Bicycle Network Plan

Final Report

November 2012

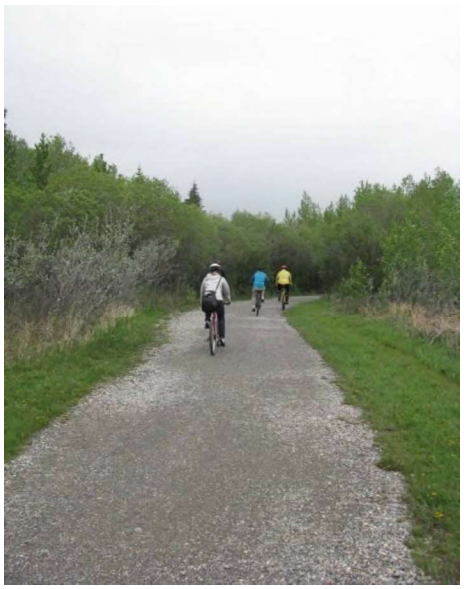
URBAN systems

Contents

1.0 Introduction

The Town of Cochrane is a thriving and rapidly growing community in southern Alberta. The Town's favorable climate, rolling topography, scenic views and distinct small-town atmosphere are all strong assets that enhance the livability of the community. Recognizing Cochrane's strategic and growing position within the Calgary Region as well as the increasing pressures being placed on the community due to rapid growth and development, the Town has recently adopted or endorsed a number of initiatives that support building the community in a way that promotes sustainability, livability, economic development, and a high quality of life for residents and visitors alike.

The Town's commitment towards a sustainable future and a more complete community impacts several areas of the community, including its built environment, culture, economy, governance, and natural environment, as well as the community's transportation network. While Cochrane's transportation network has historically developed primarily around the automobile, the Town's aspirations are shifting to encompass a more equitable, accessible, and efficient multi-modal transportation network. In this regard, the long-term vision of the community is aligned more closely with a multi-modal transportation network, and the Town is seeking to provide more support for active transportation modes within its roads and pathways.



In particular, the Town of Cochrane is committed to making cycling a safe and attractive transportation choice for people of all ages and abilities, for both commuting and recreational purposes. The Town is already a bicycle friendly community in many respects, as it is a popular recreational destination for locals and visitors to enjoy the municipality's extensive pathway system while taking in the scenery of the surrounding Alberta Foothills. However, there are a number of challenges for cycling in the Town, including steep topography; infrastructure and natural barriers such as the highways, railway and the Bow River; dispersed land uses outside the downtown core; lack of existing on-street bicycle facilities; and gaps and connections to the existing pathway network. Despite these challenges, the community has significant potential to increase bicycle use through cycling infrastructure as well as supportive programming and facilities to become a year-round bicycle-friendly community for residents and visitors alike, where people choose cycling as a means to get to work, school, recreation, and day-to-day activities.

1.1 Purpose of Plan

The Bicycle Network Plan is intended to address these challenges and build on opportunities to enhance cycling infrastructure that will make cycling a visible, attractive, and convenient alternative to driving in Cochrane. The Plan will assist the Town in promoting cycling, with the purpose of:

1. Developing bicycle network and facility guidelines, including guidelines for selecting the type and design of bicycle facilities.
2. Applying the network planning and facility guidelines and recommending key network improvement opportunities.
3. Providing an action-oriented guide to developing the bicycle network, recommending easy and cost-effective projects that the Town can implement in short order to support cycling both in the immediate and long-term.

The Bicycle Network Plan will be used, along with the Town's Open Space Master Plan, as a key input to the Integrated Downtown Action Plan, and planned Multi-Modal Mobility Plan. The timing of the Bicycle Network Plan therefore provides an important opportunity to integrate cycling with current and future planning initiatives, to ensure a consistent approach to accommodating cyclists in Cochrane today and in the future.

1.2 Report Structure

This report seeks to provide a concise, visual, and easy-to-read document that can inform decision-makers in the Town of Cochrane regarding the development of the Town's bicycle network. This report begins with description of the community context of the Town of Cochrane, including the existing transportation conditions, relevant community plans and policies, and issues and opportunities that influence the development of the local bicycle network. This is followed by network planning guidelines which are intended to guide the development of the Town's cycling network, as well as recommendations on corresponding bicycle facility selection and design guidelines. The last two sections of the report present the recommended bicycle network plan and implementation plan for the Town of Cochrane.

2.0 Setting the Context

Cochrane's transportation network is largely defined by the provincial highway corridors and rail corridors that move people and goods between Cochrane and various areas of Alberta and British Columbia, as well as by the Bow River and topography of the community. The transportation network also includes a number of arterial, collector, and local roads that support local traffic movements, as well an extensive off-street pathway network for pedestrians and cyclists. The pathway system and sidewalks that wind through Cochrane have become the foundation of the active transportation networks. In fact, the pathways and roads of Cochrane have become increasingly popular for residents and day-trippers to cycle for recreation, leisure, and training purposes.

However, there is considerable room for improvement to support and encourage Cochranites of all ages and abilities to cycle, and to ensure that the bicycle is a safe, convenient and competitive travel option. Communities throughout the world, including the Town of Cochrane, have recognized that the increased use of cycling (as well as transit and walking) will result in a more balanced transportation system that is healthier, more livable, cost effective and more efficient in terms of the community's infrastructure investments.The Town also recognizes the significant quality of life benefits that are associated with cycling in the community, as well as the positive economic development benefits that the Town, especially businesses in Downtown, can enjoy through a cycling-supportive environment. In particular, the benefits to supporting an active cycling culture in Cochrane include:

- **Economic benefits.** Local economic development is a major priority of the Town, and a bicycle-friendly community can contribute to the development of a healthy and diverse local economy in Cochrane. Bicycle-supportive design can encourage residents to take short bicycle trips to local businesses, instead of driving to services further away in adjacent communities. A bicycle-friendly community and atmosphere can attract more visitors to the Town who will in turn be patrons of Cochrane's services and amenities. Further, as many day-trippers drive into Downtown Cochrane on weekends, having options that support residents to cycle into Downtown can decrease weekend congestion and increase attractiveness of the area for both locals and visitors.

- **Quality of life**. A bicycle-friendly community can encourage a more livable and enjoyable place to be, with a stronger sense of place and freedom of mobility. Communities that support cycling can also contribute to safer streets and improved social interactions. All these qualities can enhance the high quality of life that Cochranites enjoy today and into the future.
- **Health.** Cycling is an effective conduit for supporting mental and physical health and building a healthier and happier Cochrane. The World Health Organization has identified physical inactivity as one of the main leading risk factors for global mortality, and as an underlying factor for many chronic diseases. Cycling increases physical activity levels, which can reduce the risk of heart disease, diabetes, cancer as well as mental illness. With many families living in Cochrane, the health benefits of cycling can be experienced by residents of all ages and abilities.
- **Decreased costs**. Constructing bicycle facilities is typically cheaper per kilometre than the cost to construct many road infrastructure projects. Cochranites receive an easy and convenient travel option and decreased congestion, roads experience less wear and tear, and the Town budget can benefit from a financially sustainable transportation solution.
- **Easy to kick-start in a developing community.** Cochrane is a rapidly growing community and integrating bicycle facilities into roadway and neighbourhood developments at the start of construction is the cheapest and most effective way to introduce bicycle facilities.
- **Environmental quality.** Cycling has many environmental benefits, as it reduces vehicle trips, congestion, air pollution, and can help to reduce greenhouse gas emissions. Promoting cycling can also help in efforts towards climate change mitigation. Environmental sustainability is a priority of the Town, and supporting cycling can protect and improve Cochrane's natural environment.

Recognizing these benefits and the unique position of the municipality to promote walking and cycling, the Town of Cochrane supports sustainable modes through the vision, goals, and objectives articulated in several overarching community plans and strategies. For example, Cochrane's **Municipal Development Plan** contains a goal for a strong multi-modal transportation network, supported by alternate modes such as cycling, walking, and transit. The **Cochrane Sustainability Plan (CSP)** supports the development of bicycle pathways throughout the community, as well as an interconnected transportation network

that is accessible for all modes by the year 2029. In addition, the CSP contains another 2029 target for reductions in community greenhouse gas emission by 30% from 2009 levels, a target which must be achieved through initiatives in the transportation sector.

2.1 Community Context

The Town of Cochrane is located in the heart of the Bow Valley, at the junction of Highway 22 and 1A in southwestern Alberta. Having started out as a small ranching settlement in the early 1900s, the Town of Cochrane has experienced rapid growth and development in recent decades to become a popular residential community and urban centre with almost 18,000 residents. Growth is expected to continue in the coming years with Cochrane's population projected to increase to approximately 26,000 residents by the year 2020 (based on a 5% growth rate). Planning for growth is not only an important part of the Town's mission, but it also provides the Town with an inherent opportunity to support bicycle-friendly design at the outset of new development.

The Town of Cochrane boasts a unique small-town atmosphere and rich natural features, such as the surrounding hills, escarpments and waterways. These features combined with the location of the Town only 20 kilometres west of the Calgary City Centre, have contributed to the community's popularity as a place to live. Due to the proximity of the Town to Calgary, Cochrane has increasingly become a commuter town, of Calgary, with many residents living in Cochane and working in the City. With the potential of transit service in the future between Calgary and Cochrane, the proximity to Calgary also presents an opportunity for the Town to support cycle commuting between the two communities.

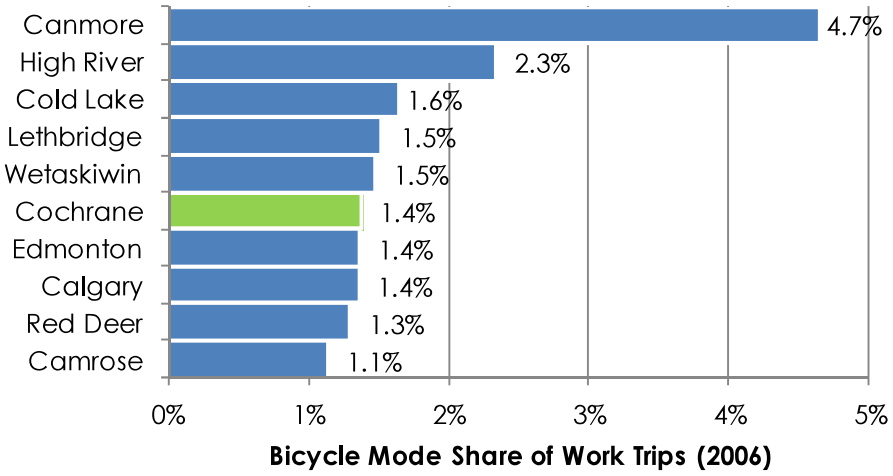
Development in Cochrane has been segmented according to the natural features and human-made barriers that cross the Town, including the Canadian Pacific Railway (CPR) line, the Bow River, and Highways 1A and 22. While there are connections across these linear features, these are limited to a few key crossings.

Highway 1A and Highway 22 bisect the Town of Cochrane, and serve dual roles as part of Cochrane's local road network and the regional transportation network. With access to these larger thoroughfares, many Cochrane residents commute daily to Calgary for work and vice versa. In addition to the road network, the Town of Cochrane has developed a comprehensive off-

street trail network, including an extensive riverfront trail and pathway system which connects to many of the Town's neighbourhoods, such as Gleneagles, Glenbow, and West Valley. These pathways provide important connections for cyclists, pedestrians and other non-motorized forms of transportation.

According to the 2006 Census, approximately 1.4% of trips to work in Cochrane are made by bicycle – higher than both the provincial and national average bicycle mode shares. In fact, as shown in **Figure 1**, Cochrane has the sixth highest bicycle mode share among Alberta municipalities with populations greater than 10,000 residents.

Figure 1: Bicycle Mode Share of Work Trips in Alberta Communities with 10,000 or More Residents (2006)



Though Cochrane has an extensive trail network, there are still areas of improvement that if addressed, can increase the safety, comfort, and convenience of bicycle trips, and thus attract more residents to use their bicycle travel to their destination. For example, some barriers include:

- **Fragmentation and gaps.** There are significant connectivity gaps for those wishing to cycle to other neighbourhoods in Cochrane. Major barriers to the cycling network exist, such as Highway 1A and 22, the rail corridor, and the Bow River, which all act as major obstacles to north-south connectivity.
- **Topography.** While the topography of Cochrane is an asset in terms of aesthetics, the big hills and escarpments are challenges to attracting cyclists.
- **Lack of on-street bicycle facilities.** Although there is an abundance of off-street trails, the lack of dedicated on-street bicycle infrastructure may deter cyclists who are hesitant to mix with automobile traffic. In many cases, the road network may provide the most direct connection to community

destinations, but the lack of dedicated bicycle facilities may encourage many residents to use the automobile instead.

The challenges to the Town's cycling network will be addressed in the recommended bicycle network in Section 4.0.

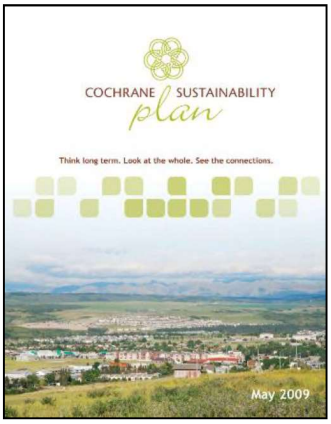
2.2 Relevant Plans and Policies

In recognition of the significant challenges and opportunities that are coupled with growth, the Town of Cochrane has made significant advancements and commitments towards growth management, liveability and sustainability through a variety of initiatives.

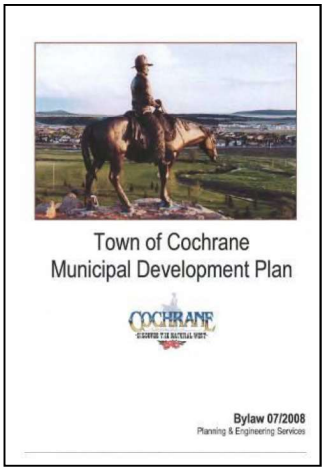
The Town has developed overarching transportation plans and bylaws to guide the development of the local transportation network, and provide guidance on the integration of cycling within the transportation landscape. Cochrane's **Transportation Plan Update (2009)** is primarily focussed on functional planning for the road network, with relatively little direction for walking, cycling or transit; however the Town of Cochrane's aspirations in recent years have been targeted towards a more multi-modal transportation system, looking beyond roads to active and sustainable modes as a means to providing residents and visitors with a range of transportation choices beyond the automobile. However, the Transportation Plan does identify a need for multi-modal transportation planning, stating that a roadway review should be conducted to identify where bicycle facilities are suitable, noting that improved bicycle infrastructure can encourage commuters to consider alternate transportation modes. The **Parks and Recreation Master Plan (2008)** identifies residents' desire for expansion of the existing pathway system and for walking and cycling links with parks and open spaces. The Plan also identified the need to address active transportation barriers such as the highways, rail corridor, and Bow River. Cochrane's **Bicycle Control Bylaw (1996)** provides some regulatory controls on bicycle use, stating that cyclists must have a bicycle bell and yield to pedestrians, cannot ride on the sidewalk unless under 13 years old, and must not exceed 20 km / hr on the pathway system.

The municipality also has a number of key plans that outline high-level transportation planning objectives for Cochrane's development. The **Cochrane Sustainability Plan (2009)** seeks to address the the gaps and fragmented nature of the pathway system between Cochrane's neighbourhoods, setting out a vision of a safe, interconnected, and accessible transportation system for all modes, including cyclists, by 2029. Similarly, the **Municipal Development Plan (2008)** contains an overarching goal for a multi-modal community transportation network, with supportive policy surrounding the integration of active modes in the

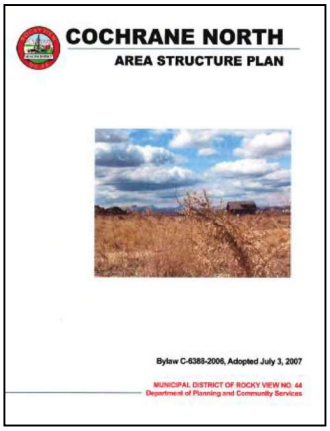
larger transportation network. The **Social Master Plan (2009)** also considers multi-modal transportation options for the Town, with suggested actions including the expansion of the walking and bicycle path system to provide links between new and existing subdivisions, schools, and the Downtown core. The Plan also identifies the need for bicycle paths along major roads leading to and from the community.



At the neighbourhood development level, Cochrane's **Land Use Bylaw** regulates the use of and development of land in the municipality, including stipulations for pedestrian corridors, walkways, and circulation, but lacking guidance on bicycle facilities and inclusion into development. Cochrane also has a number of **Area Structure Plans** that provide guidance for the future development of a specific community, including the neighbourhood transportation network. Many of the Area Structure Plans recognize the importance of coordinating and linking pathway and roadway development for active transportation circulation (i.e. Cochrane North, River Heights, Cochrane West) and include policies to support pedestrian and cyclist integration. **Neighbourhood Plans** provide a finer level of detailed local planning, setting road standards, redefining densities, and outlining housing types.



The Town of Cochrane is also currently developing an **Integrated Downtown Action Plan** which will guide the municipality in directing investment in Cochrane's Downtown, and identify key projects that will strengthen the downtown economic core and build a supportive environment for businesses to thrive. As Downtown is a major destination and trip generator within Cochrane, the Bicycle Network Plan is intended to inform the Integrated Downtown Action Plan, providing an opportunity to integrate cycling considerations at the onset of planning and development activities in the Downtown. Further, the Bicycle Network Plan, along with the Open Space Master Plan, will provide multi-modal input to Cochrane's Multi-Modal Mobility Plan which is currently being planned for 2013.

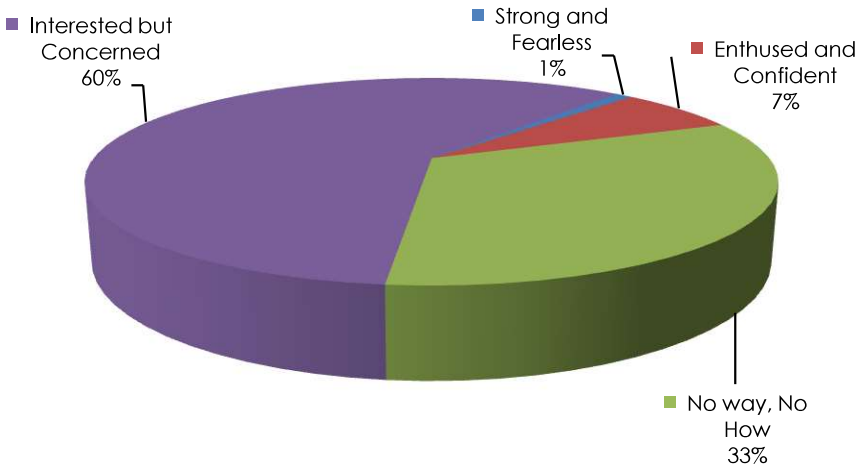


3.0 Planning Guidelines

The planning guidelines are intended to reflect the facility selection and facility design guidelines for the Town, and will guide the development of the Town's cycling network to ensure appropriate network coverage that complements the road network, a variety of facility options that appeal to different users, and equitable and convenient access to the bicycle network for all residents, commuters and visitors.

The Town of Cochrane should plan the bicycle network and target infrastructure improvements where there is the greatest opportunity to increase the number of cycling trips. As a starting point in thinking about how to plan for bicycle networks, the City of Portland, Oregon conducted research to characterize cyclists and potential cyclists, and the typical distribution of these cyclist types in a community, as shown in **Figure 2**.

Figure 2: Target Market for Cycling (Portland, OR)



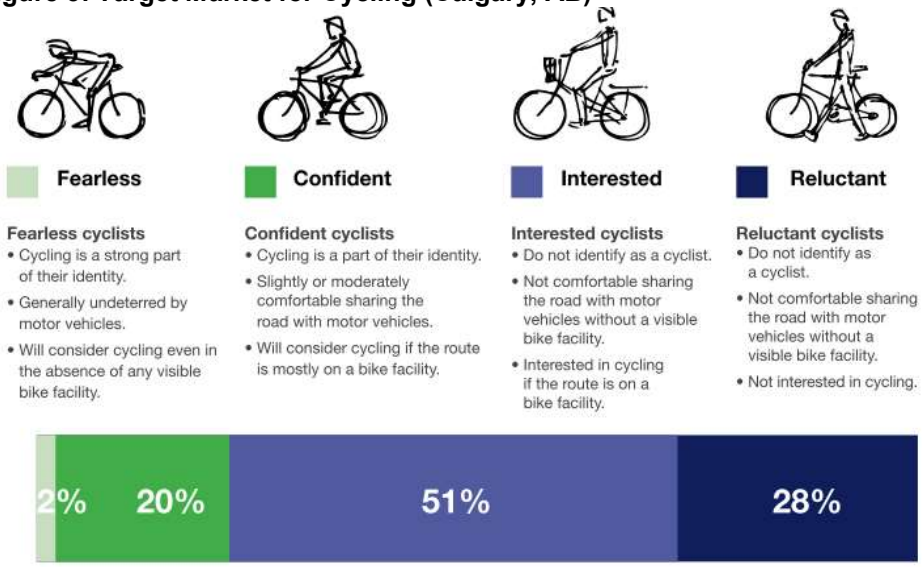
This research provides an applicable guide for any community designing and developing a bicycle network, with the following categories as a guide:

- **Strong and the fearless.** Those that are highly committed to cycling, are already cycling regularly, and will likely cycle regardless of available infrastructure (Typically less than 1% of residents).
- **Enthused and Confident.** Those that have a high interest in cycling, are confident in their cycling abilities, and will make efforts to cycle as long as they reasonable facilities are provided (Approximately 7%).

- **No way, No how.** A wide cross-section of individuals who are unlikely to cycle and are not interested in cycling for a variety of reasons including age, health, disability, or other circumstances (approximately 33%).
- **Interested but concerned.** A wide cross-section of individuals who have an interest in cycling as part of their regular travel needs, but have significant concerns (typically related to safety or convenience) that limits their desire and commitment to cycling (up to 60%).

The City of Calgary has conducted similar research and found similar results, as shown in **Figure 3.** The Strong and Fearless and Enthused and Confident cyclists represent only a small portion of residents that cycle as their primary mode of transportation. However, tapping into the larger potential market of the Interested but Concerned group represents the greatest opportunity to increase cycling in the Town of Cochrane, and as such, network planning guidelines will focus on attracting Interested but Concerned cyclists in Cochrane.

Figure 3: Target Market for Cycling (Calgary, AB)



Source: Calgary Cycling Strategy

It is also important to focus on vulnerable user groups such as children, youth, and seniors who are a likely included within the Interested but Concerned group. These vulnerable groups have unique travel needs, as seniors require safe, accessible and well-connected active transportation infrastructure to move freely around their community without a vehicle. Youth typically do not often have access to automobiles and are reliant on walking, cycling, or carpooling (or transit, if available) to get to their destination. A child's opportunity to walk or cycle is often determined by their parents' permission, which relies on the

perceptions parents have of the safety of the street environment and infrastructure. Factors such as high traffic speeds, traffic volumes, and inadequate infrastructure can easily deter these more vulnerable groups from cycling to their destination. If the design of a bicycle network is considered with these groups in mind, then it is likely that a safe, comfortable, and accessible network will result that will attract not only the vulnerable groups, but many other individuals in the Interested but Concerned group.

In order to design a bicycle network that is attractive to the most amount of Cochranites, the Town's bicycle network planning must aspire to be:

- **Comfortable.** Cochrane's bicycle network will consist of facilities and connected routes that are comfortable for the majority of cyclists. This will include routes that are respectful of topography, seeking the most gentle route where possible.
- **Connected.** The bicycle network will provide connections between Cochrane's residential neighbourhoods and key community destinations and trip generators, such as schools, places of work, stores, recreational areas and parks. The network can also facilitate a bicycle connection to Calgary.
- **Direct.** The network will link neighbourhoods and destinations through the most efficient and direct routes, utilizing both on-street and off-street networks. This will include facilitating crossings of connectivity barriers of the Highways, the Bow River, and the railway corridor.
- **Integrated.** The bicycle network will be focused on integration with existing development and centers within the community, and will also integrate with expected future development in the short and long-term.

3.1 Guiding Principles

Two key guiding principles – Transportation Hierarchy and Directness of Routes – are considered to guide the development of Cochrane's bicycle network. Each of these guiding principles are described below.

1. **Transportation Hierarchy**. Much like traditional road network planning, where a classification hierarchy (freeway, arterial, collector, local) is well understood; bicycle network planning can benefit from the use of a similar approach. It has been found that all bicycle facilities are not created equal, and do not necessarily meet the needs or appeal to all users. For example very confident riders may feel comfortable in standard painted bike lanes on busy arterial streets, while many people may feel safe only when cycling on

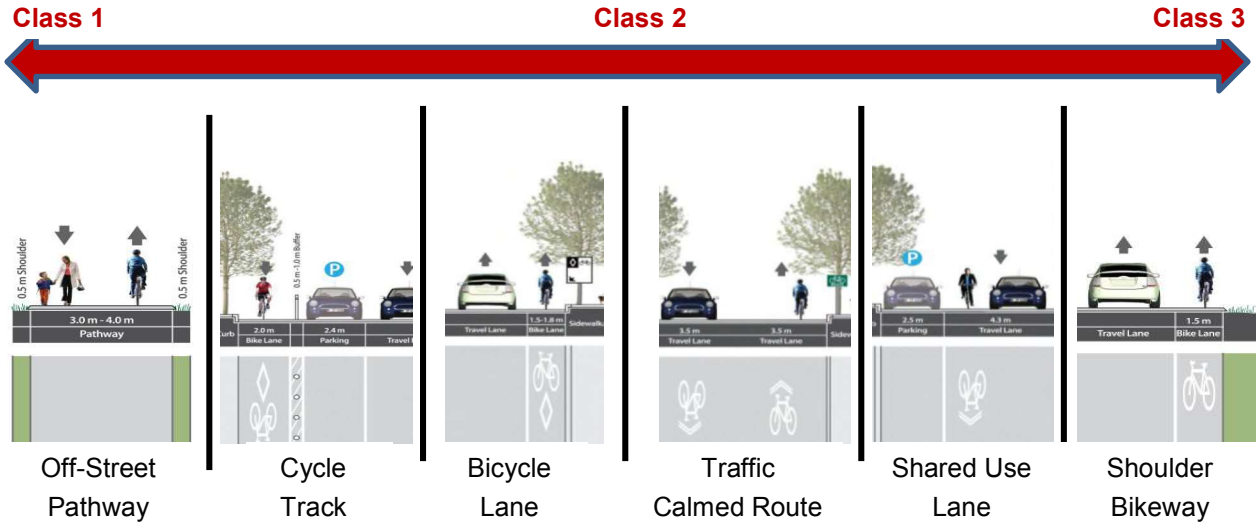
quieter streets or in separated pathways. The goal of a transportation hierarchy is to provide options for all users within the cycling network (but not necessarily within the same corridor).

There are a range of different types of bicycle facilities that can be applied in various contexts. Six types of on-street and off-street bicycle facilities are recommended for the Town of Cochrane, as summarized below and described in further detail in the following sections.

- **Off-Street Pathways** are physically separated from motor vehicles and provide sufficient width and supporting facilities to be used by cyclists, pedestrians, and other non-motorized users.
- **Cycle Tracks** are physically separated from motor vehicle travel lanes but are located within the road right-of-way. Cycle tracks are a hybrid type bicycle facility combining the experience of an off-street path with the on-street infrastructure of a conventional bicycle lane.
- **Bicycle Lanes** are separate lanes that are designated exclusively for bicycle travel and also include pavement markings.
- **Traffic Calmed Routes** are routes on streets with low vehicle speeds and volumes, which include a range of treatments ranging from relatively basic facilities consisting of signage and pavement markings to bikeways with varying degrees of traffic calming implemented to improve safety for cyclists and other road users.
- **Shared Use Lanes** provide direct routes for experienced cyclists along the outer lane of a roadway
- **Shoulder Bikeways** are typically found on streets without curb and gutter with shoulders wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway.

To ensure that the bicycle network is comfortable and attractive for the Interested but Concerned segment of the population, the bicycle plan recommends a classification of the six types of bicycle facilites noted above based on user comfort. As shown in **Figure 4**, each type of bicycle facility is located on a continum between “Class 1” facilities which are comfortable for most people including the Interested but Concerned group and consist of facilities that are physically separated from motor vehicle traffic; to “Class 2” which are comfortable for many people and include bicycle lanes as well as traffic calmed routes; and “Class 3” which are comfortablefor few people including the Strong and Fearless and Enthused and Confident groups.

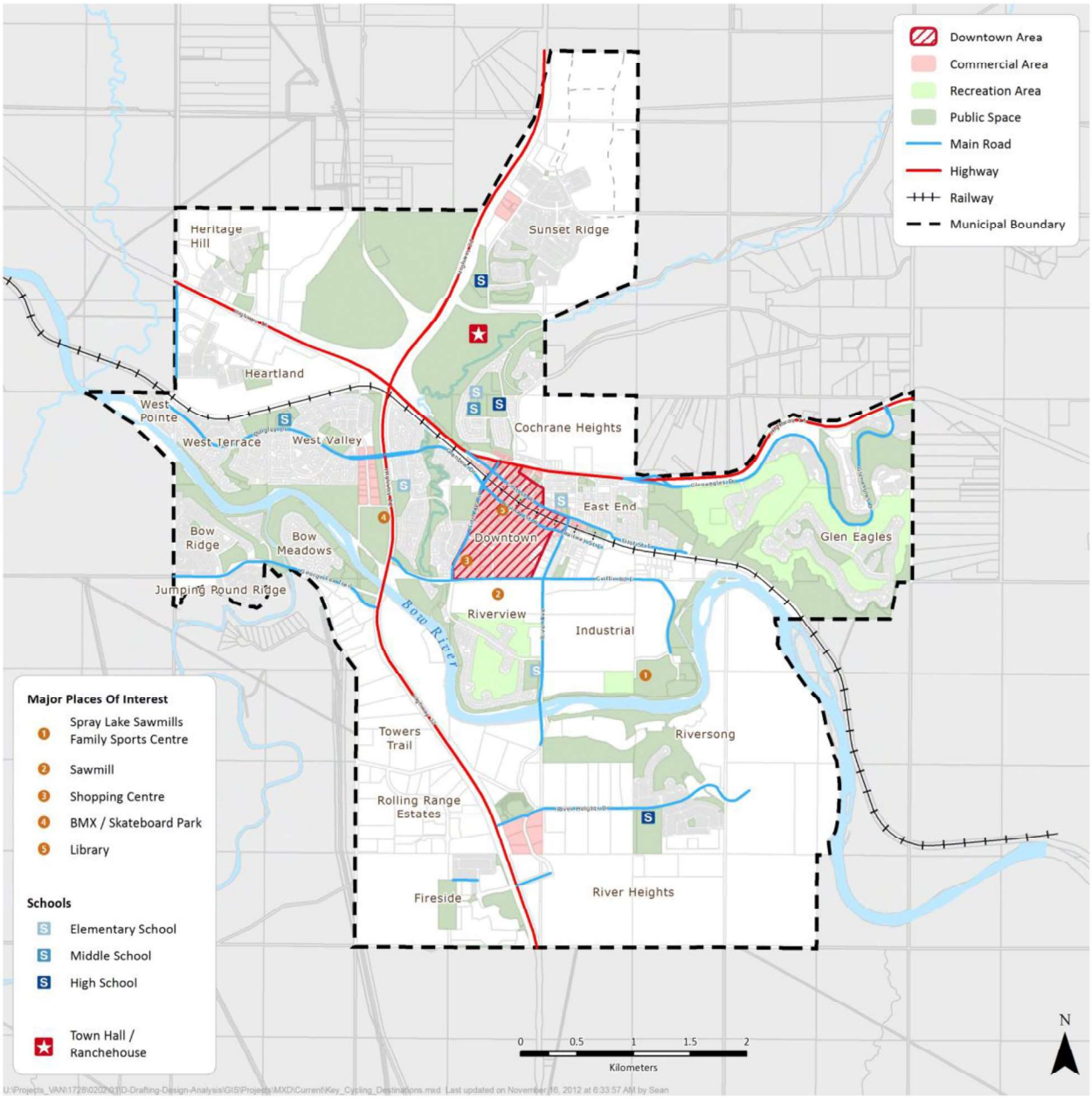
Figure 4: Bicycle Facility Hierarchy



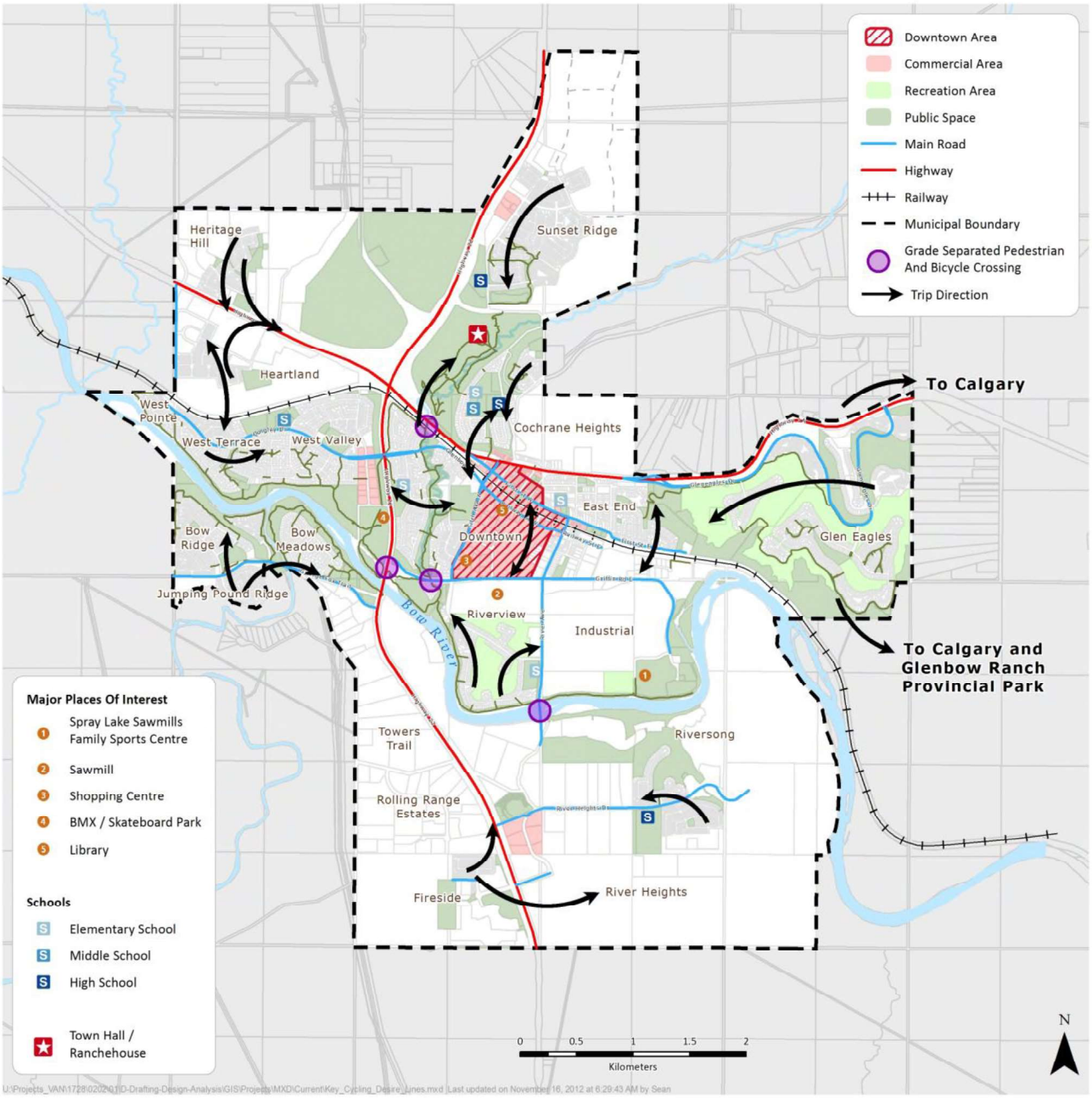
2. **Connectivity and Directness.** In addition to establishing a hierarchy of bicycle facilities, it is also critical that bicycle facilities are direct and provide adequate connections to key destinations within the community. Providing direct routes that connect to key destinations will ensure that bicycles have travel times that are competitive with automobiles. With this guiding principle in mind, the bicycle network plan has been designed to:
   - Provide connections to the downtown core from all subdivisions throughout the community.
   - Provide access within the downtown core to key destinations
   - Connect with all schools, parks and community facilities
   - Integrate with the off-street pathway network.

Key cycling destinations throughout the community, including commercial areas, schools, and parks, are shown in **Map 1**. Key "desire lines" for cyclists are shown in **Map 2**.

Map 1: Key Cycling Destinations



Map 2: Cycling Desire Lines



3.2 Bicycle Facility Selection Guidelines

There are no 'hard and fast' rules for determining the most appropriate type of facility for a particular location; engineering judgement and planning skills are critical elements of this decision. There are a wide variety of considerations for selecting the type of facility for a given context, including road classification,

urban context, traffic volumes, speed, topography, and on-street motor vehicle parking. **Table 1** provides typical application guidance for each type of on-street bicycle facility based on a range of these considerations.

Table 1 – Facility Selection Guidelines for On-Street Bicycle Facilities

Conditions	Facility Type				
	Cycle Track	Bicycle Lane	Traffic Calmed Routes	Marked Wide Curb Lane	Paved Shoulder
Road Classification	Major	Major	Local	Major	Highway
Typical Applications	Urban	Urban or suburban	Urban or suburban	Urban	Rural
Traffic Volumes	Moderate to High	Moderate – High	Low	Low – moderate	Moderate - High
Speed Limit	50 km/h or more	50 km/h or more	Less than 50 km/h	50 km/h or less	50 km/h or more
Topography	Generally flat	Flat or steep uphill	Generally Flat	Flat or steep downhill	Generally flat
On-street Vehicle Parking	Yes or no	Preferably no	Yes or no	Preferably no	No
Curb and Gutter	Yes	Yes	Yes	Yes	No

3.3 Bicycle Facility Design Guidelines

This section provides a brief overview of design guidelines for each type of bicycle facility recommended for the Town of Cochrane The design guidelines are based on current best practices as found in the a variety of Canadian and international documents, including:

- Transportation Association of Canada (TAC) Bikeway Traffic Control Guidelines for Canada (2012)
- Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (1998)
- National Association of City Transportation Officials (NATCO) Urban Bikeway Design Guide (2011)
- Capital Regional District Pedestrian and Cycling Master Plan Design Guidelines (2011)

3.3.1 Off-Street Pathways

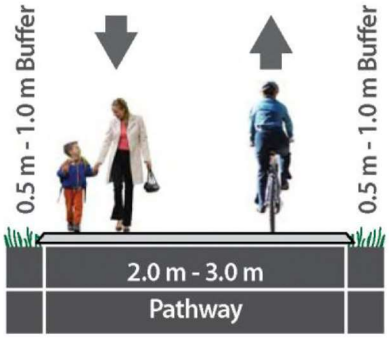
Off-street pathways (also known as multi-use paths) are physically separated from the roadway, with sufficient width and supporting facilities (i.e. benches) to be used by both cyclists and pedestrians and other non-motorized users. Off-street pathways are generally suitable for users of all ages and skill levels.

Design characteristics for off-street pathways are based on the Open Space Master Plan guidelines. Design characteristics are shown in **Figure 5** and include:

- Minimum width of 2m for local trails and connector trails
- Desired width of 3 – 3.5m for major regional trails
- Buffer of 0.5 – 1m on either side of the pathway

The Town of Cochrane currently has a network of 25 km of off-street pathways and trails that are very popular with recreational walkers and cyclists. While off-street pathways and trails are comfortable for most users of all ages and abilities, these facilities may not always provide the most direct route to key destinations.

Figure 5: Design Characteristics – Off-Street Pathways



3.3.2 Cycle Tracks

Cycle tracks, also known as separated bicycle lanes, are an exclusive on-street bicycle facility that separates the cyclist from motor vehicle travel lanes, parking lanes, and sidewalks through a variety of physical treatments such as pavement markings, bollards, curbs, medians, or planters. Cycle tracks can be either one-way or two-way, on one or both sides of a street. Some of the benefits of cycle tracks include:

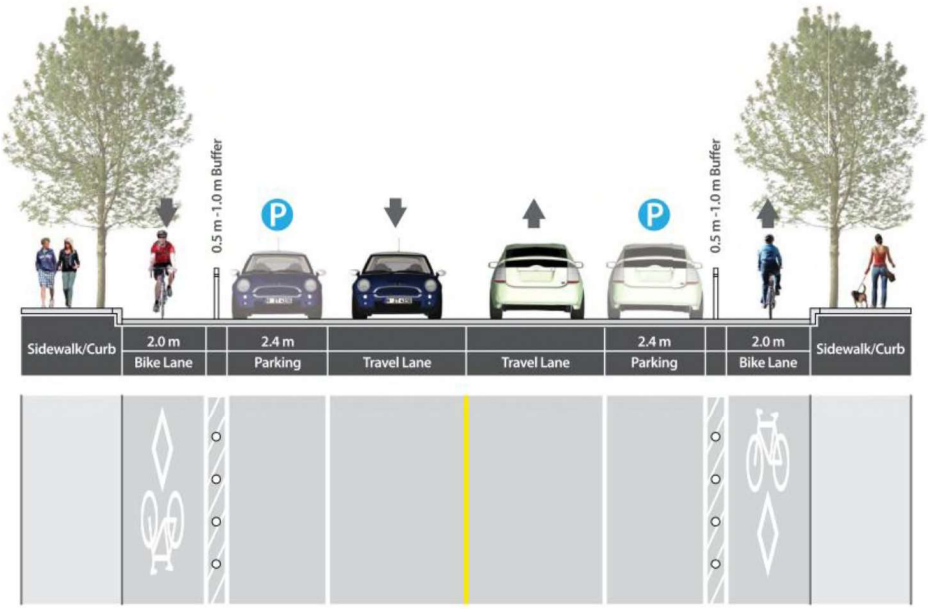
- Ideal for use on higher speed roads where greater separation from motor vehicle traffic is warranted
- Increases user comfort, particularly for new and inexperienced cyclists
- Potential for significantly increasing ridership

Design characteristics are shown in **Figure 6** and include:

- One-way cycle track: Minimum width of 2m, plus buffer. Can be narrowed to 1.5m in constrained situations.
- Two-way cycle track: Minimum with of 2.5m, plus buffer.
- Minimum buffer width of 0.5m, desired width of 1.0m
- Separation may be horizontal (buffer, boulevard, or barrier) and/or vertical (curb)

Due to the level of separation from motorists, the majority of users feel very safe and comfortable using a cycle track. However, the role of cycle tracks in Cochrane may be limited. While cycle tracks could be considered on a well-used, high volume street in Cochrane that connects users to important community destinations, the use of bicycle lanes (as described below) may be more suitable for early stages of the Town's cycling network development.

Figure 6: Design Characteristics – Cycle Tracks



3.3.3 Painted Bicycle Lanes

Bicycle lanes are designated exclusively for bicycle travel and located adjacent to vehicle travel lanes, with bicycle flow usually one-way and typically in the same direction as traffic. Bicycle lanes are typically located on the right side of the travel lane between the travel lane and adjacent curb / gutter, road edge, or parking lane. Bicycle lanes are usually identified by signage and pavement markings. Bicycle lanes are applicable for use along collector and arterial streets, with volumes greater than 2,000-3,000 vehicles per day and posted speeds of 50 km/hr or higher

Design characteristics are shown in **Figure 7** and include:

- Minimum lane width of 1.5m and desired lane with of 1.8m.
  Maximum lane width of 2m to prevent motor vehicles from using the lane.
- Pavement markings should consist of bicycle stencils in conjunction with a diamond symbol to indicate a reserved lane. Pavement markings should be provided in the centre of the bicycle lane 10m downstream of each intersection and subsequent markings at intervals of approximately 75m..
- Reserved bicycle lane signs should be mounted directly above or adjacent to the bicycle lane. Reserved bicycle lane signs should be provided 10 metres downstream of each intersection and subsequent signs installed at intervals of approximately 200 metres.

Bicycle lane delineators

Typically bicycle lanes are separated from the adjacent travel lane by a painted line. The painted line may be a solid white line or dashed white line in transition areas (i.e. approaching intersections). Bicycle lanes may be supplemented by delineators, which are essentially poles, often with reflective material that provide a form of physical separation, improving the visibility of the bicycle lane and preventing vehicles from accessing the bicycle lane. The addition of the bicycle delineators to bicycle lanes can provide a cheap and effective alternative to cycle tracks, and was used in the Seville, Spain to quickly and cheaply implement its bicycle network and attract many users.

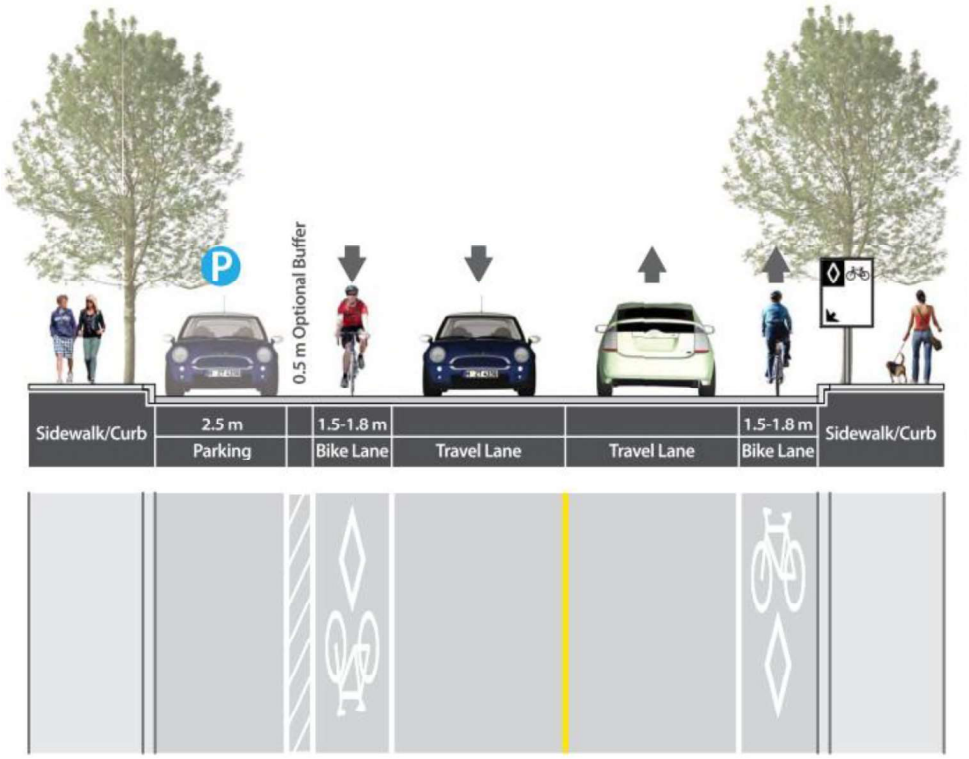
Delineator design characteristics include:

- A spacing range of 50 to 200mm
- Width should be equal to or less than the width of the painted line
- Minimum height of 1.2m

- Placed 20m or less after each intersection
- Can take the form of a tubular marker or bollard

If properly designed to connect key routes, bicycle lanes can increase safety and encourage commuter cyclists and new cyclists to ride in Cochrane. Bicycle lanes are suitable for main collector and arterial streets, and applying bicycle lanes on major routes between residential neighbourhoods and Downtown could encourage short cycle trips to key community destinations.

Figure 7: Design Characteristics – Bicycle Lanes



3.3.4 Traffic Calmed Routes

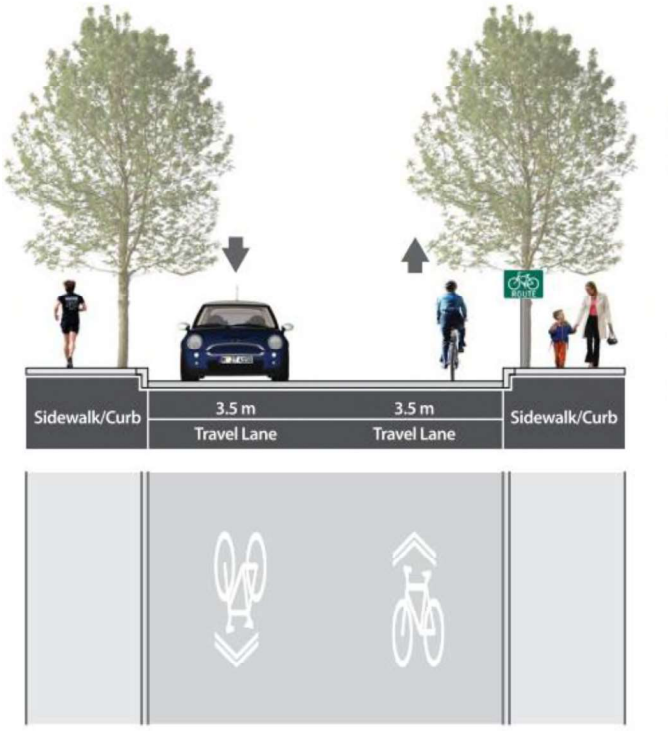
Traffic calmed routes involve bicycles sharing the roadway with other vehicles on local streets with low vehicle speeds and volumes. Traffic calmed routes often involve installing traffic calming treatments (such as speed humps, traffic diverters, mini traffic circles) to a roadway with lower vehicle volumes and speeds to improve the safety and comfort for cyclists sharing the road with motorists. These traffic calming treatments can be applied on a more central (i.e. downtown) street, or on a local street. Traffic calmed routes do not contain specific vehicle or bicycle delineation, although pavement markings and signage

should be provided to indicate the presence of a designated bicycle route. In cases where a higher prioritization is assigned to bicycle, traffic calming treatments can be applied to reduce traffic volumes and speeds and improve cyclist safety and comfort.

Traffic calmed routes provide a broad level of appeal to a variety of cyclists, including commuter cyclists and less experienced cyclists (who may not be comfortable cycling on higher volume roads). For less experienced cyclists, bikeways can also serve as "stepping stone" facilities that help increase their comfort level using on-road facilities.

Traffic calmed routes may be suitable for Downtown areas of Cochrane that have lower traffic volumes and narrower roadways. Applying traffic calming treatments can slow traffic down allowing a safe and comfortable route for cyclists going to and from many of the key community destinations in the area.

Figure 8: Design Characteristics – Traffic Calmed Routes



3.3.5 Shared Use Lanes

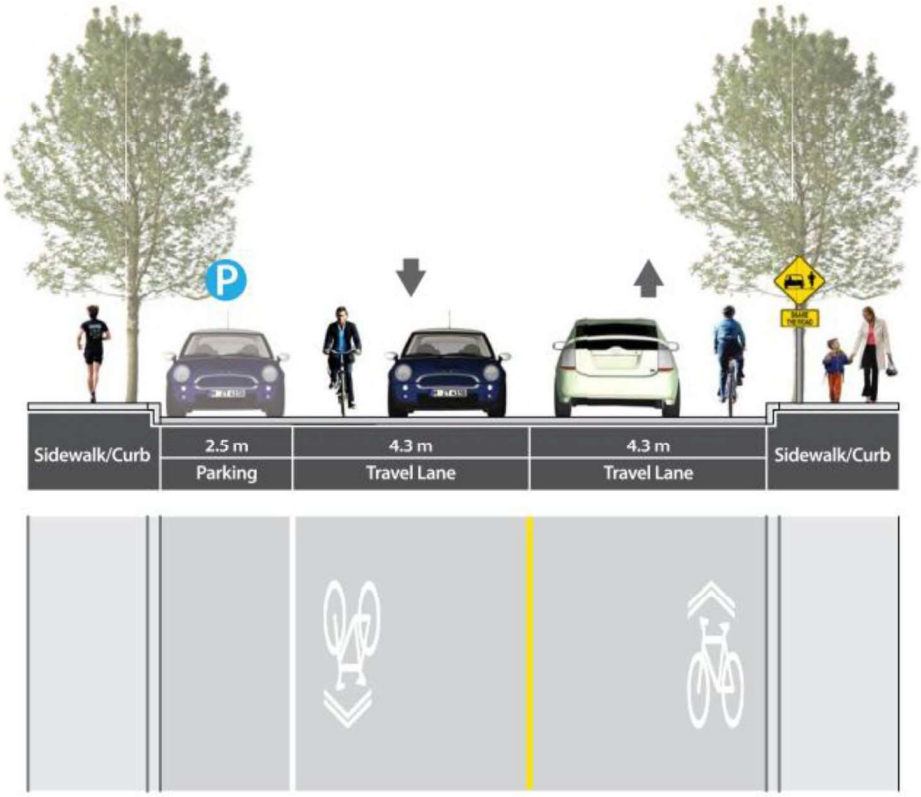
Shared use lanes are on-street bicycle facilities with a shared bicycle and motor vehicle travel lane that includes signage and pavement markings to indicate where cyclists should position themselves in relation to the curb or parked car. A shared use lane is designed to allow sufficient width for an automobile to safely overtake a bicycle, without crossing into the adjacent or oncoming travel lane.

Design features are shown in **Figure 9** and include:

- Minimum 4.3m lane width. On streets with lower traffic volumes and lower speeds, and in constrained situations this can be reduced to 4.0m.
- As motor vehicle traffic volumes and speeds increase, the width of the travel lane should be widened in order to permit motorist and cyclists to pass without changing lanes

This shared use of a wider curb lane may help assimilate bicycles into roadway, although shared use lanes may not be particularly attractive to most cyclists, as they do not specifically designate road space for cyclists.

Figure 9: Design Characteristics – Shared Use Lanes



3.3.6 Shoulder Bikeways

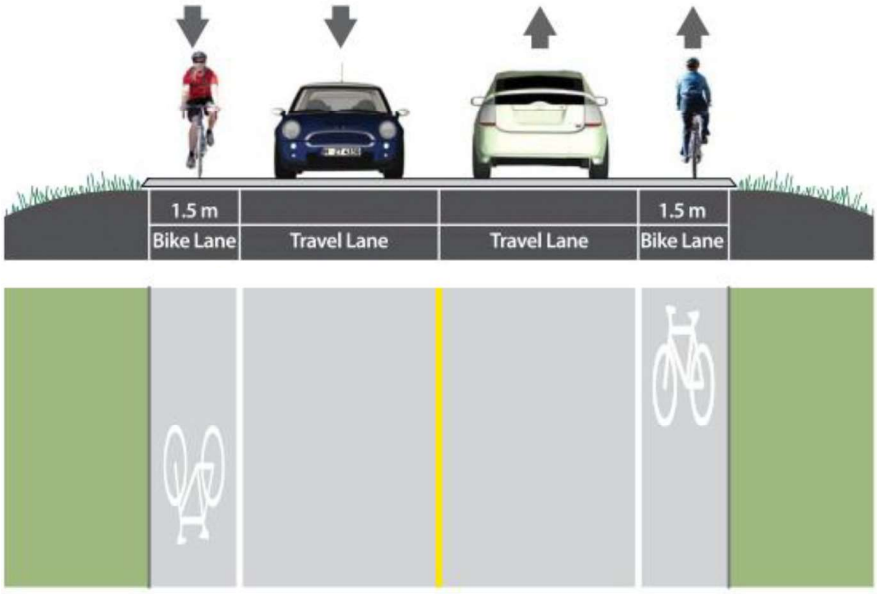
Paved shoulders are most appropriate for roadways that have higher motor vehicle traffic volumes and speeds and which are located on highways and roads without curbs and gutters. Similar to bicycle lanes, shoulder bikeways are separate travel lanes designated for the shared use of bicycles, separated from travel lanes by a painted line.

Design characteristics are shown in **Figure 10** and include:

- Minimum width typically 1.5m, but increasing to 1.8m or more for roadways with higher speeds and volumes up to a 2m maximum width to avoid the bicycle lane being used by motor vehicles. Width can be reduced to 1.2m in constrained circumstances.
- Shoulder be paved and free of obstructions.

Adding or improving paved shoulders to accommodate bicycles may be the best way to accommodate cyclists in more rural areas of Cochrane. With paved shoulders already in place on many of the local, collector, and arterial roads in Cochrane, the addition of a bicycle stencil and / or some signage may be an effective way to implement a bicycle facility on an existing infrastructure.

Figure 10: Design Characteristics – Shoulder Bikeways



3.3.7 Intersection Treatments

There are a number of configurations for intersections that will provide a safe crossing for cyclists. There is the use of colour, signage, medians, signal detection and pavement markings that can improve the safety of movements between bicyclists, pedestrians, and motorists. Some of these intersection treatments include:

- **Marked Crossings** Bicycle pavement markings through intersection indicate the intended path of cyclists through an intersection and across a driveway or ramp. These can be used to connect bicycle lanes connecting through the intersection, and have the benefit to raise awareness of bicyclists and motorists to potential conflict areas and to increase bicyclist visibility at intersections.
- **Signalized Crossings** are used where the number of persons crossing the roadway is higher, and where traffic volumes and speeds are higher. Signals can only be activated by cyclists and pedestrians who must push a button, motor vehicles cannot activate the signals.

- **Bike boxes** are used at signalized intersections to provide cyclists an opportunity to proceed through the intersection when the signals turn green in advance of vehicles. This reduces conflicts between cyclists and motorists and improves safety for cyclists. Bike boxes are beneficial where cyclists turn left from a traffic lane shared with left-turning and through traffic, and where cyclists travel straight through an intersection in a traffic lane shared with through and right-turning traffic. Similarly, a pulled back stop line can also serve the same function as a bike box. Allowing cyclists to position themselves ahead of the stop line and queued traffic, allowing them to proceed first through the intersection.

- **Bicycle loop detectors** at traffic signals are marked so that cyclists know where to position their bicycles to activate the detector. In many cases, the same detector that is used for automobiles can be used for bicycles. At intersection with bicycle lanes, addition detectors may be required in the bicycle lane.
- **Grade-separated crossings**, such as overpasses and underpasses, are expensive and consequently only used where there a high volume of high-speed motor vehicle traffic, with no opportunity for a signalized at-grade crossing.

- **Railway Crossings** Crossing railway corridors can be dangerous for cyclists, as the tracks may not be flush with the roadway surface and gaps and slippery rails can prove challenging for cyclists. TAC suggests that where railway tracks do not cross bicycle facility at a right angle, the bike path should be widened to permit bicyclists to cross at a right angle.

4.0 Recommended Bicycle Network

This section describes the existing and proposed bicycle network for the Town of Cochrane. The recommended bicycle network includes a combination of on-street and off-street bicycle facilities that are designed to connect key destinations throughout the community.

4.1 Existing Bicycle Network

The Town of Cochrane currently has an extensive off-street pathway network that is well used by cyclists as well as other users. On-street facilities are currently limited to paved shoulders along Highway 1A and Highway 22, although these are not currently signed or marked designated them for bicycle use.

4.2 Recommended Improvements

The recommended bicycle network includes a combination of improvements, including upgrades to existing off-street pathways, new on-street and off-street bicycle facilities, improved crossings, and other support measures.

The recommended bicycle network is primarily targeted towards internal and local trips within the community. This could include trips to schools, shopping and sport or recreation, for example and will make it easier for Cochranites to use their bicycles for routine travel within the community. The bicycle network plan has been designed to ensure that the bicycle network connects to all major cycling destinations within the community, including the downtown area and other commercial nodes, schools, parks, and community facilities. The bicycle network has also been designed to ensure that the on-street facilities provide good connections to the off-street pathway network.

A secondary emphasis of the bicycle network plan is on commuter cyclists. This target group in the longer term focuses on commuters to and from the City of Calgary through improved on-street and off-street connections between the two communities, including the Glenbow Ranch Trail which is planned to provide a connection through Glenbow Ranch Provincial Park to Calgary. These connections would also have the added benefit of potentially increasing the number of recreational cyclists arriving on daytrips from Calgary.

The recommended strategy for achieving this is to build on the existing pathway system, and supplement it with on-street facilities where the effect on cycling is

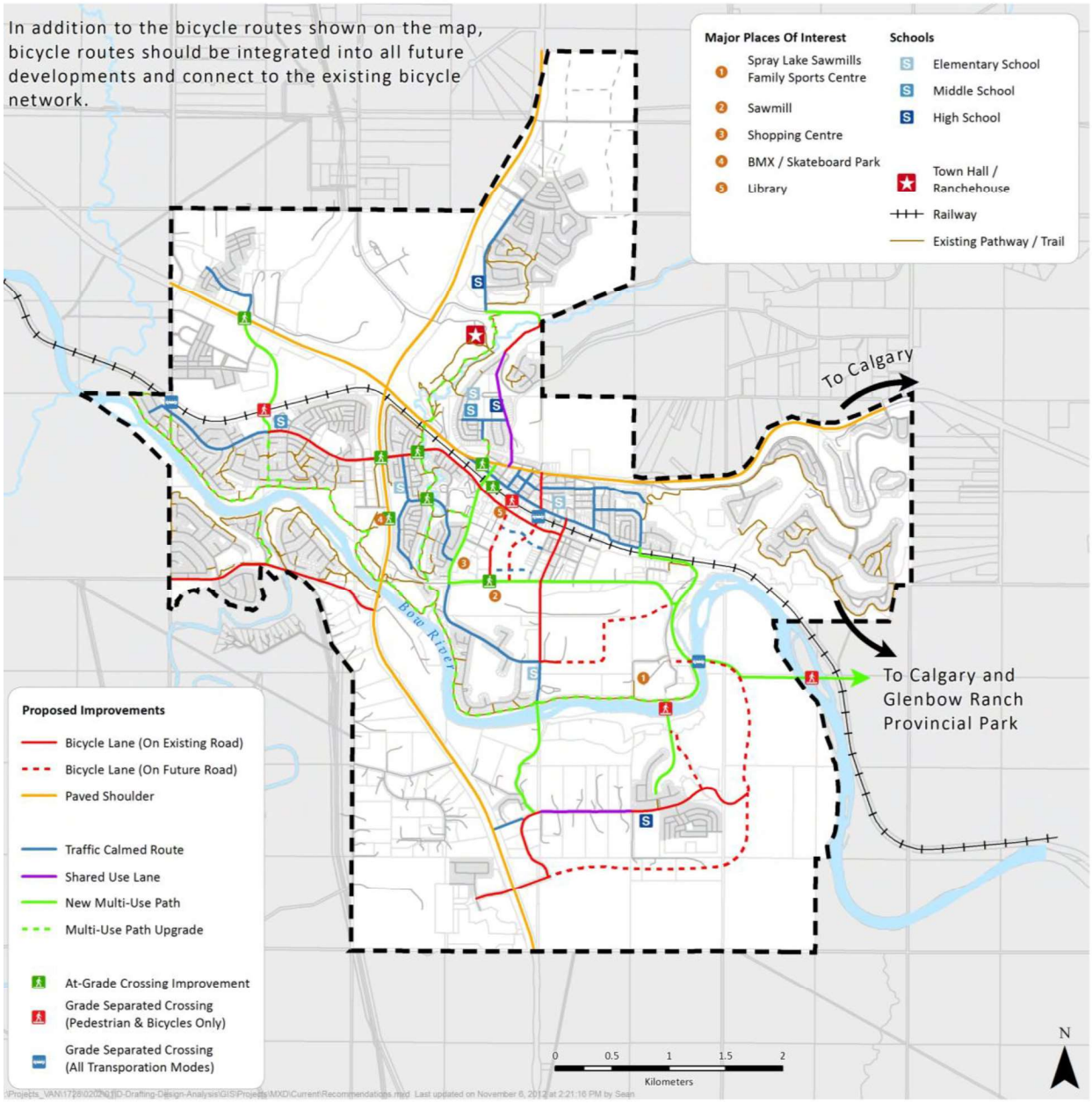
judged to be the biggest. This is the case where the additions of on-street facilities provides easy access to important destinations such as schools and shops, where it substantially reduces travel time along central corridors and/or completes gaps in the pathway system.

To the extent possible, the focus of the bicycle network plan has been to incorporate bicycle facilities with minimal impacts on motor vehicle mobility. In this regard, the highest priority projects identified in the plan consist of corridors which provide connections to key destinations within the community and which can be retrofitted to include bicycle facilities with minimal impacts to the number of motor vehicle travel lanes or on-street parking.

To achieve the maximum effect of bicycle infrastructure improvements, the Town should coordinate infrastructure improvements with initiatives related to support measures such as partnerships with workplaces as well as education and promotional campaigns. Furthermore infrastructure improvements should be closely coordinated with maintenance strategies.

The recommended bicycle network is shown in **Map 3** and is described in more detail below.

Map 3: Recommended Bicycle Network



4.2.1 Off-Street Facilities

As noted previously, the Town already has an extensive and high quality off-street pathway network. This existing network presents significant opportunities for the Town to make further improvements to improve comfort and reduce travel times cost effectively since so much is already in place.

Key improvement opportunities for off-street pathways in the short-term include:

1) **Pave Pathways.** Most pathways in Cochrane are currently unpaved and consist of gravel or red shale. Upgrading gravel or red shale pathways to a paved asphalt surface can significantly increase comfort and accessibility for cyclists as well as other users, including rollerbladers, scooters, and people with wheelchairs. The bicycle network plan recommends upgrading the high priority pathways, including the north–south connection from Sunset Ridge (near the Ranchehouse) to the downtown and further south to the Bow River; and the east–west connection along the Bow River from West Pointe to River Avenue, and continuing in the longer term east to the future bridge connecting downtown with South Ridge.

2) **Improve Crossings.** Crossings are often the most critical point along a pathway network. There are several areas where the Town can improve crossings of roadways and railways. This can include enhanced on-street crossings with the use of pavement markings and pedestrian and bicycle activated signals, as well as upgrading and providing new grade separated crossings including overpasses and underpasses.

3) **Address Gaps.** The bicycle plan identifies minor extensions or upgrades of the path system where there is a gap in the network or where shortcuts or access to on-street facilities will provide biggest effect, i.e. shortcut from Glenpatrick Dr. to 5th Avenue.

4) **Provide Amenities.** Off-street pathways can provide improved comfort through services such as air pumps, water fountains, signage and wayfinding, and footrests at crossings.

In addition, key improvement opportunities for off-street pathways in the long-term include:

1) **Cycle Superhighway to Calgary.** Cyclists wishing to travel to Calgary are currently limited to using the highway. There are plans to provide an improved link to Calgary using off-street pathways through the Glenbow Ranch Provincial Park. It is recommended that the Town of Cochrane initiate a dialogue with Calgary on the prospect of a regional 'Cycle Superhighway' between Calgary and Cochrane which would be designed and marketed in cooperation. Such a project will potentially gain both regional and national attention and thereby be a very efficient means to raise awareness of both Cochrane's and Calgary's desire to promote cycling. In addition, such a project can be marketed by the Town and be used help attract new residents to the Town and to further increase the amount of recreational day riders from Calgary.

2) **New pathways** to provide connections from existing and future developments to downtown. New pathway connections are identified from South Ridge and Fireside to the Downtown area.

3) **Additional shortcuts** across the Bow River, the Railway, Highway 22 and Highway 1A as described in further detail in the section on grade separation below.

4.2.2 On-Street Facilities

On-street facilities introduced as a supplement to the pathway system will greatly improve the connectivity of the overall bicycle network and thereby also make the pathway system useful for even more citizens. The recommended approach focuses on "quick wins", whereby the Town would implement bicycle lanes or other facilities relatively inexpensively and with minimal trade-offs. In this regard, the "quick wins" include streets which have sufficient width within the carriageway to add bicycle facilities and do not involve road widening or major construction, and streets which have sufficient room to implement bicycle facilities with minimal impacts on motor vehicle operations or on-street parking.

Existing Roads

The sections below summarize some of the key recommended on-street bicycle network improvements that should be considered over the short-term.

- **Railway Street West - Glenbow Drive – Quigley Drive.** Bicycle lanes are recommended between River Avenue and Mitford Middle School. This corridor provides an important east-west connection from West Pointe, West

Terrace and West Valley to and from the downtown core, and also provides access to Mitford Middle School as well as a direct connection to the north-south pathway between the Ranchehouse and downtown. This corridor has limited on-street parking and generally has sufficient width to implement bicycle lanes by reducing the width of the motor vehicle travel lanes.

- **River Avenue.** Bicycle lanes are recommended between Riverview Drive and Griffin Road West. This corridor would provide a high quality north-south connection from the Bow River and riverfront pathways to the downtown core. This would also provide a connection to the existing bridge, which is intended to be a bicycle and pedestrian-only bridge to provide access to subdivisions south of the Bow River in the future. There is sufficient room on River Avenue to provide enhanced bicycle lanes by providing buffers and/or delineators. There is not currently sufficient width for bicycle lanes on River Avenue north of Griffin Road, however bicycle lanes should be implemented as future redevelopment occurs in this area.

- **Centre Avenue.** The development plan for the Quarry site identifies Centre Avenue as the primary north-south spine road through the site accommodating vehicles, pedestrians and cyclists. Centre Avenue will provide a direct north-south connection between Griffin Road/River Avenue and the downtown core and has been designed to include bicycle lanes.

- **Grande Boulevard.** A portion of Grande Boulevard has recently been constructed north of Griffin Road West, and this road is planned to be extended further north to Railway Street West. Grande Boulevard will provide an important north-south link as part of the Quarry Development. The existing portion of Grande Boulevard has sufficient space to reallocate the road space to provide bicycle lanes, and the future extension of Grande Boulevard should also be designed to continue these bicycle lanes. There is sufficient room on Grande Boulevard to provide enhanced bicycle lanes by providing buffers and/or delineators. With this treatment, Grande Boulevard would provide a continuous high quality connection from the Bow River to the downtown core via River Avenue (as discussed above) and Griffin Road (as discussed below).

- **Griffin Road.** Griffin Road is identified as a future four-lane road in the Town's Transportation Plan. Griffin Road is currently a four-lane road without on-street parking west of River Avenue, and a two-lane road with on-street parking east of River Avenue. There is sufficient right-of-way on the south side of Griffin Road to provide a multi-use pathway, however it should be noted that a portion of this right-of-way may be required for the future widening of Griffin Road east of River Avenue. West of River Avenue, the right-of-way is more constrained but there is still an opportunity to implement

a multi-use pathway on the south side of the street to connect the River Avenue bicycle route with Grande Boulevard and Centre Avenue.

- **First Street.** This is recommended as a traffic calmed route through the downtown core. Most importantly on First Street from Highway 1A to Centre Avenue. Another example of a street where traffic calming should be considered is Glenpatrick Drive.

Several other roads are identified as important for the directness and connectivity of the overall network and to make sure that the network is integrated with the ongoing development. These other corridors are generally medium to longer term priorities. Outside of the downtown core, this includes George Fox Trail from Bow Ridge to Highway 22, Quigley Drive west of Mitford Middle School, River Heights Drive, and Fourth Avenue between Highway 1A and Sunset Ridge.

Future roads

Cochrane is a rapidly growing community with significant growth expected the coming years. This presents the Town with an important opportunity to ensure new roads are designed to adequately accommodate cyclists and pedestrians. It is recommended that all future collector and arterial roads should include bicycle lanes at a minimum. If opportunities exist, arterial roads may have enhanced bicycle facilities, including cycle tracks or multi-use pathways parallel to the roadway. In addition, future developments should also include traffic calmed routes along local streets and should ensure that future developments, particularly those with cul-de-sacs, preserve right-of-way for off-street pathway connections which can provide important shortcuts for pedestrians and cyclists. Although this plan provides design guidance for implementing bicycle facilities, the Town should consider developing road standards to incorporate bicycle facilities.

Crossings

The implementation of bicycle facilities should be supplemented with minor redesign of some intersections to improve connectivity. Such crossings where improvements should be considered are highlighted on **Map 3.**

Crossings are very often the part of cycle trips where both the perceived and real risk of being in an accident is the biggest. Therefore improvements of crossings are crucial for the overall effect of the investment in cycling facilities.

4.2.3 Grade Separated Crossings

There are several barriers throughout the community, including the Bow River, the railway corridor, and the highways. Grade separated crossings for cyclists and pedestrians can be considered at these locations to facilitate access and create short-cuts for pedestrians and cyclists. Grade separated crossings are of particular importance to connect the north and south sides of downtown across the railway. A basic standard is to make sure that all crossings (for all modes of transportation) include bicycle facilities, and that all crossings for pedestrians can be used also by cyclists. Providing short-cuts by providing grade separated crossings exclusively for pedestrians and cyclists is not only a way to improve safety, comfort and access, but is also an effective way to provide short-cuts for pedestrians and cyclists, while helps to increase the competitiveness of cycling as compared to automobiles. Some key grade separated crossings include:

- Preserving an at-grade pedestrian/cycling crossing at Fourth Avenue if the construction of the new Centre Avenue crossing means closing the Fourth Avenue crossing for motor vehicle traffic.
- A pedestrian overpass connecting the plaza on First Street to Grande Avenue on the south side of the tracks is expected to be constructed (a project identified for funding under the Community Revitalization Levy program). This overpass should be constructed with bicycle facilities.
- Just west of Highway 22 between Quigley Drive and the Bow River is the skateboard park and other sports facilities. To give good access to these and to improve connection between West Valley and the Downtown, an underpass should be considered for cyclists and pedestrians under highway 22 at the skateboard park.
- A connection across the railway west of downtown linking Cochrane West and West Terrace/West Valley. Depending on urban development this connection should be considered supplemented with a pedestrian and bicycle bridge across Highway 1A. This will connect West Valley/West Terrace and Cochrane West. This will make trips on foot and bicycle between these subdivisions competitive with the automobile, and open up a much broader 'market' for the Mitford Middle School and for the cycle lanes on Quigley Drive / Glenbow Drive that will provide direct and comfortable access to downtown.
- Supplement the planned bridge across Bow River in the southeast of the town with a pedestrian and cycling bridge further south to create direct and comfortable access between the South Ridge Development and the Downtown.

4.2.4 End-of-Trip Facilities

Every trip by bicycle requires that the bicycle be parked at the end of the trip. In many cases, this means locking the bicycle on the street where it could be stolen. The fear of theft or vandalism is a significant deterrent to cycling. Regardless of whether a bicycle is worth $100 or $5,000, no-one wants to have their bicycle stolen, particularly if they depend upon it for transportation. Consequently, providing safe and secure on-street parking at key locations throughout the Town is a significant means of encouraging cycling in addition to developing a comprehensive network of bicycle facilities. Additional bicycle parking is recommended in key areas of Cochrane, such as:

- The Downtown core;
- Schools;
- The Ranchehouse;
- Shopping Centres;
- The Library;
- Community and Recreation facilities, such as the Spray Lake Sawmills Family Sports Centre; and
- Other major employment areas.

Improved facilities for cycle parking are relatively inexpensive and can be implemented gradually.

In addition, the Town should provide requirements for the bicycle parking and other end-of-trip facilities (such as showers and clothing lockers) for private developments, and also develop design guidelines to regulate the overall quality and design of end-of-trip facilities.

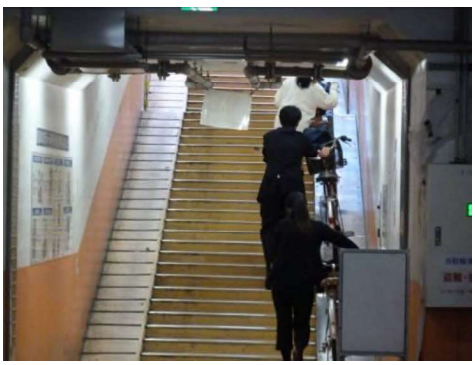
Furthermore the Town should continue to provide facilities for their own employees for showering and getting changed in addition to bicycle parking. The Town already provides showers and clothing lockers in most of its facilities, including the Town Hall, Shop, Pool and Fire Hall. In addition to providing facilities for its employees, this also demonstrates leadership on behalf of the Town and will help encourage others in the community to follow suit.

4.2.5 Other Improvement Opportunities

In addition to providing a comprehensive network of bicycle facilities with attractive crossings as well as bicycle parking, a number of other improvement opportunities include:

- **Signage and Wayfinding.** Wayfinding and signage helps to identify designated bicycle routes and guide cyclists throughout the bicycle network, and also provide a visual cue to motorists that they are driving along a bicycle route. This can also help "brand" the bicycle network, increasing awareness and marketing of the bicycle network for both cyclists and motorists. Enhanced wayfinding and signage can include:

  - **Route signs** that indicate which streets are designated bicycle routes through the use of bicycle route signs and bicycle symbols on street name signs. Supplementary tabs can be installed below bicycle route signs to indicate major destinations.
  - **Wayfinding signs** can indicate directions to key destinations, as well travel distance and estimated riding time. Signs may consist of a single placard that lists several destinations with directional arrows or several destination blades that can be angled to emphasize the direction of travel.
  - **Educational signs** provide information for cyclists and motorists regarding appropriate use of bicycle facilities, such as "Share the Road" signs and "Yield To..." signs.



- **Bicycle Escalators.** The Town might also consider visible projects with large 'promotion' value on top of the function they provide. One option is introducing 'bicycle escalators' on the potential new bridge connecting the old and the new downtown area if it is chosen not to make the bridge 'bike able'. This would make the bridge accessible for more kids and elderly people and improve comfort for everyone.
- **Bicycle Lift.** Another option the Town might consider is

cooperation with a ski lift company on a possible 'bicycle lift' to compensate for the hills in the area, as a pilot project. Just the branding value for Cochrane on implementing such a device would likely go a long way in regard to making the investment sound. The Town may wish to develop a feasibility study for installing a bicycle lift in the community.

4.2.6 Maintenance

Similar to end-of-trip facilities, regular maintenance is an effective way of getting the best possible effect out of investment in the overall bicycle network.

Maintenance is also a symbol of the Town's commitment to cycling. For example, the Town should ensure that the debris is not left to accumulate on the bicycle lanes or pathways, that snow is removed from the highest priority pathways and bicycle lanes, and that painted lanes are repainted as required.

On pathways, the highest priority should be given to the path from Sunset Ridge via Downtown to the Bow River and to the short cuts to schools and between roads, i.e. the short cut between Glenpatrick Drive and 5th Ave. Regarding future bicycle lanes, the east west corridor from Railway Street to Quigley Drive should be the highest priority.

4.2.7 Support Measures

Finally, there are a number of support measures and programs that the Town can consider to encourage cycling. There are a wide variety of support measures and program, but some examples could include:

- Partnerships, i.e. with urban developers, schools, workplaces and major retailers on promotion and end of trip facilities
- Campaigns aimed at newcomers (lending out bicycles, including electrical assisted bicycles for a limited period, informing of cycling facilities etc)
- Lending cargo bikes to small businesses and other companies with an interest in cycling
- Working with elderly homes on providing bicycles for small trips
- Encouraging Town staff to ride their bicycles to work, and providing shared bicycles for employees to use during work hours.

- Working with the businesses in the downtown area to create a “Bike Friendly Business District”

Such activities have a strong positive effect measured in ‘extra km cycled per dollar spent’. If the wish in Cochrane is to get as much new cycling for the lowest possible investment, then infrastructure improvements should be supplemented with some support measures as noted above.

5.0 Implementation Plan

The Bicycle Network Plan identifies a number of improvements for the Town of Cochrane to consider over the long-term. In some cases, projects can be implemented more easily and quickly than others. In addition, in some cases projects will be implemented as development occurs or in conjunction with road or other infrastructure projects, whereas in other cases the projects may be implemented by the Town as a standalone initiative. The section below identifies some general guidelines for the Town to use when prioritizing and implementation bicycle network projects:

- **A step-by-step approach to projects.** The recommendation is to focus first on rather small and easy bicycle interventions (i.e. bicycle parking, bicycle lanes that can be implemented with minimal trade-offs) that are quick to implement, effective at attracting users, are cost-effective, and which drive the demand for a larger projects and an expanded network.
- **Part of a program, not isolated measures.** To maximize the effect and ensure coherence, every single activity should be seen as part of a holistic bicycle program, which in addition to on- and off-street infrastructure includes maintenance, education and communication initiatives, as well as partnership opportunities. This also means that a broad coalition of competences and interests should be involved in the implementation
- **Ongoing focus on 'the why'.** It is recommended to focus not only on 'the what and how' but also very much on 'the why promote cycling' during the implementation process. The explanation of 'the why' will differ depending on the audience and the project.
- **Not only cycling.** In the design of actual projects emphasis should, wherever possible, also be on improving conditions for other modes of transportation, especially pedestrians, such as traffic calming of First Street and water fountains and/or lighting on trails. This ensures that projects consider the needs not only of cyclists, but all road users and identify opportunities to improve conditions for each mode of transportation.

5.1 Bicycle Network Priorities

Below is a list of the recommended short-term priority improvements for the Town to consider. As noted previously, these include 'quick win' projects that are relatively easy to implement and which have high potential for increased ridership as they connect directly to the Downtown Core. According the City of Calgary's

Cycling Strategy, the cost to retrofit existing roadways to accommodate bicycle lanes where no roadworks are required (in other words, where bicycle lanes can be implemented simply by repainting the street) is approximately $25,000 / kilometre. This unit cost has been used to estimate the cost to retrofit the following high priority corridors to provide on-street bicycle lanes in Cochrane. In addition, a 40% contingency has been applied to this unit rate to account for intersection treatments and other amenities that may be required beyond provision of paint. The three highest priority on-street projects that have been identified and which are not being implemented through development or other processes are estimated to cost approximately less than $150,000, as shown in the table below. It should be noted that these estimates are order-of-magnitude estimates and should not be used for planning purposes. Further conceptual and detailed designs are required to develop more accurate cost estimates.

	Distance (km)	Unit Rate ($25,000/ km)	Contingency (40%)	Total
Railway Street West - Glenbow Drive – Quigley Drive	2.7km	$67,500	$27,000	$94,500
River Avenue	1.0km	$25,000	$10,000	$35,000
Grande Boulevard	0.25km	$6,300	$2,500	$8,800

At this point, cost estimates have not been provided for improvements to off-street pathways. Further detail would be required regarding potential widening, crossing improvements (including underpasses or overpasses), lighting, and desired amenities to provide cost estimates.

5.2 Funding and Implementation

This section describes several funding strategies and potential funding sources that municipalities may consider to help leverage their investments and to maximize their ability to implement cycling facilities. Note, however, that funding programs change regularly.

5.2.1 Implementation Strategies

There are a number of strategies and policies that the Town can follow to fund and implement bicycle facilities, as described below:

- **Capital Plan** Once the planned Bicycle Network Plan has been adopted, bicycle projects should be prioritized to identify projects to be implemented over the short-term. These projects can then be included in the Town's capital plan.
- **Road Standards** Municipalities provide standards for implementing roadway infrastructure in their Subdivision and Development Control Bylaws. To ensure cycling infrastructure is provided on new or upgraded roads, the Town should develop or update its roadway standards to include cycling facilities.
- **Road rehabilitation** Cycling facilities can be implemented as part of ongoing road rehabilitation projects. Accordingly, municipalities may adjust certain cycling infrastructure priorities (moved forward or deferred) to reflect their plans for major roadworks. In addition, the Town could consider establishing a policy that requires consideration of pedestrian and cycling facilities in any road rehabilitation project.
- **Other capital works** Often cycling facilities can be implemented as part of a separate capital works project. For example, cycling infrastructure can be implemented in conjunction with sewer or sidewalk improvements.
- **Development opportunities** Municipalities may require private developers to construct bicycle facilities along roadways fronting new developments. This represents an important contribution to the community's cycling network, but may offer the municipality opportunities for providing more widespread cycling improvements in conjunction with development. For example, municipalities may choose to accelerate a given bicycle project to complete a bicycle route if private development occurs along a portion of that road segment.
- **Bicycle Parking** The Town should amend its Land Use Bylaw to incorporate minimum bicycle parking requirements for new developments. This could include regulating the number of on-street and off-street bicycle parking spaces, as well as the quality of bicycle parking.

5.2.2 Funding Sources

The Town should consider pursuing all available public sector sources of funding for bicycle facilities and programs, including the programs identified below. However, to take advantage of many of these public sector funding opportunities the municipality is required to have previously completed detailed designs and corresponding accurate cost estimates. The costs of preparing detailed designs are often not eligible for cost share funding — only the capital costs of construction are eligible. As funding opportunities change regularly, the information in this section is subject to change. Municipalities should regularly check with all levels of government to keep up to date on funding opportunities.

- **Infrastructure Canada** manages several programs that provide funding for environmental and local transportation infrastructure projects in municipalities across Canada. Typically, the federal government contributes one-third of the cost of municipal infrastructure projects. Provincial and municipal governments contribute the remaining funds, and in some instances, there may be private sector investment as well.
- **Green Municipal Funds** The Federation of Canadian Municipalities manages the Green Municipal Fund, with a total allocation of $550 million. This fund is intended to support municipal government efforts to reduce pollution, reduce greenhouse gas emissions and improve quality of life. The expectation is that knowledge and experience gained in best practices and innovative environmental projects will be applied to national infrastructure projects.
- **Other federal programs** At any given time, there are usually one or more federal grant programs for which bicycle facilities would be eligible. As an example, in the past, Environment Canada provided grants through the Environmental Partners Fund for bicycle-related projects, which demonstrated a benefit to the environment and formed partnerships with the community.

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

There are several other sources of funding that municipalities can consider financing bicycle facility projects and bicycling programs:

- **Private sector** Mountain Equipment Co-Op is an example of a business that provides funding that could be applied to bicycle and pedestrian facilities and programs. To protect the environment in areas having significant recreational value, and to facilitate public access and recreational use of areas, Mountain Equipment Co-Op supports applications from member groups and not-for-profit organizations.
- **Many corporations** wish to be good corporate neighbours — to be active in the community and to promote environmentally-beneficial causes. A bicycle network is well-suited to corporate sponsorship, and has attracted significant sponsorship both at the local level and throughout North America.
- **Deeds, donations and dedications** In many communities, multi-use pathways have been funded in part and in whole by local residents who purchased "deeds"″ to sections of the pathway. The Trans Canada Trail, for example, is funded partially by sales of one metre sections for $40. Kelowna partially funded development of a pathway along Mission Creek in Kelowna through community donations. Similar to park bench dedication programs, a dedication program can be set up for residents and corporations to donate bicycle facilities, such as bicycle racks or lockers. In many cases, these deeds, donations and dedications are tax-deductible where they are administered by a not-for-profit agency.
- **Service clubs** Efforts to provide new bicycle facilities can be coordinated with service clubs, such as the Lions Club, the Rotary Club and Kiwanis. In Kelowna and Port Coquitlam, for example, the Rotary Club provided funding for the construction of bicycle facilities.
- **Advertising** There are several options for obtaining funding for bicycle projects from advertising revenues. The costs of producing and distributing a bicycle route map can be partially or fully offset by selling advertising space on the map. Advertising on bicycle racks can reduce the costs of providing bicycle parking. Potential advertisers include bicycle stores, commercial recreation operators, hotels, restaurants and transportation services.