

Duncan Area Active Transportation Plan

Acknowledgments

Elected officials, staff and the residents of Duncan, North Cowichan and Cowichan Tribes, Cowichan Valley Regional District and Ministry of Transportation and Infrastructure all played key roles in developing this plan.



Executive Summary

Purpose of the Plan

Active transportation includes walking, cycling, and any other self-propelled method of getting around and includes the use of mobility devices and accessing public transit. The purpose of the Duncan Area Active Transportation Plan (ATP) is to:

1. Identify benefits of active transportation (AT).
2. Improve safety and community connectivity for pedestrians and cyclists.
3. Support plans and policies for the reduction of green house gas (GHG) emissions.
4. Guide the development of well designed and integrated walking and cycling infrastructure.
5. Identify a framework of programs and policies to ensure that residents and visitors have safe access to a variety of travel options, depending on their needs, within the study area.
6. Provide an implementation strategy.

Information Gathering and Analysis

The Duncan Area ATP is the result of a comprehensive planning effort for Cowichan Tribes, the City of Duncan, and the Municipality of North Cowichan. The project undertook a number of steps:

1. Information was sought from residents to determine user needs and comments about existing walking and biking options, in particular about how often they walk or cycle, perception of safety, and what they liked and did not like about walking and cycling in the study area. The information was gathered in a number of ways, including an on-line survey, a stall at the Duncan Farmer's Market with questionnaires and the use of maps to identify likes and concerns, and meeting with user groups.
2. The consulting team (the Team) collected data on existing infrastructure during the summer and fall of 2011, then analyzed the information with respect to safety, connectivity, completeness, destinations, barriers, constraints and user experience.
3. The Team reviewed and assessed the policy documents of each jurisdiction and related jurisdictions such as the Cowichan Valley Regional District (CVRD), with respect to transportation goals and level of support for AT.
4. The Team reviewed the existing local programs available to support pedestrians and cyclists.
5. The Team interviewed staff of each jurisdiction to determine policy, program, and jurisdictional opportunities and constraints.
6. The plan makes recommendations based on the above information gathering, analysis, and by giving consideration to a transportation hierarchy that utilizes "complete street" principles.



Objectives of the Plan

"Self-propelled" active transportation policies provide a number of benefits to individuals. It provides anyone from the very young to the very old quality mobility options. It supports residents that live in the area and visitors to the area that are looking for a more physically active and economic experience to improve their health and well-being. System wide, strong active transportation policies provide greater equity in the provision of transportation and helps reduce harmful emissions thereby improving air quality and support climate action planning.

The Plan provides the municipalities with a recommended approach including improvements that take place in the form of policy, programming and physical design and implementation. The objectives of the recommendations are prioritized as follows:

1. **Safety improvements**

Safety improvements support the needs of all age groups, those with few mobility options due to physical or financial constraints, and those who choose to travel by walking or cycling for most trips.

2. **Connectivity improvements**

Connectivity improvements support the same groups as safety improvements but also enhance the experience of recreational users (residents and visitors) by tying the cycling and walking infrastructure to trails and other destinations.

3. **User experience improvements**

Giving consideration to the improvement of the experience of walking and cycling will increase resident and visitor support and the use of pedestrian and cycling infrastructure. The result is intended to further enhance the livability for residents, the visitor experience, and the general character of the study area.

Implementation Plan

The ATP consists of recommended policy for review and adoption by each jurisdiction. The policy is based on a **transportation hierarchy** that gives priority to pedestrians and cyclists and the principles of "**Complete Streets**".

The ATP provides a list of potential programs that the partner jurisdictions or other agencies (such as the School District, seniors groups, or cycling groups) could consider for implementation to support the objectives of safety, connectivity and improved experience. The programs are related to outreach, bicycle skills training, the use of the web to access information, developing safe routes to school, walking opportunities to increase social interaction as well as improving health, and enforcement related issues.

The ATP provides recommendations with respect to the monitoring, evaluation and achievement of the objectives of the Plan. These include forming multi-jurisdictional committees intended to address barriers to obtaining the objectives of the plan and to support design, policy and programs wherever possible for each jurisdiction to, obtain as much consistency as possible in approach and product.

Included are **Design Guidelines** that support obtaining the objectives of the Plan. These guidelines are meant to address and give priority to the needs of pedestrians and cyclists, while recognizing the reality of motorized travel for a variety of purposes.

Finally, the ATP provides a recommended facility improvement plan to address short-term pedestrian and cycling network improvements and identifies potential funding sources. The recommended initial network improvements are prioritized on the basis of providing:

- Safety Improvements
- Active and Safe Routes to School
- Access to Community Destinations
- Suitable Roadway Types
- Ease of Implementation
- Community Support
- Local / Regional Connectivity

Conclusion

The ATP represents the efforts of elected officials, many dedicated community members, and staff members from several governing jurisdictions. There is a significant amount of data and consideration given to improving the quality of the pedestrian and cycling experience. The data is a snapshot of the general condition of active transportation in the study area in a limited time frame. The ATP is the result of a multi-jurisdictional interest that recognizes that residents and visitors do not see or interact with the boundaries of each jurisdiction but with the overall built environment. Each jurisdiction has a number of common goals – the primary goal is to address the safety and comfort of their residents and those who visit the area. This Plan is intended to support those goals with a particular focus on active transportation.

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1 Introduction

Active transport includes walking, cycling, and any other self-propelled mode. The purpose of the Duncan Area Active Transportation Plan (ATP) is to guide the development of walking and cycling infrastructure and to identify a framework of programs and policies designed to encourage residents and visitors of the Cowichan Valley to use these modes.

The Plan was prepared under the direction of a Stakeholder Advisory Committee (SAC) that includes representatives from the City of Duncan, the Cowichan Tribes, the Municipality of North Cowichan, and the Cowichan Valley Regional District (CVRD).

This Plan is the result of a comprehensive planning effort by Cowichan Tribes, Duncan, and North Cowichan. This Plan recommends that roadway design focus on serving the most vulnerable roadway users (pedestrians and bicyclists) and support transportation alternatives, (e.g., transit), which will result in a transportation system that meets the needs of all users. Recommending bicycling and pedestrian improvements in a comprehensive and systematic manner can create a more cohesive and legible transportation system. Working with a unified set of design guides and policy directives also provides a clear picture for planners, decision makers, and residents. Multi-jurisdictional planning can result in strengthened municipal partnerships, efficient resource utilization, and increased opportunities to transform the Duncan area into an increasingly pleasant place to walk and bike.

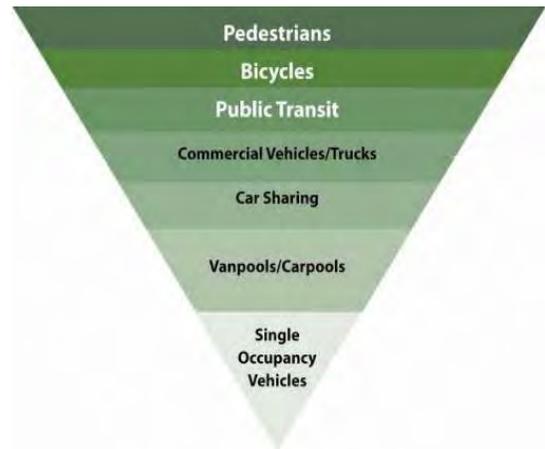


Figure 1. Transportation planning hierarchy that meets the needs of all roadway users

1.1 Building the Case for Walking and Biking

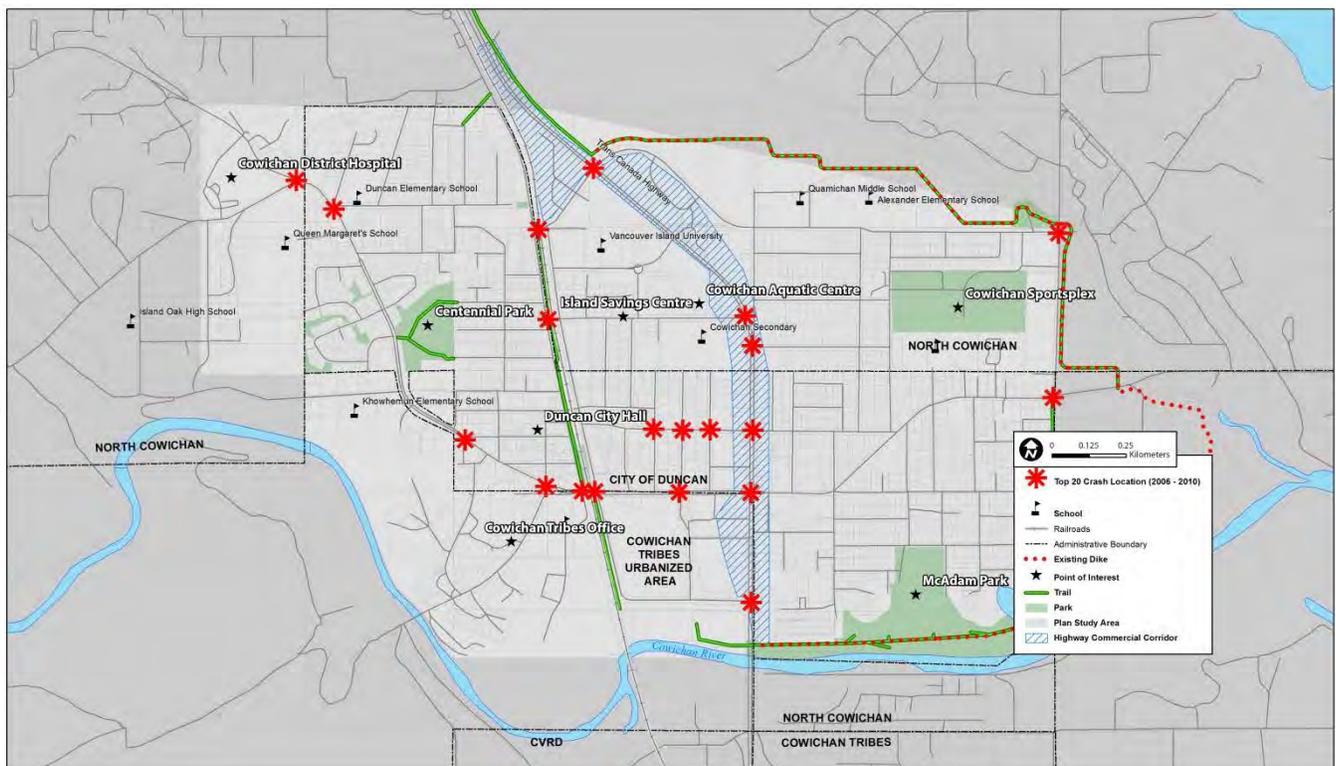
Walking and bicycling are gaining new interest from communities across Canada after decades of neglect when most attention focused on motor vehicle transportation. As fuel prices rise, making short trips by bicycling and walking instead of by car makes sense. However, due to existing low levels of use and funding, walking and bicycling face an uphill battle to prove their utility as viable, efficient modes of transportation. Many of walking and bicycling's greatest strengths – such as creating attractive, livable streetscapes and increasing community health through exercise – are not accounted for when evaluating transportation projects. Similarly, many of the external social costs of driving, such as traffic congestion, crashes, and climate change from greenhouse gas emissions, are not sufficiently weighted.

The benefits created by walking and bicycling increase with use. For each additional mile traveled by walking or bicycling instead of driving, about one pound of greenhouse gas emissions are prevented, a few less cents are spent on gas, and a person gets a few minutes closer to reaching their recommended healthy levels of physical activity for the week. When walking and bicycling become part of people's daily activity, these benefits add up to create a healthier, more affordable community.

1.2 Study Area

The study area is shown in light gray on Map 1 (below). The ATP focuses on the urbanized activity centres in Duncan, the Cowichan Tribes' Urbanized Area, and portions of North Cowichan's 'South End' growth centre. Other active transportation connections - to activity centres in other parts of the Cowichan Valley - were also considered in the Plan, but in far less detail.

The ATP also focuses on priority corridors (shown in orange), which were selected by the SAC during the initial phase of plan development. These corridors provide key connections to community destinations and nearby communities.



Map 1. Active Transportation Plan Study Area

1.3 Goals of the Plan

The overall vision of the ATP is to “provide safe, convenient, and comfortable active transportation facilities to promote the movement of people and goods; maximize transportation choice; promote liveability and sustainability; and minimize environmental impact.” Specific policy goals of Duncan, North Cowichan and the Cowichan Tribes are to:

- Increase safety for cyclists and pedestrians;
- Provide a suite of walking and bicycling facilities that allows people of all ages and abilities including people that use mobility devices, to use active transportation;
- Increase the mode share of active transportation trips, in support of other planning efforts such as greenhouse gas reduction targets;
- Develop an immediately implementable plan that identifies ready-to-move-forward projects;
- Encourage and enhance cooperation and coordination between government agencies; and
- Raise awareness of active transportation within the community to start a paradigm shift in the way people think about how they move around the region.

1.4 Public Involvement

The ATP is intended for the community of people living in and visiting the Cowichan Valley. Through a robust public involvement strategy, their voices guided the development of this Plan and shaped the recommendations. By creating a Plan based on the preferences and goals of the local community, the Plan is more likely to be implemented with strong public support.

The public involvement strategy for the ATP included an information booth and forum at the Farmers Market, a public survey, and multiple public meetings. The plan for public involvement and an analysis of its results is provided in Chapter 3, User Needs and Infrastructure Assessment.

2 Existing Conditions

This section documents existing active transportation conditions in the Cowichan Valley. The analysis includes a review of the existing decision-making framework, infrastructure, policies and programs. The effort was supported by stakeholder interviews from community groups, law enforcement, the Ministry of Transportation and Infrastructure, and participating local jurisdictions including CVRD. The full analysis of existing conditions includes a detailed inventory (the Inventory) of the existing and potential active transportation network conducted in August 2011, a review of existing plans and policies that support the ATP, and an investigation into how operational decisions are currently made within and between organizations.

2.1 Existing Program and Policy Framework

2.1.1 Policy Review

Thirteen plans and policies developed within the last five years were reviewed to assess the existing policy framework. There are many reasons to support bicycling and walking as transportation and recreation choices including fitness, stress reduction, and reduced transportation costs. The participating agencies have developed a strong policy framework to support the ATP. Most notably, each community supports walking and cycling for many of the reasons mentioned previously in its general planning guidance. The list of plans and policies reviewed is provided in **Table 1** below. A summary of each of these documents can be found in **Appendix A**.

Table 1. Thirteen policies and plans were reviewed to assess the existing policy framework.

Plan or Policy	Agency	Year
Official Community Plan	City of Duncan	2007
Commons Trail Feasibility Assessment	City of Duncan	2011
Zoning Bylaw and Off Street Parking & Loading Bylaw	City of Duncan	n/a
Integrated Community Sustainability Plan	City of Duncan	In progress
Zoning Bylaw	Municipality of North Cowichan	n/a
Official Community Plan	Municipality of North Cowichan	2011
Climate Action and Energy Plan	Municipality of North Cowichan	2013
Trails Network Plan (unpublished)	Municipality of North Cowichan	Undated

Plan or Policy	Agency	Year
Regional Parks and Trail Master Plan	Cowichan Valley Regional District	2007
Trans-Canada Highway Corridor Management Plan	Ministry of Transportation and Infrastructure	2009
Cowichan Tribes Greenhouse Gas and Carbon Footprint Report	Cowichan Tribes	2007-2009
Comprehensive Community Plan	Cowichan Tribes	2012
BC Transit Future Plan 2011	BC Transit	2011
BC Transit 2030 Strategic Plan	BC Transit	2010

Although Duncan, North Cowichan, and Cowichan Tribes (the Plan participants) have each supported policies that encourage active transportation and enhance its role in community planning, the policies could be enhanced to more comprehensively and explicitly support active transportation. To date, there has been a lack of formalized communication and decision-making processes among the Plan participants. The jurisdictions have had an informal relationship where transportation infrastructure is concerned. This informal relationship can be strengthened by institutionalizing a collaborative approach toward planning and implementing active transportation infrastructure and supportive programs.

In addition to the existing plans and policies noted above, two other comprehensive planning projects are currently ongoing involving the City of Duncan, North Cowichan and the Cowichan Tribes. The proposed University Village Local Area Plan and Trans-Canada Highway Corridor Management Plan include a set of policies and programs related to active transportation. The content of these Plans is guided by the policies and programs of the ATP to ensure consistency between the Plans.

2.1.2 Program Review

Programs complement engineering improvements, such as bikeways, sidewalks and crossing treatments. Examples of programs designed to increase rates of walking and bicycling include *Open Streets* or *Ciclovía* events, individualized marketing programs that focus on the positive aspects of active transportation, *Active and Safe Routes to School* programs, *Bike to Work* challenges, ongoing crosswalk enforcement actions, and safety trainings. Encouragement, education, and enforcement programs give Duncan residents the tools they need to safely and confidently use the active transportation network. This section provides an overview of existing programs to support active transportation in Duncan and North Cowichan and Cowichan Tribes.

Chapter 5 presents recommended programs to support the vision and goals of this plan. The recommendations include continuation of those administered by the City and other agencies and organizations, as well as additional programs that have proven to be popular and effective in other bicycle- and walk-friendly cities.

Existing and Potential Partners

Active transportation programs are a relatively inexpensive method for improving and raising public awareness and adding to the safety and enjoyment of bicyclists and pedestrians in Duncan. Programs also usually remain outside of the jurisdiction of any one agency. While the vast majority of infrastructure and policy recommendations fall within the exclusive jurisdiction of the City of Duncan and its governing authority, many program recommendations can, and should, require the participation of other partners including, other local governments/jurisdictions, private sector partners, and nonprofit organizations. To that end, the following is an assessment of the existing organizations and agencies that can contribute to or lead active transportation programs.

- City of Duncan
- Municipality of North Cowichan
- Cowichan Tribes
- Cowichan Green Community
- Cycle Cowichan
- Duncan Farmers Market (City Square Market Society)
- Canadian Cycling Association
- Valley Seniors Organization of Duncan
- Cowichan Valley Regional District, Parks Department
- Cycling BC
- BC Masters Cycling
- Mayor's Advisory Committee on Disability Issues (MACDI)
- Duncan Advisory Committee on Seniors' Issues
- Cowichan Valley Regional Transit System (BC Transit)
- CVRD Safety Committee
- Transition Cowichan
- Cowichan Sportsplex (Chesterfield Sports Society)
- Royal Canadian Mounted Police (RCMP), Community Policing
- CVRD Safety Advisory Committee
- Tourism agencies
- Organizations supporting individuals with disabilities
- Seniors groups
- Local bike shops
- Insurance Corporation of British Columbia
- British Columbia Ministry of Transportation and Infrastructure
- Cyclingbc.net
- Bcmasterscycling.net
- Transport Canada
- School District 79
- Law enforcement agencies

Duncan and the North Cowichan and Cowichan Tribes have an opportunity to build on these existing and potential partners by collaborating in the development and implementation of active transportation programs.

2.2 Existing Infrastructure

This section documents existing active transportation facilities in the Cowichan Valley, in the study area identified on Map 1 (page 1-2). The Plan strives to provide easier access to quality facilities that make walking and cycling safe, convenient and comfortable for all types of trips including trips to work, school, home, and accessing services. Purely recreational facilities have not been considered as part of this plan. Further, the Inventory focused on the major road system that currently, or could potentially, play a role in active transportation. Many of the local streets have not been reviewed in detail (and may be missing inventory data such as the presence of sidewalks) because, with lower traffic volumes, they will generally be more comfortable to many cyclists.

Map 2 (page 4-69) shows the functional classification of the street system in the study area, along with the corridors reviewed in detail as part of the Inventory. Functional classifications describe the character of service the road is intended to provide. For example, arterial roadways and highways are intended to move high volumes of people and goods efficiently, while local streets are designed to accommodate fewer users moving at slower speeds. Collectors typically attempt to balance access and mobility, with design speeds and roadway capacities falling between the (lower) ranges of local streets and (higher) ranges of arterial streets.

2.2.1 Pedestrian Network

Walking is the most basic form of transportation and has a number of individual and community health, social, economic, and environmental benefits. Increases in walking can be achieved through:

- Reducing the distance between trip origins and destinations through effective land use planning;
- Providing safe, comfortable, and convenient walking routes; and
- Giving priority to pedestrians as the basis for a healthy transportation system.

Sidewalks and Roadway Shoulders

Table 2 (page 2-8) provides a summary of the existing sidewalk and shoulder walkway network coverage along surveyed corridors within the study area. For higher-order roads (highways and arterials), the provision of a road shoulder that can be used by pedestrians has been defined as presence of sidewalk. The existing pedestrian network is shown on **Map 4** (page 4-71).

Table 2: Walkway Inventory of Surveyed Corridors in Study Area, August 2011

	Local Streets	Collectors	Highway/Arterial	All Surveyed Streets
Sidewalk Both Sides	2.7 km	3.1 km	4.3 km	10.1 km
Sidewalk One Side	1.1 km	1.0 km	0.1 km	2.2 km
No Sidewalk	1.9 km	0.6 km	0.0 km	2.5 km
Total	5.7 km	4.7 km	4.4 km	14.8 km

The majority of roadways included in the Inventory had a sidewalk or shoulder on at least one side of the roadway (**Figure 2**). This includes all highways and arterials, where traffic volumes are generally much higher. Some roadways in the downtown core have existing canopy cover provided by street trees.

In general, the key corridors in the study area as the south-west side of the TCH between Beverly Street and University Way, have a fairly good coverage of sidewalks and marked crossings. Most streets have some form of walkway such as sidewalks or shoulders but not all are accessible for scooters or people with mobility impairments. Some notable exceptions include portions of Jubilee Street, Duncan Street, Chesterfield Avenue, and McKinstry Road.

Sidewalks in the downtown commercial area are typically 1.5 metres wide, constructed from concrete and are typically in ‘good’, ‘fair’ or ‘excellent’ condition (see **Appendix B** for examples of facility quality ratings). Corridors where a portion of the sidewalk network is less than 1.5 metres wide, due to telephone poles or other infrastructure obstructions, require relocation or widening of the sidewalk. Corridors where a portion of the sidewalk network is less than 1.5 metres wide include Lakes Road, Beverly Street, Trans-Canada Highway, Government Street, Evans Street, and Jubilee Street.



Figure 2. Sidewalk, both sides of roadway. (Nagle Street)



Figure 3. Allenby Road has sporadic sidewalk/shoulder coverage.

Further from downtown, sidewalk coverage becomes sporadic along the arterial and collector roadways that connect to surrounding activity nodes (e.g., Allenby Road, Government Street, Lakes Road, Tzouhalem Road, and the Trans-Canada Highway). Existing pedestrian facilities on these roadways are more likely to be paved roadway shoulders, which pedestrians share with bicyclists and occasionally motor vehicles. With or without fog lines, shoulders typically feel less safe and comfortable for pedestrians, who are forced to walk closer to motor vehicles traveling at higher speeds without the measure of separation afforded by a typical sidewalk.

Some areas lack any pedestrian facilities, including large segments of Tzouhalem Road and Allenby Road (as shown in **Figure 3**)¹. Missing shoulders of the Tzouhalem Road Bridge, east of the Duncan core, in combination with higher speed motor vehicle traffic create difficult pedestrian travel conditions. Inventoried facilities were generally in ‘good’ condition, although several corridors with heavy pedestrian use were in ‘poor’ condition, notably Allenby Road and Miller Road, which both have sporadic shoulders and poor pedestrian lighting.

Crosswalks

Providing frequent and safe crossing opportunities is paramount to a successful pedestrian network. Pedestrian crossing opportunities can be enhanced using a variety of treatments including marked crosswalks (**Figure 4**), pedestrian activated signals (**Figure 5**), mid-block curb extensions, or by designing roads to allow safer crossings, (e.g., providing median refuge, signalized or flashing crossings, or altering signal timing to create gaps in traffic or an all-way pedestrian crossing opportunity).



Figure 4. Signed and marked crosswalk.

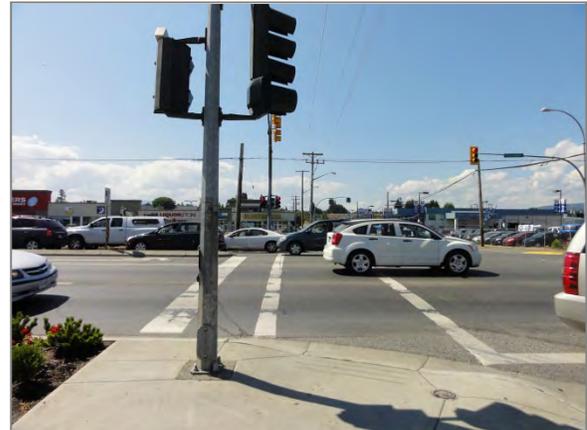


Figure 5. Pedestrian Actuated Signal.

¹ Though Tzouhalem Road is outside the study area it is the primary connection for many people living east of Duncan’s urban core.

In British Columbia, pedestrians have the right-of-way at marked or unmarked crosswalks, which are defined as:

A portion of the roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by signs or by lines or other markings on the surface, or the portion of a highway at an intersection that is included within the connection of the lateral lines of the sidewalks on the opposite sides of the highway, or within the extension of the lateral lines of the sidewalk on one side of the highway, measured from the curbs, or in the absence of curbs, from the edges of the roadway. – Motor Vehicle Act RSBC Chapter 318

A crosswalk can also be created outside an intersection using road markings. Formalized crosswalks, marked with 3.0 metre “double lines” are frequent features in the urban areas of Duncan and are typically marked according to Transportation Association of Canada (TAC) standards. Marked crosswalks were located at all signalized intersections included in the Inventory. Few formalized crossings exist along collector and arterial roadways outside of downtown, and are particularly infrequent on Allenby Road, Tzouhalem Road, and the Trans-Canada Highway. Where signals do exist roadways are typically wide, which increases pedestrian exposure to motor vehicles. Both staff and members of the public commented that the time allotted to pedestrian crossings in many places do not provide a comfortable amount of time for those with mobility challenges to cross the road. Audible Pedestrian Signals (APS) are not present within the study area. Upgrade of existing signals or installation of new APS signals can be beneficial to pedestrians with visual impairments.

Pedestrian Amenities and Lighting

Pedestrian amenities including benches, trash receptacles and greeting signs were also noted in some areas. These amenities generally contribute to the attractiveness of the streetscape and create an environment that feels safe and comfortable for pedestrians. While not all sidewalks in the downtown and core residential area were part of the Inventory the conditions observed were consistent with casual observations of the downtown and core residential area.

Lighting fixtures are generally spaced at every 30 – 100 metres along roadways included in the Inventory of the urbanized area. Pedestrian-scale fixtures are located in the downtown area (e.g., near City Hall). While providing light, these fixtures throughout the system sometimes obstruct pedestrian flow. Light fixtures along roadways outside of downtown are placed less frequently, generally every 40 – 150 metres. Many intersections could benefit from enhanced lighting, which could increase bicycle and pedestrian visibility.

2.2.2 Bicycle Network

The bicycle network includes roadways and dedicated rights-of-way that have facilities to accommodate bicycles. The following types of bikeways were included in the Inventory shown on **Map 5** (page 4-73):

- **Paved Shoulder\Shoulder Bikeway** – These are paved roadways that have striped shoulders wide enough for bicycle travel as shown in **Figure 6**, are typically a 1.5 metre paved shoulder (1.2 metre minimum in constrained areas). Roadways with shoulders less than 1.2 metres are considered shared roadways. Shoulder bikeways are signed to alert motorists to expect cyclists. Signing of shoulders within the study area was infrequent.
- **Bike Lane** - Bike lanes, shown in **Figure 7**, are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. The standard width of a typical bicycle lane is 1.5 metres (minimum of 1.2 metres if constrained against a curb or adjacent to a parking lane). Bike lanes are most appropriate on arterials and major collectors, where high traffic volumes and speeds warrant greater separation.



Figure 6. Unsigned shoulder bikeway.



Figure 7. Bike lanes on Cowichan Lake Road.

- **Shared Use Paths/Multi-Use Trail** –Shared use paths are used by a variety of non-motorized users, including pedestrians, cyclists, skaters, and runners. Shared use paths may be paved or unpaved, and are typically wider than an average sidewalk (i.e. 3.0 – 4.3 metres). In circumstances where peak traffic is expected to be low, pedestrian traffic is not expected to be more than occasional, good passing opportunities can be provided, and maintenance vehicle loads are not expected to damage pavement, the width may be reduced to as little as 2.4 metres. Shared use paths can be paved or unpaved. User types may differ based on paving material. For example a person using a mobility aid may have difficulty using an unpaved trail.

The existing bikeway network includes:

- **Shoulder bikeway: 1.8 kilometres.** Shoulder bikeways are provided on several corridors including, Beverly Street, Jubilee Street, Ingram Street and Duncan Street. An additional 2.7 kilometres of existing roadway shoulder was inventoried but did not meet the minimum width standard, of 1.5m. These roadways may not feel safe and comfortable for all bicyclists.

- **Bike lanes: 0.5 kilometres.** Bike lanes are provided along Cowichan Lake Road and are approximately 1.0 metres in width (below the minimum standard). Bicycle lanes are also provided on University Way, but were not inventoried as part of the survey.
- **Shared use path: 4.9 kilometres.** Shared use trails within the study area vary by surface and composition. The Trans-Canada Trail connections are generally surfaced with crushed gravel and were found to be in ‘good’ or ‘excellent’ condition for pedestrians, but not necessarily for bicyclists. Typical trail widths varied between 1.0 and 3.0 metres while several sections were more constrained. Throughout the shared use trail system there are segments that may create challenging conditions for cyclists because of the trail surface, facility width, condition, or topography.

Cyclist crossings are often difficult at major intersection as detection is not present at most of the signalized intersections, nor are push buttons conveniently located that would allow a cyclist to activate the traffic signal, which may result in cyclists crossing into the pedestrian realm of sidewalk and crosswalk (**Figure 8**).



Figure 8. Cyclist crossing utilizing the crosswalk.

Overall, the bicycle network covers approximately 2.3 kilometres (16%) of the 14.8 kilometres of roadway surveyed within the study area. An additional 4.9 kilometres of shared use path augments the existing on-street bicycle facilities. Although largely disconnected, the bikeway facilities shown on **Map 5** (page 4-73)

provide the start of a more comprehensive cycling network and many local streets currently provide safe and attractive cycling options.

Bicycle Parking and Other End of Trip Facilities

Bike parking is a critical component of a community’s bikeway network, and can strongly influence one’s decision whether to complete a trip via bicycle. Examples of existing bicycle parking include existing wave racks at Vancouver Island University, shown in **Figure 9**, and modified coat hanger style racks at Cowichan Commons. A survey of parking quantity and quality was conducted focusing on key destinations in the downtown core, such as the Craig Street corridor; results are shown on **Map 3** (page 2-13). Additional details on existing bicycle parking are provided in **Appendix C**.



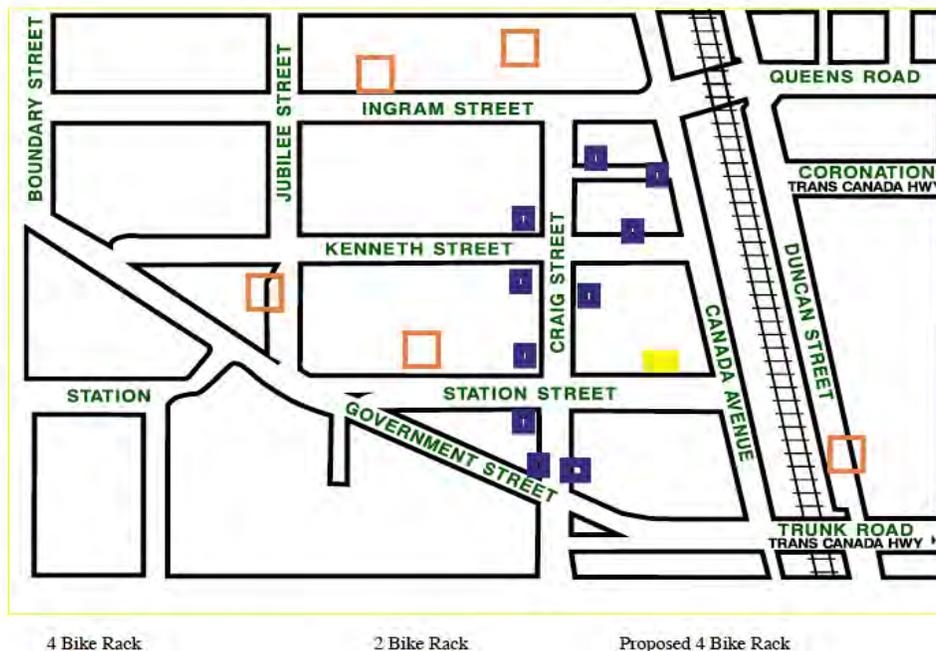
Figure 9. Example of wave-style rack.

Generally, the racks observed during August 2011 were wave shared racks or modified coat hanger style racks (**Figure 10**). While both of these racks will support a bicycle frame and allow locking of at least one wheel it is considered difficult to lock both wheels to the rack. Wave-style or undulating bike racks may not always allow sufficient room between bicycles for users to securely park bicycles. Racks placed closer to shop entrances and within a good line of sight will have higher utilization rates. The majority of parking observed during this study was considered Class 2 (short-term). Longer-term bicycle parking (Class 1), which provides protection from the elements and increased security via secured entry (e.g., a bike cage) was reported at the Cowichan District Hospital. The average number of precipitation days each month in Duncan is nearly 13, which indicates that many bicyclists would benefit from additional sheltered bike parking.



Figure 10. Modified coat-hanger style racks.

Other end-of-trip facilities include changing rooms and lockers, where cyclists can store excess gear and shower before going about their daily activities. Changing rooms and lockers may be provided by a building owner and are typically difficult to track. Changing rooms and lockers were reported at the Cowichan District Hospital and may exist in other private buildings within the study area, but a formal inventory was not completed as part of this study.



Map 3 Bike parking inventory for downtown Duncan, August 2011

2.2.3 Jurisdictional Approach and Active Transportation Planning - Overview

The project team conducted a series of face-to-face and phone interviews in September and October 2011 with agency staff and local stakeholders that play a role in active transportation in the Cowichan Valley. These stakeholders included planning, engineering, or public works staff from:

- The City of Duncan
- The Municipality of North Cowichan
- Cowichan Tribes
- Cowichan Valley Regional District (CVRD)
- Ministry of Transportation and Infrastructure (MOTI)

A number of common themes emerged in how the local jurisdictions interact with each other and other levels of government. The following is a summary of findings from the interviews conducted by the project team.

Operations within Duncan, North Cowichan, and Cowichan Tribes

Planning Activities – Since it has not been identified as a high priority to date, little dedicated staff time or resources have been allocated to active transportation. This trend is changing over time as evidenced by the ATP planning process, strengthened pedestrian and cycling initiatives in North Cowichan’s OCP, Development Permit Guidelines, Climate Action and Energy Plan and the Cowichan Tribes stated desire to include ATP recommendations in their forthcoming Community Comprehensive Plan. Historically, planning staff have targeted bicycle and pedestrian improvements through individual development permit application requirements or roadway safety improvement projects. Staff members are assigned to projects as needed. None of the agencies have formally committed a staff member or a percentage of staff hours to focus on active transportation.

Engineering Activities – Engineers and Parks and Recreation staff have always been involved with the development of several trails, pedestrian improvements in the downtown areas (e.g., pedestrian bump-outs), and support as requested for active transportation projects. Though interviewees saw the ATP primarily as a planning effort, all interviewees expressed the need to work cooperatively and collaboratively with their respective engineering departments.

Programmatic Activities – Staff at Duncan, North Cowichan, and Cowichan Tribes have opportunities to participate in programs related to active transportation, such as the Bike to Work commute challenge. Programmatic activities intended for the public currently have some support from the City, District or Tribes and are implemented within the school system or through other community oriented entities.

Funding – Active transportation projects are funded through a variety of sources including a line item in the public works budget, gas tax funds, Insurance Corporation of British Columbia (ICBC) safety grants, and other federal or provincial sources. Redevelopment frequently leads to improved pedestrian and cycling facilities along frontages and within a site. To date, trail projects have been funded more successfully than on-street bicycling infrastructure, though interviews suggested this was due, in part, to a lack of comprehensive cycling and pedestrian planning. A breakdown of funding dedicated to active

transportation by jurisdiction was not available. It is often difficult to track dedicated funding as bicycle and pedestrian improvements are often wrapped into larger roadway improvement projects rather than tracked as standalone figures.

Internal Communication – Interviewees reported that communication between departments was typically casual and unstructured. While successful on a project-by-project basis, the lack of regular communication has resulted in unexpected disconnects (e.g., lack of agreement on infrastructure priorities) and reduced effectiveness in active transportation initiatives undertaken by a single department. There is limited integration between planning and engineering with respect to capital improvement projects.

Formal avenues for communication within agencies include Duncan’s regular Management Team meetings where department managers discuss ongoing projects and planning initiatives. These formal meetings are restricted by time constraints and staff capacity.

Operations between Duncan, North Cowichan, and Cowichan Tribes

Duncan, North Cowichan, and Cowichan Tribes have a shared interest in managing and developing systems that transcend administrative boundaries, including the active transportation system. Through the interview process it was determined that transportation engineering staff was in closer contact with colleagues in neighbouring communities on some issues than they were with other departments within their own municipality.

The transportation engineers of each entity, as well as other interested parties, regularly participate in a quarterly Traffic Advisory Committee meeting chaired by ICBC, where safety concerns are discussed and addressed. These meetings provide a venue for staff to problem solve and share resources, such as potential new design standards. Outside of this quarterly meeting, business is typically conducted through cooperative and informal conversations, with documentation as necessary (e.g., when work is contracted).

In the last ten years, the trend has been towards a more formal and collaborative relationship between Duncan, North Cowichan, and Cowichan Tribes. Precedent for a formal working relationship is set forth in the *2003 Cowichan Valley Bridge Building Protocol Agreement*, the *2007 Cowichan Place Partners Memorandum of Understanding*, and the *Joint Utility Board 2008 Working Agreement* detailing regional sewage treatment practices. All parties interviewed expressed interest in continued and increased collaboration, particularly with respect to active transportation initiatives.

Operations with CVRD

As the local regional government, the CVRD’s responsibilities relating to active transportation include long range planning for Electoral Areas, management and development of regional parks and trails, and management of the local transit system. Key interests and activities include development of the Cowichan Valley Trail and local connections, maintenance of existing parks and trail facilities, strengthening of cycling/transit connections, and greater linkage between urban and rural cycling routes. Recent successes have included grant funding for trail planning and bridge rehabilitation.

The CVRD currently works with parks and trail planners informally in North Cowichan and Duncan to develop more cohesive parks and trail systems. In addition to long range planning, the CVRD enacts pedestrian friendly design through the zoning process and requirement of trail development within new rights of way and pedestrian access in cul-de-sacs as part of new development.

Regular communication occurs between CVRD and the Chief Administrative Officers of member municipalities including the Cowichan Tribes.

Operations with Ministry of Transportation and Infrastructure

In addition to primary responsibility for the Trans-Canada Highway, MOTI has responsibility for roadways on Cowichan Tribes land, CVRD land and other roadways outside and within the administrative boundaries of Duncan and North Cowichan. Additional responsibilities include general right-of-way guidance (e.g., *The Pedestrian Crossing Control Manual for British Columbia*), OCP review and comment, and approval of rezoning within 800 metres of a controlled access provincial corridor such as the TCH. A key cycling-related policy includes the provision of bicycle facilities when a roadway is rebuilt.

Within the Duncan area, MOTI's primary interests include pedestrian safety issues along the Trans-Canada Highway, pedestrian crossings of the Trans-Canada Highway, increasing network connectivity for all users, and increasing the availability and use of transit service. The Ministry is currently less focused on cycling improvements but is generally supportive of separated facilities on highway corridors. At this time no separated facilities have been designed or constructed that fall within the Highway right-of-way. City staff felt that MOTI could benefit from a more detailed investigation of treatments in the urbanized core that would provide increased pedestrian refuge and reduce distance between protected crossings. Efficient communication of questions and concerns related to MOTI's (e.g., requests for maintenance and safety concerns) are relayed through area managers who can provide a solution or escalate the request as necessary. Safety concerns for all roadway users are typically addressed through quarterly meetings of the safety committee chaired by ICBC.

Summary of Current Concerns

The following shared concerns were identified through the operational interview process:

- **Limited staff capacity.** The biggest barrier facing active transportation, according to interviewees, is limited time and staff capacity due to lack of ATP priority. The analysis of existing operations is intended to identify areas where efficiencies can be gained and provide information that will help increase staff capacity (e.g., through increased and relevant communication).
- **Lack of design standards and design guidelines.** Several interviewees indicated that a lack of training and technical expertise has resulted in non-viable facility design or no facility construction. Staff would benefit from training on active transportation designs that promote safety and accessibility for people of all ages and abilities.

- **Lack of knowledge of active transportation principles.** Several interviewees noted that a lack of knowledge or passion for active transportation at the highest political and administrative levels of an organization resulted in a lack of commitment at the staff level.
- **Limited funding for active transportation.** Interviewees generally noted that active transportation was funded from several sources, but funds were not viewed as one single pot of money that could be used to improve system safety and efficiency. The piecemeal approach to funding, as well as competing priorities has resulted in fragmented construction of the existing active transportation infrastructure.
- **Limited communication between departments or agencies.** Staff noted that communication does occur and short-term or immediate problems are solved, but the lack of communication can create challenges with regard to project development, funding, prioritization, and construction both in the long term and short term. This challenge, while it tends to occur more frequently between agencies or groups, also occurs between departments within an organization.

2.2.4 Enforcement

Providing an environment that feels safe is important to encourage new pedestrians and cyclists. Currently, enforcement is enacted by either a call for service or upon observation (e.g., during regular patrol activity). RCMP's primary pedestrian and cycling related activities involve patrol of areas with high motor vehicle volumes and incidence of collisions. In addition, the Community-Policing Unit coordinates with volunteer members who conduct speed watches to compare actual travel speed to posted speed, and provide bike rodeos and other children's education events. The general duty patrol officer receives training in cycling and pedestrian use of the right-of-way during basic officer training at the beginning of his or her career with RCMP. Officers believe that one key implementation challenge is low helmet usage among adults.

Officers on bicycles patrol the downtown core, parks and trails, and other problem areas throughout the summer months and at selected times during the rest of the year. Bicycle patrol officers are generally involved with street level drug and liquor enforcement as well as general education and enforcement.

Collision Response and Prevention

Police response to crash events is complaint-driven. Calls for service increase with the seriousness of the related injuries or when multiple parties are involved. When a serious injury or fatality occurs, RCMP coordinates with South Island Traffic Enforcement, a collaboration of local police detachments and ICBC. ICBC and RCMP also frequently coordinate local governments to identify areas of concern within the roadway network and develop solutions mutually agreeable to the involved parties.

Preventative Maintenance

The RCMP has an interest in reducing the number of response events by promoting safety both in site design and user behaviour. One principle mentioned by the RCMP is Crime Prevention through Environmental Design (CPTED), which recommends simple environmental solutions such as providing

adequate lighting in activity areas and trimming trees and shrubs to improve sightlines and visibility along trails to make users feel more comfortable.

2.3 Plan Summary

The Duncan Area Active Transportation recognizes the value of active transportation and reduced dependence on private automobiles. This Plan's implementation will lead to visible change and will encourage a paradigm shift in the community.

The existing pedestrian and cycling networks include some facilities on major roadways and a network of local streets. This foundation can be leveraged to create a connected active transportation network that is safe, comfortable, and convenient for people of all ages and ability levels. Area jurisdictions have recognized the importance of active transportation in policy documents and are in need of a systematic policy, design approach, and design standards and guidelines to incorporate active transportation improvements as they move towards with implementation.

3 User Needs and Infrastructure Assessment

The Duncan area's active transportation needs are diverse and depend on many factors, including the existing infrastructure. This section provides an assessment of local user needs, determined through a multi-faceted public involvement process, and of the opportunities and constraints of Duncan's active transportation infrastructure. This assessment builds upon the review provided in **Chapter 2**.

The summary of public involvement includes comments heard at the farmer's market, a summary of responses to the survey, and identification of exemplary and problematic locations. The analysis of the existing active transportation infrastructure focuses on corridors identified by the SAC at the start of analysis of existing network based on:

- Safety, connectivity, completeness, service of key destinations, service of different user types (e.g., seniors and people with mobility impairments)
- Gap analysis
- Assessment of public interest groups and involvement in active transportation
- Policy and organizational recommendations
- Assessment of user experience
- Review of enforcement policies and best practices

3.1 Public Involvement Analysis

Public involvement is integral to the development of an active transportation plan that considers the needs of the public and promotes plan implementation by building support. The ATP is intended for the community of people living in and visiting the Cowichan Valley. Allowing their voices to guide this process and shape these recommendations creates a plan that is more likely to be implemented with strong public support.

3.1.1 Public Involvement Plan

The most intensive public outreach was conducted at the beginning of the project to allow the project team to hear existing issues, identify examples of effective active transportation within the Cowichan Valley, understand concerns and priorities of the public and provide information to the public about the project.

Outreach was conducted using a variety of media including the following:

- A stall set up at the Duncan Farmer’s Market provided some background information and an opportunity for members of the public to speak with the project team and note their concerns, interests, and success stories.
- An active transportation survey was made available at the Farmer’s Market, and on the project partners’ websites.
- The participating agencies established project websites to provide information on the project, offer the active transportation survey, and publish project deliverables.
- A meeting hosted by Cycle Cowichan on September 22, 2011 to brainstorm ideas for infrastructure improvements.

3.1.2 Initial Public Input

Farmers Market Stall and Online Active Transportation Survey

The project team set up a stall at the Duncan Farmer’s Market on Saturday, August 13, 2011, to introduce the project to the public and gather feedback on active transportation in the community. In particular, the survey asked for examples of active transportation that worked well and ones respondents would like to see repeated; locations where it was unsafe, inconvenient, or uncomfortable to walk or cycle; and what type of improvements would most likely make respondents walk or cycle more often. Approximately 40 people completed surveys related to walking and cycling. Many of these people also provided comments on locations within the city where they would like to see infrastructure improvements. Many people also provided input via the active transportation plan web survey, resulting in a final sample size of 130 survey responses. A copy of the survey is included in **Appendix D**². Exemplary and problematic active transportation locations were combined with input from the Active Transportation Survey (see below) and are represented on **Maps 6** and **7** (pages 4-75 and 4-77).

² The web survey included an additional question showing respondents pictures and asking which bikeway types they preferred as well as which types of unmarked roadways they would feel comfortable riding on.

3.1.3 Walking Analysis

About half of the respondents, noted that they walk at least once a day. (Figure 11). These results indicate that some people may not account for all of their everyday walking trips, which could include trips to their mailbox or from their car to a store.

Reasons for Walking

As shown in Figure 12, the reasons most people walk include health and fitness (26 percent), shopping and running errands (17 percent) and accessing regional parks and trails (16 percent). This indicates that Duncan area residents walk both for recreation and utilitarian purposes.

More people reported walking (4 percent), rather than cycling (2 percent) to access transit, though fewer people are walking to work (7 percent) compared to cycling to work (20 percent). This is consistent with the longer distances a person can cycle, compared to walking, and the distance between home and work.

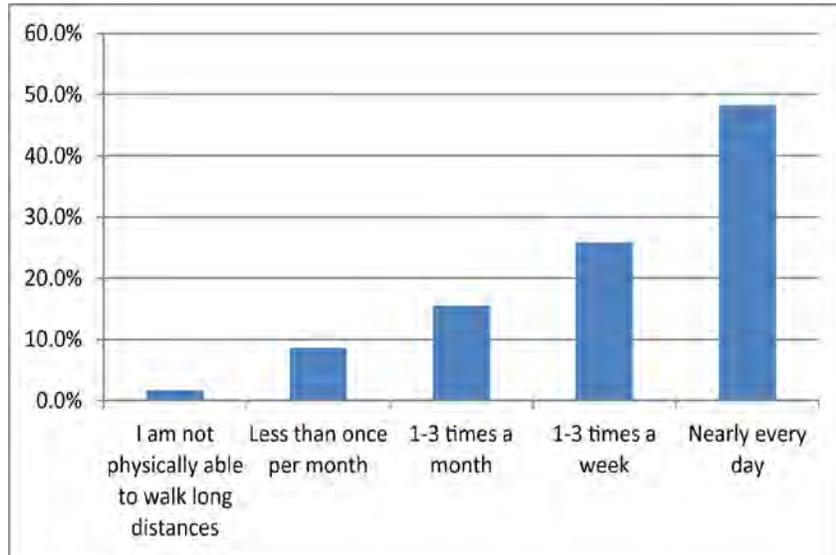


Figure 11. How often do you walk?

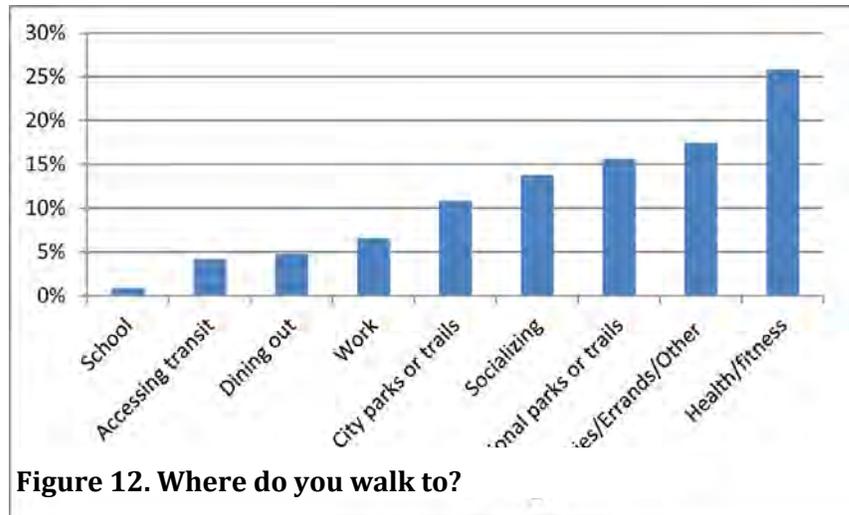


Figure 12. Where do you walk to?

Figure 13 shows people most frequently reported that they walk for health and fitness (42 percent) or to reduce their carbon footprint (30 percent). It is worthwhile to point out that some people walk because they cannot drive or cannot afford a car. While the original survey did not provide these specific prompts, it is assumed these reasons are a subset of the 'to save money' and the 'I do not own a car' answers.

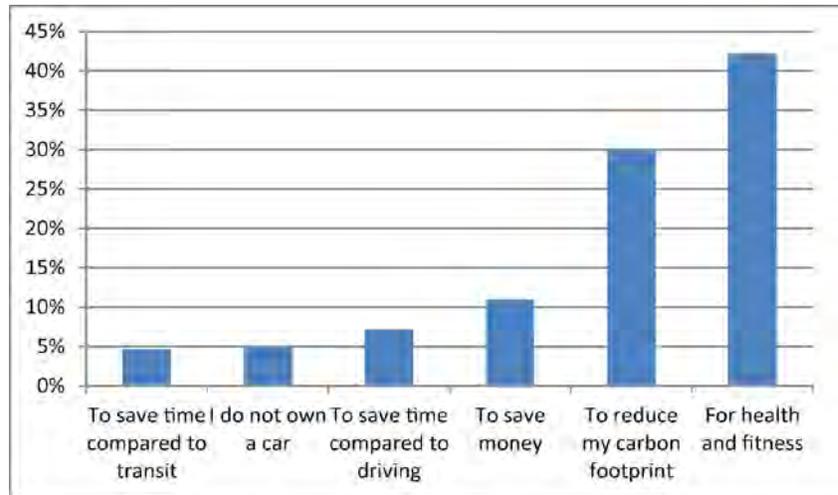


Figure 13. Why do you walk?

Perceived Walking Conditions

Most people (83 percent) felt that conditions for walking were 'Good' or 'Fair' and relatively few (17 percent) thought conditions were 'Poor.' When asked about the biggest barriers to walking (**Figure 14**), respondents most commonly indicated people driving too quickly, a lack of connected facilities, and the presence of too many motor vehicles. Though sidewalks exist on most roadways in Duncan, barriers still exist. Examples include discontinuous sidewalks, areas where the sidewalk is obstructed by utility poles, and intersections without curb ramps.

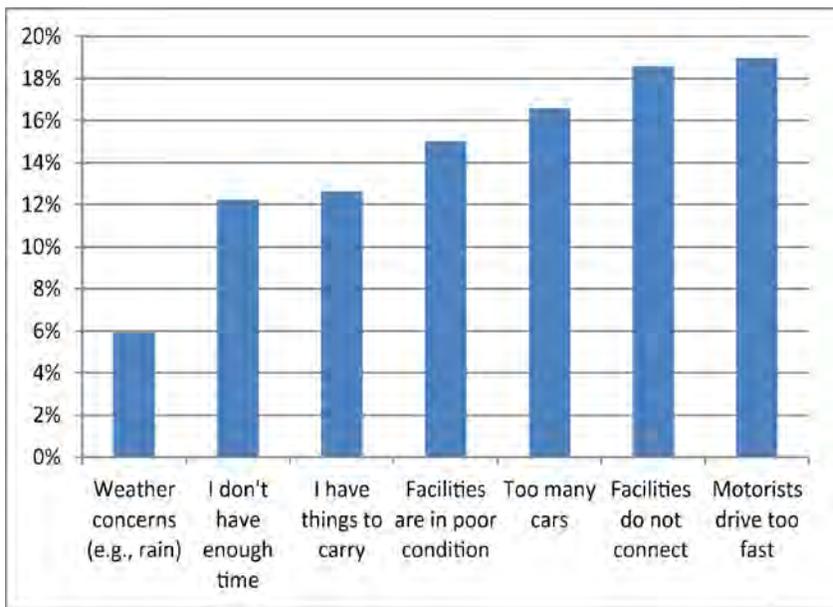


Figure 14. What are your biggest barriers to walking more?

3.1.4 Cycling Analysis

Of the respondents, nearly two-thirds (60 percent) reported that they are daily or weekly riders. About 8 percent of people reported that they have a bicycle but do not use it, while 13 percent of respondents report that they cycle once a month or less (**Figure 15**). These results illustrate that, while many people have bicycles and may be interested in increasing the frequency of their cycling trips, most people who took the survey already bicycle at least occasionally. Because survey participants self-selected, the results may not represent the views of all area residents, but rather there is a bias toward people that already bicycle with some frequency.



Figure 15. How often do you bike?

Reasons for Cycling

Though health/fitness was the most-frequently cited reason to bicycle (29 percent), using a bicycle to travel between home and work (20 percent) or to pick up groceries and run errands (21 percent) also proved popular reasons to cycle. Few people reported accessing transit or cycling to school as common reasons to ride (**Figure 16**). School-related bicycling was likely impacted by the (adult) age of most survey respondents. **Figure 17** shows that many people choose to bicycle for health and fitness (33 percent) or to reduce their carbon footprints (30 percent). These results indicate that cyclists in Duncan are using bicycles for transportation in addition to recreational use.

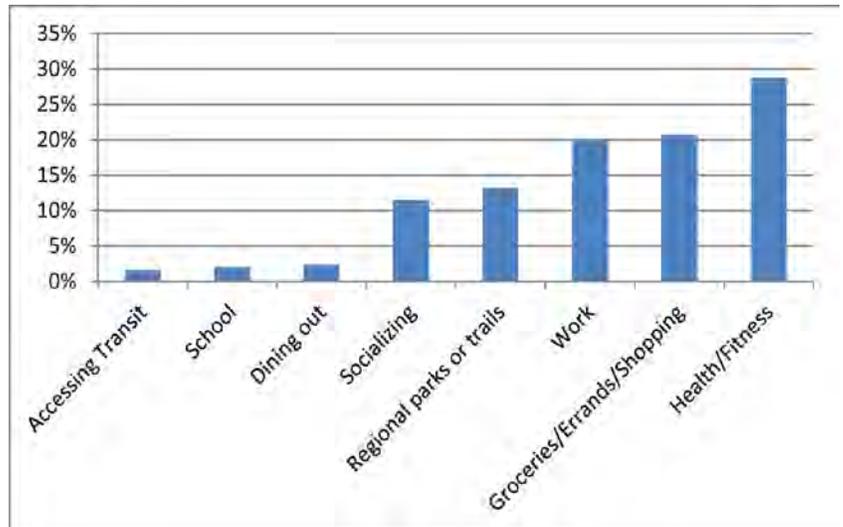


Figure 16. Where do you bike?

Perceived Bicycle Riding Conditions

While the majority of respondents (53 percent) reported that cycling conditions were 'Fair', one third of people (33 percent) thought conditions were 'Poor' and only 14 percent rated conditions as 'Good' indicating that work will be necessary to create a first-rate cycling system. **Figure 17** indicates the top concerns for bicyclists in Duncan include poor facility condition (24 percent), high traffic volumes (21 percent), and gaps in the facility network (20 percent).

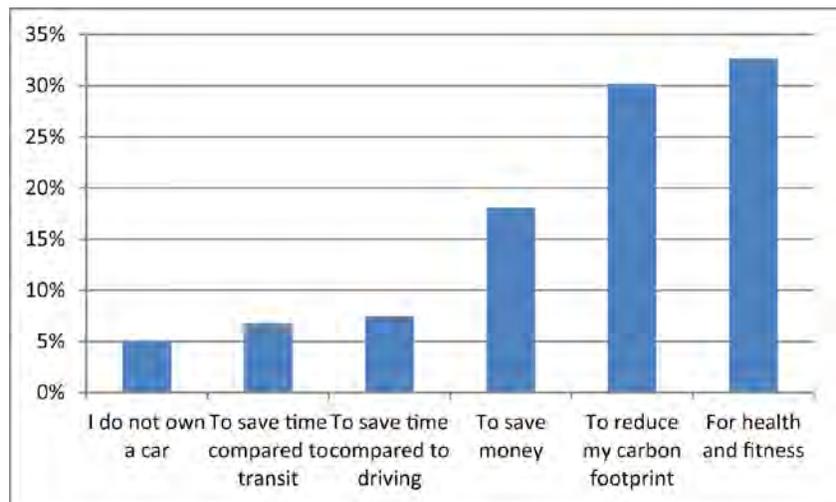


Figure 17. What are your top reasons for biking?

Cycling Facility Preference

User facility preference typically varies with a bicyclist's skill level, trip purpose, and individual characteristics, and there is no simple rule for determining what users prefer³. However, as the level of separation increases, a facility becomes more attractive to a wider range of bicycle users, making bicycling a more viable and preferred transportation mode.

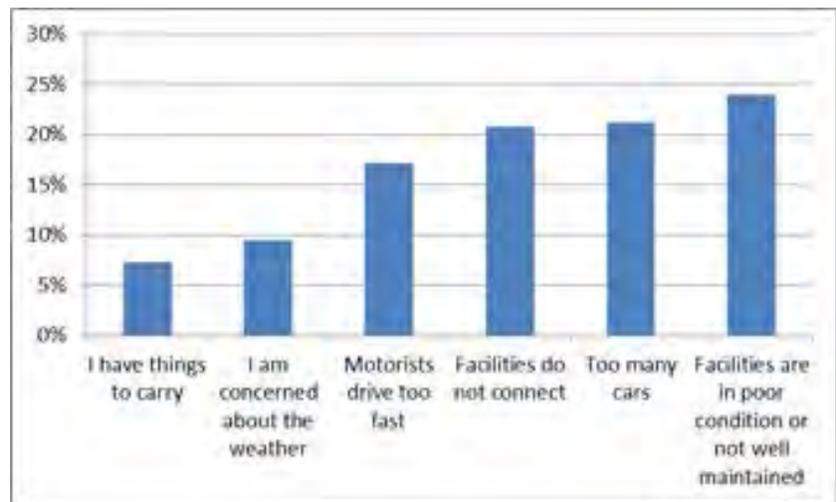


Figure 18. What are the biggest barriers to bicycling?

³ Information on user types is provided in the Design Guidelines.

Currently, roadways in the Duncan area require that cyclists ride in traffic in standard motor vehicle lanes (**Figure 19**) or within wide motor vehicle lanes (**Figure 20**). The majority of survey respondents (78 percent) reported that while they would not feel comfortable sharing a standard lane, most people (70 percent) would feel comfortable sharing a wide outside lane.

When asked what types of facilities they would feel comfortable using, most respondents opted for bikeways that would provide physical separation from motor vehicles. **Figure 21** shows the top rated facilities are bicycle paths (88 percent), multi use paths and cycle tracks (86 percent each). Respondents also ranked neighbourhood bikeways and shared roadways highly (83 percent and 82 percent respectively). Neighbourhood bikeways may be more comfortable for users of all types and abilities as they are facilities that take advantage of the local roadway network and additionally prioritize cycling and walking by installing traffic calming and infrastructure designed to encourage slow motor vehicle travel. Bicycle routes may simply be signed roadways. While bicycle lanes scored lowest, this could be impacted by the limited examples that are available in the Duncan area. The existing bike lanes on Government Street north of Gibbins Road are only 1 metre wide rather than the 1.5-metre minimum used in many communities. These narrow bicycle lanes provide some dedicated roadway space but are likely uncomfortable for many cyclists because they do not provide adequate clear space between a motor vehicle and the curb.



Figure 19. Roadway with standard motor vehicle lane, Coronation Avenue.

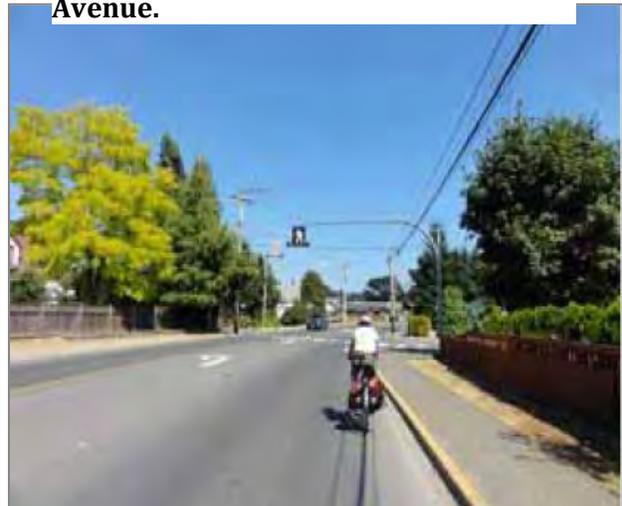


Figure 20. Roadway with a wide motor vehicle lane, Trunk Road.

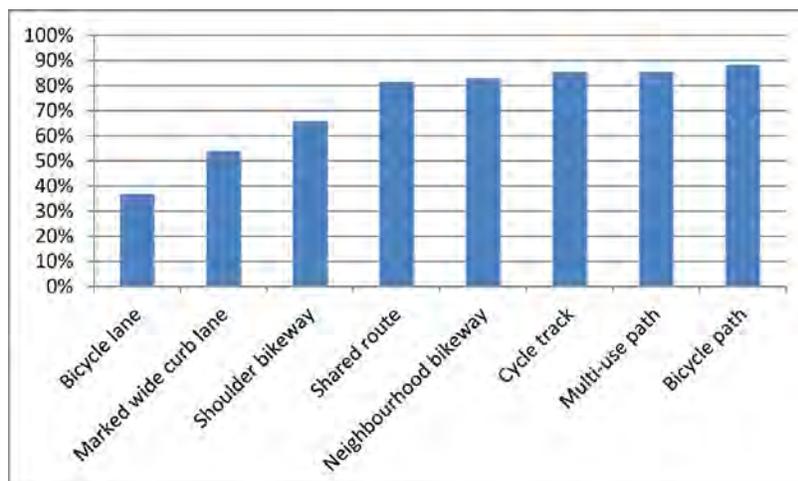


Figure 21. Which types of bicycle facilities would you be comfortable using?

General Comments

Respondents to the online survey and at the Farmer’s Market provided the following general feedback on cycling and walking in Duncan⁴. Key themes are listed below; a complete listing of comments is included for reference in **Appendix E**.

- Many roadways are too narrow to comfortably accommodate both cyclists and motor vehicles (e.g., Trunk Road and Government Street).
- Wide shoulders could be marked as bike lanes.
- Opportunities exist on roadways that are already wide (e.g., Canada Avenue).
- Crosswalks throughout the City of Duncan are faded and difficult to see.
- Sidewalks can create challenges for users with mobility impairments. Challenges include rough, slanted, and cracked sidewalks, as well as sidewalks that lack transitions (e.g., curb ramps).
- Traffic signals should provide aids for the visually impaired.
- Utility poles create obstructions on sidewalks in several locations (e.g., Jubilee Street and Duncan Street).
- More transit service is desirable, both fixed-route transit and shuttle service.
- Education and encouragement would be beneficial. The preliminary programs should focus on safe roadway/trail cycling.
- Crossing the Trans-Canada Highway is difficult for both cyclists and pedestrians.

Maps 6 and 7 (pages 4-75 and 4-77) note the locations of specific geographic concern.

⁴ In some instances, feedback was provided for road in **Appendix E**, but will not be addressed as part of this planning process.

3.1.5 Cycle Cowichan Brainstorming Meeting

On September 22, 2011 the consultants, Bunt and Associates; members of Cycle Cowichan; and City of Duncan staff met to review maps documenting existing conditions. Members of Cycle Cowichan shared information about locations that function well, ones needing improvement, and where signs should be installed. Generally, members were positive about the existing bike racks in downtown Duncan and painted bike lanes in several places. Places where improvements were deemed necessary included many collector and arterial roadways (e.g., Trunk Road and the Trans-Canada Highway). The organization is involved in several outreach activities including:

- Bike to Work Week – which is organized with over 25 sponsors;
- Policy Outreach – which including letter writing and contacting local politicians to voice concerns about active transportation issues; and
- Group Rides – organized by local bike shops and email newsletter.

Things that are being done right:

- Trans-Canada Trail, Pipeline Trail, Friendship Trail and Somenos Trail
- Painted shoulder on Herd Road, Maple Bay Road, and elsewhere in North Cowichan
- Painted bike lanes on Cowichan Lake Road and Somenos roundabout to Gibbins roundabout
- Bike racks in downtown Duncan
- New bike racks in a number of locations including Craig Street, Vancouver Island University, and on buses, and bike lockers at the Cowichan Valley District Hospital

Locations needing bike lanes or other improvements⁵:

- Lake Cowichan Road/Government Street from Gibbins roundabout to Downtown Duncan
- Beverly Street from Lakes Road to Canada Avenue
- Trans-Canada Highway from Boys Road to Beverly Street, especially the connection with the dike trail
- Tzouhalem Road from Maple Bay Road to Lakes Road
- Trunk Road/Coronation Avenue from Lakes Road to Downtown Duncan
- Craig Street and Allenby Road from downtown Duncan to the Trans-Canada Highway
- Facilities that will improve comfort on Cairnsmore Street and Government Street and Allenby
- Need improved bike facilities on/along the Trans-Canada Highway or information on how to safely share existing facilities

⁵ The categorical summary and description here was provided by Cycle Cowichan. Several of these corridors/locations mentioned include crash locations documented by ICBC.

Requests for improved infrastructure

- "Share the road" or "bicycles must occupy full lane" signs at all of the roundabouts
- Informative signs about how to access the Trans-Canada Trail, Somenos Trail, etc.
- Sign a north / south and east / west route with good wayfinding signage
- Bike Route signs for a safe Duncan-Cowichan Bay ride
- "Bikes must occupy full lane" or "No passing bikes on a bridge" on all of the bridges
- Bike racks at major public facilities like the library and Aquatic Centre, improved racks near Craig Street Renovations, new racks at Village Green Mall, and secure bike parking for commuters riding transit to Victoria
- Connections on University Way to the mall and downtown
- Green marking paint to highlight where cycling and car traffic converges.

Non-Infrastructure related suggestions

- Regional standards for on and off-street bicycle facilities
- Develop a permanent Regional Active Transportation Advisory Committee that includes local politicians
- Encourage accountability of local and regional governments to champion and implement active transportation support programs and infrastructure

Potential resources Cycle Cowichan members could offer

- Education and practical advice; including courses for children
- Networking
- Advocacy

3.2 Analysis of Existing Infrastructure

This section analyzes the existing active transportation network by considering the adequacy of existing facilities and evaluating "user experience" on existing facilities. Data used in this analysis was collected during the late summer and fall of 2011 and includes the roadway inventory (Inventory) and existing GIS data provided by Duncan, North Cowichan and CVRD. In November, 2011 the project team reviewed the existing active transportation network to determine the adequacy of existing facilities based on the following criteria:

- Safety
- Connectivity and completeness of the network
- Ability to serve key destinations
- Barriers and constraints
- User experience (a measure of comfort and of the ability of the bicycle network to serve the needs of different types of bicyclists)

Each of these criteria and their associated evaluations are described below, followed by a summary of the evaluation at the end of the sub-section.

3.2.1 Safety

Crashes involving pedestrians and cyclists tend to be more severe than automobile-only crashes. Cyclists and pedestrians represented 13 percent and 2 percent respectively of national roadway fatalities between 2004 and 2008⁶. Nationally, 75 percent of pedestrian fatalities occurred on urban roads, and 60 percent of pedestrian fatalities occurred when pedestrians were attempting to cross the roadway.

Elderly pedestrians are disproportionately represented in national fatality statistics, representing about 35 percent of deaths and 13 percent of the population. Their higher mortality rate is typically due to reduced visual acuity and ability to judge approaching motor vehicle speeds. The majority of fatality crashes (60 percent) occurred during dim light conditions or at night.

Cyclists are involved in approximately 2 percent of all roadway fatalities; crashes typically impact cyclists who are at least 16 years old and 34 percent of all incidents occurred at night. Approximately 19 percent of cyclist fatalities involved a heavy truck or other large motor vehicle.

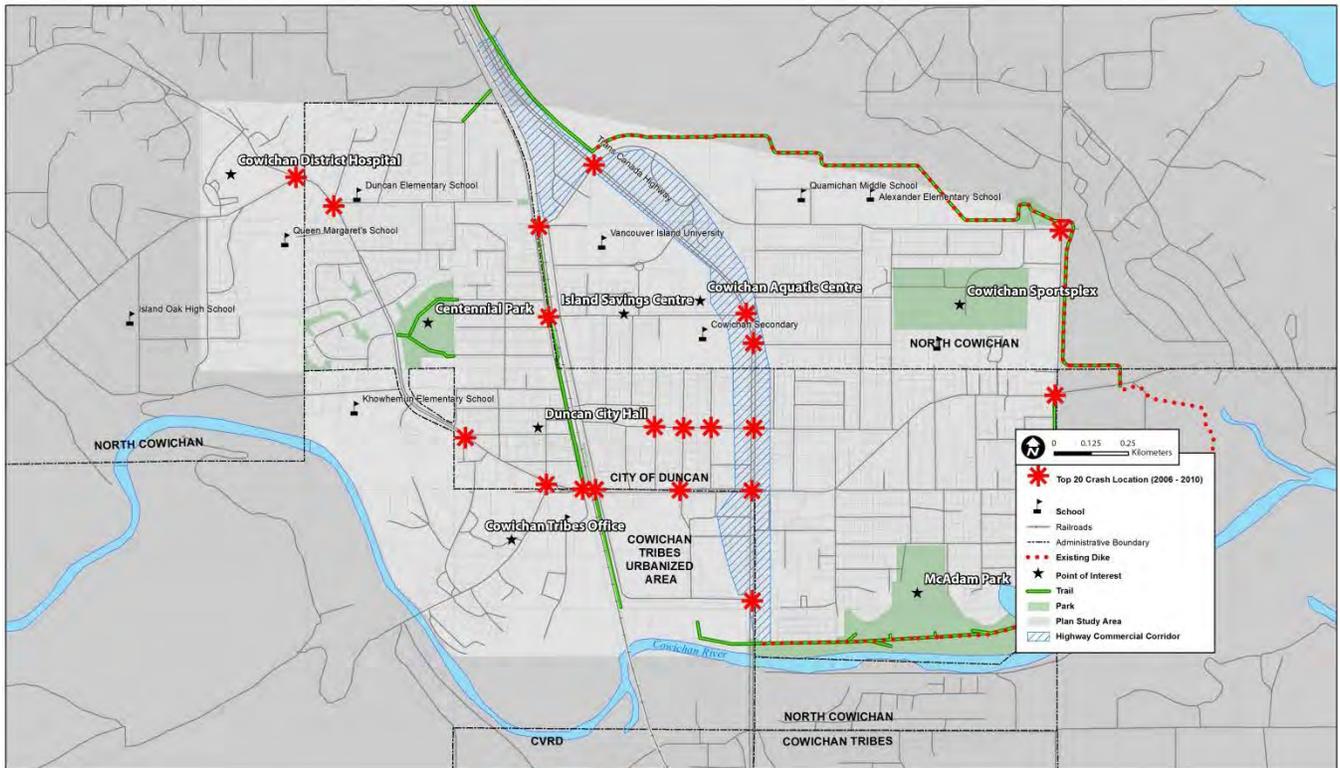


Figure 22. Top 20 Crash Locations 2006 to 2010

⁶ Transport Canada. "Road Safety in Canada." 2011. Web. 17 Nov 2011.

Rates of injuries and fatalities among pedestrians and bicyclists in British Columbia reflect national trends.⁷ ICBC provided summary level information for pedestrian- and bicycle-involved crashes. **Figure 22** illustrates the top 20 crash locations from 2006 – 2010; the top four crash locations involving the most pedestrians and/or cyclists are:

- Trans-Canada Highway and Trunk Road
- Cowichan Way and Trans-Canada Highway
- Festubert Street, Trunk Road, and the Mall Access
- Marchmont Road, McKinstry Road and Trunk Road

These roadways are classified as arterials or collectors and the BC Digital Roadway Atlas designates them as roadways in which the primary purpose is to provide motor vehicle access. These locations are consistent with the top 20 casualty crash locations for the same period. Crashes involving cyclists and/or pedestrians also frequently occurred along Canada Avenue and Jubilee Street.

Factors most frequently cited as contributing crash factors in bicycle and pedestrian crashes by the police and reported by ICBC were “Driver inattention” and “Failure to Yield Right of Way.” The top ten reported factors in bicycle and pedestrian crashes in order of most frequent to least frequent include⁸:

- Driver inattention
- Failing To Yield Right Of Way
- Driver error/confusion
- Driving On Wrong Side Of Road
- Weather (fog, sleet, rain, snow)
- Pedestrian Error/Confusion
- Ignoring Traffic Control Device
- Alcohol
- Road Condition (ice, snow, slush, water)
- Glare-Sunlight

The contributing factors list includes crashes that did not involve a cyclist or pedestrian; however, this information still provides insight into factors that increase cyclist/pedestrian risk. These contributing factors are consistent with behaviors known to be particularly dangerous for cyclists and pedestrians in other US and Canadian cities.

⁷ Insurance Corporation of British Columbia. “Traffic Collision Statistics.” 1997. Web. 17 Oct. 2012.

⁸ Each involved party may be assigned up to 4 contributing factors. Information provided by ICBC did not include information about frequency of factor assignment to cyclists, motor vehicles, or pedestrians.

3.2.2 Connectivity and Completeness, Barriers and Constraints

A gap analysis was conducted to identify missing segments and underserved locations in the existing pedestrian and bikeway network. Gaps were classified as follows (**Figure 23**):

- **Spot gaps:** point locations lacking active transportation facilities or with an observed/documentated safety issue (e.g., missing crosswalks, bike lane “drops” etc.).
- **Connection gaps:** missing segments (typically less than 0.5 km long) between routes or connecting to land uses.
- **Lineal gaps:** missing segments or barriers along an otherwise well connected corridor (e.g., bike lanes “dropping” for several blocks or a missing bridge crossing along a trail).
- **Corridor gaps:** missing links longer than 1.6 km that can encompass an entire street where facilities are desired but do not currently exist.
- **System gaps:** larger geographic areas (e.g., a neighbourhood or business district) where few or no bikeways exist.
- **Facility quality gaps:** In some cases, a formalized bikeway itself may represent a gap despite its status as part of a designated network. This condition typically occurs when a corridor (often a major street) lacks the type of bicycle facilities to comfortably accommodate a broader user base, including infrequent or less confident cyclists. Other examples include roadway corridors lacking formalized facilities (e.g., bike lanes) where conditions such as higher vehicle speeds and volumes would otherwise justify greater separation between motorists and cyclists.

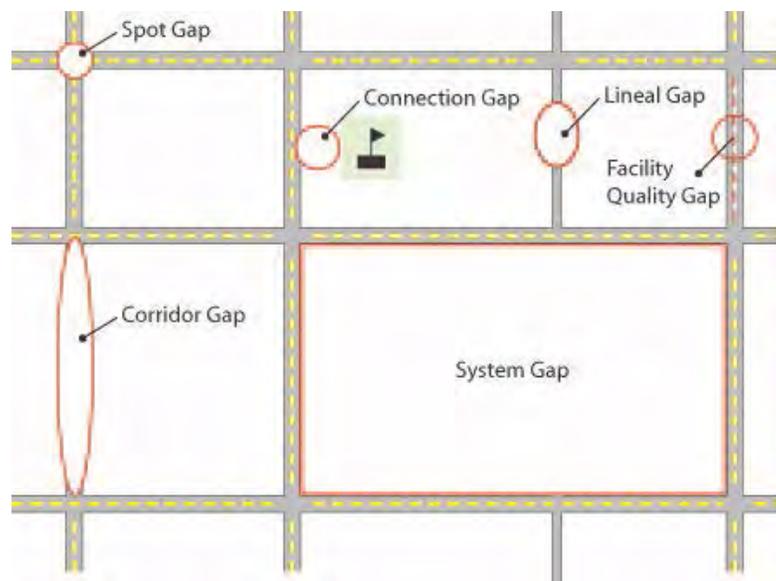


Figure 23. Example of typical gaps.

Gaps typically exist where physical or other constraints impede development of the bikeway or pedestrian networks. Example constraints may include bike lanes “dropping” at an intersection to provide space for vehicle turn lanes, narrow bridges on existing roadways, severe cross-slopes, or potential environmental impacts associated with wider pavement widths. Traffic mobility standards and other policy decisions may also lead to gaps in a network. For instance, a community’s strong desire for on-street parking or increased vehicle capacity may hinder efforts to install continuous bicycle lanes along a major street.

As part of this project, facility information was collected for a number of potential active transportation corridors. This information is helpful in establishing a cycling and walking system; however, there are gaps throughout the mapped network that can create uncomfortable cycling and walking conditions. These gaps are

shown on **Maps 8 and 9** (pages 4-79 and 4-81) respectively and were identified through field investigation, review of existing planning documents, and public comment.

In general, Duncan has a fairly well-connected walking network and an incomplete and disconnected cycling system. Spot gaps and Facility quality gaps disrupt the connectivity and utility of the network.

The best general street connectivity exists in downtown Duncan and east of the Trans-Canada Highway, where the denser street grid and lower traffic speeds and volumes allow cyclists a greater range of route choices and afford pedestrians opportunities to walk. However, even in this area, north-south connectivity is limited by physical features such as the Cowichan River and few alternatives exist for the higher speed arterial streets, such as Trunk Road or the Trans-Canada Highway.

3.2.3 Analysis of Pedestrian Gaps

Facility Quality Gaps

Facility quality gaps commonly exist where pedestrians are accommodated via a roadway shoulder (e.g., the Trans-Canada Highway north of Dingwall Street). While a wide shoulder may be an appropriate facility for more rural environments, formalized sidewalks or a pathway that provides increased separation from motor vehicle traffic are recommended. Notable shoulder gaps also exist on Allenby Road, Lakes Road, and portions of Cowichan Way.

The Jubilee Street corridor between Evans Street and White Road has numerous power pole obstructions. Other corridors with many power pole obstructions include Canada Avenue north of Beverly Street, Ingram Street, Queens Road, portions of Government Street, and the Trans-Canada Highway.

Another type of facility gap exists where sidewalks are of poor quality and are sufficiently cracked enough that a mobility-impaired individual may have a difficult time traversing them or locations where curb drops are not present or their design makes use difficult. Areas with poor pavement quality include Beverly Street, portions of Duncan Street, and Allenby Road.

Other facility gaps exist where the proposed sidewalk does not provide a minimum of 1.5 metres of clear space to accommodate two pedestrians walking side-by-side. Narrow sidewalks include Jubilee Street, Evans Street, and Beverly Street.

Spot Gaps

Conventional intersections may be considered a Spot gap for pedestrians where crosswalks are missing, frequent crashes indicate need for a safety improvement, or signal timing does not allow enough time for a user to comfortably cross the roadway. Intersections identified as Spot gaps for safety reasons include Trans-Canada Highway/Trunk Road, Cowichan Way/Trans-Canada Highway, Festubert Street/Trunk Road/Mall Access, and Marchmont Road/McKinstry Road/Trunk Road. Many Duncan residents felt that crossings of the Trans-Canada Highway do not allow time for a comfortable crossing. Respondents also felt that bridges represented Spot gaps for pedestrians due to narrow or missing pedestrian facilities.

Corridor and Lineal Gaps

Corridor and Lineal gaps exist where there are missing links between existing facilities on one or both sides of the roadway. Corridor gaps can also impede access to popular destinations such as schools, parks, trails, and senior facilities. Corridor gaps exist along Allenby Road, Beverly Street, McKinsty Road, and Lakes Road.

In some cases, corridor gaps are identified along entire street corridors where facilities are desired but currently do not exist. In Duncan, corridor gaps were identified along Tzouhalem Road where east/west travel is difficult. Canada Avenue is also a Corridor gap north of Beverly Street, following the E&N Railway. If completed, this facility could provide a north-south alternative to the Trans-Canada Highway.

3.2.4 Analysis of Bicycling Network

Though many of Duncan's local roadways currently provide safe and comfortable places to ride, a general lack of dedicated (signed and marked) cycling facilities, and a network of arterial and collector roadways that serve as travel barriers for less confident cyclists, characterize the network.

Facility Quality Gaps

Facility Quality gaps exist when a designated facility may not adequately serve user needs (e.g., bicycle lanes that are too narrow or bike lanes that drop at roundabouts or right turn lanes). While the bicycle lanes on Cowichan Lake Road north of Gibbins Road provide a measure of separation between cyclists and motor vehicle traffic, the 1-metre width does not meet the recommended TAC Standard minimum of 1.8 metres. Many jurisdictions use a less-generous, but still acceptable recommended 1.5 metre minimum.

Spot Gaps

There are a number of Spot gaps along Duncan's roadways. Though the potential active transportation corridors are currently unsigned, these Spot gaps may affect people who currently choose to cycle on the roadways and trails. Spot gaps typically occur in Duncan in areas with heavy volumes of right-turning traffic or slip lanes that do not require vehicles to stop (e.g., Beverly Street/Canada Avenue, and Beverly Street/Trans-Canada Highway). In these locations, the lack of clarity for proper navigation can create uncomfortable conditions for people who bicycle.

Conventional intersections may also be considered a Spot Gap for cyclists when bicycle detection is not provided at an actuated traffic control. In these locations, cyclists are required to run the light, wait for a motor vehicle to trigger the signal or get off their bicycle to use a pedestrian push button. These conditions typically exist at crossings of the Trans-Canada Highway (e.g., James Street). Spot gaps also occur at roundabouts where cyclists and motorists are unclear about proper positioning as well as in locations with a history of bicycle and pedestrian involved crashes (e.g., Trans-Canada Highway/Trunk Road). In many situations, the application of minimal treatments will result in enhanced system connectivity (e.g., addition of shared lane markings and signing at roundabouts).

Additional Spot gaps exist where one facility transitions to another without adequate guidance for users or facility transition. For example, the intersection of Beverly Street and Lakes Road does not include a curb let down to allow trail users to transition to the roadway.

Corridor, Lineal, and System Gaps

Most of Duncan's arterial and collector roadway network has been classified as Linear and Connection gaps. In most circumstances, these roadways represent the most direct pathways between popular destinations. It is possible to retrofit these roadways for bicycle use but with varying degrees of success. For example, Coronation Avenue and James Street could be reconfigured easily, but adding bicycle lanes to Trunk Road might require a road diet and result in reduced motor vehicle capacity, which can encourage active transportation by creating safer and more comfortable cycling conditions. Local roadways exist in several locations that could complement the arterial and collector network, providing routes for less confident cyclists to access destinations such as the Cowichan Sportsplex and McAdam Park.

3.2.5 Service of Key Destinations

One key to the development of a community that walks and bicycles for recreation and transportation is providing safe, accessible, attractive and desirable connections to destinations like parks, schools, and commercial areas. The following section provides a high-level description of the active transportation infrastructure around each destination.

Elementary Schools

Many of Duncan's elementary schools are located on local roadways. Key barriers to access are created by arterial and collector roadways without existing bicycle facilities. Generally, destinations are more accessible for pedestrians than bicyclists.

Cowichan Sportsplex

The Sportsplex is served by Beverly Street and Lakes Road, which currently have incomplete and intermittent sidewalks and no marked bicycle facilities. Pedestrians traveling from east of Lakes Road may have difficulty accessing the Sportsplex. Protected crossing opportunities exist at Tzouhalem Road/Lakes Road and Trunk Road/Chesterfield Avenue.

Tzouhalem Road

Tzouhalem Road provides connections to and from residential areas to destinations along Trunk Road and to the Cowichan Tribes Urbanized area. The roadway has intermittent narrow shoulders and no continuous bicycle or pedestrian facilities, which equates to poor quality travel conditions. The narrow bridge crossing east of Lakes Road increases the collision risk for cyclists and pedestrians sharing roadway space with motor vehicles.

City Hall and Downtown

Downtown Duncan is well served with wide sidewalks, user amenities (e.g., benches), bicycle parking, streets with relatively low travel speeds and volumes, and numerous pedestrian oriented destinations. Downtown is bounded by Government Street to the south and west, relatively steep topography to the north, and Canada Avenue to the east.

Cowichan Tribes Office

Situated off Allenby Road, the Cowichan Tribes Office may be challenging for people who walk or bike, as the sidewalk is incomplete and the roadway is not marked for cyclists. The quality of the roadway surface can create challenging travel conditions for cyclists and pedestrians.

Centennial Park

Pedestrians may access Centennial Park via a new multi-use trail on Government Street and cyclists may access the park via several lower speed and volume roadways near downtown Duncan. The gravel surface of the trail may create challenges for cyclists trying to access the park via the trail.

Cowichan District Hospital

The Cowichan District Hospital may present a moderate challenge for cyclists accessing the facility via Government Street. Pedestrian travel is better accommodated through a fairly complete system of multi-use trail and sidewalks. Mid-block crossings throughout the corridor provide enhanced crossing opportunities. The gravel trail surface and lack of pedestrian-scale lighting in some areas may deter cyclists and pedestrians from using the trail system to access the hospital.

Vancouver Island University

Bounded by Beverly Street and the Trans-Canada Highway, access to the University is complicated by a lack of dedicated bicycling facilities and requires complex intersection movements, which can increase the risk of collisions for both pedestrians and cyclists. Pedestrians and cyclists accessing the University from the south can complete the trip on local roads but not from the Trans-Canada Hwy.

Trans-Canada Highway Commercial Corridor

The Trans-Canada Highway is the most heavily traveled roadway in the Duncan area. The road is characterized by two motor vehicle travel lanes in each direction, a center turn lane, and 1.5 – 2.0 metre sidewalks. In some areas, sidewalks are separated from the roadway by landscaping, but frequent driveway access and lack of pedestrian-oriented lighting reduce the road's pedestrian-friendliness and walkability. Cyclists using the corridor typically use the sidewalk rather than riding in the roadway, which is an uncomfortable experience for most cyclists due to motor vehicle speeds and volumes. While using sidewalks increases cyclist separation from motor vehicles, mixing with pedestrians on the sidewalk increases the potential for bike/pedestrian conflicts. The Trans-Canada Highway is a key commercial corridor in the study area, access along and across the corridor is important for all active transportation users.

Island Savings Centre/Cowichan Aquatic Centre

Located on James Street, the Island Savings Centre and Cowichan Aquatic Centre are served by complete sidewalks and several marked crosswalks. Bicycle and pedestrian access to the Centre is constrained from the east by a crossing of the Trans-Canada Highway.

3.2.6 User Experience

Factors that affect user comfort and experience include the facility type and width, adjacent motor vehicle volumes, proximity and speed of adjacent motor vehicles, presence of safe crossings, lighting, the aesthetics of the route (e.g., scenery or active land uses), and topography.

Using available data, the project team scored each of the major active transportation routes based on the factors included in **Table 3**. These scores provide a picture of the conditions a user is likely to find in each corridor. However, people who walk and cycle may prefer different environments and have a different subjective evaluation of each corridor. The ATP identifies the suitability of cycling facilities based on user type (**Figure 24**) and illustrates them in the user experience maps, **Map 10** and **11** (pages 4-83 and 4-85). Facilities that currently provide a lower quality experience (shown in gold) are Class 3 facilities, while adequate Class 2 experiences are in light green and high quality Class 1 experiences in dark green. Subsequent infrastructure recommendations are intended to improve the user experience to Class 1 or Class 2.

Tables describing each factor and the scoring system are included in **Appendix F**.

Table 3. Active Transportation Comfort Evaluation Factors and Data

Factor	Used in Cycling Analysis	Used in Pedestrian Analysis
Facility Type	X	X
Facility Width		X
Surface Quality	X	X
Controlled Crossings	X	X
Posted Speed	X	
Roadway Classification	X	X
Aesthetics	X	X
Topography	X	
Completeness		X



Figure 24. User type classification

User Experience – Walking

Pedestrians in Duncan will find a fairly high quality walking experience on many of the previously identified potential active transportation corridors⁹. Facilities of the highest quality are typically multi-use pathways that are completely separated from the roadway or facilities on lower order roadways (e.g., local streets). Notable exceptions are arterial and collector streets, including Trunk Road between McKinstry Road and Chesterfield Avenue, which received a high score because it is barrier free, provides a protected crossing opportunity and is fairly wide. Areas typically receiving a low score were locations where a pedestrian facility did not exist, or exists on only one side, and along higher order roadways like the Trans-Canada Highway.

User Experience – Bicycling

Like pedestrians, Duncan’s cyclists may have the best user experience on multi use trails, which are completely separated from motor vehicle traffic. Their experience is best when trails provide a smooth travel surface (e.g., asphalt or concrete) and have appropriate lighting. Cyclists will also have a fairly high quality experience on many of Duncan’s roadways with lower motor vehicle volumes and posted speeds, such as McKinstry Road and Chesterfield Avenue. Though these roadways are not formally designated as bicycle facilities, they are still fairly comfortable for cycling. Users will have the lowest quality experience on multi-lane roadways with high posted speeds and motor vehicle volumes (e.g., Trunk Road and the Trans-Canada Highway).

3.2.7 Summary of Network Evaluation

Duncan has the potential to become a truly inviting area for cyclists and pedestrians. Cyclists will benefit from expanding and enhancing the network of bicycle lanes on arterials and collectors and marking lower-stress designated shared roadways. Pedestrians will benefit from a network of complete facilities and intersection improvements designed to make crossing safer and more comfortable. These and other improvements can help to increase bikeway and walkway connectivity and access to commercial corridors, neighbourhood parks, greenways, and schools. A consistent approach between jurisdictions can create an active transportation network that is safer for all users.

⁹ Potential active transportation corridors were defined in consultation with the ATP SAC early in the planning process. These corridors typically provide connectivity within the study area as well as connections to neighbouring communities. The project team conducted significant field review of these corridors to inform the forthcoming infrastructure recommendations.

4 Recommendations and Implementation

The review of existing conditions (Chapter 2) and assessment of existing opportunities and constraints (Chapter 3) offers the framework for infrastructure, policy, and program recommendations and implementation strategies. The non-infrastructure recommendations of this Plan are designed for implementation within two years of adoption of the Plan. Existing and potential partners that may want a role in implementing community programs are described in Chapter 2. This Chapter concludes with recommended bicycle and pedestrian infrastructure and accompanying short-, medium- and long-term phasing recommendations.

4.1 Policy Recommendations

Although Duncan, North Cowichan, and Cowichan Tribes have each supported policies that encourage active transportation and enhance its role in community planning, the policies could more comprehensively and explicitly support active transportation. The following policy recommendations build on the many existing policies that are supportive of transportation hierarchy. Recommended policies include a transportation hierarchy and a Complete Streets policy.

The following priority policies should be implemented within the next 6 to 12 months:

- Complete Streets Policy
- Bicycle Parking Policy

4.1.1 Transportation Hierarchy

Many cities in British Columbia and the United States have consciously adopted policies that prioritize bicycle and pedestrian access and investments over motor vehicle use, including Vancouver, British Columbia and Tacoma, Washington. This hierarchy places pedestrians, cyclists, and public transit in the forefront of transportation planning to receive funding and implementation priority. These principles are already embedded with North Cowichan's and Duncan's Official Community Plans. **It is recommended that each municipality adopt an official policy that explicitly prioritizes pedestrians, cyclists, and transit connections over motor vehicle facilities to further emphasize and unify the existing supportive policies.**



Figure 25. Transportation Hierarchy

4.1.2 Complete Streets

A standard of planning that prioritizes active transportation before other modes is best supported by strong policy. If active transportation is to become a priority, **a Complete Streets policy that explicitly prioritizes funding for walking and bicycling infrastructure development should be adopted by each jurisdiction.**

The term Complete Streets means the process of planning, designing, building, and operating streets so they routinely and safely accommodate all modes of local and regional travel. Complete Streets principles aim to

provide a balanced transportation system for all modes of travel. The policy goal is to design and build streets that are safe, comfortable, and convenient for anyone to travel by foot, bicycle, transit, and motor vehicle regardless of age or ability. According to the National Complete Streets Coalition (www.completestreets.org), an ideal Policy is comprised of the following elements:

- Includes a vision for how and why the community wants to complete its streets
- Specifies that ‘all users’ includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses, and automobiles
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all travel modes
- Is adoptable by all agencies to cover all roads
- Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.
- Directs that complete streets solutions will complement the context of the community

Taking a Complete Streets approach to public policy and planning for a community improves quality of life. Duncan’s OCP Policy 7.2.3.2 recommends adoption of a Complete Streets Policy. The Municipality of North Cowichan’s Official Community Plan contains policy direction that establishes the basis of a Complete Streets approach. Policy 2.5.6.1 states “The municipality will design its transportation network to accommodate all modes of transportation (pedestrian, cyclist, transit, and auto) and enhance connectivity throughout the municipality,” with Section A further clarifying that “the movement of people by foot, bicycle and public transit will be given equal priority and attention with automobile transportation in policy, design, and capital investment decision-making.” Though not specifically described as a Complete Streets policy, the current policies are supportive of the same concepts. Based on recommendations provided by the U.S. National Complete Streets Coalition, sample language for a comprehensive complete streets policy is provided below. If the language is not formally adopted as a complete policy, selected recommendations could be adopted individually.

4.1.3 Sample Complete Streets Policy Language

“Complete Streets is an on-going and comprehensive planning, design, construction and operations process with a long-range perspective aimed at improving safety, usability and quality of life. Duncan, North Cowichan, and Cowichan Tribes seek to plan and program rights-of-way that fully integrate the needs of street users of all ages, abilities, and modes including cyclists, pedestrians, transit users, commercial vehicles, emergency service vehicles, and passenger vehicles.

To achieve a roadway network that is safe, comfortable,



Figure 25. Complete Streets serve all types of users.

Chapter 4 | Recommendations and Implementation

and attractive for all users a complete streets policy has been developed that addresses the following topics:

- Planning
- Design
- Finance
- Construction
- Operations
- Exceptions

The following steps form the basis of a solid complete streets strategy as well as the basis for implementation of this Plan:

Planning

1. Regularly discuss current roadway projects to provide seamless transitions between existing facilities.
2. Adopt the Transportation Hierarchy as a common basis for transportation planning.
3. Reference the Cowichan Valley Transit Future Plan when conducting corridor studies to give explicit consideration to transit use.
4. Where appropriate ask BC Transit, Cowichan Valley Regional District (CVRD), the BC Ministry of Transportation and Infrastructure, and other project partners to review alternatives of corridor studies.
5. Review and provide comment on the Transportation Plan contained in member jurisdictions' Official Community Plans (OCPs) or other relevant plans.
6. Coordinate trail development with CVRD to prioritize trail segments that provide connectivity to the regional system.
7. Sign a memorandum of understanding (MOU) or other document formalizing the intention to cooperatively plan and prioritize active transportation investments in the Cowichan Valley.

Design

1. When appropriate, consider roadway design that slows motor vehicles and/or limits access so as to provide greater safety for cyclists, pedestrians, and motorists (e.g., lane narrowing or the reduction of lanes; reduction of access etc.).
2. Adopt by a MOU consistent design principles for cyclists and pedestrians as recommended in this Plan. Periodically update these design guidelines based on best practices in British Columbia and elsewhere.
3. Evaluate existing and potential on-road bicycle use in all repaving and re-striping projects (i.e. striping of bicycle lanes, wide curb lanes, paving of roadway shoulders, or widening of curb lanes) as well as new roadway construction and reconstruction projects.
4. Evaluate the effectiveness of narrowing pedestrian crossing distances at intersections where high motor vehicle counts and high pedestrian counts are expected. Narrowing can be accomplished with pedestrian refuge islands or curb extensions.
5. Provide appropriate bicycle accommodation on and along all arterial and collector streets.
6. Use pedestrian-scale design adjacent to sidewalks and other pedestrian facilities (e.g., pedestrian scale lighting, application of buffers between roadways and sidewalks or shared use paths, application of street furniture etc.).
7. Maintain the function of existing freight corridors, such as the Trans-Canada Highway, but evaluate design treatments to improve function of the corridor for cyclists and pedestrians.
8. Provide pedestrian accommodation in the form of sidewalks or shared-use paths adjacent to all arterial and collector streets.

9. Retrofit sidewalks and curbs with pedestrian ramps as expeditiously as possible so that all pedestrians are served at the highest possible levels of service.
10. Develop a Complete Streets checklist to guide the development of transportation projects.¹⁰
11. Recognize the role that street trees and other urban design elements, play creating a safe and attractive environment for active transportation and include them in retrofit and urban design projects and roadway reconstruction or redesign projects, whenever possible. Many design elements, like pedestrian scale lighting, are context specific, but street trees can be used in almost any roadway context.

Finance

1. Include active transportation as a line item in each jurisdiction's operational and capital budget

Construction

1. Provide alternate routes for cyclists and pedestrians during construction, reconstruction, and repair of streets. Develop standards to maintain pedestrian and cyclist access during construction activities.

Operations

1. Time traffic signals to provide adequate/comfortable pedestrian and cyclist crossing time.
2. In pedestrian areas, provide audible and countdown signal heads. Consider exclusive pedestrian timing or leading pedestrian intervals where pedestrian crossing volumes are sufficiently high. Set a goal of establishing a warrant system or hierarchy.
3. Provide bicycle signal detection at all actuated signals along bikeways and major roads typically used as cycling routes.
4. Explore development of a coordinated maintenance schedule or program to address bikeway, sidewalk, and shared use path maintenance needs.
5. Develop a maintenance schedule and strategy that is consistent across jurisdictions.
6. Establish performance metrics to track the implementation of this policy and report regularly (e.g., annually) via a website or other publically available format. Sample metrics include:
 - a. Kilometres of bikeways, shared use paths, and sidewalks in relation to kilometres of roadway
 - b. Reduced collisions involving cyclists or pedestrians
 - c. Improvements to air quality
 - d. Reduced transportation system maintenance costs
 - e. Increased numbers of people walking and cycling (counted annually)
 - f. Increased percent of traffic signals with countdown signalization and/or bicycle detection
 - g. Increased transit boardings, number of transit passengers who bring bicycles

¹⁰ A sample checklist from the Metropolitan Transportation Commission in the San Francisco, CA area can be found here: http://www.mtc.ca.gov/planning/bicyclespedestrians/Routine_Accommodation_checklist_FINAL.pdf

Exceptions

Not every street can be ideal for every traveler. However, it is still important to provide basic, safe, and direct access for users regardless of the design strategy used.

Exceptions to the Complete Streets policy should be made, by each appropriate jurisdiction where:

1. A suitable or more desirable alternative is available within a reasonable distance based on public and staff input. (General acceptable total distances between facilities: pedestrians 0.4 kilometres; bicyclists 0.8 kilometres.)
2. The cost of accommodation would be excessively disproportionate to the need or probable use. (Note: Excessively disproportionate is sometimes defined as exceeding 20% of the cost of the larger transportation project.)
3. There is public consensus that the accommodation is unwanted. Evidence of this should be well documented and defensible.

4.1.4 End of Trip Facilities for Bicyclists

Bicycle parking (**Figure 26**) and other end of trip facilities are critical to a decision about whether to bicycle to a destination. Research has shown that a number of factors influence the use of bicycle parking, including type, quantity, proximity to destinations, and security. The following actions are recommended to enhance end-of-trip facilities.

- **Continue and expand the adoption of bicycle parking codes requiring installation of bicycle parking tied to land use.** Duncan OCP Policy 7.2.3.4 supports installation of secure parking, storage and shower facilities. Exemplary Development Permit Area (DPA) guidelines, such as those outlined in zoning code for Chemainus Artisan Village, provide a starting place for code development in other DPAs. A sample bicycle parking requirement table is included (see Table 4).
- **Monitor occupancy of short-term bicycle racks. Add bicycle parking if racks are consistently over 80% occupied, or if nearby residents or business owners request additional parking.**



Figure 26. Bicycle parking is part of the active transportation network.

4.1.5 Sample Bicycle Parking Policy Language

Just as motor vehicle trips vary in purpose and duration, so too do bicycle trips. Because of the varied nature of bicycle trips, different types of bicycle parking should be provided to accommodate these needs. These needs can be met by providing both short-term and long-term parking. The Association of Pedestrian and Bicycle Professionals addresses the distinction between short/long-term parking in the *Bicycle Parking Guide, 2nd Edition, 2010*) **Table 4** provides a summary.

Table 4. Criteria for short-term and long-term bicycle parking¹¹

Criteria	Short-term	Long-term
Parking Duration	Less than two hours	More than two hours
Fixture Type	Simple bicycle racks	Lockers, racks in secured area
Weather Protection	Unsheltered	Sheltered or enclosed Secured, active surveillance
Security	Unsecured, passive surveillance	Unsupervised
		“Individual-secure” such as bicycle lockers
		“Shared-secure” such as bicycle room or cage
		Supervised
		Valet bicycle parking Paid area of transit station
Typical land uses	Commercial or retail, medical/healthcare, parks and recreation areas, community centers	Residential, workplace, transit

Providing the options for short-term and long-term bicycle parking is important to bicyclists. Communities use different metrics for assigning appropriate levels of bicycle parking, including:

- Unit count
- Percentage of building square footage
- Building occupancy
- Percentage car parking

The APBP Guidelines recommend decoupling bike parking supply from motor vehicle parking supply. The reason for this is that motor vehicle parking supply is not necessarily a good measure of the number of cyclists who would be expected to travel to a particular destination, especially in densely urbanized areas or where multiple travel options exist. The APBP Bicycle Parking Guide provides two groups of recommendations, one standard set and a higher level for “Urbanized or High Mode Share Areas.” Because of the characteristics of the Duncan area, **Table 5** does not reflect the higher bicycle parking rates from the Bicycle Parking Guide, which are approximately 20 percent higher and are recommended as a starting point for communities with higher levels of bicycling use. The values in **Table 5** may be used as a starting point for developing a bicycle parking code requirements. A count or assessment of current bicycle parking use and latent demand (e.g., bicycles secured to sign poles or other sidewalk furniture) should be completed in conjunction with development of code requirements.

¹¹ Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guide, 2010. Page 10.

Table 5. Sample Bicycle Parking Requirements

Use	Short-Term Bicycle Parking	Long-Term Bicycle Parking
Recreational/Civic		
Non-assembly cultural (library, government buildings, etc.)	1 sp./930 sq. m. (2 min)	1 sp./10 employees (2 min)
Assembly cultural (church, theater, park, etc.)	Spaces for 2% maximum daily attendance	1 sp./20 employees (2 min)
Hospital	1 sp./1,860 sq. m. (2 min.)	1 sp./20 employees or 1 sp./6500 sq. m., whichever is greater (2 min.)
Schools		
Kindergarten/Elementary Schools	1 sp./20 students (2 min)	1 sp./10 employees (2 min)
Jr. High/High School	1 sp./20 students (2 min)	1 sp./10 employees + 1 sp./20 students (2 min)
Colleges/Universities	1 sp./10 students (2 min)	1 sp./10 employees + 1 sp./10 students; or 1 sp./1860 sq. m., whichever is greater
Residential		
Single Family	No spaces required	No spaces required
Multifamily Residential		
With private garage for each unit	.05 sp./bedroom (2 min)	No spaces required
Without private garage for each unit	.05 sp./bedroom (2 min.)	.5 sp./bedroom (2 min)
Senior Housing	.05 sp./bedroom (2 min.)	.5 sp./bedroom (2 min)
Commercial/Other		
Offices	1 sp./1860 sq. m. (2 min)	1 sp./930 sq. m. (2 min)
Retail (furniture, appliances, hardware, etc.)	1 sp./465 sq. m. (2 min)	1 sp./1115 sq. m. (2 min)
Retail (grocery, convenience, personal)	1 sp./185 sq. m. (2 min)	1 sp./1115 sq. m. (2 min.)
Industrial/Manufacturing	Determined at discretion of Planning Director (Suggested 2 min)	1 sp./1394 sq. m. (2 min)
Bus terminals/stations	Spaces for 1.5% of a.m. peak period ridership	Spaces for 5% projected a.m. peak period daily ridership

4.1.6 Emphasizing Transit Connections

Consistent with the *Cowichan Valley Transit Future Plan*, BC Transit will enhance transit service in the Duncan area over the coming years by adding additional capacity, increasing direct connections between communities, and providing service for elderly, youth, and student populations. These modifications will be necessary if the community is going to significantly increase active transportation's mode share to accommodate new residents and to have capacity for the shifting demographics that anticipate a higher proportion of elderly residents.

Additional policy strategies will improve the integration of transit use with cycling and walking. Jurisdictional policies that support efficient transit systems and that improve access to transit can dramatically increase the viability of walking and cycling as transportation options and reduce traffic congestion. In addition, improved transit can reduce barriers to active transportation by providing options to increase trip distance, bypass barriers created by infrastructure (e.g., highways), and serving people with mobility impairments. Based on existing conditions inventory and existing service, recommended strategies to support increased transit use include the following:



Figure 27. Transit connections are critical to the last kilometre of travel.

- **Work with CVRD to improve transit accessibility and legibility:**
 - Provide route and schedule information at each transit stop
 - When possible increase frequency and expand evening service
 - Provide bicycle parking in proximity to transit stations to facilitate multi-modal trips
 - Provide amenities to increase the comfort of wait time at transit stops, including shelter, seating, and trash receptacles
 - Provide safe roadway crossing opportunities in proximity to transit stops
 - Provide safe access to transit vehicles for the elderly and physically disabled¹²
 - Prioritize upgrades (e.g., shelters and benches) at transit stops near destinations used by youth, students, and the elderly, and stops that receive heavy use.
 - Increase the number of pedestrians and cyclists that are within a stop's service area by increasing land use density and supporting transit oriented development.
- **Support land use policies that provide a grid of connections and minimize cul-de-sacs.** Where cul-de-sacs do exist, support development of pedestrian accessways to reduce the need for out-of-direction travel.
- **Support the continued practice of providing bicycle racks on buses to support the 'last kilometre' of the trip.** Monitor the system through anecdotal evidence or formal surveys to ensure adequate match between supply and demand.

¹² In the United States, the *Americans with Disabilities Act (ADA)* provides guidelines for accessibility to and at transit stops. Two of its minimum standards are the provision of 1.2 metre wide pathways around the bus stop or shelter and a pathway between the bus and the waiting area (i.e. across the boulevard).

- **Work with CVRD to investigate methods to provide additional capacity to carry bicycles on commuter buses heading to Victoria.**

4.2 Program Recommendations

Research and experience have demonstrated that program work is essential to achieving modal shift to walking and cycling. The following programmatic recommendations are based upon the existing conditions review and assessment and are intended to complement proposed policy and infrastructure improvements. The programs fall within the following broad categories of program types:

- Encouragement and Education
- Enforcement
- Evaluation/Institutional

Encouragement and Education

While all non-infrastructure recommendations are intended for short-term implementation, some programs will likely have the highest impact and the lowest cost. The following priority programs, which are described within this section, should be implemented within the next 12 to 24 months:

- Farmer's Market Outreach
- Bicycle Skills Training
- Comprehensive Communication
- Active and Safe Routes to School
- Senior Strolls Walking Program and Safety Education
- Formal Decision-Making Process (convene an Active Transportation Committee)
- Driver Awareness Campaign

4.2.1 Farmer's Market Outreach

The well-attended Duncan Farmer's Market in the Square is an ideal way to reach large numbers of residents in a casual and friendly setting. **For Bike Month (June), a cycling outreach station should be set up to offer free safety checks and basic bicycle tune-ups, offer flat repair training, distribute the Bike Sense booklet, and share information about the goals and progress of the ATP.** This could be undertaken in partnership with Cycle Cowichan and/or local bike shops. If the first year's program is considered successful, it could be expanded in the future to cover more than one month and/or to offer more services (such as valet bike parking, guided rides, maps, and brochures, etc.).

4.2.2 Bicycle Skills Training

While most people learn to ride a bicycle, the vast majority do not receive any training on roadway cycling. There is a great need to increase knowledge of both cyclist and motorist rights and responsibilities, as well as training cyclists on specific cycle handling skills that will benefit them as they negotiate roadways with motor vehicles.

It is recommended that training be provided using existing curricula. One possible offering is the CAN-Bike program (http://www.canbike.net/cca_pages/index.htm), **offered through the Canadian Cycling Association with support from Transport Canada.** CAN-Bike has ready-to-offer courses for children as well as beginning and advanced adult cyclists. Courses can be offered by working with a nearby trainer (e.g., in partnership with Bike to Work Victoria), or it may make sense for Cycle Cowichan, local bike shops, or another organization to select one or more people to be trained as local instructors.

4.2.3 Comprehensive Communication

Many residents do not know where to find information about walking and cycling, including laws, events, maps, tips, and biking groups. **Duncan, North Cowichan, and Cowichan Tribes should collaborate on a “one stops shopping” website aimed at pedestrians and bicyclists.** The website should contain links to local community groups, the ATP document and periodic updates about Plan implementation, simple evaluation metrics tracking community progress towards infrastructure implementation, information about current projects and how to get involved (e.g., public meetings and comment periods). Information should be made available in hard copy format at social agencies and other public locations.

Other links can include how to order the Bike Sense booklet, local jurisdictions and staff contacts, information about walking and cycling events (e.g., rides, classes, volunteer opportunities), and (if desired) a blog or other social media portal. For physical fitness, improved health, and active communities, a social marketing campaign similar to, or in conjunction with, the Green Communities Canada iCAN walk initiative may be appropriate.

A one-stop bike website will not be difficult to set up, but it will only be successful if the site is both easy to use and updated regularly. The site contents should be reviewed at least quarterly for accuracy.



Figure28. ASRTS pilot programs can be used to model successful programs.

4.2.4 Active and Safe Routes to Schools (ASRTS)

Building on the national and international resources available, a **pilot ASRTS program should be developed for one elementary school in the Duncan region (Figure 28).** The pilot should follow the national ASRTS School Travel Planning protocol (<http://saferoutestoschool.ca/>), and will result in a “Five E’s” (Engineering, Education, Encouragement, Enforcement, and Evaluation) plan for the school. An ASRTS Working Group can build on that experience to expand the program to other schools. The program should be coordinated with efforts already underway such as talks on bicycle and pedestrian safety conducted by Crime Prevention Unit officers. A trained ASRTS facilitator should be engaged; one way to accomplish that may be to partner with Hub for Action on School Transportation Emissions (HASTE - <http://www.hastebc.org/>).

Other initial ASRTS actions that may be considered:

- Participating in International Walk to School Day (<http://www.saferoutestoschool.ca/registration/registration/>)
- Offering youth bicycle skills training through the Kids-CAN program (see “Bicycle Skills Training,” above)

- Offering an after-school walking and/or bicycling club for youth

4.2.5 Senior Strolls Walking Program and Safety Education

Many seniors experience limitations in mobility as they age, and are often left out of recreation programs (Figure 29). A Senior Strolls walking program will help seniors maintain physical fitness, improve health, and enjoy opportunities for social interaction. Senior Strolls should be short, easy, and organized group walks hosted on a regular basis (weekly or biweekly) during pleasant weather months. Walks may originate at Volunteer Cowichan and/or the Valley Seniors Organization of Duncan. Walks can have different themes to keep participants interested (e.g., heritage homes tour, public art tour, waterwise gardens walk), or could have a few set routes and focus instead on community and wellness. Walks could provide an opportunity for ongoing safety education.



Figure 29. Senior strolls can help seniors remain active.

Enforcement

4.2.6 Creating Strong Relationships between the RCMP, Public Works, Cycling/Walking Community, and Community Policing

Additional actions to complement the current activities of the RCMP will continue to make trails and roadways in the Duncan area safer and enhance the pedestrian and cycling environments. Recommendations include creating a formal relationship between the RCMP and municipal staff and implementing enforcement actions that have proven effective in other communities throughout North America (Figure 30).

Transportation/public works departments' and law enforcement agencies' standard operating procedures have several differences that are important to note despite their common goal of increased road user safety.

Transportation and public works employees are expected to consider and respond to residents' complaints and recommendations and involve the public in decision-making. The success of a transportation project and its project manager's performance is often measured by a collaborative stakeholder involvement process that includes other agencies as well as the public, and that results in public support for (or lack of public opposition to) a project. Transportation professionals also deal



Figure 30. Partnerships with law enforcement make roadways safer for all users.

with projects that are expected to stretch out for years between visioning and completion. Their work is typically policy- or standards- based.

By comparison, law enforcement work is not primarily driven by public input or an expectation of a high level of citizen engagement. On a day-to-day basis, law enforcement professionals primarily react to field incidents or unique complaints. Law enforcement staff's successful performance is often measured by quantitative enforcement targets and by the ability to prevent incidents from escalating. Their work is typically based upon successful interpretation of the law as it relates to public safety.

However, there are also similarities between transportation agencies and law enforcement agencies. Both are committed to the goal of improving the health and safety of residents while they travel throughout the city. Both agencies set proactive priorities that can be changed on short notice by elected officials in response to a crisis that results in community outcry (such as a tragic road crash). Finally, both transportation and law enforcement professionals have unique skills and knowledge that can serve the interest of improving road safety for all residents.

Actions that can be taken to foster and strengthen the relationship between public works and law enforcement representatives include:

- **Identify the best internal advocates for walking and bicycling in both agencies (the likeliest candidate is a cyclist) regardless of his/her official role. Regularly ask the established contact(s) for advice and input on enforcement and public safety issues.**
- **Collaborate on grant applications.** Ideally, ideas for grant requests will come out of shared issue identification and ideas for solutions. It may also be effective to request that the RCMP provide letters of support.
- **Find opportunities to collaborate on small projects that generate positive community feedback** (e.g., requesting law enforcement presence at International Walk-to-School Day events in October). The experience gained, and the relationships formed, in working together on short term small efforts will form the basis for longer-term efforts that may require more intensive collaboration and tackling potentially controversial issues together. One potential partnership opportunity is the Citizens on Patrol (COPS) program, which operates in British Columbia on Friday and Saturday nights. Exemplary programs exist in the BC lower mainland.
- **Upon understanding enforcement priorities, identify current agency efforts that already support cyclist safety, and create private and public opportunities for appreciation.** Establish connections between enforcement activities and overall cycling or walking safety. For example, impaired driving and speed enforcement directly tackle safety issues that endanger cyclists, even though that is not likely to be a primary reason for making it an enforcement priority.

The following recommendations for enforcement activities should be a high priority because of their impact on cycling and pedestrian safety. Creating a strong relationship between the RCMP and bicycling/walking community will aid in development and implementation of these programs.

4.2.7 Speeding Enforcement

Speeding vehicles endanger all road users, including pedestrians. High-speed driving results in more frequent collisions and collisions that are more likely to result in serious injury or death. Targeted speed enforcement activities are a proven way to improve road safety and make walking and cycling more appealing.

- **Law enforcement officials should enforce speeds near schools, in downtown, at entrances to key destinations like the Cowichan Sportsplex, and at locations that are known to have speeding problems.** Locations can be identified by the Safety Committee, through volunteer speed watches and consideration of resident complaints. These campaigns are ideally used for an Active and Safe Routes to School Program (discussed in Section 4.6); many towns hold an annual “Back to School Blitz” to enforce speed limits in school zones.
- As part of ongoing enforcement against speeding, **the RCMP should also continue to utilize the speed reader board request program that exists through Community Policing.** The boards should be mounted temporarily (e.g., for two weeks) and then be moved to another location to keep motorists from becoming inured to the speed reader board effect.

4.2.8 Crosswalk Enforcement Action

Crosswalk enforcement actions (sometimes known as “pedestrian stings”) raise public awareness about the legal obligation of motorists to stop for pedestrians at crosswalks. While crosswalk enforcement actions do result in tickets being distributed, the greater impact comes through media publicity of the event to reinforce the importance of obeying pedestrian crossing laws. **RCMP should conduct regular crosswalk enforcement actions.**

Most crosswalk enforcement sites are selected because they have been identified as locations where pedestrians have trouble crossing, and/or where a large volume of pedestrians (especially vulnerable pedestrians such as children and seniors) is expected. High-crash locations may also be candidates for enforcement actions. If locations near schools are selected, the best timing for an enforcement action is the back-to-school window just after school has begun for the year. Locations should be selected by the RCMP in consultation with the Safety Committee. Any complaints from the public about problem crossing locations should be considered. School officials will also have valuable input about school crossing locations that would benefit from targeted enforcement.

Once locations have been determined, the RCMP should prepare by marking the safe stopping distance with cones. Then plainclothes police officers or trained volunteer decoys attempt to cross at corners and marked mid-block crossings just before a vehicle passes the cone. (Decoys may also be notable community members such as the mayor or a well-known business leader to increase media interest in the event.) If motorists fail to yield to the pedestrian in a crosswalk, a second police officer issues a warning or a ticket at the officer’s discretion. It is recommended that the enforcement action be recorded on video to support issued violations should a motorist challenge the ticket.

Evaluation/Institutional

4.2.9 Convene an Active Transportation Committee

In order to facilitate coordination and momentum on pedestrian and cycling issues, Duncan, North Cowichan and Cowichan Tribes should convene an Active Transportation Committee consisting of municipal staff (planners, engineers and other staff tasked with working on these issues), community, and staff from partner agencies (such as CVRD and the MOTI). The group should meet quarterly following completion of the ATP with the goal of working energetically towards implementing the plan recommendations and developing standardized design guidance and implementation practices. Logistical support from CVRD would enhance coordination with regional transportation planning, projects, and issues. Appointments to the committee should be made by the mayor or other high-level decision maker and attendance should become a part of each person’s job description. Citizen or other public participation should be considered; these seats could be designated as advisory only, depending on the final committee format.

Major task areas include:

- Implementing the ATP
- Determining the composition and decision making structure of the committee
- Developing standardized design guidance and implementation practice
- Leveraging funding and seeking new funding sources
- Working together on cross-jurisdictional efforts (such as Active and Safe Routes to School and Bicycle Skills Training) and existing committees such as MACDI and Advisory Committee on Seniors Issues
- Furthering the development of a formal working agreement or memorandum of understanding among Duncan, North Cowichan and the Cowichan Tribes for plan implementation

A successful advisory group will typically include no more than 12 members and should include the representation recommended in **Table 6**.

Table 6. Recommended ATC Committee Representation

Public Members	Municipal / Jurisdictional Members
A community member from Duncan, North Cowichan and Cowichan Tribes	A planner and engineer from each jurisdiction with an interest in bicycle and pedestrian issues
A member with specific interests and expertise in public health and fitness issues	CVRD Parks director or designee
A community member or advocate with knowledge of universal design	CVRD Transit representative or designee
Representatives of related advocacy groups such as Advisory Committee on Senior’s Issues or Cycle Cowichan	MOTI Area Manager or other designee
Public members of environmental, climate action, or related committees or advocates	Law enforcement representative (e.g., RCMP)
	Planner or engineer from each jurisdiction supporting environmental or climate action committees

4.3 Additional Programmatic Recommendations

These additional recommendations are general in nature and can help improve coordination and communication around active transportation.

4.3.1 Share Training or Expertise

A unified approach to system design can increase staff efficiency and create a system that is attractive and safe for all users. Opportunities for shared training and communication between staff should occur on a quarterly basis or more frequently as opportunities arise.

4.3.2 Develop Shared Methodologies and Priorities for Project Funding and Development

A more comprehensive approach to project development, prioritization, and funding could contribute to successful grant awards and bicycle/pedestrian network development. For example, an implementation checklist can provide staff step-by-step guidance on project implementation. An example is referenced in the Complete Streets section.

4.3.3 Formalize Annual Review of Performance Measures

Develop simple performance measures that can be used to track community progress towards infrastructure implementation and report the results annually. Recommended metrics are embedded within the Complete Streets recommendations.

4.4 Infrastructure Recommendations

Recommendations for bicycle and pedestrian facilities were developed to help make the Duncan area a place that is increasingly friendly for active transportation. To realize this vision, project recommendations were developed with the following criteria in mind:

- Improving safety
- Providing Safe Routes to School
- Providing Access to Community Destinations
- Completing Streets
- Ease of Implementation
- Increasing Regional/Local Connectivity
- **Map 12** (page 4-87) shows the recommended pedestrian improvements. Consisting largely of sidewalk infill, these improvements complement the proposed bicycling network and provide dedicated space for pedestrian travel. These improvements include approximately 20 kilometres of sidewalk infill or construction. Additionally, crossing improvements, new signals, or signal timing studies are recommended at 9 intersections. Pedestrian improvements are described in **Tables 10-11** (page 4-59).

This plan recommends a robust network of on-street bicycle facilities and trails that follow the active transportation corridors agreed on during the project kickoff meeting. Recommended facilities include bike lanes, cycle tracks, shared lane markings, and side paths and trails. The recommendations shown on **Map 13** (page 4-89) depict a continuous on-street bikeway network and complementary trail network and include

connections to CVRD’s proposed regional trail network (e.g., along the E&N Rail Corridor and Trans-Canada Highway).¹³

The bicycle facility recommendations are summarized in **Table 7** (page 4-54), shown on **Map 13** (page 4-89), and described in detail in **Table 12** (page 4-60). Recommendations are listed by roadway name and recommended facility type. Some recommendations will require greater effort to implement than others (e.g., shared lane markings on Cairnsmore St vs. a cycle track on the Trans-Canada Highway).

Table 7. Summary of Bicycle Facility Recommendations

Proposed Facility	Km
Bike Lane	12
Cycle Track	5
Shared Lane Marking	73
Shoulder Bikeway	17
Trail	1

4.4.1 Citywide Recommendations

Recommendations for area-wide efforts are non-location-specific improvements that would improve conditions for bicycling and walking throughout the city.

Bicyclist Detection at Intersections

Duncan and North Cowichan can improve detection of bicycles and use of traffic signals by bicyclists through the following actions:

- Work with cyclists to develop a list of intersections along frequently used routes where existing signals can be modified to detect cyclists better at a relatively low cost. Prioritize these locations for signal improvements.
- Ensure that all new signals provide a means of cyclist activation.
- Consider adjusting signal timing plans to provide adequate crossing time at intersections on the designated bicycle network.
- Use pavement markings to identify the most sensitive spots of in-pavement loop detectors.

Wayfinding Signs

Duncan, Cowichan Tribes and North Cowichan should develop a signing program with the specific uniform standards. The signing program can be implemented in several phases to make use of available funding and construction opportunities. Signs should be integrated with the standards developed by CVRD for use on regional trails. Additional information on wayfinding signs is included in the design guide.

¹³ For more information on proposed regional trails and implementation strategies see the 2007 Cowichan Valley Regional District Regional Parks & Trails Master Plan.

Accessibility Improvements

During public involvement many residents mentioned the desire to enhance pedestrian accessibility throughout the Duncan area by installing or improving curb let downs, increasing the length of the pedestrian crossing phase at key intersections, the removal of obstructions to cyclists and pedestrians (clear pathways), surfacing trails with materials that permit easy access for people using wheelchairs or other mobility devices, and installing pedestrian countdown timers at signalized intersections. Duncan, North Cowichan, and Cowichan Tribes should consider identifying standards of implementation and a regular funding source for small scale pedestrian improvements, maintaining a list of requested improvements, and working with the Active Transportation Committee and other relevant advisory or municipal representatives to prioritize and respond to citizen requests.

Installation of APS in key locations could also benefit visually impaired or blind pedestrians. APS signals are used in conjunction with standard pedestrian activated traffic signals and emit distinct tones that assist people of all ages crossing streets at designated intersections and could benefit Duncan area pedestrians. However, an audible signal does not and cannot assure pedestrians that no potential traffic conflicts will occur. In particular, conflicts may occur if:

- A motor vehicle is clearing the intersection when the signal turns on
- A motor vehicle fails to yield
- A motorist stops to make a right turn and watches traffic on the left and fails to notice a pedestrian on the right
- A motor vehicle may have the right or left turn signal phase as a pedestrian

Installation of an APS should be considered if the location is suitable and need is demonstrated. Several municipalities have developed checklists to prioritize installation of APS signals throughout the community including Portland, Oregon and the City of San Diego¹⁴. These lists represent a good starting point for development of a similar checklist for Duncan, North Cowichan, and Cowichan Tribes.

Trans-Canada Highway phased Implementation

As discussed previously a cycle track is recommended as a long-term and aspirational retrofit for the Trans-Canada Highway. This facility would provide the greatest amount of separation between bicyclists and motor vehicles, but retrofitting a cycle track in this constrained corridor could require significant acquisition of right-of-way or reconfiguring the existing roadway. A short-term strategy to improving conditions within this corridor would prioritize improvements along other north-south corridors and roadways that cross the Trans-Canada Highway and additional short-term recommendations from the 2005 Trans-Canada Highway Corridor Management Plan. Canada Avenue or Duncan Street are recommended as a priority north-south corridor or other north-south streets that currently do not provide through connections (e.g., Festubert Street or Bundock Avenue). Recommended intersection treatments include development of bicycle facilities on James Street and Coronation Avenue, review of crossing times to ensure that cyclists and pedestrians are detected at signals and that they have adequate crossing time, installation of curb bulbs to reduce crossing distances when possible, and installation of advance stop bars to improve bicycle and pedestrian visibility.

¹⁴ FHWA. Accessible Pedestrian Signals: Synthesis and Guide to Best Practice. 2003. Web.

Enhanced Lighting

Many intersections and trails in the study area could benefit from pedestrian-scale lighting to 1) Increase visibility at and along roadways and 2) provide safety and comfort along trail. Standards and guidance should be developed to meet the needs of trail users, especially along heavily used trails, while also considering the potential impact on wildlife. Opportunities may exist to provide solar lighting and/or work with BC Hydro during implementation.

Safety Studies

There are a number of high-crash locations in the Duncan area that warrant further study to determine the best methods to improve pedestrian and cycling safety. An area of particular focus should be on pedestrians who use mobility devices or who may have other special needs (e.g., additional time at intersection crossings). Funding for the following intersection studies should be prioritized. Duncan, North Cowichan, and Cowichan Tribes should work with ICBC, MOTI, and other relevant stakeholders to identify factors that contribute to crashes and develop solutions that can be implemented at these intersections and throughout the area. High priority intersections include:

- Trans-Canada Highway and Trunk Road
- Cowichan Way and Trans-Canada Highway
- Festubert Street, Trunk Road, and the Mall Access
- Marchmont Road, McKinstry Road and Trunk Road

4.5 Implementation of Infrastructure Recommendations

4.5.1 Recommended Project Prioritization

The recommended bicycle, sidewalk, trail and intersection improvements represent the efforts of Duncan, North Cowichan, and Cowichan Tribes to create a comprehensive and well-connected active transportation network that serves users of all ages and abilities. The proposed network is comprised of a long list of projects and while all projects represent important steps for improving the active transportation environment, prioritizing projects will maximize use of limited financial and staff resources. Project priorities were developed based on staff feedback and the criteria listed in **Table 8** (below) and are described on **Maps 12 and 13** (pages 4-87 and 4-89) and in **Tables 10-12** (page 4-59).

It is recommended that short-term projects be constructed first, but this project list should also be considered a living document and staff should take an opportunistic approach to facility construction that responds to new sources of funding, grant opportunities, and other opportunities that may arise. Medium- and longer-term projects are also important, and may be implemented at any point in time as part of a development or public works project, or as additional funding becomes available. Priority project lists should be revisited occasionally to ensure that the identified priorities still align with community needs and desires.

Table 8. Project Prioritization Criteria

Criterion	Description	Scoring Definitions	Bicycle or Pedestrian
Improves Safety	Score each project based on collision history. Projects receive a higher score if they improve a location that has had a high number of collisions. Projects that upgrade an obsolete (potentially hazardous) design receive a higher score.	Projects will receive a score of 4 if a crash occurred within the project extent.	Both
Provides Active and Safe Routes to School	Score each project based on its proximity to a school. Projects receive a higher score if they are located closer to a school.	Projects within a half-kilometre of a school receive 2 points, projects within one-quarter of a kilometre of a school receive 4 points.	Both
Provides Access to Community Destinations	Score each project based on its proximity to commercial areas, parks, and civic areas. Projects receive a higher score if they are located closer to community destinations.	Projects within a half-kilometre of a point of interest receive 2 points, projects within one-quarter of a kilometre of a point of interest receive 4 points.	Both
Roadway Type	Score each project based on roadway type. Projects receive a higher score if they are located on an arterial, lower if they are located on a residential roadway.	Projects will receive 4 points if they are located on a highway, 3 points if they are located on arterials, 2 points if they are located on collector roads, and 1 point if they are pathways or local roads. High Ease (4 points) projects are bicycle boulevards and sidewalks in public right of way or enhanced crossing. Medium Ease (2 points) projects are modifications to existing paths, bicycle lanes that require minimal lane modification, and sidewalks on privately owned or ministry owned property, or signal timing adjustment.	Both
Ease of Implementation	Score each project based on the complexity of the project. Projects with significant feasibility analysis, design, or environmental requirements receive a lower score. Projects that require completion of another project before they can be implemented receive lower scores.	Low Ease (0 points) projects are paths requiring right-of-way negotiation or acquisition, sidewalks along multiple private properties, bicycle lanes or cycle tracks requiring significant roadway reconfiguration, or new signal.	Both
Increases Regional/Local Connectivity	Score each project based on connectivity to local and regional routes. Projects that connect to an existing bike project in a neighbouring community or identified as part of the CVRD regional trail network receive a higher score.	Projects receive 4 points if they are part of the CVRD bikeway network, and 2 points if they connect to neighboring communities' existing or planned bikeways.	Bike Only
Community Support	Projects receive points if they were mentioned during the planning process.	Projects receive 4 points if they were mentioned more than five times, 3 points if they were mentioned two to four times and 1 point if they were mentioned once.	Both

Prioritization within Short-, Medium- and Long-Term Project Tiers

For the process of project prioritization within each tier and the associated apportionment of funding, it may be desirable for municipalities to undertake a second prioritization exercise utilizing criteria that are closely focused on the details of project implementation. This process would enable staff to objectively rank the ease and benefits of project implementation. Sample recommended criteria are presented in **Table 9** (page 4-59).

Table 9. Potential Secondary Project Ranking Criteria

Criteria	Ranking	Measurement
Budget Need	2	More than half of funding is already secured
	1	Less than half of funding is already secured
Expected Environmental Process or Discretionary Funding	3	Project expected to receive exemption or exclusion (local or provincial funding)
	2	Project expected to receive exemption or exclusion (federal funding)
	1	Project expected to require minor environmental/discretionary review
	0	Project expected to require significant environmental/discretionary review
Jurisdictional Complexity	3	Project requires departmental coordination with minimal involvement from other agencies
	2	Project requires coordination with 2 agencies
	1	Project requires coordination with 3 or more agencies
Potential to Leverage Other Funding	2	Initiating project now will secure 80% or more of the funds
	1	Initiating project now will secure less than 80 % of the funds
Policy Directive	1	Project specified by policy

4.5.2 Recommended Short-Term Area Wide Improvements

Duncan, North Cowichan, and Cowichan Tribes should undertake the development of wayfinding signage as a short term priority for the bicycling network. Wayfinding signing is a low cost strategy that can significantly improve the ability of both residents and visitors to navigate local roadways already suited to bicycle travel, existing pathways, and new on-street bikeway improvements. Wayfinding also increases the visibility of cycling in the Duncan area and alerts all roadway users to the presence of bicyclists in the system.

4.5.3 Short Term Pedestrian Network Improvements

The pedestrian projects recommended for preliminary implementation include studies to evaluate crossing times. Based on public comments that signals along the Trans-Canada Highway consistently do not allow enough time for a pedestrian to comfortably cross the roadway, it is recommended that Duncan and North Cowichan staff work with MOTI to review the existing signal timing plans. Additional short-term infrastructure improvement recommendations are shown in **Table 11** (page 4-60) and shown on **Map 12** (page 4-87).

4.5.4 Short Term Bicycle Network Improvements

In the near term, within one to two budget cycles, Duncan, Cowichan Tribes, and North Cowichan should each focus on one to two projects that will provide significant enhancements to bicycling connectivity and organizational capacity for partnership among the municipalities. Projects recommended for priority implementation include Government Street, Canada Avenue in Duncan, and the future Dike Trail in North Cowichan.

In addition to these two priority projects, other short-term projects are recommended to improve conditions for cyclists. **Table 12** (page 4-60) shows short-, medium-, and long-term bicycle system recommendations. Recommended phasing is shown on **Map 13** (page 4-89).

Table 10. Recommended Sidewalk Facilities and Prioritization

Project No.	Tier	Roadway Name	Extent	Length	Improvement Type	Jurisdiction
3	1	Duncan St	Trunk Rd to North Cowichan border	821	Infill	Duncan
11	1	Duncan St	Duncan border to Beverly St	962	Infill	North Cowichan
9	1	Lakes Rd	North of North Cowichan border	291	Infill	Cowichan Tribes and Duncan
12	1	Lakes Rd	Cowichan Sportsplex to Beverly St	280	Widening	North Cowichan
14	2	Lakes Rd	North Cowichan border to Trunk Road	160	Infill	Duncan
2	2	Chesterfield Ave	Coronation Avenue to North Cowichan border	408	Infill	Duncan
10	2	Chesterfield Ave	Duncan border to Cowichan Sportsplex driveway	910	Infill	North Cowichan
4	2	Evans St	Jubilee St to Tyee St	146	Infill	Duncan
5	2	Government St	Cairnsmore St to Gibbins Rd	147	Widening	Duncan
59	2	Trans-Canada Hwy	Beverly St to James St	301	Pedestrian median fencing	Ministry of Transportation & Infrastructure
61	2	Trans-Canada Hwy	Cowichan Way to Boys Rd	439	Pedestrian median fencing	Ministry of Transportation & Infrastructure
6	3	Jubilee St	Evans St to 2nd St	206	Widening	Duncan
7	3	Jubilee St	Cavell St to White Rd	436	Infill	Duncan
8	3	McKinstry Rd	Trunk Rd to McAdam Park	854	Infill	Duncan

Table 11. Recommended Intersection Improvements and Prioritization

Project No.	Tier	Project Name	Type	Jurisdiction
15	1	Canada Avenue and James Street	Enhanced Crossing	North Cowichan
16	1	Canada Avenue and Queens Road	Enhanced Crossing	Duncan
17	1	Trunk Road and Canada Avenue	Signal Timing Study	Duncan
56	1	Trans-Canada Highway and Beverly Street	Enhanced Crossing	North Cowichan
57	1	Trans-Canada Highway and University Way	Pedestrian Signal	North Cowichan
61	1	Trans-Canada Highway and Boys Road	Pedestrian Signal	Cowichan Tribes
18	2	Trans-Canada Highway and Coronation Avenue	Signal Timing Study	Duncan
19	2	Trans-Canada Highway and James Street	Signal Timing Study	North Cowichan
20	2	Trunk Road and Coronation Avenue	Enhanced Crossing	Duncan
21	2	Trunk Road and Festubert Street	Signal Timing Study	Duncan
22	3	Cowichan Way and Trans-Canada Highway	New Signal	Duncan
23	3	Trans-Canada Highway and Trunk Road	Signal Timing Study	Duncan
58	3	Trans-Canada Highway Elevated Pedestrian Crossing	Overhead Crossing	North Cowichan

Note: A signal timing study indicates an intersection where older pedestrians or pedestrians with physical impairments may benefit from signal phases which provide greater time to cross the intersection. Research indicates that 0.9 m/s is recommended for less capable pedestrians with shorter strides, slower gaits, and longer 'start up' time before leaving the curb.

Table 12. Recommended Bicycle Facilities and Prioritization

Project No.	Tier	Road Name	Extent	Improvement Type	Length	Jurisdiction
15	1	Allenby Rd	Cowichan Tribes border to Government St	Bike Lane	34	Duncan
17	1	Canada Ave	Trunk Rd to North Cowichan border	Bike Lane	1,328	Duncan
47	1	Chesterfield Ave	Duncan border to Beverly St	Shared Lane Marking/Bike Boulevard	462	North Cowichan
21	1	Coronation Ave	Ypres St to Trunk Rd	Bike Lane	818	Duncan
48	1	Cowichan Lake Rd	Traffic Circle at intersection with Gibbins Rd	Shared Lane Marking/Bike Boulevard	94	North Cowichan
22	1	Duncan St	Trunk Rd to North Cowichan border	Shared Lane Marking/Bike Boulevard	427	Duncan
50	1	Duncan St	Duncan border to Beverly St	Shared Lane Marking/Bike Boulevard	494	North Cowichan
27	1	Government St	Trunk Rd to Gibbins Rd	Bike Lane	1,510	Duncan
51	1	James St	Canada Avenue to Trans-Canada Highway	Shared Lane Marking/Bike Boulevard	670	North Cowichan

Project No.	Tier	Road Name	Extent	Improvement Type	Length	Jurisdiction
41	1	Lakes Rd	Trunk Road to North Cowichan Border	Bike Lane	72	Duncan
39	1	Trunk Rd	Government St along border with Allenby Rd to Trans-Canada Hwy	Bike Lane	590	Duncan and Cowichan Tribes
40	1	Underwood St	Allenby Rd to Trunk Rd	Bike Lane	102	Cowichan Tribes
60	1	Trans-Canada Highway	Silver Bridge	Lighting & Pathway Improvements	81	Ministry of Transportation & Infrastructure
43	2	Alexander St	Chesterfield Avenue to Trans-Canada Highway	Shared Lane Marking/Bike Boulevard	469	North Cowichan
16	2	Boundary Rd	Government St to Ingram St	Shared Lane Marking/Bike Boulevard	61	Duncan
19	2	Centennial Park North Trail	Trunk Rd to Lukaitis Lane	Multi Use Trail	389	Cowichan Tribes
20	2	Chesterfield Ave	Coronation Avenue to North Cowichanborder	Shared Lane Marking/Bike Boulevard	212	Duncan
35	2	Trans-Canada Hwy	Cowichan Tribes border to North Cowichan border	Cycle Track	410	Duncan
53	2	Trans-Canada Hwy	Duncan border to Beverly St	Cycle Track	907	North Cowichan
49	2	Islay St/Philip St/Berkeley St	Cairnsmore St to Canada Ave	Shared Lane Marking/Bike Boulevard	646	North Cowichan
23	2	Evans St	Canada Ave to Jubilee St	Shared Lane Marking/Bike Boulevard	213	Duncan
24	2	Festubert St	Trunk Rd to North Cowichan border	Shared Lane Marking/Bike Boulevard	410	Duncan
25	2	First St	Centennial Park to Jubilee St	Shared Lane Marking/Bike Boulevard	186	Duncan
26	2	Fourth St	Canada Avenue to Jubilee St	Shared Lane Marking/Bike Boulevard	120	Duncan
28	2	Ingram St	Canada Ave to Boundary St	Shared Lane Marking/Bike Boulevard	368	Duncan
38	2	James St Alley	Canada Ave to Jubilee St	Shared Lane Marking/Bike Boulevard	140	Duncan

Project No.	Tier	Road Name	Extent	Improvement Type	Length	Jurisdiction
29	2	Jubilee St	Government St to Cavell St	Shared Lane Marking/Bike Boulevard	917	Duncan
52	2	Lakes Rd	Duncan border to Townend Rd	Bike Lane	1,373	North Cowichan
30	2	Third St	Centennial Park to Jubilee St	Shared Lane Marking/Bike Boulevard	168	Duncan
33	2	Queens Rd	Canada Ave to Ypres St	Shared Lane Marking/Bike Boulevard	306	Duncan
7	2	Trans-Canada Hwy	Allenby Rd to Cowichan Bay Rd	Shoulder Bikeway	1,827	Cowichan Tribes
42	2	Trans-Canada Hwy	From North Cowichan Border to Trunk Rd	Cycle Track	550	Duncan
54	2	Trans-Canada Hwy	Beverly St to Drinkwater Rd	Shoulder Bikeway	2,036	North Cowichan
37	2	Ypres St	Coronation Avenue to Queens Rd	Shared Lane Marking/Bike Boulevard	71	Duncan
35	2	Trans-Canada Hwy	Trunk Rd to James St	Multi-Use Pathway	597	Ministry of Transportation & Infrastructure
42	2	Trans-Canada Hwy	Boys Rd to Trunk Rd	Multi-Use Pathway	801	Ministry of Transportation & Infrastructure
63	2	York Rd	Somenos Marsh Dike to Beverly St	Multi-Use Pathway	285	North Cowichan
44	2	Beverly St	Lakes Rd to Canada Ave	Bike Lane	1,975	North Cowichan
8	3	Tzouhalem Rd	Lakes Rd to CVRD Border	Shoulder Bikeway	316	Cowichan Tribes
34	3	Tzouhalem Rd	Along border	Shoulder Bikeway	1,754	North Cowichan and Cowichan Tribes
1	3	Allenby Rd	Cowichan Tribes border to Government St	Shoulder Bikeway	1,363	Cowichan Tribes
36	1	Trunk Rd	Trans-Canada Highway to Lakes Rd	Bike Lane	1,148	Duncan
10	3	Allenby Rd	Cowichan Tribes border to 185 m. east of Trans-Canada Highway	Shoulder Bikeway	1,023	CVRD
11	3	Boys Rd	Allenby Rd to Trans-Canada Highway	Bike Lane	674	CVRD
55	3	Boys Rd	Trans-Canada Highway to Mission Rd	Bike Lane	1,030	North Cowichan and Cowichan Tribes

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Project No.	Tier	Road Name	Extent	Improvement Type	Length	Jurisdiction
45	3	Canada Ave	North Cowichan border to Sherman Rd	Bike Lane	343	North Cowichan
18	3	Canada Avenue Trail	Beverly St to North Cowichan border	Multi-Use Trail	413	Duncan
46	3	Canada Avenue Trail	North Cowichan border to Sherman Rd	Multi-Use Trail	326	North Cowichan
9	3	Cowichan Way	Trail to Central Rd	Shared Lane Marking/Bike Boulevard	283	Cowichan Tribes
2	3	Dike Trail	North Cowichan border to Tzouhalem Rd	Multi-Use Trail	77	Cowichan Tribes
3	3	Indian Rd	Cowichan Tribes border to Glenora Rd	Shoulder Bikeway	3,582	Cowichan Tribes
4	3	Miller Rd	Indian Rd to CVRD Border	Shoulder Bikeway	431	Cowichan Tribes
31	3	McKinstry Rd	Trunk Rd to McAdam Park	Shared Lane Marking/Bike Boulevard	427	Duncan
32	3	McKinstry Trail Connection	McKinstry Rd to McAdam Park	Multi-Use Trail	95	Duncan
5*	3	Miller Rd	CVRD Border to Trans-Canada Highway	Shoulder Bikeway	1,527	Cowichan Tribes
13	3	Miller Rd	Cowichan Tribes border (north and south)	Shoulder Bikeway	1,284	CVRD
6	3	Trans-Canada Hwy	Allenby Rd to Boys Rd	Cycle Track	431	Cowichan Tribes
14	3	Trans-Canada Hwy	Boys Rd to Silver Bridge	Cycle Track	122	Cowichan Tribes
64	3	Trans-Canada Hwy	Silver Bridge	Pedestrian/Cyclist Bridge	82	Ministry of Transportation & Infrastructure

* Project not shown on Map 13

4.6 Explore Potential Funding Sources

A key to successful plan implementation is ensuring funds to construct cycling and walking infrastructure. The following section provides a list of potential funding sources and strategies. As funding opportunities change regularly, this information is subject to change. Additionally, creating a dedicated budget line item in the capital and operating budget will ensure that some thought is given to active transportation during budget deliberations.

4.6.1 Municipal Government

There are a number of funding sources and strategies that municipal governments can use to fund and implement pedestrian and bicycle facilities, as described below:

- **General Funds:** General funds are provided by property tax or other regular jurisdictional revenue streams. Capital projects are generally not allowed to utilize funding from this source unless funding is allocated as part of the annual budget. Bicycle and pedestrian infrastructure, education, enforcement, and encouragement projects may be an acceptable use of general fund dollars.
- **Development Cost Charges:** Municipalities can charge developers a series of “development cost charges” (DCCs) on new developments. The intent of these charges is to assist the municipality in funding the costs associated with increasing infrastructure to serve a growing and changing community. These charges include sewer, water, recreation, and transportation charges. Municipalities can use the transportation and recreation DCCs collected for active transportation infrastructure expenditures.
- **Street User Fees or Maintenance Fees:** The revenue generated by a street user fee is used for operations and maintenance of the street system, and priorities are established by the Public Works Department. Revenue from this fund should be used to maintain on-street bicycle and pedestrian facilities, including routine sweeping of bicycle lanes and other designated bicycle routes.
- **Local Improvement Districts (LIDs):** Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks, or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation.
- **Business Improvement Districts (BIDs):** Pedestrian improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Business Improvement Districts collect levies on businesses in order to fund area-wide improvements that benefit businesses and improve access for customers. These districts may include provisions for pedestrian and bicycle improvements, such as wider sidewalks and landscaping.
- **Road Rehabilitation:** Active transportation facilities can be implemented as part of ongoing road rehabilitation projects. Accordingly, municipalities may adjust certain pedestrian and bicycle infrastructure priorities (moved forward or deferred) to reflect their plans for major roadworks. In addition, many municipalities have established policies that require consideration of pedestrian and cycling facilities in any road rehabilitation project.
- **Other Capital Works:** Often active transportation facilities can be implemented as part of a separate capital works project. For example, cycling infrastructure can be implemented in conjunction with sewer or sidewalk improvements.

- **Cash-in-lieu Parking:** Recent changes to the Local Government Act allow municipalities to use funding from cash-in-lieu parking reserves to fund alternative transportation such as active transportation network upgrades.
- **Development Opportunities:** Municipalities may require private developers to construct pedestrian and bicycle facilities along roadways fronting new developments. This represents an important contribution to the community's pedestrian and bicycle network, but may offer the municipality opportunities for providing more widespread active transportation improvements in conjunction with development. For example, municipalities may choose to accelerate a given bicycle project to complete a bicycle route if private development occurs along a portion of that road segment.

4.6.2 Senior Government Funding Sources

In addition to the local government funding sources described above, there are other public sector sources of funding for active transportation facilities and programs, include the programs identified below. However, to take advantage of many of these public sector funding opportunities applicants are required to have completed detailed designs and engineering cost estimates. Typically design costs are ineligible for cost share funding, while the capital costs of construction are eligible. As funding opportunities change regularly, the information in this section is subject to change. Municipalities should regularly check with all levels of government to keep up to date on funding opportunities.

- **BikeBC:** *BikeBC* is a provincial initiative to promote new, safe, and high quality cycling infrastructure through cost-sharing with local governments. *BikeBC* is a \$31 million umbrella initiative that consists of the programs described below:
 - **Provincial Cycling Investment Program (PCIP):** This program focuses on strategic investments to build important cycling corridors of regional and provincial significance. Some possible projects include new bicycle trails and bicycle lanes, improvements to existing cycling infrastructure, and providing for bicycle lockers and other equipment that makes cycling a safer and more convenient option for travelers. Eligible projects under this program could include regional connections to other municipalities or major connections within the municipality that make use of high quality cycling facilities such as off-street pathways and bicycle lanes.
 - **Local Government Infrastructure Planning Grant Program:** The Ministry of Community and Rural Development offers grants to support local governments in projects related to the development of sustainable community infrastructure that will improve public health and safety, protect the natural environment, and strengthen local and regional economies. Grants up to \$10,000 are available to study the feasibility, costs, technology, and location of proposed sewer, water, drainage, transportation, or other local government infrastructure. Grants can be used for a range of activities related to assessing the technical, environmental, and/or economic feasibility of municipal infrastructure projects.

Further Information:

Ministry of Community and Rural Development, Infrastructure and Finance Division

250-387-4060

infra@gov.bc.ca

www.cd.gov.bc.ca/lgd/infra/infrastructure_grants/infrastructure_planning_grant.htm

- **Gas Tax Fund:** Gas tax is collected annually by the federal government. Jurisdictions receive a proportion of the federal dollars based on their population through the Gas Tax Fund (GTF). The GTF provides 100% funding to local governments for a variety of capital and planning projects. The GTF provides a predictable and long-term funding source for local governments. The GTF supports environmentally sustainable municipal infrastructure, such as public transit, drinking water, wastewater infrastructure, green energy, solid waste management, and transportation.
- **Infrastructure Canada:** Historically, Infrastructure Canada has managed several programs that provide funding for environmental and local transportation infrastructure projects in municipalities across Canada in addition to the Gas Tax Fund. Typically, the federal government contributes one-third of the cost of municipal infrastructure projects. Provincial and municipal governments contribute the remaining funds, and in some instances, there may be private sector investment as well.

Further Information:

Infrastructure Canada

<http://www.infc.gc.ca/ip-pi/index-eng.html>

- **Other Federal Programs:** At any given time, there are usually one or more federal grant programs for which active transportation facilities would be eligible. As an example, in the past, Environment Canada provided grants through the Environmental Partners Fund for bicycle-related projects that demonstrated a benefit to the environment and formed partnerships with the community.

Note that eligibility for some federal programs is limited to not-for-profit organizations. By forming partnerships with local not-for-profit organizations, local governments can access a number of alternative funding sources and grant programs for bicycle projects. Also, because the primary applicant for funds is the not-for-profit group, they are nominally in charge of the project. Many of the grants available to not-for-profit groups from the federal government are designed to provide jobs for people receiving Employment Insurance. Therefore, in order to qualify, the project must create new, preferably skills-based jobs, filled only by those receiving EI.

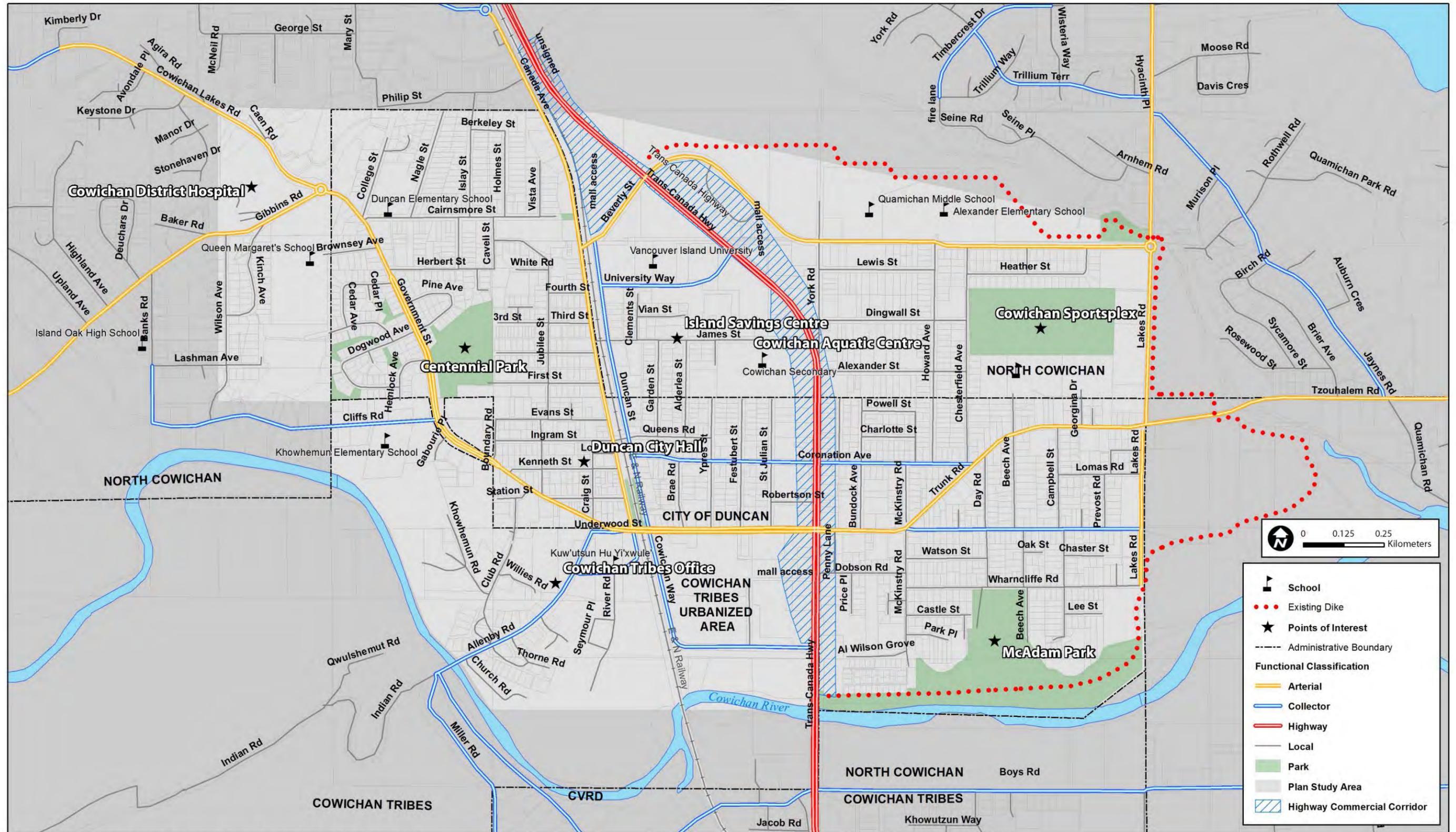
Other Funding Sources

There are a number of other sources of funding that local governments can consider for financing active transportation projects and programs, including:

- **The Insurance Corporation of British Columbia (ICBC):** ICBC has, in the past, provided funding for active transportation facilities, particularly where these have the potential to reduce crashes, improve safety, and reduce claims costs to ICBC. Funding is available through ICBC's Road Improvement Program (<http://www.icbc.com/road-safety/safer-roads/invest-roads>).
- **Private Sector:** Mountain Equipment Co-Op is an example of a business that provides funding that could be applied to bicycle and pedestrian facilities and programs. To protect the environment in areas having significant recreational value, and to facilitate public access and recreational use of areas, Mountain Equipment Co-Op supports applications from member groups and not-for-profit organizations.

Many corporations wish to be good corporate neighbours, to be active in the community and to promote environmentally-beneficial causes. A bicycle network is well-suited to corporate sponsorship, and has attracted significant sponsorship both at the local level and throughout North America. Examples in B.C. include Construction Aggregates in Sechelt, which constructed an overpass over a gravel conveyor to provide a link for pedestrians and cyclists, and 7-Eleven and Molson Breweries, which have sponsored multi-use pathways in Vancouver, Burnaby, and New Westminster.

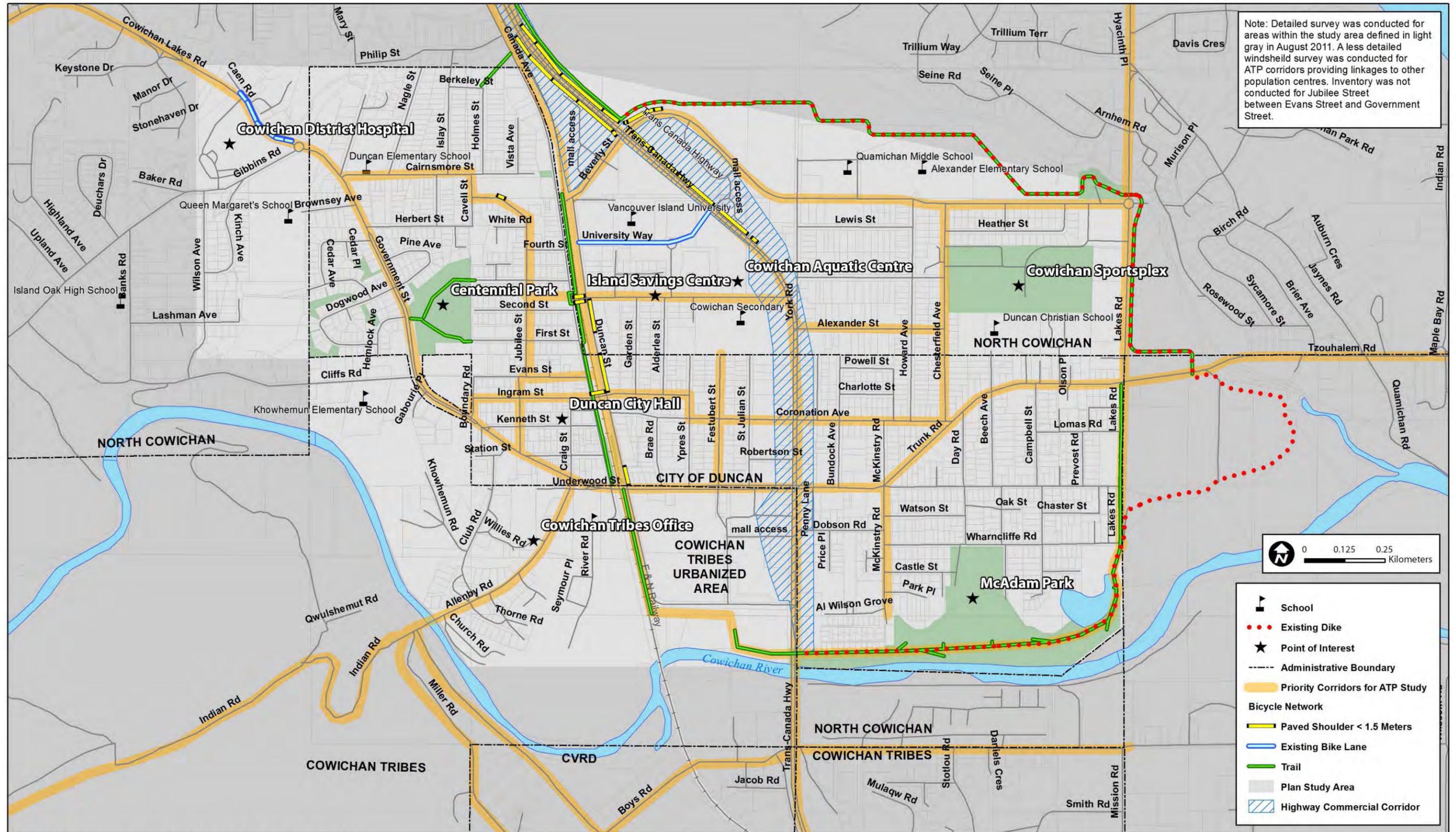
- **Deeds, Donations, and Dedications:** In many communities, multi-use pathways have been funded in part or in whole by local residents who purchased “deeds” to sections of the pathway. The Trans-Canada Trail, for example, is funded partially by sales of one metre sections for \$40. Kelowna partially funded development of a pathway along Mission Creek in Kelowna through community donations. Similar to park bench dedication programs, a dedication program can be set up for residents and corporations to donate bicycle facilities, such as bicycle racks or lockers. In many cases, these deeds, donations, and dedications are tax-deductible where they are administered by a not-for-profit agency.



Map 2. Plan Area Street Functional Classifications

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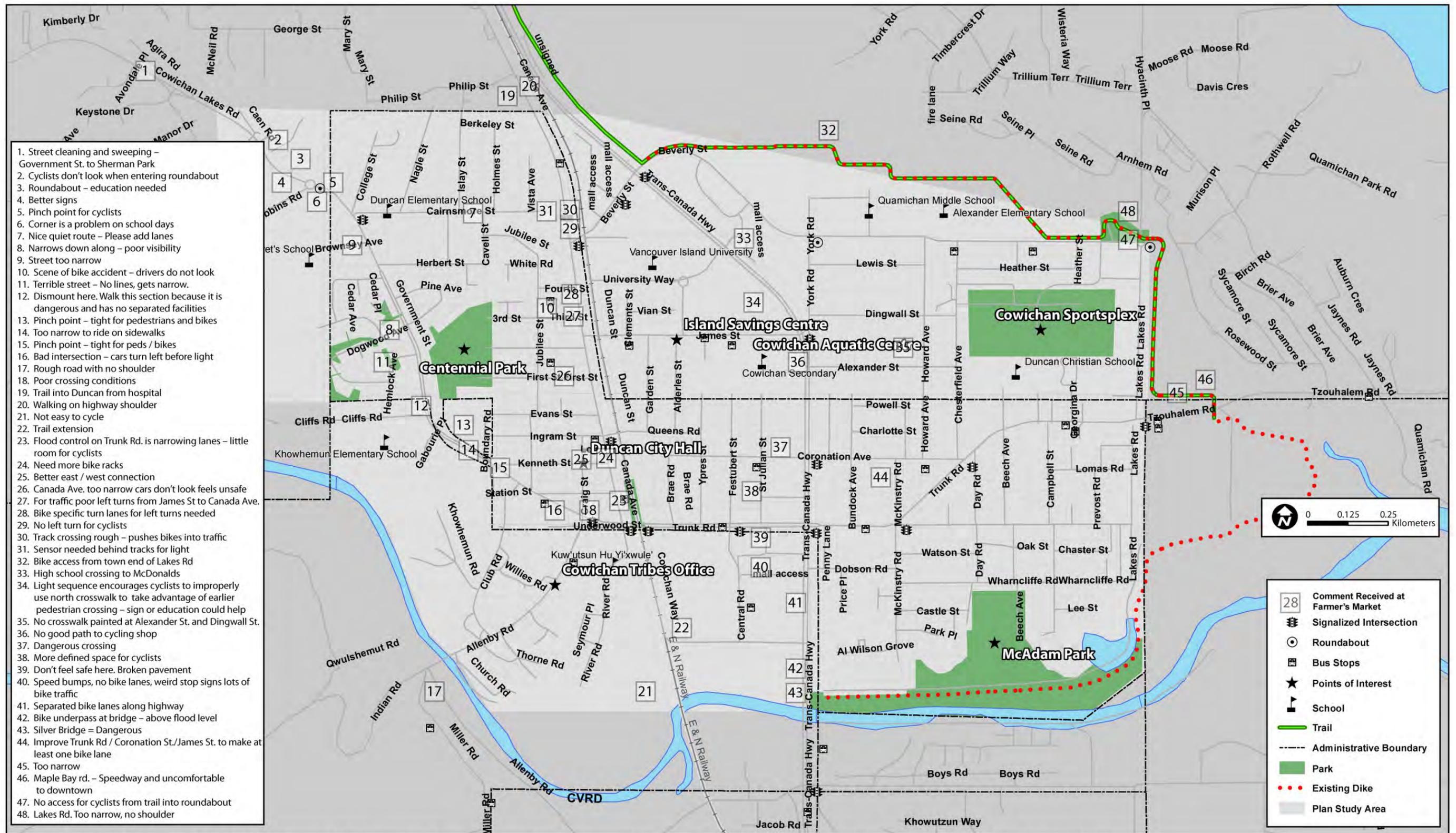
Map 5. Plan Area Existing Bicycle Facilities

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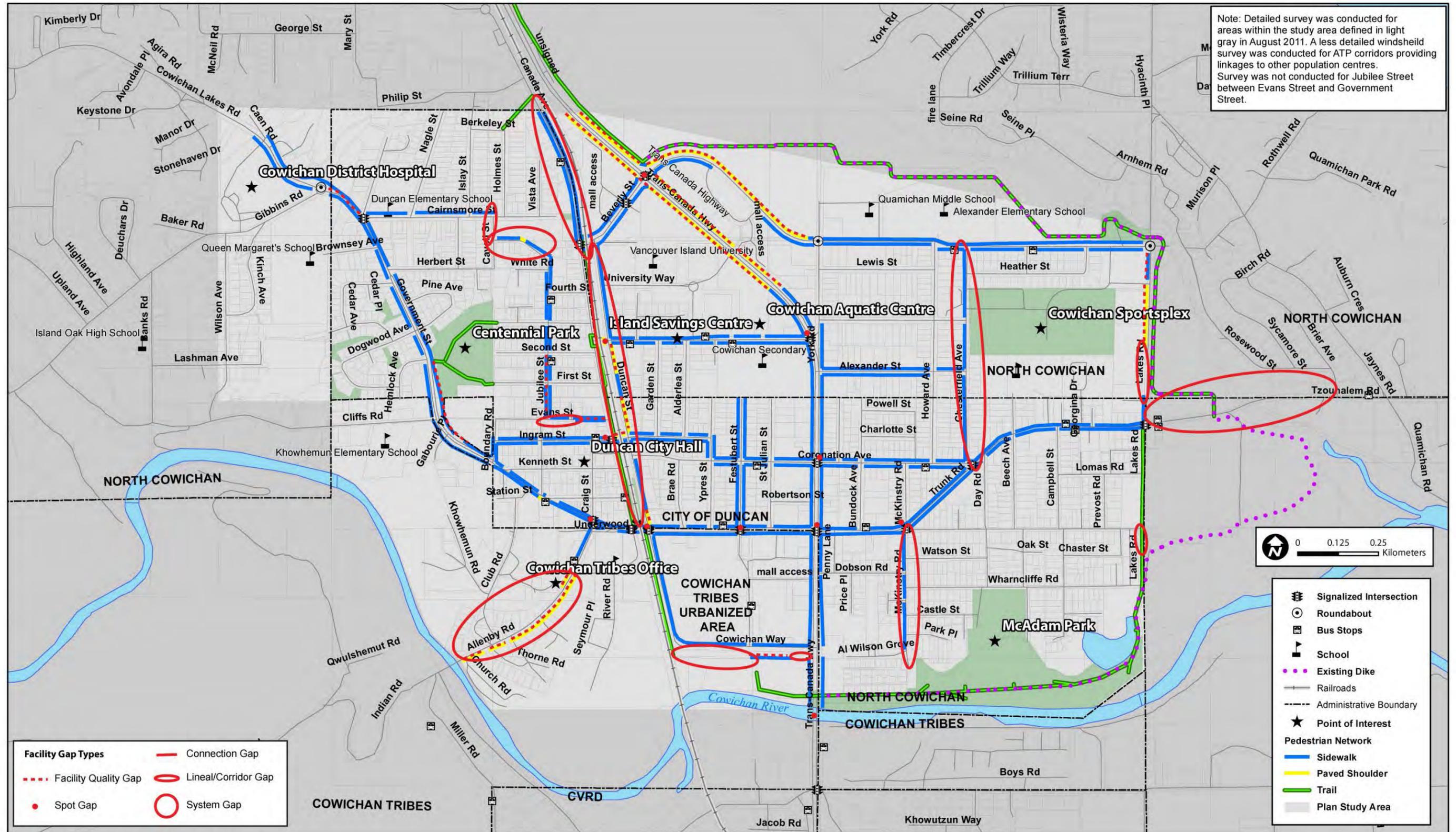
Map 6. Exemplary and Problematic Active Transportation Locations - Walking - Comments Received at Farmer's Market Summer 2011

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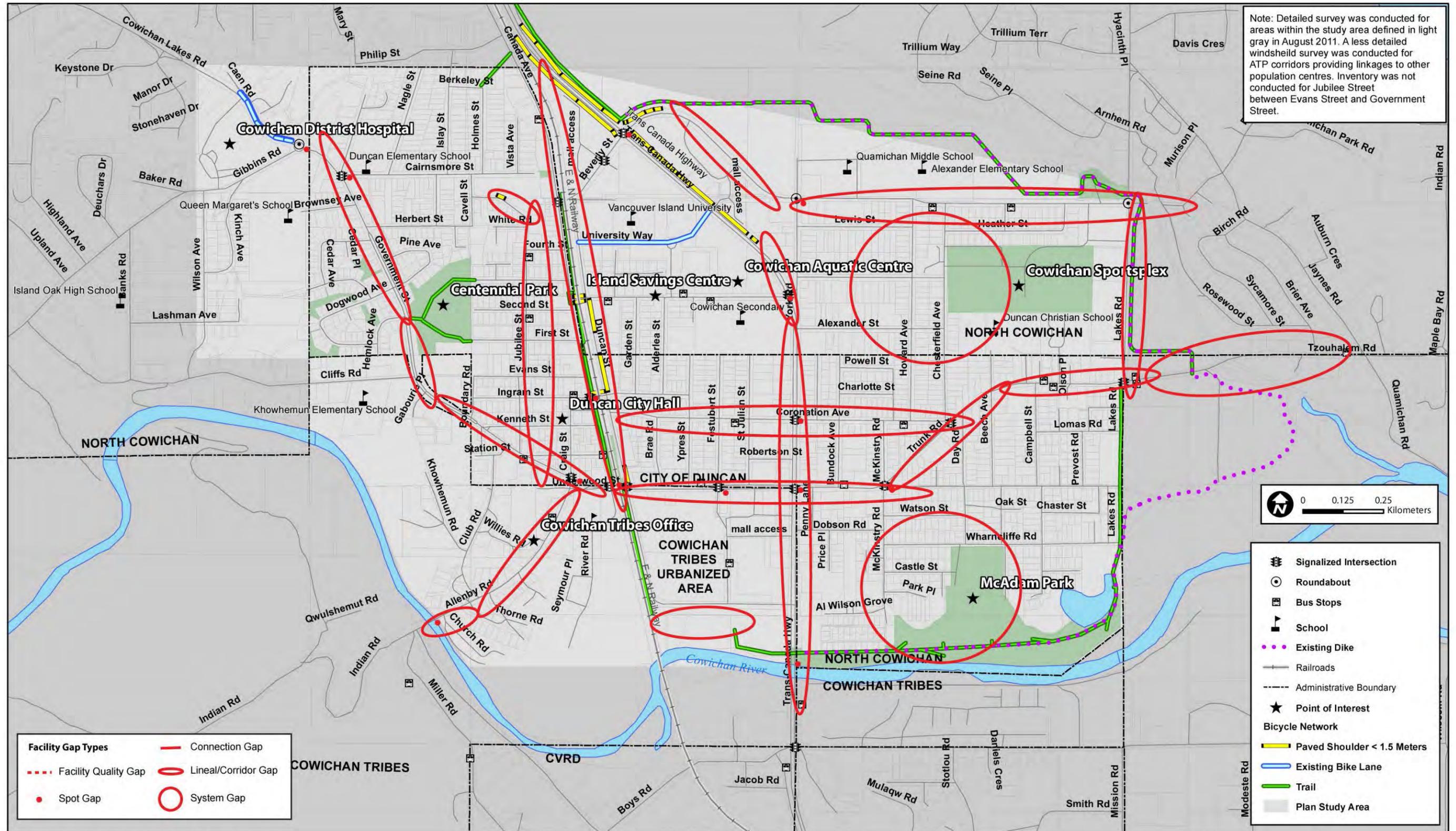
Map 7. Exemplary and Problematic Active Transportation Locations - Bicycling - Comments Received at Farmer's Market Summer 2011

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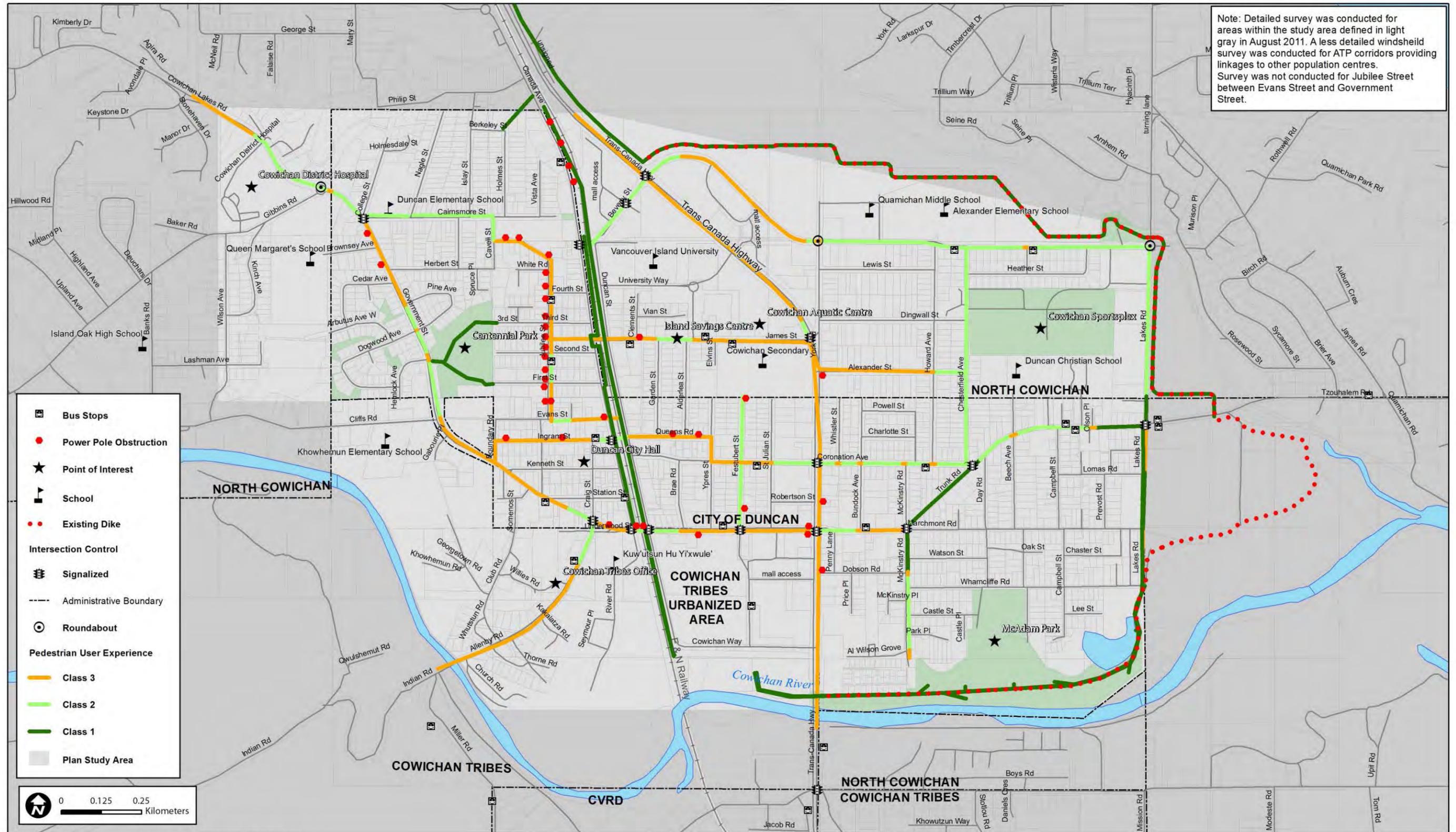
Map 8. Gap Analysis - Walking

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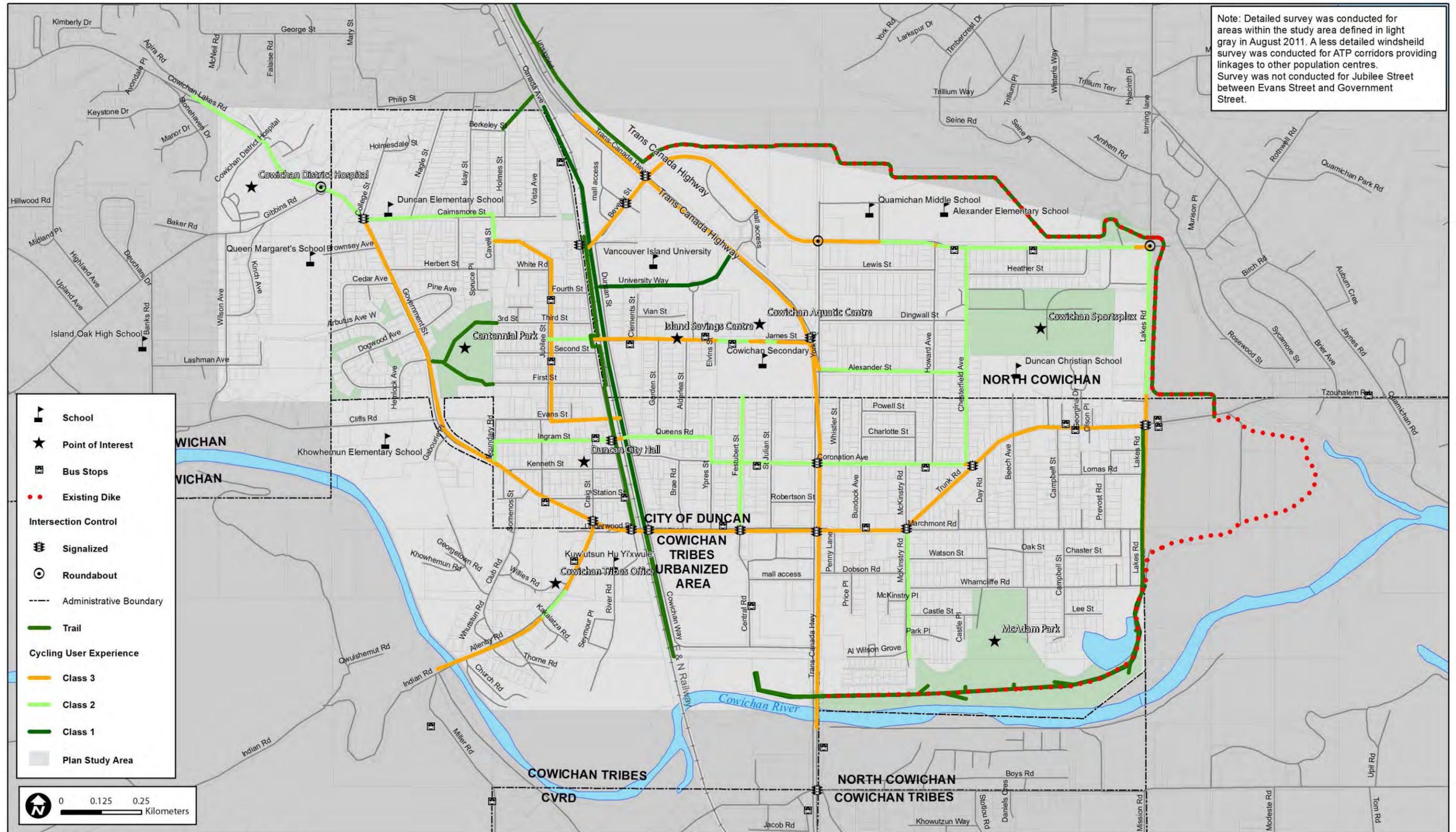
Map 9. Gap Analysis - Bicycling

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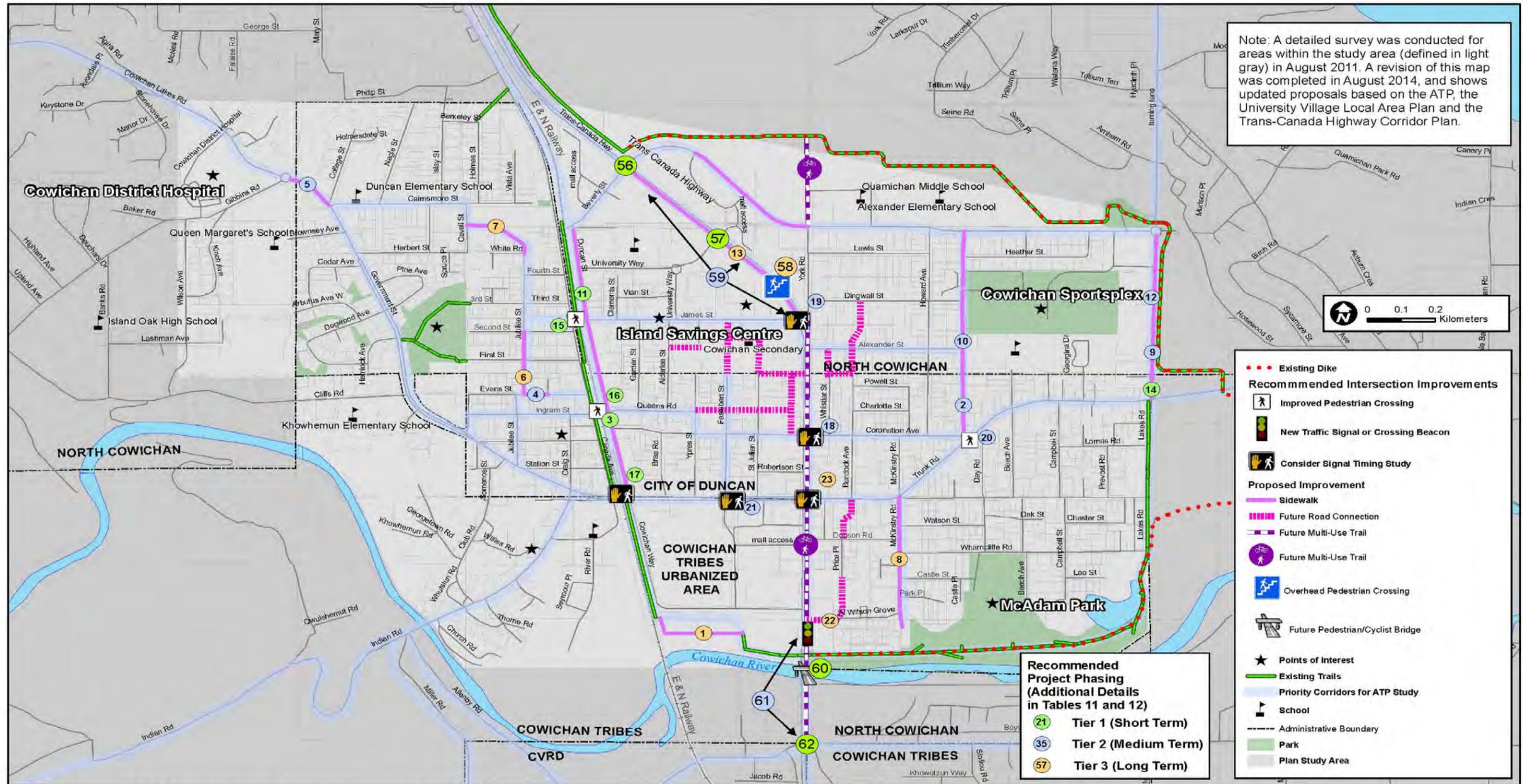
Map 10. User Experience - Walking

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Map 11. User Experience - Bicycling

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Map 12 Plan Area Pedestrian Facility Improvements

Duncan Area Active Transportation Plan

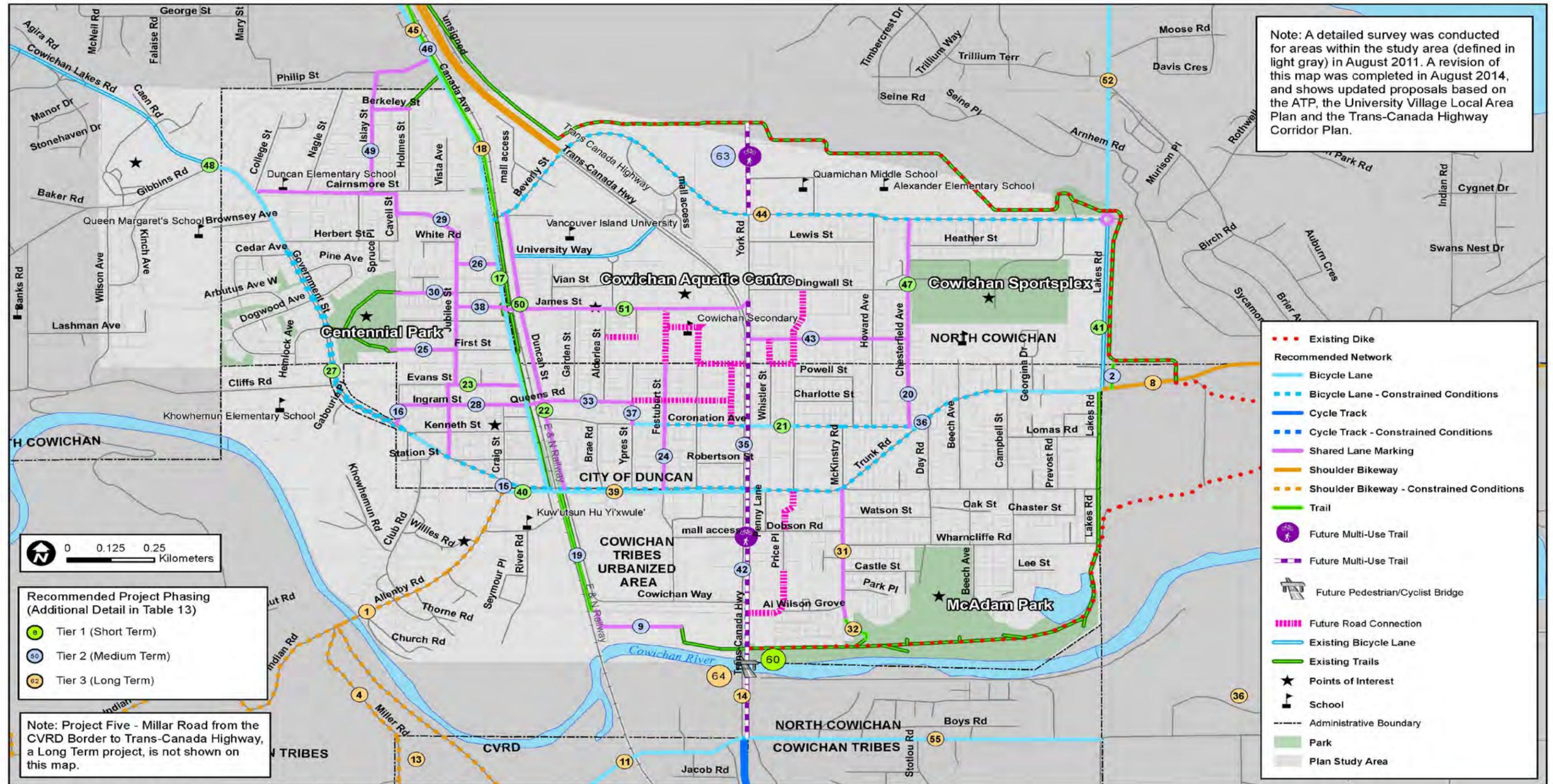
Table 10. Recommended Sidewalk Facilities and Prioritization

Project No.	Tier	Roadway Name	Extent	Length	Improvement Type	Jurisdiction
3	1	Duncan St	Trunk Rd to North Cowichan border	821	Infill	Duncan
11	1	Duncan St	Duncan border to Beverly St	962	Infill	North Cowichan
9	1	Lakes Rd	North of North Cowichan border	291	Infill	Cowichan Tribes and Duncan
12	1	Lakes Rd	Cowichan Sportsplex to Beverly St	280	Widening	North Cowichan
14	2	Lakes Rd	North Cowichan border to Trunk Road	160	Infill	Duncan
2	2	Chesterfield Ave	Coronation Avenue to North Cowichan border	408	Infill	Duncan
10	2	Chesterfield Ave	Duncan border to Cowichan Sportsplex driveway	910	Infill	North Cowichan
4	2	Evans St	Jubilee St to Tyee St	146	Infill	Duncan
5	2	Government St	Cairnsmore St to Gibbins Rd	147	Widening	Duncan
59	2	Trans-Canada Hwy	Beverly St to James St	301	Pedestrian median fencing	Ministry of Transportation & Infrastructure
61	2	Trans-Canada Hwy	Cowichan Way to Boys Rd	439	Pedestrian median fencing	Ministry of Transportation & Infrastructure
6	3	Jubilee St	Evans St to 2nd St	206	Widening	Duncan
7	3	Jubilee St	Cavell St to White Rd	436	Infill	Duncan
8	3	McKinstry Rd	Trunk Rd to McAdam Park	854	Infill	Duncan

Table 11. Recommended Intersection Improvements and Prioritization

Project No.	Tier	Project Name	Type	Jurisdiction
15	1	Canada Avenue and James Street	Enhanced Crossing	North Cowichan
16	1	Canada Avenue and Queens Road	Enhanced Crossing	Duncan
17	1	Trunk Road and Canada Avenue	Signal Timing Study	Duncan
56	1	Trans-Canada Highway and Beverly Street	Enhanced Crossing	North Cowichan
57	1	Trans-Canada Highway and University Way	Pedestrian Signal	North Cowichan
61	1	Trans-Canada Highway and Boys Road	Pedestrian Signal	Cowichan Tribes
18	2	Trans-Canada Highway and Coronation Avenue	Signal Timing Study	Duncan
19	2	Trans-Canada Highway and James Street	Signal Timing Study	North Cowichan
20	2	Trunk Road and Coronation Avenue	Enhanced Crossing	Duncan
21	2	Trunk Road and Festubert Street	Signal Timing Study	Duncan
22	3	Cowichan Way and Trans-Canada Highway	New Signal	Duncan
23	3	Trans-Canada Highway and Trunk Road	Signal Timing Study	Duncan
58	3	Trans-Canada Highway Elevated Pedestrian Crossing	Overhead Crossing	North Cowichan

Note: A signal timing study indicates an intersection where older pedestrians or pedestrians with physical impairments may benefit from signal phases which provide greater time to cross the intersection. Research indicates that 0.9 m/s is recommended for less capable pedestrians with shorter strides, slower gaits, and longer 'start up' time before leaving the curb.



Map 13. Plan Area Recommended Bikeway Facility Improvements and Phasing

Duncan Area Active Transportation Plan

Table 12. Recommended Bicycle Facilities and Prioritization

Project No.	Tier	Road Name	Extent	Improvement Type	Length	Jurisdiction
15	1	Allenby Rd	Cowichan Tribes border to Government St	Bike Lane	34	Duncan
17	1	Canada Ave	Trunk Rd to North Cowichan border	Bike Lane	1,328	Duncan
47	1	Chesterfield Ave	Duncan border to Beverly St	Shared Lane Marking/Bike Boulevard	462	North Cowichan
21	1	Coronation Ave	Ypres St to Trunk Rd	Bike Lane	818	Duncan
48	1	Cowichan Lake Rd	Traffic Circle at intersection with Gibbins Rd	Shared Lane Marking/Bike Boulevard	94	North Cowichan
22	1	Duncan St	Trunk Rd to North Cowichan border	Shared Lane Marking/Bike Boulevard	427	Duncan
50	1	Duncan St	Duncan border to Beverly St	Shared Lane Marking/Bike Boulevard	494	North Cowichan
27	1	Government St	Trunk Rd to Gibbins Rd	Bike Lane	1,510	Duncan
51	1	James St	Canada Avenue to Trans-Canada Highway	Shared Lane Marking/Bike Boulevard	670	North Cowichan
41	1	Lakes Rd	Trunk Road to North Cowichan Border	Bike Lane	72	Duncan
39	1	Trunk Rd	Government St along border with Allenby Rd to Trans-Canada Hwy	Bike Lane	590	Duncan and Cowichan Tribes
40	1	Underwood St	Allenby Rd to Trunk Rd	Bike Lane	102	Cowichan Tribes
60	1	Trans-Canada Highway	Silver Bridge	Lighting & Pathway Improvements	81	Ministry of Transportation & Infrastructure
43	2	Alexander St	Chesterfield Avenue to Trans-Canada Highway	Shared Lane Marking/Bike Boulevard	469	North Cowichan
16	2	Boundary Rd	Government St to Ingram St	Shared Lane Marking/Bike Boulevard	61	Duncan
19	2	Centennial Park North Trail	Trunk Rd to Lukaitis Lane	Multi Use Trail	389	Cowichan Tribes
20	2	Chesterfield Ave	Coronation Avenue to North Cowichanborder	Shared Lane Marking/Bike Boulevard	212	Duncan
35	2	Trans-Canada Hwy	Cowichan Tribes border to North Cowichan border	Cycle Track	410	Duncan
53	2	Trans-Canada Hwy	Duncan border to Beverly St	Cycle Track	907	North Cowichan
49	2	Islay St/Philip St/ Berkeley St	Cairnsmore St to Canada Ave	Shared Lane Marking/Bike Boulevard	646	North Cowichan
23	2	Evans St	Canada Ave to Jubilee St	Shared Lane Marking/Bike Boulevard	213	Duncan
24	2	Festubert St	Trunk Rd to North Cowichan border	Shared Lane Marking/Bike Boulevard	410	Duncan
25	2	First St	Centennial Park to Jubilee St	Shared Lane Marking/Bike Boulevard	186	Duncan
26	2	Fourth St	Canada Avenue to Jubilee St	Shared Lane Marking/Bike Boulevard	120	Duncan
28	2	Ingram St	Canada Ave to Boundary St	Shared Lane Marking/Bike Boulevard	368	Duncan
38	2	James St Alley	Canada Ave to Jubilee St	Shared Lane Marking/Bike Boulevard	140	Duncan
29	2	Jubilee St	Government St to Cavell St	Shared Lane Marking/Bike Boulevard	917	Duncan
52	2	Lakes Rd	Duncan border to Townend Rd	Bike Lane	1,373	North Cowichan
30	2	Third St	Centennial Park to Jubilee St	Shared Lane Marking/Bike Boulevard	168	Duncan
33	2	Queens Rd	Canada Ave to Ypres St	Shared Lane Marking/Bike Boulevard	306	Duncan
7	2	Trans-Canada Hwy	Allenby Rd to Cowichan Bay Rd	Shoulder Bikeway	1,827	Cowichan Tribes
42	2	Trans-Canada Hwy	From North Cowichan Border to Trunk Rd	Cycle Track	550	Duncan
54	2	Trans-Canada Hwy	Beverly St to Drinkwater Rd	Shoulder Bikeway	2,036	North Cowichan
37	2	Ypres St	Coronation Avenue to Queens Rd	Shared Lane Marking/Bike Boulevard	71	Duncan

Project No.	Tier	Road Name	Extent	Improvement Type	Length	Jurisdiction
35	2	Trans-Canada Hwy	Trunk Rd to James St	Multi-Use Pathway	597	Ministry of Transportation & Infrastructure
42	2	Trans-Canada Hwy	Boys Rd to Trunk Rd	Multi-Use Pathway	801	Ministry of Transportation & Infrastructure
63	2	York Rd	Somenos Marsh Dike to Beverly St	Multi-Use Pathway	285	North Cowichan
44	2	Beverly St	Lakes Rd to Canada Ave	Bike Lane	1,975	North Cowichan
8	3	Tzouhalem Rd	Lakes Rd to CVRD Border	Shoulder Bikeway	316	Cowichan Tribes
34	3	Tzouhalem Rd	Along border	Shoulder Bikeway	1,754	North Cowichan and Cowichan Tribes
1	3	Allenby Rd	Cowichan Tribes border to Government St	Shoulder Bikeway	1,363	Cowichan Tribes
36	1	Trunk Rd	Trans-Canada Highway to Lakes Rd	Bike Lane	1,148	Duncan
10	3	Allenby Rd	Cowichan Tribes border to 185 m. east of Trans-Canada Highway	Shoulder Bikeway	1,023	CVRD
11	3	Boys Rd	Allenby Rd to Trans-Canada Highway	Bike Lane	674	CVRD
55	3	Boys Rd	Trans-Canada Highway to Mission Rd	Bike Lane	1,030	North Cowichan and Cowichan Tribes
45	3	Canada Ave	North Cowichan border to Sherman Rd	Bike Lane	343	North Cowichan
18	3	Canada Avenue Trail	Beverly St to North Cowichan border	Multi-Use Trail	413	Duncan
46	3	Canada Avenue Trail	North Cowichan border to Sherman Rd	Multi-Use Trail	326	North Cowichan
9	3	Cowichan Way	Trail to Central Rd	Shared Lane Marking/Bike Boulevard	283	Cowichan Tribes
2	3	Dike Trail	North Cowichan border to Tzouhalem Rd	Multi-Use Trail	77	Cowichan Tribes
3	3	Indian Rd	Cowichan Tribes border to Glenora Rd	Shoulder Bikeway	3,582	Cowichan Tribes
4	3	Miller Rd	Indian Rd to CVRD Border	Shoulder Bikeway	431	Cowichan Tribes
31	3	McKinstry Rd	Trunk Rd to McAdam Park	Shared Lane Marking/Bike Boulevard	427	Duncan
32	3	McKinstry Trail Connection	McKinstry Rd to McAdam Park	Multi-Use Trail	95	Duncan
5*	3	Miller Rd	CVRD Border to Trans-Canada Highway	Shoulder Bikeway	1,527	Cowichan Tribes
13	3	Miller Rd	Cowichan Tribes border (north and south)	Shoulder Bikeway	1,284	CVRD
6	3	Trans-Canada Hwy	Allenby Rd to Boys Rd	Cycle Track	431	Cowichan Tribes
14	3	Trans-Canada Hwy	Boys Rd to Silver Bridge	Cycle Track	122	Cowichan Tribes
64	3	Trans-Canada Hwy	Silver Bridge	Pedestrian/Cyclist Bridge	82	Ministry of Transportation & Infrastructure

* Project not shown on Map 13

