Connecting Courtenay

Cycling Network Plan

September 2019

URBAN systems

REPORT FOR:

City of Courtenay
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September 2019

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1 INTRODUCTION

Cycling can be an attractive transportation option, as it is convenient, relatively low cost, and for shorter trips can be a practical alternative to vehicle travel. Cycling has several benefits to individuals, the community, and the environment. Cycling is enjoyable, efficient, affordable, healthy, sociable, and a sustainable form of transportation.

Cycling is already a popular recreational activity in Courtenay, due to the City's natural beauty and great climate. Cycling accounts for 4% of all trips to/from work and school within Courtenay.[1] Based on the feedback received from residents and stakeholders people are cycling in Courtenay for a variety of trip purposes including cycling to school and work but also for shopping, to restaurants, for groceries and for their other daily needs. The most common trips are to work and for daily errands. Approximately 32% of survey respondents cycle or are cycling at least once a week with approximately 57% cycling at least once a month.

Developing a safe and comprehensive bicycle network along with supporting education and promotional programs is an important way to encourage cycling as a viable and attractive mode of transportation. With appropriate facilities, cycling can be time-competitive with both automobiles and transit, particularly over short-to-moderate distances during peak travel periods. A variety of factors influence an individuals' decision to bicycle, such as network connectivity, quality of facilities, and the distance between destinations.

[1] Source: Statistics Canada, Census Profile, 2016

2 POLICY CONTEXT

Courtenay's OCP outlines the importance of cycling as a form of transportation. The OCP sets a target that by 2020 10% of trips in Courtenay will be made by bicycle. Additionally, one of the goals identified in the Transportation chapter recognizes the importance of developing a transportation system that provides choice for different modes of travel including pedestrians and people with mobility challenges. The OCP also states that the City will continue to pursue the development of a continuous, integrated bicycle network to promote and encourage cycling as a commuting alternative to the automobile and as a means of active recreation.

The Subdivision and Development Servicing (SDS) Bylaw identities the recommended bicycle facility types by street network classification and land use context for new developments in the City of Courtenay. **Table 1** outlines the City's bicycle facility design recommendations based on the street network classification. Bicycle facilities are identified on arterial and collector streets, the facility type is either a buffered or unbuffered bicycle lane. The bicycle lane is 1.5 metres and where applicable the buffer is 0.5 metres. Design guidance and width are also provided for gravel and asphalt multi-use pathways which should be 3.0 metres in width.

Table 1: Bicycle Facility Requirements for New Developments by Road Classification

Road Classification	Bicycle Facility	Width (m)
Arterial	Buffered Bicycle Lane	1.5 (lane) 0.5 (buffer)
Collector - Urban	Buffered Bicycle Lane	1.5 (lane) 0.5 (buffer)
Collector - Residential	Buffered Bicycle Lane	1.5 (lane) 0.5 (buffer)
Collector - Road Rural	Bicycle Lane	1.5
Local Road	NA	-

Per the City's Strategic Plan, the Cycling Plan and future cycling projects should apply what was learned on the Complete Street Pilot Project.

One objective of the Comox Valley Regional Growth Strategy is to improve bicycle and pedestrian infrastructure to increase the use of active transportation options.

The supporting policies outlined in the RGS proposed to meet these goals by supporting local efforts to improve cycling connections to, through, and between Town Centres, improving connections and amenities through development, identifying and addressing gaps, developing

and implementing consistent regional street standards that improve cycling safety, and promoting healthy lifestyles.

Another policy with overlapping implications for walking and cycling, the Comox Valley Sustainability Strategy, includes a goal of reducing the need for single occupant vehicles.

In 2007, the Comox Valley Cycling Plan was developed. The purpose of the plan was to compile and synthesize existing information, policies and guidelines from the provincial level to the local area (neighbourhood) level that pertain to safe cycling and bicycle ways within the Comox Valley. It included infrastructure recommendations and a discussion on preferred facility types.

3 BICYCLE INVENTORY & ASSESSMENT

The bicycle inventory considers both physical infrastructure and existing programs that support cycling as a mode of transportation in the City of Courtenay. The inventory is followed by an assessment of existing cycling patterns and gaps.

Bicycle Inventory

The City has existing bicycle facilities, as well as bicycle parking and other support infrastructure. There is also support for integration between cycling and transit, as well as some historic programs that have encouraged cycling in Courtenay.

Courtenay's existing bicycle network is limited and largely on-street. Multi-use trails, such as the Courtenay Riverway, the Rotary Trail, and other connections provide key connectivity, but face special challenges due to narrow widths, popularity with a wide variety of trail users, and uncontrolled intersection crossings. The majority of the recommended improvements to the multi-use pathway network are addressed in the City's Draft Parks and Recreation Master Plan. The City has some existing designated bicycle facilities. on-street bicycle lanes and signed bicycle routes, as described below and shown in **Figure 1** and **Table 2**. Existing bicycle facilities include:

- **Painted Bicycle Lanes** are located on both directions of Fitzgerald Avenue between Cumberland Road and 21st Street.
- **Paved shoulders** have been signed as bicycle routes on some streets in Courtenay including Lerwick Road and Cumberland Road.
- **Paved and Unpaved Off-Street Pathways.** There are several kilometres of paved and unpaved pathways throughout the City which are used by both people walking and cycling. There are approximately 13 km of paved pathways, 11 km of unpaved pathways and nearly 30 km of pathways within the City where the surface type is unknown.
- **Protected Bicycle Lanes.** In parallel with the first phases of development of Connecting Courtenay, the City of Courtenay constructed its first protected bicycle lanes as part of the 5th Street Complete Street Pilot Project. The lanes connect Menzies Avenue to Fitzgerald Avenue along 5th Street for a total of approximately 500m.

Figure 1: Existing Bicycle Network

*Unpaved multi-use pathways as identified may not be suitable facilities for all cyclists due to their varying condition. Lerwick Road offers inconsistent cycling facilities.

Table 2: Distance of Existing Bicycle Facilities by Type

Bicycle Facility	Km	Percentage
Off Street Pathway (Paved)	12.7 km	44%
Off Street Pathway (Unpaved)	11.5 km	40%
Protected Bicycle Lanes	500m	0.5%
Bicycle Lane	1.3 km	4%
Signed Bicycle Route	3.5 km	11.5%
Total	**29.5 km**	**100%**

Beyond the linear facilities described above, cycling in Courtenay is also supported by the following infrastructure and programs:

- **Transit Integration.** By integrating cycling with transit, the utility of both the transit and the cycling networks can be improved for longer distance trips and trips where transit does not directly serve a trip origin or destination. Bicycle racks are available on all buses, allowing two bicycles to be transported. Some buses, usually the smaller community shuttle style buses, do not carry bikes after dark as the bikes block the front lights.
- **Bike Parking and End of Trip Facilities.** Support infrastructure allows more people to choose cycling, knowing that their bicycle is stored safely and that there is an opportunity to store their belongings and shower at their destination if needed.

  There is some short term and longer-term parking throughout Courtenay at various locations, this includes bicycle racks located throughout Downtown within the public right of way as well as in front of City buildings such as City Hall. A lack of bicycle parking was noted by some as a barrier to cycling in the public survey.

  There are currently no short or long-term bicycle parking requirements or end-of-trip facility requirements in the City's Zoning Bylaw. Many communities provide bicycle parking requirements based on dwelling unit for residential dwellings and floor space for commercial land uses.
- **Support Programs.** The City supports cycling related initiatives such as Bike to Work and School Week which focuses on encouraging people that live and/or work in the Comox Valley to try cycling rather than driving for at least one trip during the week. Bike to Work and School Week is held in late May annually.

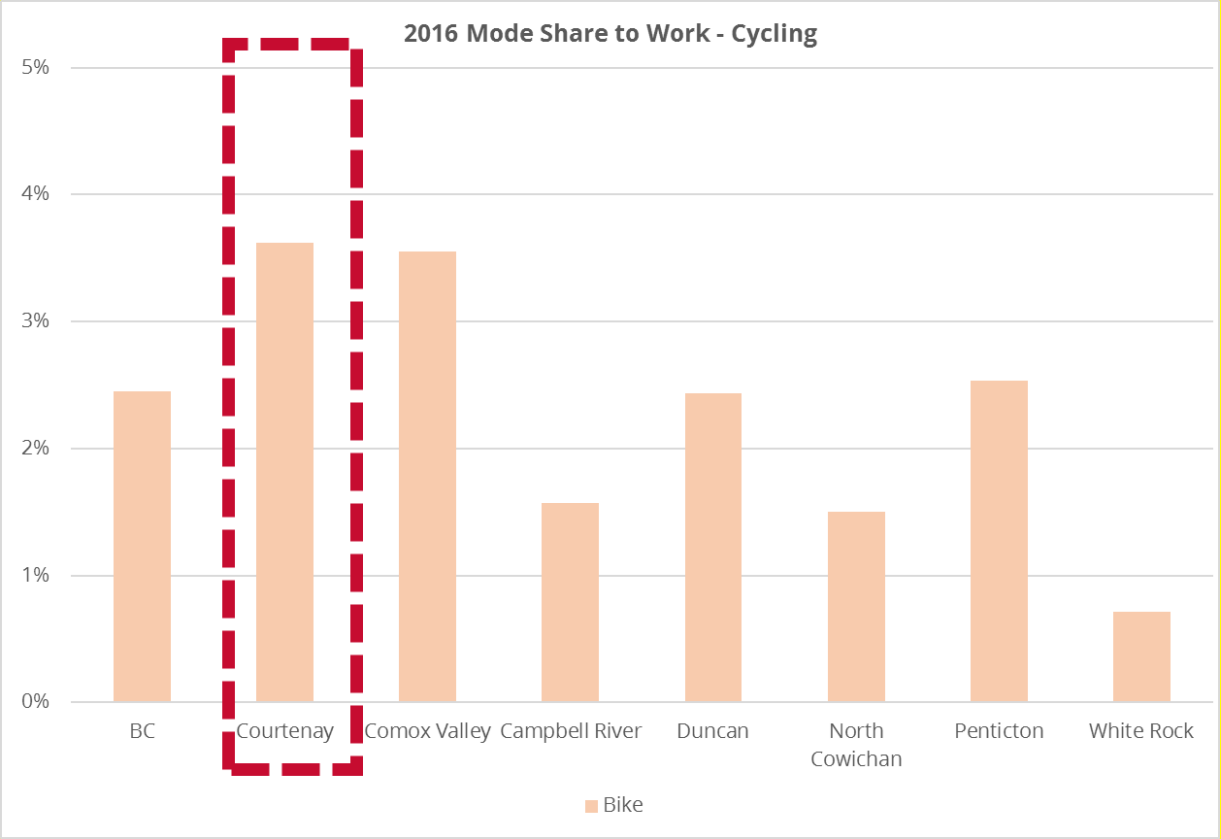
Existing Conditions Assessment

The existing conditions assessment evaluated cycling mode share and connectivity for cycling in Courtenay. This assessment is summarized below.

Cycling Mode Share Assessment

Cycling is already a popular recreational activity in Courtenay, due to the City's natural beauty and great climate. According to Statistics Canada, cycling accounts for 4% of all trips to/from work and school within Courtenay. This is less than half of the target of 10% set by the OCP. As illustrated in **Figure 2**, Courtenay's commuting mode share for cycling is the highest among comparable communities in BC.

Figure 2: 2016 Mode Share to Work - Cycling



Based on the feedback received from residents and stakeholders, people are cycling in Courtenay for a variety of trip purposes including cycling to school and work but also when they are going shopping, to restaurants, for groceries and for their other daily needs. The most common trips are to work and school and for daily errands. Approximately, 32% of survey respondents are cycling at least once a week with approximately 57% cycling at least once a month.

Gap Analysis

The cycling gap analysis focused on three geographic areas: river crossings, west of the Courtenay River, and east of the Courtenay River. These are described below:

- **River Crossings.** Courtenay is bisected by the Courtenay River, which results in a barrier for cyclists. There are three existing river crossings, two of which are within the City of Courtenay, at 5th Street and 17th Street. At the 5th Street crossing, signage indicates that cyclists and vehicles should traverse the bridge single file. Cyclists can also dismount and push their bicycles along the separated pedestrian walkways on either side of the bridge. At 17th Street, the metal grate surface of the lift bridge is difficult and uncomfortable for most cyclists to ride. Cyclists also must dismount to use the sidewalks on the bridge as they are not designated as multi-use facilities. Both bridges have poor connections to the surrounding area.
- **West Courtenay.** West of the Courtenay River the grid system provides cyclists who are comfortable riding in traffic with route choice and connectivity to destinations. The Courtenay Riverway provides a protected, off-street connection through much of the commercial areas of West Courtenay; however, it can be challenging to ride because of its popularity with a wide variety of users. There are no protected connections from the Riverway Trail to the commercial areas or to the existing Fitzgerald Avenue bike lanes. Similarly, the protected bicycle lanes that are part of the 5th Street Complete Street Pilot Project are not connected to any other complete cycling facility. The 5th Street Complete Street Pilot Project does connect to the Rotary Trail; however, the uncontrolled intersections along this trail can be difficult for cyclists to navigate. The schools in west Courtenay are not connected to comfortable cycling facilities.
- **East Courtenay.** East of the Courtenay River cycling facilities are limited to trails and shoulder bikeways. Ryan Road is a barrier for cycling – both as a major roadway that is difficult to cross, and because it is a major east-west connection with no provision for cycling. According to stakeholders, cyclists currently use local roads to cycle south of Ryan Road. There are informal and formal paved and unpaved trails connecting to schools, the North Island College, and the North Island Hospital which provide a mix of user experience. Some of these trails are not currently suitable for all cyclists.

3.1 KEY ISSUES AND OPPORTUNITIES

There is strong interest in cycling in Courtenay, and the existing mode split for commuter cycling is higher than in some other communities with similar – or even more – infrastructure. The existing cycling system in Courtenay is discontinuous, with a limited number of cycling facilities, most of which are not comfortable for cyclists of all ages and abilities. There is an opportunity to invest in cycling, expand the cycling mode share for all trip purposes, and improve the health and vibrancy of the community. To embrace the opportunities for cycling, the City and its partners should address some key issues.

This section summaries key issue and opportunities surrounding cycling in Courtenay. It was developed based on input received through Connecting Courtenay public surveys, public engagement events, discussions with stakeholders and City staff, and through the inventory and assessment summarized above. Key issues include:

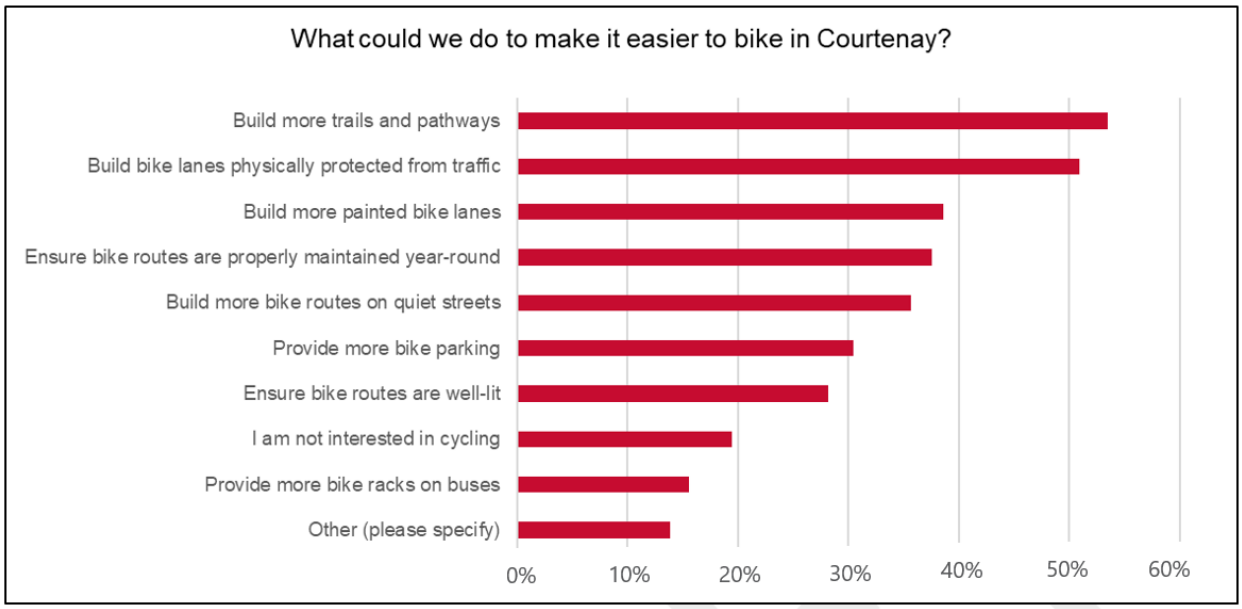
- **Limited network of designated routes.** Courtenay has very few protected and off-street cycling routes that connect to key destinations and 54% of survey respondents indicated that they do not feel safe riding in traffic. Routes do not connect to key commercial areas or to other key destinations, like schools – 29% of survey respondents indicated that bike routes do not go to destinations.
- **No comfortable river crossing.** Because Courtenay is bisected by the Courtenay River, many trips must cross this natural barrier. With no comfortable river crossing, cycling is not an attractive option for these trips.
- **Although popular off-street pathway facilities act as the spine to the current network, there are inherent barriers in some locations.** The Courtenay Riverway is popular with many different trail users – including people walking with children and dogs on leash. When the pathway is busy, cycling can be difficult. Intersections along the Rotary Trail can be difficult for cyclists to safely navigate.
- **Many neighbourhood routes that are comfortable to ride on are unsigned.** Cyclists currently use local roads to make many trips. Some local roads are very comfortable to ride on; however, they can be hard to locate and are not communicated with potential cyclists and drivers. Most of these routes do not offer traffic calming to ensure vehicles travel at speeds more appropriate for shared facilities.

- **Existing highways as well as major and minor arterials do not have comfortable cycling facilities, and most do not have parallel routes.** None of the highways or the City's major arterials have cycling facilities that are protected or buffered from vehicle traffic. There are limited parallel routes to allow cyclists to reach the same destinations as drivers.
- **Lack of secure bicycle parking at the end of a trip.** Currently many potential cyclists do not have a safe and secure place to store their bicycles at the end of their trip. Almost 30% of survey respondents indicated that having no safe place to park their bicycle discouraged them from cycling more for their day-to-day needs. An update to the Zoning Bylaw could be beneficial to support the provision of secure bicycle parking.

Because the existing infrastructure, support facilities and programmatic support for cycling is limited in Courtenay, there are many opportunities for enhancement. This can be expected to lead to a larger cycling mode share and can contribute to the City and region's overall transportation, environment, and health goals.

The top survey responses for what might encourage people to cycle more focus on providing more on-street and off-street cycling facilities. This includes, more trails and pathways, which was also the top response for encouraging walking. It was also noted that, many of the popular off-street pathway facilities which act as a spine to the cycling network are unpaved, and all are shared with pedestrians. The second most common response was build bicycle lanes that are physically separated from motor vehicle traffic. Some of the other top opportunities for making it easier to bike around Courtenay include, more painted bicycle lanes, ensuring routes are properly maintained year-round and more cycling routes on quiet streets. Overwhelmingly, the top opportunities focus on providing higher quality bicycle facilities that will make biking in the city more comfortable for all cyclists (**Figure 3**).

Figure 3: Biking Opportunities (Connecting Courtenay Survey, 2018)



Through the survey and public engagement process residents and stakeholders were asked about future funding and investment in the various modes of transportation. Approximately 58% of respondents said they would like to see more or much more investment in the cycling network when compared to current levels, this was second only to transit.

4 CYCLING NETWORK

The Long-Term Cycling Plan addresses key issues by identifying where, when, and how the City can invest in the development of a comfortable cycling network, support programs, and facilities. Like the other long-term plans, the recommendations are intended to be advanced by the City and its partners over a number of years. The City is beginning with limited cycling infrastructure and it will take time to fully develop a network that connects residential areas to major destinations throughout the City. Further, the City will need to work with partners and stakeholders to refine and further develop the recommendations outlined in the Long-Term Cycling Plan.

To encourage cycling in the City of Courtenay, the City and its partners should invest in making cycling a safe and comfortable transportation option. Investment focused on creating infrastructure and support facilities and programs that foster safe and comfortable cycling to important destinations will have the greatest likelihood of increasing the percentage of all trips that are made by bicycles. Guiding principles for cycling were developed based on this overarching approach, as well as industry best practices, and input from stakeholders and the public survey. They outline the approach to the development of the network and application of facility types in different areas, while focusing higher investment facilities where they are likely to have the highest use from across the population. The guiding principles are:

- **Build on existing momentum.** The City has recently completed the construction of a separated bicycle facility on 5th Street from Fitzgerald Avenue to Menzies Avenue. The City also has an existing network of well-used multi-use trails[2] and local roads that are already used by local cyclists. Understanding that cycling infrastructure is most effective where it is connected, the City should focus on creating a network that connects outwards from existing infrastructure to maximize the value of investment.
- **Create network 'spines' that connect key destinations and focus on safety and comfort for all ages and abilities (AAA).** Public input was clear; there is a desire for more separated bicycling infrastructure – both trails and protected bicycle lanes – in Courtenay. Acknowledging the size and capital limitations of the community, focus on creating a spine network that builds from existing assets and connects key destinations, including commercial areas and schools.
- **Supplement the spine routes with a network that uses local street bikeways and existing and planned trails to access a broader area.** Stakeholders identified that there are local roads that are commonly used by the cycling community and

[2] As defined in the Draft Parks and Recreation Master Plan.

provide important access to destinations, as well as connections between communities. Formalize these routes as bicycle boulevards with signage, pavement markings, wayfinding, and localized traffic calming/diversion treatments. Where existing and future off-street multi-use trails can connect bicycle routes or provide access to destinations, work towards improving crossings and providing additional width where required. Consider paving these pathways so they can be used by all cyclists, as well as pedestrians using mobility devices.

- **Ensure new roadways provide for all modes.** New major roadway projects proposed in the long-term plan and built by the City and / or Province should be corridors for all modes of transportation. Neighbourhood plans for new neighbourhoods should identify safe connections for cyclists, prioritizing protected lanes or multi-use pathways along arterial and collector roads.

These guiding principles were well supported by the public – more than 80% of survey respondents agreed with the principles outlined above. They were used to inform the development of the Long-Term Cycling Plan.

Connecting Courtenay, and therefore this Cycling Network Plan, was developed in tandem with the Draft Parks and Recreation Master Plan and acknowledges that recreational trails can also act as important transportation connections for bicycles and pedestrians. The Cycling Network Plan was developed to align with the outcomes of the Draft Parks and Recreation Master Plan.

4.1 CYCLING FACILITY STANDARDS

Creating a safe, comfortable, and enjoyable cycling network for people of all ages and abilities relies on planning, designing, and implementing cycling facilities along corridors and at intersections. Before recommending a long-term cycling network, the Long-Term Cycling Plan provides a toolbox of bicycle facilities and intersection treatments that should be applied as the cycling network in Courtenay evolves. This toolbox is described in more detail below (**Table 3**).

Bicycle Facility Toolbox

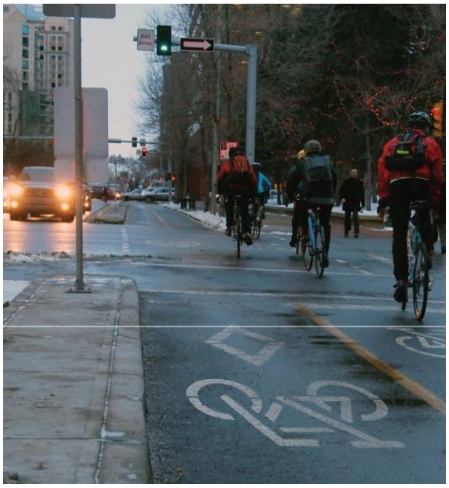
The SDS bylaw has already integrated cycling facilities with minimum widths into typical cross-sections for new roadways in the City. This is a Complete Street approach that assigns space in the cross-section to all modes of transportation. Beyond the minimums specified in the SDS, there are a range of cycling facility types that can be applied to different circumstances to achieve a cycling network that focuses on safety and comfort for all.

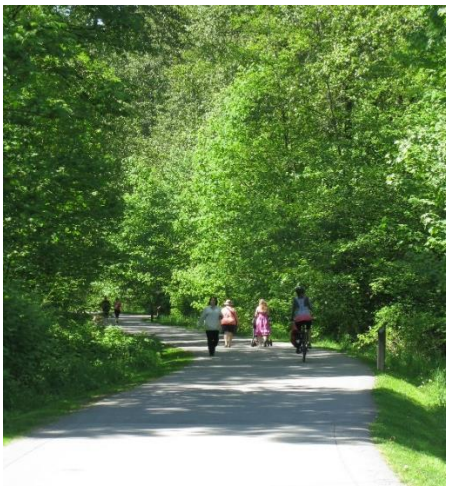
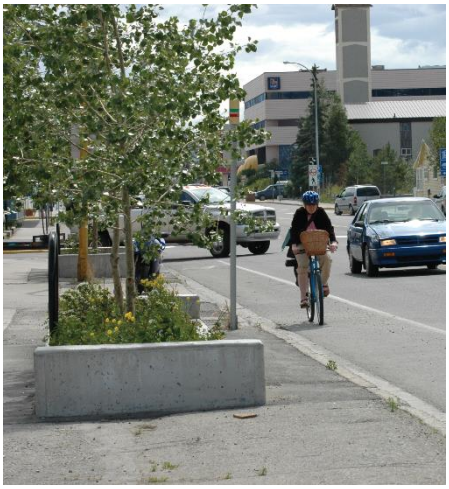
To develop a more comfortable and effective network of bicycle facilities across a wide range of conditions, the City can apply a toolbox of cycling facility types. This toolbox, based on the recently updated Transportation Association of Canada Design Guide for Canadian Roads, is described in **Table 3**. The facilities identified have varying levels of appeal for different users and respond to different contexts and constraints. Bicycle facilities that are physically separated from motor vehicle traffic, such as off-street pathways and cycle tracks, are generally the most comfortable for the widest range of users. Different facilities perform better in different situations, and can have different impacts on property requirements, parking restrictions, and other cross-section elements. The broad toolbox presented in this section allows for the right-sizing of bicycle facilities based on the desired characteristics and local constraints.

Facility types can be divided into two overall categories:

- **All Ages and Abilities (AAA) Facilities.** AAA facilities include bicycle facilities that are physically separated from motor vehicles, including multi-use pathways and trails and protected bicycle lanes or cycle tracks. AAA facilities also include neighbourhood greenways or bicycle boulevards, which are routes along local streets with low vehicle speeds and volumes in which people cycling share the same space with vehicles. A core network of AAA facilities can encourage more bicycle ridership and increase perceived and actual safety within the City's bicycle network.
- **Supporting Facilities.** These facilities include buffered bicycle lanes, painted bicycle lanes, shared use lanes, and paved shoulders. These facilities are less comfortable to ride on because they do not include physical separation from motor vehicle traffic where vehicle volumes and/or speed tend to be high. Supporting bicycle facilities are typically less expensive and are useful for expanding and connecting the overall bicycle network and can often provide interim solutions when long-term facilities require greater investment than is currently available. They are sometimes preferred by high speed cyclists.

Table 3: Toolbox of Bicycle Facilities

ALL AGES AND ABILITIES FACILITIES		**Bicycle Boulevards and Neighbourhood Greenways** are local streets with low vehicles speeds and volumes in which cyclists share the same space with vehicles. They often include traffic calming measures to keep speeds low and improvements at major road crossings to help cyclists cross safely.
		**Protected Bicycle Lanes / Cycle Tracks** are bicycle only facilities that are physically separated from vehicle travel lanes. They can be roadside or on-street, raised or at grade, one- or two-way, and combine the experience of an off-street path with the on-street infrastructure of a conventional bicycle lane. Ideal width: 1.8 m with 0.3 to 1.0 m buffer Minimum width: 1.5 m with 0.3 m buffer (minimum 0.6 m buffer adjacent to parking)
		**Multi-use Pathways** are physically separated from streets and designed to support cyclists, pedestrians, and other non-motorized road users. In the busiest areas, a wider pathway with paint indicating separate areas for bicycles and other users may be warranted. Ideal width: 3.0 – 6.0 m depending on the expected volumes of users. Minimum width: 2.7 m

ALL AGES CONT.		**Multi-use Trails** are trails outside of the roadway network that are designed to support cyclists, pedestrians, and other non-motorized road-users. They are part of the recreational trail system, but can also provide important linkages for cyclists between other facilities on and adjacent to streets. *These trails are being recommended through the Courtenay Draft Parks and Recreation Master Plan.*
SUPPORTING FACILITIES		**Buffered Bicycle Lanes** are separate travel lanes designed exclusively for bicycles with painted buffers providing additional separation from the roadway. The buffered space may also include flexible delineators to provide some protection from vehicles. Ideal width: 1.8 m with 0.3 to 0.9 m buffer Minimum width: 1.5 m with 0.3 m buffer (minimum 0.6 m buffer adjacent to parking)
		**Bicycle Lanes** are separate travel lanes designed exclusively for bicycles. The lane is defined by white pavement markings and signage. Ideal width: 1.8 m Minimum width: 1.5 m

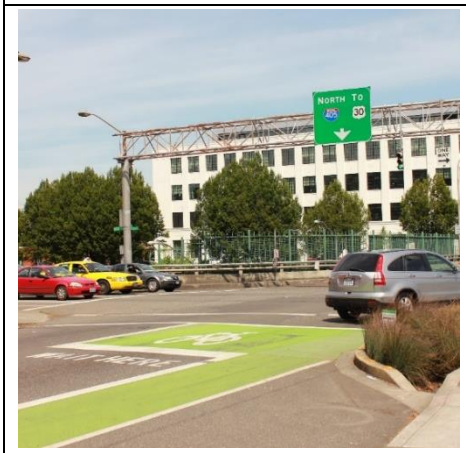
SUPPORTING FACILITIES CONT.

	**Shared Use Lanes / Wide Shared Use Lanes** indicate that cyclists and vehicles should share the roadway through signage and painted 'sharrows'. Wide shared use lanes provide additional width for cyclists and vehicles to share the outer lane of a roadway.
	**Shoulder Bikeways** are paved shoulders that are typically found on streets without curb and gutter and where shoulders are wide enough for shared bicycle / pedestrian travel. Shoulder bikeways are typically indicated with the white painted bicycle symbol and with signage alerting motorists to expect bicycle travel along the roadway. Ideal width: 2.0 m to 3.0 m on higher speed roadways. As low as 1.8 m on roadways with speeds of 50 km/h or less. Minimum width: 1.5 m

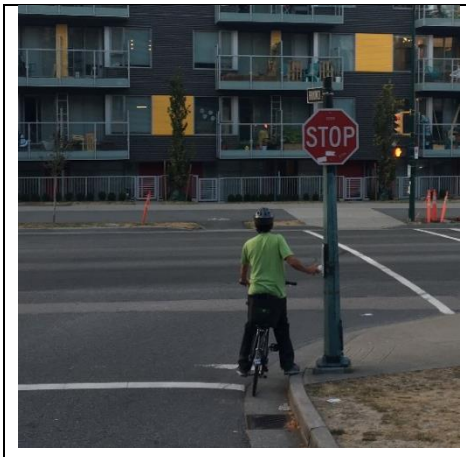
Intersection Treatment Toolbox

Beyond the bicycle facility toolbox for corridors described above, intersections need to be carefully addressed, as these are common locations for cycling collisions. Properly designed intersection treatments can increase cyclist convenience and reduce conflicts with motorists helping to improve the overall comfort and safety of a city's bicycle network. Cycling safety improvements also serve to remove barriers and can help make cycling more attractive to people of all ages and abilities. A brief description of some intersection treatments is provided in **Table 4**.

Table 4: Intersection Treatment Toolbox

INTERSECTIONS		**Coloured conflict zone markings** can be used at conflict zones, including intersections and driveways, areas where vehicles are merging across a bicycle lane. Often denoted by the colour green, these markings increase the visibility of cyclists and highlight areas where potential conflict can occur.
		**Dashed bicycle lane markings** through intersections provide direction for where cyclists should be positioned as they travel through an intersection. They also alert vehicle drivers that cyclists may be travelling in these lanes.
		**Bike boxes** can be used at signalized intersections to provide cyclists with an opportunity to position themselves ahead of queued vehicles, and to proceed through the intersection when the signals turn green in advance of vehicles.

INTERSECTIONS CONT.

	**Enhanced bicycle signal crossings** can include full signals or pedestrian and bicycle activated signals which can be activated by a cyclist through a range of technologies, such as bicycle loop detectors, bicycle pushbuttons, or video detection at traffic signals.
	**Crossbikes and elephant's feet** are pavement markings that indicate a crossing zone in which a cyclist does not need to dismount. They may be combined with a pedestrian crosswalk or may be used to indicate a separate bicycle crossing.
	**Protected intersections** utilize a combination of bicycle signal phases and design elements as well as space allocation to help protect people cycling from turning vehicles. The design of protected intersections include a combination of corner refuge islands, a forward stop bar for bicyclists, a setback bicycle and pedestrian crossing and protected bicycle phasing help protect bicycle users in intersections as they are riding along protected bikeways.

4.2 LONG-TERM CYCLING NETWORK

The Long-term Cycling Network was developed to address the gaps noted in the inventory and assessment and the issues summarized earlier. In accordance with the guiding principles, the recommendations focus on a spine network of comfortable facilities that builds on recent improvements and connects to key destinations. This spine is supplemented with a network that uses bicycle boulevards and existing and planned multi-use trails, which are recommended in the Courtenay Draft Parks and Recreation Master Plan. Facility types were chosen from the bicycle facility toolbox, although the final facility types and design of the network are subject to further study and consultation. The recommended Cycling Network is illustrated in **Figure 4**, the cycling network connectivity map. The implementation of the overall Cycling Network is also demonstrated through medium-term (which includes short-term improvements) and long-term network maps in **Figure 5** and **Figure 6**. More detail about the options considered for each route and period of implementation are provided in **Appendix A.**

Figure 4: Recommended Long Term Cycling Network, Connectivity Map

In addition to the full build-out network shown, any new or amended road infrastructure should be designed to support all modes of transportation

Figure 5: Recommended Short- and Medium-Term Cycling Facilities

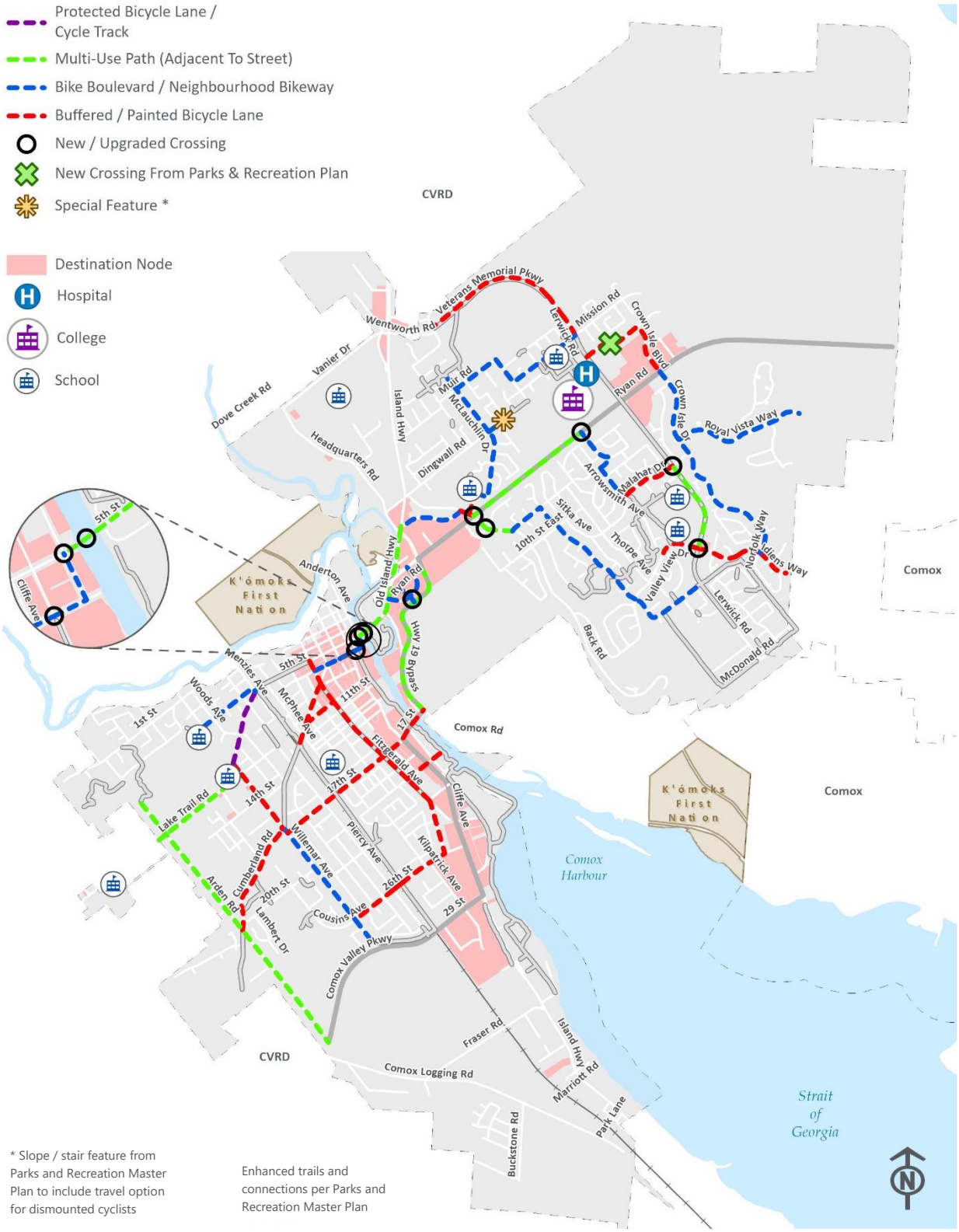
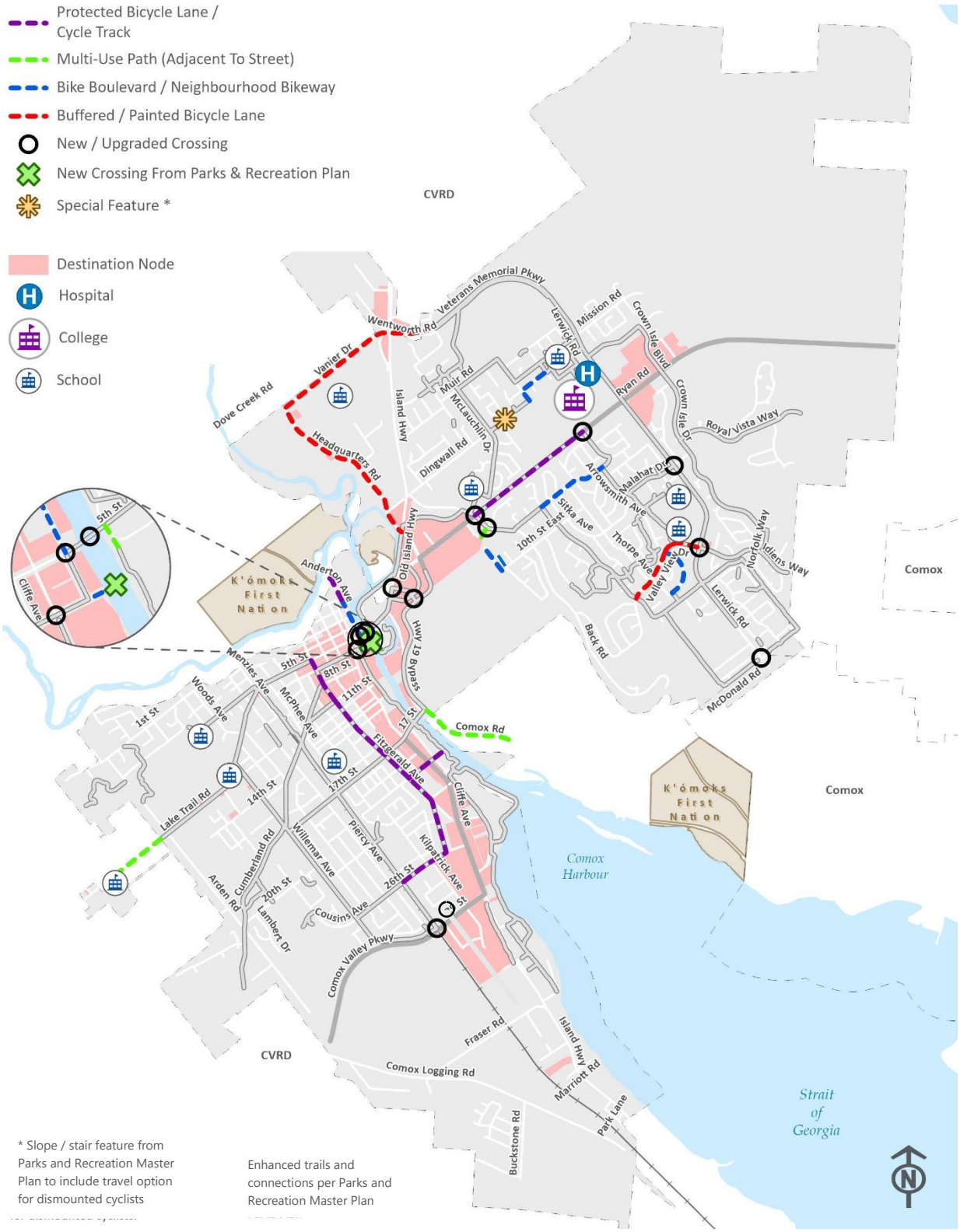


Figure 6: Recommended Long-Term Cycling Facilities



4.3 SUPPORT FACILITIES

In addition to on-street and off-street network connections, there are other bicycle infrastructure improvements that can make cycling a more attractive and convenient transportation choice. The draft Transportation Master Plan, Connecting Courtenay, recommends that the City look for opportunities to enhance wayfinding, increase bicycle parking supply, improve end-of-trip facilities, improve bicycle-transit integration and partner on cycling amenities.

- **Wayfinding.** While most residents know how to travel through the City by car, it may not be obvious which routes are the best by bicycle. For both experienced and inexperienced cyclists, signage and pavement markings can help riders to find the best routes that match their cycling abilities and comfort levels and to find new routes as they become more confident. Bicycle route signage and pavement markings can also highlight for drivers and other road users where they should expect to see greater concentrations of cyclists, which can help to educate drivers and cyclists and to improve cycling safety.
- **Bicycle parking.** Providing safe, secure parking for bicycles is an important part of improving cycling conditions. It is important to recognize that the fear of bicycle theft or vandalism is a significant deterrent to cycling. There are many different types of bicycle parking that can be tailored to specific situations. One of the key considerations in providing bicycle parking is to locate the 'right' bicycle parking facility in the 'right' place. The best type of bicycle parking facility for a specific location is driven by user needs (such as the purpose of the trip, length of the trip, and length of stay); and other factors (such as adjacent land uses, available space, and safety). Bicycle parking is typically categorized as either short-term or long-term. Recommendations to improve bicycle parking in Courtenay include:
    - Ensure there is sufficient long- and short- term bicycle parking at all City-owned buildings and that the location and type of parking is clearly communicated to staff and guests through a variety of measures.
    - Work with the Downtown Business Association and with individual local businesses to provide regularly spaced and sheltered on-street bicycle parking in the public right-of-way on all commercial streets and other commercial areas.
    - Work with School District 71 to ensure that bicycle parking is provided at schools.

  - Consider revising the Zoning Bylaw to require long-term and short-term bicycle parking in all developments. Bicycle parking should be addressed as part of development site traffic impact and / or parking studies.
  - Work with community groups to provide temporary event parking. Temporary parking typically consists of portable racks that meet the demand for an event. Racks are clustered together, providing a higher level of security than if people were to park the bicycles on their own. Event staff can monitor the area, providing people with peace of mind while they are away from their bicycle.

- **End-of-trip facilities.** End-of-trip facilities such as showers and clothing lockers at workplaces are critical components of making cycling more convenient for employees. Many bicycle commuters have long commutes or are required to wear professional clothing attire and need a place to change before coming into the office.
  - Investigate opportunities to provide end-of-trip facilities at City-owned workplaces.
  - Consider requirements for end of trip facilities as part of a Zoning Bylaw requirement.
- **Bicycle-transit integration.** Transit integration allows people cycling to make trips that are farther than they may be able to ride and allowing transit riders to reach destinations that are not adjacent to transit routes. Currently, bicycles are supported on all BC Transit buses through carrying racks on the front of each bus. The City can work with BC Transit to continue to ensure transit and cycling are seamlessly integrated by continuing to ensure that all buses have bicycle racks and by providing bicycle parking at transit exchanges and major transit stops.
- **Facility maintenance.** Once bicycle facilities are installed, it is important to ensure that bicycle infrastructure is well maintained on a regular basis, all year-round. Riding surfaces should be kept smooth and free of debris, while pavement markings and signage should be visible for all road users. This includes prioritizing road maintenance on bicycle routes and ensuring that durable pavement markings are used to identify bicycle routes. The City should consider developing and implementing maintenance and cleaning guidelines for bicycle routes, prioritizing routes with high ridership.

- **Cycling amenities.** The City should also identify opportunities to provide cycling amenities throughout the City. Cycling amenities include drinking fountains with bottle fill stations and bicycle maintenance stations placed at key locations. The City should also consider opportunities to provide a "bike traffic garden" education park with demonstration infrastructure, display boards/kiosks, bike racks, and repair stands. Possible partners for this bike traffic garden could include the Comox Valley Cycling Coalition, ICBC and School District 71.

4.4 SUPPORT PROGRAMS

Education, awareness campaigns, events and other incentive and information programs can help bolster cycling activity in addition to infrastructure improvements. While it is understood that the installation of a well-connected network of comfortable cycling facilities is likely to help promote cycling within the city, it has also been found that infrastructure alone is often not enough to see higher levels of ridership. A number of support initiatives are recommended for Courtenay, as described below. The City should partner with other organizations, agencies, non-profits, and other nearby communities to gain support for these programs and to help make them more effective.

- **Cycling education programs.** Courtenay should work with partner agencies to provide cycling skills and information to residents. Examples of programs include Share the Road safety campaigns, School Travel Planning programs, and bike skills courses for both adults and school-aged children. These programs help to instill confidence in new riders, support existing riders, and educate both people cycling and people driving about the rules of the road.
- **Promotional events.** Promotional events help to raise awareness and showcase the benefits of cycling as healthy sustainable transportation options. These events can be mixed in with other active transportation events. Bike to Work Week is an example of an enjoyable community event that simultaneously promotes cycling and provides cycling education. Bike to School week could also be provided to schools currently participating in the School Travel Planning process.

- **Bike maps.** Bike maps enable users to identify designated cycling routes that match their cycling ability and comfort level. The Comox Valley Cycling Coalition has developed a bicycle map with existing facilities. The City should build on this base to develop updated maps for the City of Courtenay as new infrastructure is delivered. Bike maps should identify bicycle facility types and include important local destinations and amenities. The map should be available in both hard copy and digital formats.

Beyond education and awareness programs, the City should also engage with partner agencies and stakeholder groups on a regular basis to confirm directions and priorities and to seek to understand new issues as they arise. These groups should also be consulted in the development of projects from planning through to detailed design.

Bicycle Parking near transit exchanges and / or major transit stops. Bicycle parking at major stops and transit exchanges facilitates multi-modal trips by bicycle and transit. This can allow people to choose non-auto modes for longer distance trips, especially where their homes are not well served by transit.

5 IMPLEMENTATION PLAN

The implementation of the cycling network and establishment of supportive programs will take many years. The draft Transportation Master Plan, Connecting Courtenay, and this associated Cycling Network Plan recognizes that the City of Courtenay will not only require new and additional sources of funding through local, provincial and federal partnerships, but will also need to substantially increase funding for sustainable modes of transportation at the municipal level. This not only responds to input and feedback from the community and stakeholders but will contribute towards the mode shifts envisioned throughout the City and CVRD's guiding strategies and defer the need for other investments in major infrastructure.

The Cycling Network Plan identifies short, medium and long-term projects. This section highlights *medium-term* priorities for infrastructure, programs, and policies to be implemented over the next ten or so years as funding and resources become available. Medium-term priorities for cycling have been developed to a concept level and documented in the respective appendices to this plan. It should be noted that the City will want to work with the community and Council to advance these priorities during annual capital and financial planning. Concept costs for City-based infrastructure have been developed and are included for reference and planning purposes. This section also identifies existing and potential funding sources to implement the medium- and long-term priorities.

5.1 THE APPROXIMATE COST OF THE LONG-TERM PLAN

As part of the development of the Cycling Network Plan conceptual order-of magnitude cost estimates were developed for each of the capital investments identified for the networks long-term implementation. This provides a sense of the potential overall future levels of investment for the City and its partners in current (2018) dollars. The order of magnitude costs are for comparative purposes and are based on a conceptual level of design; they should be refined to establish project budgets. Actual costs for implementation could vary significantly for each initiative as project scope gets confirmed through subsequent stages of design and costs are clearer. The preliminary estimates provided within this report are 'Class D' type estimate (order of magnitude) which uses simplified methods of estimate preparation, consistent with methods used for the draft Transportation Master Plan.

Possible contributions from other agencies and the private sector are not possible to estimate and have not been included to offset the overall costs.

The level of investment required to implement improvements and programs recommended within this Cycling Network Plan that are within municipal or shared jurisdiction is approximately $26.7-million (2018 dollars) as summarized in **Appendix B**. Projects are identified as short term (five years), medium term (10 years) and long term (up to twenty years). The implementation map provided in **Figure 5** shows both short- and medium-term improvements. **Figure 6** shows the long-term improvements. It should be noted that these cost estimates do not include items such as property costs, environmental mitigation costs, and utility relocations, staff time, or operations and maintenance and include costs for both interim measures and long-term improvements. These interim measures include critical corridors for the network's connectivity such as Fitzgerald Avenue and Ryan Road.

5.2 IMPLEMENTATION CONSIDERATIONS

The long-term plan will require significant financial investment over the next 20 years and beyond. The implementation strategy identifies priorities for investment, as well as to guide the City's on-going transportation planning and design work in service of achieving long-term goals. The implementation plan was developed based on the following considerations:

- **All transportation future planning and design work should consider the needs of all modes of transportation.** The priority improvements integrate the recommendations for all modes of transportation within the improvement area. Further, as projects progress through design, consideration should be given to the needs of all road users.
- **Cycling improvements in the first ten years should focus on the spine of the cycling network, connecting existing infrastructure and 'quick wins' in neighbourhoods.** The guiding principles included in the Cycling Plan prioritize building on existing momentum and developing a spine cycling network. The implementation plan for the first 10 years connects key destinations – like the Lewis Centre, North Island College, commercial areas, and schools. It also focuses on cycling facilities that are relatively easy to implement, such as bicycle boulevards that can provide key connections and serve important destinations. In some cases, a lower-cost facility can be implemented in the medium-term and then upgraded over time as demands increase or resources allow.

5.3 CYCLING NETWORK PRIORITY PROJECTS AND PROGRAMS

The total long-term cost for the cycling projects recommended in this plan is approximately $26.7-million. This includes linear facilities and improvements to intersections, some of which should be undertaken in collaboration with partner agencies.

Historically, the City has not invested significantly in cycling infrastructure. Consultation with the public and stakeholders indicates that there is a desire to increase funding for cycling, especially for projects that separate bicycles from other vehicles. Still, some cycling projects should be prioritized for medium-term investment to allow for an increase in cycling funding over time. Funding from other sources, including partners and grants will allow the City to maximize investment and advance projects as quickly as possible. The guiding principles from the Cycling Plan provide a basis for the prioritization of cycling projects. This includes the prioritization of projects that build on existing momentum and that complete a spine network of routes that are comfortable for cyclists of all ages and ability to access key destinations. Key destinations and connections that were considered in project prioritization are:

- Core commercial areas, especially Downtown Courtenay.
- Lewis Centre
- North Island College
- Schools
- Connections from the spine cycling network to existing paved trails, including the Courtenay Riverway and trails in east Courtenay that connect to the Town of Comox.

In addition to the provision of on-street and off-street cycling facilities to get around the community, support facilities and programs should be planned and implemented within the medium-term. They may include, but not be limited to:

- Wayfinding signage to connect to key areas of the City.
- Bicycle parking for short- and long-term parking either as part of new development within the city or potentially within public rights-of-way.
- End of trip facilities to make cycling more convenient for commuters that ride longer distances and/or simply need a place to change after arriving at work.
- Cycling support initiatives such as educational programs, school travel planning, promotional events and bike maps.

The total cost of projects and programs recommended is $2.1-million for the short-term (up to five years), $8.5-million for the medium-term (five to ten years), and $13.8-million for the long-term (ten to twenty years). Costs do not include property, environmental impacts, utility relocations, staff time, or operations and maintenance. All costs are outlined in **Appendix B**. An additional $2.3-million is identified for support initiatives beyond those explicitly listed in the Cycling Network Plan (support programs, support facilities, cycling facility standards), consistent with the draft Transportation Master Plan.

Expansion of pedestrian and cycling facilities on the 5th Street Bridge was not included in the capital cost estimate for medium-term priorities because it is being addressed through a parallel process. This project is recommended to continue in the near-term as part of overall bridge rehabilitation and maintenance work.

Appendix A provides key information for each of the recommended priority projects. All projects require further development, confirmation of all features, discussion with stakeholders, and collaboration with partner agencies (where applicable). Improvements may be eligible for grants and funding from other agencies.

APPENDIX A

CYCLING FACILITY PLAN DEVELOPMENT

The existing cycling network in Courtenay is made up of a network of off-street pathways, supported by signed neighbourhood bicycle routes, bicycle lanes on Fitzgerald Avenue, and a protected cycle lane on 5th Street between Fitzgerald Avenue and Menzies Avenue. The Recommended Long-Term Cycling Network developed as part of Connecting Courtenay will guide the City's capital investments over the next 20 years. This recommended implementation process has been separated into short (5 year), medium (ten year), and long-term capital projects.

The Recommended Long-Term Cycling Network is shaped by the assessment of existing conditions and future demands that are informed by input from the public and key stakeholders, as well as through the application of best practices and an assessment of the physical characteristics of potential routes.

This appendix summarizes the identification and evaluation of routes to create a network over the long-term. Key trade-offs and constraints for each corridor are identified for future consideration by the City as these recommendations move from planning to design. It will be important to continue to work with partner agencies and stakeholders, including the Comox Valley Cycling Coalition and adjacent property owners as these concepts are advanced.

A.1. RIVER CROSSINGS

Options Evaluation

There is a need to provide a safe, comfortable cycling connection between Downtown Courtenay and east Courtenay, and especially to the Lewis Centre. Stakeholders and the public expressed a need for this connection and the Courtenay River is a barrier to cycling in Courtenay. Historically, two options have been explored:

- Widening of the existing pedestrian facilities on the 5th Street crossing
- Development of a new crossing between Anderton Avenue and Simms Millennium Park on the 6th Street alignment.

Previous work has investigated options for widening the existing pedestrian facilities on the 5th Street crossing to 3.0 m multi-use pathways that would be suitable for shared use by cyclists and pedestrians. Previous work confirmed the feasibility of this approach and ongoing work is confirming the expected cost. From a network perspective, both approaches to the bridge are constrained and improvements would be required to connect the proposed crossing to a broader network – this is discussed further in the evaluation of networks on the west and east sides. This concept is available to the City in the near-term since the planning for rehabilitation of the bridge is currently underway. For this reason, Connecting Courtenay includes widening of pedestrian and cycling crossings of the 5th Street crossing in the Long-Term Cycling Network Plan. Pursuing this option in combination with planned maintenance and rehabilitation work

maximizes investment by the City and allows for a connection in the near-term, making cycling and walking safer. This option requires some changes to the surrounding network that are discussed in the 'West Courtenay' and 'East Courtenay' section below.

In 2012, City Council directed staff to pursue development of a new pedestrian and cycling crossing on the 6th Street alignment between Anderton Avenue and Simms Millennium Park. This crossing had been proposed by members of the public and was supported by architectural and engineering work. The crossing would connect to the existing trails network in the Park, providing indirect access to the Lewis Park and the Lewis Centre. The staff report submitted on March 15, 2012 indicated an estimated cost of $2,000,000 with maintenance and repair costs of around $5,000 per year and $25,000 every ten years. This option provides more direct connectivity with existing off-street pathways on the east side; however, the off-street pathways do not connect to a broader network. This option is included in the Draft Parks and Recreation Master Plan because of its role connecting Downtown Courtenay to Simms Millennium Park and Lewis Park. It has generated substantial public interest and was found through previous work to be technically feasible. Connecting Courtenay includes a 6th Street pedestrian and cycling crossing in the long-term plan. Connections developed for the 5th Street crossing can be utilized for a future 6th Street crossing. Because of the cost of this structure and the coverage provided by the 5th Street crossing, it is anticipated that this may be a low priority, long-term improvement from a transportation lens relative to some of the other network needs and the City should explore potential future funding opportunities.

A.2. WEST COURTENAY

The assessment of existing facilities and core destinations, including review of input from stakeholders and the public, identified a number of core gaps and challenges with the existing network. These include:

- The 5th Street protected bicycle lanes do not connect with the existing bicycle lanes on Fitzgerald Avenue.
- The existing Fitzgerald Avenue bicycle lanes end before connecting to Driftwood Mall, an important regional destination.
- There is no all ages and abilities east-west connection between the end of the 5th Street protected bicycle lanes and the 5th Street Crossing. Cyclists are expected to share the road with vehicles.
- Ecole Puntledge Park Elementary, Lake Trail Middle School, and Arden Elementary are not served by any cycling facilities.
- The bicycle lanes on Fitzgerald Avenue are good for more confident cyclists but are not suitable for all ages and abilities.

- The Rotary Trail provides a separated connection; however, intersections do not have any measures for cycling, trail is unpaved.

Based on the guiding principles, the proposed long-term network for 20 years focuses on:

- Building on recent work at 5th Street and the existing bike lanes on Fitzgerald Avenue to create a more complete network.
- Protected connections to and through commercial areas and schools where traffic volumes are too high for neighbourhood bikeways.
- Providing alternatives to the Riverway Trail, which is heavily used by pedestrians and can be difficult to cycle.

Routes were chosen that identify the gaps summarized above and then assessed to determine the facility type that is most likely to provide the highest quality connection, while being sensitive to the local context, physical and cross-section constraints, overall network affordability and other issues. The key considerations for each recommended corridor are summarized in the bullets below:

- **Fitzgerald Avenue** provides a north-south connection with access to commercial areas west of the Courtenay River. The existing bicycle lanes from 8th to 21st provide a north-south spine. It does not currently connect to the 5th Street protected bike lanes to the north or to Driftwood Mall or the trail network to the south and east (Riverway Trail). Fitzgerald is part of BC Transit's proposed Frequent Transit Network – providing good bicycle connections to transit can encourage multi-modal trips, but bike lanes can conflict with bus stops. There is an opportunity to connect bike facilities on north Fitzgerald Avenue to the Complete Street Pilot Project on 5th Street and to the Riverway Trail. Because this is a central spine of the cycling network and connects many important destinations, the recommended configuration for this facility in the long-term is a protected bicycle lane or cycle track. Improving and expanding this corridor would be a valuable piece of the network's overall implementation. Key considerations:
    - The existing curb is old and in need of repair in some areas. Some signal configurations have been identified as requiring improvement in previous studies.
    - This will require reconstruction from property-line to property line in some areas, with a need to eliminate parking at approaches to some intersections to maintain turn lanes.
    - The intersection of 8th Street / Fitzgerald Avenue / Cumberland Road requires additional study.

  - Parking could be maintained for most of Fitzgerald Avenue with the exception of the blocks around 11th Street where the right-of-way is narrow. South of 14th Street the parking could be maintained with a reduced boulevard or parking could be alternated on each side of the road to maintain ideal boulevard width.
  - Need to reconfigure the intersection and reduce turning lanes at 26th Street to accommodate protected intersection.
  - Additional property should be acquired where available through development to provide enhanced treatments, including wider lanes and passenger amenity areas for transit stops along the cycle track.
  - This cross-section can be implemented over time as the opportunity arises – either from development or through other works. The highest priority components are the extensions of the current bicycle lane to connect to other infrastructure and destinations.
  - The existing facility from 8th to 21st could be improved with spot improvements such as updated pavement markings near intersections and signage along the route, this could be done simultaneously to extending the network outwards from this north-south spine.

- **6th Street** is a local road in the Downtown that connects Fitzgerald Avenue to the Courtenay River. It provides access to the commercial core of Downtown Courtenay, including the Courtenay branch of the Vancouver Island Regional Library. A bike boulevard / neighbourhood greenway is recommended for this route as a comfortable cycling connection. Key considerations include:
  - 5th Street between Fitzgerald Avenue and the 5th Street Bridge was considered as an alternate east-west connection. It was eliminated from further review for a number of reasons. 5th Street is heavily used by vehicles and pedestrians and supports the movement of goods and services. The narrow right-of-way and angled parking would make protect bike lanes difficult on 5th Street in this area.
  - Requires a crossing of Cliffe Avenue, which can be accommodated at the existing signal with the addition of bicycle pushbuttons and paint treatments. May require minor curb modifications.
  - Traffic calming may be required to reduce traffic volumes and speeds.
  - Drive-in angle parking on 6th Street between Fitzgerald Avenue and England Avenue should be modified to be reverse-in angle parking or parallel parking, which are safer when combined with cycling routes.

  - Bicycle parking opportunities and partnerships with local businesses and the BIA should be pursued along 6th Street as the 'bicycle gateway' to Downtown.

- **Anderton Avenue** between 6th Street and the City boundary connects the recommended bike boulevard on 6th Street to the 5th Street Bridge and on to planned development on the K'omoks First Nation land north of the Puntledge River. A bike boulevard / neighbourhood greenway is recommended from 6th Street until 1st Street. North of 1st Street a protected cycle track is recommended due to Anderton's classification as a collector roadway and the potential for increased traffic volumes accessing the planned development. Key considerations include:
  - A new bicycle / pedestrian crossing of 5th Street is recommended. The type of connection is to be determined, but it will require changes to the curbs and existing concrete median. Design will need to give special consideration of the visibility of any flashing lights or signals from the bridge deck and how this crossing will operate in conjunction with the nearby signal at 5th Street & Cliffe Avenue. Amalgamating the crossing with the existing signal at 5th Street was considered; however, connecting the crossing to the 5th Street Bridge would be complex and require additional property.
  - Traffic calming may be required to slow traffic speeds south of 1st Street.
  - Transition to no parking or parking pockets north of 1st Street.
- **5th Street** from Menzies to Lake Trail Road (via Willemar Avenue) connects the protected bicycle lanes that have recently been constructed on 5th Street at Menzies to Lake Trail Middle School. Protected bicycle lanes or cycle tracks are recommended for this corridor. Key considerations include:
  - North of 9th Street, ideal cross-section widths can be maintained in narrow sections by alternating parking. Alternatively, parking could be maintained with reduced widths for all cross-section elements – this would also require reconstruction from property line to property line.
  - More detailed assessment and discussions with stakeholders are required to finalize the facility type and configuration on Willemar Avenue adjacent to the school. This includes consideration of pick-up and drop-off patterns and use of existing turn lanes. There may be an opportunity to partner with the school to locate a cycle track or multi-use pathway on school property.
- **Lake Trail Road** connects Lake Trail Middle School to Arden Elementary. A multi-use pathway is recommended to provide separation for traffic and a connection for both cyclists and pedestrians. This is the subject of a concurrent study.

- **Arden Road** Arden Road runs from 1st Street in the north and dead ends near the Comox Valley Parkway in the south. A possible roadside multi-use pathway could be implemented along Arden Road, from Morrison Creek to the Comox Valley Parkway, in order to increase pedestrian and cyclist connectivity in this area and provide a continuous north-south connection at the west end of the City.
- **17th Street** improvements will provide a continuous east-west connection between Comox Road / 17th Street Bridge and Willemar Avenue and Cumberland Road, with access to the Riverway Trail.
- **19th Street** connects the Courtenay Riverway to the existing Fitzgerald Avenue bike lane. In the long-term, protected bicycle lanes are recommended because of this short connection's central role between two planned facilities that are fully protected. Key considerations include:
    - Although protected bicycle lanes are recommended in the long-term, they will require additional property. Buffered bicycle lanes are recommended for a more immediate connection but require elimination of existing parking. This requires more discussion with property owners and stakeholders. A bike boulevard can be considered as an alternative to removing parking.
    - Changes will be required at 19th Street and Cliffe Avenue 19th to the existing signalized intersection
- **26th Street** connects the proposed Fitzgerald Avenue protected bicycle lanes and Driftwood Mall to the planned future extension of the Rotary Trail and on to the existing multi-use pathway along Comox Valley Parkway. Protected bicycle lanes are recommended for this connection. Key considerations:
    - The existing curbs can be maintained along with the addition of protected bicycle lanes by implementing alternating parking. Full parking can be accommodated by acquiring additional right-of-way or reducing all cross-section elements to recommended minimums and reconstructing the roadway from property line to property line.
- **Cumberland Road** currently offers a discontinuous signed route and painted shoulder. It is recommended that this route be improved to provide a consistent bicycle route to connect to the Fitzgerald Corridor.
- **Willemar Avenue** has been identified as a corridor for improvement and will provide an alternate north-south connection to the recommended improvements along Lake Trail Road. This route is proposed as a neighborhood greenway requiring signs and paint treatment from Cumberland Road to 26th Street. North of

Cumberland Road to 5th Street, painted/buffered lanes are the recommended treatment. Key considerations:

- Improvements at the intersection of Lake Trail Road could be required. Parking could be impacted along the route and requires further study.

The Courtenay Draft Parks and Recreation Master Plan is expected to include recommendations for extension of, and improvements to, key multi-use trails that also provide transportation connections. These include the Courtenay Riverway and the Rotary Trail. For the Rotary Trail, improvements will be required at intersections to maximize the safety and efficiency of the trail for cyclists. Although recommendations to improve and extend the Rotary Trail will be provided within the Draft Parks and Recreation Master Plan, Connecting Courtenay includes a recommendation (and associated costs) for improved crossings along the length of the trail.

A.3. EAST COURTENAY

The assessment of existing facilities and core destinations, including review of input from stakeholders and the public, identified a number of core gaps and challenges with the existing network. These include:

- No east-west connection on Ryan Road or parallel roads to provide cycling access to commercial areas, the 5th Street Bridge, North Island College, North Island Hospital, residential areas, or to regional destinations.
- No current connection from commercial areas around Ryan Road south to the 17th Street bridge or on to the Town of Comox.
- No connection from Courtenay east to Comox.
- No all ages and abilities connections to Mark R Isfeld Secondary and Valley View Elementary school from the east. Trails connecting from the west are not suitable for all cyclists.
- No all ages and abilities connections to Queneesh Elementary School, North Island College, and North Island Hospital.

Based on the guiding principles, the proposed long-term network for 20 years focuses on:

- Creating a spine network that connects key destinations and focuses on safety and comfort for all ages and abilities (AAA).
- Creating a network of neighbourhood bikeways that connect to existing trails and schools and by formalizing and improving routes already used by cyclists.

Routes were chosen based on the gaps summarized above and then assessed to determine the facility type that is most likely to provide the highest quality connection, while being sensitive to the local context, physical and cross-section constraints, overall network affordability and other issues. The evaluation for each recommended corridor is summarized in the bullets below:

- **Major road widenings and new major roads** are recommended to include facilities for all modes of transportation. On the east side of the Courtenay River, this would include the following facilities:
    - Cycling facilities – either multi-use pathways or protected cycling lanes along with sidewalks – on both sides of the community
    - Multi-use pathway along one side of the potential, widened Highway 19A Bypass. (under jurisdiction of MoTI, not included in cost estimates)
    - Multi-use pathways along both sides of the recommended 17th Street Extension.
    - Protected bicycle lanes along Ryan Road in the long-term when widening occurs. Alternative facilities are recommended along Ryan Road in the medium-term before full widening occurs (under jurisdiction of MOTI, not included in cost estimates)
- **Old Island Highway / 5th Street** from 5th Street Bridge to Puntledge Road connects the recommended improvements to the 5th Street Bridge crossing to the Lewis Centre. A multi-use pathway is recommended. Key considerations include:
    - Preliminary investigation suggests that the north side would be more suitable because of access to Lewis Park and property constraints on the southeast side of Old Island Highway.
    - The pathway may be through the park property at some points to manage impacts to trees. Grades and driveway crossings require careful consideration.
    - The portion of the pathway in front of the Lewis Centre should be delivered along with recommended road network improvements to access control along Old Island Highway.

  - The crossing of Old Island Highway at Puntledge Road is already a controlled crossing; updated paint markings and a bicycle push button are recommended.

- **Puntledge Road** provides an alternate to Old Island Highway and Ryan Road where there is no space available for a multi-use pathway or other cycling facilities comfortable for all ages and abilities. A bicycle boulevard is recommended with the length to be determined following further study of potential crossing locations of the Highway 19A Bypass. A crossing of the Highway 19A Bypass would connect the Puntledge Road bike boulevard to the multi-use pathway along Highway 19A and a multi-use trail recommended in the Draft Parks and Recreation Master Plan. Key considerations:
  - Traffic calming may be required to reduce vehicle volumes and speeds. Any traffic calming applied in this area should be suitable for navigation by large trucks, since this is an industrial area.
  - The location and type of crossing of Highway 19A should be determined through further planning and design work and be responsive to the final design for the potential widening of Highway 19A.
- **Tunner Drive** is identified as a future street connection, which would include sidewalks and cycling facilities connecting Back Road to the Highway 19A Bypass. Consideration is to be given to coordination with planned cycling facilities on Back Road and Highway 19A Bypass, including a means of crossing Highway 19A Bypass
- **Back Road** connects future protected bicycle lanes on Ryan Road and Tunner Drive to a network of bicycle boulevards in this neighbourhood. A multi-use pathway is recommended for this corridor. Key considerations:
  - In the long-term widening Back Road is recommended to accommodate traffic growth. To accommodate widening and a multi-use pathway requires additional property.
  - In the interim – before widening is required and property is available – preliminary investigations suggest a multi-use pathway can be accommodated on the southwest side of the roadway. Between 6th Street and Tunner Drive the pathway can be accommodated beyond the limits of the existing asphalt. North of Tunner Drive, implementing a full multi-use pathway may require removing the existing curb and narrowing the southbound lane. Further consideration is required in the design stage.
  - Connecting the network requires an improved crossing of Back Road, with the type to be determined. Locating the crossing at Tunner Drive would

provide a direct path for the most cycling trips because it does not require 'back-tracking' to reach Ryan Road or 6th Street. It also responds to other community requests for a controlled pedestrian crossing; however, Tunner Drive is within 150 m of the nearest controlled crossing at Ryan Road. A crossing at 6th Street could be considered as an alternative. More detailed study is required to confirm the crossing location.

  - Connecting the network also requires an improved crossing of Ryan Road at Back Road to facilitate bicycle connections. Bicycle push-buttons and paint are recommended. Changes to existing curbs could further enhance crossing comfort. This intersection is under MoTI jurisdiction.

- **A network of bicycle boulevards** south of Ryan Road and east of Back Road is recommended to facilitate travel through the neighbourhood and to key destinations. Proposed roadways are:
  - 6th Street East from Back Road to Arrowsmith Avenue.
  - Hobson Avenue from 6th Street East to Hawk Drive.
  - Hawk Drive from Hobson Avenue / Valley View Drive to Swallow Crescent.
  - Mallard Drive from the trail connecting to Hawk Drive to Valley View Drive.
  - Cowichan Avenue / 6th Street East / Arrowsmith Avenue from Ryan Road to Malahat Drive.
  - Williams Road from Hunt Road to 10th Street.
  - Crown Isle Drive from Ryan Road connecting to Idiens Way, including Royal Vista Way.
- Key considerations include:
  - Traffic calming may be required to reduce traffic speed and volume on these roadways.
  - A continuous connection on 6th Street was considered and not included in the recommendations due to the extreme grade of 15%.
- **A network of bicycle boulevards** is also recommended north of Ryan Road along Braidwood Road, connecting to recommended painted facilities on Back Road to Centennial Drive, along Centennial Drive to McLauchlin Drive connecting through the cul-de-sac at the north of McLaughlin Drive and onwards to recreational trails. This connection would also follow Dingwall Road. This connection should align with the proposed dismounted bicycle feature at the extreme slope at the northeast corner of Dingwall Road where it meets Cruikshank Avenue (this feature is being

explored through the Draft Parks and Recreation Master Plan process). This connection is dependant on that feature's development.

- **Tamarack Drive and Muir Road** from North Island College to Queneesh Elementary School are recommended to be bicycle boulevards. Key considerations:
    - The corridors provide a local connection to the elementary school via an existing trail.
    - A bicycle boulevard along Muir Road connects to a potential future multi-use trail that has been identified through the Courtenay Draft Parks and Recreation Master Plan. The exact configurations of these trails are subject to further investigation due to grade and right-of-way considerations.
- **Malahat Drive** connects the proposed network of bicycle boulevards to Lerwick Road and the Crown Isle neighbourhood. Buffered or painted bicycle lanes are recommended for this connection. Key considerations:
    - Narrowing of existing lanes and / or modification of the existing painted median will be required.
    - Improvements to the intersection of Lerwick Road and Malahat Drive may be required to provide safe crossing to the Crown Isle neighbourhood.
    - Buffered bicycle lanes with flexible delineators are preferred in sections where volume is higher and where more detailed work indicates there is sufficient width.
- **Valley View Drive / Idiens Way** connects the proposed network of bicycle boulevards to an existing multi-use pathway. Buffered or painted bicycle lanes are recommended for this connection.
    - Improvements to the intersection of Lerwick Road and Valley View Drive / Idiens Way are required to facilitate crossing. Paint and bicycle push-buttons are recommended.
    - Buffered bicycle lanes with flexible delineators are preferred in sections where volume is higher and where more detailed work indicates there is sufficient width.
    - Some modifications to existing lane configurations may be required to accommodate the bicycle lanes. More detailed study is required to determine trade-offs.
    - Parking restrictions on Idiens Way will be required to accommodate bicycle lanes.

- **Lerwick Road** provides the most direct north-south connection across Courtenay east of the Courtenay River. Much of this roadway has been built out, making continuous protected bicycle lanes or multi-use pathways infeasible within the existing right-of-way. Discontinuous bicycle facilities are not desirable. There are some segments of Lerwick Road where a multi-use pathway remains feasible and can provide a connection between other facilities or adjacent to important destinations, such as schools. For this reason, multi-use pathways are recommended on Lerwick Road between Valley View Drive / Idiens Way and Malahat Drive and between Waters Place and the existing unpaved multi-use pathway on Veterans Memorial Parkway. Key considerations include:
    - Because future widening may be required for Lerwick Road in the long-term, consider locating the multi-use pathway adjacent to the school outside of the future widening area. This will require working with School District 71 for property dedication.
    - Changes to the cross-section or narrowing of ideal cross-section element widths may be required at the intersection with Valley View Drive / Idiens Way.

- **Other crossing improvements** are recommended to connect infrastructure. These include:
    - **Ryan Road at Cowichan Avenue**
    - **McDonald Road at Lerwick Road / Guthrie Road.** At this location, multi-use pathways along McDonald Road should connect to on-street bicycle lanes on Guthrie Road in the Town of Comox. Bicycle boxes, push buttons, and conflict paint are recommended to improve the crossing.

The Courtenay Draft Parks and Recreation Master Plan includes recommendations for improvements to trails that also provide transportation connections. On the east side of the Courtenay River, these improvements are focused around an east-west connection between Highway 19A and Tunner Drive, as well as existing unimproved trails that can provide access to schools. Existing dirt and unpaved trails should be paved and widened to connect bicycle boulevards to schools and to provide north-south and east-west connections. Some of these trails are on property owned by School District 71, a key partner in improving these connections.

The City typically plans and funds transportation facilities and programs through various programs, as well as cost sharing opportunities. As part of the city's ongoing 5- and 10-year capital planning, consideration may be given toward utilizing alternative funding sources for the delivery of key street, walking, cycling, and transit facilities and programs as briefly outlined below.

- General Revenues. The City should incorporate the recommendations from the cycling network plan into its short-, medium-, and long-term budgeting plans to ensure that the projects are accounted for in the City's capital planning process. To accommodate this, the City may seek changes to its capital budget to fund the implementation of this network plan over the medium- and long-term. The City should also seek to integrate transportation improvements with other capital projects, such as utility projects.
- Developers. The City should leverage transportation investments during the planning of new development projects. Other ways in which transportation investments can be leveraged through developers include:
    - Voluntary public realm improvements
    - Community amenity contributions
    - Density bonusing contributions
    - Require high quality bicycle parking facilities through Zoning Bylaw update
- Development Cost Charges (DCC). The City has a DCC bylaw that should be updated to include projects identified through Connecting Courtenay. DCC projects should

include projects from across all modes of transportation that benefit new growth in the community.

- Provincial Programs and Initiatives. Key infrastructure may be funded in partnership with the Ministry of Transportation. Beyond this, the Provincial Government administers the BikeBC program, which promotes new, safe, and high-quality cycling infrastructure through cost-sharing with local governments. Some possible projects include new bicycle trails and bicycle lanes, improvements to existing cycling infrastructure, and providing for bicycle lockers and other equipment that makes cycling a safer and more convenient option for travellers. The BikeBC program provides funding for infrastructure which forms part of a bicycle network plan adopted by a BC local government. To ensure maximum success at obtaining grant funding, the City should have grant-ready concepts pre-developed for application.
- Federal Funding. There are several programs that provide funding for environmental and local transportation infrastructure projects in municipalities across Canada. Typically, the federal government contributes one third of the cost of municipal infrastructure projects. Provincial and municipal governments contribute the remaining funds, and in some instances, there may be private sector investment as well.
- Green Municipal Funds. The Federation of Canadian Municipalities manages the Green Municipal Fund, with a total allocation of $550 million. This fund is intended to support municipal government efforts to reduce pollution, reduce greenhouse gas emissions, and improve quality of life. The expectation is that knowledge and experience gained in best practices and innovative environmental projects will be applied to national infrastructure projects.
- Carbon Tax Rebate. Each municipality that has signed the Climate Action Charter receives an annual rebased based on completion of the CARIP form. The City could choose to direct this funding towards sustainable transportation projects, such as funding bicycle, pedestrian, and transit infrastructure.
- ICBC: ICBC provides funding for road improvements, including pedestrian and bicycle infrastructure, particularly where these have the potential to reduce crashes, improve safety, and reduce claims costs to ICBC. Funding is available through ICBC's Road Improvement Program, and other ICBC programs include the Speed Watch Program (through the Community Policing Centres), Speed and Intersection Safety Program, Counter Attack, Operation Red Nose, and Road Sense Speaker Program for Schools.
- Private Sector. Many corporations wish to be good corporate neighbours— to be active in the community and to promote environmentally-beneficial causes. Bicycle

and pedestrian routes and facilities in particular are well suited to corporate sponsorship and have attracted significant sponsorship both at the local level and throughout North America. Examples in BC include Construction Aggregates in Sechelt, which constructed an overpass over a gravel conveyor to provide a link for pedestrians and cyclists, and 7-Eleven and Molson Breweries, which have sponsored multi-use pathways in Metro Vancouver

APPENDIX B

CYCLING IMPROVEMENT SUMMARY

SHORT TERM CYCLING IMPROVEMENTS AND COST ESTIMATES (Class D)*

Facility Name	Start	End	Horizon	Length (m)	Sides	Facility Type	Cost/m	Additional LS Work	Total Cost
Fitzgerald Avenue	5th Street	8th Street / Cumberland Road	Short	250	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 70,000
Fitzgerald Avenue	Cumberland Road	21st Street	Short	1300	2	Spot improvements along existing route			$ 30,000
Fitzgerald Avenue	21st Street	26th Street	Short	500	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 140,000
19th Street	Fitzgerald Avenue	Riverway Trail	Short	250	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 70,000
Back Road	Ryan Road	6th Street	Short	350	1	MUP - Convert Rural to Urban (1 side)	$ 940	$ 20,000	$ 349,000
6th Street	Back Road	Hobson Avenue	Short	280	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 11,200
Hobson Avenue	6th Street E	Hawk Drive	Short	1300	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 52,000
Tunner Road	Williams Road	Back Road	Short	100	1	MUP - Convert Rural to Urban (1 side)	$ 940	$ 20,000	$ 114,000
6th Street	Fitzgerald Avenue	Anderton Avenue	Short	460	1	Neighbourhood Greenway - Signs and Paint Only	$ 40	$ 50,000	$ 68,400
Anderton Avenue	5th Street	6th Street	Short	90	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 3,600
Anderton Avenue Intersection	5th Street		Short					$ 310,000	$ 310,000
5th Street / Old Island Highway	5th Street Bridge	Lewis Centre	Short	360	1	MUP on Existing Urban	$ 620		$ 223,200
Lerwick Road	Malahat Drive	Valley View Drive	Short	800	1	MUP on Rural Road Flat	$ 550	$ -	$ 440,000
Malahat Drive	Arrowsmith Avenue	Lerwick Road	Short	500	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140	$ 13,900	$ 153,900
Cowichan Avenue/Arrowsmith Avenue	Ryan Road	Malahat Drive	Short	750	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 30,000
			5-year Total						$ 2,065,300

* This preliminary estimate is a 'Class D' type estimate (order of magnitude) which uses simplified methods of estimate preparation, consistent with methods used for the Transportation Master Plan, is developed for discussion purposes only for the City of Courtenay.

MEDIUM TERM CYCLING IMPROVEMENTS AND COST ESTIMATES (Class D)*

Facility Name	Start	End	Horizon	Length (m)	Sides	Facility Type	Cost/m	Additional LS Work	Total Cost
5th Street	Menzies Avenue	Lake Trail Road	Medium	800	2	Raised Cycle Track w/ Landscaping	$ 1,370	$ 75,000	$ 2,267,000
Hawk Drive	Hobson Avenue	Swallow Crescent	Medium	450	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 18,000
Puntledge Road	Old Island Highway	Highway 19A	Medium	185	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 7,400
Idiens Way/Valley View Drive	Mallard Drive	Comox Boundary	Medium	850	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140	$ 25,000	$ 263,000
Willemar Avenue	5th Street	Cumberland Road	Medium	700	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 196,000
Lake Trail Road	Willemar Avenue	Webdon Road	Medium	910	1	MUP on Rural Road Flat	$ 550	$ 310,000	$ 810,500
Arden Road	Morrison Creek	Comox Valley Parkway	Medium	2700	1	MUP on Rural Road flat	$ 550		$ 1,485,000
26th Street	Willemar Avenue	Fitzgerald Avenue	Medium	950	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 266,000
Willemar Avenue	Cumberland Road	S end of Willemar at Trail	Medium	1200	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 48,000
Cumberland Road	Willemar Avenue	Arden Road	Medium	950	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 266,000
Cumberland Road	Piercy Avenue	Fitzgerald Avenue	Medium	720	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 201,600
Veterans Memorial Parkway	Caledon Cresent	N of Poje Way	Medium	1100	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 308,000
Veterans Memorial Parkway	N of Poje Way	Mission Road	Medium	400	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 112,000
Crown Isle Dr	Ryan Road	Idiens Way	Medium	2000	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 80,000
Crown Isle Blvd /Water Pl	Lerwick Road	Ryan Road	Medium	1000	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 280,000
4th Street	Willemar Avenue	Menzies Avenue / 5th Street	Medium	530	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 21,200
Back Road	Ryan Road	Braidwood Rd	Medium	120	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 33,600
Centennial Drive	Back Road	McLauchlin Dr	Medium	300	1	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 42,000
McLauchlin Drive	Centennial Drive	Cul-De-Sac	Medium	1100	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 44,000
Braidwood Road	Back Road	Old Island Highway	Medium	550	1	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 77,000
Old Island Hwy	Ryan Rd	Braidwood Rd	Medium	420	1	MUP on Rural Road Flat	$ 550		$ 231,000
Tsolum Road	Old Island Highway	Puntledge Road	Medium	200	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 8,000
N Island Hwy	17th Street Bridge	Ryan Road	Medium	1500	1	MUP on Rural Road Flat	$ 550		$ 825,000
17th Street	Willemar Avenue	Comox Road	Medium	1600	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 448,000
Muir Road	McLauchlin Drive	Lerwick Road	Medium	1300	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 52,000
Royal Vista Way	Crown Isle Drive	End	Medium	1200	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 48,000
			10-year Total						$ 8,438,300

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LONG TERM CYCLING IMPROVEMENTS AND COST ESTIMATES (Class D)*

Facility Name	Start	End	Horizon	Length (m)	Sides	Facility Type	Cost/m	Additional LS Work	Total Cost
Rotary Trail - Street crossing improvem	5th Street	26th Street	Long	2050				$ 225,000	$ 225,000
Fitzgerald Avenue	5th Street	26th Street	Long	2050	2	Raised Cycle Track w/ Landscaping	$ 1,370	$ 582,500	$ 6,199,500
Lake Trail Road	Webdon Road	Salisbury Road	Long	550	1	MUP on Rural Road Flat	$ 550	$ -	$ 302,500
26th Street	Rotary Trail	Fitzgerald Avenue	Long	460	2	Raised Cycle Track w/ Landscaping	$ 1,370	$ 15,000	$ 1,275,400
19th Street	Fitzgerald Avenue	Courtenay Riverway	Long	300	2	Raised Cycle Track w/ Landscaping	$ 1,370		$ 822,000
Mallard Drive	Trail Connection	Valley View Drive	Long	450	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 18,000
Anderton Avenue	1st Street	Puntledge River	Long	230	2	Raised Cycle Track w/ Landscaping	$ 1,370		$ 630,200
Anderton Avenue	5th Street	1st Street	Long	350	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 14,000
6th Street Pedestrian / Bicycle Bridge	Anderton Avenue	Simms Milleniium Park	Long					$ 2,750,000.00	$ 2,750,000
Headquarters Road	Old Island Highway	Vanier Drive	Long	1500	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 420,000
Muir Road/Mission Road	Cul-de-sac	Trail Connection	Long	350	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 14,000
Carmanah Drive / Tamarack Drive	Cruickshank Park	Tamarack Drive	Long	450	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 18,000
Valley View Drive	Hobson Avenue	Mallard Drive	Long	450	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 126,000
Williams Road	Hunt Road	10 Street	Long	230	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 9,200
Comox Road	17 Street Bridge	South	Long	800	1	MUP on Rural Road Flat	$ 550	$ -	$ 440,000
McDonald Road Intersection	Lerwick Road		Long						$ 96,400
Vanier Drive	Headquarters Rd	Veteran Memorials Pkwy	Long	1500	2	Buffered Bike Lanes with Delineators - Curb to Curb	$ 140		$ 420,000
Trail Extension at Simms Millenium Par	Ex. Trail	5th Street Bridge	Long	40	1	MUP on Rural Road Flat	$ 550	$ -	$ 22,000
6th Street	Hobson Avenue	Arrowsmith Avenue	Long	750	1	Neighbourhood Greenway - Signs and Paint Only	$ 40		$ 30,000
			20-year Total						$ 13,832,200
			Grand Total						**$ 24,335,800**

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