

REPORT



Connecting Cochrane



Final

November 2017

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Executive Summary

The Town of Cochrane is a growing community in Southern Alberta. Located approximately 40km west of Calgary, the Town is shaped by the Bow River, creeks, escarpments, topography, and major transportation corridors including the CP Rail Line and two provincial highways.

Cochrane has grown substantially since the development of the previous 2006 Transportation Master Plan. As explored further on in this document, the population has increased by approximately 12,560 residents between 2006 and 2017; approximately 90% increase in population over a ten-year period.

Connecting Cochrane is the overarching Transportation Master Plan for the Town. It includes multi-modal transportation considerations needed today and into the long-term. A strong transportation system is essential to the Town's continued success and livability. The approach to Connecting Cochrane was designed to achieve four key elements through the planning process:

- A. Inform and support existing plans and policies;
- B. Chart Cochrane's transportation future (explore the possibilities);
- C. Create plans for the four major modes of transportation (vehicles, bicycles, pedestrians and transit);
- D. Develop implementation priorities and a short- and mid-term implementation plan.

Key recommendations within the Connecting Cochrane document focus on capital projects over the next 20 years in the following categories:

- Roads
- Pathways
- Cycling
- Transit

In the next 10 years key improvements are recommended as follows:

- Roads
 - o Griffin Road/James Walker Trail Bridge and road connections
 - o Centre Avenue upgrades
 - o Key intersection improvements
 - o Rail crossings
 - o Interchange at Highways 1A & 22
 - o Exploration of roundabouts on Highway 1A through Cochrane
- Pathways
 - o Continued connectivity
- Cycling
 - o Improve the network
- Transit
 - o Regional Services to ease commuter traffic

- o Exploration of a local service including research on fixed routes and an on demand pick up service

Town of Cochrane Capital Projects

The Transportation Master Plan for Cochrane requires significant investments to be made in capital projects over 20 years. The Implementation Plan is based on the continuation of strong growth in the economy of the Calgary Region and assumptions with community development in Cochrane.

Long-term implementation plans are assembled into a series of Five-Year Capital Plans. The Five-Year Capital Plans are meant to be flexible. They are typically adjusted on an annual basis to reflect acceleration or deceleration in the economic growth, and to reflect changes in the list of capital projects that will best serve new development or redevelopment within the Town.

The Connecting Cochrane local capital projects will cost approximately \$132.6 million and will be phased in/prioritized over a 20-year period. These projects include new traffic lanes on arterial streets, Griffin Road/James Walker Trail bridge and road connections, grade separated rail crossing, new traffic signals, multi-use paths, sidewalks, bicycle lanes and trail facilities.

Approximately 95% of Connecting Cochrane's capital budget is allocated to the construction of new roads, the Griffin Road/James Walker Trail bridge and road connections and future grade separated railway crossings to provide improved community connectivity. The remaining 5% of the Connecting Cochrane Capital Budget is allocated to transit, bicycle, sidewalk and trail projects.

Regional Projects

Highway 1A and Highway 22 will require significant Provincial investment over the next 20 years to support regional traffic and accommodate Cochrane's growth. They are considered as regional transportation facilities because of the nature of the traffic and services.

The regional projects within the 20-year time include widening Highway 1A and Highway 22 to a 4-lane facility with a multi-use trail, upgrade Highway 1A/Highway 22 intersection to a grade separated interchange, upgrade the pedestrian underpass across Highway 22 and a 4 lane Bow River Bridge upgrade along Highway 22.

1 Introduction

The Town of Cochrane is a vibrant and growing community in Southern Alberta. Located west of Calgary, the Town is shaped by the Bow River, creeks, escarpments, topography, and major transportation corridors including the CP Rail Line and two provincial highways. Cochrane's character and history have been formed by the natural landscape and its western heritage. Cochrane maintains its connection to its roots as a small western town, but it has also experienced the opportunities and challenges associated with rapid growth and change. Because Cochrane has grown 'around' these major transportation corridors, they serve as the spine of Cochrane's road network. As a municipal government, Cochrane has also built a unique relationship with Alberta Transportation, working together to provide a cohesive transportation network comprised of municipal roads with connections to Highway 1A and Highway 22, which fall under provincial jurisdiction. A strong transportation system is essential to the Town's continued success and livability.

Connecting Cochrane is the overarching transportation master plan for the Town. It considers multi-modal transportation needs now and into the long-term. This introduction describes the purpose and content of the plan, as well as the study process that was applied to arrive at this document.

1.1 Purpose and Content of the Plan

Cochrane's last full transportation plan was completed in 2003, with an update in 2009. Both plans focused on assessing traffic conditions and provided a small amount of guidance on multi-modal transportation or transportation policy.

Since the completion of these plans, best practices in the transportation industry have evolved and transportation plans have taken on an enhanced role as both high-level planning documents connected to the community's vision and goals, as well as being fully multimodal in their assessments and recommendations.

Cochrane has changed substantially since the development of previous transportation plans. As explored further in this document, the population has increased by about 12,560 residents between 2006 and 2017; approximately 90% increase in population just over a ten-year period. New neighbourhoods have been developed and these neighbourhoods have evolving transportation needs. The Town has also



advanced other planning and policy documents, and there is a new understanding of Cochrane's vision, goals, needs, and anticipated growth. Based on these key changes, it was appropriate time to develop a new transportation master plan – Connecting Cochrane.

1.1.1 *What do we want the plan to achieve?*

The approach to Connecting Cochrane was designed to achieve four key elements through the planning process:

- A. Inform and support existing plans and policies;
- B. Chart Cochrane's transportation future (explore the possibilities);
- C. Create plans for the four major modes of transportation (vehicles, bicycles, pedestrians and transit);
- D. Determine implementation priorities and develop an implementation plan based on 5 year horizons

Each of these elements is described in more detail below.

Inform and Support Existing Plans

The Town has developed a system of planning documents, policies, and guidelines that guide decision making and service delivery across all aspects of municipal life. Many of these documents influence, and/or are influenced by, the transportation system. Connecting Cochrane must evolve from the policy context set by these documents and, at the same time, support the Town in the evolution of these documents.

As the planning context evolves, updated transportation planning is needed to ensure that different systems align and resources (capital, land, operations) are being invested in the right places at the right times.

Further to this broader context, the Town and other agencies have completed other studies and analysis addressing individual modes of transportation (pedestrians, bicycles, and transit), highway planning and design, and parks and open spaces. Studies have also been completed relating to the needs of specific neighbourhoods and development areas. These must be integrated into a larger understanding of the system.

More detail about the existing planning context is included in Section 2.4.

Charting Cochrane's Transportation Future (Exploring the Possibilities)

The Transportation Plan must answer the question: 'What is important and what should be considered as the Town grows to a population of 60,000 people?'. That question can only be answered by residents who call Cochrane home, which is why public consultation is an essential component of plan development. Based on the work in early stages of the plan, it became clear that the following three things are important:

- Accommodating growth.
- Developing a transportation network that supports the needs of people and businesses and is aligned with local values and vision.
- Enabling transportation mode choice and opportunities for all demographics.

Technical work completed through the study process allows transportation planners and engineers to identify possibilities and to assess the impacts and trade-offs associated with those possibilities. Viewing the results of the technical analysis through the lens of public consultation allows opportunities to be refined to recommendations, and for recommendations to be prioritized per local needs.

Transportation plans have a wide variety of possibilities available to address the three items of importance identified above. The numerous elements to be considered through the planning process include:

- **Upgrading existing infrastructure** – While larger, wider roads can increase capacity, move traffic, and reduce congestion they can also segregate neighbourhoods, incur high costs, and contribute to safety concerns such as speeding
- **Building more infrastructure** – Keeping roads small but increasing the connections will grow the network and access options.
- **Investing in new communities** – When connecting new neighbourhoods, it's important to ensure that the networks can accommodate all modes of transport and have capacity for locally generated traffic.
- **Emphasis on active modes and transit** – Transit and active modes could increase travel options, reduce congestion, and promote healthier lifestyles.
- **Land use planning** – Balancing live/work and commercial uses within neighbourhoods will decrease commuting traffic. While promoting development of complimentary land uses within communities can reduce the strain on the transportation network, the economics of ensuring the vitality of the downtown core businesses need to be considered.
- **Other Transportation Demand Management measures** – Making use of existing infrastructure while implementing different techniques such as off-peak and shared parking, Intelligent Transportation System (ITS) for traveler information, promotion of off-peak travel for commuters, etc. should be considered to reduce peak period demand.

Connecting Cochrane will encompass components from a variety of elements, but in varying degree of focus depending on the findings of the technical evaluation and the results of consultation. Some of these elements have been defined through other planning processes and will be reflected in this plan, some will be directly recommended here, and others will be the subject of further study. The resulting plan will be unique to Cochrane.

Plans for Each Key Modes of Transportation

Connecting Cochrane will establish direction and recommend improvements for all modes of transportation including walking, cycling, public transit, and vehicles. It will also consider needs for all types of travel:

- Travel within Cochrane
- Travel to/from Cochrane
- Travel through Cochrane

Implementation Priorities

Finally, the plan will consider the Town's priorities, available resources, and parallel processes in the development of an implementation plan. The implementation plan will:

- Ensure that transportation investments work towards achieving the Town's strategic goals, make the best use of tax dollars, and help shift towards a more sustainable future
- 5-year Capital Plans over the next 20 years for implementation purposes
- Establish list of priorities to address regional concerns along highways in collaboration with Alberta Transportation
- Integrate short-term implementation priorities with asset management needs (e.g.: utility replacements, paving programs, etc.) as well as with development requirements to maximize the impacts of investment.



1.1.2 Content of the Plan

Connecting Cochrane evolved through the elements identified above and the study process that's explored in greater detail below. The result of this work is the plan documented in this report, which includes the following sections:

- **Introduction** – outlines the purpose and content of the plan, as well as the study process that was used to develop the plan.
- **Taking Stock** – summarizes the existing and future conditions that influence the needs of the transportation network. This includes existing and projected demographics, an exploration of the existing and planned neighbourhoods, a profile of current travel patterns, and an exploration of anticipated future travel patterns. This section also includes a short summary of existing documents that create the policy framework inside which Connecting Cochrane was created.
- **Transportation Networks** – provides an exploration of transportation in Cochrane on a mode by mode basis. This section includes a summary of existing infrastructure, services and policies, key barriers to travel by each mode, and an exploration of how future growth will put pressure on the existing network.

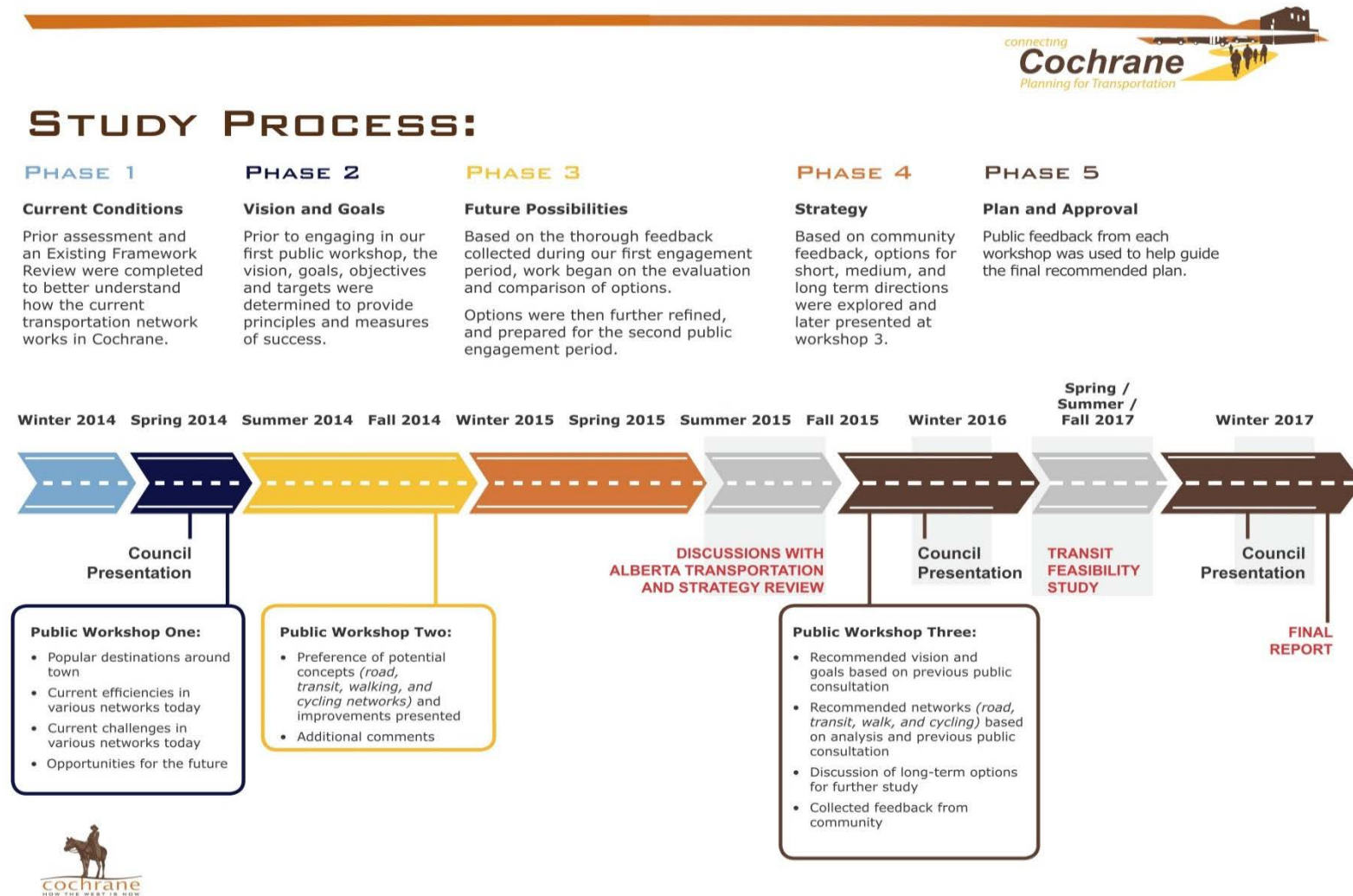
- **Issues and Challenges** – summarizes the issues and challenges for transportation in Cochrane now and in the future based on the information explored in the Taking Stock and Transportation Networks sections.
- **Vision and Goals** – identifies an overarching vision and goals for transportation in Cochrane. These are important, as they provide the structure for transportation decision making both within this plan and in the future.
- **Transportation Plan** – provides a summary of the transportation plan by mode. The plan identifies recommended transportation improvements by mode. This includes new infrastructure, improvements to existing infrastructure, infrastructure management needs, standards and guidelines, services, and facilities, as applicable to each mode. This section also identifies some of the other network changes that were considered during the planning process, but were ultimately excluded from the recommendations of this plan, as well as some long-range options that are recommended for continued study.
- **Implementation Plan** – this section compiles the improvements listed in each modes' transportation plan into projects. This is important because there are many locations where improvements are required across modes of transportation and these would be delivered as a single project. The implementation plan is divided into 5-year Capital Plans based on local priorities, parallel processes (such as other asset management or utilities projects that may maximize the value of the investment, and anticipated growth patterns). The implementation plan includes order of magnitude cost estimates in line with Council Policy 1706-01.

1.2 Study Process

Connecting Cochrane was developed through a five-phase process with the plan being completed in the winter of 2017. The study process is illustrated in Figure 1-1 and included the following activities:

- Summary and analysis of current conditions
- Development of micro-simulation models for existing peak period conditions at key intersection using Synchro v7.0 software
- Development of macro travel forecasting model in the VISUM platform.
- Public consultation throughout the process – used to identify issues and challenges, vision and goals, and feedback on options
- Consultation with other agencies and organizations, including Alberta Transportation and land owners
- Coordination across departments within the Town to identify efficiencies and align investment
- Discussion with Council at key decision points
- Identification of challenges and opportunities
- Technical analysis of possibilities
- Development of strategy
- Development of implementation program
- Delivery of report

Figure 1-1: Study Process



2 Taking Stock

Many factors influence the needs of the transportation system in a community. The number and location of people and jobs, as well as the type and location of important community destinations influence where, when, and how people travel. The policy context within a community, that is, the documents and policies that guide local planning and decision making also have impacts on transportation patterns and needs. It is important to understand the context and existing travel patterns within a community before assessing the issues and opportunities and developing recommendations for the future. Beyond understanding the existing conditions, it is also important to understand expectations concerning the type, shape, and location of growth; as the community evolves, transportation patterns can be expected to evolve as well.

The modelling and analysis that support Connecting Cochrane were developed based on an understanding of population, employment, and land use under today's condition as well as the long-term scenario with a population projected to approximately 60,000 in the next 43 years or so. The long-term growth scenario was guided by the Town's Growth Management Strategy, May 2013.

This section presents a snapshot of existing and anticipated future demographics and land use. It also includes a profile of existing transportation patterns and how these might be expected to evolve as the community changes. The section ends with a summary of existing plans, policies, and guidelines that influence, and are influenced by, this transportation plan.

2.1 Demographic Profile

Initially a small ranching settlement with a traditional town centre, Cochrane has experienced similar development pressures as communities across the fast-growing Calgary region. Over time, the services provided within the Town have diversified, and Cochrane is now home to more than 25,000 residents served by a diverse range of local businesses and amenities, including schools, retail and restaurants, and local recreation facilities. This section explores the changing demographic profile of Cochrane, including both population and employment factors that influence travel patterns and transportation needs.

2.1.1 Population

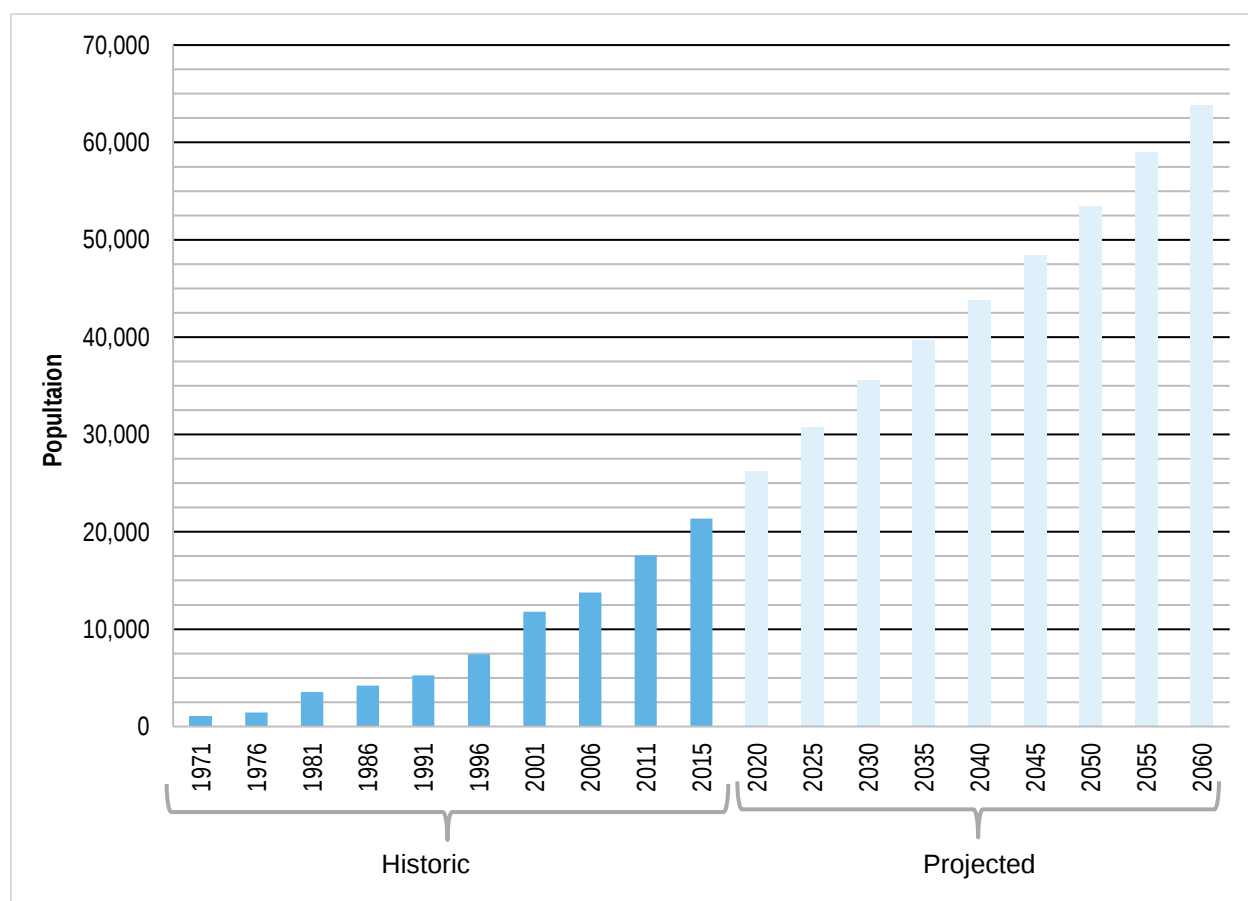
As per the most recent municipal census, in 2017, Cochrane was home to 26,320 people. In 2013, Cochrane was home to 18,750 residents. Over this 4-year period Cochrane's population grew on average by more than 1800 people per year, with an annual average linear growth rate of 9%.

Over the next 43 years (2060), the annual growth rate is expected to remain steady between 2-4% per year. With this anticipated growth rate, the community's population can be expected to more than triple to over 60,000 people by 2060. This growth will be accommodated within the existing Town boundary through the development of almost 14,000 additional residential units over time. These residents will need the local services and amenities that result in a livable community, including schools, recreation, employment, and a robust multi-modal transportation network. The expected growth and development will create a significant need to manage the existing transportation system and to determine what

improvements or mitigated measures on the transportation network would need to be completed to accommodate the anticipated growth.

The priorities and Implementation Plan that comprise the final section of Connecting Cochrane were developed understanding that a population of 40,000 is expected within 20 years (by 2037) and the strongest growth is expected to take place in the short- and medium- term horizons, with 3 – 5% growth per year in the next 20 years. Figure 2-1 illustrates the historic and projected populations for the Town of Cochrane based on work completed for the Growth Management Strategy (2013).

Figure 2-1: Town of Cochrane - Historic and Projected Population



Source: Town of Cochrane Growth Management Strategy (2013)

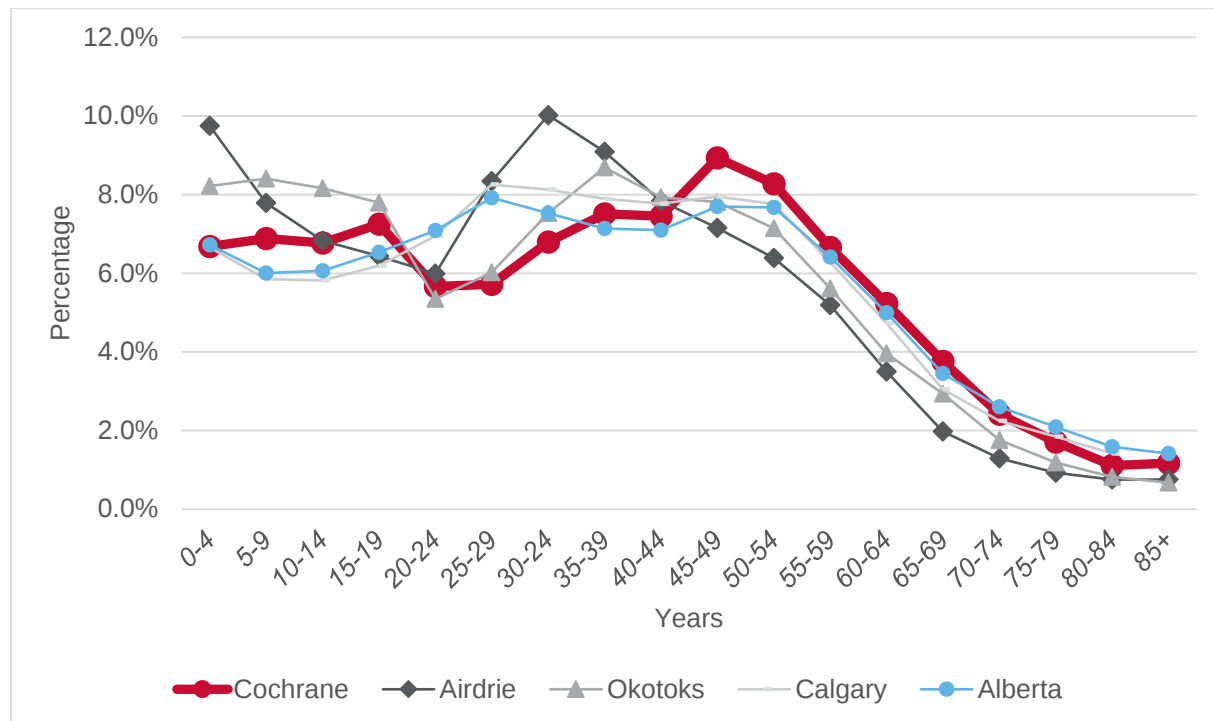
Age profiles and household occupancy rates for Cochrane and nearby municipalities based on the 2011 Federal Census data¹ are illustrated in Figure 2-2 and Figure 2-3 respectively. Cochrane's age profile in 2011 had a high representation of people in the 45 – 54 age range compared to other nearby municipalities and to Alberta. The median age of Cochrane was 38 years with 79% of the population over the age of 15; however, there was a 'hollowing' of the age profile between 20 and 34. This may indicate

¹ 2016 Federal Census Data complete detail not available at time of report

that the residents that are being attracted to Cochrane are typically established adults. This is supported by the low percentage of children under the age of four. With an average household occupancy rate of 2.47 people per household and 37% of households having 2 people, Cochrane had a high rate of adult-only households compared to other Alberta communities. For households with children, a larger percentage was between 10 – 19 years of age than were under 10.

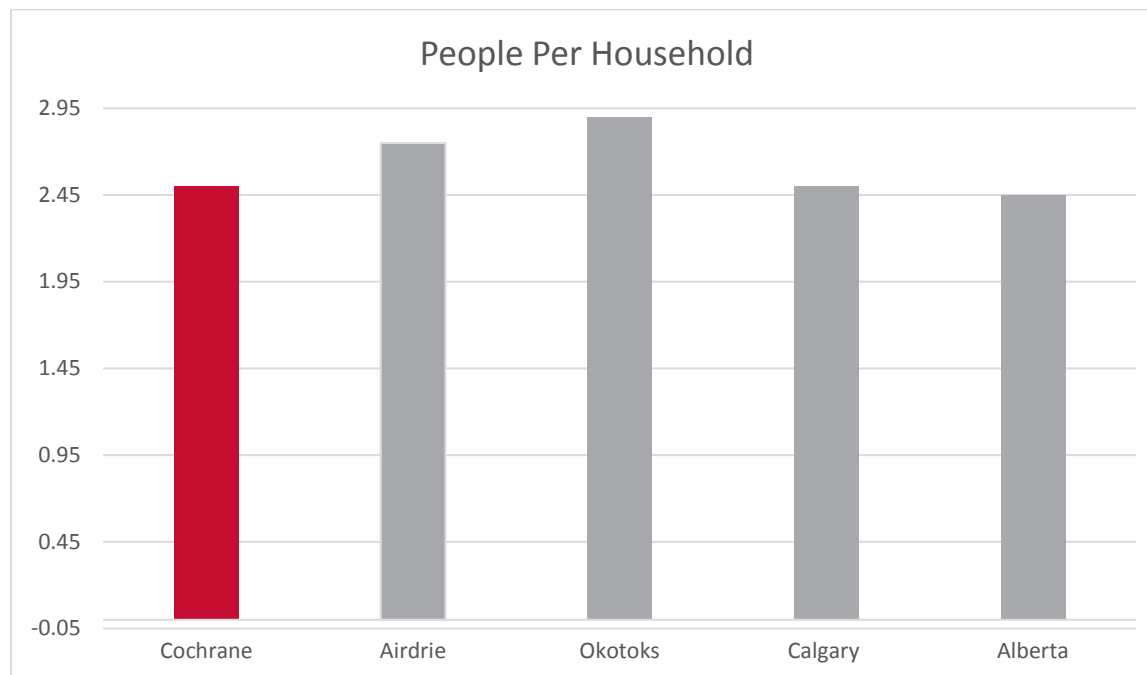
The age and household demographics suggest that it is important to consider older adults who may be nearing retirement as part of transportation planning, as well as the needs of older children and teens. Both user groups would benefit from more transportation modal options that would decrease their dependency on driving and increase their mobility. Such modal options include providing more opportunities for walking, cycling and transit.

Figure 2-2: 2011 Age Profiles in Alberta Communities



Source: Statistics Canada, 2011 Census

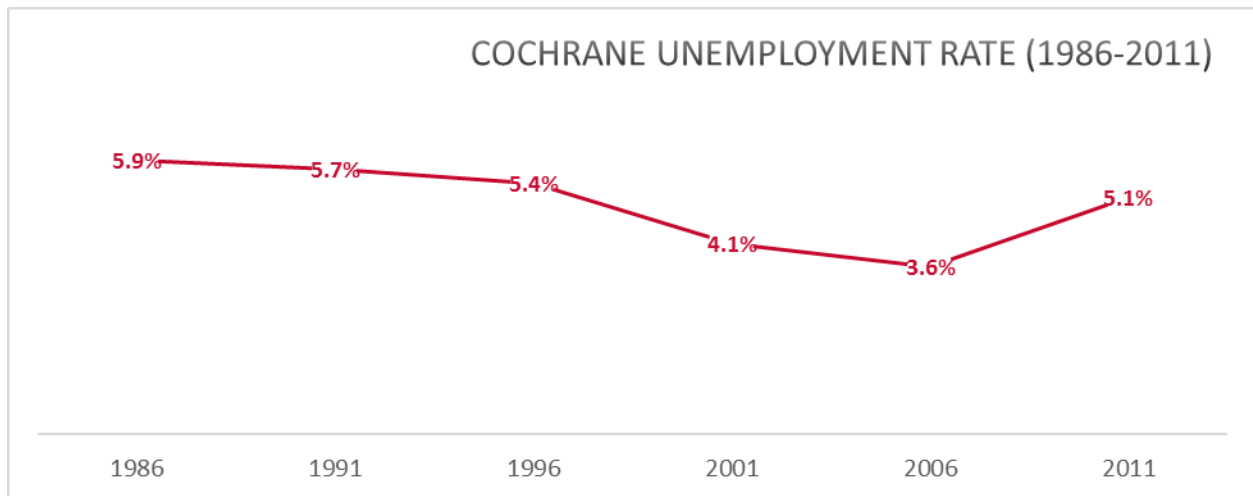
Figure 2-3: 2011 People per Household in Alberta Communities



Source: Statistics Canada, 2011 Census

2.1.2 Employment

The highest traffic volumes in most communities are experienced during the morning and afternoon peak hours. These are associated with commuter work trips, and are affected by how many people work, where they work, and how they get there. Like most of Alberta, Cochrane has historically had average labour participation rates and low unemployment rates. Labour participation rates reflect the percent of working-age population (between 15 to 65 years old) that are employed. The most recent data available for the Calgary Region shows that unemployment has increased somewhat; however, in 2011, the labour force in Cochrane was around 14,000 people with an unemployment rate of around 5%. Unemployment rates from 1986 to 2011 are illustrated in Figure 2-4. Labour force participation in Cochrane is 76%; this is slightly high compared to Alberta but lower than nearby Airdrie (80%). Interestingly, 7.8% of Cochrane employees work from home; this is higher than 7.4% for Alberta and substantially higher than Airdrie (5.5%) and Calgary (5.8%). As the number of people working from home increases, the number of peak hour trips generated by residential neighbourhoods tends to decrease.

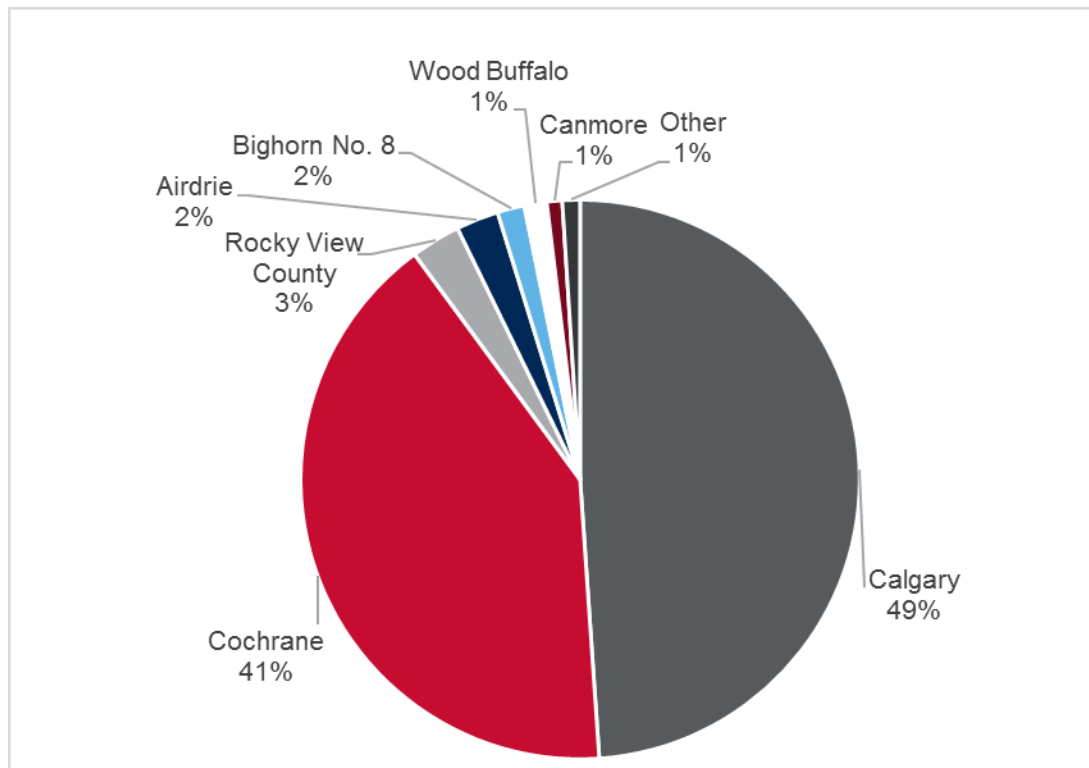
Figure 2-4: Cochrane Unemployment Rate

Source: Statistics Canada, Census Data / National Household Survey (1986 – 2011)

Many people living in Cochrane commute to nearby Calgary. At the same time, Cochrane serves as a local destination for work. This means that the transportation network must serve longer-distance commuters commuting out of the Town in the morning and returning home in the afternoon; a smaller population of residents that both work and live within Cochrane; and some residents of other communities that commute into Cochrane in the morning and return home in the afternoon. As Cochrane grows, these general patterns are expected to stay true, although the differences between the three groups are expected to decrease over time as the number of local jobs grows.

For residents that do have a fixed workplace address outside of their home, around 40% work within Cochrane and almost 50% commute to Calgary. The remaining 10% work in areas distributed through the surrounding municipalities, with a small percentage (< 2%) working in remote locations. Figure 2-5 illustrates the place of work for Cochrane residents.

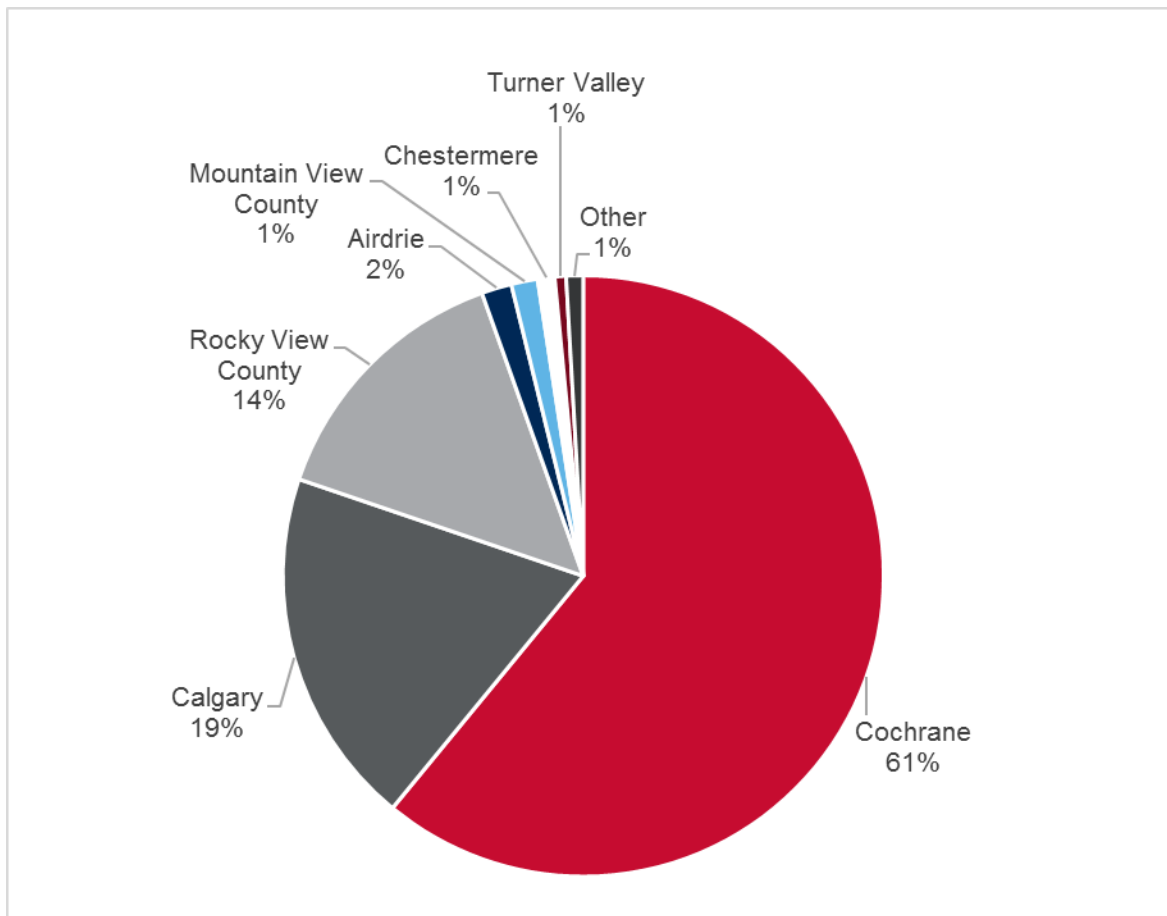
Figure 2-5: Commuting Destinations for Cochrane Residents (2011)



Source: Statistics Canada, 2011 National Household Survey

Cochrane acts as a local employment centre for Cochrane residents and the surrounding areas. In 2011, there were about 5,000 jobs in Cochrane. Around 60% of these employees also lived in Cochrane. The remaining 40% of jobs were held by people who commuted to Cochrane from the surrounding area, with almost 20% coming from Calgary and almost 15% coming from throughout RVC.

Figure 2-6: Place of Residence for Employees Working in Cochrane (2011)



Source: Statistics Canada, 2011 National Household Survey

2.2 Land Use and Neighbourhoods Profile

Cochrane is geographically complex; topographical and man-made features define Cochrane's neighbourhoods, linking the Town to the landscape in a unique way. These features create opportunities and barriers for the transportation network and have influenced the urban fabric of the Town.

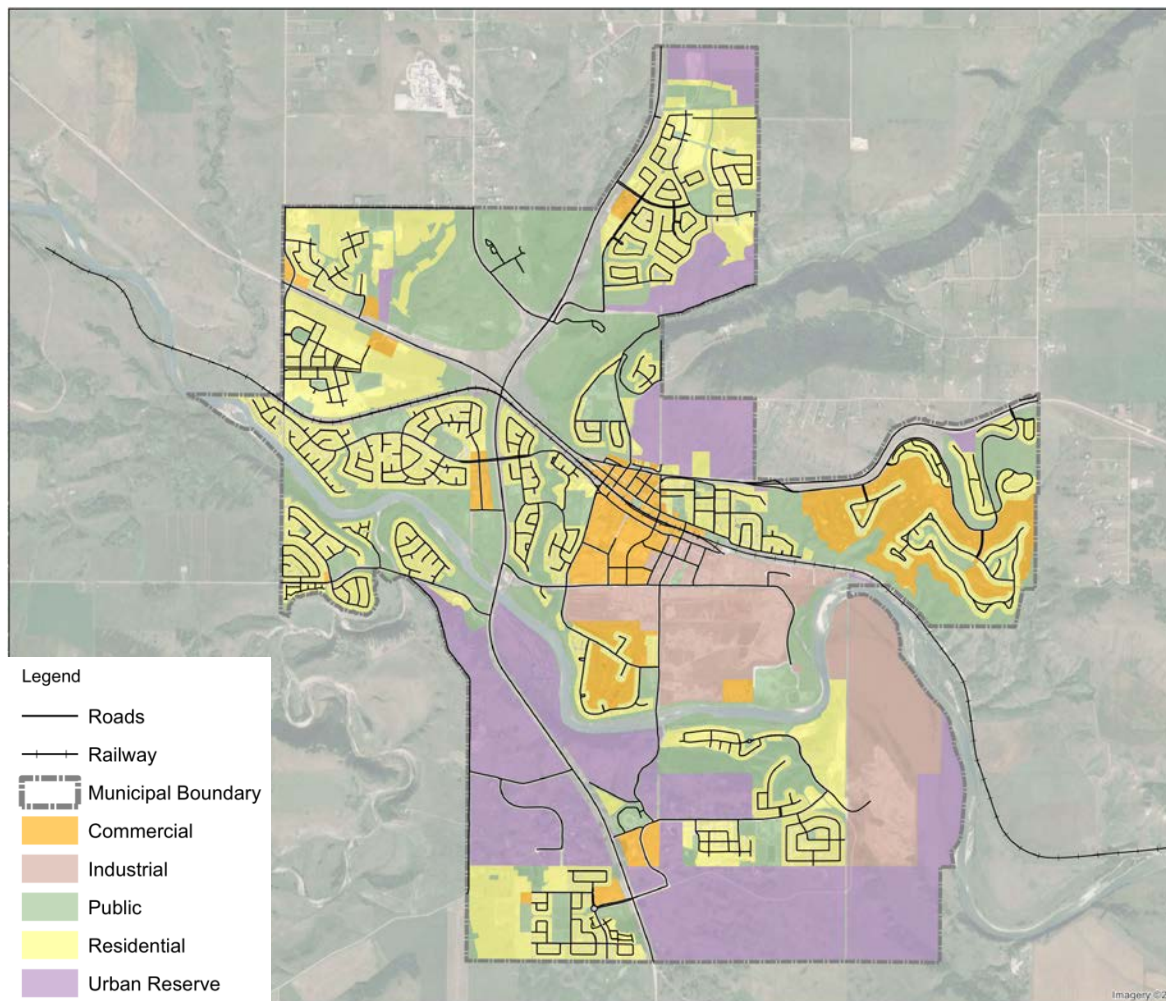
- Highway 1A
- Highway 22
- CP Rail
- Bow River
- Big Hill Creek and Escarpment
- Jumping Pound Creek

The key features of the existing neighbourhoods and land uses, along with how they are expected to evolve in the future, are described in more detail below.

Existing Neighbourhoods and Land Use

The existing land use in Cochrane is illustrated in Figure 2-7.

Figure 2-7: Cochrane Existing Land Use Zoning



Services & Amenities. Cochrane's commercial core is primarily in Historic and South Downtown, which supports most of the Town's services and amenities. The Historic and South Downtown (Quarry) extends from Highway 1A to the north, Sixth Avenue to the west, Ross Avenue to the east, and Griffin Road at the southern limits. Downtown contains restaurants, specialty shops, financial services, entertainment destinations, tourist services, and other civic amenities. The area of Downtown north of the rail corridor is the historic centre of Cochrane, with many of the buildings fronting the sidewalk, in compact lots, and on a tight grid network. Several businesses are located on 1st Street West or on streets radiating north from it. South of the rail corridor, land uses support larger format businesses, and it should be noted that the larger lot sizes and increased surface parking that are needed by these businesses create longer travel

distances, therefore favouring automobile travel. Outside of Downtown, there are small pockets of commercial development, including West Side Drive (primarily hotel / motel and restaurants services), and highway-based commercial developments in the neighbourhoods of River Heights, Fireside, and Heritage Hills. Small neighbourhood commercial pockets also exist in Sunset Ridge and Bow Ridge.

Schools. Cochrane has all levels of educational facilities. Most schools, including Mitford, Glenbow, Elizabeth Barrett Elementary, Holy Spirit Catholic School, Ecole Notre-Dame Des Vallees, Manachaban Middle School, and Cochrane High are within proximity (2.5km) to the Downtown core. Bow Valley High School, St. Timothy's School, RancheView School and the Fireside School are in more suburban locations within Cochrane's residential neighbourhoods.

Recreation. Recreational, cultural and natural assets in the community include smaller community parks, as well as larger regional park facilities. There are over two dozen parks and over 30 kilometres of paved pathways. Some of the recreational attractions in Cochrane include the Spray Lake Sawmills Family Sports Centre, Cochrane Lions Rodeo Grounds and the Zero Gravity Skateboard Park. Cochrane is home to the historic 1881 Cochrane Ranche Site, which today serves as a multi - purpose venue for many community events and activities. Also within the Town's boundary in the northwest is the Agricultural Society land which hosts several recreational events throughout the year.

Industrial & Employment Areas. A significant portion of employment is in or around the Town's Downtown, in an area bounded by Highway 1A and the Bow River. The Historic Downtown contains some smaller-scale office buildings, commercial, and retail uses. A business/light industrial park is located east of the downtown core. In addition to centralized employment areas, the Town also contains mixed use commercial / retail development in the emerging neighbourhoods. However, areas dedicated specifically to office/business park uses are limited, and generally are developed and integrated in conjunction with industrial land uses.

Industrial development is concentrated in relatively central locations. There is an existing industrial area south of Griffin Road that includes the Spray Lake Sawmill, which occupies roughly 40 hectares (approximately 100 acres), and gravel extraction areas just north of the Bow River. There is also another large industrial area south of the Bow River on the east boundary of the Town, which primarily contains gravel extraction areas and open space. The gravel extraction areas and sawmill (north of the Bow River) generate noticeable truck traffic in the industrial areas south of the railway tracks and directly north of the Bow River.

Residential. Residential areas are primarily located adjacent to the Downtown core, to the north, west, east and south. Cochrane is predominately a single-family community (69% of housing stock is single family detached) and in general, most residential neighbourhoods are developed on a typical mid-century suburban road network (high usage of cul-de-sacs). As Cochrane becomes more populated, new and proposed developments are increasing the range of housing options for residents and providing a more "modified grid" road network typology. Emerging residential neighbourhoods and their expected full build out populations based on the Cochrane Growth Management Strategy are illustrated in Figure 2-8. The areas shown in this figure are based on the names of the approved Area Structure Plans.

Figure 2-8: Expected Population in Area Structure Plans & Neighbourhoods



Source: Cochrane Growth Management Strategy (2013)

West Ridge is now known as "Fireside"

Cochrane West is now known as "Heartland"

Future Growth and Neighbourhood Development

Over the next 43 years, the Town is expected to add approximately 33,000 people and 11,000 jobs, distributed over existing and new neighbourhoods. Population growth is expected to be focused outside of the core, especially north of Highway 1A (Heritage Hills and Sunset Ridge) and south of the Bow River (River Heights & West Ridge), while employment growth is expected to be focused downtown and in south Cochrane. The anticipated pattern of growth for population is illustrated in Figure 2-9 and for employment is in Figure 2-10.

Figure 2-9: Existing and Future Population Density by Neighbourhood

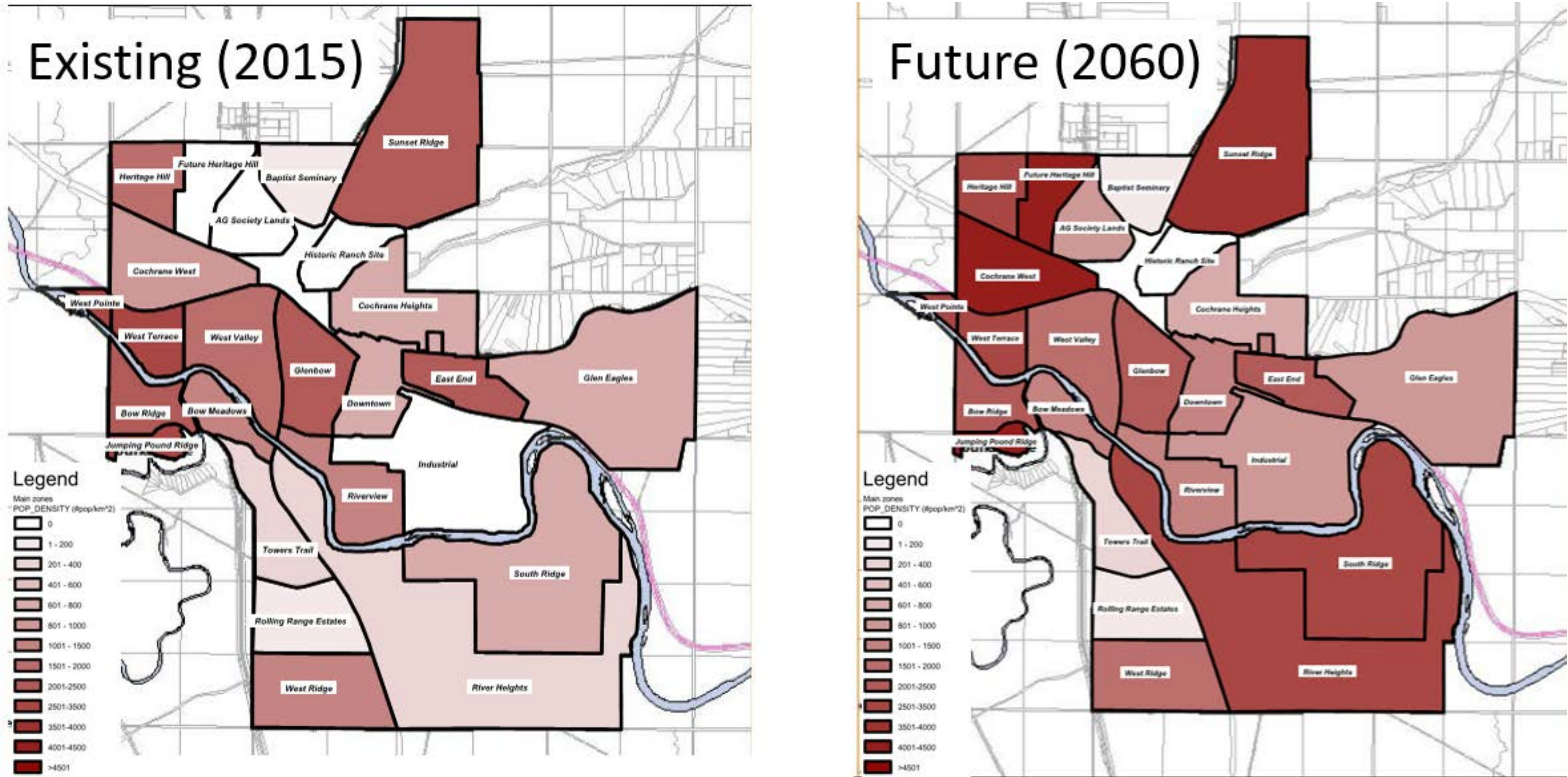
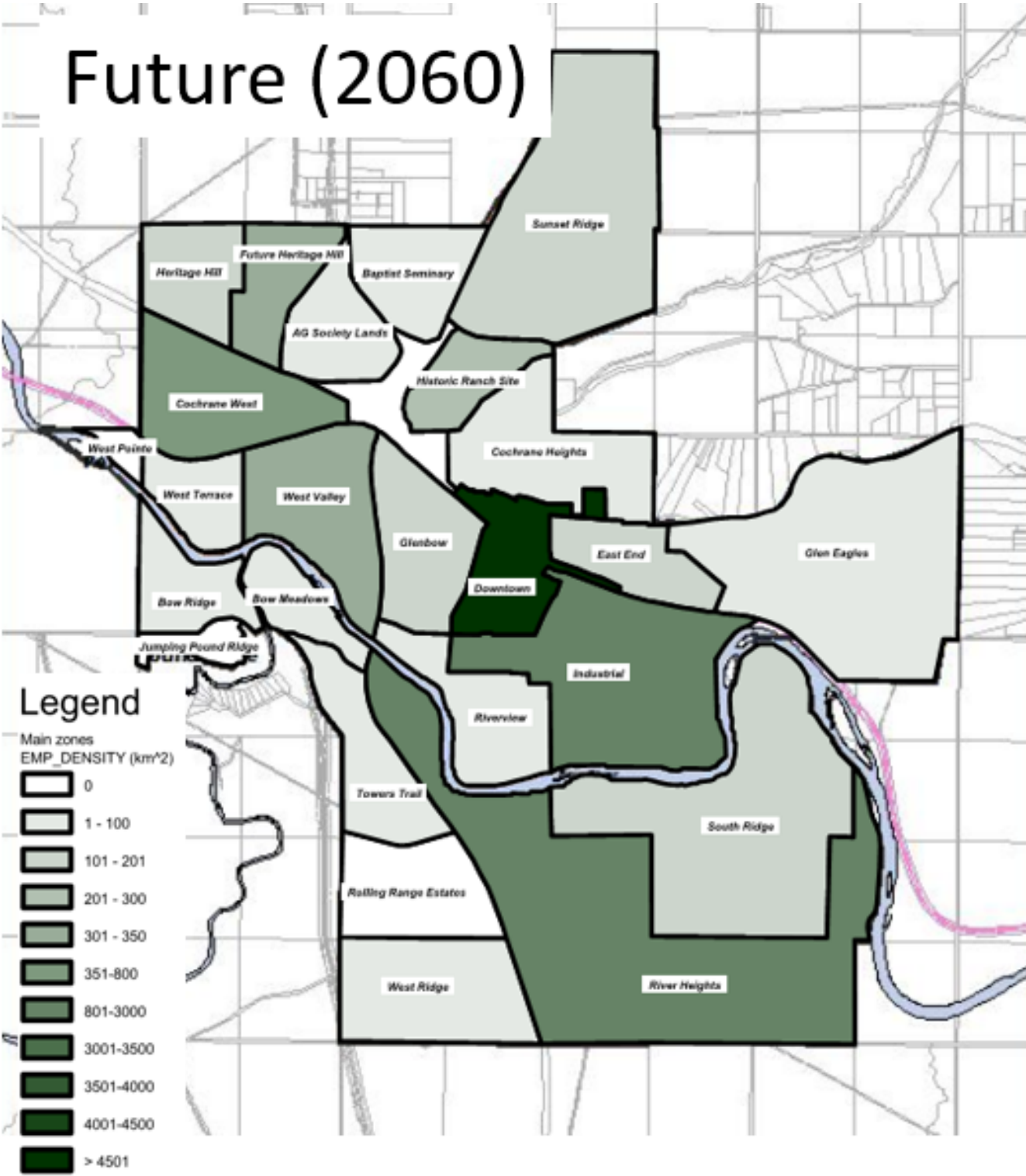
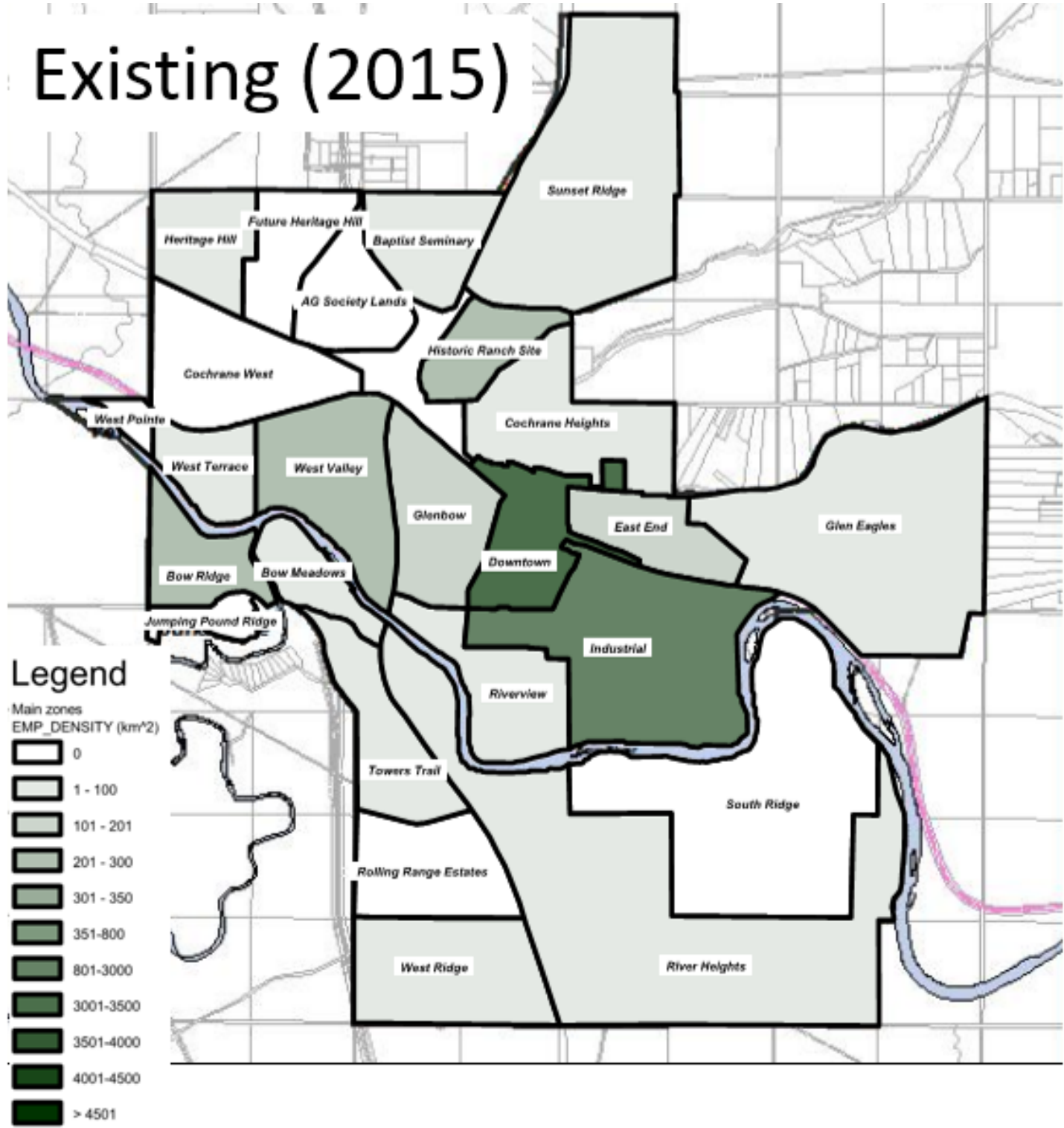


Figure 2-10: Existing and Future Employment Density by Neighbourhood



2.3 Transportation Profile

Cochrane relies on a network of municipal roads connecting to a spine of provincial highways. Existing travel patterns have been influenced by the shape of this network, the availability of non-auto modes of transportation, and the demographic and land use profiles discussed above. As the Town grows and land use patterns develop, existing transportation systems will also evolve.

Where people start, and end their trips (called origins and destinations), distance travelled, and the mode they choose to use determines how they use transportation infrastructure and services. In total, these patterns determine the demand on the system and what investments are required to maintain mobility. This relationship is not linear, however, because the infrastructure, services, and programs provided also influence mode choice. Connecting Cochrane must balance recommendations that invest in modes of transportation to support existing and anticipated future travel patterns, while also setting the course for more diversity in transportation choices to support a vibrant and livable community.

This section discusses the existing transportation profile in Cochrane, as well as anticipated shifts in travel behaviour over the next 43 years.

2.3.1 Existing Mode Share

The available mode share data for Cochrane is based on the Statistics Canada National Household Survey (2011) and applies to trips to work by Cochrane residents. This is an important component of all trips, especially during the morning and afternoon peak hour. Work trip mode splits are not necessarily reflective of mode splits for other trip purposes. Mode shares for walking and cycling tend to be highest where trip distances are less than 5 km.

Modes of Transportation

A 'mode' of transportation is a means by which people or goods move from one place to another. For the purposes of planning, the following four transportation modes are typically considered:



Walking: Walking is the most fundamental form of transportation. It is part of every trip, whether that trip is made by car, transit, or bicycle. Walking can be a viable primary mode of transportation for trips less than 2 km and has health and social benefits.



Cycling: Cycling can be a healthy, low-cost and convenient form of transportation for trips between 3 km - 5 km. For most people, a 5 km trip can be made by bicycle within 30 minutes.



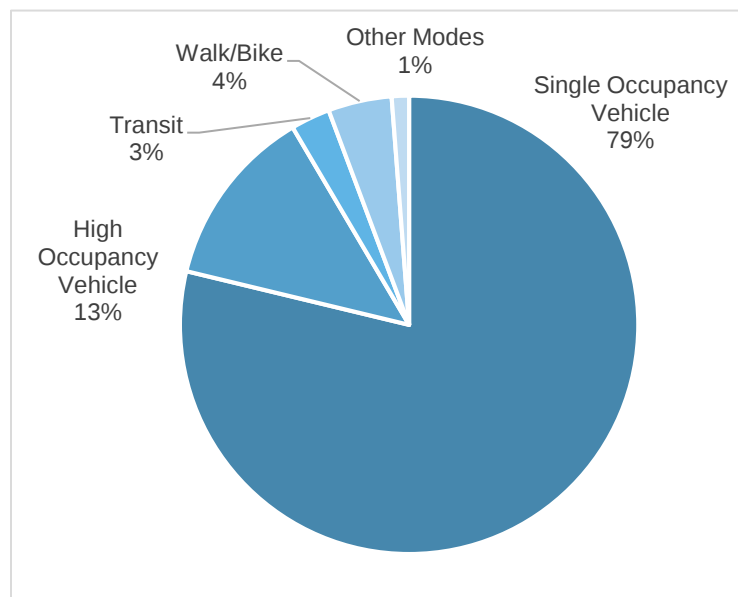
Transit: Transit includes private or publicly operated services that transport multiple people. In many communities, public transit agencies operate bus service that can be used over a wide variety of distances and for different trip types. Transit systems provide mobility for those than are unable or reluctant to drive, as well as enhancing transportation choice for all travellers.



Road: Although roads typically provide the physical space for multiple modes of transportation, in this case the 'road mode' includes travel by private automobile (for both drivers and passengers), as well as goods movement by truck. This is the primary mode of transportation in most Canadian cities.

Mode split for Cochrane residents travelling to work is illustrated in Figure 2-11. In Cochrane, almost 50% of residents work in Calgary, which is difficult to access without driving. Most trips to work are by automobile at 92%. Around 13% of all work trips used high occupancy vehicles, indicating that carpooling is the highest used mode after single occupancy vehicle use. Local trips for school, shopping, recreation and other purposes may have a higher non-auto mode share. Cochrane's mode split is similar to other comparable sized municipalities in Alberta, as shown in Figure 2-12. Note that St. Albert, which has both local transit service and regional service to Edmonton, has a higher transit mode share at approximately 6%.

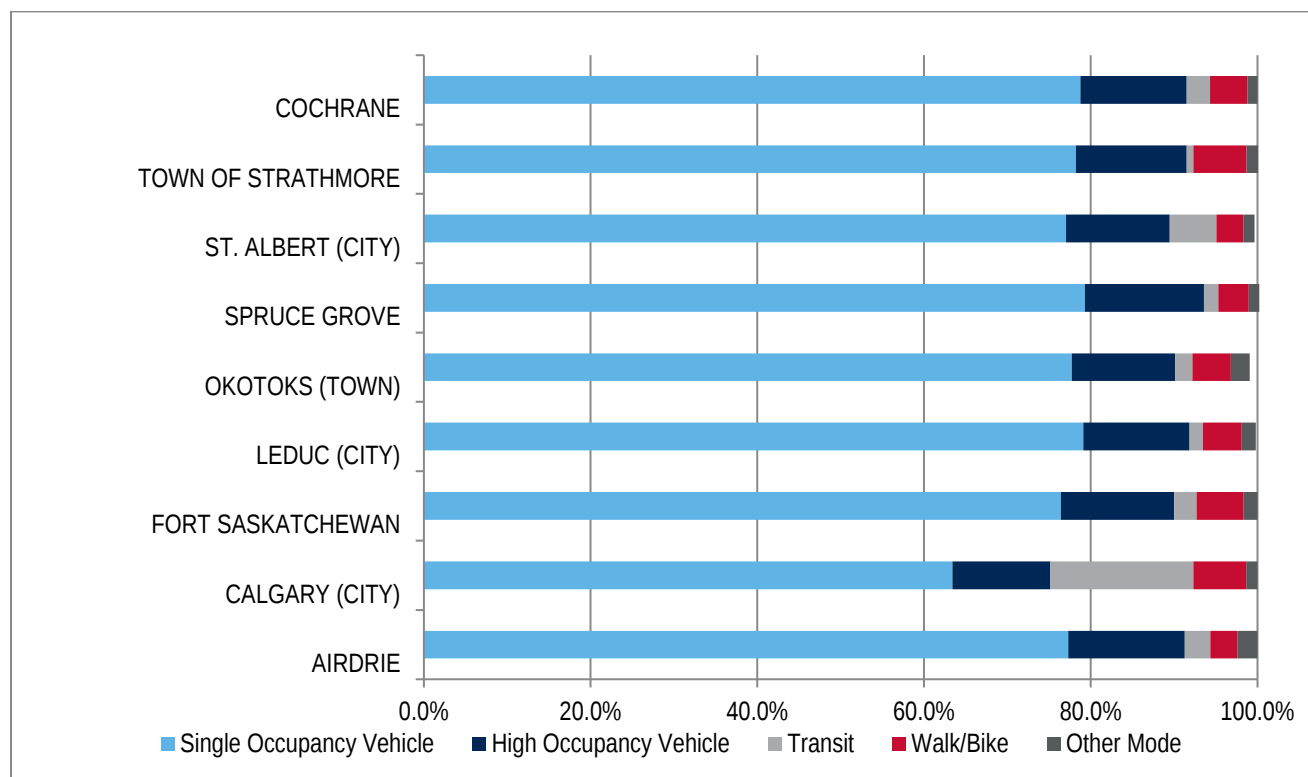
Figure 2-11: Town of Cochrane Mode Split, Trips to Work (2011)



Source: Statistics Canada, National Household Survey 2011²

² 2016 Federal Census Data complete detail not available at time of report

Figure 2-12: Mode Split by Municipality for Trips to Work (2011)



Source: Statistics Canada, National Household Survey 2011

All modelling work completed for Connecting Cochrane assumes that mode splits will stay consistent over time. With investments in active transportation infrastructure and transit, the proportion travelled for these modes can be expected to increase. The intensity of this increase will depend on the intensity of the investment, as well as the success of supporting programs and policies. Further, greater mode shift to active transportation can be expected for trips that are less than 5 km in distance. The modelling work evaluated the worst case – “no-change” scenario. It can be expected that with improvements and support programs for non-vehicular modes, the transportation network should result in a decrease in vehicle kilometres travelled resulting in less traffic on the overall network.

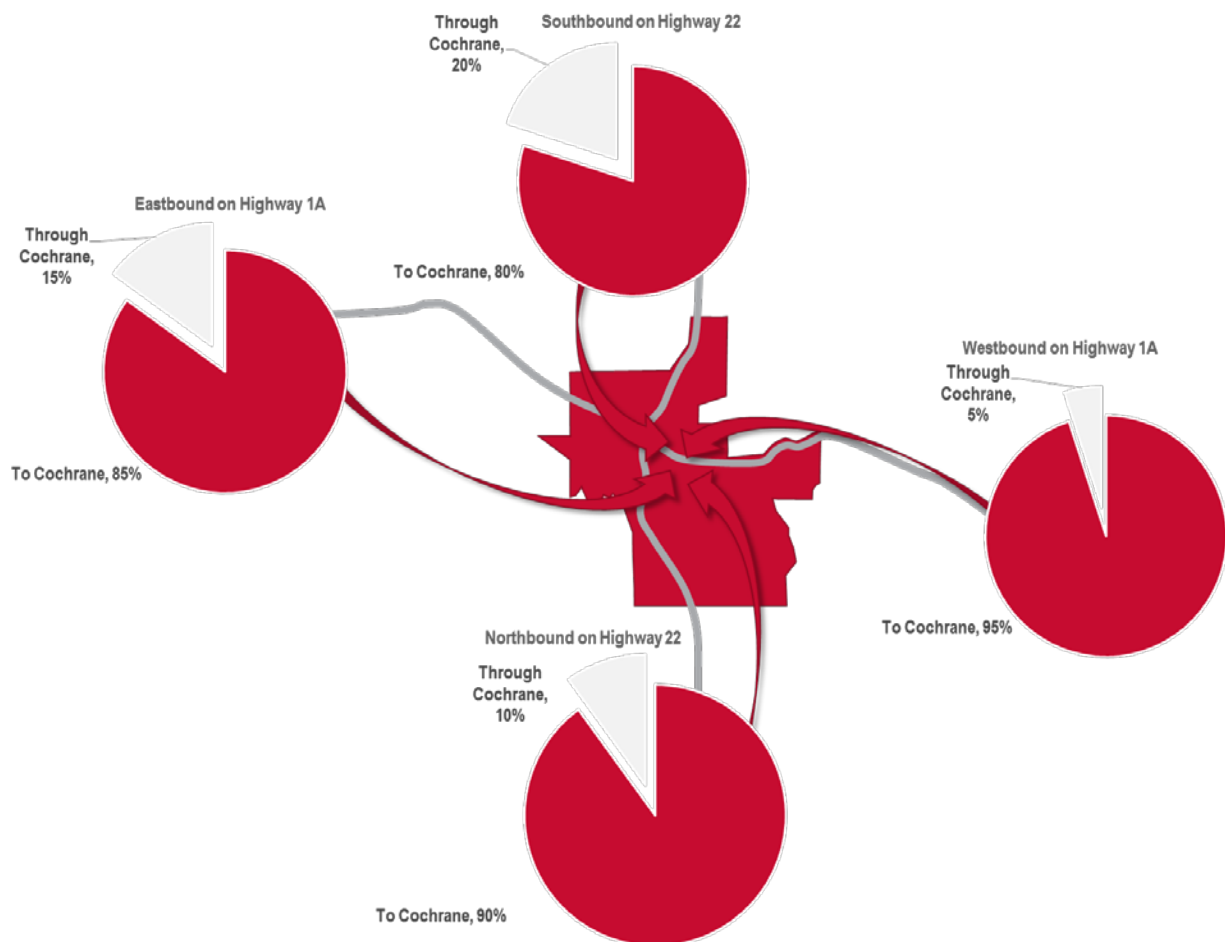
2.3.2 Destinations and Travel Patterns

Currently, travel in Cochrane is focused around travel to downtown and travel to external destinations. Based on the results of the transportation demand model, almost half of vehicle trips travelling on roads within Cochrane are between the Town and the surrounding area. This pattern is reflective of the land use and employment patterns in Cochrane, which were discussed in Section 2.2. As Cochrane develops and the number of residents and jobs increase locally, the percentage of trips travelling between Cochrane and the surrounding region is expected to drop from approximately 45% in 2017 to approximately 40% by 2060.

Highway 1A and Highway 22 are the highest volume roadways in Cochrane and the results of public consultation indicate that congestion on the highways is a concern for residents. Because these highways are provincial roadway links, it can be expected that traffic on these roads are regional or provincial in nature and travels through the Town without stopping into local attractions. The highways carry most of the through traffic in Cochrane; however, the through-trips are a minority of all highway traffic. Around 5% of all peak-hour vehicle trips travelling on the Highway within Cochrane are through-trips.

As illustrated in Figure 2-13, most trips entering Cochrane on Highway 1A or Highway 22 are destined for Cochrane. For vehicles entering westbound on Highway 1A, approximately 95% are destined within Cochrane. Approximately 85% of vehicles entering eastbound on Highway 1A are destined within Cochrane. Highway 22 has slightly more through trips than Highway 1A, with approximately 90% of northbound trips and 80% of southbound trips entering from the north being destined internally to the Town, resulting in 10 to 20% through traffic.

Figure 2-13: Existing Highway Travel Patterns



Approximately 55% of trips that start in Cochrane, stay in Cochrane – that is, around half of trips generated in Cochrane during the peak hour can be considered internal trips. This is expected to increase to approximately 60% by 2060. These trips may use the local road network or local roads in combination with the highways to travel between neighbourhoods in Cochrane. The downtown neighbourhood is the largest trip generator in Cochrane, with almost half of all internal trips within Cochrane either starting or ending in the downtown. As Cochrane grows and the land use diversifies, more and more trips will be generated by other areas of Cochrane. Substantial residential development in River Heights and South Ridge will drastically increase trip generation in these neighbourhoods. Increasing employment density in River Heights will also contribute to increasing trip generation by this neighbourhood. With all anticipated changes in place, based on the forecasts from the Growth Management Strategy, travel within Cochrane is expected to be much more diverse, with the percentage of trips starting or ending in downtown to decrease to approximately 22% by 2060. This means that providing for neighbourhood-to-neighbourhood connectivity will be increasingly important.

Currently within Cochrane, trip generators are distributed somewhat uniformly. Figure 2-14 illustrates the trips generated (both origins and destinations) by each neighbourhood in Cochrane. The downtown area

is the most significant trip generator, attracting and producing more trips than other areas. Secondary destinations include some of the more established residential and industrial areas surrounding downtown. Figure 2-15 shows anticipated trip generation by neighbourhood in the future. Over time, the intensity of trips in the downtown and industrial area is expected to increase substantially, largely due to the increasing number of jobs. At the same time, growth in jobs and employment south of the Bow River is expected to increase the total number of trips in and out of this area. By 2060, the River Heights area is expected to generate the highest number of trips in the peak hours in Cochrane. Providing multi-modal connectivity to and from this area will be an essential element of the recommended transportation plan.

Figure 2-14: Existing Total PM Peak Hour Trip Generation by Neighbourhood (2015)

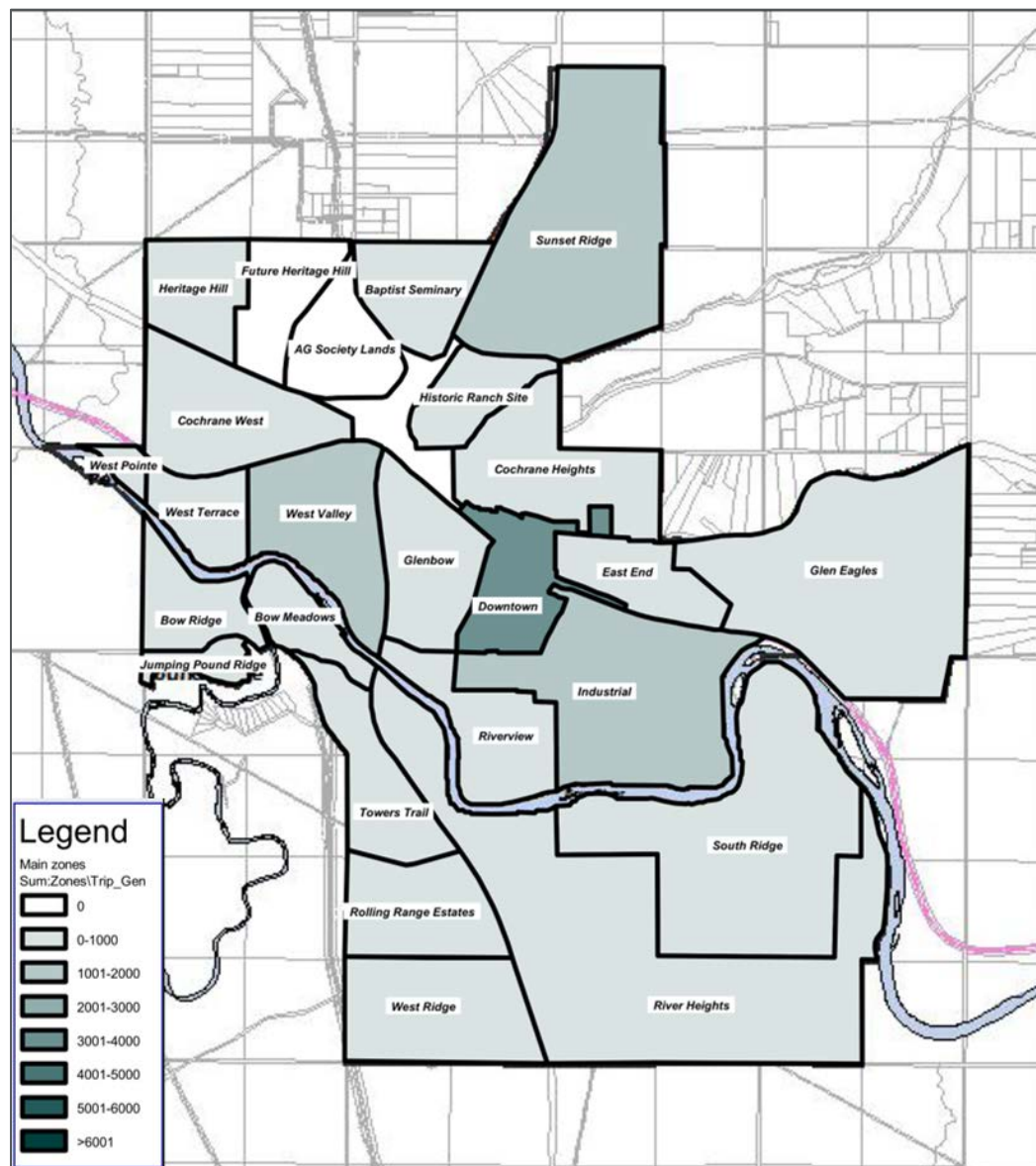
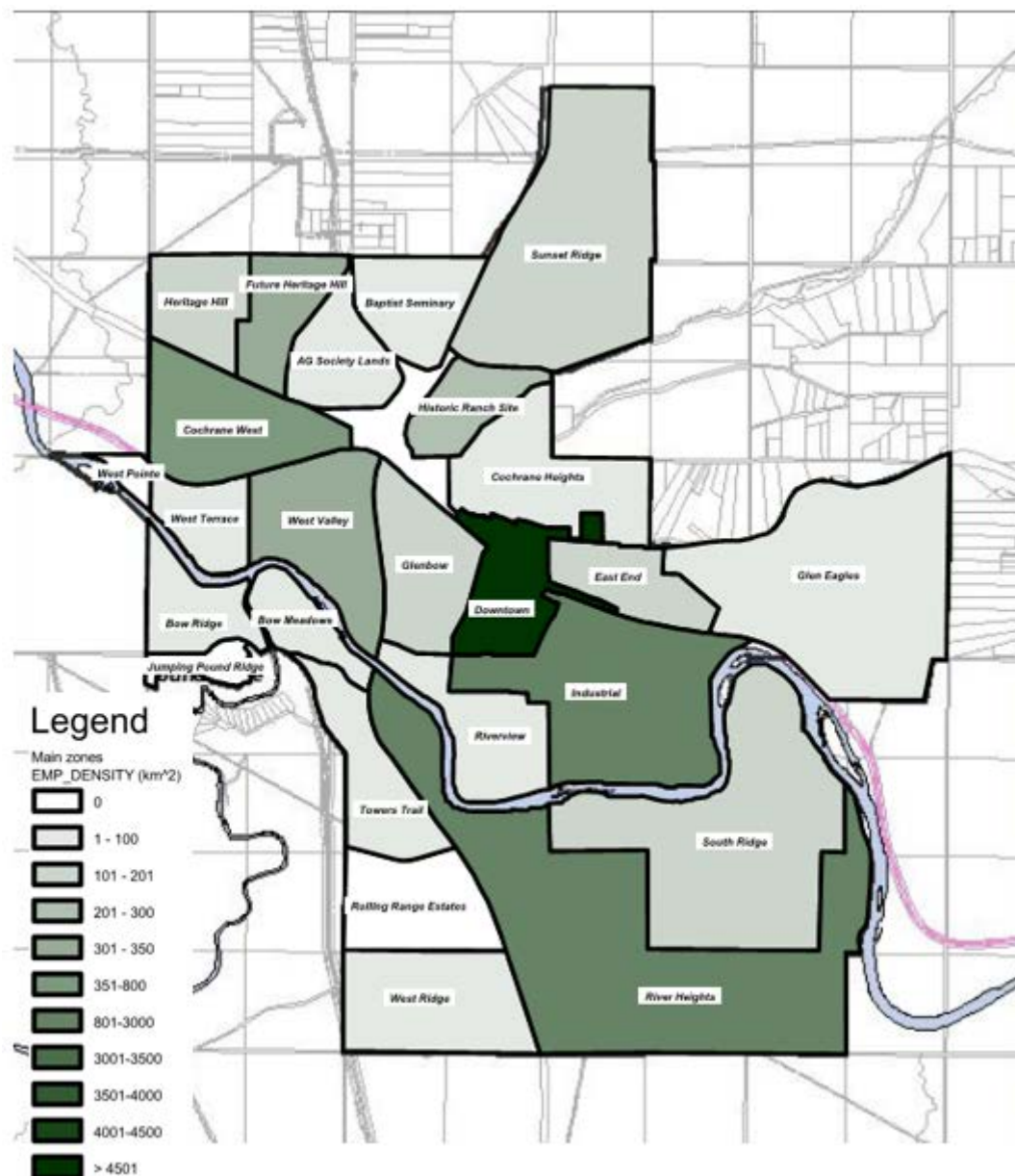


Figure 2-15: Forecast Total PM Peak Hour Trip Generation by Neighbourhood (2060)



In summary, as Cochrane evolves, highway links will continue to play an important role in transportation within Cochrane; however, over time, local travel between neighbourhoods will increase in importance relative to regional travel. This will influence the need to invest in all modes of local travel. Therefore, it is necessary to develop a transportation plan that provides multiple routes and additional capacity within Cochrane. Due to the growing trip generation, south of the Bow River and in downtown, crossings of the Bow River and people-moving capacity within the downtown will be important. Finally, as the percentage of locally-focused trips increase, there is an opportunity to shift some short distance trips (<5km) from driving to walking or biking, in addition to opportunities for regional and local transit.

2.4 Policy Context

The Town has developed a system of planning documents, policies, and guidelines that guide decision making and service delivery across all aspects of municipal life. The intent is for the Transportation Master Plan to align with existing Town policies and plans.

- **Transportation Master Plan | 2003** – The 2003 Transportation Plan was prepared to support the rapid growth on the transportation network, and provides an expanded overview of the Town of Cochrane and the growth boundaries identified in the 2001 Growth Review. The model was calibrated to the 2001 conditions prior to including network and land use assumption for the 2006 and 2018 horizon. The recommendations from the 2003 Transportation Plan support an approximate population of 32,000.

Recommendations accomplished as part of the 2003 Transportation Master Plan include:

- o Implement traffic signals along Griffin Road at Highway 22, 5th Avenue and Centre Avenue;
 - o Implement traffic signals at Centre Ave / 1st Street;
 - o Implement traffic signals at Centre Avenue / Railway Street;
 - o Implement traffic signals at George Fox Trail / Highway 22;
 - o Rail crossing closure at 4th Avenue;
 - o Four lane Griffin Road from Highway 22 to River Avenue;
 - o Closure of existing River Height Drive intersection and relocated 500m south on Hwy 22;
 - o Extend Centre Avenue to Griffin Road;
 - o River Avenue bridge closure for future use as a pedestrian crossing and emergency access.
- **Transportation Master Plan Update | 2009** - The 2009 Transportation Update provided an update to the 2003 Transportation Plan. The Plan introduced transit as part of the comprehensive transportation strategy for the community. The Update included revised land use data as well as regional and local network improvement assumptions. The 2009 Plan provided support for a Town population of 49,000. Recommended improvements that were completed as part of the 2009 Transportation Plan include:
 - o Centre Avenue / 1st Street Signalization;
 - o Highway 22 / River Heights Drive (James Walker Trail) Signalization;
 - o Open two-lane CPR at-grade crossing at Centre Avenue;
 - o RancheHouse Road restriction to Right-in Right-out;
 - o Installation of traffic signals at Centre Avenue / Highway 1A;
 - o Installation of traffic signals at Gleneagles Drive / Highway 1A;
 - o Installation of traffic signals at Centre Avenue / Griffin Road.
- **Municipal Development Plan | 2008** – Many of the principles of the Plan and supporting goals around growth management, environmental stewardship and economic viability rely on local and regional transportation connections for pedestrians, cyclists, and eventually transit users. A well-

organized and maintained transportation system is a critical foundation for building and sustaining a livable community. The transportation policies of the Municipal Development Plan (MDP) emphasize the need for a network that efficiently moves traffic, has improved regional connections, has a strong pathway network, and has strong integration of walking, cycling, and local and regional transit into the larger transportation network

- **Growth Management Strategy | 2013** – The Growth Management Strategy is a non-statutory planning document that aligns other plans, policies and strategies for the orderly and appropriate growth of Cochrane, as identified in the visions and objectives of the Cochrane Sustainability Plan and Municipal Development Plan.
- **Cochrane Social Policy | 2016**—Cochrane recently adopted a Social Policy. Through the policy, the Town is committed to understanding the impact the municipality's services and delivery can have on the wellbeing of its residents and what factors are needed to create a strong healthy community. The policy focuses on many key objectives that are relevant to Connecting Cochrane, and include:
 - **Excellence of Municipal Service:** *Support Town Administration to use best practices to reduce and prevent inequalities in our community by creating a person-centered system of high quality services and programming for all residents of Cochrane.*
 - **Increased Efficiencies/Effectiveness:** *Utilizing an Equity and Inclusion lens through strategic and coordinated planning for land use, transit, public health, housing, culture and recreation and immigrant services, will positively influence the quality of life and community well-being in Cochrane.*
 - **Place-Based Approach:** *Using local perspectives, knowledge and resources to provide coordinated, locally-relevant responses to issues that are seen to be too complex and long-term to have simple solutions implemented by any one stakeholder*
- **Cochrane Sustainability Plan | 2009** – The Sustainability Plan sets out a 2029 vision of a transportation system that is serving a community with higher population densities, and where residents have more mobility options. Promoting walking, cycling, and particularly transit are seen as key methods to achieving the goal of reducing greenhouse gases by 30% by 2029 from 2009 levels. The Plan envisions a road network that is well connected, with single-use roadway corridors evolving into multi-use corridors, and a more connected and comprehensive pathway system that is used year-round. In addition, the Plan seeks for 50% of the population to be located within 400m (or a 5-minute walking distance) to transit by 2029.
- **Integrated Downtown Action Plan | 2013** – The Integrated Downtown Action Plan provides a framework that ensures redevelopment takes place in a coordinated fashion enabling downtown to continue its transformation into a sustainable, diverse, and vibrant place for both residents and visitors. The study encompasses several neighbourhood districts and priority plans established by the Town.
- **Transit Feasibility Study | 2016** – In 2016, the Town completed a transit feasibility study including staging of implementation and preparation of bus shelters and stops for routing. The intent was that the recommendations be used to support an amended application for GreenTRIP

Phase 1 funding to the Province of Alberta and set the stage for a phased introduction of local transit service, potentially beginning in the fall of 2018. Introducing local transit service in Cochrane will address many of the goals and principles of sustainability that have been endorsed by the Town of Cochrane. Local transit service is needed to provide mobility options for travel within Cochrane, particularly for people who are unable to drive, as well as connecting residents to regional bus service (e.g. existing private commuter services, possible future regional transit service).

Based on feedback from stakeholders, previous transit planning, existing activities, development and growth patterns, a network of five bus routes is proposed as an ultimate, long range transit plan. The equipment and infrastructure requirements inherent with this network will form the basis of an amended GreenTRIP application. This includes funds for the development of a downtown transit 'hub' for both local and regional service connections on lands now owned by the Town of Cochrane.

- **Bicycle Plan | 2012** – The Bicycle Plan seeks to make cycling a visible, attractive, and convenient alternative to driving in Cochrane. The Plan provides the Town with a proposed long-term bicycle network, as well as guidelines for selecting the type and design of bicycle facilities. The Plan also identifies actions, policies and programs to developing a bicycle culture, recommending easy and cost-effective projects that the Town can implement in short order to support both immediate and long term. The plan was presented to Council for information purposes only. The plan was developed based on a high-level overview of the Town's infrastructure, and would require more detailed evaluation to confirm placement of any bicycle infrastructures."
- **Open Space Master Plan | 2013** – The Open Space Master Plan identifies and defines short (1-5 years), medium (5-10 years) and long term (10-20 years) plans for park, outdoor recreation, open space and pathway development in the Town of Cochrane and outlines budget planning for operational and capital requirements for investment in existing and future parks, outdoor recreation, open spaces and pathways.
- **Land Use Bylaw | 2004** –The Land Use Bylaw regulates the use and development of land in the municipality, including stipulations for pedestrian corridors, walkways, and circulation, but lacks guidance on bicycle facilities and inclusion into development.
- **Area Structure Plans** – These plans provide guidance for the future development of specific neighbourhoods, 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 and include policies to support pedestrian and cyclist integration.
- **Neighbourhood Design Guidelines** – The Neighbourhood Design Guideline is in place to ensure neighbourhood plans are developed to enhance the community for the residents and visitors that use it. It aims to ensure accessibility for all users, and provides street definition while emphasizing the importance of spaces for walking and leisure.

- **Neighbourhood Plans** – These provide a finer level of detailed local planning setting local road networks, defining densities, outlining housing types, and identifying local parks and schools.

It should be noted that Area Structure Plans and Neighbourhood Plans are typically accompanied by Transportation Impact Assessments or other transportation work that help define the needs of the local transportation system, including detailed improvements to existing and future intersections. The recent outcomes of these approved plans, including any substantial transportation network recommendations have been integrated into Connecting Cochrane.

3 Transportation Networks

Cochrane is served by existing road, bicycle and pedestrian networks. For transit, there is a private commuter service between Cochrane and Downtown Calgary; however, there is no public transit service other than the Rocky View Regional HandiBus Society, which only provides service to those who meet their criteria. All the transportation networks face the same core challenges to connectivity, that is, that natural and man-made boundaries have divided Cochrane's neighbourhoods and made it difficult to provide a connected, resilient network. These features create opportunities and barriers for the transportation network and have influenced the urban fabric of the Town.

- **The Bow River** creates a natural barrier within the Town, with most existing development north of the river and significant proposed development to the south. While the river acts as a barrier, it also creates opportunities for recreation, to connect to nature, and to support east-west travel. The existing system of trails and pathways focuses on access to the Bow River.
- Topographic features, such as **escarpments and creeks** (Jumping Pound Creek, Big Hill Creek), shape neighbourhoods, create natural features, and create local and municipal barriers. They also create recreational opportunities and can be integrated with pathways to improve livability and create connections with nature.
- **Highway 1A** supports travel to and from Calgary and other regional locations; however, it also acts as a local barrier, creating congestion during weekend peak times and causing difficulty for north-south crossings by all modes. Historic downtown Cochrane is south of Highway 1A, and several schools and residential developments are north of the Highway.
- **Highway 22** supports north-south travel within the Town and between the Town and regional destinations; however, it also serves as a barrier to east-west travel due to the limited number and location of accesses. Highway 22 separates distinct neighbourhoods within Cochrane.

Canadian Pacific Rail has an active rail line running east-west through Cochrane. The rail line divides downtown Cochrane and causes congestion when a train passes through. Highway 22 is the only existing grade-separated crossing of the rail line however there are long term plans for additional grade separated crossings at Centre Avenue and 5th Avenue.

This section provides context about each of the existing transportation networks, including existing infrastructure, how the existing network performs based on existing travel patterns, and how future travel patterns are expected to change the performance of the network if only basic improvements are made. It also presents key information about barriers to travel for that mode.

3.1 Road Network

Cochrane has an existing municipal roadway network serving its neighbourhoods. The municipal road network provides connectivity to residences, businesses, and other destinations within Cochrane. The municipal road network largely connects to the highway network, with the provincial highway network acting as a central spine for most travel. From there, the highway network connects Cochrane to the surrounding area. Highway 1A (Crowchild Trail) is the shortest route from Cochrane to Downtown Calgary and the University of Calgary. Highway 22 connects to Highway 1(Trans-Canada Highway) south of

Cochrane. Highway 1 provides another key connection to Downtown Calgary to the east, and the mountains to the west.

There are a few existing challenges for Cochrane's road network. With anticipated growth, some constraints are expected to worsen while new constraints will appear. Analysis of the road network identified these key challenges, which are explored further below.

3.1.1 *Roadway Classification*

The Town of Cochrane currently has seven roadway classifications. They are:

- Highway;
- Arterial;
- Minor Arterial;
- Primary Collector;
- Secondary Collector;
- Local Road;
- Rural Roads (unpaved).

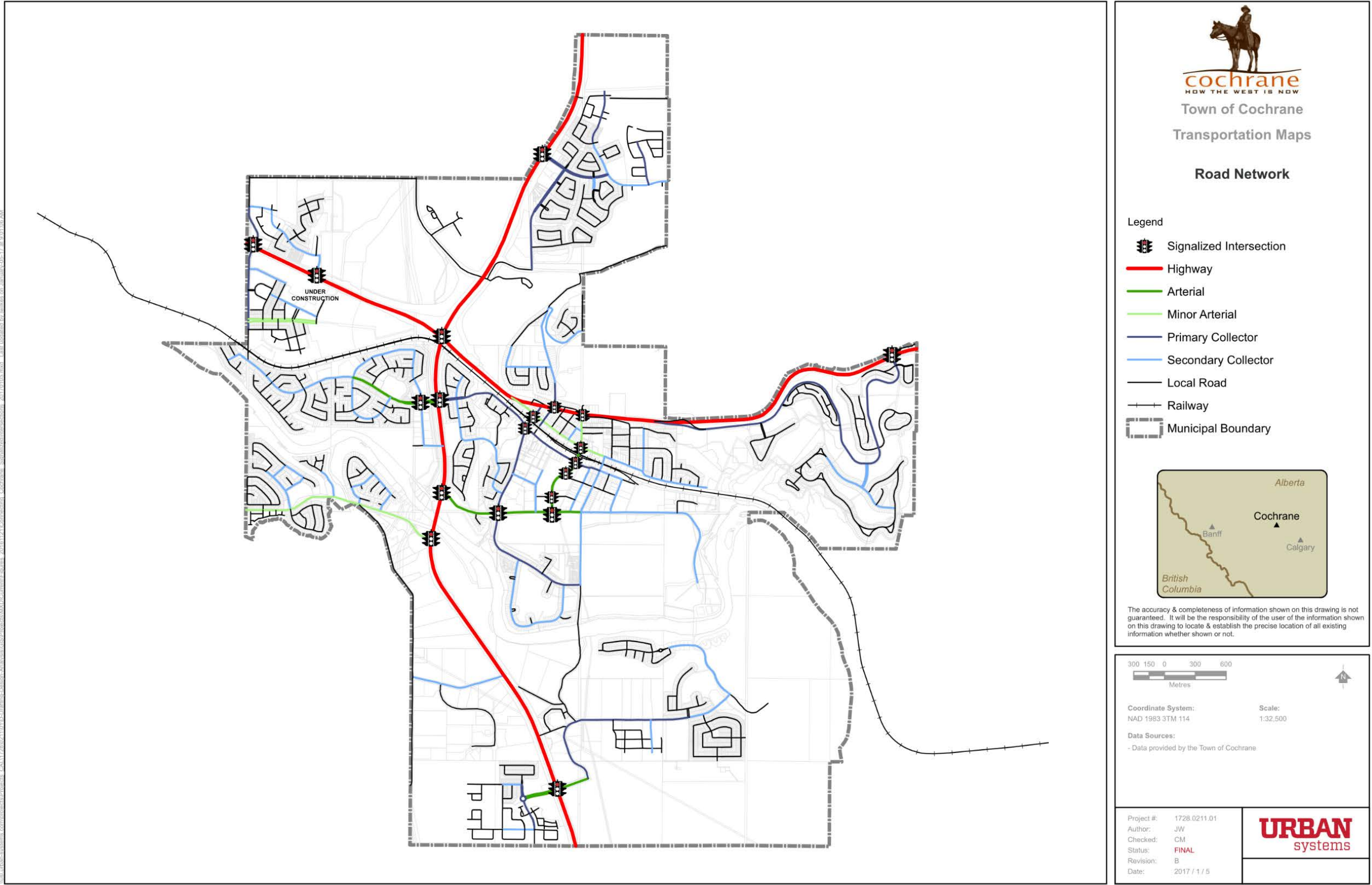
Provincially operated Highway 22 and Highway 1A intersect within the Town north of the CP Rail corridor. Each approach along the highways serve 10,000 to 20,000 vehicles per day that include local, regional, commuter and long-distance trips. Traffic data on municipal roads is typically less than that on the highway corridors, with most arterial and collector roads having daily traffic volumes between 5,000 and 15,000 vehicles per day. The existing roadway classifications in the Town of Cochrane are illustrated in Figure 3-1

Most of Cochrane's existing municipal roads are two lanes (i.e. one travel lane per direction). Some existing arterials and primary collectors have four lanes. Existing traffic signal controls in the Town are also shown in Figure 3-1.

There are currently 18 traffic signals in Cochrane: nine are operated by Alberta Transportation and nine are operated by the Town. Most un-signalized intersections are either multi-way or two-way stop controlled



Figure 3-1:
Roadway
Classifications &
Signalized
Intersections



3.1.2 Existing and Future Traffic Conditions

Existing and future traffic volumes show how the road network is being used and how that use is expected to evolve as land use changes and planned improvements are made. This section provides estimated existing traffic volumes, and comments on existing network performance before exploring future forecast traffic volumes and the performance of the future base network. The future base network reflects road network improvements and new connections that have been recommended through other work and has recommended measures to mitigate constraints from future demand.

Existing peak hour traffic volumes were estimated using historical traffic counts and model results to reflect 2015 conditions. These volumes are shown in Figure 3-2. The peak hour volumes are generally highest along Highway 1A east of Highway 22 and Highway 22 south of Highway 1A, with more than 1,000 vehicles per hour of traffic in the peak directions. The directional traffic volume on Highway 22 at the Bow River crossing is estimated to reach up to 1,000 vehicles per hour per lane in the peak hours. Traffic volumes are generally higher in the afternoon peak hours compared to morning peak hours.

The estimated existing daily traffic volumes on Cochrane's roads are illustrated in Figure 3-3. The volumes are generally highest through downtown Cochrane and at the eastern and southern municipal boundaries. The highest volumes in the municipal network are on east-west roadways, with Griffin Road carrying 14,700 vehicles per day and Glenbow Drive carrying 9,200 vehicles per day. Centre Avenue is the north-south municipal road with the highest volume at 8,600 vehicles per day.

The Levels of Service experienced at signalized intersections in Cochrane during the morning and afternoon peak hours are illustrated in Figure 3-2. These Levels of Service are based on the analysis from the microsimulation model of the existing traffic condition. Most of the intersections will operate with good Levels of Service A, B or C representing low delays. There are a few intersections showing lower performance, and includes the 4 Avenue and Highway 1A intersection with Levels of Service D and E. Levels of Service D and E indicate the intersection is approaching capacity. During the morning peak hour, the intersections of Highway 1A and Highway 22, and 5th Avenue and Railway Street show Level of Service F, indicating that the intersection is operating at capacity during that hour. The performance results of the microsimulation model were compared with the Google data further in this section.



Figure 3-2: Estimated (2015) Peak Hour Traffic Volumes

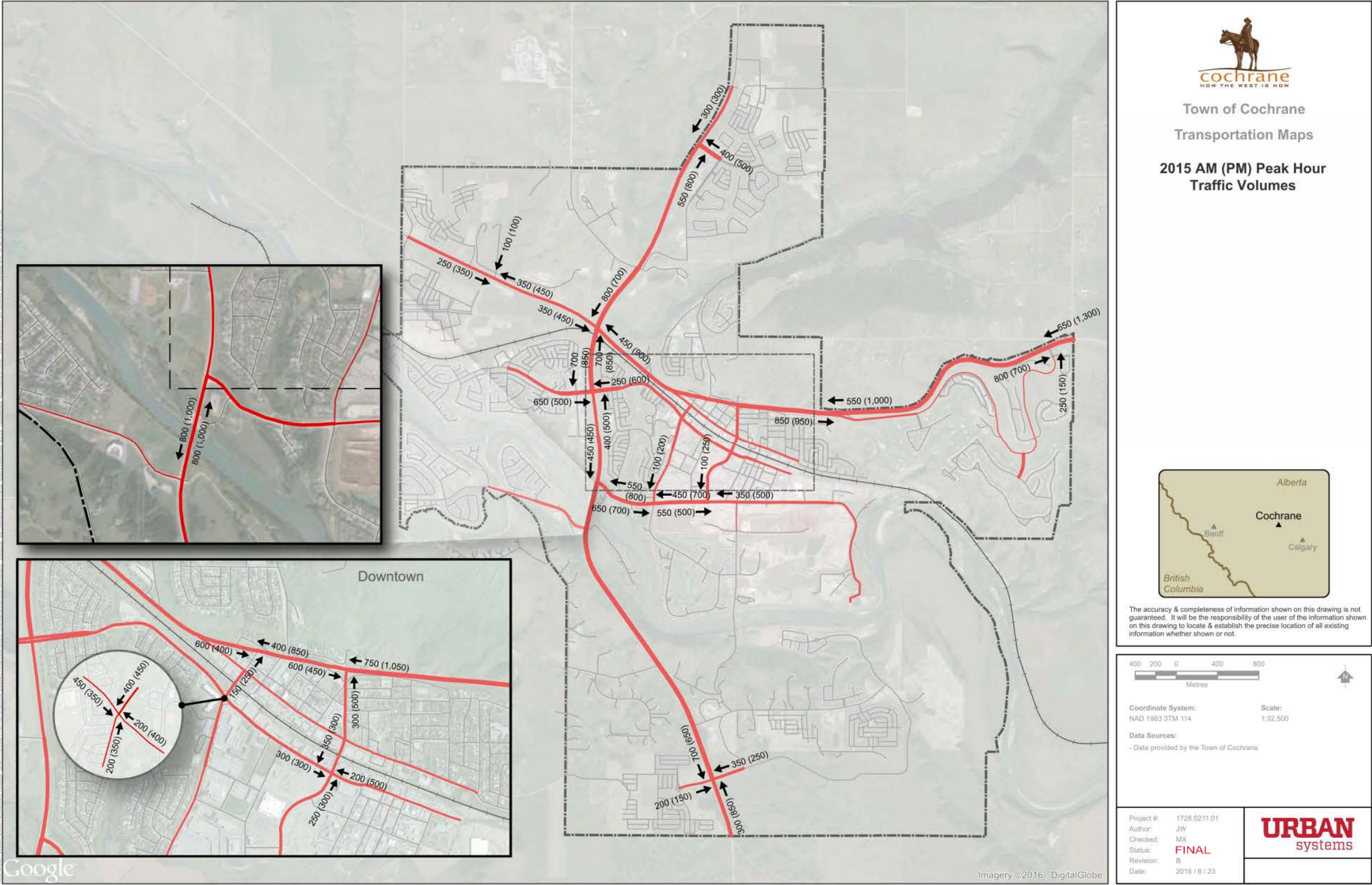
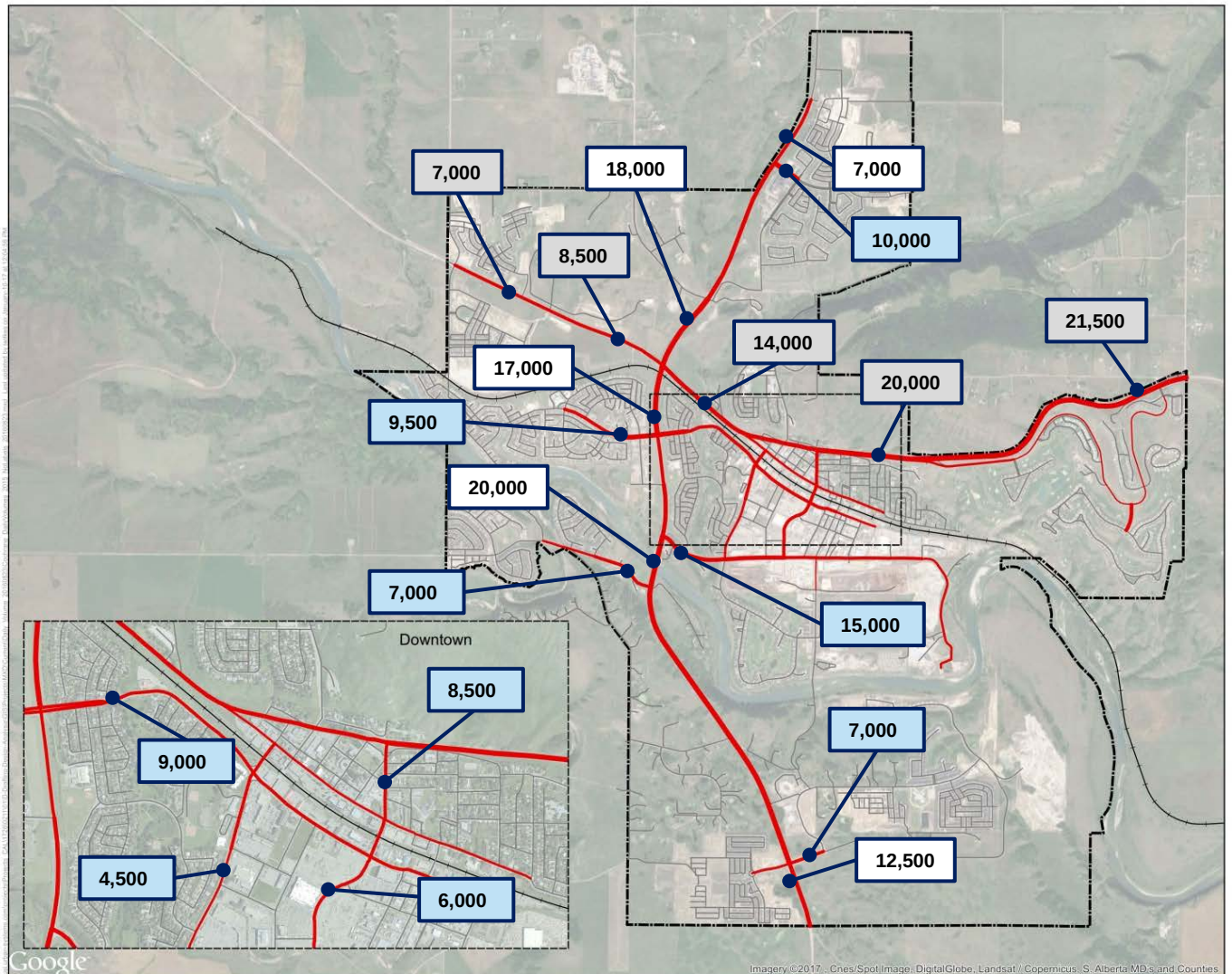


Figure 3-3: Estimated 2015 Daily Traffic Volumes



cochrane
HOW THE WEST IS NOW
Town of Cochrane
Transportation Maps

**Signalized Intersection
Level of Service**

Legend

Level of Service

AM PM

● A, B, C
● D
● E
● F

—+— Railway
— Roads
--- Municipal Boundary

Alberta
Cochrane
Banff
Calgary
British Columbia

The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.

300 150 0 300 600
Metres

Coordinate System:
NAD 1983 3TM 114

Scale:
1:30,000

Data Sources:
- Data provided by the Town of Cochrane

Project #: 1728.0211.01
Author: JW
Checked: CM
Status: **FINAL**
Revision: A
Date: 2017 / 2 / 21

URBAN
systems

Google Maps provides a current perspective on typical peak period traffic conditions along busier roadway corridors. It also provides real time traffic conditions as well as typical conditions during different periods of the day using cell phone data and information in cities throughout North America. By taking frequent samples of the travel speed of individual cellular phones on the road system, a picture of actual traffic flow conditions can be interpreted from the network. Applying this to Cochrane, an example of typical morning weekday peak conditions are illustrated in Figure 3-5 and afternoon peak conditions are illustrated in Figure 3-6. Based on information provided by Town staff and the public, Google Maps were also used to investigate the most congested weekend conditions, which were found to be midday Saturday and are illustrated in Figure 3-7. These data represent average conditions for a weekday and weekend peak period in 2016.

The speed for each colour gradient was estimated by comparing the Google Typical Traffic to the observed travel time provided by Google. As illustrated, the yellow and green colours indicate that the corridor segments are operating reasonably well with ambient speeds that are within 50% of posted speeds and red indicates areas of greater delay in the network where average speeds are below 50% of posted speeds. These patterns can be used to highlight the areas of recurring congestion due to peak period traffic volumes.

Google tracks vehicle travel speeds using cell phone signals and makes this information available to the public. A review of Google Traffic data and estimated travel times led to the following conclusions about the colours used on these maps:

- **Red** - travel speed is less than 50% of posted speed
- **Yellow** - travel speed is 50% - 80% of posted speed
- **Green** - travel speed >80% of posted speed

These estimates are rough approximations, but give some indication of locations where travel speeds are slow in the peak periods.

Figure 3-5: Google Traffic Data - Morning Peak Conditions

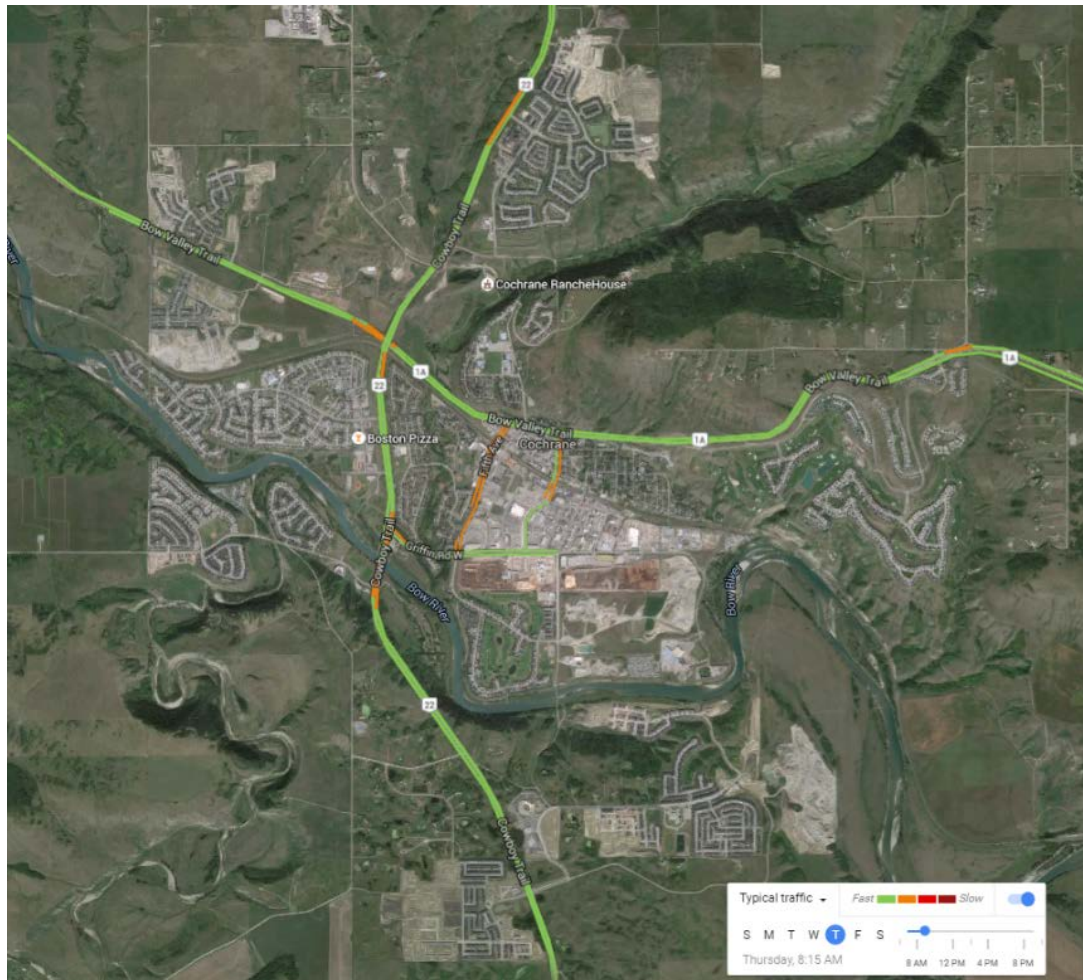


Figure 3-6: Google Traffic Data – Afternoon Peak Conditions

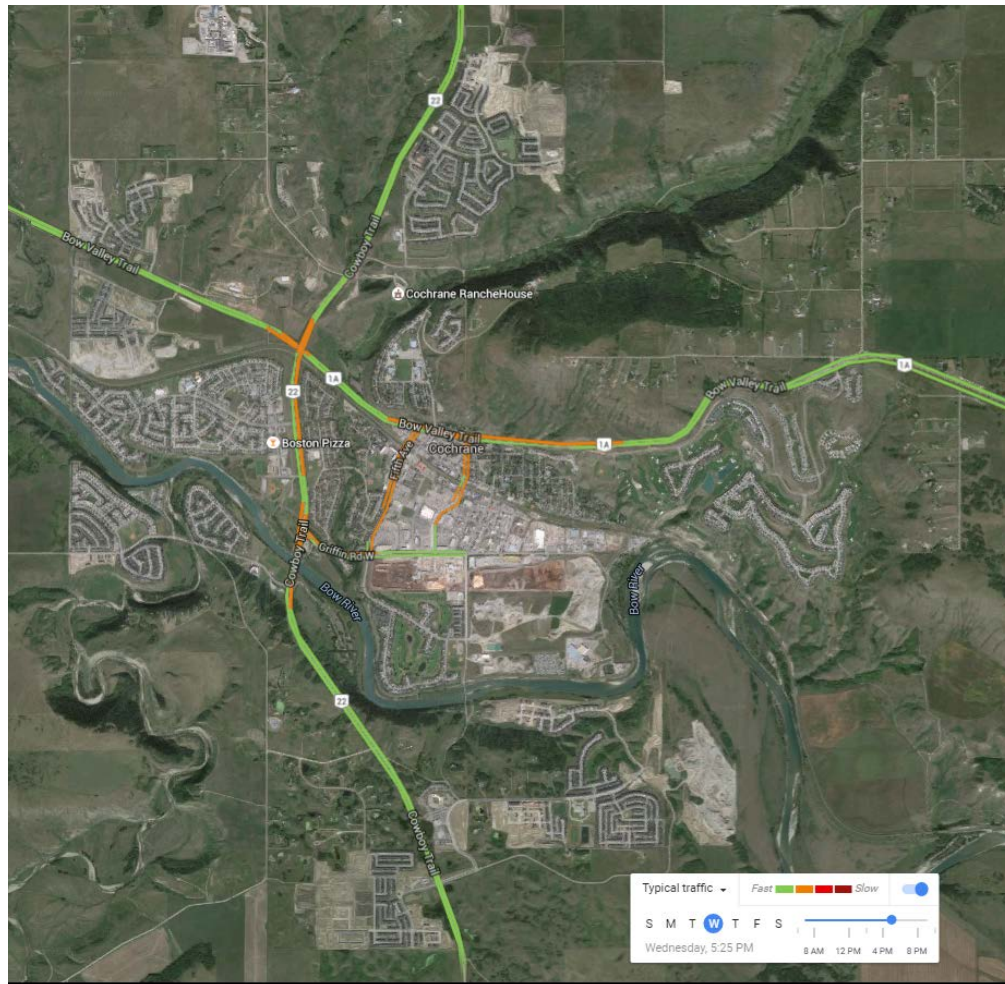
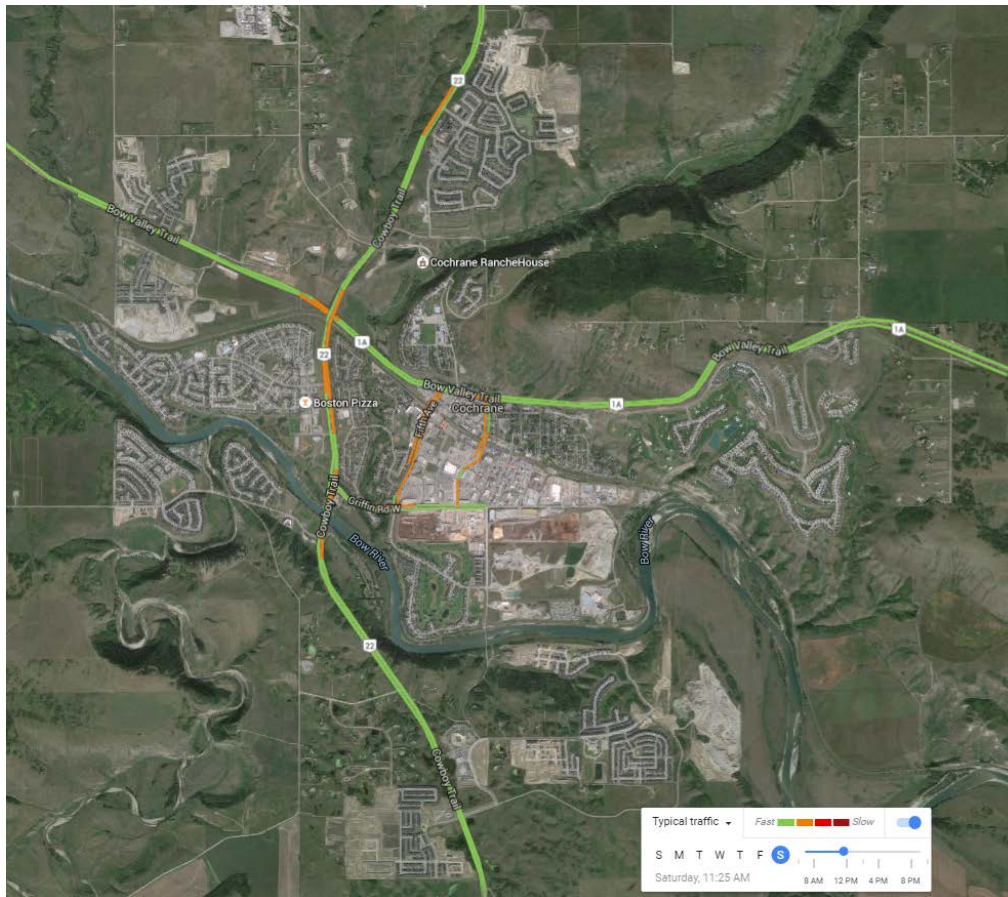


Figure 3-7: Google Traffic Data – Weekend Conditions (Saturday midday)



As Figure 3-5, Figure 3-6, and Figure 3-7 illustrate, the intersection of Highway 1A and Highway 22 is a constraint during the morning, afternoon, and weekend peaks. Northbound congestion on Highway 22 during the afternoon and weekend peaks can extend from Highway 1A to West Rock Road, with additional congestion around the Bow River Crossing. Highway 1A through Downtown Cochrane experiences westbound congestion in the afternoon peak period. Fifth Avenue and Centre Avenue experience speeds that are slower than posted throughout all peak hours.

Work being done as part of the development process in southeast Cochrane indicates that the existing network is constrained. Existing access to Highway 22 at James Walker Trail/Fireside Gate has limited capacity to facilitate the demand being generated by proposed developments in the area. There is an existing proposal to improve the capacity of this intersection; however, this improved intersection will also reach capacity in the short-term without further investments. As discussed earlier, a new connection from southeast Cochrane to Downtown Cochrane across the Bow River is planned as part of the future arterial roadway tying Griffin Road to the north and James Walker Trail to the south together. Providing this connection will relieve existing pressures on the network in southeast Cochrane and extend the life of the planned improvements to James Walker Trail and Highway 22.

A future base model was developed to understand how traffic can be expected to change with developments in land use, and the addition of known infrastructure improvements. These improvements included the new North Arterial / James Walker Trail Bridge and arterial roadway, as well as the four-laning of both Highway 1A and Highway 22. The anticipated future peak hour volumes based on this forecast are illustrated in Figure 3-8 and the forecasted daily traffic volumes are shown in Figure 3-9. An assessment of volume to capacity ratios from the future base transportation model was used to identify locations in the road network where conditions are expected to become constrained in the future without further improvements. In general, east-west congestion east of Highway 22 along Highway 1A and parallel routes is expected to worsen over time, as well as congestion along some sections of Highway 22 and on key routes in the downtown.



Figure 3-8: Forecast 2060 Peak Hour Traffic Volumes (Future Base Network)

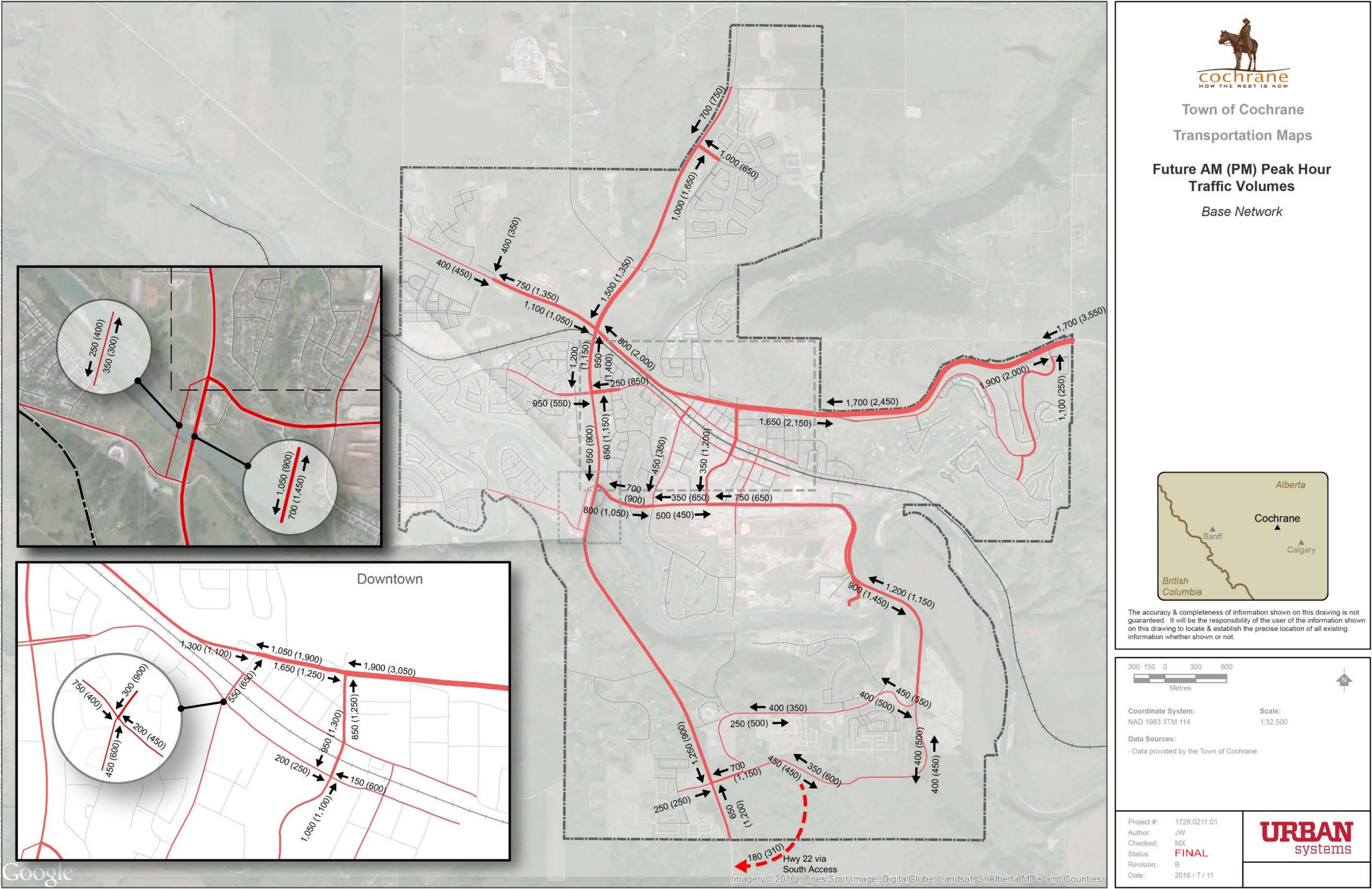
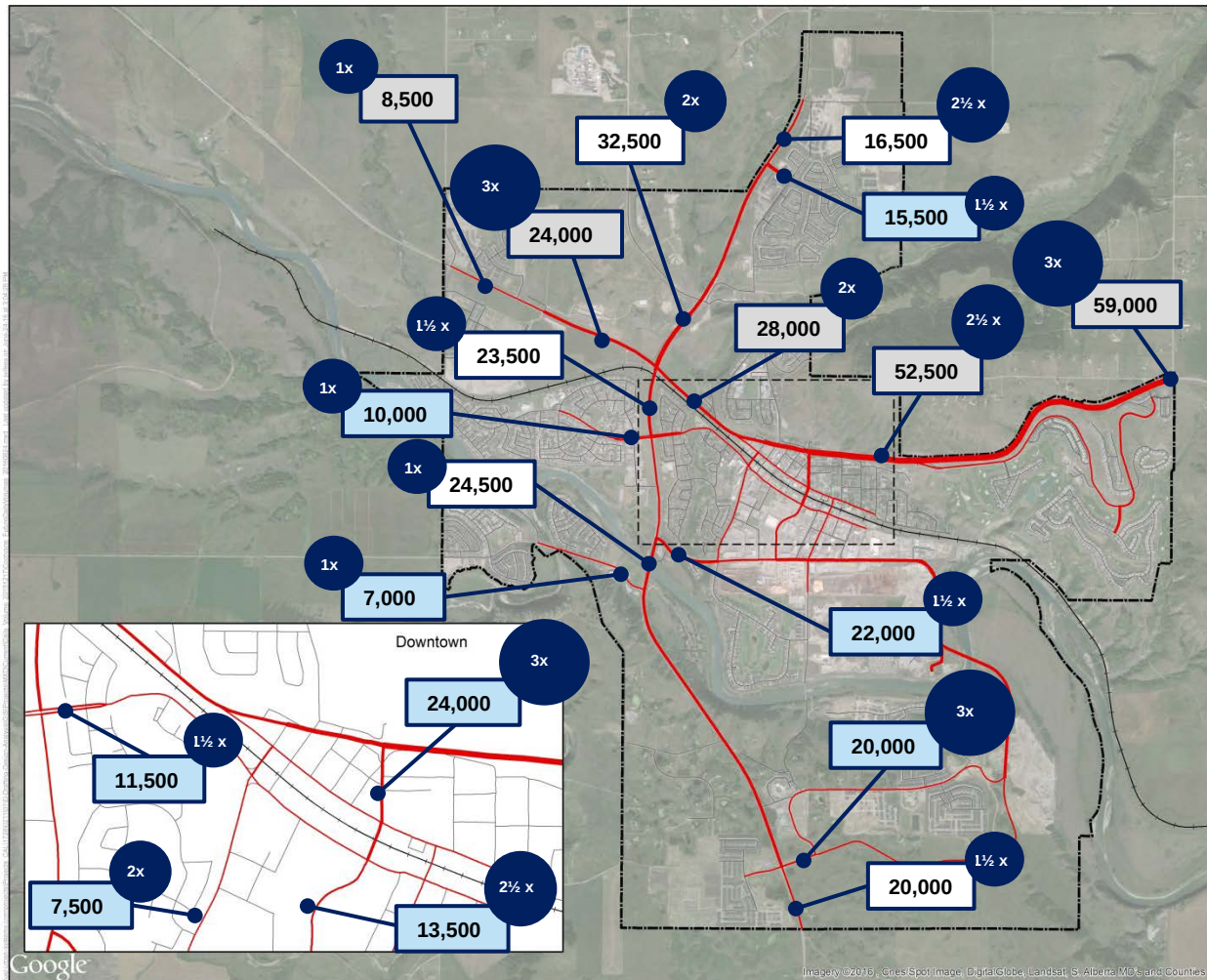


Figure 3-9: Forecast Daily Traffic Volumes for 60,000 Population (around 43 years)



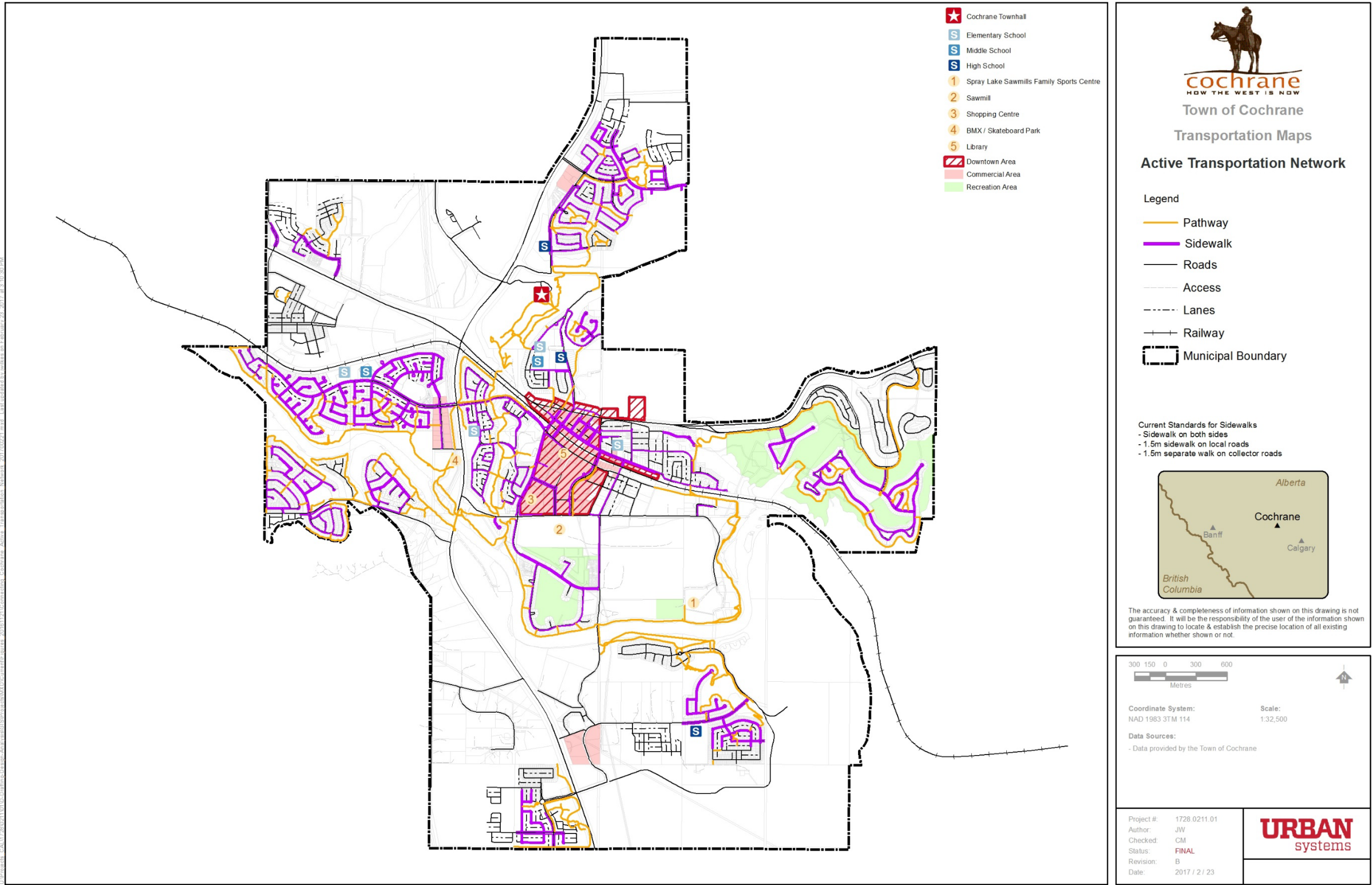
3.2 Walking Network

3.2.1 Sidewalks

Cochrane has an extensive network of sidewalks that support pedestrian mobility through residential neighbourhoods as well as to the Downtown. Sidewalks in the core connect the Downtown with surrounding residential and commercial areas, parks, and community facilities. The Town promotes a pedestrian-friendly Downtown with safe, linked and convenient pedestrian connections that complement the mixed-use development of the area. All streets in the downtown core have a minimum of a sidewalk on one side of the street. There are some gaps in the sidewalk network in the industrial area east of the Downtown core. In the outer developing residential areas, the new standard is 1.5m sidewalks on both sides of the road. Figure 3-10 shows the existing sidewalk network within the Town.



Figure 3-10: Existing Active Transportation Network



3.2.2 Pathways

The Town of Cochrane has an extensive off-street pathway network with approximately 70 km of pathways and trails available for mixed use. Primary use of this system is for recreational purposes with some use for commuting and transporting. The pathway system is also illustrated in Figure 3-10 and is located primarily along the watercourses.

3.2.3 Pedestrian Generators

There are key areas of the community that are significant hubs of pedestrian activity, including the Historic Downtown shopping area on First Street, and the south Downtown shopping area on 5th and Centre Avenue. Recreational facilities in parks, the Spray Lake Sawmills Family Sports Centre, the Cochrane Historic Rancho Site, the RanchoHouse, and schools generate walking activity and create the need for sidewalks, safe crossings, and good pedestrian connections.

3.2.4 Barriers

There are several major crossings which act as barriers for pedestrians. Highways 1A and 22 are wide roads that support higher traffic volumes and speeds, with limited crossing opportunities. The designated pedestrian crossing areas across Highway 1A for pedestrians include:

- Formerly 6th Avenue (signed, marked crossing);
- 4th Avenue (signalized crossing);
- 3rd and 2nd Avenue (signed, marked crosswalks).
- Pathway from Cochrane Rancho Historic Site to Glendale Way / Glenbow Drive (underpass of railway corridor and Highway 1A)

Two signalized crossings exist along Highway 22 at Quigley Drive and James Walker Trail for pedestrians to use. There is also an underpass of Highway 22 connecting West McDougal Road and Glendale Way.

The intersections of Griffin Road and Highway 22, George Fox Trail and Highway 22 and Centre Avenue and Highway 1A currently do not accommodate pedestrians but should be considered, and would require consultation with Alberta Transportation.

3.2.5 Railway corridor

The railway corridor is a significant linear barrier to north south connectivity for pedestrians walking in the downtown core trying to go between Historic and South Downtown. The only official crossings of the railway corridor are at 5th Avenue, Centre Avenue, River Avenue and the east-end pathway crossing. The largest gap through the core Downtown area is between 5th Avenue and Centre Avenue and is over 500m. Sidewalks start and stop on either side of the rail corridor, and a relatively even surface is maintained for pedestrians to use.

Further west, there is a pathway between the Cochrane Rancho Historic Site and Glendale Way/Glenbow Drive via an underpass of the railway corridor and Highway 1A.

3.2.6 Watercourses

The Bow River presents another barrier to north-south connectivity for pedestrians and vehicles alike, with bridge crossings on Highway 22 and pedestrian bridge crossing at River Avenue. A sidewalk is available on the east side of the Highway 22 Bridge. The historic River Avenue bridge provides pedestrian connectivity over the Bow River. Although there are no dedicated pedestrian facilities on the River Avenue bridge, limited access for vehicle traffic allows for pedestrians to use this crossing relatively safely.

3.2.7 Topography

While the core of Cochrane is relatively flat, the escarpments and benches south of the Bow River, east in the Gleneagles neighbourhood, and north into Sunset Ridge and Cochrane Heights can act as significant deterrents for walking.

3.3 Cycling Network

3.3.1 Existing Bicycle Network

The Town of Cochrane has an extensive off-street pathway network with approximately 70 km of pathways and trails, in addition to approximately 2 km of on-street bicycle facilities. The off-street pathway network is for mixed use and is well used by cyclists as well as other users. Of the 70 km in total pathways and trails, 40 km are unpaved, while 30 km of paved. Unpaved pathways typically consist of gravel or red shale. On-street bicycle facilities include bicycle lanes on Centre Avenue between Griffin Road and Railway Street and a combination of bicycle lanes and shared use lanes on Glenbow Drive / Railway Street between Highway 22 and Centre Avenue.

Although there is an abundance of off-street trails, the limited network of dedicated on-street bicycle infrastructure deters cyclists who are hesitant to mix with automobile traffic. The future bicycle network, as envisioned in the 2012 Bicycle Network Plan, proposes upgrades to existing off-street pathways, new on-street and off-street bicycle facilities, improved crossings, and other support measures.

3.3.2 Bicycle Network Connectivity

The Town's pathway network is typically comfortable for most cyclists of all ages and abilities; however, the pathways were developed in a way that provides access to nature and do not always provide the most direct route to key destinations in Cochrane for transportation purposes. The Historic Downtown and the Quarry area provide most of the commercial and retail services within Cochrane and the bicycle network within this area is evolving, but still has some gaps in connectivity.

The most connected pathway in Cochrane runs along the north side of the Bow River, between the west boundary of Cochrane at West Pointe Manor and Griffin Road East. This trail links pathways that provide access into residential areas with the Spray Lake Sawmills Family Sports Centre. This trail also connects to the north side of the railway tracks via an at-grade crossing at Carolina Drive, which in turn connects to the neighbourhood pathway system through the Gleneagles neighbourhood. The River Avenue Bridge

provides a crossing of the Bow River and connects to new trails on the south side of the Bow River. North of Highway 1A, there are paths that connect the Cochrane Ranch, Cochrane Heights, Sunterra and into the Sunset neighborhood.

The existing and emerging neighbourhoods in Cochrane have trail networks connecting to the spine of trails along the Bow River and through Cochrane's parks. The most significant gaps in the cycling system are between the pathway network and core destinations, especially to retail destinations in the larger downtown area.

Apart from the pathways, the Town's road network tends to provide the most direct east-west and north-south connections to community destinations, but the lack of dedicated on-street bicycle facilities deters cyclists from using the road network.

3.3.3 Crossings and Barriers

There are significant connectivity and crossing barriers within the network, due to natural features and infrastructure barriers. For example, Highways 1A and 22 effectively cut the community into quadrants and act as east-west and north-south barriers for those using non-motorized modes to travel. The CPR rail corridor and the Bow River also present significant obstacles for north-south connectivity.

3.3.4 Regional Integration

Commuter cyclists who travel outside of the Town of Cochrane are currently limited to using the highways. There are plans to provide an improved link to Calgary using off-street pathways through the Glenbow Ranch Provincial Park, requiring a future river crossing connection at the east end of the Southbow Landing community.

3.3.5 Policy

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 2012 Bicycle Plan developed a bicycle network based on a high-level overview of the existing road network and was presented to Council for information only.

3.3.6 Topography

While the main core of Cochrane has flat and gently rolling terrain, the hills and escarpments that define the surrounding landscape can create a significant challenge to attracting cyclists of all ages and ability.

3.4 Transit Network

There is no existing public transit system within the Town of Cochrane. Over the past 10 years, different concepts have been considered for the introduction of both regional and local service. This section

summarizes the existing private and specialized transit services provided in Cochrane and documents some of the work completed to determine the feasibility of public transit in Cochrane.

3.4.1 Existing Transit Services

Cochrane does not have any publicly funded transit system that is available to all residents; however, there are operators that provide transit services for Cochrane residents. A description of these services is described below:

Southland Transportation Ltd. operates a daily peak hour coach bus service between Downtown Cochrane and Downtown Calgary. Limited peak-direction commuter services are provided on weekdays. Inbound AM peak trips, each serving a different routing, are provided between the Town of Cochrane and Downtown Calgary, connecting the two communities via either Highway 1A or Highway 1. Travel between the last stop serviced in Cochrane and Downtown Calgary takes approximately 40 to 45 minutes. Similar services are provided in the PM peak period.

The Rocky View Regional HandiBus Society operates a door-to-door shared ride service to support people with disabilities. Local and regional service is provided in and around Cochrane, Crossfield, Balzac/Sharp Hill/Butte Hill, Chestermere, Conrich, and Northeast and Southeast Rocky View. Additionally, connections to Calgary are available. HandiBus operates on weekdays between 7:00 AM and 4:30 PM. Customers must register before riding the HandiBus and in some cases, medical certification may be required.

3.4.2 Calgary Regional Partnership

Two planning documents were created to understand the potential transit opportunities in the Calgary region:

- Calgary Regional Transit Plan, 2009
- DRAFT CRP Regional Transit: Scenario 1 & 2, 2013

The planning documents illustrate a connection between the Town of Cochrane and Crowfoot Station in the City of Calgary limits. 2006 census data revealed approximately 3,200 commuters between Cochrane and Calgary. GreenTRIP funding initiatives approved for the Town of Cochrane in 2011 included:

- Four double deck buses
- Two-way inter-municipal transit service to Calgary
- Transit terminal to support services with local bus stop facilities
- \$9 million-dollar investment between the Province and Municipality

In 2015, additional work was completed by the Town to identify possible 'first steps' for the implementation of transit, including identifying a more limited service option that could be introduced initially and from which additional service could be developed over time.

In December 2016, a Cochrane Transit Feasibility Study was prepared by Calgary Transit for the Town of Cochrane. This study laid out a phased approach the Town could use to implement local transit. Town Council voted to amend the GreenTRIP application in early 2017; realigning its focus towards local transit. An amended GreenTRIP application focused on local transit was approved by the Province in June 2017 and Council will consider local transit next steps late in 2017.

3.4.3 Benchmarks for Future Service

Mid- and small-size communities throughout Canada have taken different approaches to providing transit. Some communities have chosen to invest in local services only and others at the fringe of larger urban centres have developed a regional service. In a few cases, communities have developed a local and regional service as a first step toward introducing transit. This section provides a summary of key benchmarks from transit systems with service area populations between 25,000 and 70,000. Assessing service levels and types, investment, and ridership in other municipalities can help inform the establishment and ongoing development of Cochrane's future transit service.

Within Alberta, the types of transit service and level of investment in smaller communities such as Airdrie, the Banff-Canmore region, Spruce Grove, Strathcona County, Leduc County and City of St. Albert may be considered as Cochrane grows and considers establishing and evolving transit service. The other communities included in the benchmark summary below have had transit services operating for anywhere from two to approximately ten years. Table 3-1 provides some key data concerning the provision of transit service in other Alberta communities with populations between 20,000 and 65,000.

Table 3-1: Transit Service in Alberta Communities (2013)

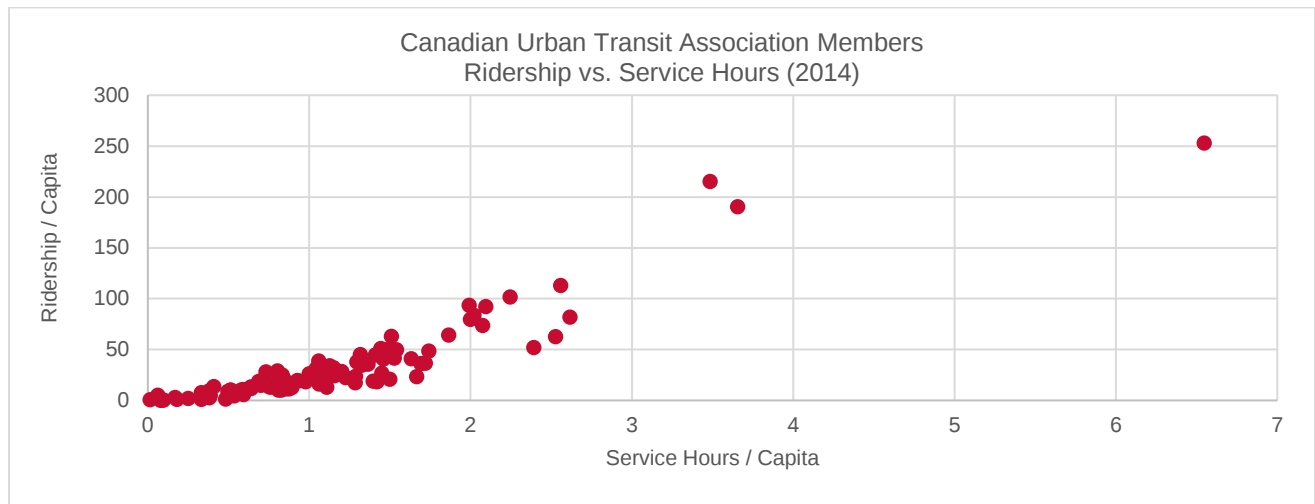
Community	Service Area Population	Local (L) & Regional (R) Service	Service Type	Annual Hours of Service	Fleet (buses)	Amount of Service (Hrs / Cap)	Ridership per Capita	Municipal Operating Contribution per Capita	Operation / Maintenance / Storage
Leduc County / City	27,200	R	Peak Only	3,400	3	0.12	1.98	\$20.17	Outsource to ETS
Spruce Grove	29,500	R	Peak Only	4,800	7	0.16	2.80	\$11.26	Outsource to ETS
Airdrie	49,600	L & R	All Day	19,700	13	0.40	2.88	\$17.31	Local
St Albert	62,000	L & R	All Day	87,250	53	1.41	19.31	\$98.35	Local
Strathcona County	65,500	L & R	All Day	112,500	74	1.69	23.22	\$152.26	Local

The peer communities shown demonstrate three distinct service levels and likely show how communities of different sizes, and with different objectives, approach the provision of public transit service. Comparing transit service in these communities also provides an example of how increasing transit investment can result in greater ridership per capita.

As a community with a population of over 26,000 near a major centre, Cochrane's demographic and travel profile is most immediately comparable to the communities of Leduc and Spruce Grove now. Leduc and Spruce Grove both provide commuter-oriented regional transit service connecting the respective communities to Edmonton. Service is provided in weekday peak periods only, which result in relatively modest overall service levels and lower operating costs per capita. Transit is geared to the commuting market only and is not targeted towards achieving basic mobility for those who cannot or choose not to drive. These services result in relatively modest municipal operation costs per capita of between \$10 to \$20. Both systems are contracted out to Edmonton Transit System (ETS), who operate the service as well as house and maintain the vehicles. Ridership in these communities is relatively high at 1.98 to 2.80 rides per capita compared to the level of investment, which reflects the nature of a peak hour, commuter-focused service.

Airdrie is an example of a slightly larger community that offers a more comprehensive transit service. Airdrie operates all day, every day, local and regional services with significantly higher service levels than what are offered in Leduc and Spruce Grove. The system is operated, housed, and maintained by the City of Airdrie. Service is geared to both the commuter market and to ensuring that basic mobility is provided to the community. The result is a system with a cost that is under \$20 per capita and ridership at 2.88 riders per capita.

Strathcona County and St. Albert have similar demographic and travel profiles to what is anticipated for the future of Cochrane, as described previously in Section 1. Both communities have populations between 60,000 and 70,000 and operate sophisticated networks of both local and regional services. Services are provided all day, every day at much heavier service levels. Strathcona County operates a fleet of 74 buses and can target service above and beyond the commuter and basic mobility markets, allowing transit to effectively compete against the automobile for travel around the community along major corridors. The level of service provided in Strathcona County and St. Albert is significantly costlier, resulting in municipal operation costs per capita of \$100 to \$150, but results in much higher ridership levels at 19 to 23 rides per capita. This shows that ridership tends to increase as investment in transit service and frequency increases. This relationship is also illustrated in Figure 3-11 using data from all Canadian Urban Transit Association (CUTA) members in 2014.

Figure 3-11: Relationship between Ridership and Service Hours

4 Issue and Challenges

Cochrane is a rapidly growing community with some existing transportation challenges related to congestion and connectivity. Ongoing growth and development provide an opportunity to address some of these challenges through new and improved multi-modal network capacity and through the Town's approach to programming and policy. If existing challenges are not addressed, the high levels of forecasted growth are expected to worsen congestion and intensify existing issues.

The technical work completed to assess the existing policy, transportation network, and transportation patterns in Cochrane was documented in Sections 1 and 3. This work was considered in combination with input from the public, stakeholders, Town of Cochrane staff from multiple departments, Alberta Transportation, and Council to develop an overall understanding of the existing and forecasted transportation issues and challenges for the Town of Cochrane. Those overall issues and challenges are summarized in this section and addressed through the Transportation Plan in Section 6.

Those overall issues and challenges are summarized in this section and addressed through the Transportation Plan in Section 6.

Three main themes of issues and challenges were identified by the public through consultation. Residents of Cochrane expressed that the transportation system should be:

- Connected
- Safe
- Moving

These three themes are explored further in the illustrations to the right.

CONNECTED

Residents want to feel connected within Cochrane and to the rest of the region – changes that divide Cochrane and create barriers are not supported. Changes that connect communities by multiple modes are supported.



SAFE

Residents want to be safe while travelling by all modes, but especially while walking and cycling on roadways with high traffic volumes.



MOVING

Congestion affects quality of life during peak periods and during special events. Residents want to see improvements to traffic flow.

5 Vision and Goals

Clear vision and goals that are based on local values allow for improved decision making at all levels of planning. Transportation plans set out the high-level policy and infrastructure actions to be delivered by the Town and its partners; however, there are many decisions between project identification and final delivery. Clearly articulated vision and goals provide the context for further study, evaluation, and discussions between the various stakeholders who will help deliver Connecting Cochrane.

The vision and goals are in place to guide decision making, ensuring future proceedings are in line with the established plan. They provide a framework for deeper understanding of the plan by others, as well as a baseline by which to develop implementation priorities. They also serve as a base of information for the Town to use in future stakeholder discussions.

To develop the vision and goals of the Plan, a review of the community visions from the Municipal Development Plan (2008) and the Cochrane Sustainability Plan (2009) occurred. Public feedback from the Open Houses was then collected to understand public sentiment, which placed high importance on being connected, keeping moving, and travelling safely for all modes of transportation.



5.1 The Transportation Vision

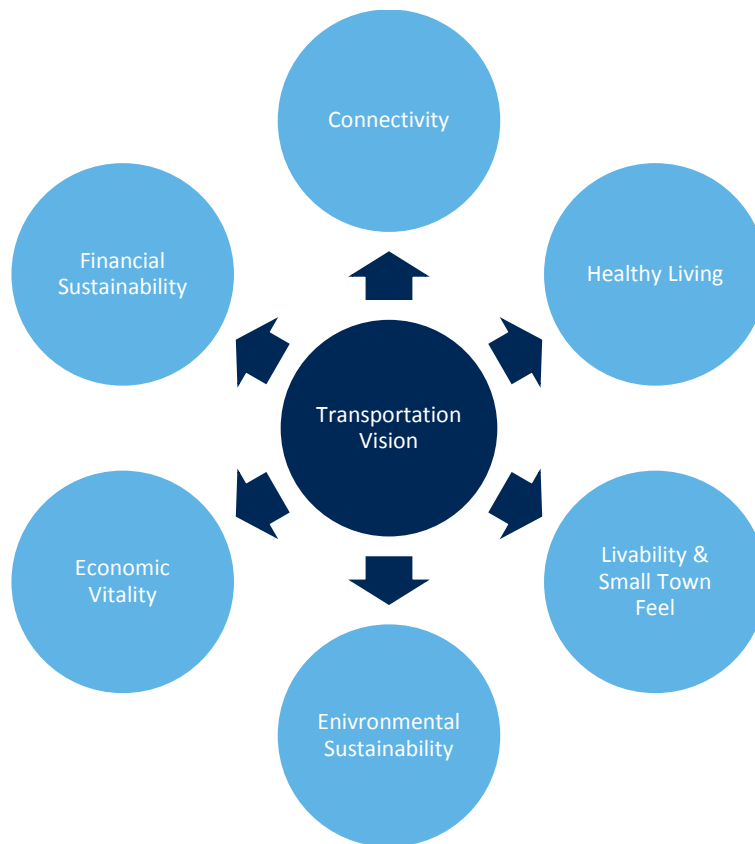
The Vision is a statement that summarizes the Town of Cochrane's ideal transportation future. It emphasizes the elements that are integral to sustaining a vibrant and functional community. The Vision can be used as a simplified tool to assess whether opportunities are in line with Cochrane's Transportation Plan.

THE VISION

Cochrane is served by a multi-modal transportation system that supports economic viability and environmental, social, and financial sustainability. Cochrane's transportation network respects the natural landscape, while connecting communities, fostering relationships and enabling healthy living and safe travel.

5.2 Goals

There are six established Goals which will guide decision making to ensure that appropriate systems and resources (capital, land, operations) are being invested in the right places at the right times. The overall transportation vision is supported by these goals, and to fulfill the vision, the Town and its stakeholders must keep the goals as a priority to effectively implement the Plan.



Goal 1: Improve **connectivity** for all modes within Cochrane and between Cochrane and the surrounding region.

- Enhance multi-modal transportation network connecting neighbourhoods;
- Reduce congestion on highway links into and out of Cochrane;
- Increase multi-modal connections between Cochrane and the region. e.g. Regional transit

Goal 2: Support **healthy living** for residents and visitors by creating a community where walking and cycling are safe and enjoyable.

- Improve safety for all road users;
- Make it safe and enjoyable to walk or bike;
- Expand transportation infrastructure that supports social connection.

Goal 3: Enhance **livability and protect the small town feel** of Cochrane by reducing barriers and investing in local transportation.

- Respect the natural landscape and historic assets of Cochrane in the design and delivery of transportation infrastructure;
- Invest in transportation infrastructure that is connected to the natural environment, including off-street pathways.

Goal 4: Improve **environmental sustainability** by reducing congestion and providing alternatives.

- Ensure that transportation infrastructure is appropriately managed to maximize efficiency, including corridor management, signal timing, and parking management;
- Invest in the full range of transportation alternatives in a way that makes sense for Cochrane.

Goal 5: Promote **economic vitality** by keeping local businesses accessible by all modes of transportation and enabling people to commute efficiently.

- Provide access to businesses in the downtown, industrial area, and south Cochrane by all modes to support travel by both employees and customers.
- Increase the person-carrying capacity of Highway 1A, understanding that a large proportion of commuters are destined for Calgary;

Goal 6: Maintain **financial sustainability** by investing in appropriately-sized infrastructure cooperatively with stakeholders.

- Ensure that transportation infrastructure for new neighbourhoods (including new and existing roadways) are multi-modal, appropriately sized, and designed to meet the needs of the neighbourhood.
- Maximize investment by identifying opportunities to deliver transportation improvements together with other asset management or infrastructure investments.
- Work in partnership with Alberta Transportation and Rocky View County to deliver key infrastructure.

6 Transportation Plan

The Transportation Plan presented here is a roadmap to address issues and opportunities and to achieve Connecting Cochrane's vision and goals. A plan for each mode is outlined and includes investments in infrastructure, operations and management, services, and policy that will be needed to address Cochrane's transportation needs. The plan is grounded in the technical work completed for Connecting Cochrane, as well as the input from the public, Council, staff and key stakeholders engaged throughout the study process.

6.1 Road Network Plan

The Road Network Plan includes a combination of infrastructure, guidelines, and policies that will address the demand for vehicle capacity now and through the next 43 years. The recommended plan addresses the issues and challenges documented in Section 4 and moves Cochrane towards the vision and goals outlined in Section 5. The plan includes a combination of new roads in new neighbourhoods, improvements to the existing network, and new infrastructure or significant improvements to existing infrastructure. The documentation included in this section also identifies some potential road network changes that were identified, but were ultimately not included in the plan.

The road network plan has been organized into four sub-sections:

1. Complete the Network – this section identifies new infrastructure associated with new and developing areas of Cochrane. It references the policies and practices that should guide the development of new roadway networks, including key cross-section elements for each road classification.
2. Maintain Existing Network – this section outlines strategies and policies to maintain the existing network and improve its efficiency. It also includes changes to intersection control that may be required as the network evolves.
3. New Infrastructure / Significant Upgrades – this section describes the recommended major new infrastructure as well as significant upgrades to existing infrastructure, such as road widening.
4. Additional Options for Future Consideration – through the technical analysis, it was identified that there are a few different options that Cochrane should consider for the long term to alleviate some ongoing concerns. A regional plan under the guidance of the new Growth Management Board should be considered. This section provides information about each of the options, including advantages and disadvantages and discusses how they might be applied alone or in combination to address east-west capacity constraints.

The infrastructure improvements associated with the recommended road network plan are shown in Figure 6-1. This includes elements from the first three sub-sections. The final sub-section is addressed separately.

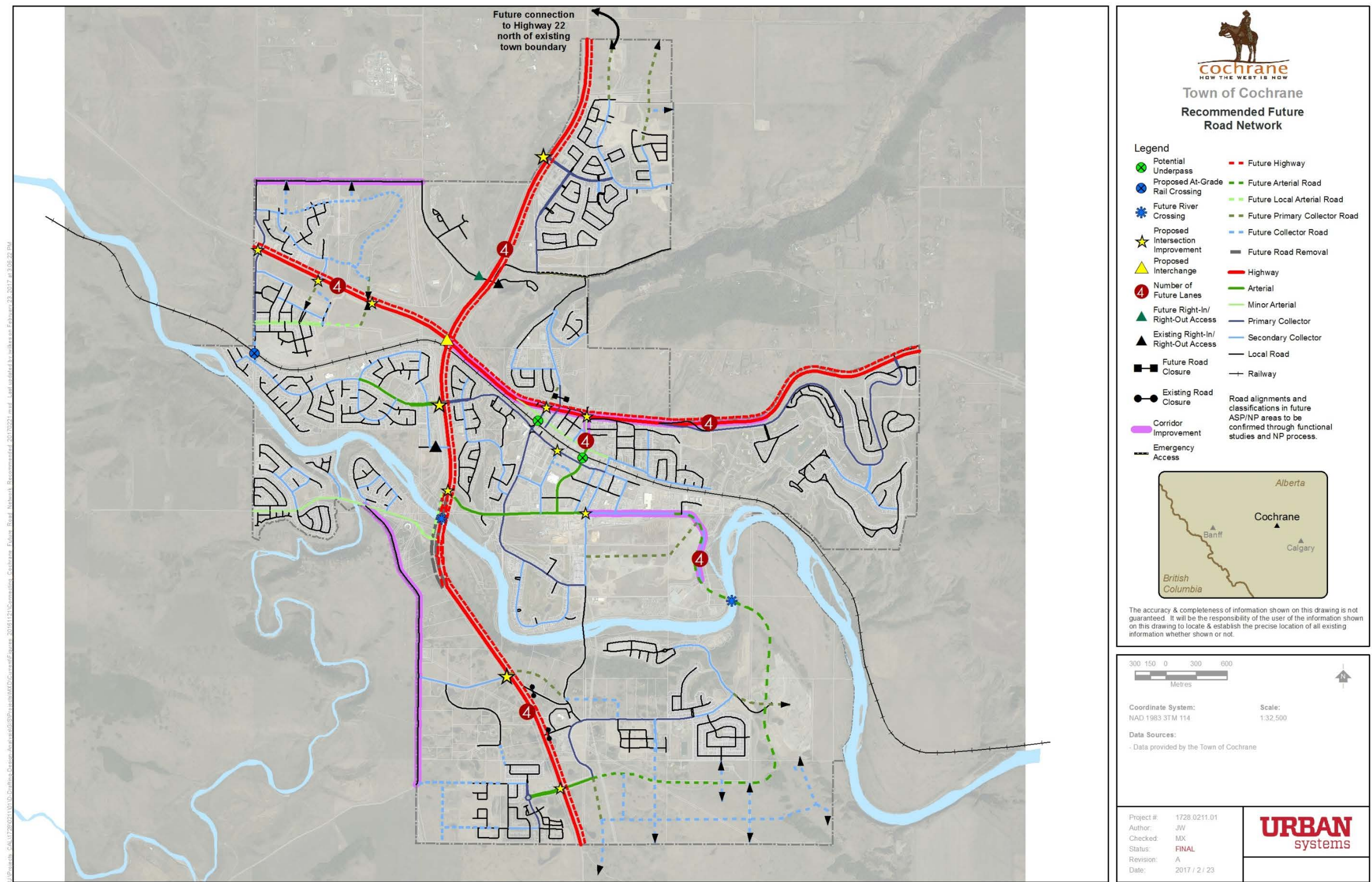


Figure 6-1: Recommended Road Network

6.1.1 Complete the Network

New and growing neighbourhoods need new roadways and connections. These connections must be planned and designed to accommodate the planned development in the area. This section outlines the guidelines for the type and format of new roadways and identifies the major connections required to complete the network in developing areas.

Note that there are some undeveloped and very low-density areas of Cochrane that are outside of the current planning horizon and are subject to future Area Structure Plans. These areas will also need new road networks, which will be determined through later planning processes.

Road Classifications and Typical Cross-sections

Road classifications are assigned based on forecasted daily demand for a roadway combined with the surrounding land use and network role of the roadway. Connecting Cochrane recommends continuing with the existing road classifications and specifications outlined in Table 6-1 for new roadways and improvements to existing roadways. Note that in retrofit situations, it may be acceptable to narrow lane widths by up to 0.3 m to a minimum of 3.0 m, if required to maintain minimum access for all modes of transportation. This would be appropriate on roads with lower speed and low truck traffic.

Table 6-1: Road Class and Typical Requirements

Street Type	Daily Traffic Volume Accommodation (vpd)	Land Use Access Accommodated	Recommended lane width	Parking
Arterial Street	20,000 – 35,000	Industrial, Commercial	3.5 m	None
Industrial Street	2,000 – 12,000	Industrial, Commercial	4.5 m	None
Collector Street	2,000 – 8,000	Commercial, Multi-Residential, Residential	3.3 m	Yes
Residential Street	0 – 2,000	Multi-Residential, Residential	N/A (Pavement width of 9.0m)	Yes
Neighbourhood Boulevard	12,500 – 22,500	Lane (Alley)	3.3 m	Yes
Primary Collector	8,000 – 15,000	Commercial, Multi-Residential, Residential, Lane (Alley)	3.5 m	None
Activity Centre Street	3,000 – 15,000	Lane (Alley)	3.3 m	Yes

Road Network in New Developments

Roadways in new neighbourhoods are located, sized, designed, and built through the development process. Transportation Impact Assessments that accompany Area Structure Plans, Neighbourhood Plans, Tentative and/or Subdivision Plans, and Development Permits must demonstrate that the planned transportation network has sufficient capacity to support the development in the near- and long- term. The planned local network within the community must connect to the larger municipal network in a way that provides sufficient access, including network redundancy.

Arterial and Collector Roads are important to Connecting Cochrane because they allow people to connect within and between neighbourhoods. The arterial and collector road network should be designed to accommodate forecasted traffic volumes due to development, with intersection laning and control determined through transportation impact studies as development progresses.

Major recommended new road corridors associated with new neighbourhoods are listed below and illustrated in Figure 6-1:

- South Cochrane:
 - o Fireside Collector Road Network
 - o Fireside Link and Rolling Range South of Bow River / East of Highway 22:
 - o Southbow Collector and Arterial Road Network;
 - o Willow Drive / Southbow Avenue.
- Highway 1A West / North of CP Rail Line:
 - o Heritage Hills Collector and Arterial Road Network;
 - o Heritage Hills Collector Road connections to Township Road 262;
 - o Heartland Collector and Arterial Road Network.
- Northeast Cochrane:
 - o Sunset Ridge Collector Road Network.

Highway Connections and Crossings

Further to the road corridors themselves, good connections are critical to the success of new development and for the Town. As identified earlier, “being connected” was one of the key issues uncovered through public consultation and is an important theme through the vision and goals. New neighbourhoods need to be connected to other areas of Town and to regional and provincial destinations. Frequent and appropriate access and crossing opportunities along Highway 22 and Highway 1A are essential to the success of the Town.

Current planning by Alberta Transportation does not support all the highway connections recommended by Connecting Cochrane. Because of the high importance of these connections to the Town of Cochrane, Town staff will continue to work with Alberta Transportation to advocate the provision of reasonable and appropriate access to and across the highways for new neighbourhoods, as outlined below:

- Highway 1A West of Highway 22
 - o Three intersections provide access to new development west of Highway 22. These will be improved over time as indicated by transportation studies associated with development. Alberta Transportation has agreed to these three intersections.
- Highway 22 South of Highway 1A
 - o Two new connections south of the Bow River to provide access to new development in south Cochrane:
 - Complete the Rolling Range Drive intersection by adding a new east approach to connect to River Heights Lane
 - Create a new intersection associated with the Southbow community in south Cochrane.

6.1.2 Maximize Existing Networks

The existing road network within the Town is a significant asset that must be managed to maximize its efficiency and longevity. Ongoing asset management and minor improvements to operations and safety will ensure that the Town's investment is protected therefore reducing expensive major infrastructure upgrades. This section outlines recommendations to maximize the existing network.

Asset Management

Effectively managing a community's infrastructure requires long term planning and strong communication and coordination amongst various departments including finance, planning, engineering and infrastructure.

Cochrane will continue to plan for the annual maintenance and rehabilitation of its road infrastructure, including resurfacing projects and to integrate asset management projects with the provision of new infrastructure, such as bicycle markings, wherever possible.

Existing Municipal Intersections

The Town reviews intersection control on a regular basis to ensure that intersections are operating efficiently. This includes assessing the need to install four-way stops, signals, investigating the use of roundabouts, particularly on Highway 1A at Centre Avenue and 5th Avenue, as well as the management of existing signal timings. Through the analysis supporting Connecting Cochrane and other transportation work in the Town, the following improvements have been recommended at existing intersections:

- **Griffin Road & River Avenue.** Install traffic signals and improve the lane configuration at the intersection.
- **Railway Street & Grande Avenue.** As this area evolves, lane configuration improvements will be required. This intersection should be monitored as traffic volumes increase; a multi-way stop is recommended in the mid-term. Alternative intersection control may be appropriate depending on the evolution of traffic volumes, pedestrian and cyclist crossings, and transit needs.

6.1.3 New Infrastructure / Significant Upgrades

The technical work supporting Connecting Cochrane used a travel demand model to estimate growth in traffic volumes over the next 43 years. As described earlier, the 'future base' model was used to generate anticipated traffic volumes with known network improvements in place. Three 'option' models were developed to assess different combinations of additional improvements. These improvements were based on findings from the previous transportation master plan, as well as results of ongoing transportation studies and work in support of development growth, and included initial consultation with stakeholders. These options and their key outcomes were assessed and presented to the public for feedback. The results of the analysis and consultation led to the development of a hybrid recommended network which is consistent with the vision and goals, and responsive to public input.

The infrastructure and transportation upgrades recommended below are partially a result of the previous efforts confirmed through modelling and the consultation process. In addition to the recommendations, the discussion provides insight into some of the elements that were considered through the analysis, but were excluded from the final recommended network. The recommended infrastructure and transportation upgrades are illustrated in Figure 6-1, along with the network in new neighbourhoods that was discussed in Section 6.1.1.

Highways

Highway 1A and Highway 22 are Alberta Transportations jurisdiction; they form an essential component of the transportation network for trips within Cochrane and between Cochrane and the surrounding region. The highways act as a barrier in locations where crossing opportunities are limited, and some highway intersections currently experience congestion during peak periods. This congestion is expected to increase over time if no improvements are made to the highway network. The Province has short term and long-term plans for improvements along the two highways, but timing is largely dependent on available funding.

Alberta Budget 2017 includes funding to begin the process for building an interchange at Highway 1A and Highway 22 in the Town of Cochrane. The project is estimated to cost between \$40 to 50 million. It will include:

- Twinning of Highway 1A under a twinned Highway 22 structure;
- Construction of a twinned Highway 22 bridge structure over the CPR mainline;
- Ramps to access both Highway 1A and 22; and,
- Highway 1A bridges over Big Hill Creek.

Selection of an engineering consultant will begin in 2017. Once design and engineering are complete construction could begin as early as Fall 2019, and is expected to take about two years to complete construction.

Along Highway 22, the Province has developed a long-term vision for improvements that include widening from two to four lanes. Although the existing daily traffic volumes meet the guidelines for widening along some sections within the Town, the Province does not currently have it in their three-year plan to widen, but they anticipate that the widening will be funded within 20 years. The following are recommended highway improvements based on the above-mentioned modeling, Alberta Transportation planning

studies, transportation impact studies for community developments, and the Town's transportation planning studies, and include:

- **Highway 1A west of Highway 22.** Development west of Highway 22 both north and south of Highway 1A is expected to contribute to growing traffic volumes on this link. The Province currently has no plans to widen or improve this section of Highway 1A. Current, peak hour and peak direction volumes are in the range of 450 vehicles per hour (vph). By 2060, this is expected to increase to between 1,100 vph and 1,400 vph, with much of the increase expected in the mid-term horizon. These traffic volumes are over the capacity for a two-lane highway with signalized intersections, and therefore improvements will be needed before the 50-year horizon. Recommended improvements include:
 - o Twin to four lanes to accommodate future highway volumes.
 - o Improvements at Horse Creek Road associated with future four laning and traffic volumes associated with development.
 - o Improvements at Heritage Gate associated with future four laning and traffic volumes associated with development.
 - o Approved new intersection near east limits of Heritage Hills and Heartland development associated with development. This intersection has been approved by Alberta Transportation and may be built initially on the two-lane highway and then upgraded when the highway is twinned to four lanes. Additional intersection improvements to support development may be required in addition to four lanes on Highway 1A.
 - **Highway 1A east of Highway 22.** This section of Highway 1A was identified throughout consultation as being an area of congestion and a barrier to north-south travel. This is the primary connection for commuter traffic between Cochrane and Calgary. Plans to widen the highway through this section were put on hold by the Province due to unavailable funding. The Existing peak hour, peak direction traffic volumes range from around 950 vehicles per hour (vph) at Gleneagles Drive to about 1,050 vph around Centre Avenue. These volumes exceed the typical capacity of a two-lane signal controlled highway and analysis indicated some delay at the intersection with Fourth Avenue. Delays are expected to increase over time with development, however other recommendations regarding improvements to the municipal network discussed later in this section will mitigate some demands on Highway 1A between Centre Avenue and Highway 22.
- In the future, traffic on Highway 1A can be expected to increase to approximately three times the current traffic volumes. With this anticipated demand, even a four-lane highway can be expected to be over capacity within 20 years. The plan acknowledges that some action will be required to mitigate increasing traffic volumes on Highway 1A; this is discussed further in Section 6.1.4.
- Connecting Cochrane highlights several recommendations for the near and mid-term horizons to address existing challenges and accommodate growth. Improvements to Highway 1A based on Alberta Transportation's design include:
- o Twin to four lanes from Gleneagles to just west of Highway 22 to accommodate existing and future highway volumes.

- o Improve and consolidate intersections throughout the downtown as part of the twinning of Highway 1A to 4 lanes. Roundabouts or full access intersections through the downtown core should be investigated, noting full access intersections are expected to require left-turn lanes and roundabouts could be implemented prior to the twinning to help ease traffic congestion.
- o Improve the intersection of Centre Avenue and Highway 1A. This intersection has sufficient capacity for existing traffic volumes; however, after the construction of the James Walker Trail / North Arterial Bridge and the grade separation of the Centre Avenue rail crossing, much of the growth in traffic travelling to Highway 1A from neighbourhoods south of the Bow River can be expected to use this route. There will be two opportunities to improve this intersection: one associated with the twinning of Highway 1A and the other associated with the widening of Centre Avenue to four lanes, options to improve this intersection should include investigation of the use of a roundabout to accommodate traffic movement in all directions or dual left turn lanes to accommodate westbound to southbound traffic volumes, which is discussed further below.
- o Close the intersection of Highway 1A and 4th Avenue. Since the railway crossing at 4th Avenue closed, retaining the 4th Avenue intersection as the key connection does not make sense from the south side; therefore, this plan recommends closing the intersection with 4th Avenue North and realigning the north approach to meet the improved 5th Avenue intersection which connects south of the railway with an at-grade crossing.
- o Improve the 5th Avenue / Highway 1A intersection in association with the twinning of Highway 1A to four lanes, investigation of the use of a roundabout to accommodate traffic movement in all directions should also be explored in this area with Alberta Transportation.
- o
- **Highway 22 north of Highway 1A.** This segment of the highway is currently operating with sufficient capacity; however, it is approaching capacity for a highway with signalized intersections. Peak direction, peak hour volumes are around 800 vph on the approach to Highway 1A. Due to growth in the Sunset Ridge area as well as in Rocky View County to the north, volumes are expected to increase to around 1,700 vph by 2060. These increased volumes warrant a four-lane cross section. The recommended improvements for this section of highway are based on Alberta Transportation's long-term plan and direction, and are identified below:
 - o Twin to four lanes to accommodate future highway volumes.
 - o Retain the right-in/right-out access to Rancho House Road / HWY 22 (east leg) with the twinning of Highway 22 to four lanes. This will address sight line and safety concerns that would accompany the new geometry and increased traffic volumes at this intersection. The Province originally planned to close this intersection, but approved the restricted access in 2014/5 following a request by the Town.
 - o Convert the Range Road 43 /HWY 22 (west leg) to right-in / right-out access only with the twinning of Highway 22 to four lanes. This will address sight line and safety concerns that would accompany the new geometry and traffic volumes at this intersection.

- o Improve the intersection with Sunset Boulevard, in conjunction with the twinning of Highway 22 to four lanes, and accommodate traffic growth from development in proposed intersection design. The existing Sunset Boulevard was constructed to accommodate the long-term plans, and has a second left turn bay constructed but is closed to existing traffic until traffic warrants the additional westbound to southbound movement.
- **Highway 22 south of Highway 1A.** This segment of highway provides an important connection for new developments south of the Bow River. Based on the technical review and the input of public consultation, the role of Highway 22 as a barrier for east-west travel and community connectivity has been identified as a major challenge.

Although Alberta Transportation currently characterises this highway as a rural multi-lane highway, the increasing development within the Town of Cochrane and the highway's role in local travel indicates that further consideration is needed. Alberta Transportation has indicated that they will not be considering additional intersections on Highway 22 until future study has identified the proposed location of a future Ring Road. The development of Highway 22 into a future Ring Road would have negative impacts on road network connectivity within Cochrane, as well as on development potential and quality of life. A Ring Road through the Town would also have significant land requirements, including impacts on land that has already been developed. Alberta Transportation would need to consult with the Town and public before any changes to the Highway classification can be made. Highway 22 currently operates as an urban connector and requires upgrading to address growing north-south volumes and the expanding desire for east-west connectivity by all modes of transportation. Existing peak hour, peak direction traffic volumes are approximately 1,000 vehicles per hour (vph).

Growth in this area will be mitigated by new municipal infrastructure, which is discussed in more detail below. Future peak hour, peak direction traffic volumes on Highway 22 south of Highway 1A are expected to be around 1,500 vph in 45 years. As the Town develops, more frequent at-grade intersections are needed to support connectivity for all modes of transportation; especially relating to crossing opportunities of the highway. Based on the information above, the following improvements are recommended for Highway 22 south of Highway 1A:

- o Twin to four lanes to accommodate future highway volumes. Per Alberta Transportation long term plan, this includes the realignment of the Highway 22 Bridge over the Bow River and improved connections to George Fox Trail and Griffin Road. This is described in further detail as part of the Bow River Crossings discussion below.
- o Provide three full movement intersections on Highway 22 south of the Bow River:
 - Improve Rolling Range Drive intersection to a full movement intersection with the addition of a new east leg at this location, connecting to River Heights Lane within an undetermined alignment.
 - Improve the existing connection at James Walker Trail. In the short-term changes to the lane configuration and signal timing are needed; the design of the improved intersection has recently been approved by Alberta Transportation and construction should begin in 2017.

- New connection in the Southbow neighbourhood to facilitate crossings and access to the community.
- **Highway 1A / Highway 22 intersection.** The analysis of existing conditions, numerous transportation impact assessments, discussions with the Province and Town, and from the results of public consultation indicated that this intersection is over capacity and causes significant delay in some peak periods. Further, residents experience long queues during special events and holiday weekends when regional traffic is combined with local traffic. These delays are expected to increase over time as traffic volumes increase. Existing (2015) and forecast peak hour traffic turning movement volumes for this intersection are shown in Figure 6-2 and Figure 6-3.

Alberta Transportation and the Town are collaborating to develop a proposed improvement configuration for this intersection, based on geometric, traffic, and design constraints. The anticipated outcome is a grade separated Parclo AB interchange, as shown in Figure 6-4. The design will decrease delays and increase reliability in the near-term. When twinning of Highway 1A and Highway 22 occur, it is anticipated that additional work will be required at this interchange to accommodate the wider highways and long-term forecast traffic volumes. Connecting Cochrane's recommendations for this intersection are:

- o Undertake improvements to the Hwy 1A/22 intersection through the construction of a grade-separated interchange as soon as possible.

Figure 6-2: Highway 1A & Highway 22 – Existing (2015) Peak Hour Traffic Volumes AM (PM)

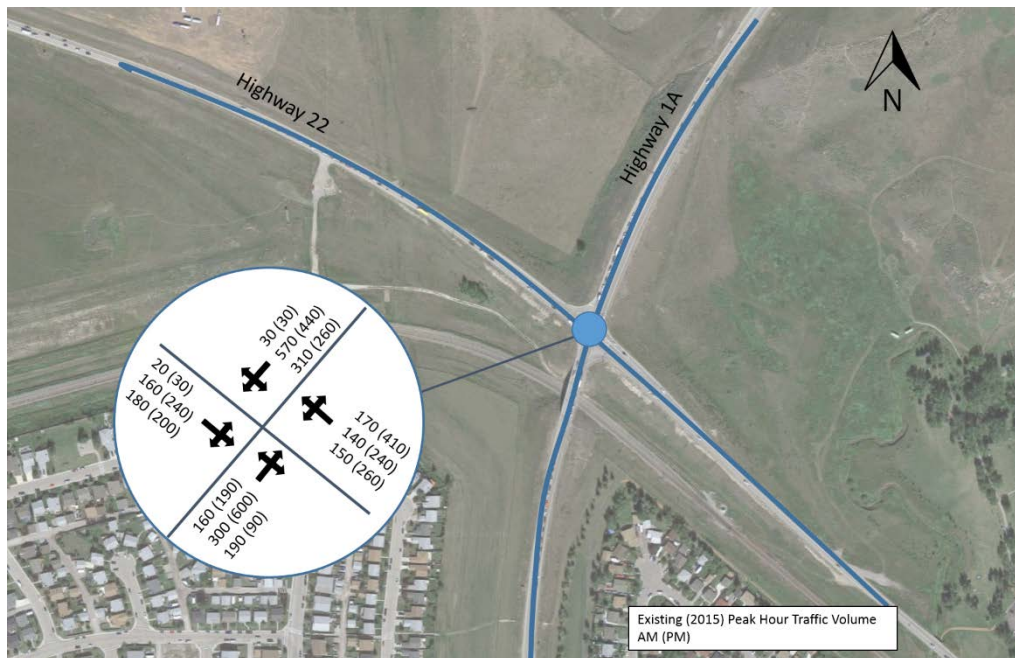


Figure 6-3: Highway 1A & Highway 22 – Future (2060) Peak Hour Traffic Volumes AM (PM)

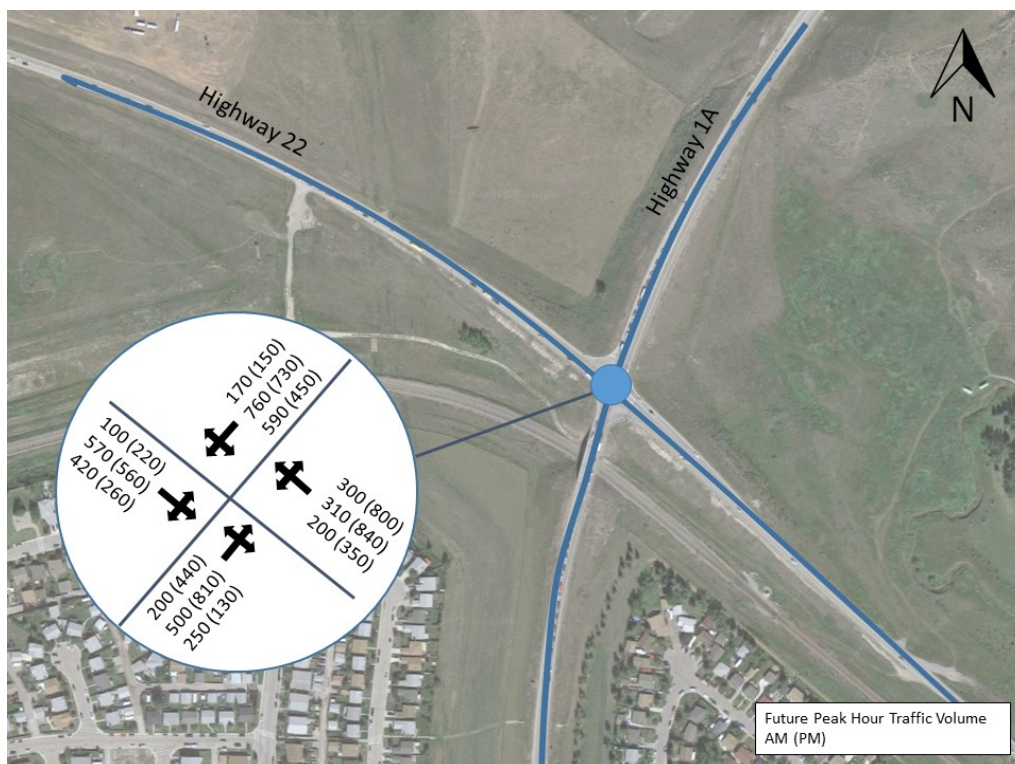
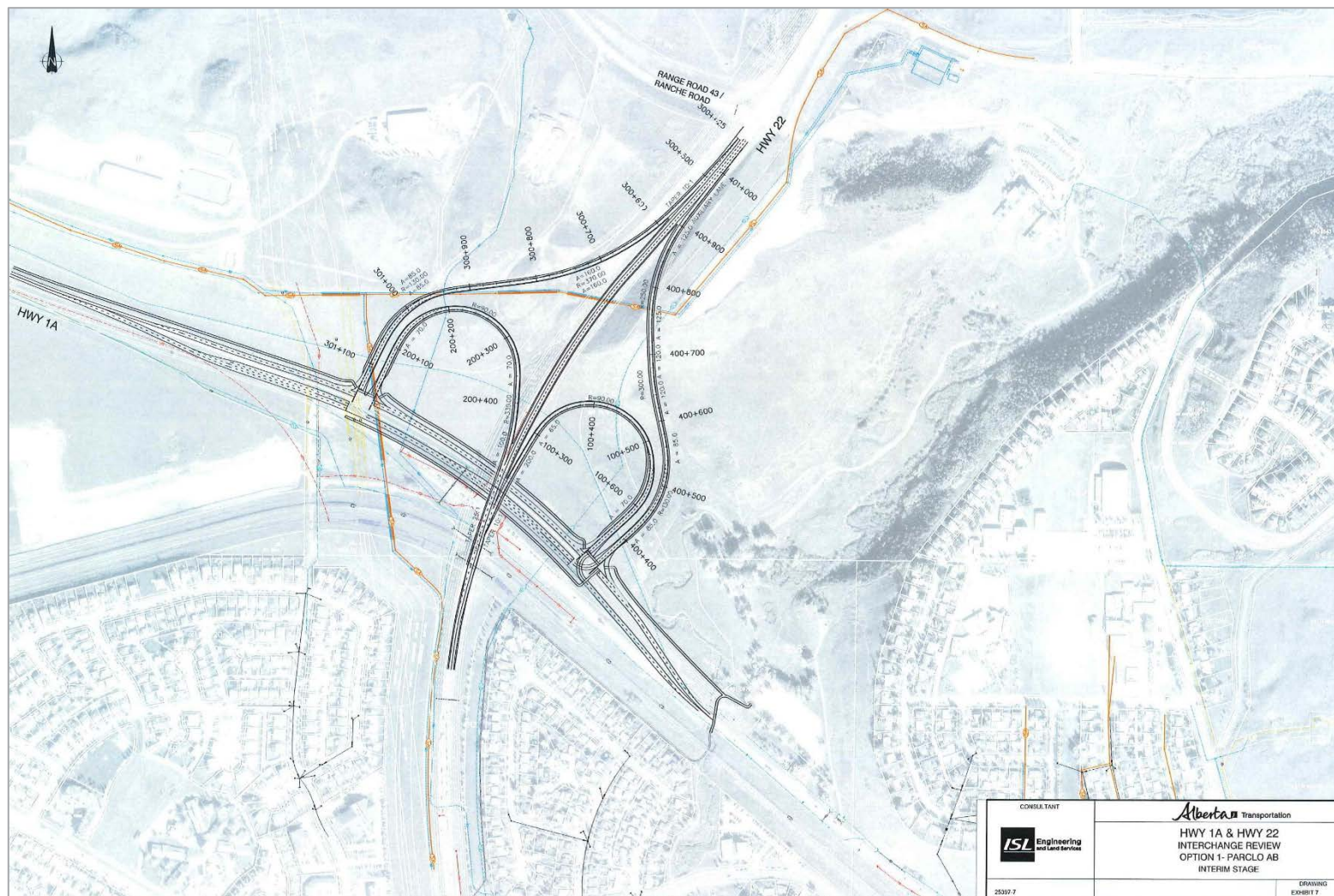


Figure 6-4: Highway 1A / Highway 22 Proposed Concept



Source: ISL / Alberta Transportation (2016)

Bow River Crossings

Currently, peak hour, peak direction traffic volumes crossing the Bow River in Cochrane are approximately 1,000 vehicles per hour (vph). By 2060, these are expected to increase to around 2,900 vehicles. Traffic volumes across the Bow River are related to both trips within Cochrane (between the south and downtown), and between Cochrane and neighbouring communities. This level of traffic volume and the destinations of these trips indicate the need for both additional travel lanes on Highway 22 (as described above) and a new municipal connection on the east side of Cochrane. These types of major improvements will support both capacity and the network redundancy that will be increasingly important as Cochrane grows. The following improvements are recommended:

- Highway 22 Bow River Bridge upgrade and George Fox Trail – Griffin Road Connector
 - o Established in the Alberta Transportation Highway 22:16 and Highway 1A:06 – 2005 McElhanney Study
 - o To accomplish the twinning of Highway 22 to four lanes, Alberta Transportation has indicated that it will build a new four-lane crossing of the Bow River to the east of the existing structure.
 - o The existing highway bridge will be maintained to facilitate connections between Highway 22, George Fox Trail, and Griffin Road, as well, will facilitate traffic during construction of the new bridge. By separating the new crossing to the east, the existing bridge will also act as a new arterial connection, providing a more direct connection between George Fox Trail and Griffin Road. Vehicles currently making this movement must enter and exit Highway 22 in a short distance.

Figure 6-5: Schematic of Highway 22 Four-Lane and George Fox Trail / Griffin Road Connector



- Construct the new James Walker Trail / North Arterial Bridge. This bridge will ultimately provide a new four lane crossing connecting south Cochrane to downtown and on to Highway 1A.

River Avenue Bridge was considered to provide a more robust road network to also support growth in south Cochrane. The existing bridge is a historic asset and a valuable pedestrian / bicycle connection in its existing form. Topography on the south banks of the Bow River creates a difficult connection to planned development on the south shore. Finally, the widening of Highway 22 combined with the provision of the ultimate four lanes at the James Walker Trail / North Arterial Bridge will provide sufficient capacity for the next 45 years. For these reasons, expansion and / or replacement of the River Avenue connection was excluded from the recommended improvements as part of this plan.

Road-Rail Crossings

As north-south traffic volumes in Cochrane grow, the effects of delay due to train blockages of downtown roads will become more significant. Because of the geography of Cochrane and the lengths of the trains, trains can block all downtown north-south connections for an extended time. Currently, around 1,200 vehicles cross the railway in downtown Cochrane during the afternoon peak hour. By 2060, this is expected to grow to approximately 2,400 vehicles. There are presently 26 trains that cross through Cochrane daily. At grade road-rail crossings also introduce the risk of train-vehicle collisions; the frequency of these collisions can be expected to increase as traffic and train volumes increase over time.

Connecting Cochrane recommends the following improvements to accommodate this increase and address existing challenges:

- Centre Avenue Rail Grade Separation;
- 5th Avenue Rail Grade Separation.

Further to these grade separated rail crossings, a new at-grade crossing connecting Horse Creek Road to Quigley Drive is recommended to improve local connectivity and network redundancy on the west side.

New / Widened Municipal Roads

Further to the elements outlined above, the following new infrastructure and major improvements to existing infrastructure are recommended to accommodate forecasted traffic demand and to provide network resiliency:

- James Walker Trail / North Arterial– this new arterial roadway is proposed to connect the James Walker Trail / Highway 22 intersection to Griffin Road via the new arterial road crossing of the Bow River. In the long-term, four lanes are required throughout this new corridor.
- Griffin Road – the long-term plan includes four lanes on Griffin Road between River Avenue and the connection to the North Arterial to accommodate growing vehicle volumes.
- Towers Trail – this existing road is expected to be redeveloped in the long-term to a higher standard two-lane urban cross-section with sidewalks or pathways. It will provide secondary access to the neighbourhoods of Fireside and Rolling Range and increase overall connectivity for all communities south of the Bow River and west of Highway 22. The proposed long-term improvement is in addition to rehabilitation that is required in the short-term. The final

classification, cross-section, and intersection treatments for this roadway in the long-term may be revisited as the land use in surrounding neighbourhoods evolve.

- East-West Connection; - the plan includes the development of a primary collector between River Avenue and the North Arterial north of the Spray Lake Sawmills Family Sports Centre. This road will be constructed and funded by the landowner as the lands develop.
- Centre Avenue four lanes from Railway Street to Highway 1A. – Centre Avenue is currently four lanes between Griffin Road and Railway Street. The roadway plan includes the expansion of Centre Avenue between Railway Street and Highway 1A to four lanes.

A new connection between Township Road 262 and Highway 22 was also considered based on the Province's long-term plan; however, the technical work indicated that traffic demand on this link would be very low, with less than 200 vehicles per hour during peak hours in 45 years. This level of traffic demand did not warrant developing this connection now, which is topographically challenging and would significantly impact the environment. Any connection provided at this location would be relatively high cost and provide service to a limited number of trips.

6.1.4 Additional Options for Future Consideration

Prior to a population of 60,000 being reached, the Highway 1A through downtown can be expected to become congested, even with the recommended road network in place. There are two options to take Cochrane beyond the recommended network, to address growing traffic concerns in the long-term.

New East-West Road North of Highway 1A

This option includes a new east-west road north of Highway 1A. Key components of this option are:

- Provides more access to the northeast;
- Reduces traffic volumes through the intersections in downtown Cochrane;
- Requires cooperation with Rocky View County;
- Environmental and topographic challenges exist;
- Significant capital cost associated with developing new link.

This option could accommodate approximately 600 vehicles in the peak hour, peak direction by 2060. This could reduce traffic volumes on Highway 1A to around 2,500 vehicles by 2060, reducing demands on the network between Gleneagles Drive and Highway 22. This connection was excluded from the Connecting Cochrane recommendations because more work is required to understand the potential alignment, for discussions with partner organizations (Rocky View County), and to evaluate the economic viability for the connection.

High Quality, High Frequency Transit Service

Invest in high quality, high frequency transit service, especially service between Cochrane and Calgary. Key components of this option are:

- Provides transportation choice to all citizens;
- Reduces environmental footprint of transportation;

- Reduces congestion on Highway 1A and throughout Cochrane;
- Requires growing investment over time with operating costs funded in part from Town taxpayers.

More information about this option is presented as part of the transit plan. The impact of this option would range depending on the intensity of the investment.

6.2 Walking Network Plan

Walking is the most fundamental form of transportation and is a component of most trips by other modes; for example, drivers and passengers walk to and from their vehicles and transit passengers walk to the bus stop. Walking is an accessible mode across age demographics, including children and some seniors. It doesn't require a drivers' licence and it has no cost. Walking has been shown to contribute to good health and reduce obesity, especially in children. Increasing the share of trips made by walking and improving the walking network plan supports many of Connecting Cochrane's goals.

People will choose to walk if it is a comfortable and convenient way to travel. Trips less than two kilometres in length are most convenient for walking and therefore land uses where destinations and homes are close together will support walk trips. The walking network must also support safe, enjoyable recreational walking, which is tied to Cochrane's sense of place and connection to the natural landscape.

To address the walking issues and challenges identified earlier and to maximize investment in walking, the Walking Network Plan focuses on a few key elements:

- Standards and guidelines that provide the day-to-day guidance to integrate walking into infrastructure improvements and new development;
- Recommended infrastructure improvements to complete the walking network in existing neighbourhoods, new neighbourhoods, and on the pathway network;
- Programs that will support walking within Cochrane.

6.2.1 Standards and Guidelines

Prioritize Walking Infrastructure

- Ensure that all new neighbourhoods provide a system of roadways and pathways that prioritizes local walking for recreation and as a mode of transportation.
- Provide strong connections to the River and Cochrane's natural surroundings and heritage in new and existing neighbourhoods.
- Ensure all new roadway infrastructure and roadway expansion projects within the Town's boundary include accommodation for walking, including advocating for walking infrastructure alongside and crossing highways.

Prioritize Investment in New Infrastructure

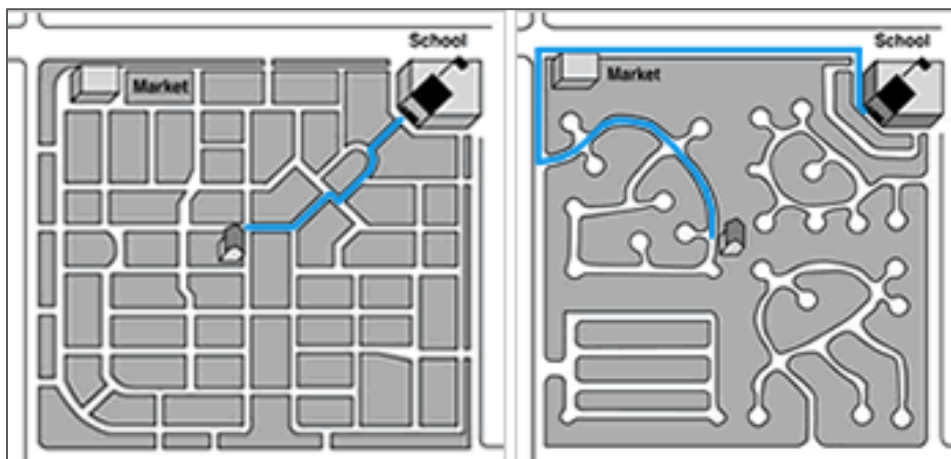
- Focus investments in addressing gaps in the existing network on areas where safety is a concern or where there is high demand for pedestrian access.
- Downtown walkability is important for transportation and livability and is a high priority.

- Walkability and pedestrian safety around schools is a main concern.

Improve Walkability within neighbourhoods

Figure 6-6: Example of How Community Layout Affects Walking Distance

- In commercial areas, invest in landscaping, narrow crossings, and construct accessible letdowns at intersections.
- Invest in accessibility around schools, including improving crossing locations, constructing accessible letdowns, and completing the pathway network.



Source: Transportation and Growth Management Oregon Guide for Reducing Street Widths

- Reduce walking distances within neighbourhoods by:
 - o Providing direct connections for walking (and cycling) to schools via pathways and direct connections to the neighbouring residential areas.
 - o Create convenient connections to the regional pathway system and reduce the need for circuitous travel paths for pedestrians. Ensure that urban blocks that exceed 200 m in length have pathways that effectively reduce travel distances for pedestrians.

Pedestrian Facility Design Guidelines

- Minimum sidewalk widths in Cochrane are 1.5 m for new neighbourhoods and for the redevelopment of existing infrastructure.
- Sidewalks are required on both sides of the road throughout Cochrane.

Classification	Minimum Sidewalk Width
Arterial Street	2.0 m separate walk OR 3.0 m multi-use pathway
Industrial Street	1.5 m moonwalk
Collector Street	2.0 m monowalk/separate OR 3.0 m moonwalk
Residential Street	1.5 m separate walk OR 1.5 m moonwalk
Neighbourhood Boulevard	3.0 m separate walk OR 3.0 m multi-use pathway
Primary Collector	2.0 m separate walk
Activity Centre Street	2.5 m separate walk

Improve Crossings & Support Accessibility

Accessible, safe, and visible crossings are an important part of a quality walking environment, especially as the number of young families and seniors increase over time. For vulnerable road users, such as youth, children and seniors, it is important that crossings be designed to support safety and comfort within the pedestrian network, so that residents and visitors of all ages and abilities feel confident walking in the Town. A range of crossing and accessibility treatments should be considered throughout the Town, with a focus on the downtown, other commercial areas, areas close to seniors' residences, and around schools. Recommended measures include:

- Curb letdowns on all corners of intersections;
- Curb extensions/bulbs to shorten crossing distances;
- Identification and improvement of uncontrolled and mid-block crossing locations;
- Implementation of audible signals and pedestrian countdown timers at new signals and at downtown locations as signals are upgraded and / or replaced.

6.2.2 Complete Network

As discussed in Section 3.2, the existing pedestrian network has gaps and barriers that can be addressed through investment in sidewalks, trails, pathways, and crossings. Further, pedestrian infrastructure should be developed concurrently with new and expanding neighbourhoods. This section identifies new or improved pedestrian infrastructure to complete the Town's pedestrian network. The recommended walking network with these improvements is illustrated in Figure 6-7.

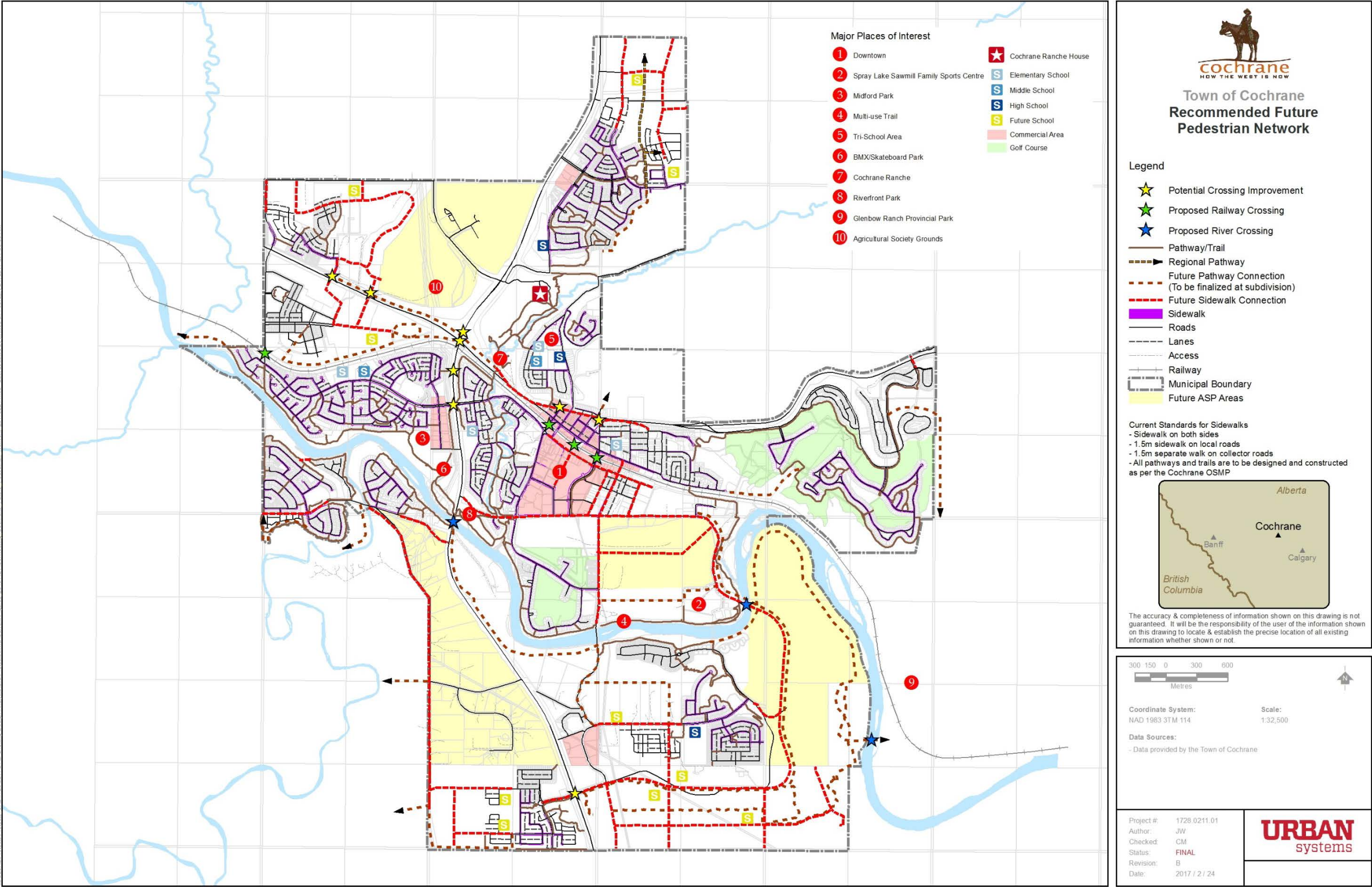


Figure 6-7: Recommended Walking Network

Existing Roads

- Railway Street – address gaps and add sidewalk on north side.
- Highway 1A – develop a pathway along Highway 1A between Heritage Gate and downtown. Through downtown, install sidewalks along Highway 1A
- River Avenue – add sidewalk on east side.
- Charlesworth Avenue – add sidewalk on east side and address gaps in west side.
- Griffin Road – address gaps on north side and add sidewalk on south side.
- River Avenue – add sidewalk on east side and both sides from Riverview Drive to River Avenue Bridge.
- George Fox Trail – address gaps and add sidewalks

Improve Connections

- Grade separated rail crossing on Centre Avenue;
- Grade separated rail crossing on 5th Avenue;
- New at-grade rail crossing at Horse Creek Road / Quigley Drive;
- New at-grade/grade separated rail crossing at 2nd Avenue / Grande Avenue;
- New Bow River crossing and connection to regional pathway system (connecting to the Glenbow Provincial Park);
- Improved highway crossings throughout Town;
- Improved Bow River crossing on Highway 22;
- Connect to the regional pathway system at the Town's boundaries as they are developed, including
 - o West of Quigley Drive
 - o Along north shore of Jumping Pound Creek
 - o To Jumping Pound Creek east of Rolling Range Drive
 - o Through wetlands west of the Fireside Development
 - o Into Glenbow Ranch Provincial Park via new crossing of Bow River
 - o Into Glenbow Ranch Provincial Park via Gleneagles
 - o Into Big Hill Natural Environmental Park and beyond around 2nd Avenue north of Highway 1A

New Neighbourhoods

- Throughout all new neighbourhoods, sidewalks should be provided on both sides based on the guidelines and policies identified earlier. In addition to these connections, new neighbourhoods should connect to the municipal and regional trail networks as identified in the recommended network drawing. Areas without current ASPs should work to identify an appropriate trail network considering the natural environment, topography, land use, and opportunities for transportation and recreational connections.

Trails and Pathways

- Complete Bow River Trail on south bank between River Avenue Bridge and Highway 22, connection under Highway 22 and from Riviera community to Cochrane Boundary. Ensure that this links to Regional Pathway system via new crossing of the Bow River.
- New east-west pathways north and south of Highway 1A. Ensure that these provide a continuous connection through the Highway 1A interchange and into the new neighbourhoods in west Cochrane.
- New formal pathway connecting the River Avenue Bridge to River Heights Drive
- New pathway along James Walker Trail and the North Arterial

6.2.3 Support Programs

Supportive measures, such as programs, events, and education and encouragement initiatives should also be in place to encourage walking and connection to the natural environment in the Town of Cochrane. Often, supportive programming targeted at walking is combined with programs to support cycling as well, as both provide alternatives to driving for short-distance and local trips. Sharing information and awareness about walking and cycling is a cost-effective initiative that can enable people to feel more safe and comfortable using active modes to get around the Town, while encouraging increased use of existing pedestrian (and cycling) facilities.

- **Safe Routes to School** can be delivered through partnerships with the School District, and can include programs that promote walking (and cycling) education and road safety awareness. Safe Routes to School programming involves investigating engineering, encouragement, enforcement, education and evaluation measures that can improve the safety for youth and children walking and cycling to school sites. This can include working with schools and students to identify preferred walking and cycling routes to school, identifying areas where infrastructure improvements are needed, and developing volunteer-based programs (i.e. crossing guards, student valet programs, walking school bus) to promote better traffic safety during drop-off and pick-up times.
- A **dedicated Town webpage** providing general information about the benefits of walking and cycling, information on popular walking and cycling routes, pedestrian and bicycle maps, and other education / safety resources. The Town's website could potentially host the 'walking and cycling in the Town of Cochrane' website which also highlights information and services for residents and visitors.
- Host and / or promote **community events** such a local Walk Day, World Walking Day, iWalk, Move for Health, Active Month, and or special area events that support local businesses and walking, including local festivals. Consider closing a local road as part of these celebrations.
- Develop a **signage and wayfinding program** to guide people around activity areas, such as Downtown, the Bow River trail network, and emerging commercial and recreational areas. Enhanced wayfinding signage can benefit visitors, to help orient pedestrians to key destinations and commercial areas of the Town. Enhanced signage also benefits all users, can increase

safety, and helps to ensure a sense of place at key destinations. Signage standards may support a theme, and should be designed to meet the needs of visually impaired.

6.3 Cycling Network Plan

Cochrane has an existing network of trail systems that enable walking, cycling, and a connection to the natural environment; however, currently the use of cycling as a mode of transportation is limited. The Town developed a Bicycle Network Plan in 2012 and many of the findings and recommendations of that plan are supported in this document. The recommendations of that plan have been reviewed and assessed based on the information and analysis done as part of Connecting Cochrane, and the Bicycle Network Plan (2012) provides the basis for this Cycling Network Plan.

There is substantial opportunity in the Town of Cochrane to increase cycling use for both recreation and transportation purposes by targeting people who are interested in cycling, but there are concerns about safety and convenience. Consultation with stakeholder groups indicates that the 'interested but concerned group' represents a wide cross-section of individuals and can be up to 60% of the total population. Increasing the use of cycling as a mode of transportation can have the following key benefits:

- **Economic benefits.** Bicycle-friendly transportation networks are known to contribute to the development of a healthy and diverse local economy. Bicycle-supportive design can encourage residents to take short bicycle trips to local businesses, instead of driving to services farther away in adjacent communities. A bicycle-friendly transportation system in Cochrane with a strong connection to the network of parks and trails, together with a vibrant commercial centre can attract more visitors to the Town who will in turn be patrons of Cochrane's services and amenities.
- **Quality of life.** A bicycle-friendly community can encourage a more livable and enjoyable neighbourhood, with a stronger sense of place and freedom of mobility.
- **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.
- **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.

This Cycling Network Plan includes three main components, which are explored below: standards and guidelines, complete network, and supporting programs.

6.3.1 Standards and Guidelines

Guiding Principles for the Planning and Design of Cycling Infrastructure

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.

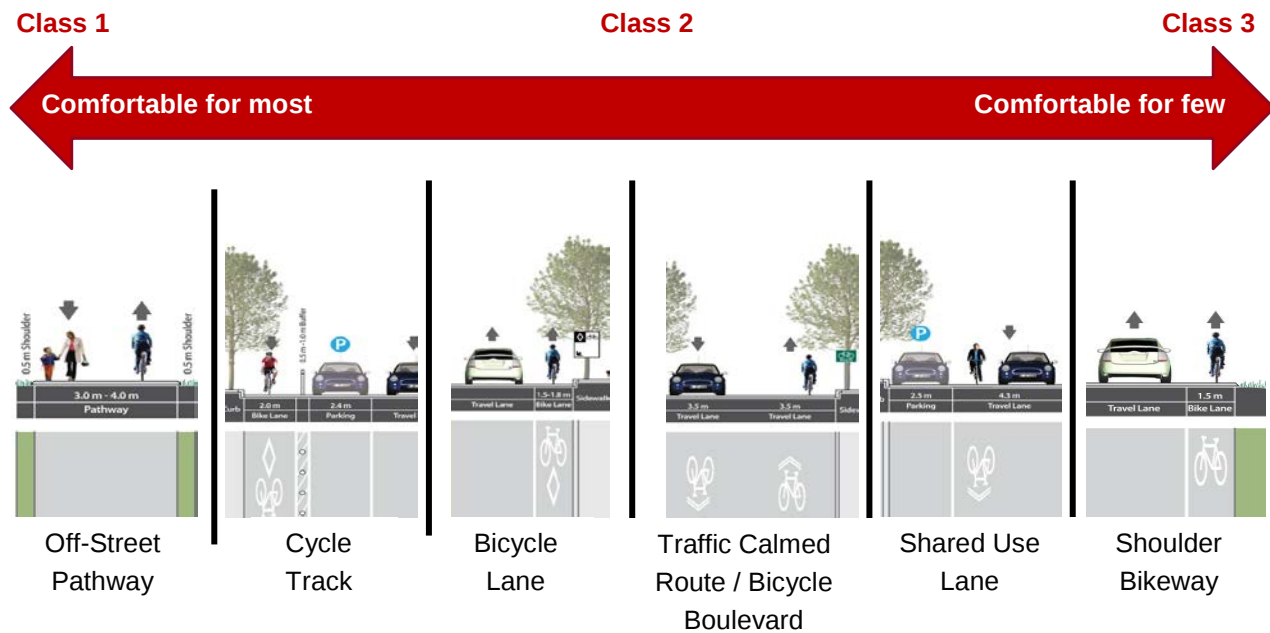
1. **Transportation Hierarchy.** Much like traditional road network planning, where a classification hierarchy (freeway, arterial, collector, local) is well understood, bicycle network planning can benefit from the use of a similar approach. For example, very confident riders may feel comfortable in standard painted bike lanes on busy arterial streets, while many people may feel safe only when cycling on quieter streets or on separated pathways. The goal of a transportation hierarchy is to provide options for all users within the cycling network.

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.

- o **Off-Street Pathways** are physically separated from motor vehicles outside of the roadway and provide sufficient width and supporting facilities to be used by cyclists, pedestrians, and other non-motorized users.
- o **Cycle Tracks** are physically separated from motor vehicle travel lanes but are located within the roadway. 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.
- o **Bicycle Lanes** are separate on street lanes that are designated exclusively for bicycle travel and include pavement markings.
- o **Bicycle Boulevard / 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.
- o **Shared Use Lanes** provide direct routes for experienced cyclists along the outer edge of the travel lane on the roadway.
- o **Shoulder Bikeways** are typically found on streets without curb and gutter but with shoulders wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway.

As shown in Figure 6-8, each type of bicycle facility is located on a continuum 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 comfortable for few people including the “Strong and Fearless” and “Enthusied and Confident” groups.

Figure 6-8: Bicycle Facility Hierarchy



2. Connectivity and Directness. In addition to establishing a hierarchy of bicycle facilities, it is important that bicycle routes 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:

- o Provide connections to the downtown core from all neighbourhoods throughout the town.
- o Provide access within the downtown core to key destinations.
- o Connect with all schools, parks and community facilities.
- o Integrate with the off-street pathway network.

These guiding principles have been applied in the development of the recommended cycling infrastructure improvements recommended in the Complete Network section. They should also be applied as the network is planned and designed in new neighbourhoods.

Bicycle Facility Selection and Design Guidelines

Each road classification includes a recommended bicycle facility based on road type, land use, and environmental capacity. These are described in Table 6-2. These are applicable to new neighbourhoods and should also be considered in the redevelopment of existing roadways. Further to this guidance, a higher class of bicycle facility may be warranted for some routes, land uses, or to accomplish specific goals. For examples, key spine routes in the network may warrant consideration for a higher bicycle facility class than specified by the road classification (e.g. the Town could consider a Cycle Track rather than a Cycle Lane in some circumstances). There are no 'hard and fast' rules for determining the most appropriate type of facility for a location; judgement and planning are critical elements of this decision.

Table 6-2: Bicycle Facility by Road Classification

Classification	Bike Facility Selection
Arterial Street	1.5 m bike lane + 1.0 m buffer OR 3.0 m multi-use pathway
Industrial Street	None
Collector Street (AADT < 3,000 vpd)	1.5 m with no buffer OR Bicycle Boulevard (Shared) / Traffic Calmed Route
Residential Street	None OR Bicycle Boulevard (Shared) / Traffic Calmed Route
Neighbourhood Boulevard	1.5 m with no buffer OR 3.0 m multi-use pathway
Primary Collector	1.5 m with no buffer
Activity Centre Street	1.5 m with no buffer

Bicycle facility design within the Town of Cochrane should be based on current practices as described in the following documents:

- 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).

More detailed guidance for each facility type is included in the Bicycle Network Plan (2012).

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. 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, including:

- 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.

6.3.2 *Complete the Network*

Section 3.3 identified gaps in the existing bicycle network, focused largely on the limitations of the on-street cycling network through the established areas of Cochrane. This can be addressed through investment in on-street cycling routes, including bicycle boulevards, on-street bike lanes, and shared use lanes. There are also some gaps in the existing trail network, where investments in key locations could improve overall access and connectivity. Further, bicycle infrastructure, including both on-street and pathway networks, should be developed concurrently with new and expanding neighbourhoods. This section identifies new or improved cycling infrastructure to complete the Town's network based on the 2012 Bicycle Network Plan and the 2013 Open Space Master Plan. The recommended bicycle network with these improvements is illustrated in Figure 6-9.

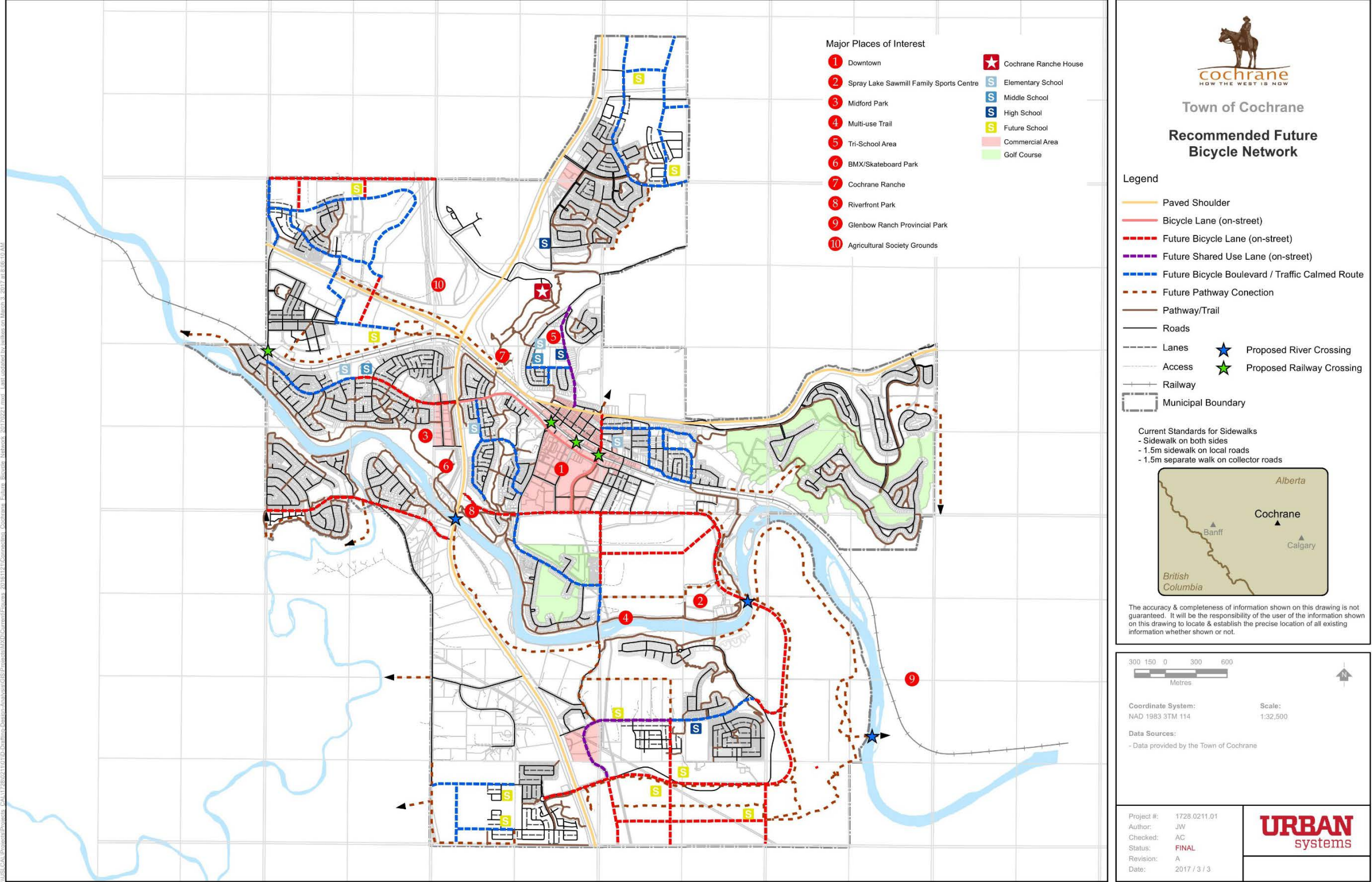


Figure 6-9: Recommended Cycling Network

Existing Roads

- **Quigley Drive/Glenbow Drive.** Bicycle lanes / shared use lanes were installed in 2015 between Centre Avenue and Highway 22 on Railway Street West and Glenbow Drive. To continue this connecting route, bicycle lanes are recommended along Quigley Drive between Highway 22 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 to 3.5 m.
- **River Avenue.** Bicycle lanes are recommended between Riverview Drive and Griffin Road West. This corridor would provide a north-south connection from the Bow River and riverfront pathways to the downtown core. This would also provide a connection to the existing River Avenue bridge, which is intended to be a bicycle and pedestrian-only bridge to provide access to subdivisions south of the Bow River. There is sufficient room on River Avenue to provide enhanced bicycle lanes with buffers and/or delineators.
- **Centre Avenue.** The development plan for the Quarry site identifies Centre Avenue as the primary north-south spine road accommodating vehicles, pedestrians and cyclists. Centre Avenue provides a direct north-south connection between Griffin Road/River Avenue and the downtown core and has been designed to include bicycle lanes. Continuing bicycle lanes north along Centre Avenue to Highway 1A is also recommended; although this section may be more challenging. Reductions in the ideal width for bicycle lanes and / or other road cross-section elements may be required in an interim condition. Over the next fifty years, more property may become available through redevelopment and this would allow for the development of higher quality bicycle facilities.
- **Griffin Road.** Griffin Road at the east end 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.

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 from Highway 22 to Bethany Centre;
- River Heights Drive from Willows Drive to Riviera Way;

Improved Connections

- **Improve Road and Rail 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. These include providing improved bicycle crossings at the following locations:
 - o Grade separated rail crossing on Centre Avenue;
 - o Grade separated rail crossing on 5th Avenue;
 - o New at-grade rail crossing at Horse Creek Road / Quigley Drive;
 - o New at-grade/grade separated rail crossing at 2nd Avenue / Grande Avenue;
 - o Improved at-grade crossing of Highway 22 at Quigley Drive / Glenbow Drive;
 - o Improved at-grade crossing of Highway 22 at Fireside Gate / James Walker Trail;
 - o Improved at-grade crossing of Highway 1A at Centre Avenue;
 - o Improved at-grade crossings of Highway 1A in West Cochrane;
 - o Improved below grade crossing of Glenbow Drive for existing trail east of Glendale Way.

- **New and improved crossings of the Bow River.** The Bow River is a major barrier to north-south bicycle travel throughout the Town. It also provides an opportunity for cycling, as the existing and proposed trail system is an asset and connection to nature for residents and visitors. Bow River Crossings for cyclists can be improved as part of other projects targeting roadway and pedestrian improvements. These projects should be designed in a way that provides high quality connectivity for cyclists. They include:
 - o Improved Bow River Crossing and connections to surrounding trail network at Highway 22. The 2013 Open Space Master Plan identifies the crossing as a key connection, and indicates that the Town should work with the province in the design of the crossing to ensure appropriate pedestrian and bicycle facilities and connection of these facilities to the existing and future Town's' trail network.

- **Connect to the regional pathway system** at the Town's boundaries, including
 - o West of Quigley Drive;
 - o Along north shore of Jumping Pound Creek;
 - o Into Glenbow Ranch Provincial Park via new crossing of Bow River;
 - o Into Glenbow Ranch Provincial Park via Gleneagles;
 - o Into Big Hill natural area and beyond around 2nd Avenue north of Highway 1A;

New Neighbourhoods

Cochrane is a rapidly growing community with significant growth expected in the coming years. This presents the Town with an important opportunity to ensure new roads are designed to adequately accommodate cyclists and pedestrians. New roads should follow the cross-section guidelines outlined earlier to ensure the minimum requirements for cycling are met; however, the Town and the development

community should look for opportunities to exceed these requirements on important routes. 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. Based on the results of public consultation, multi-use pathways and connections to the trail and pathway network should be prioritized wherever possible.

Trails and Pathways

As noted previously, the Town has an extensive and high quality off-street pathway network. This existing network presents significant opportunities for the Town to make further improvements to increase comfort and reduce travel times cost effectively.

- **Pave Pathways.** Some pathways in Cochrane are currently unpaved and consist of gravel or red shale. The Town undertook a significant trail paving program in 2013 after many unpaved trails were damaged during flood conditions. Approximately 40 km of trails remain unpaved. 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 completing the east–west connection along the Bow River from West Pointe to the future bridge connecting the North Arterial with River Heights.



- **Provide Amenities.** Off-street pathways can provide improved comfort through services such as air pumps, water fountains, signage and wayfinding, and footrests at crossings.
- **Extend the trail and pathway network** with the following new infrastructure:



- o Ensure that new neighbourhoods contribute to a continuous and high-quality trail and pathway network. The network should focus on connections to the natural environment, the existing Cochrane Trail and Pathway Network, regional pathway connections, and key destinations, such as schools.
- o Complete Bow River Trail on south bank between River Avenue Bridge and Highway 22, connection under Highway 22 and from Riviera community to the Town boundary. Ensure that this links to regional pathway system via new bridge crossing of the Bow River.

- o New east-west pathways north and south of Highway 1A. Ensure that these provide a continuous connection through the Highway 1A interchange and into the new neighbourhoods in west Cochrane.
 - o New formal pathway connecting the River Avenue Bridge to River Heights Drive.
 - o New pathway along James Walker Trail and the North Arterial.
 - o Address short gaps in the network, either through extending the trail system or by providing a short, high quality on-street connection between discontinuous components of the trail network (i.e. shortcut from Glenpatrick Dr. to 5th Avenue)
- **Calgary-to Cochrane Regional Trail.** 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 promote important linkages with all stakeholders in the area. 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 to help attract new residents to the Town and to further increase the amount of recreational day riders from Calgary.

6.3.3 Support Programs

There are several support measures and programs that the Town can consider to encourage cycling.

- Engage with partners to develop **programs and events** that support cycling within the Town. These may include:
 - o Partnerships, i.e. with urban developers, schools, workplaces and major retailers on promotion and end of trip facilities
 - o Campaigns aimed at newcomers (lending out bicycles, including electrical assisted bicycles for a limited period, informing of cycling facilities etc.)
 - o Lending cargo bikes to small businesses and other companies with an interest in cycling
 - o Working with adult living communities and seniors' apartment buildings on providing bicycles for small trips
 - o Encouraging Town staff to ride their bicycles to work. The Town already provides storage for bicycles and showers for staff use and will continue to do so.
 - o Working with the businesses in the downtown area to create a "Bike Friendly Business Environment."

- Develop a **signage and wayfinding** program. Wayfinding and signage helps to identify designated bicycle routes and guide cyclists throughout the bicycle network, and 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:
 - o Route signs that indicate which streets are designated bicycle routes using bicycle route signs and bicycle symbols on street name signs. Supplementary tabs can be installed below bicycle route signs to indicate major destinations.
 - o 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.
 - o Educational signs provide information for cyclists and motorists regarding appropriate use of bicycle facilities, such as “Share the Road” signs and “Yield To...” signs.



Sample sign for illustration purposes only. Signage design and key locations to be determined through wayfinding program development.

6.4 Transit Network

Over the long-term, a well-developed transit system will support the economic goals of Cochrane by providing everything from access to an expanded labour force through to supporting one-car families that wish to live in Cochrane. A mature transit system where ridership is high will reduce vehicle travel and reduce traffic delays and congestion in the long-term.

Additionally, a mature transit system provides many social benefits including helping aging populations maintain independence and supporting people of all age groups and income levels with an attractive transportation alternative. Finally, the environmental benefits of an established transit service across a community will reduce greenhouse gases, support greater density and mixture of land uses and limit other environmental impacts such as on watercourses and wildlife by reducing the demand on roadways.

As discussed earlier, there is no existing conventional public transit service in Cochrane. As the Town grows, transit will become a part of the transportation system, providing a choice of modes to all users and providing improved connectivity. The exact form of the transit network will be determined through further study; Connecting Cochrane sets out key guiding principles and needs that will shape the transit system as it is established in the near-term and then enhanced over the mid- and long- term horizons.

6.4.1 Policies and Guidelines

Proposed Service Standards

Service standards form the basis for the development of a transit system. Service standards also change over time as a service grows it will develop goals and targets beyond what was envisioned for the initial service offering. Service standards set guidelines for the delivery of transit services as well as act as a “service contract” between the Town of Cochrane, its service delivery contractor, and transit users. Included in the standards should be definitions for service coverage, bus stop location and amenities (benches and shelters), hours of service, levels of service frequency and a defined process for evaluating any changes to the transit service. Suggested standards should be formally adopted as part of the process for finalizing Cochrane’s transit service plans.

Start with Base Service and Evolve Over Time

Mid and small-size communities throughout Canada have taken different approaches to providing initial transit services. Some communities have chosen to invest in local services only and others at the fringe of larger urban centres have developed a regional service. In a few cases, communities have developed a local and regional service as a first step toward introducing transit.

For travel within the Town, the principle customer markets that would use and benefit from transit include seniors, youth, modest income residents as well as people with mobility challenges. In many cases, these people are ‘captive’ to transit for their mobility and independence to get around the community and to access services. Transit provides them the opportunity to travel further distances, and travel is not impeded by grades.

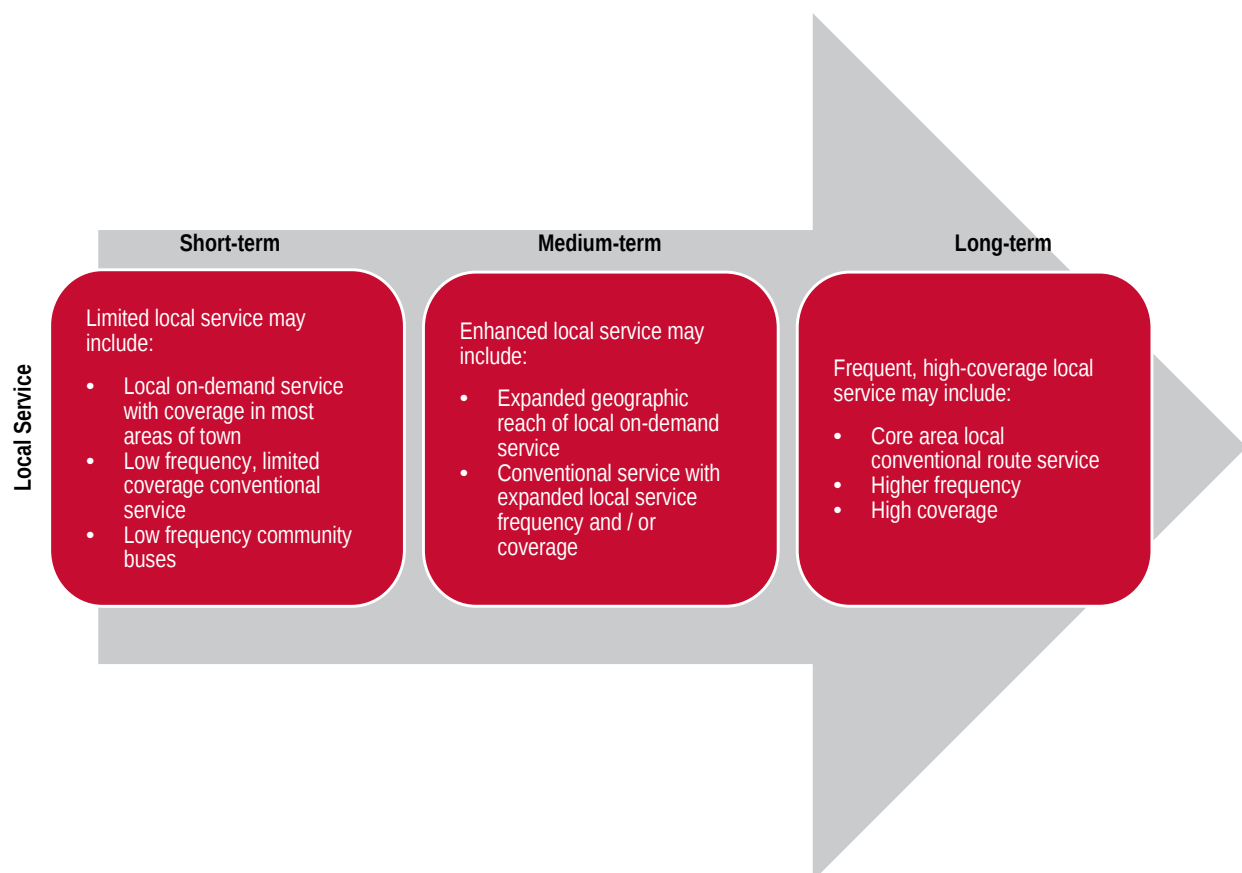
Regionally focused transit allows people to live in Cochrane and commute to work and/or go to school in Calgary. A regional service would also provide access to other labour markets for businesses located in Cochrane. While a regional transit service could support mobility for lower income workers, it also supports one-car households, reducing household costs and allowing for sustainable transportation choices.

The Town of Cochrane’s transit service will need to evolve over time as the population grows. To ensure that the first step to introducing transit to Cochrane is manageable and realistic, it must be focused. As a manageable and fundable first step, it is unlikely that transit service can be geographically broad, serve all community groups – youth, seniors, workers, etc. – provide high quality service for all types of travel, and operate through all periods of the day. Instead, the initial service will be designed to focus on a few key aspects that align with the Town’s goals. This may mean fewer hours of service, lower frequency, or an alternative service model as a first step in a system that will become more complex and serve more markets as it evolves over time.

A limited conventional weekday service along with an on-demand service is proposed for local travel to provide basic accessibility to the community. This service will improve over time as population and resources warrant.

The proposed local transit service routing for Cochrane strives to maximize the number of residential dwellings located within 400 metre service coverage. As a minimum, introductory service would be provided in the weekday AM and PM peak periods to provide transit service to key local destinations, connections to commuter service to/from Calgary and travel by seniors and youth within Cochrane. Service expansion could be phased based on evaluation of demand, ridership and available operating funding

Figure 6-10: Cochrane's Transit Service Trajectory



Maximize Local Service Coverage to Provide Accessibility

Transit service coverage is a performance measure that gauges people's access to transit service by means of walking distance. The transit industry standard for service coverage is 400 metres walking distance, which is roughly equivalent to a five-minute walk.

To provide equitable service to the community, Cochrane's local services will be focused on serving as many neighbourhoods as financially feasible, at the expense of higher frequencies. At service initiation, an equitable yet limited weekday local service will provide residents without access to a vehicle or the

ability to drive with basic mobility options. As an example, it will provide those without a vehicle with the ability to get to an appointment, a social engagement, or get about town. Local services will operate at 40 to 60-minute service frequencies throughout much of the day with timed, reasonable transfers at a singular transfer point downtown. Routes will be designed to maximize coverage, i.e. maximizing the number of residents within a 400-metre walking distance to transit.

Over time as more resources become available, system frequencies and hours of operation will increase to support local commute trips, with peak period frequencies as low as 15 minutes on key routes. Additional routes will be introduced to improve route directness and shorten travel times while maintaining the integrity of the timed transfer system at the downtown transfer point. Ultimately, 90-95% of residences will be within 400 metres of a transit stop.

Adapt Service Delivery to Achieve Objectives

The delivery of local services can evolve and change over time as ridership warrants. To maximize service coverage area with limited resources, local services can be delivered with on-demand service, community shuttle fixed routes, and conventional bus fixed routes. Proposed service types for local services are described below.

- ***On-Demand*** transit provides an attractive alternative to a fixed-route, fixed-schedule service in low transit demand areas. Unlike conventional services, on-demand operates only in response to customer requests for service. On-demand services will pick-up passengers at designated transit stops in the community and drop-off customers anywhere along a given route at their request. Customers must make advanced reservations (typically up to 60 minutes before making a trip) to request a pick-up at a specific transit stop. Depending on the number and location of passengers picked-up, drivers need not follow a predefined route. Rather, drivers may choose the most direct route between the pick-up and drop-off request points. If no requests are made, no transit service is provided in that area. This reduces vehicle operating costs and reduces the undesirable outcome of empty buses running through the community. An on-demand service could accommodate 5 to 20 trips per hour.
- ***Community Shuttle Fixed Route*** could be trialed in areas of higher density nearer to the core, with on-demand services remaining for neighbourhoods further afield. Alternately, fixed routes could be designed to route into lower density areas on-demand only.
- ***Conventional Bus Fixed Route*** services can be initiated for local routes when ridership warrants. Conventional 12 metre buses are less nimble than community shuttle vehicles but can accommodate significantly more passengers. Conventional fixed



bus routes tend to be more direct than community shuttle routes, with greater distance between stops. This is due in part to geometry and in part because the character of the bus route is evolving from a purely coverage based model to a higher-level service where travel speed and time on-board is of increasing concern.

Plan Neighbourhoods for Future Transit

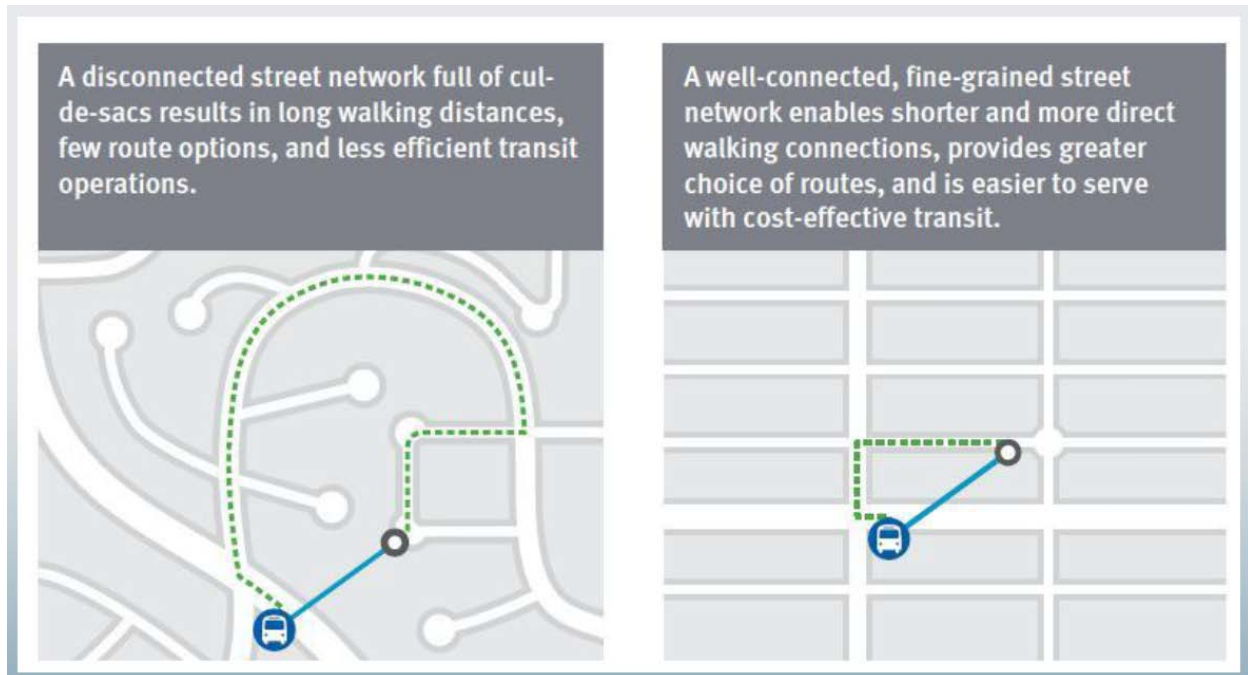
According to the Canadian Urban Transit Association (CUTA), a transit trip consists of four components:

- Trip collection (walking from origin to the bus stop)
- Transfer (waiting and transferring to the vehicle at the stop)
- The line haul
- Distribution (walking from destination stop to final destination)

In addition to investing in buses and service hours (the 'line haul'), the Town of Cochrane will need to plan for all aspects of transit trips to make public transit a true choice for residents. The following is recommended:

- Ensure all proposed local transit corridors have minimum 2.0m sidewalks on both sides of the street along their entire length. Sidewalks along main corridors should be well-lit. Where possible, separated sidewalks may be preferred along high volume/fast moving arterial corridors to improve pedestrian comfort (safer spacing and reduced incidence of splashing from vehicles during rains / snow melts).
- Ensure all sidewalks along transit corridors have curb cuts that can facilitate wheelchair access.
- Ensure safe and frequent road crossing opportunities across transit corridors.
- Ensure all bus stops are designed to accommodate wheelchairs and are cleared of ice and snow in the winter.
- Ensure easy penetration into neighbourhoods from transit stops, with preference for grid or modified grid street networks in newly developing areas as displayed in Figure 6-11.
- Build a parallel cycling network that connects neighbourhoods and transit stops to each other; ensure the provision of bike racks on buses and at major bus stops.
- Ensure bus stops are within a 200m to 400m walking distance of all residents

Figure 6-11: Roadway Network and Distance to Nearest Bus Stop



Plan for Continued Growth

For transit services to evolve investment in transit will need to grow over time. Service hours per capita is the industry-wide measure of how much transit service is provided to the community. In Alberta, smaller systems such as Leduc and Spruce Grove have low overall service hours per capita in the 0.1 to 0.2 range. Centres such as Airdrie have higher service hours per capita in the 0.4 range, while larger communities such as Strathcona County experience ratios closer to 1.7. Industry experience shows a strong correlation between amount of service and overall ridership.

At system inception, the amount of transit delivered in Cochrane on a per capita basis may be modest. It is fundamental that this level of investment increase over time to build the system. If service hours only grow at the same rate as the population, the overall amount of service will remain unchanged and the nature of services will remain static. If transit is to develop into a viable choice for Cochrane residents local travel investment levels will need to increase to ensure a continued growth of ridership.

6.4.2 Services

Conventional public transit service in Cochrane can be considered as two types of integrated service: regional and local. Regional service will provide a connection to the City of Calgary, while local service will allow people to travel around Cochrane by transit, as well as providing a connection between Cochrane's neighbourhoods and the regional service. A vision of future routing from the 2016 Feasibility Study is shown in Figure 6-12 and described in more detail below.



COCHRANE TRANSIT FEASIBILITY STUDY CONCEPTUAL ROUTES

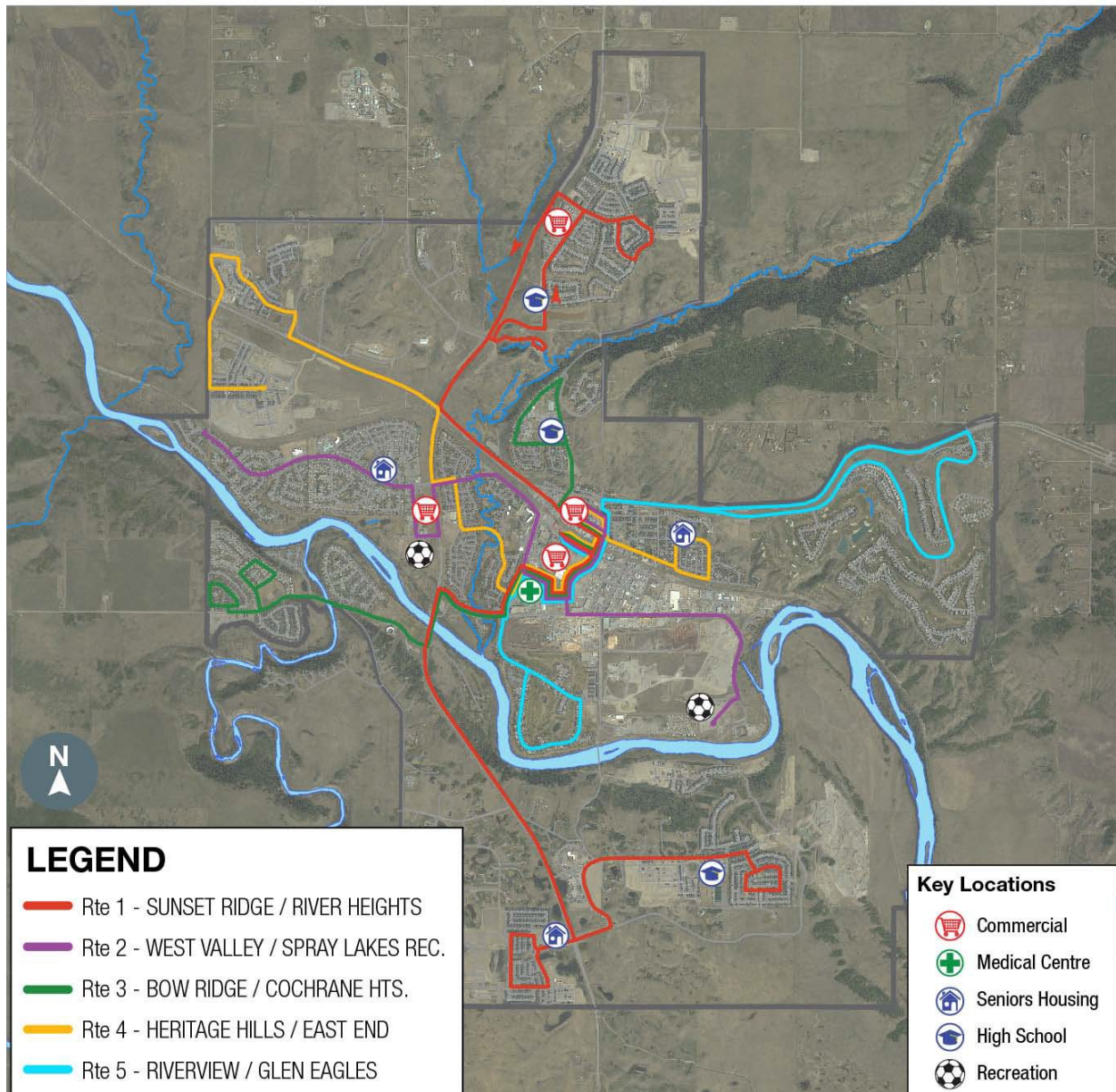


Figure 6-12: Recommended Transit Network Plan

Regional

The transit strategy prepared by Calgary Transit in 2012 identified an express bus service between Cochrane and Crowfoot LRT operating at 30 minute frequencies during the weekday morning and afternoon peak periods. This type of service is fundamentally important to the Town and, more broadly, to the highway network east of town, as peak period transit service will help mitigate the growth of vehicle traffic along the busy Highway 1A corridor to Calgary.

The form and trajectory of regional transit services should be as follows:

- Regional transit should target commute trips to/from Calgary during peak hours, connecting to Calgary's LRT network at Crowfoot Station.
- Regional transit should provide, high speed, express, limited stop service to Calgary LRT
- Regional transit service should be reasonably priced for the transit user in recognition that most regional service users will need to pay an additional cost for Calgary Transit; to be attractive, regional transit services should also not be significantly costlier than a reserved parking spot in a Calgary Transit park-and-ride lot (\$85 / month)
- At inception, Regional Express service should operate at 30 to 60-minute minimum frequencies during weekday peak periods only.
- Over the medium-term, Regional services should extend to all day weekday operation and eventually operate on weekends.
- Over the longer term, frequencies should be increased to a minimum of every 15 minutes during peak periods and 30 minutes during the off-peak, as ridership warrants. Ultimately, services should operate every day from early morning to late in the evening.

At the time of release of Connecting Cochrane, the Calgary Regional Partnership was preparing a pilot program for regional service from Downtown Cochrane to the Calgary LRT (Red Line).

Local

Local services will be designed to connect Cochrane's neighbourhoods to a central transit hub downtown. Local services will begin modestly and expand over time as ridership and resources permits.

The form and trajectory of local services should be as follows:

- Local services will be designed to maximize service coverage so that 90-95% of Cochrane residences will be within 400 metres of a transit stop
- All local and regional routes will fan out from Cochrane's central transit hub, located in the downtown core. Routes will be timed to arrive and depart the central transit hub at the same time so that passengers can easily transfer between routes within a reasonable time frame. An effective timed transfer system means that all points within Cochrane could be reached with at most one transfer at the central hub

- While local services will evolve over time, maximizing service coverage will be the overarching principle for local services where competing priorities such as route directness or increased frequency are at play. Providing access to as many residences as possible while keeping the service affordable to the community will guide the design and phasing approach of the system.

6.4.3 Facilities

Transit systems require several physical facilities and capital investments to operate. Introducing a new transit system requires an initial capital investment in key infrastructure, such as bus stops and a central hub, as well as investing in a bus fleet to provide the service.

Central Transit Hub

The Central Transit Hub would function as the nexus of Cochrane's transit system and, as such, should be in a central location downtown, near shops and services. The Central Transit Hub will connect all local and regional services in one location. As the hub of the system, all services will be designed for timed transfer from this facility, facilitating easy transfers between routes for customers. The pulsing nature of a timed transfer system means that most the system's buses will arrive and depart the hub at the same time. Thus, the central transit hub will need to be large enough to support many buses at the same time.

As the system's central customer facility, the hub should be highly visible and universally accessible. It should be well lit and comfortable and include the following amenities:

- Benches,
- Bike racks
- Shelters (possibly heated)
- Garbage receptacles
- System and route specific maps
- System timetables
- Optional GPS-powered Next Bus display boards

As the terminus for all Cochrane bus routes, the Central Transit Hub will also need to accommodate operator amenities. Washrooms will either need to be provided or an agreement will need to be reached with a neighbouring business for operators to use the facilities. Additionally, proximity to a nearby coffee shop or restaurant is an important consideration for operators and can also improve the experience for transit riders.

Transit Stops

The attractiveness of transit is not only dependent on transit service, but also on passenger facilities provided at transit exchanges and bus stops. Passenger amenities and facilities at bus stops and transit exchanges can also have a significant impact on passenger safety and comfort, in addition to attracting new customers. Enhanced facilities such as bus shelters and bike racks are recommended at bus stops and major cross roads on the local network. Shelters allow customers to remain protected from the

elements while they wait for a bus, and bike racks expand the reach of regional services to customers willing to bike from locations a bit further afield.

The following principles should apply for transit stops:

- The Town should strive to provide high visibility, universally accessible bus stops throughout Cochrane.
- Bus stops should be placed every 150-200 metres apart on the local network to support the system's longer-term basic coverage imperative of 90-95% of residences being within 400 metres of a bus stop
- A bench, route map, garbage receptacle, and schedule should be provided at every bus stop in central Cochrane and near neighbourhood gateways
- A bus stop identification pole, route map and schedule are to be located at minor stops
- Recognizing that all transit trips start and end as pedestrian trips, all bus stops should be directly accessible by sidewalk or another pedestrian path. Bus stops should be fully accessible, and providing accessible pedestrian access to bus stops should be a high priority for localized sidewalk and pedestrian crossing improvements.

Bus stops should generally be accommodated within the standard curb-to-curb width along all but arterial and highway facilities, where heavier traffic volumes may warrant bus bays. Specific bus stop design guidelines should be developed that detail the shape and form of bus stop infrastructure for different vehicle types and contexts. Examples of bus stop design guidelines focusing on on-street requirements are shown in Figure 6-14 and Figure 6-15. These specifications indicate the requirements within travel and / or parking lanes to accommodate a bus stop from the City of Calgary's guidelines for bus stops for standard vehicles in different zones (far-side, mid-block, and near-side). Examples of bus stop guidelines with more detail regarding design for accessibility and loading are provided in Figure 6-16 and Figure 6-17.

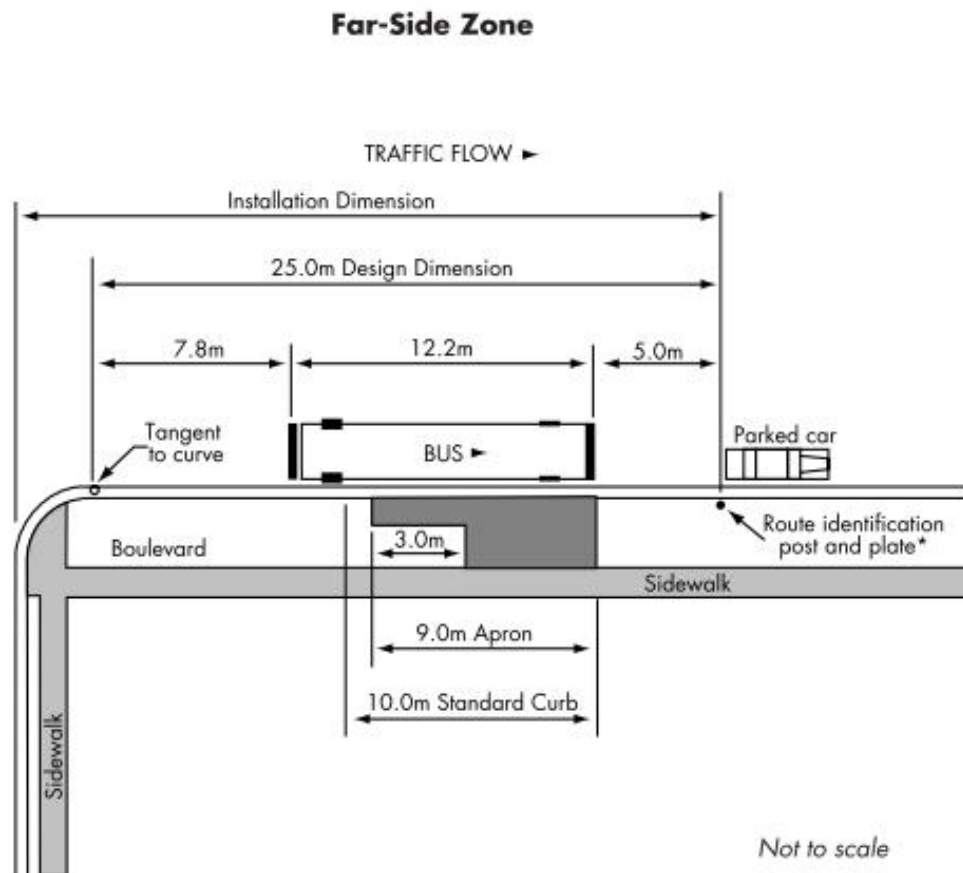
Figure 6-13: City of Calgary Bus Stop Design Guidelines for Far-Side Zones - Standard Vehicle

Figure 6-14: City of Calgary Bus Stop Design Guidelines for Mid-Block Zones - Standard Vehicle

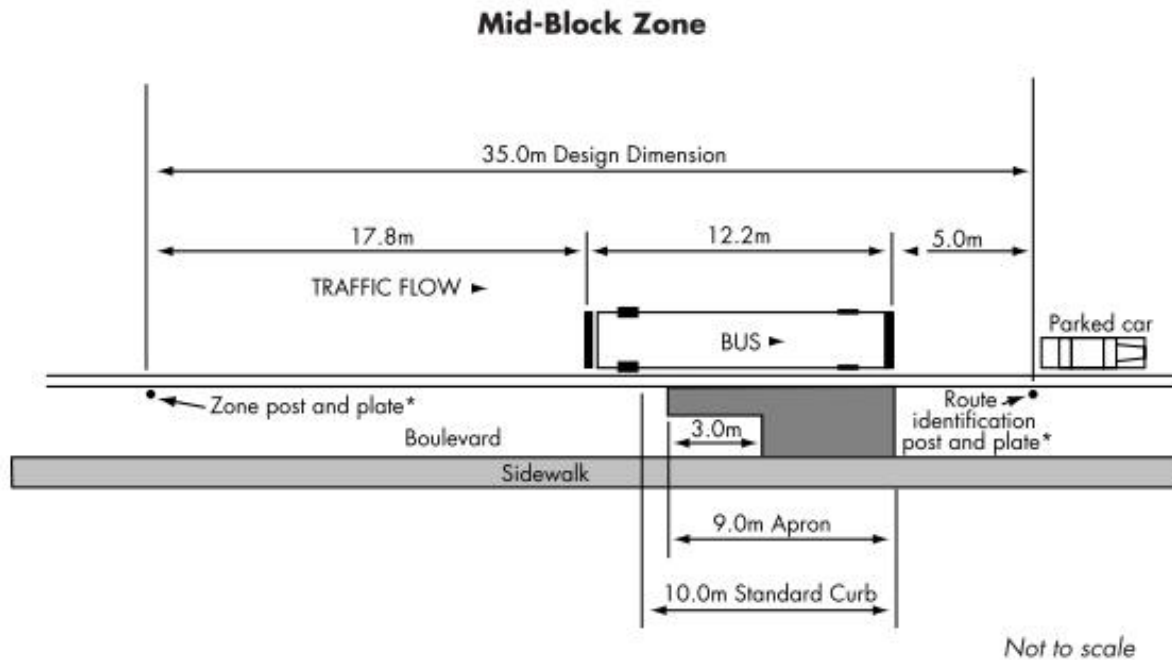


Figure 6-15: City of Calgary Bus Stop Design Guidelines for Near-Side Zones - Standard Vehicle

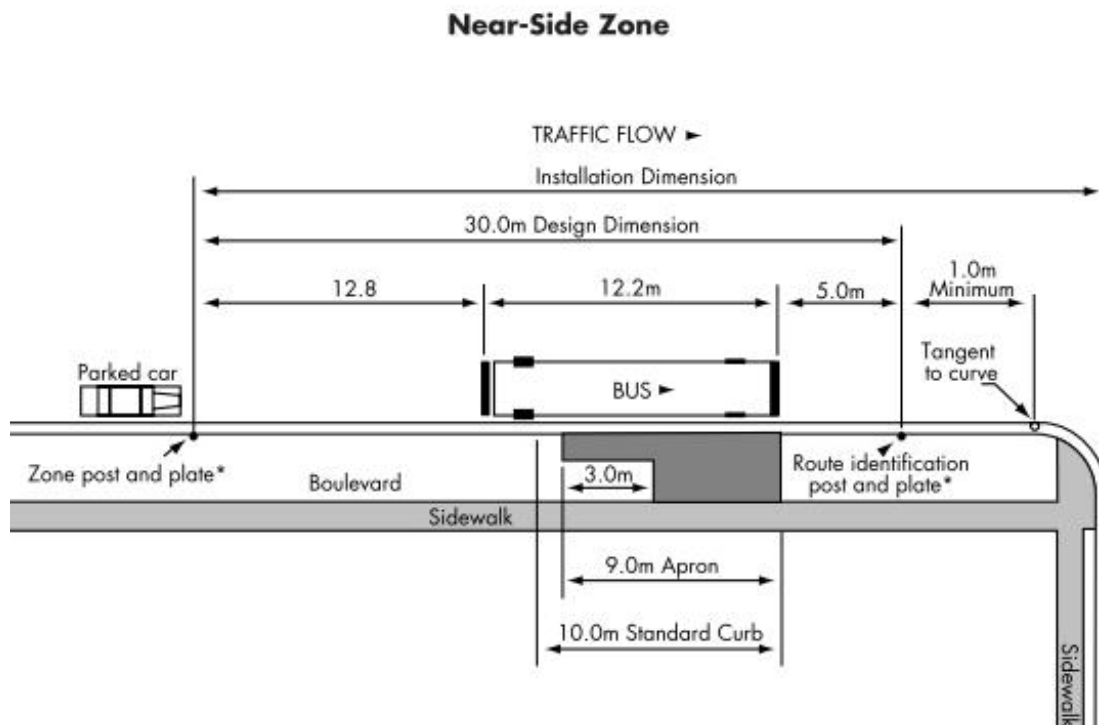


Figure 6-16: TransLink (Metro Vancouver) Bus Stop Specifications - Standard Bus

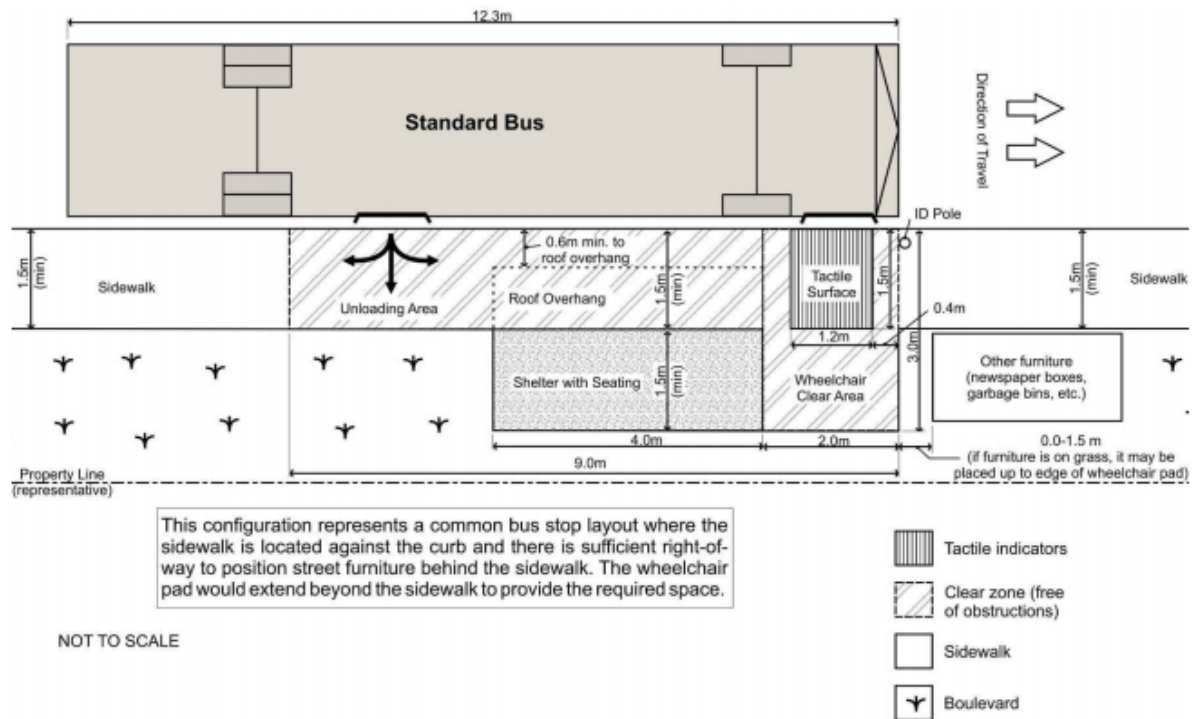
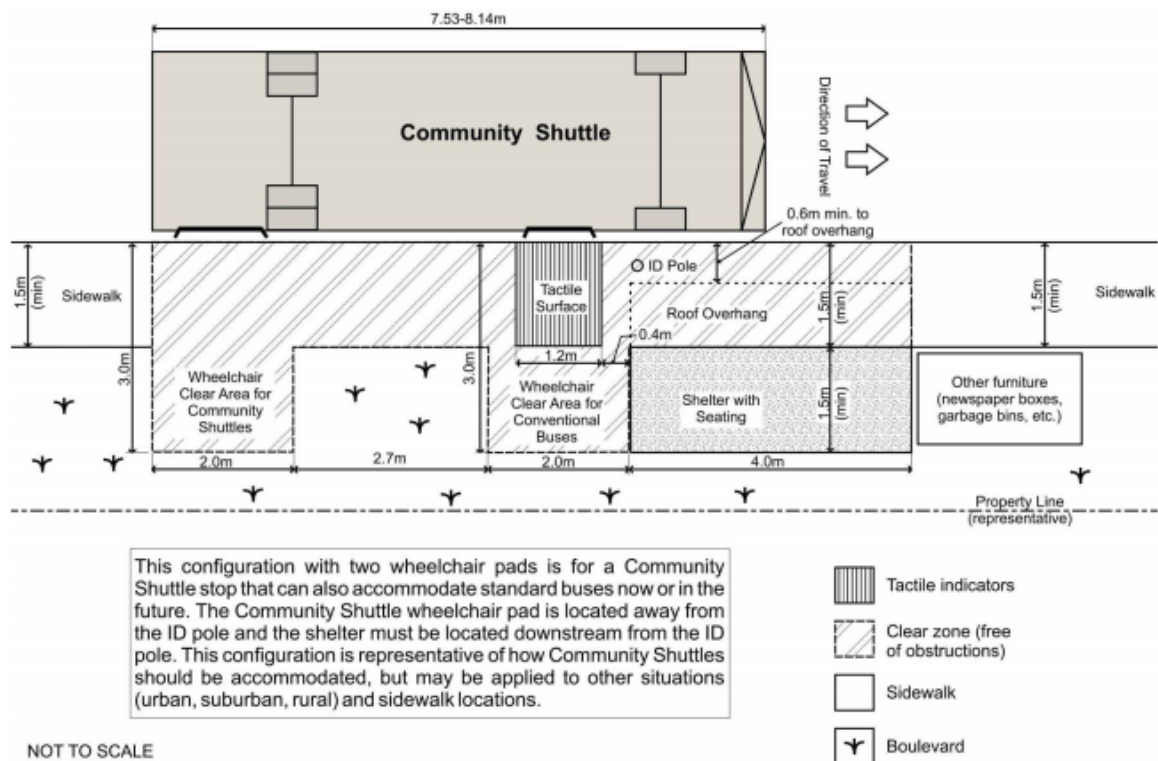


Figure 6-17: TransLink (Metro Vancouver) Bus Stop Specifications – Community Shuttle



Bus Fleet

Transit in Cochrane will likely be delivered in Community Shuttle vehicles, standard low floor Community Shuttle buses or 12 metre buses. At the system's inception, community shuttles will almost certainly be well suited to local on-demand and conventional routes. Transit vehicle types are described in further detail below:

- **Community Shuttle buses** are a smaller size vehicle that is better suited to the anticipated ridership and allows transit to operate with less impact than a 12-metre conventional bus. Community Shuttle buses typically accommodate about 20 seated passengers and no standees.
- **Standard 12 m buses** can be used for both neighbourhood and express services. They can accommodate about 30 seated passengers plus an additional 45 standees.

Cochrane's fleet requirements will be determined by the level of service the Town chooses to implement. A community's fleet requirements are tied to the amount of service provided during the busiest periods. Additionally, a system needs to maintain a vehicle spare ratio of 10-20% of total fleet requirements during the peak period to account for vehicle maintenance, breakdowns, accidents, or scheduling issues.

Transit agencies throughout North America have developed a wide range of approaches to service delivery. Many small to mid-sized municipalities provide public transit through contracted service delivery. A variety of contracted transit service delivery models exist including models where the municipality administers the transit service with a private sector contractor operating and maintaining the vehicles to others where an adjacent public-sector service provider operates, maintains and potentially owns the vehicles. In the Edmonton area, ETS operates and maintains both Spruce Grove and Leduc's fleet; Cochrane may consider entering negotiations with Calgary Transit for a similar type of service.

Ultimately, the Feasibility study presented to Council in December 2016 recommended an operating model that would see the Town of Cochrane contracting the delivery of transit service to a private sector contractor while the Town would maintain a planning and administrative role.

7 Implementation Plan

Connecting Cochrane requires significant investments to be made in capital projects over 20 years. The Implementation Plan is based on the continuation of strong growth in the economy of the Calgary Region and assumptions with community development in Cochrane.

Long-term implementation plans are assembled in a series of Five-Year Capital Plans. These capital plans allow the Town to prepare draft annual budgets to allocate future resources.

The Five-Year Capital Plans are meant to be flexible. They are typically adjusted on an annual basis to reflect acceleration or deceleration in the economic growth, and to reflect changes in the list of capital projects that will best serve new development or redevelopment within the Town.

7.1 Connecting Cochrane Capital Budget

Preliminary cost estimates have been prepared for the transportation projects identified in Connecting Cochrane. Generalized cost estimating procedures were used and do not include right-of-way acquisition. Contingency allowances were used to provide for specific project issues such as engineering costs. Rebuilding existing roads, trails and other transportation facilities are generally not included unless capacity improvements are being made.

These estimates are meant to provide an order of magnitude cost for the long-term plan that will allow the Town to evaluate its allocation of resources and to begin discussions with other partners, such as adjacent jurisdictions, local developers, private industries, and provincial levels of government for funding the projects and will be aligned with Council Policy 1706-01.

7.1.1 *Town of Cochrane Capital Projects*

There is approximately \$132.6 million in local capital projects to be phased in/prioritized over a 20-year period as shown in Figure 7-1. These projects include new traffic lanes on arterial streets, grade separated rail crossing, new traffic signals, multi-use pathways, sidewalks, on-street bicycle lanes and trail facilities.

Table 7-1 summarizes the 20-year capital projects.

Approximately 95% of the local Connecting Cochrane capital budget is allocated to the construction of new roads, the Griffin Road/James Walker Trail bridge and future grade separated railway crossings to provide improved community connectivity. The remaining 5% of the local Connecting Cochrane capital budget is allocated to bicycle, sidewalk and pathway/trail projects.

Table 7-1: 20 Year Connecting Cochrane proposed Capital Budget

Project Type	Totals	% Budget
Bicycle Lane and Sidewalk Projects	\$5,000,000.00	4%
Griffin Road / James Walker Trail New Arterial	\$64,400,000.00 ³	49%
Multimodal Roads Projects	\$33,500,000.00	25%
Railway Crossing Projects	\$27,600,000.00	21%
Trails Projects	\$2,100,000.00	1%
20 Year Total	\$132,600,000.00	100%

³ Total includes estimates for entire road development including 4 lane Griffin Road/James Walker Trail bridge.....I think this is OK as it does footnote that the \$64.4M is for 4 lanes for the entirety of the road and bridge

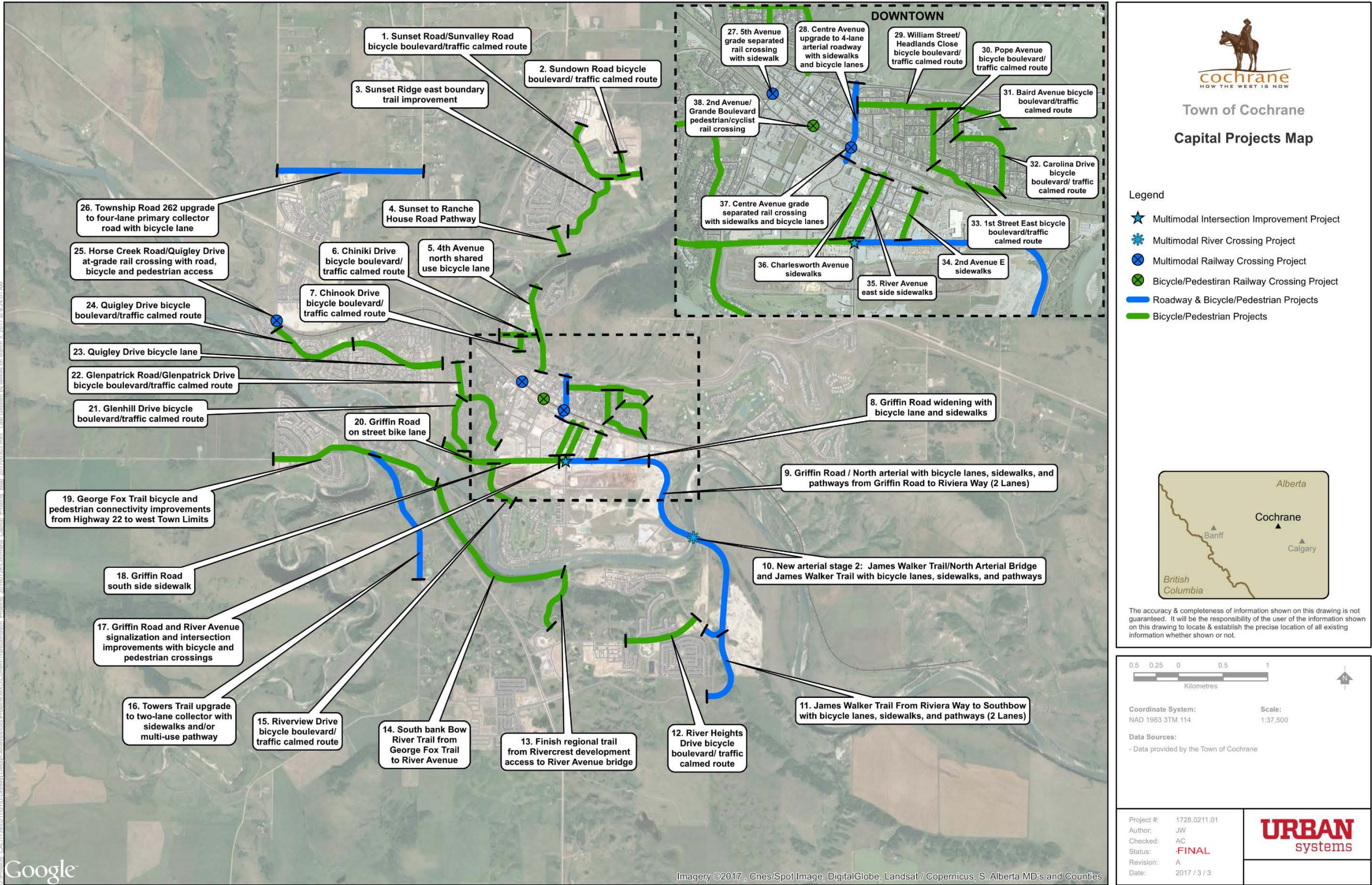


Figure 7-1: Town of Cochrane 20 Year Capital Projects

7.1.2 *Provincial/Developer Projects*

Highway 1A and Highway 22 will require significant Provincial investment over the next 20 years to support the growth of Cochrane and regional traffic. They are considered as regional and developer driven transportation facilities because of the nature of the traffic and services. Table 7-2 summarizes these upgrades recommended over the next 20 years. The Province has short and long term (within the 20-year period) plans to widen Highway 1A and Highway 22 to a 4-lane multi-lane highway with a multi-use trail. The Town will work with Alberta Transportation in their widening design to ensure upgrade of pedestrian underpass across Highway 22, and upgraded pedestrian and cyclist facilities with the Bow River Bridge upgrade along Highway 22. The upgrade of Highway 1A/Highway 22 to a grade separated Parclo AB interchange will require collaboration between Alberta Transportation, the Town, Rocky View County and developments, Figure 7-2 summarizes projects along Highway 1A and Highway 22.

Table 7-2: 20 Year Regional Projects

Highway 1A
• 4th Avenue realignment with sidewalks • East Highway 1A 4-laning (east of Highway 22) • East Highway 1A 4-laning with pathway/trail (east of Highway 22) • East Highway 1A 4-laning with sidewalk (east of Highway 22) • West Highway 1A 4-laning (west of Highway 22) • West Highway 1A 4-laning with pathway/trail (west of Highway 22)
Highway 22
• North Highway 22 4-laning (north of Highway 1A) • South Highway 22 4-laning (south of Highway 1A)
Intersection
• 5th Avenue and Highway 1A improvements plus improved bicycle and pedestrian crossing, include investigation of the use of roundabouts in these improvements • Centre Avenue and Highway 1A improvements associated with 4-laning plus improved bicycle and pedestrian crossing, include investigation of the use of roundabouts in these improvements • East access (Heritage Hills/Heartland) and Highway 1A intersection improvements associated with 4-laning plus improved bicycle and pedestrian crossings of Highway 1A • Griffin Road/George Fox Trail and Highway 22 intersection improvements plus improved bicycle and pedestrian crossing associated with 4-laning • Heritage Gate and Highway 1A intersection improvements associated with 4-laning plus improved bicycle and pedestrian crossings of Highway 1A • Highway 1A/Highway 22 Parclo AB interchange with multi-use pathways for bicycles and pedestrians • Highway 22 and Sunset Boulevard intersection improvements associated with 4-laning • Highway 22/McDougall Road to Glendale Way pedestrian/cyclist underpass improvements • Horse Creek Road and Highway 1A intersection improvements associated with 4-laning • James Walker Trail/Fireside Gate and Highway 22 intersection improvements associated with 4-laning plus improved bicycle and pedestrian crossing • New Southbow connection and Highway 22 intersection • Quigley Drive/Glenbow Drive and Highway 22 intersection improvements associated with 4-laning plus improved bicycle and pedestrian crossing • Rolling Range Drive and Highway 22 intersection improvements
Structure
• Griffin Road to George Fox Trail connection with pedestrian and cycling connections • Highway 1A/Highway 22 Parclo AB interchange • Highway 22 Bow River Bridge upgrade

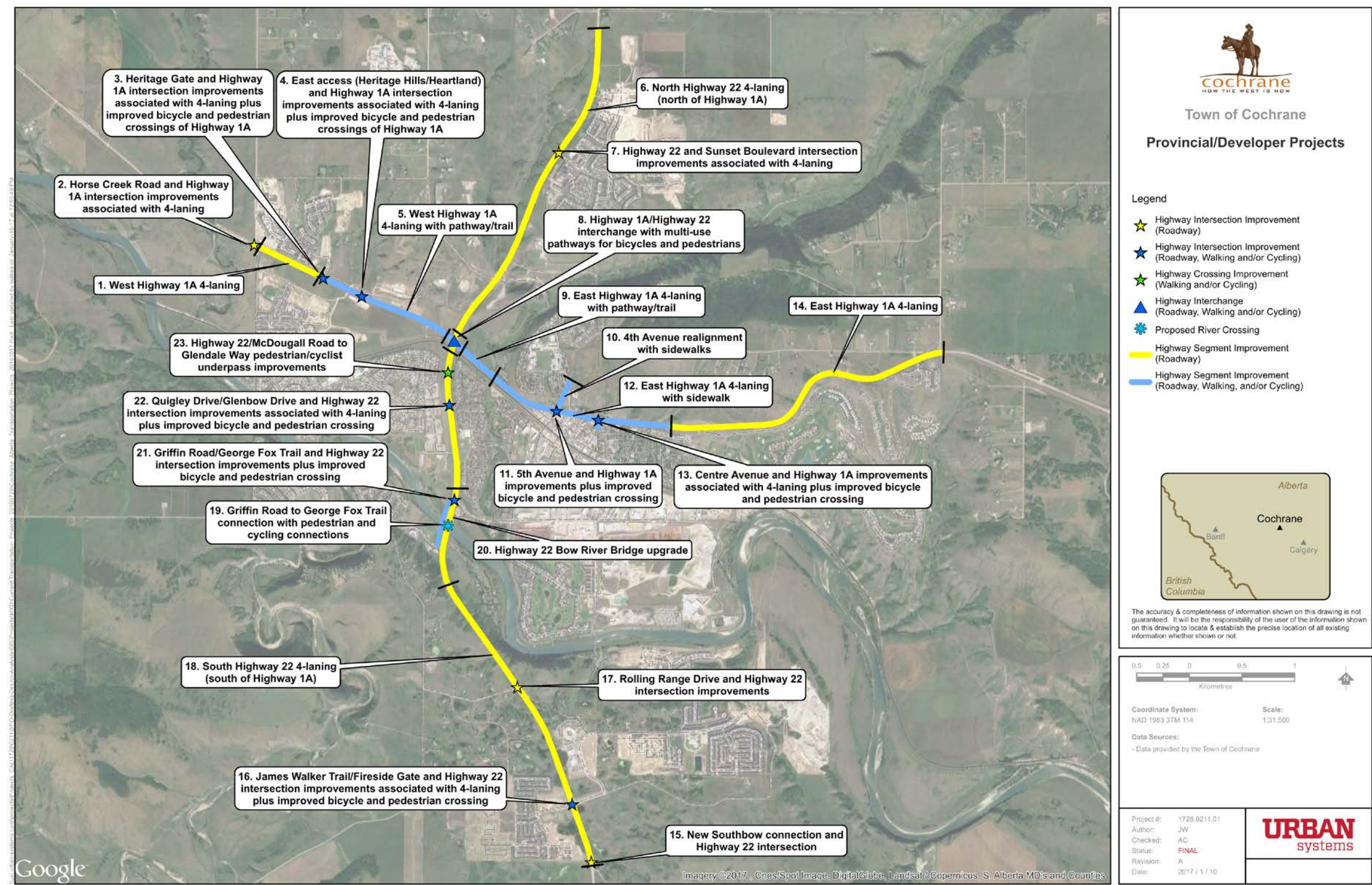


Figure 7-2: 20 year Regional Projects

7.2 Five-Year Capital Plans

Connecting Cochrane has been assembled in a series of Five-Year Capital Plans. These plans will assist the Town in preparing annual budgets to allocate resources and to develop partnerships with other authorities and jurisdictions in scheduling major multi-year projects.

The Five-Year Capital Plans are meant to be flexible and include high level estimates that will change once the projects are fully scoped out and design work is completed. They should be adjusted on an annual basis to reflect changes in the capital projects as will best serve development within the Town. As with annual plans, as projects become completed, new projects will be added to the then current Five-Year Plan.

7.2.1 *Adjusting Capital Plans*

The Five-Year Capital Plans assume that the projected growth will occur in a relatively steady pattern over the next 20 Years and that the objectives for changing travel behaviour can be achieved. If the growth patterns subside, or if the community decides to change their travel behaviour targets, or if the community decides to accept a lower level of transportation service, then the projects in the Five-Year Plans can be deferred over a longer period.

Adjusting the proposed Five-Year Capital Plans to defer or to advance any project completions can be undertaken at any time. Typically, a Five-Year Capital Plan is adjusted on an annual basis as projects are completed and as project priorities change in accordance with development patterns. The 20 Year capital plan is typically adjusted every five years with a review of the long-term Connecting Cochrane.

7.2.2 *First Five-Year Capital Plan*

The first Five-Year Capital Plan will operate from 2017-2022. The plan proposes that the first stage of North Arterial/James Walker Trail should be completed from Griffin Industrial Point to Riviera Way/River Heights Drive. Centre Avenue (from Railway Street to Highway 1A) will be upgraded to a 4-lane (at-grade) arterial roadway with sidewalks and bike lanes. Griffin Road/River Avenue will be signalized with improved connectivity for all users, and other rail crossing, trail and sidewalk improvements should be completed. The first Five-year project list is shown in Table 7-3.

The Town budget for the first Five-Year Capital Plan is estimated at about \$60.4 million or about \$12.08 million per annum, as shown in Table 7-3. The plan assigns significant investments in the first two stages of the North Arterial/James Walker Trail, which would connect Griffin Industrial Point to Riviera Way/River Heights Drive via a new river crossing and reduce the impacts on the Highway 22 and James Walker Trail intersection. Investments in active modes also create an early incentive to change travel behaviour locally.

Table 7-3: First Five Years: 2017- 2022 Project List

Project Description	Totals	% Budget
Bicycle Lane and Sidewalk Projects		3%
i. George Fox Trail, from Highway 22 to Cochrane west municipal boundary, bicycle lanes and sidewalks connectivity improvements	\$1,800,000.00	
ii. Quigley Drive bicycle lane, from Bethany Centre to Hwy 22 ¹	\$200,000.00	
Griffin Road / James Walker Trail New Arterial		88%
i. Griffin Road (North Arterial)/James Walker Trail with new bridge, bicycle lanes, sidewalks, and pathways from Griffin Industrial Point to Riviera Way/River Heights Drive (2 Lanes)	\$53,500,000.00	
Multimodal Roads Projects		6%
i. Centre Avenue upgrade to 4-lane arterial roadway with sidewalks and bicycle lanes	\$3,300,000.00	
ii. Griffin Road and River Avenue signalization and intersection improvements with bicycle and pedestrian crossings	\$400,000.00	
Railway Crossing Projects		3%
i. Horse Creek Road / Quigley Drive at-grade rail crossing with road, bicycle and pedestrian access	\$1,600,000.00	
First Five Years (2017-2022) Total	\$60,400,000.00	100%
First Five Years Annual	\$12,080,000.00	

Note ¹ Pending feasibility analysis

7.2.3 Second Five-Year Capital Plan

The second Five-Year Capital Plan will operate from 2023-2028. The plan proposes James Walker Trail to be connected from Riviera Way/River Heights Drive to the east end of Southbow Landing with a two-lane road. Pedestrian and cycling projects will continue to be implemented during this period connecting gap areas within the Community. Either an at-grade or grade separated rail crossings for pedestrian and cyclists will increase the connection into the Historic Downtown while trail projects continue to improve the recreational and non-vehicular commuting network. The project list is shown in Table 7-4.

The Town budget for the second Five-Year Capital Plan is estimated at about \$11.7 million or about \$2.34 million per annum, as shown in Table 7-4. The most significant elements of this five-year budget are the continued investment for James Walker Trail and connectivity improvements across the rail corridor.

Table 7-4: Second Five Years: 2023-2028 Project List

Project Description	Totals	% Budget
Bicycle Lane and Sidewalk Projects		12%
i. Charlesworth Avenue sidewalks	\$500,000.00	
ii. Griffin Road on-street bicycle lanes	\$500,000.00	
iii. River Avenue east side sidewalks, from Griffin Road to Railway Street)	\$400,000.00	
Griffin Road / James Walker Trail New Arterial		56%
i. James Walker Trail from Riviera Way/River Heights Drive to Southbow Landing with bicycle lanes, sidewalks, and pathways (2 Lanes) ¹	\$6,600,000.00	
Railway Crossing Projects		26%
i. 2 nd Avenue / Grande Avenue pedestrian and cyclist rail crossing	\$3,000,000.00	
Trails Projects		6%
i. Regional trail from Rivercrest development Access to River Avenue bridge	\$200,000.00	
ii. Sunset Ridge to RancheHouse Pathway	\$500,000.00	
Second Five Years (2023-2028) Total	\$11,700,000.00	100%
Second Five Years Annual	\$2,340,000.00	

Note ¹ Construction is dependent on timing of the Southbow Landing Development

7.2.4 Third Five-Year Capital Plan

The third Five-Year Capital Plan will operate from 2029-2034. This plan proposes to upgrade Center Avenue to a grade separated rail crossing under the existing CP corridor, and includes improved connections for pedestrians and cyclist along this corridor.

The Town budget for the third Five Year Capital Plan is estimated at about \$23.3 million or approximately \$4.66 million per annum as shown in Table 7-5. The most significant element of the budget is the continued investment in building capacities on the road.

Table 7-5: Third Five Years: 2029-2034 Project List

Project Description	Totals	% Budget
Bicycle Lane and Sidewalk Projects		7%
i. 2 nd Avenue E sidewalks	\$500,000.00	
ii. Griffin Road south side sidewalk	\$1,100,000.00	
Multimodal Roads Projects		91%
i. Centre Avenue grade separated rail crossing with sidewalks and bicycle lanes	\$21,300,000.00	
Trails Projects		2%
i. Sunset Ridge east boundary trail improvement	\$400,000.00	
Third Five Years (2029-2034) Total	\$23,300,000.00	100%
Third Five Years Annual	\$4,660,000.00	

7.2.5 Fourth Five-Year Capital Plan

The fourth Five-Year Capital Plan will operate from 2035-2040. This plan proposes construction of additional lanes on Griffin Road from River Avenue to where the North Arterial Connection left off at Griffin Industrial Point. Towers Trail is planned to be upgraded to a collector standard corridor while Township Road 262 will be upgraded to a 4-lane facility. Connectivity across the railway corridor will also be a priority during this period with a planned grade separated crossing at 5th Avenue. During this period trails will also be constructed to complete the Town's ultimate network. The project list is shown on Table 7-6.

The Town budget for the fourth Five-Year Capital Plan is estimated at about \$37.2 million or about \$7.44 million per annum, as shown in Table 7-6. The most significant elements of the budget are the continued investment in road and rail crossing facilities.

Table 7-6: Fourth Five Year: 2035 -2040 Project List

Project Description	Totals	% Budget
Griffin Road / James Walker Trail New Arterial		12%
i. Griffin Road widening with bicycle lanes and sidewalks - River Avenue to North Arterial Connection	\$4,700,000.00	
Multimodal Roads Projects		23%
i. Towers Trail upgrade to two-lane collector with sidewalks and / or multi-use pathway	\$4,200,000.00	
ii. Township Road 262 upgrade to four-lane primary collector road with bicycle lane from two lanes	\$4,300,000.00	
Railway Crossing Projects		62%
i. 5 th Avenue grade separated rail crossing with sidewalk	\$23,000,000.00	
Trails Projects		3%
i. South bank Bow River Trail from George Fox Trail to River Avenue	\$1,000,000.00	
Fourth Five Years (2035-2040) Total	\$37,200,000.00	100%
Fourth Five Years Annual	\$7,440,000.00	

7.2.6 Annual Allocation Project Plan

The Town of Cochrane Connecting Cochrane Capital Plan also includes projects that can be completed during the Town's annual maintenance (repaving, restriping, etc.) programs. The planned projects focus on delivering local on-street improvements which includes the construction of traffic calming elements and shared travel lane corridors. Table 7-7 summarizes the planned projects that should be evaluated on an annual basis complementing the Town's maintenance schedule.

Table 7-7: Annual Allocation Projects

Annual Allocation	
i.	1 st Street East bicycle boulevard / traffic calmed route
ii.	4 th Avenue north shared use bicycle lane
iii.	Baird Avenue bicycle boulevard / traffic calmed route
iv.	Carolina Drive bicycle boulevard / traffic calmed route
v.	Chiniki Drive bicycle boulevard / traffic calmed route
vi.	Chinook Drive bicycle boulevard / traffic calmed route
vii.	Glenhill Drive bicycle boulevard / traffic calmed route
viii.	Glenpatrick Road / Glenpatrick Drive bicycle boulevard / traffic calmed route
ix.	Pope Avenue bicycle boulevard / traffic calmed route
x.	Quigley Drive bicycle boulevard / traffic calmed route (Glen Boles Trail to West Hall Place)
xi.	River Heights Drive - bicycle boulevard / traffic calmed route (Willow Dr to Riviera Way)
xii.	Riverview Drive bicycle boulevard / traffic calmed route
xiii.	Sundown Road bicycle boulevard / traffic calmed route
xiv.	Sunset Road / Sunvalley Road bicycle boulevard / traffic calmed route
xv.	William Street / Headlands Close bicycle boulevard / traffic calmed route

7.3 Funding Sources

7.3.1 Partnerships

Partnerships should be formed with several public agencies and private developers. Alberta Transportation is the obvious partner on regional projects such as Highways 1A and 22.

The Calgary Regional Partnership, City of Calgary and Rocky View County should also be involved in all the regional projects, including the development of a transit system.

7.3.2 Development Levies

The Town of Cochrane currently collects levies from developers to pay for the increased capacity needs of the arterial transportation system. It is recommended that the Town should revise its development levy process on a regular basis to ensure that these revenues reflect the current and projected needs.

7.3.3 Direct Developer Costs

In addition to the Development Levies the costs of new local and collector roads are primarily the responsibility of developers. Some retrofitting of existing collector roads with future transit facilities and additional trails, bike lanes and sidewalks will be the responsibility of the Town through its general tax revenues.

Appendix A

Town of Cochrane – Implementation Spreadsheet and Map

Table A-1: Connecting Cochrane 20 Year Capital Projects

Description / Project Name	Map Reference	Horizon	Capital Cost (2015/2016)
Griffin Road / James Walker Trail New Arterial			
New arterial Stage 1: Griffin Road / North arterial with bicycle lanes, sidewalks, and pathways (2 Lanes)	9	0 - 5 years	\$12,300,000
New arterial Stage 2: James Walker Trail from Arena Road/North Arterial to River Heights Dr/Riviera Way with new bridge bicycle lanes, sidewalks, and pathways (2 Lanes)	10	0 - 5 years	\$40,820,000
New arterial Stage 3: Jame Walker Trail From Riviera Way to Southbow with bicycle lanes, sidewalks, and pathways (2 Lanes)	11	5 - 10 years	\$6,580,000
Griffin Road widening to 4 lanes with bicycle lanes and sidewalks - River Avenue to North Arterial Connection	8	15 - 20 years	\$4,640,000
Railway Crossing Projects			
Horse Creek Road / Quigley Drive at-grade rail crossing with road, bicycle and pedestrian access	25	0 - 5 years	\$1,575,500
2nd Avenue / Grande Avenue at-grade/grade seperated pedestrian cyclist rail crossing	38	5 - 10 years	\$3,000,000
5th Avenue grade separated rail crossing with sidewalk	27	15 - 20 years	\$23,000,000
Multimodal Roads Projects			
Griffin Road and River Avenue signalization and intersection improvements with bicycle and pedestrian crossings	17	0 - 5 years	\$400,000
Centre Avenue upgrade to 4-lane arterial roadway with sidewalks and bicycle lanes	28	0 - 5 years	\$3,322,000
Centre Avenue grade separated rail crossing with sidewalks and bicycle lanes	37	10 - 15 years	\$21,252,000
Towers Trail upgrade to two-lane collector with sidewalks and / or multi-use pathway	16	15 - 20 years	\$4,200,000
Township Road 262 upgrade to four-lane primary collector road from two lane with bicycle lane	26	15 - 20 years	\$4,245,000
Trails Projects			
Sunset Ridge to Ranche House Rd pathway	4	5 - 10 years	\$500,000
Finish regional trail from Rivercrest development access to River Avenue bridge	13	5 - 10 years	\$200,000
Sunset Ridge east boundary trail improvement	3	10 - 15 years	\$396,000
South bank Bow River Trail from George Fox Trail to River Avenue	14	15 - 20 years	\$929,000
Bicycle Lane and Sidewalk Projects			
George Fox Trail from Highway 22 to Cochrane west municipal boundary pedestrian connectivity and bicycle lane	19	0 - 5 years	\$1,725,000
Quigley Drive bicycle lane (pending feasibility analysis)	23	0 - 5 years	\$181,000
Griffin Road on-street bike lanes	20	5 - 10 years	\$500,000
River Ave east side sidewalks from Griffin Road to Railway Street	35	5 - 10 years	\$393,750
Charlesworth Avenue sidewalks from Griffin Road to Railway Street	36	5 - 10 years	\$497,000
Griffin Road south side sidewalk from 5th Ave to River Ave	18	10 - 15 years	\$1,100,000
2nd Avenue E sidewalks from Griffin Road to Railway Street	34	10 - 15 years	\$462,000
Bicycle 'Sharrow' Projects			
Sunset Road / Sunvalley Road bicycle boulevard / traffic calmed route	1	0 - 10 years	Annual Allocation
Sundown Road bicycle boulevard / traffic calmed route	2	0 - 10 years	Annual Allocation
4th Avenue north shared use bicycle lane	5	0 - 10 years	Annual Allocation
Chiniki Drive bicycle boulevard / traffic calmed route	6	0 - 10 years	Annual Allocation
Chinook Drive bicycle boulevard / traffic calmed route	7	0 - 10 years	Annual Allocation
River Heights Drive - bicycle boulevard / traffic calmed route (Willow Dr to Riviera Way)	12	0 - 10 years	Annual Allocation
Riverview Drive bicycle boulevard / traffic calmed route	15	0 - 10 years	Annual Allocation
Glenhill Drive bicycle boulevard / traffic calmed route	21	0 - 10 years	Annual Allocation
Glenpatrick Road / Glenpatrick Drive bicycle boulevard / traffic calmed route	22	0 - 10 years	Annual Allocation
Quigley Drive bicycle boulevard / traffic calmed route (Glen Boles Trail to West Hall Place)	24	0 - 10 years	Annual Allocation
William Street / Headlands Close bicycle boulevard / traffic calmed route	29	0 - 10 years	Annual Allocation
Pope Avenue bicycle boulevard / traffic calmed route	30	0 - 10 years	Annual Allocation
Baird Avenue bicycle boulevard / traffic calmed route	31	0 - 10 years	Annual Allocation
Carolina Drive bicycle boulevard / traffic calmed route	32	0 - 10 years	Annual Allocation
1st Street East bicycle boulevard / traffic calmed route	33	0 - 10 years	Annual Allocation

Note: Annual Allocation projects are expected to be addressed through an annual allocation in the capital budget for active transportation improvements and / or incorporated into road maintenance.

Capital Projects Map

Legend

-  Multimodal Intersection Improvement Project
-  Multimodal River Crossing Project
-  Multimodal Railway Crossing Project
-  Bicycle/Pedestrian Railway Crossing Project
-  Roadway & Bicycle/Pedestrian Projects
-  Bicycle/Pedestrian Projects



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:
NAD 1983 3TM 114

Scale:
1:37,500

Data Sources:

- Data provided by the Town of Cochrane

Project #: 1728.0211.01
Author: JW
Checked: AC
Status: ~ DRAFT ~
Revision: A
Date: 2017 / 3 / 3

URBAN
systems