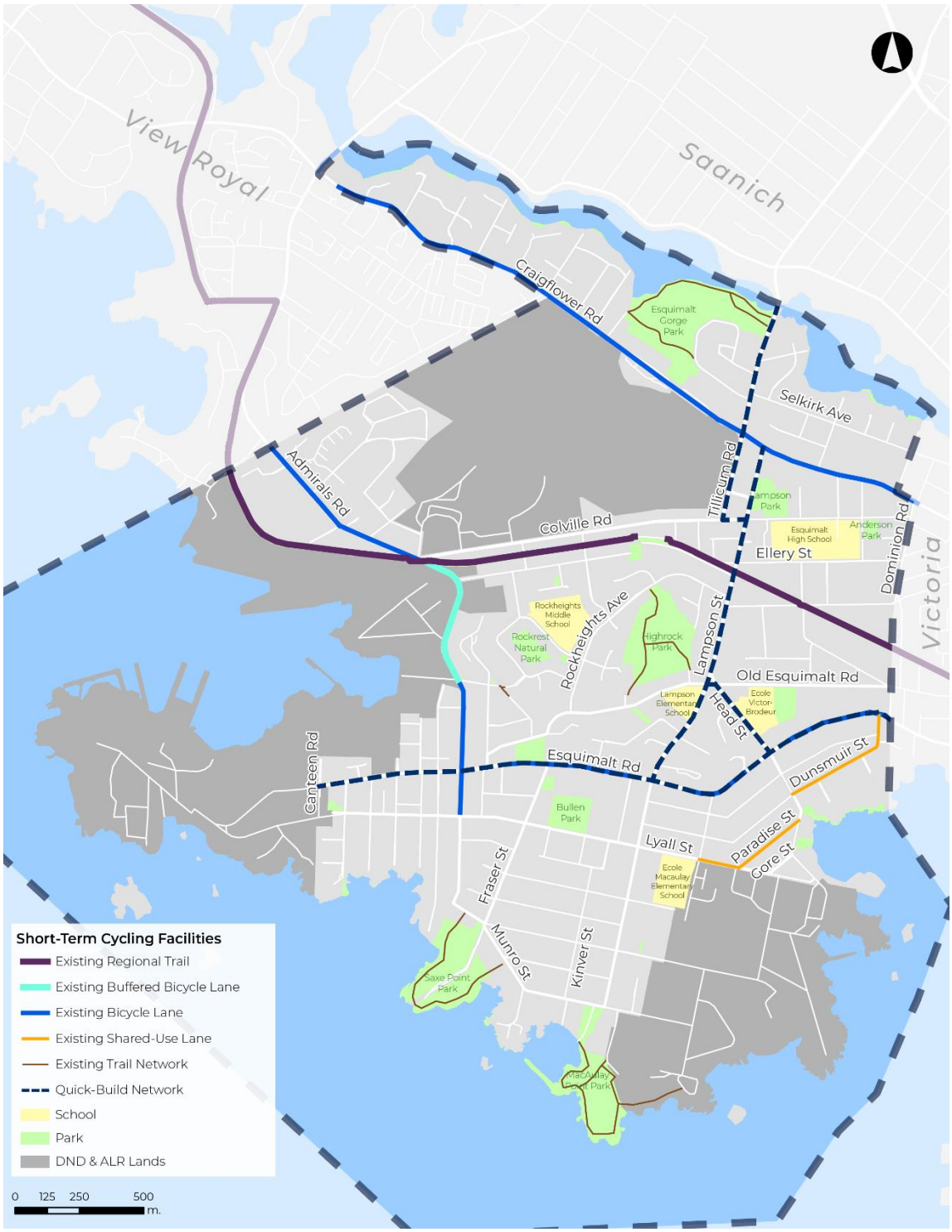
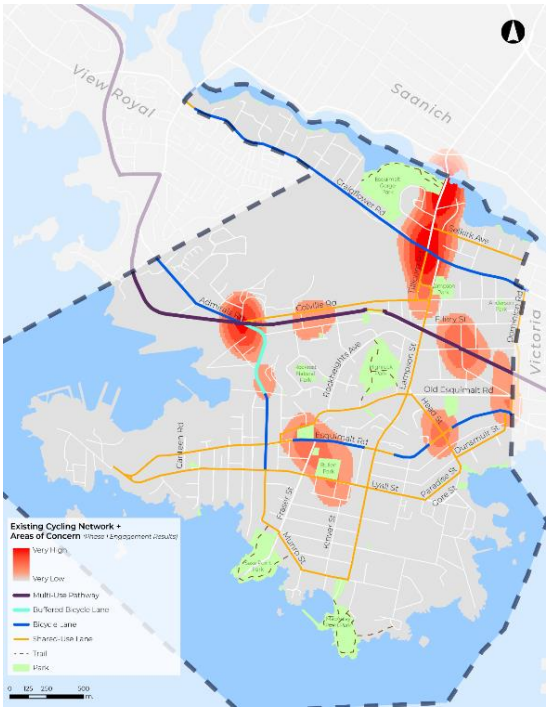


Figure 10. Short-term (Quick-Build) Cycling Network

North-South Cycling Corridor

As shown in **Figure 10**, the north-south cycling corridor includes recommended protected cycling facilities on Lampson Street north of Esquimalt Road and continuing along Tillicum Road until the Gorge Bridge. In the second public engagement survey, about 75% of survey respondents either supported or strongly supported a protected bike facility on Tillicum Road north of Craigflower Road. Further, this part of the north-south cycling corridor tied for first place in the ranking for the highest priority cycling project in the short-term.



Areas of concern as they were highlighted by participants of the online interactive mapping tool in the first phase of engagement with Tillicum Road receiving the most pins.

Even though Tillicum Road north of Craigflower is the higher priority facility, the entire north-south corridor should be treated as one pilot project to provide a safe and connected facility for people cycling across the Township. Head Street is also recommended for the quick-build cycling network. People cycling would have another north-south corridor option with connectivity to other cycling routes and key destinations including Victor Brodeur, and commercial / retail amenities at Head Street and Esquimalt Road.

WHAT WE HEARD – NORTH-SOUTH CYCLING CORRIDOR

"This [Tillicum Road'] is the least protected, most dangerous section of potential bike access and use in Esquimalt, with the highest potential for increased growth in cycling. Ensuring easily accessed and safe connections into Esquimalt over Gorge Bridge is vital to connecting Saanich and Victoria with Esquimalt by bike. I would propose this should be the highest priority cycle improvement."

Table 7. North-South Cycling Corridor Projects

Cycling Facility	Description / Implications	Length (m)
2A. Tillicum Road Protected Bike Lanes (Craigflower Rd – Gorge Bridge)	Uni-directional bike facilities are recommended on Tillicum Road north of Craigflower Road. This will include 1.8m wide bike lanes with a 0.6m buffer from the vehicle travel lane. Flexible delineator posts are the recommended quick-build material for separation, except at the bridge where a concrete barrier is required to protect people biking and walking. A motor vehicle travel lane will be removed to fit the bike lanes on both sides. The handrail at the bridge is to be removed on both sides and raising the bike lanes up to sidewalk level should be included to improve the pedestrian realm on both sides.	650
2B. Tillicum Road Protected Bike Lanes (Craigflower Rd – Colville Rd)	A uni-directional bike facility against west curb (southbound) is recommended, which includes a 1.8m wide bike lane with a 0.6m buffer from the vehicle travel lane. Flexible delineator posts are the recommended quick-build material. Conflict markings and intersection treatments are required and upgrades to the Tillicum / Craigflower signal are warranted.	350
2C. Lampson Street Protected Bike Lanes (Craigflower Rd – Colville Rd)	A uni-directional bike facility against the east curb (northbound) is recommended, which includes a 1.8m wide lane with a 0.6m buffer from the vehicle travel lane. Flexible delineator posts are the recommended quick-build material for separation. Conflict markings and intersection treatments are required and upgrades to the crossing at Craigflower / Lampson is warranted. On-street parking will be removed on both sides of Lampson Street to accommodate the cycling facilities.	350
2D. Lampson Street Protected Bike Lanes (Esquimalt Rd – Craigflower Rd)	Uni-directional bike facilities are recommended on Lampson Street from Esquimalt Road to Craigflower Road. This will include 1.8m wide bike lanes with a 0.6m buffer from the vehicle travel lane. Flexible delineator	1,400

Cycling Facility	Description / Implications	Length (m)
	posts are the recommended quick-build material for separation. On-street parking will be removed on both sides of Lampson Street to accommodate the cycling facilities. Improvements to the signals at Lampson Street / Esquimalt Road and Lampson Street / Old Esquimalt Rd are required to facilitate safer movements for people cycling.	
2E. Head Street Protected Bike Lanes (Esquimalt Rd – Lampson St)	Uni-directional bike facilities are recommended on Head Street from Esquimalt Road to Lampson Street. This will include 1.8m wide bike lanes with a 0.6m buffer from the vehicle travel lane. Flexible delineator posts are the recommended quick-build material for separation.	360

Example of a quick-build cycling facility in Tucson, Arizona that has delineator posts as the separation material. This is the type of facility envisioned on Tillicum Road / Lampson Street as part of the quick-build network.

East-West Cycling Corridor

In the second public engagement survey, respondents had the oppportunity to evaluate the three cycling facility options for the east-west cycling corridor, as follows:

- **Option 1** | Protected bike lanes on Esquimalt Road
- **Option 2** | Westbound protected bike lane on Esquimalt Road and eastbound protected bike lane on Lyall Street
- **Option 3** | Convert Lyall Street to a neighbourhood bikeway

Option 1 (protected bike lanes on Esquimalt Road) was the highest ranked option, followed by option 2. Further, the east-west cycling corridor tied for first place in the ranking for the highest priority cycling project in the short-term. Based on the public feedback and the network evaluation, protected bike lanes on Esquimalt Road are the recommended east-west cycling corridor for the quick-build network.

Table 8 below provides more detail on the specific bike facility improvements for Esquimalt Road. Further consultation with businesses and residents is recommended in the detailed design stage to further explore and outline the trade-offs and implications of accommodating a protected bike facility along this corridor. Even though the public survey ranked the Esquimalt Road cycling facilities at the top with the Tillicum Road cycling facilities (north of Craigflower Road), it is recommended that this facility be pursued after the north-south cycling corridor as [a] there are already cycling facilities in place on Esquimalt Road and [b] it is a more complex project that will require further public consultation.

WHAT WE HEARD – EAST-WEST CYCLING CORRIDOR

"When we think about commuting along the east west corridor, it seems most efficient for cyclists to ride along Esquimalt Rd instead of having to navigate through side roads. I believe that cyclists should get to ride a convenient path instead of riding on detours."

"As a parent of a child at MacAulay and a frequent visitor to the library and Memorial Park, I would like to see both Esquimalt Rd and Lyall St be made all ages and abilities (AAA). I also think Esquimalt High and Rockheights Middle School need to be connected directly to the network."

EXPLORING THE FEASIBILITY OF PROTECTED BIKE LANES ON ESQUIMALT ROAD

Esquimalt Road is a critical transportation and commercial corridor for the Township, CFB Esquimalt, and regional traffic. The streetscape and cross-section of the road changes several times throughout the corridor. For example, the section from Dominion Road to Head Street is a mix of residential and commercial with a three-lane cross-section (including landscaped medians), bike lanes on both sides, and no on-street parking. The section from Park Place to Admirals Road, by contrast, is highly commercial with a three-lane cross-section with a median, on-street parking on both sides, and a shared use lane, which means people cycling share the road with vehicles.

The corridor is also a regional transit route, which means that there are several bus stops and bus layovers along Esquimalt Road. In addition, as a dense commercial and residential corridor, there are many driveways, commercial loading areas, and on-street parking, all of which result in a more constrained road right-of-way to accommodate cycling facilities.

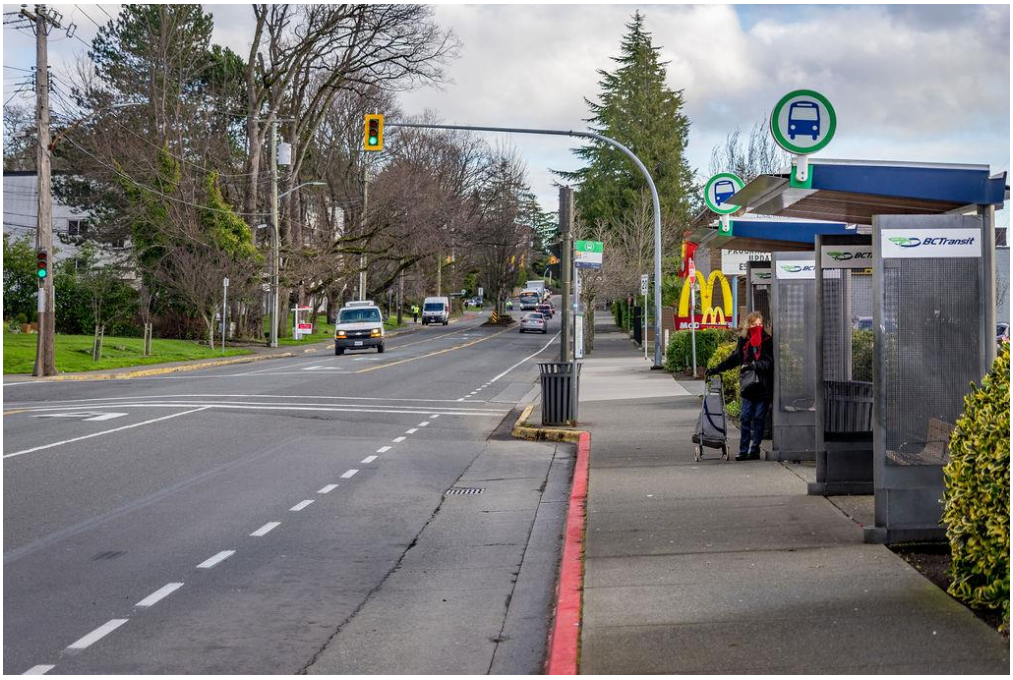
The combination of on-street parking, medians, and bus layovers make it more challenging to provide a cycling facility with full protection for all sections of the Esquimalt Road corridor.

Table 8. East-West Cycling Corridor Project, Esquimalt Road

Cycling Facility	Description / Implications	Length (m)
2F. Esquimalt Road Protected Bike Lanes (Canteen Rd – Dominion Road)	Uni-directional bike facilities are recommended on Esquimalt Road from Admirals Road to Dominion Road. This will include 1.8m wide bike lanes with a 0.6m buffer from the vehicle travel lane, where feasible. Flexible delineator posts are the recommended quick-build material. As a quick-build facility, the left-turn lanes and medians along Esquimalt Road do not have to be removed but trade-offs will be required. However, on-street parking would have to be removed from several blocks along the corridor to accommodate the cycling facilities. Due to the constrained road right-of-way, protection from the motor vehicle travel lane cannot be provided along all segments of the corridor. Bus stops / layovers and some parked vehicles may result in people cycling having to share the road with vehicles. However, intersections will need to be modified to ensure that bike lanes are accommodated on approach and through major and minor intersections. Asphalt ramps can be added where existing curb extensions are placed if needed.	1,400

The construction of the quick-build cycling network will bring several benefits to the community. However, the Township should anticipate some impacts to overall operations when installing the cycling facilities. This could include added time for garbage collection and impacts to traffic operations during garbage collection where a vehicle cannot pass a truck.

Example of a quick-build cycling facility on Agnes street (New Westminster, BC). A similar facility is recommended on Esquimalt Road as part of the quick-build network.



Examples of locations along Esquimalt Road where a protected facility may not be possible in the quick-build network. While on-street parking will need to be removed along Esquimalt Road in most locations, it may not be possible for all locations.

6.2.2 Maintenance of the Quick-build Network

The benefits of a connected quick-build network would quickly disappear if it is not adequately maintained throughout the year. Research has reported that icy or snowy conditions, glass or debris, and potholes or uneven paving can have a negative impact on cycling as they pose hazards to people cycling and potential causes for crashes.[24]

The quick-build network will require regular maintenance to ensure they provide safe cycling conditions. The Township does not currently have the proper equipment that would be required to actively maintain the recommended cycling facilities. As such, $250,000 should be budgeted for new equipment (see **Section 8.2.3** for more information). The overall maintenance of the network includes several components, as follows:

- Sweeping and removing gravel, debris, and leaves; trimming adjacent vegetation; and adjusting bollards and other elements related to protected bike lane delineators
- In the winter months it is critical to clear and remove snow and treat and remove ice or slippery conditions (see **Section 6.4.6** for recommendations on the Township's Salting/Sanding/Snow Clearing Policy)
- There are also asset management activities, which can include repairing pavement surfaces and other road surface appurtenances such as utility covers; replacing worn pavement markings, signs, and signals; mitigating locations with pooling water or drainage issues; replacing broken delineators; maintaining street and path lighting; and repairing and maintaining equipment that is used to maintain cycling facilities

[24] Winters, M., Davidson, G., Kao, D., Teschke, K., 2011. Motivators and deterrents of bicycling: comparing influences on decisions to ride. Transportation (38), 153-168.

BEST PRACTICES AROUND SNOW CLEARANCE & REMOVAL

There are typically two approaches to snow clearing: plowing and applying rock salt or brining and sweeping. The Institute of Transportation Engineers' Protected Bikeways Practitioners Guide clearly outlines the advantages and limitations of both. Typically, best practice is to apply brine before snow events and use a sweeper to clear snow. The brine limits snow bonding to the cycling surface and the sweeper efficiently clears snow from uneven surfaces, which is not the case with a plow. The plow and rock salt technique is also less efficient because bicycles have a small tire footprint and do not have engines or sufficient weight to generate heat; large tires and generated heat are required to crush and activate the rock salt. Both techniques have been extensively trialed in Montreal and results validate the superiority of brining and sweeping. The main limitation of this technique is that sweepers are typically not adequate during heavy snow events. When snowfall is abundant or the snow has a high amount of water, plowing before sweeping may be necessary.

Example of a John Deere tractor from the City of Calgary that is clearing snow in a protected bike lane. This tractor has different attachments (brush, bucket, sprayer on the back) that can be used to clear snow, leaves, and other debris.

Even though there are several maintenance activities involved in maintaining cycling facilities, the following specific activities are recommended for the quick-build cycling network:

- All of the recommended cycling facilities shown in **Figure 10** should be swept to remove leaves, gravel, glass, sticks and other debris on a regular basis
- Vegetation along cycling routes (e.g., trees, shrubs, bushes, and other plants) should be trimmed seasonally to ensure horizontal clearances from the edge of a cycling facility and adequate sightlines are provided at intersections
- While all of the recommended (and existing) cycling facilities are important, the Township should create a prioritized network of cycling facilities for winter maintenance (see **Section 6.4.6**)
- Establish a minimum width for a cycling facility during winter to direct the timing of snow removal operations.
- Treat all cycling facilities with anti-icing and de-icing materials to reduce and eliminate slippery conditions.

6.2.3 Ultimate Network

The ultimate cycling network is intended to provide more separation and protection from motor vehicles and greater connectivity. After the Township has implemented the quick-build network over the five-year period, it will need to revisit the facilities and determine if upgrades are required, whether the materials should be more permanent, and/or where new facilities are required altogether. Overall, the ultimate network has a longer time horizon (5 to 15 years) to provide the Township with greater flexibility in prioritizing how it builds the overall cycling network.

Taking a holistic approach in designing this network, it is anticipated that cycling will become significantly more comfortable and safer for people living and visiting Esquimalt. The network is intended to attract people already riding a bicycle, but also residents who are interested but have safety concerns. The following section describes the overall intent of the ultimate cycling network, examples of the types of cycling facilities that would be included, and new roads where a cycling facility would be added. **Figure 11** illustrates the ultimate cycling network.

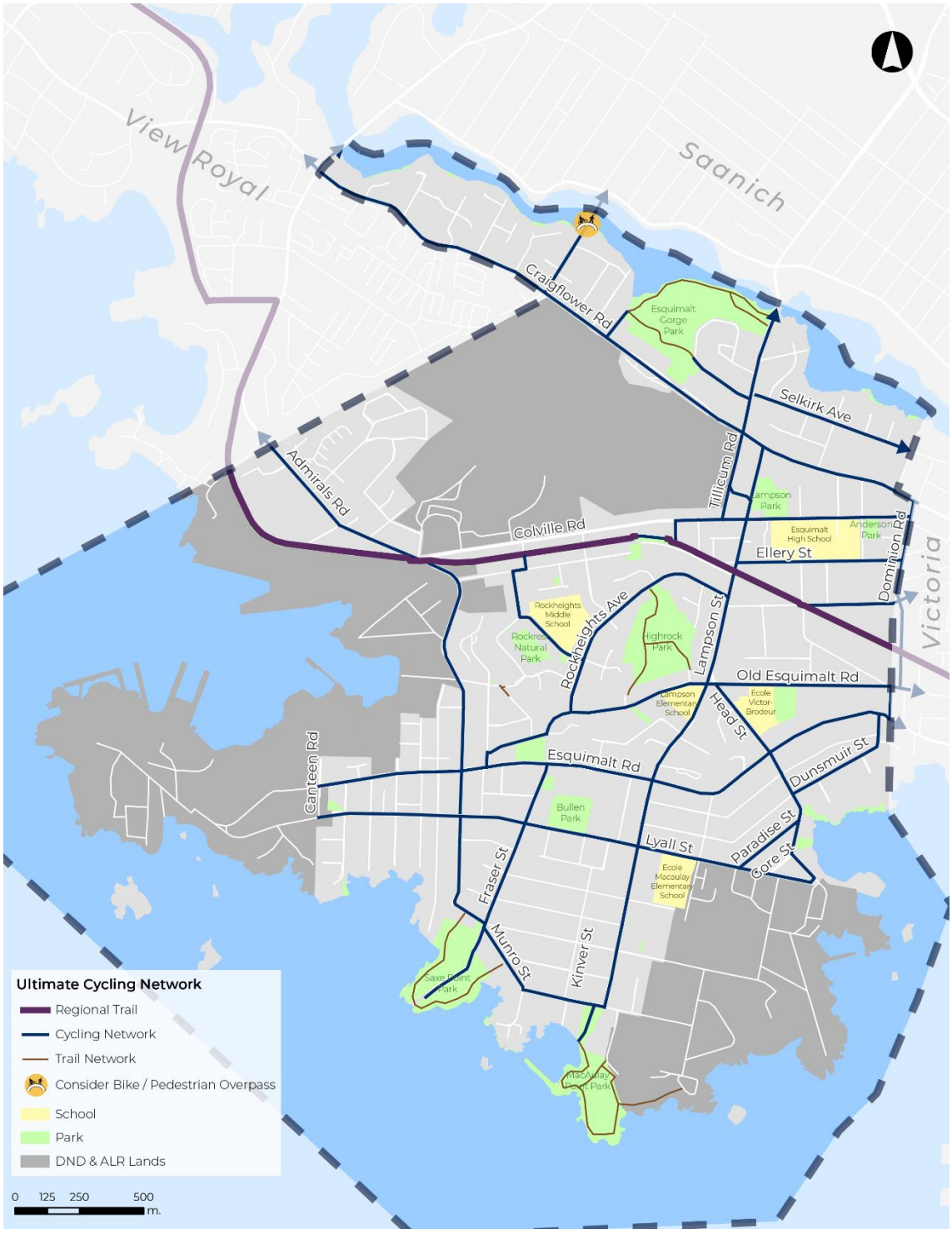


Figure 11. Ultimate Cycling Network

Fully Connected Network

As shown in **Figure 11**, the ultimate network will make it easy, safe, and convenient for residents and visitors to reach any part of the cycling network by bike. This aligns with the overall vision of the plan and addresses the concerns raised in the plan engagement about the lack of connectivity in Esquimalt's cycling network. Examples of how the ultimate network will add to the quick-build network are summarized below.

- A bike facility is recommended for **Lampson Street** south of Esquimalt Road. This will provide connectivity to Lyall Street, residential dwellings in south Esquimalt, and other important recreational destinations including MacAulay Point Park.
- A bike facility is recommended for the entire corridor of **Lyall Street**. This would provide connections to several destinations along this east-west corridor including CFB Esquimalt, Esquimalt Recreation Centre, schools, and to north-south cycling facilities. Based on public engagement in the ATNP and past engagement conducted by the Township, there is a desire for a bike facility on Lyall Street, but the specific facility will warrant further study and consultation.
- **Munro Street** is also recommended to be part of the ultimate network to make it easier and safer for residents to connect to north-south cycling routes such as Fraser Street and Lampson Street.
- With over 12,000 vehicles per day and an existing buffered bike lane for part of the road, a protected bike facility is recommended for the entire **Admirals Road** corridor linking south and north Esquimalt and connecting with View Royal.

Design Guidance for Facility Types

The ultimate network's cycling facilities will need to be determine at a later stage once the Township undertakes detailed design and consultation with the public and businesses. However, to align with the vision of this plan and to meet the needs of all ages and abilities, there are two specific facility types that are appropriate for the Township and warrant further exploration: (1) protected bike lane (2) neighbourhood bikeway. Both facilities are described and summarized based on Chapter D of the BC Active Transportation Design Guide and TAC's Geometric Design Guide for Canadian Roads.

While protected bike facilities are recommended as part of the short-term quick build network, they will also play an important role in the ultimate cycling network. The following outlines the design considerations for protected bike facilities that meet the "ultimate" standard:

- **Width** | the desirable width of a uni-directional facility is 2.5m and 1.8 in constrained situations. The buffer zone is 0.9m (desirable) and 0.6m (constrained). On streets like Esquimalt Road, the provision of a wide protected bike facility would result in the removal of a left-turn lane, median, and/or the movement of curbs.
- **Furnishing Zone** | the furnishing zone, or "boulevard", refers to the area between the sidewalk facility and the curb or pavement edge. The desirable width of the zone is 2.0 metres and 0.25m if constrained. It helps distinguish between the bicycle and pedestrian facilities. It also provides a visual separation, which can reduce encroachment of users, enhance safety and comfort for all users.
- **Type of Separation** | the BC Active Transportation Design Guide recommends a continuous barrier such as a raised barrier on roads with a posted speed limit of 50 km/h or greater. TAC recommends the raised barrier be designed to 150mm in height and at least 0.3 metres in width. A concrete barrier may also be used but is recommended on roads with a higher a posted speed limit and across bridges.

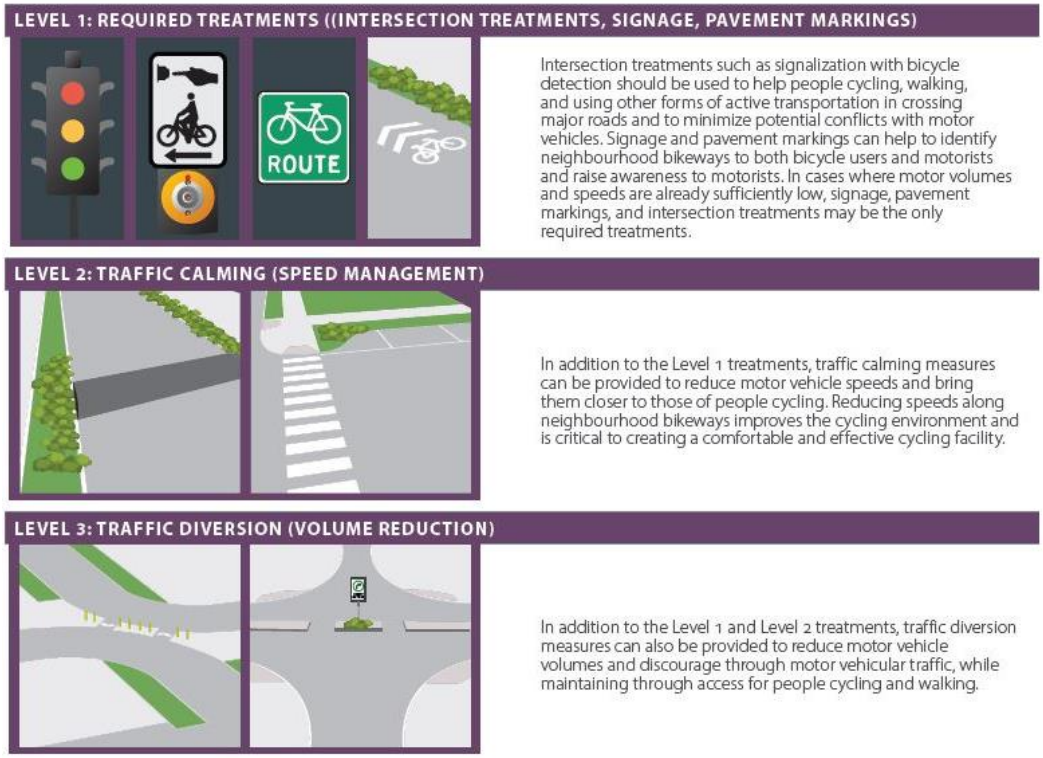
Examples of protected bike facilities in Vancouver that meet the ultimate standard. A sidewalk level protected bike lane (top) shows the bike lane separated from the road by a vertical curb and buffer.

The Township should work with applicants of future development proposals along these corridors to construct cycling facilities to these standards through amenity bonusing and works and services.

A neighbourhood bikeway, also referred to as a bicycle boulevard, is another facility type that may be suitable in Esquimalt's ultimate network. They are defined by TAC as a shared roadway that provides a continuous corridor of suitable operating conditions for cyclists, including limiting exposure to motor vehicle traffic and designing for low motor vehicle speeds.[25] These are acceptable on local streets or streets with very low volumes of vehicle traffic. These facilities include the following levels of treatment:

- **Level 1** treatments include signage and pavement markings. In some contexts and jurisdictions, Level 1 can include intersection treatments such as signalization with bicycle detection to help minimize conflicts.
- **Level 2** treatments such as traffic calming. The desired average daily traffic on an all ages and abilities neighbourhood bikeway is 500 motor vehicles per day or less and the maximum average daily traffic is 1,000 vehicles.
- **Level 3** treatments include traffic diversions, which refer to devices that restrict motor vehicle movements at intersection while allowing unrestricted movements for people walking and cycling. They reduce motor vehicle volumes on bike boulevards.

[25] Transportation Association of Canada. (2017). Geometric Design Guide for Canadian Roads: Chapter 5 – Bicycle Integrated Design.
[26] BC Active Transportation Design Guide, Chapter D2 – Neighbourhood Bikeways. Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_d_rfs.pdf



Neighbourhood bikeway levels of treatment. Source: BC Active Transportation Design Guide

A neighbourhood bikeway would only be suitable on some roads in Esquimalt including Local streets and some Residential Collectors, but only if traffic volumes are substantially reduced with level 3 traffic diversion.

6.3 Quick-Build Network Design Considerations

6.3.1 Barrier Types

Quick-build networks can comprise of many different treatments that identify the intended changes to the transportation network. There are various barrier types that can be used to separate vehicle traffic with people cycling. There are several types of barrier types including delineators, concrete planters, rubber curbs, armadillos, precast curbs, and concrete jersey barriers. The selection of the barrier type will depend ultimately on available space in the streetscape, costs, and maintenance durability, among other factors. Flexible delineators, which are recommended as the main barrier type for Esquimalt's quick-build network, are often a low-cost option that yields positive results from users in terms of actual and perceived safety.

Example of a protected bike facility in Kelowna, BC with quick-build materials including flexible delineator posts and a rubber curb.

More examples of quick-build cycling facilities with a concrete jersey barrier in Vancouver (top) and flexible delineator posts in Calgary (bottom).

6.3.2 Signage & Pavement Markings

Intersections and crossing points are the highest perceived and actual barriers for people using active transportation modes. Most of incidents and fatalities occur at intersections and as such, the active transportation design must ensure that intersections and conflict points are safe, comfortable, and convenient for everyone. More specific design consideration around signage and pavement markings is available on page 57 of Chapter G (Intersections + Crossings) in the BC Active Transportation Design Guide.[27]

There are different design treatments in the BC Active Transportation Design Guide that protect cyclists on intersection approaches including specific measures that reduce conflict between users such as conflict markings, turn movement restrictions, and signal phase separation.

Protected bike lane adjacent combined right through turn lane. Source: BC Active Transportation Design Guide.

One of the recommended treatments in the BC Active Transportation Design Guide that is applicable to the Esquimalt context is a protected bike lane adjacent to combined right through turn lane as shown in the image above. The protected bicycle lane should remain to the right of the dedicated right turn lane. Bicycle-friendly signal phasing may be used to mitigate conflicts between through moving bicycle users and right turning motor vehicles.[28] This treatment could be implemented at the intersections of Esquimalt Road and Head Street, Esquimalt Road and Admirals Road, and Esquimalt Road and Lampson Street, for example. This

[27] Government of BC. (2019). Active Transportation Design Guide. Chapter G (Intersections + Crossings). Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_g_rfs.pdf
[28] Ibid.

treatment would require lane reconfiguration and signal changes, which have been included in the cost estimates in **Section 8.2**.

Cross-ride markings (or elephant's feet) is another recommended pavement marking to indicate that people riding their bicycle have the right-of-way over turning motor vehicles. A 'Turning Vehicles Yield to Bicycles Sign' is also required. Cross-ride markings are best used in environments where sightlines for both cyclists and motorists are appropriate and motor vehicles are expected to yield to oncoming cycling traffic.

Example of a cross-ride and conflict zone marking. Image credit: NACTO

Examples are stop or signal controlled crossings, driveways, lanes, and other crossings whereby motor vehicle traffic is legally required to stop before turning or entering the road. Yield lines can also be used for driveways and laneways to indicate the edge of the bicycle facility. Cross-rides and crosswalks should be separated, but if that is not possible, signage indicating that faster active transportation modes must yield right-of-way to pedestrians should be included.

Conflict zone markings can be used to both raise awareness of people cycling, but also make cycling movements more predictable. Green coloured pavement is typically used to indicate conflict zones. The application of green pavement markings should be reserved for specific areas where a conflict may occur or where the design guides people cycling through intersections or complex cycling facilities (e.g., connecting two bicycle facilities, two-stage turn box).

Green pavement marking treatments are not recommended for:

- Bicycle lanes where motor vehicles are expected to merge approaching the intersection, in order to turn right.
- At combined cross-rides and crosswalks, as green should be reserved for bicycle-only applications.
- Bicycle crossings with no conflicts, due to signal phasing and high compliance by motor vehicles.

Example of bike lane on Admirals Road ending before the intersection, which provides the person cycling with no protection from the vehicle. According to the BC Active Transportation Design Guide, a green conflict zone marking should be provided for the bicycle lane up to the intersection.

6.4 Policies & Programs

There are several policies, regulatory amendments, and programs that can be adopted by the Township to make cycling a more attractive mode of transportation and more popular for people getting exercise.

6.4.1 Bicycle Parking in New Developments

Existing bicycle parking in the Township is difficult to find and of poor quality. The Township's current Parking Bylaw (2011) does not contain any requirements for bicycle parking in new developments. This has and continues to result in little bicycle parking in new builds. Further, the Parking Bylaw does not provide any design requirements for bicycle parking either, which means developers can provide lower quality and less secure bicycle parking to reduce costs.

Despite the lack of regulatory requirements around bicycle parking, the Township's OCP contains various policy direction on this topic, as follows:

- Section 6.1 (General):
    - To encourage the use of bicycles, provision should be made in all commercial/commercial mixed-use developments for bicycle parking for employees and visitors.
- Section 7.2 (Esquimalt Business Park):
    - Encourage the use of bicycles in new industrial and business developments with the provision of secure bicycle parking and shower facilities for employees and visitors.
- Section 13.3.4 (Low Carbon Transportation)
    - Where feasible, increase the amount and diversity of infrastructure available to cyclists, such as public bike racks and public bike repair stations.
    - Invest in public bike parking in public parks and facilities, such as parks and beach access points, to encourage cycling.

- Increase the minimum requirements, and set design guidelines, for bicycle parking facilities in all new developments for residents, workers, and visitors.

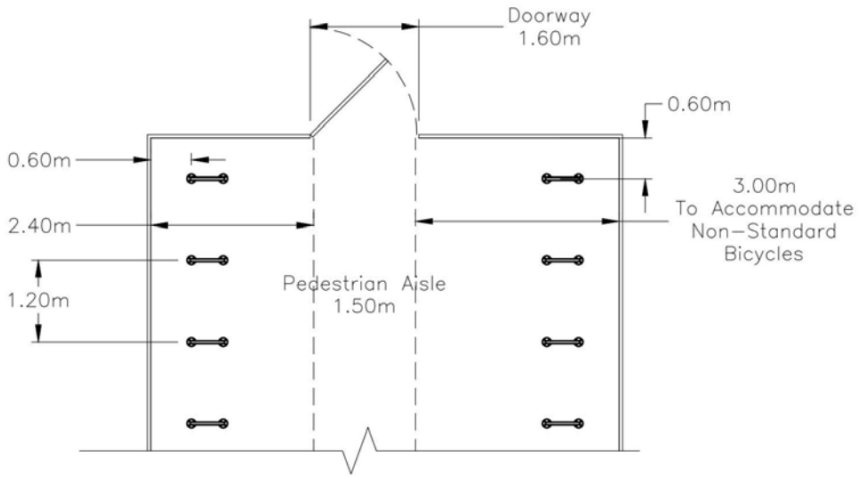
Given that the Township has already established the importance of bicycle parking for overall transportation, there are opportunities to boost the supply of both long-term and short-term bicycle parking available throughout the community.

Bicycle Parking in New Developments

New developments in Esquimalt are not required to provide any bicycle parking. The specific off-street supply rates for bicycle parking should be determined through a comprehensive review of the Township's Parking Bylaw. The following design parameters should be considered as part of the Township's Parking Bylaw update, which will be undertaken in 2022.

- **Long-term & Short-term Bicycle Parking**: both types of bicycle parking must be defined and included in the Parking Bylaw. The following definitions could be adopted:
  - Long-term Bicycle Parking | also referred to as "Class A" or "Class I" bicycle parking, this refers to a secure weather protected bicycle parking facility used to accommodate long-term parking, such as for residents or employees, usually within a room or covered, fenced area.
  - Short-term Bicycle Parking | also referred to as "Class B" or "Class II" bicycle parking, this refers to a short-term visitor bicycle parking facility, which may offer some security and be partially protected from the weather.
- **Location & Access**: Class I (i.e., long-term parking) and Class II (i.e., short-term parking) are distinct and therefore have different parking requirements around location and access. For example, short-term bicycle parking spaces should be as close as possible (15m or less) from the primary entrance of a building so it is accessible to visitors / customers. It should also be located at the surface level and physically separated from vehicle parking facilities. Long-term bicycle parking is intended to offer increased security, weather protection, and higher bicycle parking capacity. As such, it should be in a secure and weather protected facility.

- **Dimensions & Layout**: The BC Active Transportation Design Guide provides detailed design guidance for both long-term and short-term bicycle parking. The dimensions and layout for short-term bicycle parking typically including the rack type, material, dimensions, and placement. For example, most short-term bicycle racks are constructed of carbon steel or stainless steel. The racks should be spaced out 1.8m and 0.9m from the curb. For long-term bicycle parking, consideration needs to be given to ground anchored versus vertical racks and the overall design of the bicycle parking room.



The recommended design from the BC Active Transportation Design Guide for a bicycle parking room intended for long-term bike parking.

Oversized Bicycle Parking Spaces: The Capital Region Local Government Electric Vehicle + Electric Bike Infrastructure Planning Guide[29] contains e-bike parking design guidelines. The guide indicates that a greater proportion of e-bikes are larger bicycles capable of carrying cargo and/or multiple passengers. In addition, there are other non-standard bikes such as bicycles with trailers and recumbent bikes that often do not have adequate parking that can accommodate them. Based on the guide, and the BC Active Transportation Design Guide, the following should be considered:

- Oversized (or non-standard) bike parking spaces should have a minimum distance of 3.0m in length and 0.9m in width.
- At least 10% of the required long-term and short-term bicycle parking spaces should be designed as oversized spaces.
- All oversized bike parking spaces should be provided as ground anchored racks. Oversized bicycles, especially electric cargo bikes, are heavy, long, and challenging to park in a vertical bike rack.
- At least 50% of the required long-term oversized bike parking spaces should have access to a 110V wall receptable for charging.

ELECTRIC BICYCLES 101

Electric bicycles (e-bikes) are bicycles with an electric motor of 500 watts or less, and functioning pedals. The e-bike will assist a rider pedalling up to a top speed of 32 km/h at which point the electric motor will no longer assist the rider. In other words, it is possible to achieve speeds greater than 32 km/h on an e-bike—such as when going downhill, similar to what is possible on a conventional bicycle—but the electric mechanism will no longer assist the rider above 32 km/h and at that point the rider can still pedal but without benefit of the electric motor.

[29] Watt Consulting Group. (2018). Capital Region Electric Vehicle + Electric Bike Infrastructure Planning Guide. Available online at: https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/infrastructure-planning-guide_capital-region-ev-ebike-infrastructure-project-nov-2018.pdf?sfvrsn=d767c5ca_2

Cycling End-of Trip Facilities: Cycling end-of-trip facilities typically contain change rooms and showers, bicycle repair tools, personal lockers, water closets, bike wash areas, and a sink / wash basin. Some communities like Kelowna have specific requirements for commercial and institutional uses to include cycling end-of-trip facilities in new developments.

Example of a bicycle parking room at the University of Victoria. Image credit: The Times Colonist

6.4.2 Public Bicycle Parking

High quality, convenient, and secure bicycle parking is integral to enable people in using cycling as their mode of transportation. Research has shown that lack of bicycle parking is one of the key deterrents in using cycling as a mode of transportation. The BC Active Transportation Design Guide highlights the key guiding principles to select the appropriate type and location of bicycle parking:

- **Convenience:** Provision of bicycle parking in convenient and intuitive locations, adjacent to key destinations. Weather protection should be provided when possible to encourage all-weather cycling.
- **Safety and Secure:** Bicycle parking should be securely installed to the pavement and be located in well-lit and highly-visible locations.
- **Functional:** Bicycle parking should consider different bicycle types, including cargo bicycles, bicycles with trailers, etc. Clearance from buildings, street furniture, vegetation, and other bicycle racks should be considered so that the design is intuitive and functional. Bicycle racks should be oriented so that bicycles are positioned parallel to the curb.
- **Accessible:** Bicycle parking should not become an obstacle to other users, including pedestrians and motor vehicles. Bicycle racks must be placed on the furnishing zone allowing for a wide pedestrian through zone so that they do not become a barrier to people using mobility aids, and must be easily detectable by visually impaired people. Bicycle parking spaces should be located close or within fire zones, loading zones, bus zones, passenger loading zones, accessible on-street parking spaces, or any other area where pedestrian will require frequent access.
- **Aesthetics:** Bicycle parking can match the design of the surrounding streetscape, however design functionality must be prioritized over aesthetic appeal.

Bicycle parking situated in the public right-of-way will primarily intend to capture people cycling and stopping for short-term activities (2-4 hours, usually to run errands, shop, have a meal, or partake in any other short-term activity). Short-term bicycle parking has different configurations but is most commonly provided as bicycle racks. The type of bicycle racks that are recommended in the BC Active Transportation Design Guide are the inverted U and the post / ring racks. Esquimalt already has a number of these bicycle racks in place that are compliant with the above guiding principles.

Bicycle racks should be properly installed to avoid theft. The installation method depends on the surface material, with concrete being the most preferred materials as the bicycle racks can be secured using concrete spikes or wedge anchors. Bicycle rack materials are also important in minimizing theft; typically they are constructed using carbon or stainless steel. According to the BC Active Transportation Design Guide, square tubing provides better security over round tubing, as it can be more easily be cut with a hand-held pipe cutter.

TABLE H-39 // BICYCLE RACK PLACEMENT DIMENSIONS

CLEAR SPACE REQUIRED BETWEEN:	DESIRABLE WIDTH (M)	CONSTRAINED LIMIT WIDTH (M)
Bicycle racks in series (parallel to curb)	1.8	1.8
Bicycle racks in series (perpendicular to curb)	1.2	0.9
Bicycle racks in series (angled)	0.7	0.7
Bicycle rack and face of curb	0.9	0.6
Bicycle rack and street furniture and utilities*	1.2	0.9
Bicycle rack and multi-modal conflicts (curb ramps, driveways, crosswalks, loading zone, bus stops)*	1.2	1.2

*1.5 metres required from fire hydrants and bus stops. 1.5 metres recommended for crosswalks.

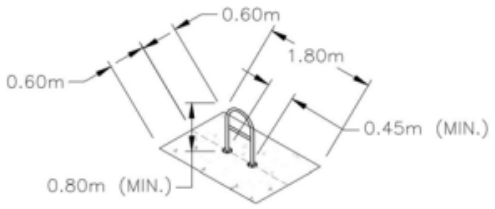
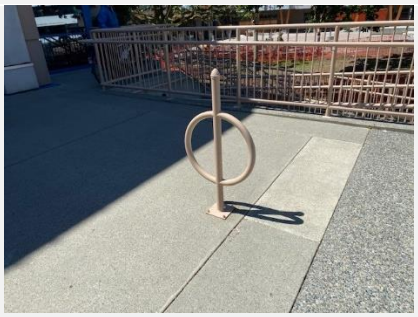


FIGURE H-143 // BICYCLE RACK DIMENSIONS

Source: BC Active Transportation Design Guide.

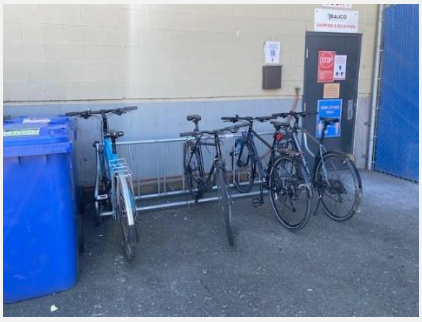
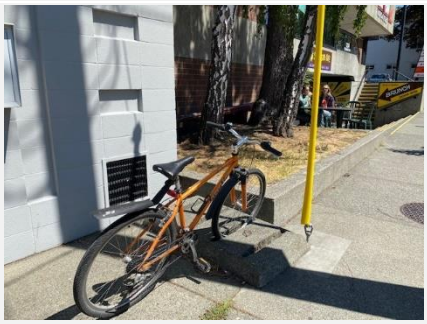
Table 9. Summary of Recommended Short-term Bicycle Racks Suitable in Esquimalt

Rack Type	Benefits
Inverted U 	✓ Can support two bicycles per rack. ✓ Can be installed alone or in a series on rails. ✓ Can accommodate oversized bikes. ✓ Many variations are available. ✓ Can be efficiently located within the Furnishing Zone of a public right-of-way
Post and Ring  	✓ Can support two bicycles per rack. ✓ Can accommodate oversized bikes. ✓ Products exist to retrofit certain parking metres to create custom post and ring racks. ✓ Can be efficiently located within the Furnishing Zone of a public right-of-way

As shown in **Table 10** below, there are several short-term racks in Esquimalt that do not meet best practices. The Township should work with businesses to retrofit all the bike racks that are not recommended in the BC Active Transportation Design Guide and ultimately establish design requirements for short-term bicycle parking. Similarly, the Township should also retrofit its own bicycle racks at municipal-owned facilities such as parks, recreational centres, municipal hall etc.

Table 10. Short-term Bicycle Racks in Township Requiring Retrofit

Rack Type		Concerns
Coat Hanger		× Top bar limits the height of bicycles that can be accommodated. × Thin 'coat hanger' loops are less durable than the thicker posts on other rack types.
Wave		× Only supports frame at one location and can require lifting wheel to park bicycle. × Often fails to provide advertised capacity

Rack Type		Concerns
Schoolyard		× Only supports frame at one location and can lead to wheel damage. × Does not allow locking of frame to bicycle rack.
Wheelwell		× Presents a tripping hazard when not in use. × Only supports frame at one location and can lead to wheel damage. × Does not allow locking of frame to bicycle rack.

6.4.3 Bicycle Skills Training

Building a network of all ages and abilities cycling facilities will be critical for enhancing overall bike safety. However, there still may be residents who would like to cycle but lack the confidence and skills needed to make a trip. Having access to bicycle skills training can increase confidence among those who are interested but concerned in cycling. The Township could partner with or provide funding support to local cycling advocacy organizations or non-profits to offer bicycle skills training courses throughout the year in different locations in Esquimalt. Depending on resource availability, the Township could also provide funding for incentives to encourage people to take the training (e.g., u-locks or helmets).

6.4.4 Dedicated Active Transportation Coordinator Position

Successful and timely implementation of this plan's recommended improvements will require considerable work. Therefore, to ensure the plan is successful, a dedicated active transportation coordinator (1.0 FTE) is recommended within the Engineering Department. This staff member's responsibilities could include planning, engagement, and coordination of active transportation improvements. The full time Active Transportation Coordinator position is envisioned to do the following:

- Serve as the public face to AT efforts
- Coordinate ATNP improvements
- Review designs to improve AT accommodation
- Oversee bike parking improvements and code updates
- Oversee education and encouragement efforts
- Oversee monitoring and deliver progress updates to Council
- Coordinate Active Transportation planning and improvements with regional partners
- Project manage active transportation improvements
- Oversee bike sharing and micromobility efforts

6.4.5 Updated Salting, Sanding & Snow Clearing Policy

The Township has an existing Council Policy on Salting / Sanding / Snow Clearing. As discussed in Section 6.2.2, an important part of the overall quick-build cycling network is its year round maintenance, particularly in the winter season. This existing Council Policy does not reflect or prioritize the needs of people walking and cycling. As such, it is recommended that the policy be updated to include the following:

1. The policy should include the removal of debris (e.g., leaves), which can present a barrier to people cycling and result in safety risks if the user has to merge into a vehicle travel lane to avoid debris in the cycling facility.

2. Section 5 includes the order in which roads are salted, sanded, or cleared of snow. The roads are inconsistent with the Township's existing street classification. The following order is recommended:
    a. Major Roads
    b. Residential Collectors
    c. Local streets near schools or along roads with cycling facilities
    d. Local streets that are hilly
    e. Balance of Local streets
3. In addition, Section 5 should also include the salting, sanding, or snow clearing of intersections along Major Roads, Collectors, near schools, and connections to the E&N Rail Trail. This may require smaller machinery in order to clear ramps and channelized rights turn islands.
4. Section 6 of the policy is focused on accommodating private vehicle travel. The following language is recommended: "the purpose of salting/sanding/snow clearing policy shall be to maintain safe conditions for people walking, biking, driving or rolling on Township streets regardless of age or ability. The responsibility of this policy is a function of the Public Works Department except where noted."
5. It is recommended that Section 7 be updated to indicate that the Township is responsible for clearing sidewalks in front of municipal properties and at intersections of ice and snow to make it safer for people walking, cycling, and rolling, except where the property owner is responsible.

6.4.6 Lighting

Lighting is a critical component of cycling infrastructure. Lighting can enhance the aesthetics of the built environment, increase comfort and safety, and assist with wayfinding. The most important areas for lighting are intersections, which need to be illuminated to allow a person cycling enough time to see the intersection and take appropriate action in advance of the crossing. Intersection lighting enables cyclists to be seen, and to see others, while crossing the intersection. Bridges, under and over passes, crossings, tunnels, and viaducts are other examples of candidate locations for lighting in the transportation network.

Broadly speaking, the objectives of lighting are to:

- Enhance both real and perceived comfort and safety
- Complement and enhance the design of cycling facilities
- Help improve and complement wayfinding, navigation and observation
- Improve the character and attractiveness of the public realm that surrounds bicycle facilities

The Township is currently updating the lighting standards in its Subdivision and Development Control Bylaw. Further, the Township has an annual program where it replaces its high-pressure sodium (HPS) lights with LED lights to bring the lighting levels up to RP-8 standard or better. These improvements are anticipated to improve the overall experience for people walking, cycling, and rolling.

The BC Active Transportation Design Guide contains a chapter on lighting.[30] The guide indicates that cycling facilities intended to be all ages and abilities and/or intended to be used for transportation purposes should have illumination along the entire route regardless of facility type. Cycling facilities that are intended primarily for recreational use during daylight hours may not require full illumination along the extents of the entire route; however, lighting is required at any intersection, junctions, or if the facility is used after dark and in winter months. The guide contains specific design guidance for off-street facilities, which the Township should consider if implementing these facilities in the future as part of the ultimate network.

[30] Government of BC. (2019). Active Transportation Design Guide. Chapter H (Amenities + Integration). Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_h_rfs.pdf

6.4.7 Municipal E-bike Incentive Program

Electric bikes are an emerging mobility mode and could be a viable option for residents in Esquimalt. Based on the CRD 2017 CRD Household Travel Survey, the average trip cycling distance for all trips recorded in the survey was 3 kilometres. Overall, the average PM peak period trip length was 5.7 kilometres and varied depending on trip purpose (3.3 km for dining / restaurant compared to 6.7 km for work, for example). Numerous studies have indicated that e-bikes allow users to travel longer distances compared to a regular bike. A 2020 study found that people who purchased an e-bike increased their bicycle use from 2.1 to 9.2 km per day on average.[31] Based on trip distances and lengths in the CRD, e-bikes could be a viable option for Esquimalt residents.

Beyond trip distances, e-bikes could play an important—and complementary—role to the Township's development of its cycling network. With supportive cycling infrastructure in place, e-bikes have the potential to substitute for, or significantly reduce almost all trips taken by a gasoline powered car, which could lower GHG emissions, reduce congestion challenges, and increase physical activity.

Despite the benefits, one of the main barriers to e-bike ownership is cost. The CRD conducted a region wide survey in 2018 to understand the barriers to EVs and e-bikes. It found that the top barrier to e-bikes was cost and fear of bike theft.[32] In light of this research, some municipalities are starting to establish rebates for e-bike purchases. In October 2021, the District of Saanich launched its "Community E-bike Incentive Pilot Program", which offers an incentive on the purchase of

[31] Fyhri, A & H.B. Sundfor. (2020). Do people who buy e-bikes cycle more? Transportation Research Part D, 86, 1-7.
[32] Watt Consulting Group. (2018). Capital Region Electric Vehicle + Electric Bike Infrastructure Backgrounder Available online at: https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/electric-vehicle-and-e-bike-infrastructure-backgrounder-sept-2018.pdf?sfvrsn=a067c5ca_2

new e-bikes by Saanich residents for personal transportation. The pilot program offers incentives to 300 participants, with 120 incentives initially reserved for income qualified applicants.[33] The incentive amounts range including a basic incentive of $350 available to all and an $800 and $1,600 incentive that are based on income. At the time of writing this plan, the District has allocated $200,000 for e-bike incentives as part of the pilot program.

It is recommended that the Township explore and implement a similar pilot program to help increase cycling mode share in the community.

6.4.8 Bike Sharing

Bike share, or bike sharing, has been on the forefront of active transportation initiatives in many cities around the world. Bike share refers to a system in which a user has temporary access to a bicycle in locations distributed across a specified geographic area. More specifically, it allows users to make short trips at low cost by picking up a bicycle at one location and dropping it off at another. Payment can be electronic and be through membership or single use. The user accesses the bicycle through a payment system, which unlocks the bicycle directly in a dockless system or at a designated location in a station-based (docked) bike share system.

Broadly speaking, the objectives of bike share systems are to:

- Improve transportation choice and lowers the cost of transportation
- Support multi-modal transportation by providing an important connection option for the first and last kilometre of trips
- Provide cycling opportunities to those who do not feel comfortable bringing their bicycle into an urban area due to fear of bicycle theft
- Reduce GHG emissions and traffic congestion

[33] More information about Saanich's E-bike Incentive Pilot Program is available online at: https://www.saanich.ca/EN/main/community/sustainable-saanich/climate-change/programs-rebates/e-bike-incentives.html

- Improve people's physical health by being more physically active
- Support local tourism
- Increase demand for more dedicated cycling infrastructure and improve cycling culture

Even though there are no existing bike share systems in the Capital Region, the Township should continue to monitor whether any of its neighbouring municipalities establish such a system (either a public or privately led program). There would be an opportunity for the Township to join other municipal bike share systems as a partner to help increase cycling within, to, and from Esquimalt.

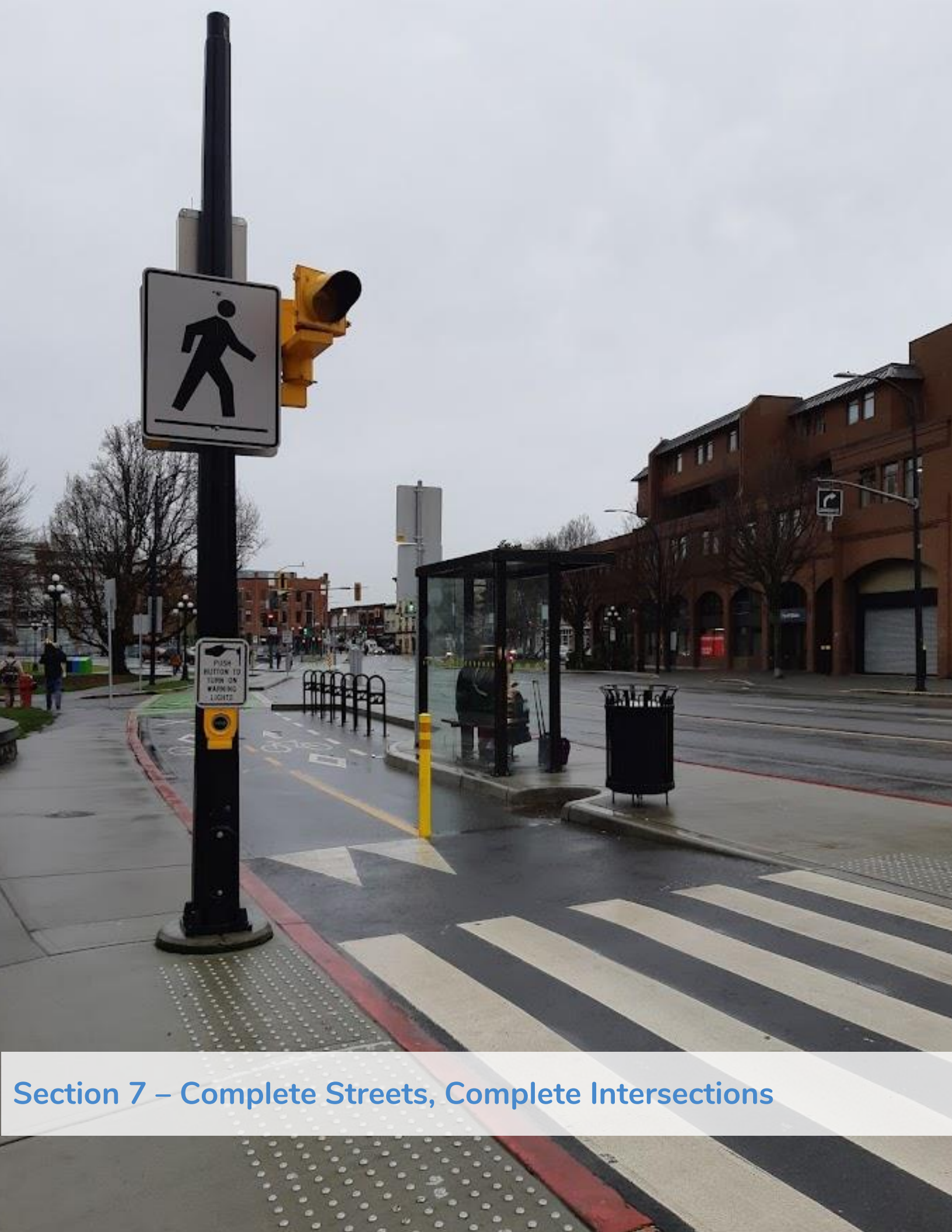
Example of a docked (station based) bike share system in Montreal, Quebec. Users can access a bicycle at a physical docking station by unlocking the bike using a membership card, cell phone, credit card or other payment methods. Docking stations are distributed through a network within a designated service area. A bicycle trip both starts and ends at a docking station.

6.5 Action Items

The following table summarizes the recommended actions for the cycling network. The costing for the cycling related actions are found in **Section 8.2**.

Action		Description
2A-2F	Implement the quick-build pilot network at the same time.	If implementation of the short-term (quick-build) network cannot be done simultaneously, then facilities should be constructed in the following order of priority: • Tillicum Road cycling facilities (Craigflower Rd to Gorge Bridge) & Lampson Street cycling facilities (Craigflower Rd to Esquimalt Rd) • Esquimalt Road cycling facilities (Canteen Rd to Dominion Rd) • Head Street cycling facilities (Esquimalt Rd to Old Esquimalt Rd)
2G	Maintain the quick-build cycling network.	The quick-build network will require regular maintenance to ensure they provide safe cycling conditions. Leaves, snow, and ice can be hazardous to people on two wheels. The purchase of small equipment may be necessary to accomplish this.
2H	Monitor, evaluate and adjust quick-build pilot network	The key to a successful pilot is to listen and respond to issues. The Township will need to keep a close eye on how the network is doing and communicate periodically with stakeholders.
2I	Undertake further review of the ultimate network.	All of the recommended cycling facilities in the ultimate network will require further review and engagement before implementation.
2J	Update Parking Bylaw to include bicycle parking requirements.	The recommended amendments include requirements for short-term and long-term bicycle parking, e-bike parking design standards, and bicycle end-of-trip facilities.
2K	Retrofit existing short-term public bike parking.	Short-term public bike parking should be retrofitted to align with best practices.
2L	Support bicycle skills training.	The Township could partner with or provide funding support to local cycling advocacy organizations to offer bicycle skills

Action		Description
		training courses throughout the year in different locations in Esquimalt.
2M	Hire a dedicated active transportation coordinator.	One full-time (1.0 FTE) staff member dedicated to ATNP oversight including communications, programs, annual work plans, bike parking, monitoring, and coordinating with external stakeholders.
2N	Update Salting, Sanding & Snow Clearing Policy.	The policy should be updated to include language that is more inclusive of people walking, cycling, and rolling.
2O	Develop a municipal e-bike incentive program.	Undertake a pilot program similar to the District of Saanich's as a strategy to increase e-bike adoption.
2P	Review BC Active Transportation Design Guide for off-street lighting standards.	Any future off-street cycling or pedestrian facilities that are constructed as part of the ultimate network should follow the guidelines in the BC Active Transportation Design Guide.
2Q	Participate in a future municipal bike share program.	The Township should continue to monitor (and potentially partner) with neighbouring municipalities who establish a bike share system (either a public or privately led program) as an overall strategy to help increase cycling within, to, and from Esquimalt.



Section 7 – Complete Streets, Complete Intersections

7.0 COMPLETE STREETS, COMPLETE INTERSECTIONS

7.1 Existing Network

Esquimalt's overall road network reflects the municipality's compact geography. The Township operates and maintains 51 kilometres of roads comprising three distinct road classifications (see **Figure 12**), as follows:

- Major Roads
- Residential Collectors
- Local Roads

WHAT DOES THE OCP SAY ABOUT ROADS?

The OCP's policy direction on roadway upgrades is to "maintain road infrastructure to an acceptable level of service". Specific policies include (1) encouraging multi-modal street design and accessibility for pedestrians, cyclists, transit users, goods and services providers, and motorists where supported by research based analysis (2) recognize roads as a community resource benefiting all users, (3) pedestrians' and cyclists' needs and neighbourhood amenities will be taken into consideration in designing road improvements and road safety, and (4) when rebuilding or improving roads, consideration will be given to accommodating pedestrians, cyclists, and motorists in the interest of road safety and community needs.

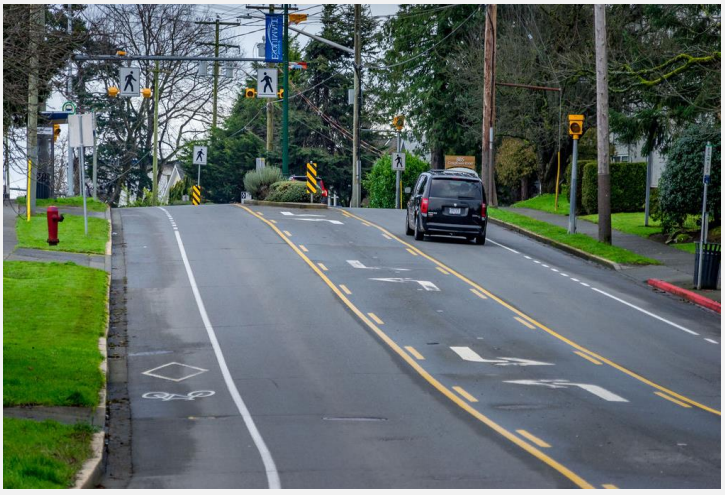


Figure 12. Existing Road Network

7.1.1 Traffic Volumes

The Township collects data on traffic volumes on a bi-annual basis. The data are expressed as the average daily two-way traffic volumes for a weekday period. **Figure 13** presents a summary of the 2018 traffic volumes. The Township also collected traffic volumes data in 2020 but due to the COVID-19 pandemic, the data were deemed to be less representative compared to 2018 conditions. The 2020 count locations were, on average, 20% lower than the 2018 count locations.

7.1.2 Vehicle Speeds

In addition to vehicle volumes, the Township also collects data on vehicle speeds. These data provide information about vehicle speeds and the level of compliance with the posted speed limits. Vehicle speeds provide valuable context for active transportation planning. Speeds are a major factor in creating a pedestrian and bike friendly environment. Even though vehicle speed does not always cause crashes, it usually determines the severity of a crash. A small difference in speed can mean the difference between life and death, especially for pedestrians, motorcyclists, and cyclists.[34]

[34] City of Edmonton. (No date). Speed Limit Reduction. Available online at: https://www.edmonton.ca/transportation/traffic_safety/residential-speed-limits

The Township collected vehicle speed data in 2020 as part of its traffic count program. Data were collected at 33 locations in the municipality. The recorded speed for most of the locations was observed to follow the posted speed limit.

Table 11 presents a summary of the locations where the 85th percentile speed was greater than the posted speed limit. As the data show, vehicles are travelling only slightly higher than the posted speed limit on some Major Roads; however, the exception is Craigflower Road where the 85th percentile speed is 51-55 km/h, well above the 40 km/h posted speed limit. Further, some of the Residential Collectors including Colville Road also see vehicles not complying with the posted speed limit.

Table 11. Summary of Vehicle Speeding in the Township[35]

Road Segment	Posted Speed Limit	Average Daily Traffic	Recorded Speed	
			Average	85th Percentile
Major Roads				
Craigflower Road *(West of Tillicum Rd)*	40 km/h	15,531	46-50 km/h	51-55 km/h
Esquimalt Road *(East of Macauley St)*	50 km/h	13,212	36-40 km/h	46-50 km/h
Lampson Street *(South of Devonshire Rd)*	50 km/h	12,604	36-40 km/h	46-50km/h
Tillicum Road *(South of Gorge Rd)*	50 km/h	18,092	46-50 km/h	56-60 km/h
Residential Collectors				
Colville Road *(East of Naden St)*	40 km/h	3,927	46-50 km/h	51-55 km/h
Lyall Street *(West of Swinford St)*	30 km/h	3,272	31-35 km/h	36-40 km/h
Local Roads				
Viewfield Road *(West of Old Esquimalt Rd)*	50 km/h	3.947	36-40 km/h	46-50 km/h

[35] This includes 2018 and 2020 data.

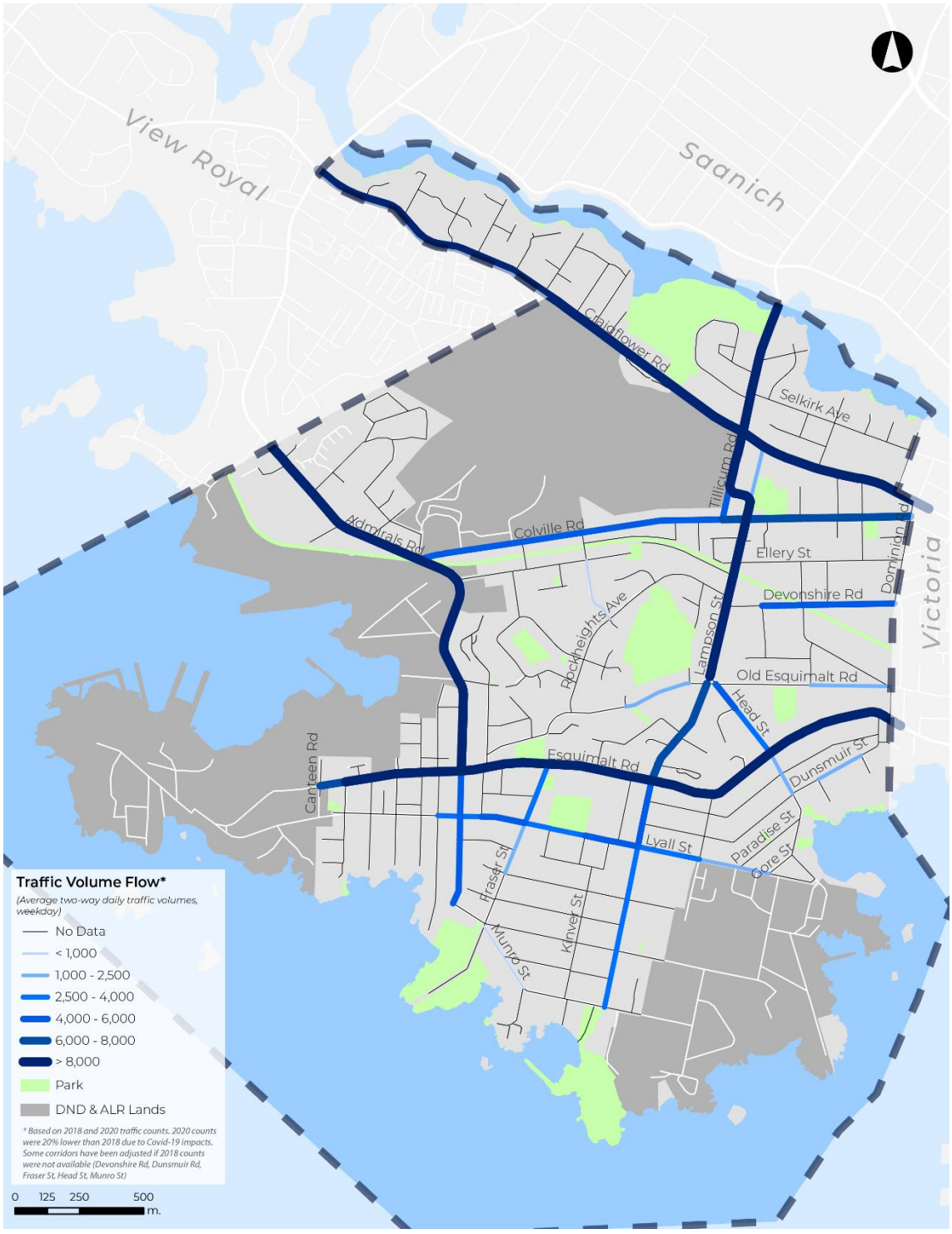


Figure 13. Traffic Volumes (2018 average two-way daily volumes, weekday)

7.2 Streets & Intersections of Tomorrow

Even though the OCP recognizes that roads should be designed to reflect the needs of all users, the overarching direction is to "maintain road infrastructure to an acceptable level of service". This policy direction largely prioritizes vehicles over all other modes of transportation and requires a refresh. One way to refresh and refine the Township's approach to its streets and intersections is through a 'complete streets' lens.

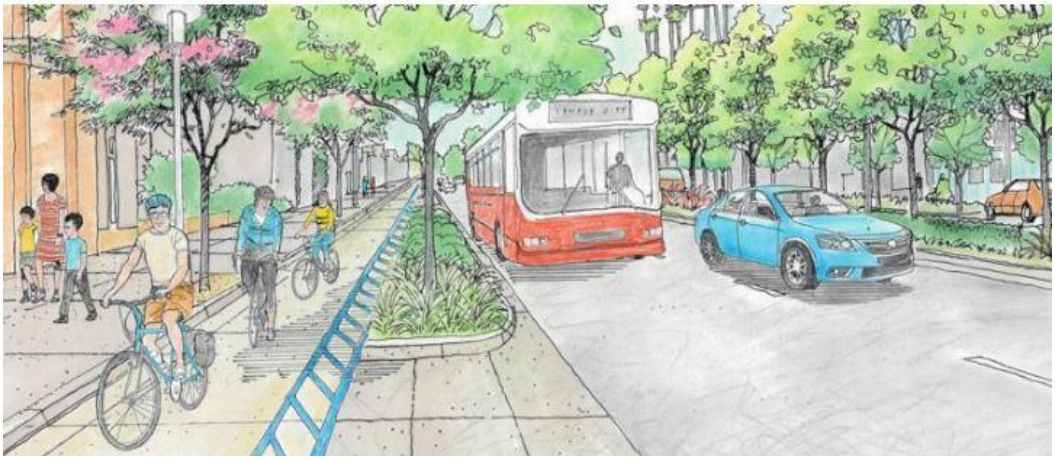
WHAT ARE COMPLETE STREETS?

"A Complete Street is designed for all ages, abilities and modes of travel, where safe and comfortable access for pedestrians, cyclists, transit users and people with disabilities is integrated into transportation planning."
-Complete Streets of Canada

Complete streets refer to streets that are designed and operated to enable safe and comfortable use for all users irrespective of age or ability. The City of Nanaimo's Complete Streets Engineering Standards & Guidelines[36] provides a useful summary of what a complete street could achieve:

- Increases safety
- Promotes a more active lifestyle
- Decreases carbon dioxide emissions
- Encourages a sense of community
- Supports local businesses

[36] City of Nanaimo. (No date). Complete Streets: Updated Engineering Standards & Guidelines. Available online at: https://www.nanaimo.ca/your-government/projects/projects-detail/complete-streets-guidelines



Conceptual illustration of a complete street. Source: City of Durango

By applying a complete streets lens, the Township could prioritize several infrastructure improvements to make its streets and intersections safer more people walking and cycling.

7.2.1 Crossing Improvements

One of the policies in the OCP states that "when rebuilding or improving roads, consideration will be given to accommodating pedestrians, cyclists, and motorists in the interest of road safety and community needs." Further, in line with the complete streets principles, major roads must have frequent and safe crossing opportunities to make it easier for people walking, rolling, and cycling around their community.

Both the technical analysis and engagement process determined several locations in the community that either lack a safe crossing or warrant an improved crossing facility. However, the specific crossing improvement at these locations should be determined by

a **minor intersection review**. A minor intersection review refers to locations where a local road meets and crosses a major road. These locations should be reviewed to ensure that people walking and cycling have been accommodated safely and comfortably. Many of these locations have been identified to help people cross the road to access a transit stop, a pedestrian facility or future cycling facility, as envisioned in the quick-build cycling network. Reviews could result in changes related to signage, pavement markings, intersection geometry, vehicle speeds, or an RRFB. The context of each location and possible solutions will vary, however a general list of possible considerations for each review can include:

- Review collision history
- Consider geometric changes to slow turning vehicles and shorten pedestrian crossings
- Consider reducing the width of travel lanes
- Ensure that curb ramps are improved (double preferred with zero lip)
- Consider use of high visibility crosswalk pavement markings
- Install sidewalk on all approaches to guide people to the crossing
- Consider adding pedestrian crossing on each leg of the intersection
- Consider leading pedestrian intervals/count down timers
- Consider installing pedestrian detection devices that can detect a pedestrian and determine if the phase should be extended or canceled
- Consider vertical traffic calming features such as pedestrian refuges or protected bike lanes on the major corridor
- Consider closing driveways too close to the intersection
- Adjust the location of transit stops or on-street parking
- Review site lines and street lighting

Table 12 and Figure 14 below includes the list of locations that warrant further review. These locations have been selected based on feedback in the public engagement process.

Table 12. Short-term Minor Intersection Improvement Considerations

Location	Considerations
1. Tillicum Road Gorge Bridge to Craigflower Road	Consider a new traffic signal along Tillicum Road to allow people walking and cycling to make a safe crossing.
2. Esquimalt Road / Dunsmuir Road	Consider a crossing at this location. This is to help people cycling transition from the cycling facility on Esquimalt Road to Dunsmuir Street. Traffic volumes exceed 8,000 vehicles per day at this location.
3. Craigflower Road Admirals Road to Tillicum Road	Existing traffic volumes and speeds along Craigflower Road result in a less comfortable crossing experience for some pedestrians. Rectangular rapid flashing beacons (RRFBs) could be considered to upgrade the existing zebra crossings along the corridor.
4. Fairview Road / Devonshire Road	Improvements to E&N Rail Trail crossings (such as this one) was identified as a priority in the second online survey. The intersection is currently a two-way stop, which creates confusion for vehicles and for people cycling / walking on the E&N Rail Trail who are trying to cross. Consider making the intersection a four-way stop.
5. Esquimalt Road / Fernhill Road	Even though this location was not identified or ranked in the online survey, it is a location that requires further technical review. There have been conflicts with people cycling who are travelling east along Esquimalt Road and vehicles turning left into the Esquimalt Plaza. Coloured conflict markings (e.g., green paint) at the driveway will increase visibility of people cycling and help reduce conflicts.

Other intersections that should be reviewed in the medium to long-term are listed as follows:

- Craigflower Rd / Phoenix St
- Craigflower Rd / Dominion Rd
- Esquimalt Rd / MacAulay St
- Esquimalt Rd / Esquimalt Plaza
- Lyall St / Heald Ave & Lyall St / Nelson St

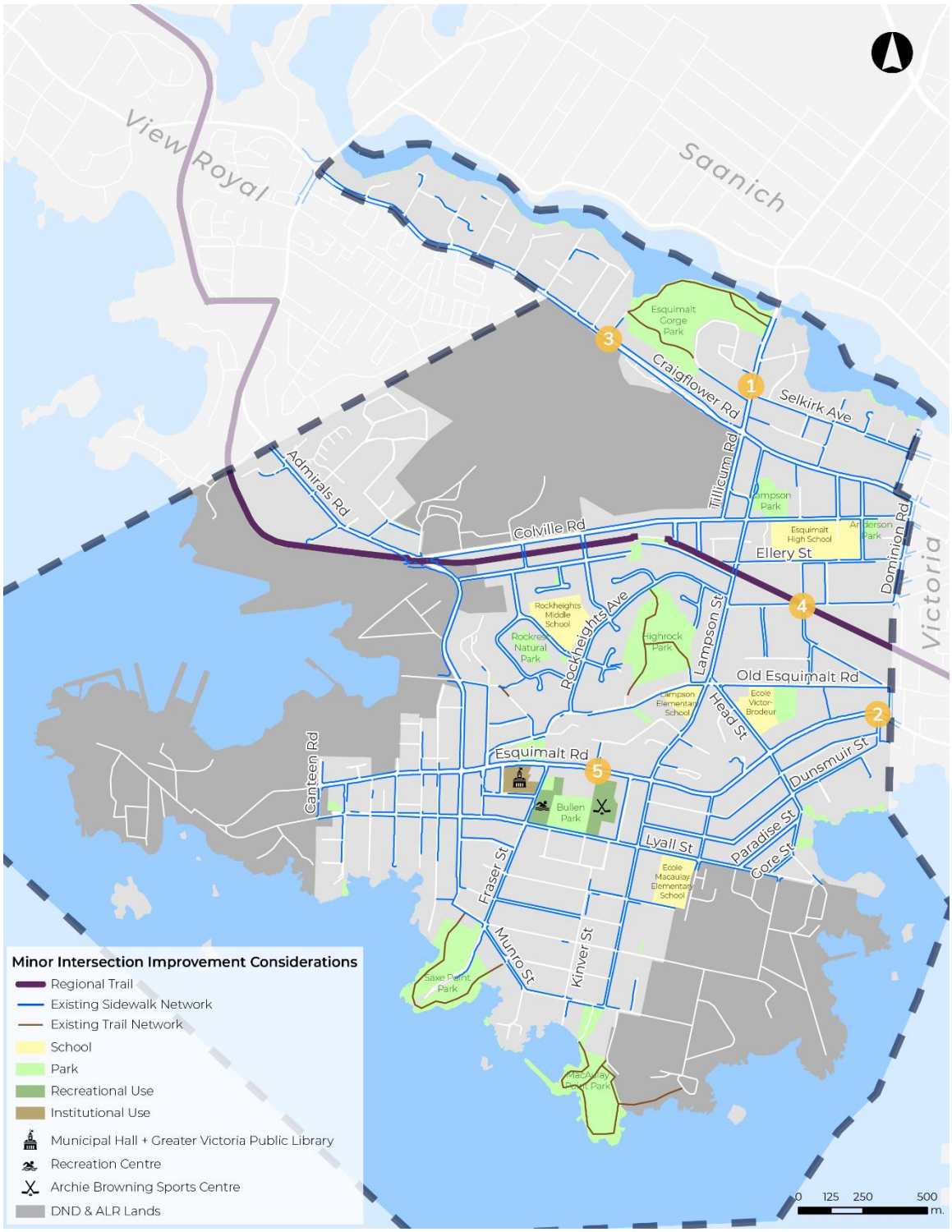


Figure 14. Locations for Minor Intersection Improvement Considerations

7.2.2 Major Intersection Improvements

According to ICBC[37], almost four out of five (78%) pedestrian accidents take place at intersections. The same is true for people cycling who are also at higher risk of a collision at intersections. **Figure 9** illustrates several intersections in Esquimalt that unsafe for both people walking and cycling.

Both the technical analysis and engagement process determined several problematic intersections in the community that do not safely accommodate people walking and cycling. A **major intersection review** is warranted for these locations to determine the specific improvements. A major intersection review refers to locations where two major roadways meet. Many of these locations have been identified to make it safer for people walking and cycling along major roads in Esquimalt. The context of each location and possible solutions will vary, however a general list of possible considerations for each review can include:

- Reviewing collision history
- Consider geometric changes to slow turning vehicles and shorten pedestrian crossings
- Consider reducing the width of travel lanes
- Ensure that curb ramps are improved (double preferred with zero lip)
- Review site lines and street lighting
- Consider use of high visibility crosswalk pavement markings
- Consider conversion of all-way stop control to traffic circle with all-way yield control
- Consider leading pedestrian intervals/count down timers
- Consider installing pedestrian detection devices that can detect a pedestrian and determine if the phase should be extended or canceled
- Consider automatic pedestrian walk phase near major destinations or where demand is high

[37] ICBC (2020). *Facts behind pedestrian crashes infographic*. Available online at: https://www.icbc.com/road-safety/sharing/pedestrian-safety/Pages/pedestrian-infographic.aspx

- Provide protected cycling infrastructure up to the edge of the intersection
- Consider if cyclists need unique signal phasing
- Consider if motorists need unique signal phasing
- Consider closing driveways too close to the intersection
- Adjusting the location of transit stops or on-street parking
- Consider right turn on red prohibition (NTOR)

There are different design treatments in the BC Active Transportation Design Guide that are recommended for intersections to improve the safety for people walking and cycling. Section 6.3 identified several design considerations for the quick-build network, but there are other solutions that could be considered for the ultimate network as the Township improves its cycling facilities over time. Further, there are also pedestrian improvements that could be considered.

Protected Intersections

The ultimate cycling network envision in Section 6.2.3 will take several years to implement. As the Township gradually transitions from its quick-build network to a more permanent network, further improvements to intersections will be required to provide increased protection for people walking and cycling. According to the BC Active Transportation Design Guide, protected intersections can be applied on any road where enhanced comfort for people of all ages and abilities is desirable. Further, they are used predominantly where protected bicycle lanes reach an intersection.[38]

The image below from the BC Active Transportation Design Guide shows the desired treatments for a protected intersection with uni-directional protected bike facilities. Some of the key design elements of these intersections is described as follows:

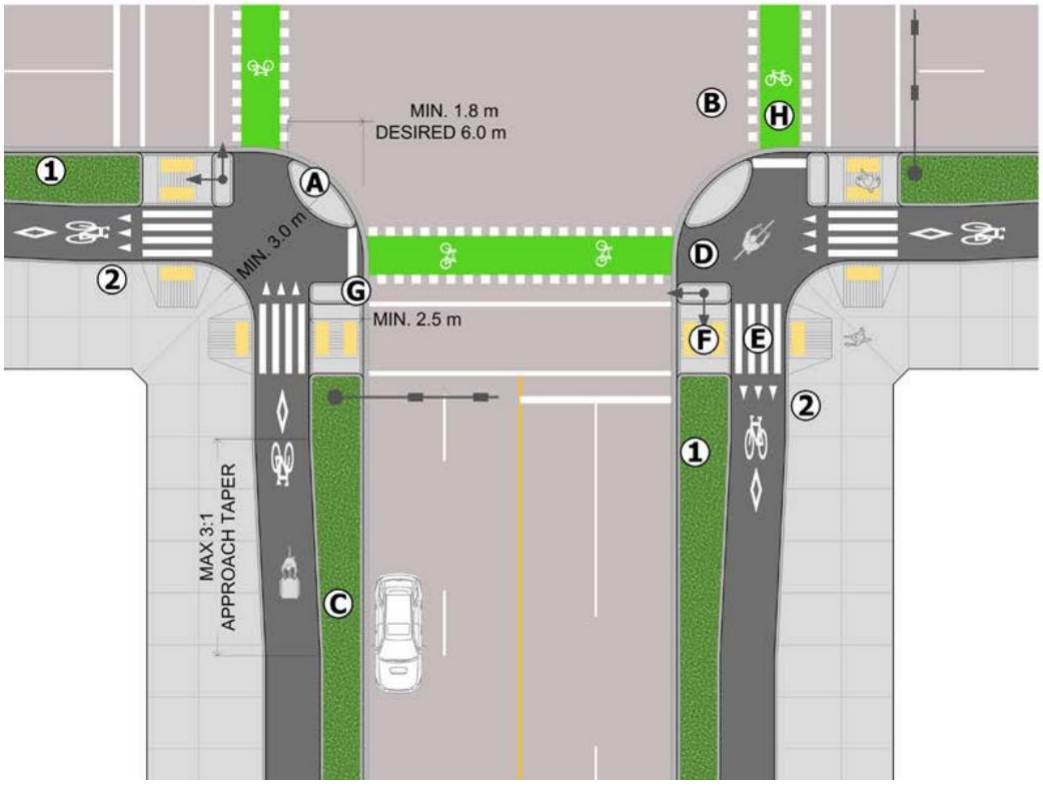
- **Corner Refuge Island (A)** | The corner refuge island is a physical element that defines the protected queuing space for bicycle users waiting to proceed

[38] Government of BC. (2019). Active Transportation Design Guide. Chapter G (Intersections + Crossings). Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_g_rfs.pdf

through the intersection. can be used to create a smaller corner radius, helping to slow the speed of turning motor vehicles.

- **Setback Bicycle and Pedestrian Crossings (B)** | these crossings create queuing space for right turning motor vehicles, which significantly improves motorist sightlines
- **Tapered Approach to Intersection (C**) | The protected bicycle facility may be required to move away from the motor vehicle travel lane when approaching the intersection in order to align cyclists with the setback crossing and provide larger queuing areas for bicycles and motor vehicles
- **Forward Bicycle Queuing Area (D)** | the area where people cycling wait before proceeding through the intersection. The forward bicycle queuing area shortens the crossing distance and enables people cycling to enter the intersection before motor vehicles, making them more visible to motorists
- **Pedestrian Crosswalk over Bicycle Facility (E)** | people cycling must yield to pedestrians who are crossing the bicycle facility to wait in the pedestrian refuge area. This crosswalk must be marked and a Bicycle Yield To Pedestrian sign (MUTCDC RB-39) may also need to be provided.
- **Pedestrian Refuge Island (F)** | provides a protected waiting area for pedestrians and shortens the crossing distance
- **Signal Operation (G)** | Protected bicycle signal phases may be used to further reduce conflicts between people walking, cycling, and driving
- **Cross-Ride Markings (H)** | Cross-rides should be painted across the intersection to guide bicycle users and raise awareness of people cycling

More detailed guidance on protected intersections can be found on page 64 of Chapter G (Intersections + Crossings) in the BC Active Transportation Design Guide.



Protected Intersection with Uni-directional Protected Bike Facilities. Source: Chapter G of the BC Active Transportation Design Guide.

Signal Phasing Schemes for Reducing Conflicts

In addition to improved design at the intersection, signal phasing is also an important element of intersection design to mitigate conflicts between users through separation in time. Chapter G of the BC Active Transportation Design Guide provides detailed direction on signal phasing schemes for reducing conflicts. It advises that when considering signal operations, various factors and trade-offs need to be explored including how best to manage turn conflicts, reviewing existing risks and issues at the intersection, and an understanding of how people using the street will respond to the signal phasing.

A summary of the different signal phasing schemes from the Design Guide are included below, all of which will require further exploration for the ultimate cycling network. More

information about each signal phasing scheme is available starting on page 30 of Chapter G (Intersections + Crossings).[39]

Exclusive Bicycle Phase

This phasing scheme represents a time-separated bicycle movement. All vehicle movements, including conflicting vehicle turns across the bicycle facility, are restricted during an exclusive bicycle phase. As shown in the image below, exclusive turn lanes for the conflicting motor vehicle turns are not required since all motor vehicle movements are stopped. A 'No Turn on Red' (NTOR) sign is recommended and the Design Guide notes that this phasing scheme is more likely to have an impact on motor vehicle operations.

Concurrent Protected Bicycle Phase

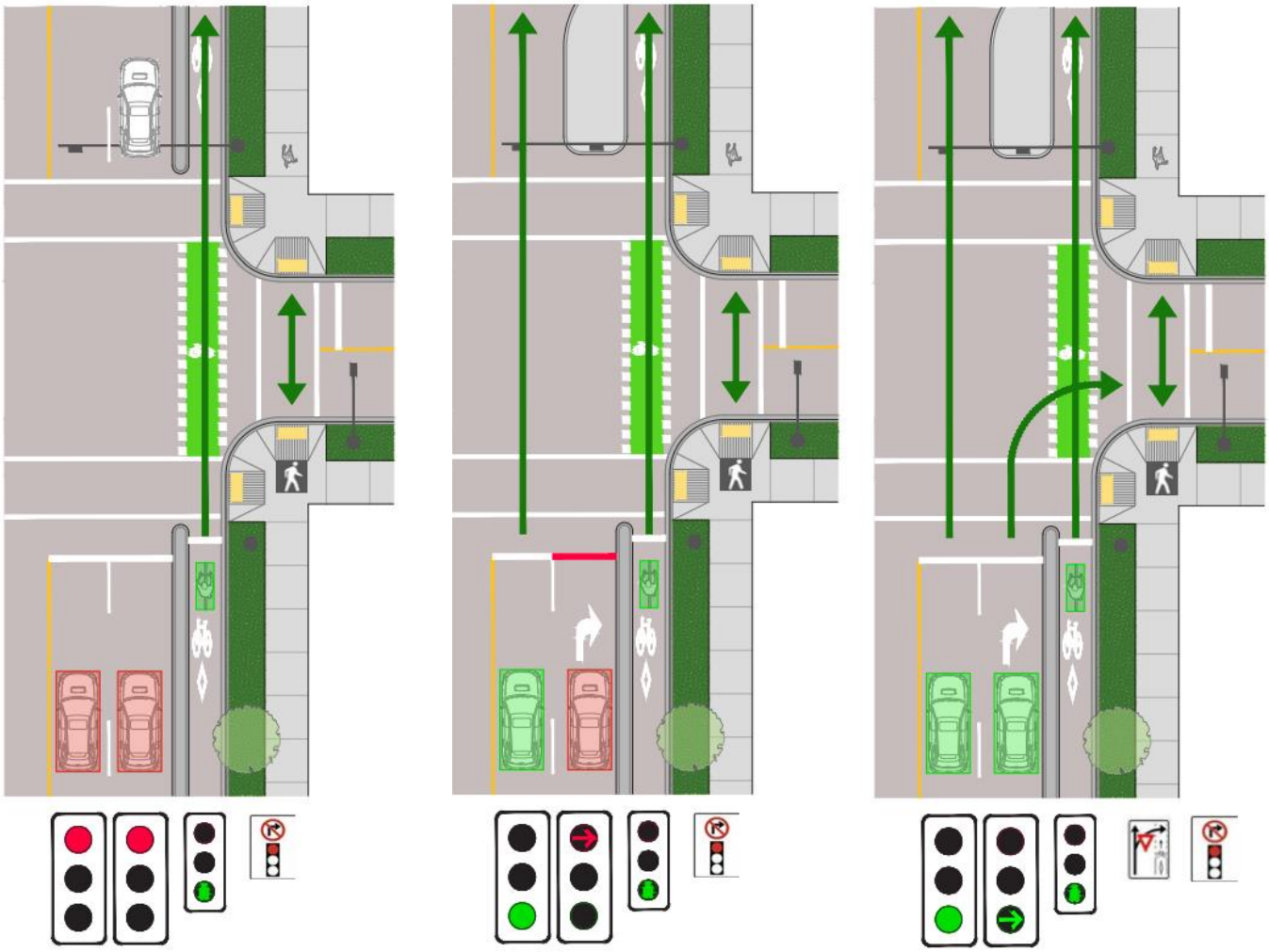
In this phasing scheme, the bicycle phase runs concurrently with parallel through vehicle phases, but conflicting vehicle turns across the bicycle facility are restricted. Turn movements across the bicycle facility operate under a protected only phase. This phasing scheme includes a dedicated right turn lane, which is desirable for the adjacent through movement while the turning movements are held. The Design Guide indicates that this phasing scheme can be effective for bicycle facilities along roadways with high through movement volumes and low turning volumes. The Design Guide also recommends a No Turn on Red (NTOR) sign.

Leading Bicycle Interval

The other phasing scheme outlined in the Design Guide is the 'Leading Bicycle Interval', which is only recommended at locations where bicycle volumes and/or motorist turning volumes are lower than the threshold to provide a protected phase, or at locations where provision of a protected phase is not feasible. Leading intervals are typically between 3 and 8 seconds long and occur in advance of the green indication for

[39] Government of BC. (2019). Active Transportation Design Guide. Chapter G (Intersections + Crossings). Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_g_rfs.pdf

turning motor vehicles. A leading bicycle interval allows a bicycle user to enter the conflict area prior to a turning motorist, improving motorist visibility of the bicycle user.



Signal phasing schemes recommended in the BC Active Transportation Design Guide including 'exclusive bicycle phase' (left), 'concurrent protected bicycle phase' (middle), and 'leading bicycle interval' (right).

Table 13 and **Figure 15** below includes the list of locations that warrant further review. These locations have been selected based on feedback in the public engagement process.

Table 13. Short-term Major Intersection Improvement Considerations

Location	Considerations
1. Admirals Road / Colville Road	Improvements to E&N Rail Trail crossings / intersections (such as this one) was identified as a priority in the second online survey. Consider cross-ride markings and improved signage to make it easier for people cycling and walking to locate the E&N Rail Trail in the short term.
2. Esquimalt Road / Head Street	Consider cross-ride markings, conflict zone markings, signage (e.g., Turning Vehicles Yield to Bicycles), and changes to the signal phasing.
3. Fraser Street / Munro Street / Bewdley Avenue	Consider stop controls for all roads and cross-ride marking.
4. Esquimalt Road / Admirals Road	Consider cross-ride markings, conflict zone markings, signage (e.g., Turning Vehicles Yield to Bicycles), and changes to the signal phasing.
5. Craigflower Road / Tillicum Road	Consider cross-ride markings, conflict zone markings, signage (e.g., Turning Vehicles Yield to Bicycles), and changes to the signal phasing.

Other major intersections that should be reviewed in the medium to long-term are listed as follows:

- Esquimalt Rd & Lampson St
- Old Esquimalt Rd & Lampson St Esquimalt Rd / MacAulay St
- Lampson St & Ellery St

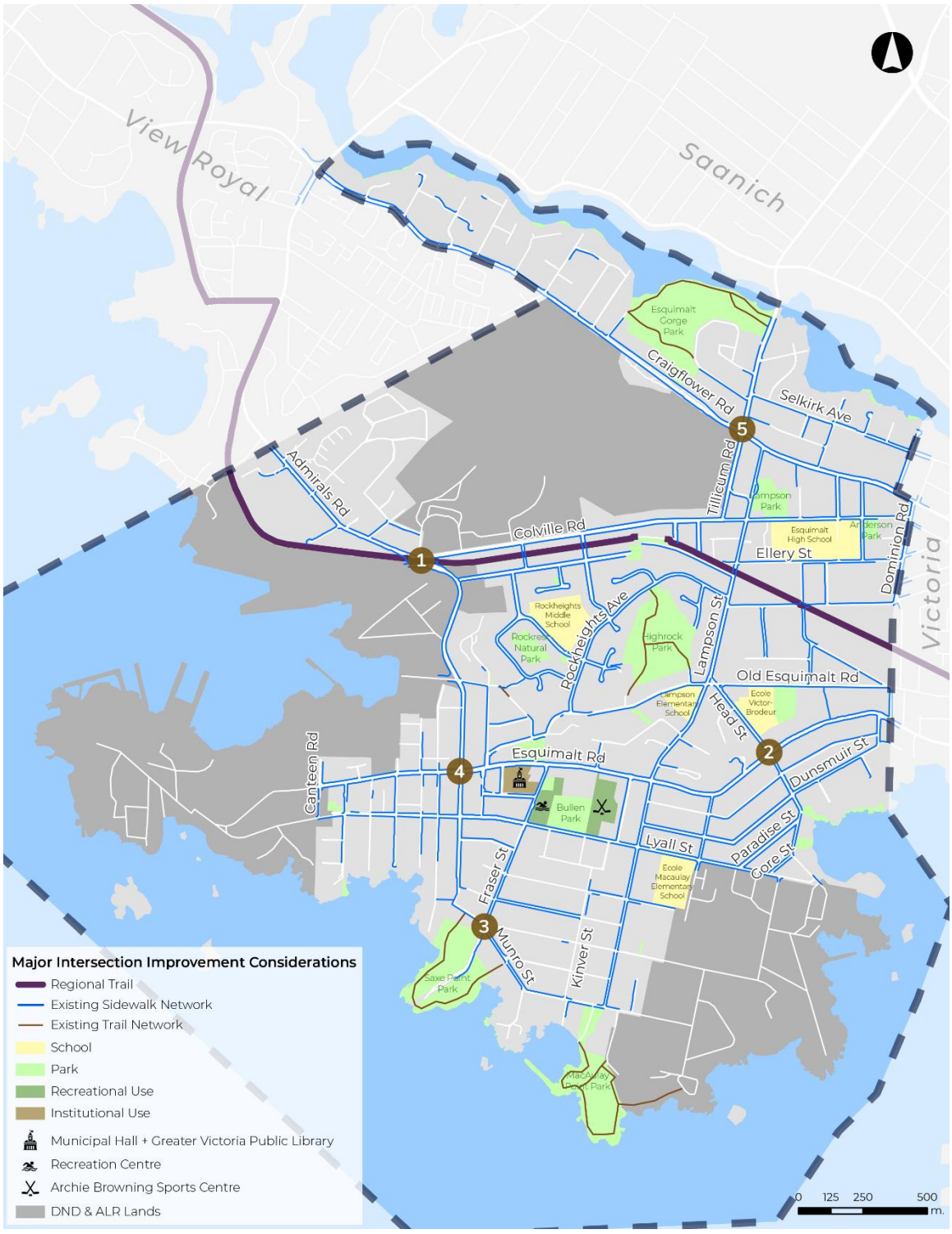
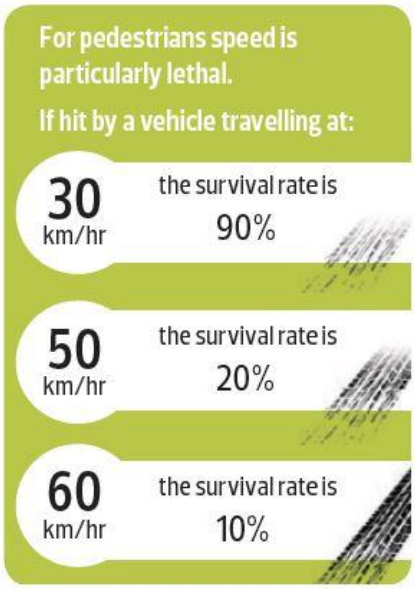


Figure 15. Locations for Major Intersection Improvement Considerations

7.3 Policies & Programs

7.3.1 Update Street & Traffic Regulation Bylaw

The Township's Street & Traffic Regulation Bylaw (2898) includes regulatory direction on several topics including speed limits. Vehicle speeds provide valuable context for active transportation planning. Speeds are a major factor in creating a pedestrian and bike friendly environment. Even though vehicle speed does not always cause crashes, it usually determines the severity of a crash. A small difference in speed can mean the difference between life and death, especially for pedestrians, motorcyclists, and cyclists. Further, results from the first online survey completed as part of the ATNP showed that the speed of motor vehicle traffic is among the top barriers for both people walking and cycling in Esquimalt's active transportation network.



Source: City of Edmonton

Several jurisdictions across Canada are considering lowering their posted speed limits as part of their 'Vision Zero' initiatives and active transportation planning. Locally, the District of Saanich is leading a regional initiative with several other Capital Region municipalities (including the Township) that would set the default speed limit to 30 km/h on streets without a continuous yellow centreline. Reducing default speed limits can lower vehicle operating speeds, improve road safety, and improve neighbourhood livability.

To address vehicle speeds in the Township, amendments should be made to the Street & Traffic Regulation Bylaw to lower the posted speed limits, specifically:

- All Residential Collectors and Local Roads should be posted at 30 km/hr.
- All Major Roads should be posted at 40 km/hr.

Achieving the recommended bylaw amendments and speed reductions will require an additional study to resolve any logistical challenges. The Township should first develop a speed reduction implementation strategy that identifies changes to the signage, potential regulatory barriers in the Motor Vehicle Act that may result in challenges to amend the posted speed limits, changes to the Street & Traffic Regulation Bylaw, and what the overall costs would be to implement the changes.

7.3.2 Update Subdivision and Development Control Bylaw

Schedule C of the Township's Subdivision and Development Control Bylaw (Design and Construction Specifications – Roadways) outlines the standards for street configurations. The bylaw provides very little regulatory direction on active transportation. There are three specific amendments that are recommended to the bylaw to better reflect the standards of the recommended action transportation facilities in this plan and to align with complete streets more broadly.

Cycling Facility Standards

The current bylaw does not provide any direction on cycling facilities. The bylaw should include cycling standards and cross-sections that reflect the Township's expectations for the ultimate cycling network discussed in **Section 6.2.3**. This will make it clearer to developers what the standards are for the ultimate cycling network and allow the Township to start building its ultimate network through the development process.

In particular, the design standards for an ultimate protected cycling facility should align with Chapter D of the BC Active Transportation Design Guide. This could include:

- **Desired Width** | 2.5m (uni-direction) to accommodate passing and side-by-side travel or 4.0m (bi-directional).
- **Constrained Limit Width** | 1.8m for uni-directional and 3.0m for bi-direction; anything narrower than this width does not allow people to pass each other in the bike lane.
- **Signage** | The Reserved Bicycle Lane sign (MUTCDC RB-90, RB 91) should be installed and the Reserved Bicycle Lane Ends sign (MUTCDC RB-92) should be

installed at the end of the reserved lane denoting the end of the protected bicycle lane.

- **Pavement Markings** | the bicycle symbol and Reserved Use diamond symbol should be used. The Bicycle symbol should point in the direction of travel with the diamond below it and should be placed at each approach to all crossings.

Sidewalks

The bylaw provides details about the requirements for sidewalks but does not indicate the overall intent of the sidewalk. Further, the sidewalk widths shown in the Supplementary Standard Detail Drawings for most of the road classifications do not meet the recommended widths in the BC AT Design Guide. It is recommended that the bylaw be updated to include the following:

1. Sidewalk facility types (e.g., separated vs non-separated) should be defined in the bylaw in accordance with the recommended language in **Section 5.3.2.**
2. The sidewalk widths in the bylaw should be amended to reflect the pedestrian facility design guidelines outlined in **Section 5.3.2**.

Table 14 below included the recommended pedestrian facility widths for each OCP land use designation that should also be included in the Subdivision and Development Control Bylaw.

Table 14. Recommended Pedestrian Facility Widths[40]

OCP Land Use Designations *(Proposed)*	Road Type	Separation	Desirable (m)	Constrained (m)
Low– Medium Density Residential	Local	Non-Separated or Separated	1.8	1.8
High Density Residential	Local	Non-Separated or Separated	2.1	1.8
	Major Road / Collector	Separated	2.4	1.8
Business	Any	Separated	2.1	1.8
Neighbourhood Commercial Mixed-Use	Any	Separated	2.4-3.0	1.8
Commercial/Commercial Mixed-Use	Any	Separated	2.4-3.0	1.8

Furnishing Zone

Section 2.0 of the bylaw indicates that all roads are required to have "shoulder boulevards". However, it does not provide a definition for a shoulder boulevard. It is recommended that the bylaw be updated to include the term "furnishing zone", which is a more all-encompassing term that reflects current design and best practices. Section C.3 of the BC Active Transportation Design Guide provides detailed design guidance on this topic. The desirable width of a furnishing zone is 2.0m; however, some parts of the Township including streets with more commercial activity could consider an "enhanced" furnishing zone, which has a desirable width of 3.0 – 5.0m.

[40] Table adapted from Table C-5 in Chapter C of the BC Active Transportation Design Guide. Available online at: https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide-low-res/2019-06-14_bcatdg_section_c_rfs.pdf

7.4 Action Items

The recommended actions for complete streets and complete intersections are below.

Action		Description
3A-3E	Conduct one short-term minor intersection review per year.	The following locations will require further technical review to determine the specific crossing improvement: • Tillicum Road (Gorge Bridge to Craigflower Rd) • Esquimalt Road / Dunsmuir Road • Craigflower Road (Admirals Rd to Tillicum Rd) • Fairview Road / Devonshire Road • Esquimalt Road / Fernhill Road
3F	Conduct minor intersection reviews in the medium and long-term.	There are several other locations that have been identified that will require further technical review in the medium and long-term to help improve comfort, accessibility, and safety of people walking, cycling, and rolling.
3G-3K	Conduct short-term one major intersection review per year.	The following locations will require an intersection study to determine conceptual options to enhance safety for people walking and cycling: • Admirals Road / Colville Road • Esquimalt Road / Head Street • Fraser Street / Munro Street / Bewdley Avenue • Esquimalt Road / Admirals Road • Craigflower Road / Tillicum Road
3L	Conduct major intersection reviews in the medium and long-term.	There are several other locations that have been identified that will require further technical review in the medium and long-term to help improve comfort, accessibility, and safety of people walking, cycling, and rolling.
3M	Update Street & Traffic Regulation Bylaw to lower speed limits.	The Township should develop a speed reduction implementation strategy to help support the recommended amendments to the Street & Traffic Regulation Bylaw.
3N	Update Subdivision & Development Control Bylaw.	Update bylaw to align cycling and pedestrian facility widths with the BC Active Transportation Design Guide.

Section 8 – Implementation Plan

8.0 IMPLEMENTATION PLAN

8.1 The Big Five Moves

The Active Transportation Network Plan identifies 43 actions to put Esquimalt on course to achieving the vision and goals. All of the actions are critical and should be implemented to increase the share of people walking, rolling, and cycling. However, recognizing resource, financial, and staffing limitations, the following identifies the five big moves that are expected to yield the greatest benefit to Esquimalt's active transportation network.

1. Quick-build Cycling Network *(Actions 2A-2F)*

2. Lower Speeds *(Action 3M)*

3. **Short-term Intersection Reviews and Improvements *(Actions 3A-3E & 3G-K)***

4. **Fill in Sidewalk Gaps *(Actions 1A-1G)***

5. **More Staff *(Action 2M)***

8.2 Capital Costs

Conceptual order of magnitude costing (Class D) was completed for each of the recommended short-term pedestrian and cycling infrastructure projects.[41] The estimates provide an overall indication of the level of investment required from the Township and its funding sources to complete the project. The actual costs for implementation of each project could vary as the project scope gets refined and confirmed through engagement and design. The total level of investment required for the short-term active transportation network is approximately **$7,450,000,** as shown in **Tables 15-16** below.

8.2.1 Pedestrian Facilities

The total level of investment required for the short-term pedestrian network is approximately **$2,350,000**. This includes costing for the seven recommended sidewalk facilities described in Section 5.2.1.

[41] Class D (2021 dollars) cost estimates are based on concept level information using unit rates for linear works and intersection improvements. Cost estimates include 25% engineering and communications as well as 50% contingency. Cost do not include property and other significant impacts. Class D cost estimates should not be used for budgeting purposes.

Table 15. Short-term Pedestrian Facility Cost Estimates

Action ID & Project Description	Class D Cost Estimate (2021 $)
PEDESTRIAN FACILITIES	
Action 1A – New sidewalk on north side of Old Esquimalt Road west of Lampson Street.	$350,000
Action 1B – New sidewalk on west side of Archie Browning Sports Centre parking lot from Lyall Street to north end of Bullen Park.	$200,000
Action 1C – New sidewalk on Munro Street from Fraser Street to Lampson Street.	$250,000
Action 1D – New sidewalk on east side of Kinver Street / Swinford Street from Lyall Street to Munro Street.	$400,000
Action 1E – New sidewalk on Bewdley Avenue from Fraser Street to Macaulay Street.	$650,000
Action 1F – New sidewalk on Wychbury Avenue from Fraser Street to Kinver Street	$300,000
Action 1G – New sidewalk on Wollaston Street from Lampson Street to MacAulay Street	$200,000
Total	**$2,350,000**

8.2.2 Quick-Build Cycling Network

The total level of investment required for the quick-build cycling network is approximately **$5,100,000**. This includes costing for the six recommended cycling facilities described in **Section 6.2.1**.

Table 16. Quick-Build Cycling Network Cost Estimates

Action ID & Project Description	Class D Cost Estimate (2021 $)
Action 2A – Uni-directional protected bike facilities on Tillicum Road from Craigflower Road to Gorge Bridge.	$1,500,000
Action 2B – A uni-directional protected bike facility against west curb on Tillicum Road from Craigflower Road to Colville Road.	$200,000
Action 2C – A uni-directional protected bike facility against east curb on Lampson Street from Craigflower Road to Colville Road.	$200,000
Action 2D – Uni-directional protected bike facilities on Lampson Street from Colville Road to Esquimalt Road.	$1,500,000
Action 2E – Uni-directional protected bike facilities on Head Street from Esquimalt Road to Lampson Street.	$200,000
Action 2F – Uni-directional protected bike facilities on Esquimalt Road from Canteen Road to Dominion Road.	$1,500,000
Total	**$5,100,000**

Notes: design costs have been included for projects 2A-2D. Costing for the Esquimalt Road cycling facilities (Action 2F) does not include removal of left-turn lanes or medians.

8.2.3 Additional Costs for Active Transportation Network

Beyond the infrastructure project identified above, there are additional capital requests that the Township will need to consider as it implements the ATNP (see **Table 17**).

Table 17. Additional Capital Requests

Budget Item	Description / Notes	Cost Estimate (2021 $)
Design, construction, and administration costs for quick-build cycling facilities	Annual cost but will vary depending on the project.	$50,000-$200,000
Public bike rack program (**Action 2K**)	Annual cost to retrofit / install 25 bike racks.	$15,000-$30,000
New equipment for maintenance	The Township does not currently have the equipment needed to adequate maintenance protected bike facilities. New machinery / equipment will be required.	$250,000
Intersection reviews and improvements	Annual cost to review and address the deficiencies at the minor and major intersections identified in the ATNP.	$100,000-$500,000

Table 18 identifies other additional operational requests that the Township will need to consider to support the implementation of the ATNP.

Table 18. Additional Operational Requests

Item	Description / Notes
Hiring a dedicated active transportation coordinator (**Action 2M**)	One full-time staff member dedicated to ATNP oversight including communications, programs, annual work plans, bike parking, monitoring, and coordinating with external stakeholders.
Planning, engagement, education, and monitoring	Annual cost to help implement the various improvements within the ATNP.
Maintenance of active transportation infrastructure	Annual supplemental costs to improve maintenance of existing facilities and to cover new infrastructure including protected bike lanes, Township sidewalks and intersections.

8.3 Action Plan

The action plan summarizes all of the recommended actions summarized above. Each action is guided by the following:

- **Timeframe**: Each recommended action includes a timeframe for implementation: short-term is within one to five years; medium-term is between 5 to 10 years; and long-term refers to 10 years and beyond. Determining the timeframe for each action is partly influenced by how important it is to the community in helping to meet the ATNP goals. The overall prioritization of the actions may shift over time depending on how the community's priorities evolve; however, the recommended timeframe should be used as a guiding framework.
- **Partners**: Even though the Township will be responsible for implementation of most actions, there are other important partners who may need to be involved to help support the action. They have been identified in the table.
- **Implementation Approach**: Identifies how each recommended action will be implemented, which includes [a] a capital project; [b] operations and maintenance budgets; [c] staff; [d] policy / regulation; [e] technical study [f] education / programming / advocacy.

Action		Timeframe	Partners	Implementation Approach
PEDESTRIAN FACILITIES, POLICIES & PROGRAMS				
1A	New sidewalk on North side of Old Esquimalt Road west of Lampson Street	Short-term	N/A	Capital project
1B	New sidewalk on west side of Bullen Park parking lot	Short-term	N/A	Capital project
1C	New sidewalk on Munro Street from Fraser Street to Lampson Street	Short-term	N/A	Capital project
1D	New sidewalk on east side of Kinver Street / Swinford Street from Lyall Street to Munro Street	Short-term	N/A	Capital project
1E	New sidewalk on Bewdley Avenue from Fraser Street to Macaulay Street	Short-term	N/A	Capital project
1F	New sidewalk on Wychbury Avenue from Fraser Street to Kinver Street.	Short-term	N/A	Capital project
1G	New sidewalk on Wollaston Street from Lampson Street to Macaulay Street	Short-term	N/A	Capital project
1H	Undertake improvements to the ultimate pedestrian network.	Long-term	N/A	Capital project
1I	Undertake technical study of a future active transportation bridge	Long-term	District of Saanich	Technical study
1J	Undertake a pedestrian wayfinding strategy	Medium-term	N/A	Technical study
1K	Continue to support the Ready, Step, Roll program	Short-term	Capital Regional District	Education / programming / advocacy

Action		Timeframe	Partners	Implementation Approach
1L	Develop a Township walking map	Medium-term	N/A	Education / programming / advocacy
CYCLING FACILITIES, POLICIES & PROGRAMS				
2A	Implement Tillicum Road protected bike facilities (Craigflower Rd to Gorge Bridge)	Short-term	District of Saanich	Capital project
2B	Implement Tillicum Road protected bike facilities (Craigflower Rd – Colville Rd)	Short-term	N/A	Capital project
2C	Implement Lampson Street protected bike Lanes (Craigflower Rd – Colville Rd)	Short-term	N/A	Capital project
2D	Implement Lampson Street protected bike Lanes (Esquimalt Rd – Craigflower Rd)	Short-term	N/A	Capital project
2E	Implement Head Street protected bike facilities (Esquimalt Rd – Lampson St)	Short-term	N/A	Capital project
2F	Implement Esquimalt Road protected bike facilities (Canteen Rd – Dominion Rd)	Short-term	N/A	Capital project
2G	Maintain the quick-build cycling network.	On-going	N/A	Operations / maintenance
2H	Monitor, evaluate and adjust quick-build pilot network	On-going	N/A	Operations / maintenance
2I	Undertake further review of the ultimate network	Long-term	N/A	Technical study

Action		Timeframe	Partners	Implementation Approach
2J	Update Parking Bylaw to include bicycle parking requirements	Short-term	N/A	Policy / regulatory
2K	Retrofit existing short-term public bike parking	Short-term	Private businesses	Capital project
2L	Support bicycle skills training	Medium-term	Capital Bike	Education / programming / advocacy
2M	Hire a dedicated active transportation coordinator	Short-term	N/A	Staffing
2N	Update Salting, Sanding & Snow Clearing Policy	Short-term	N/A	Policy / regulatory
2O	Develop a municipal e-bike incentive program	Medium-term	N/A	Policy / regulatory
2P	Review BC Active Transportation Design Guide for off-street lighting standards.	Long-term	N/A	Policy / regulatory
2Q	Participate in future regional bike share program.	Short to Medium-term	City of Victoria, District of Saanich	Policy / regulatory
COMPLETE STREETS, COMPLETE INTERSECTIONS, POLICIES & PROGRAMS				
3A	Undertake review of crossing improvements Tillicum Road (Gorge Bridge to Craigflower Rd)	Short-term	N/A	Technical study
3B	Undertake review of crossing improvements at Esquimalt Road / Dunsmuir Road intersection	Short-term	N/A	Technical study
3C	Undertake review of crossing improvements at Craigflower Road corridor (Admirals Rd to Tillicum Rd)	Short-term	N/A	Technical study

Action		Timeframe	Partners	Implementation Approach
3D	Undertake review of crossing improvements at Fairview Road / Devonshire Road intersection	Short-term	N/A	Technical study
3E	Undertake review of crossing improvements at Esquimalt Road / Fernhill Road intersection	Short-term	N/A	Technical study
3F	Conduct minor intersection reviews in the medium and long-term.	Medium / long-term	N/A	Technical study
3G	Undertake an intersection study of Admirals Road / Colville Road	Short-term	Capital Regional District, D&D	Technical study
3H	Undertake an intersection study of Esquimalt Road / Head Street	Short-term	N/A	Technical study
3I	Undertake an intersection study of Fraser Street / Munro Street / Bewdley Avenue	Short-term	N/A	Technical study
3J	Undertake an intersection study of Esquimalt Road / Admirals Road	Short-term	N/A	Technical study
3K	Undertake an intersection study of Craigflower Road / Tillicum Road	Short-term	N/A	Technical study
3L	Conduct major intersection reviews in the medium and long-term.	Medium / long-term	N/A	Technical study
3M	Update Street & Traffic Regulation Bylaw to lower speed limits	Short-term	N/A	Policy / regulatory
3N	Update Subdivision & Development Control Bylaw	Short-term	N/A	Policy / regulatory

8.4 Funding Opportunities

As shown in **Section 8.2**, the projected cost of implementing the short-term infrastructure improvements in Esquimalt's active transportation network is **$7,450,000**. The Township will not, however, be alone in paying for the recommendations. There are several external funding partners including other levels of government and the private development process. The following funding opportunities have been identified.

8.4.1 Township Funding

The Township completes an annual budget process to develop financial plans for that year. It is critical that the Township include the recommended short-term facilities in its financial plan to ensure that the projects are accounted for in the overall capital planning process.

Many of the longer-term cycling facilities identifies in the ultimate network will have a higher price tag. As the Township continues to grow and develop, it will be important to leverage active transportation investments during the planning of new development projects. The Township has the ability, through bylaws and policies, to request financial contributions for active transportation infrastructure including sidewalks and cycling facilities, for example. It can make these requests through amenity bonusing and works and services. For all new development applications along roads where an active transportation facility has been recommended, the Township should refer the developer to the ultimate standard for cycling facilities and request a financial contribution to build part of the facility.

8.4.2 Provincial Programs & Initiatives

B.C. Active Transportation Infrastructure Grant Program

The B.C. Active Transportation Infrastructure Grants Program[42] offers two grant options for Indigenous governments and local governments, including municipalities, regional districts, and Islands Trust. Specifically, the Active Transportation Infrastructure Grant allows eligible governments to apply for a maximum of two grants if they satisfy the following criteria (based on the 2021 intake):

- Previously funded active transportation projects (formerly BikeBC) awarded before 2020/2021 are complete by the time of the application submission
- Project is part of an active transportation network plan or equivalent
- Project can begin construction once provincial funding has been announced
- Projects will be completed by March 2023 (projects under $1 million) or by March 2024 (projects over $1 million)
- Projects are open to the public

The grant program typically requires that projects be "shovel-ready". Based on the criteria above, the Township could apply to the grant program to receive funds to pay for the quick-build cycling network. The Township should aim to design a cycling facility in one year followed by construction of the facility the next year to help maximize grants. The province cost-shares to a maximum of $500,000 per project and the Township would be eligible for 60% of the provincial funding.

ICBC

ICBC provides funding for road improvements including pedestrian and cycling infrastructure to help to reduce crashes, improve safety, and reduce claims costs to ICBC. Funding is available through the following programs:

- ICBC's Road Improvement Program,

[42] Government of BC. (No date). B.C. Active Transportation Infrastructure Grant Program. Available online at: https://www2.gov.bc.ca/gov/content/transportation/funding-engagement-permits/funding-grants/active-transportation-infrastructure-grants

- Speed Watch Program (through the Community Policing Centres)
- Speed and Intersection Safety Program
- Counter Attack Program
- Operation Red Nose Program
- Road Sense Speaker Program for Schools.

8.4.3 Federal Funding

National Active Transportation Fund

The Active Transportation Fund (ATF)[43] is a national, merit-based contribution program intended to support projects that improve active transportation infrastructure across Canada. Announced in March 2021, the Fund will make available $400 million over five years to help build new and expanded networks of pathways, bike lanes, trails and pedestrian bridges, as well as support Active Transportation planning and stakeholder engagement activities.

Contributions are available for capital projects that build new or enhance existing active transportation infrastructure, or which provide ancillary features and facilities that promote active transportation or enhance user safety and security. The maximum program contribution rate from Canada is 60% for municipal projects. This first intake of applications has not been released but is anticipated in 2022.

Green Municipal Funds

The Green Municipal Fund (GMF) is a program administered by the Federation of Canadian Municipalities intended to help Canadian communities expand their sustainability initiatives. Since 2000, the GMF has deployed $900M in financing to 1,250+ sustainability initiatives and a further $1 billion has been committed to the fund through the Federal 2019 budget.

[43] More information about the Active Transportation Fund is available online at: https://www.infrastructure.gc.ca/trans/active-actif-eng.html

The specific GMF initiative that is relevant to Esquimalt is the "Capital Project Transportation Networks Commuting Options", which is a combined loan and grant funding program for capital projects that reduce pollution by improving transportation systems and networks. This program covers a number of topics including bike paths, walking and cycling networks that promote accessibility and safety, and evaluation of active transportation infrastructure, among others.

8.5 Monitoring & Evaluation

The success of the Esquimalt Active Transportation Network Plan will require regular monitoring and evaluation to allow the Township to test how well it is achieving the actions identified in this plan, and, more importantly, how well it is meeting the goals. Further, monitoring of the ATNP will enable the Township, its neighbouring jurisdictions, and funding partnerships to ensure that sufficient funding and staff resources have been allocated to achieve the recommended actions.

Overall, it is recommended that the **Township review the ATNP every 5 years** as a "check-in" to see what has been implemented, and what is outstanding. The Township should also aim to update the ATNP to reset the short-term priorities and consider additions to the plan based on progress within the region. There are several progress indicators and measures that Esquimalt could use to determine how well it is meeting the ATNP goals (see **Table 19**).

Table 19. Measuring the ATNP Goals

ATNP Goal	Measuring the Goal	Indicator	2027 Target	Data Source
More Protection from Motor Vehicles	Total length of protected cycling facilities	Total km	5.3 KM	Township
	Total length of new or improved sidewalks		2.4 KM	
	Number of Local and Collector roads posted 30 km/hr	Number	All roads (51 KM)	
	Number of Major Roads posted 40 km/hr	Number		
Reduce Climate Impact	Township transportation-related GHG emissions	On-road, tonnes	Align with Township Climate Action Plan	CRD GHG Emissions Data
	Regional transportation-related GHG emissions		Reduction of 45% by 2030 based on 2007 levels	
Better Active Transportation Facilities	Number of minor intersection reviews	Number	5	Township
	Number of major intersection reviews	Number	5	
Regional Collaboration	Walking, Cycling, + Transit Mode Share (Trips to Work)	Percentage	45%	Statistics Canada Census
	Walking, Cycling, + Transit Mode Share (All Trips) between neighbouring municipalities	Percentage	57%	CRD Origin-Destinations Household Travel Survey
	Participation in a municipal or privately led bike share program	Number of operators	1	Township