Background Review

Canmore Area Trails Strategy

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1 Introduction

The Canmore Area Trails Strategy (CATS) is a trails master plan that will guide the development and management of trails, trail-based recreation and tourism experiences in the Canmore Area. The idea of CATS stems from the Bow Corridor Advisory Group established in 1995 to help protect the local wildlife and ecosystem function.

CATS will effectively be a planning document, often referred to as a trails master plan. The term ‘strategy’ was selected for use in the document’s title to reflect the document’s intention. A ‘strategy’ generally explains how you plan to move from where you are to where you eventually want to end up.

The purpose of the background review is to provide a statement of facts illustrating the current condition of trail-based recreation in the project area. The scope includes trail inventory and condition assessment, environmental overview, legislative, policy and planning document review and trail use metrics. The background review is a foundational document that will serve as a basis for additional observations and identifying needs, wants and opportunities in the final strategy.

This document is broken into 14 sections. ***Section 1*** offers an overview of the project. ***Section 2*** provides information on the project area and basis. ***Sections 3*** and ***4*** discuss land management guidelines for provincial lands, which are the focus of the CATS. ***Sections 5*** through ***7*** discuss management on adjacent lands, including municipal lands included in the project area boundary that impact the project. These sections include planning and policy documents that cross jurisdictions. ***Section 8*** also provides an overview of the dispositions and permits in the project area and implications to trail development. ***Sections 9*** through ***11*** provide a summary of resources and conditions within the project area including historical/cultural, environmental, trail infrastructure, and trail use. ***Section 11*** gives an overview of recreation and tourism in the area as well as types of users. ***Section 12*** is a trail system analysis with general considerations and a closer look at each planning unit in the project area. ***Section 13*** offers definitions of terms used throughout the document and ***Section 14*** includes references cited throughout.

The contents of this background review, combined with the Terms of Reference, informs and aids in the development of the Canmore Area Trails Strategy.


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2 Human Use in Project Area

2.1 Historic Development and Use

There is a longstanding history of human use and development in Canmore and the surrounding Bow Valley. Archaeological evidence shows Indigenous land use from over 8,000 years ago – some of the oldest in Canada. Many First Nations share historic and current use of the land in the project area. Canmore as a community was officially established in 1894 for the purpose of mining and providing coal to the Canadian Pacific Railway trains, but it wasn't until 1965 that Canmore was incorporated as a town. Coal mining played a significant role in the economic development of Canmore until all mining ceased in 1979.

The Town of Canmore was originally within the boundary of Banff National Park until the boundary was moved in 1930 due to the *National Park Act*'s ban on coal mining in the area. The economic prosperity brought by coal mining in Canmore was too great to consider abandoning resource extraction activities so the park boundary was moved to where it currently sits, approximately seven kilometres west of the town.

Despite the movement of the national park boundary and the ecological protections it afforded, Canmore is now located within, and adjacent to, several provincial and wildland parks. These parks are all located within the Kananaskis Country multi-use area, (with the exception of parts of Bow Valley Wildland Provincial Park which are not part of Kananaskis Country). Kananaskis Country was established in 1978 by the Alberta Government to accommodate various land use designations such as recreation, resource extraction, power generation and residential communities.

One such park within Kananaskis Country is the Canmore Nordic Centre Provincial Park. The Canmore Nordic Centre was home to the 1988 Winter Olympic Nordic skiing events, one of the most influential events in Canmore's recent history. The international attention and resulting tourism brought by the 1988 Olympics provided substantial economic stimulation to the area and sparked the status of Canmore as a popular travel destination that continues today. Home to Nordiq Canada and Biathlon Canada, Canada's national Nordic and Biathlon ski teams, the Canmore Nordic Centre hosts numerous world-class sporting events. Canmore's ability to host such events has been supported by a nearly $25.6 million enhancement in 2005 prior to the Alberta Centennial World Cup and a $18+ million upgrade to its Biathlon Facilities in 2023-2024.

Trail development has also grown steadily in Canmore from the early beginnings of trails as transportation meant for foot or horses to many of those same spaces being used for recreational purposes. The transition of Canmore from a coal mining town to a recreation hub following the 1988 Olympics brought an influx of residents who are extremely active in exploring the outdoors, with the highest per capita resident population of Winter Olympians in Canada[1]. As the population of Canmore and surrounding areas continues to grow, trail use and the number of trails has also grown, encroaching into wildlife habitat.

2.2 Population and Demographics

As of 2021, the Canadian census listed the Town of Canmore's population to be 15,990 people which represents a 14 per cent increase over the previous five years[2]. This five-year growth rate has substantially outpaced the provincial average, which was reported at five per cent. The Municipal District of Bighorn[3] has a growth rate of 21 per cent as a whole. Individual community growth rates are Dead Man's Flats[4] at 202 per cent, Harvie Heights at[5] -11 per cent, and Exshaw[6] at nine per cent. In

[1] Rocky Mountain Outlook, 2018a.

[2] Statistics Canada, 2021a.

[3] Statistics Canada, 2021c.

[4] Statistics Canada, 2021e.

[5] Statistics Canada, 2021g.

[6] Statistics Canada, 2021f.

comparison, nearby Banff[7] has a growth rate of negative two per cent. It is important to mention; however, that growth in Banff is maxed out due to a population cap and a requirement that you must be employed in Banff to live there. The City of Calgary[8], located an hour drive away, has a population of 1.3 million with population growth of nearly six per cent which equates to about 13,500 new residents in Calgary per year.

According to the 2000 Canmore census reports released by the Town of Canmore[9], growth in Canmore has been steady for decades. The report shows population trends dating back to the early 1990s; between 1993 and 1998 there was an average growth rate of eight per cent. This trend slowed significantly between 2000 and 2009 with an average growth rate between -0.1 per cent and six per cent, with an average of three per cent over the decade[10]. Between 2011 and 2016, the town began to see increased growth at a rate of 14 per cent, which has continued to the time of this report.[11]

According to the Town of Canmore, "there are many people who reside in Canmore occasionally but whose primary residence is elsewhere", comprising a significant "non-permanent population"[12]. In 2021, a reported 74 per cent of total private residences were occupied by permanent residents, leaving a best estimate of 26 per cent occupied by the non-permanent population. The local economy is supported by the Canmore tourism boom and the Canmore Kananaskis Community Tourism Strategic Plan[13] notes tourism as one of Canmore's key industries, generating an estimated $344.9 million in tourism expenditures and creating over $200 million in wages and salaries because of permanent jobs. This same report estimated a non-permanent population of 3,890 which would be significantly higher five years later if the same 14 per cent growth rate is applied. On a broader scale, the 2022 Alberta Tourism Communities Collaborative Report (Banff, Jasper and Canmore)[14] revealed the economic impact of tourism in the popular region between Banff and Jasper, including Canmore, generated $2.3 billion in visitor expenditures in 2019. The 2019 tourism impact also contributed $2 billion in GDP, $308 million in taxes and supported 23,600 jobs in the province.

The Canmore Kananaskis Community Tourism Strategic Plan states that since tourism is such a key industry in Canmore, urban development and environmental impacts are two of the top challenges that the town experiences.[15] This natural mountainous landscape that draws visitors, and the warmer, flatter valley bottom that supports residents also draws and supports wildlife populations. A Globe and Mail article states: "People are drawn to the iconic peaks that surround it. They want to climb up them, ski down them, and run or bike everything in between".[16] In addition, the article states that visits from outdoor enthusiasts have also increased, raising the question: Can larger numbers of humans and wildlife coexist? The 2016 Banff Jasper and Canmore Economic Impact Assessment estimates that 4.27 million visitors came to the Canadian Rockies' tourism region which accounts for 13 per cent of Alberta's total tourists but only 0.68 per cent of the province's population[17]. More recent Alberta Forestry and Parks (AFP) estimations suggest that visitor volume to the Canmore area could be over three million people alone. For example, AFP data shows visitation on the Smith Dorrien highway accessing Kananaskis Country is around over one million people per year. A higher population combining permanent residents, non-tourists and day-users inevitably means more people in outdoor spaces competing for the same terrain as the local wildlife.

[7] Statistics Canada, 2021b.

[8] Statistics Canada, 2021d.

[9] Town of Canmore, 2000.

[10] Town of Canmore, 2009.

[11] Statistics Canada, 2016 and Statistics Canada, 2021a

[12] Town of Canmore, 2024.

[13] Expedition Management Consulting Ltd., 2019.

[14] Verum Consulting, 2022.

[15] Expedition Management Consulting Ltd., 2019.

[16] Globe and Mail, 2022.

[17] Grant Thornton LLP et al., 2016.

The Canmore Tourism Strategic Plan also noted that Canmore was listed “at the top of the least affordable housing markets in Alberta”, pointing to the desirability of the area.[18] The number of total private dwellings had increased by more than 1,200 over the five-year span from 2016 to 2021. The average cost of a single-family home in Canmore has increased dramatically: from $730,000 in 2017[19] to $1.56 million in 2023[20]. The 2021 Canadian census predicts that just under 34 per cent of the housing tenure are renters, above the provincial average of 29 per cent.

When it comes to demographics, Canmore’s average age of population is 42.7, with a very close median age of 42.81[1]. Nearly 62 per cent of the total population reported living married or common-law, with 38 per cent not married and not living common-law. Additionally, 21 per cent of Canmore’s population were born outside of Canada, with the United Kingdom, Philippines and United States listed as the top three birthplaces of immigrants. Thirteen per cent identified as a visible minority, up from 9 per cent in 2016. Finally, 97 per cent of the population identified as non-Indigenous[1].

[18] Expedition Management Consulting Ltd., 2019.

[19] Expedition Management Consulting Ltd., 2019.

[20] Calgary Herald, 2023.


Access Closed
Wildlife Corridor
This is not a designated trail. Proceed to a designated trail immediately.
Under the authority of the Provincial Parks Act, section 13(1), by Ministerial Order. Travel is restricted to designated trails only.
Alberta Parks
Highline

3 Land Management Context

3.1 Project Area

The Bow Valley is made up of a complex patchwork of jurisdictions and layers of land-use planning. There is a rich history of land managers working together to identify and address issues as they arise in the area. ***Figure 1*** provides a map of the project area, showing the many different land use types and jurisdictions further described below.

The CATS will focus on trails, trail activities, trail-related impacts and trail use. While its scope, purpose and objectives will partially overlap with other types of planning initiatives, the CATS should not be interpreted as a land-use plan, park management plan, wildlife management plan, recreation master plan or similar. This strategy is essentially a trail master plan. It is about the area's trails, trail management and how sound management can contribute to a range of desired future conditions related to environmental, social and cultural values.

The CATS is supported and guided by many partners, including land managers within and adjacent to the project area. ***The scope of the document applies only to trails on provincial Crown land and excludes trails on municipal-owned and private land and trails outside the project area.*** Consideration and understanding of the inventory of trails that exist outside of the project scope is integral to the success of CATS and thus some analysis of these trails has been incorporated in the Background Review.

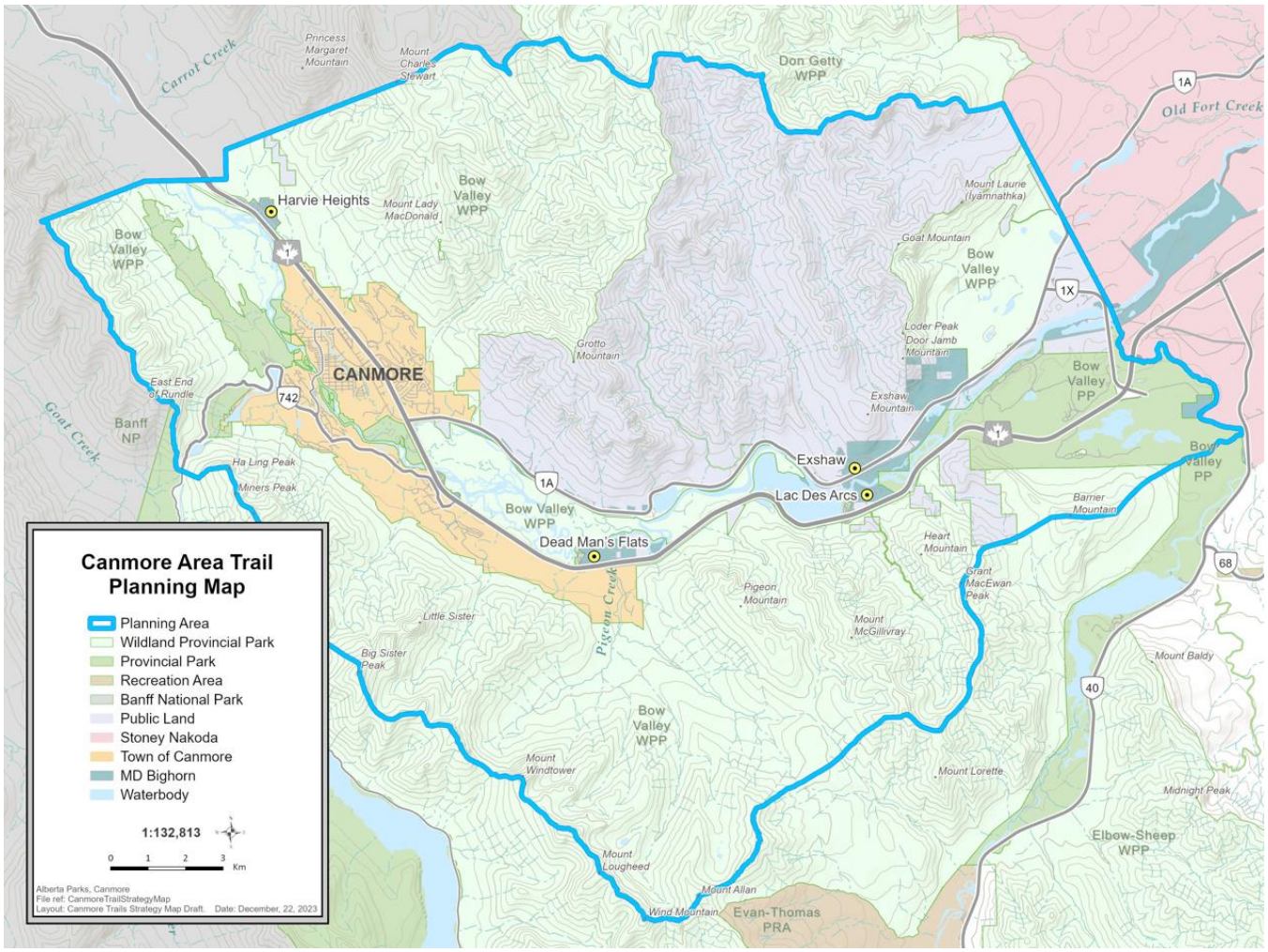


Figure 1. Map of project area

3.2 Crown Land Designations within the Project Area

Within provincial Crown land, there are multiple land designations as described below and in ***Figure 1*** and

Table 1.

3.2.1 Parks

Park land refers to specific areas of land that are managed and protected by government authorities or conservation organizations to preserve their natural, cultural or recreational values for the benefit of the public.

There are two types of parks in the project area: wildland parks and provincial parks. Both are managed by the Parks Division within the Alberta government's Ministry of Forestry and Parks.

Within parks, trail designation follows an established process. Trails are intended to be planned, designed and developed with minimal impact to wildlife and the natural environment. Park staff seek to create sustainable trails that accommodate various user groups. The trail development process involves following park-specific guidelines, consultation and engagement processes and environmental assessments.

Provincial parks serve the dual purpose of conserving nature, including cultural features, while also promoting nature-based outdoor recreation, tourism and education. These parks offer opportunities for outdoor activities and learning experiences, all while maintaining their conservation goals. What sets them apart from wildland parks is the wider array of nature-based recreation and tourism facilities, potential road access, higher levels of facility development and the availability of interpretive and educational programs. Sites considered for this classification must possess provincially significant conservation, recreation and tourism values to ensure great visitor experiences.

One example of a provincial park within the CATS boundary is the Canmore Nordic Centre Provincial Park. The Canmore Nordic Centre Provincial Park is managed within Alberta's network of recreational and protected areas. This ensures that the park's provincially significant natural, cultural and historical resources are protected while providing quality tourism, recreational and educational visitor experiences.

Wildland Parks are designated to preserve nature, allow functioning of natural ecological processes and associated cultural features while also offering extensive opportunities for backcountry/wilderness recreation which allows visitors to experience nature in its undisturbed state. These parks are intended to retain their original and untouched essence through safeguarding large, ecologically healthy landscapes that represent Alberta's natural diversity. Wilderness exploration and appreciation take centre stage here with an emphasis on experiencing solitude, challenge and personal interactions with nature. Activities such as nature-based touring, guiding, outfitting and hunting are possible within these parks as long as they align with the park's conservation objectives. An example of a wildland park within the project area is the Bow Valley Wildland Park.

3.2.2 Public Lands

Public lands are held in trust for the public and are managed by the government. Individuals or organizations can obtain leases or permits for specific uses such as agriculture, grazing, recreation or commercial purposes.

Under the *Public Lands Act*, lands can be designated as public land use zones (PLUZ), public land recreation areas (PLRA) and public land recreation trails (PLRT). Some public lands are also under disposition (see ***Section 7***). Unless under disposition, all public lands are vacant public land in the project area.

Vacant Public Lands are lands that do not have any assigned or active formal dispositions such as a lease or license. In these areas, a wide variety of recreational activities are pursued by outdoor enthusiasts. Vacant public lands can overlap with a PLUZ or remain undesignated. Recreationalists should be aware of other activities in the busy landscape.

Table 1. Crown Land by designation in the project area.

Land use type	Area (ha)	% of Project Area
Project area total	41,948	100%
Crown land total (Public Lands and Parks combined)	38,364	91%
Individual Crown land areas		
Bow Valley Wildland Provincial Park	24,465	58%
Public Lands	11,345	27%
Bow Valley Provincial Park	1,896	5%
Canmore Nordic Centre Provincial Park	657	2%

More details on provincial Crown land management mechanisms are outlined in ***Section 4*****.**

3.3 Adjacent and Non-Crown Land Designations

Land types that are adjacent to the project area and require consideration in the CATS are listed in ***Table 2***.

Table 2. Classifications of land ownership adjacent to project area

Land ownership	Description
First Nations Reserve Land	First Nations reserve land is land that has been set aside for the use and benefit of specific Indigenous communities or First Nations. These lands are governed by federal and provincial laws as well as Indigenous community-specific regulations.
Municipal Land	Municipal land refers to land owned and managed by municipalities (Town of Canmore, M.D. of Bighorn) including cities, towns and counties. Municipalities use these lands for various purposes such as infrastructure development, parks and public services.
Freehold Land	Freehold land is privately-owned property. Owners of freehold land have rights to use, manage and dispose of the land as they see fit within the bounds of applicable laws and regulations.
Federal Crown Land	National Parks border the project area to the west. Canada's national parks are protected areas established under federal legislation to preserve Canada's natural heritage. They are administered by Parks Canada, a government agency. Banff National Park has an updated management plan that was approved in 2022 and sets out the long-term objectives and priorities for Banff National Park.

More detail on these land types and management is outlined in ***Section 7***.

4 Legislation, Policy and Planning

Many pieces of legislation, policy and plans apply to trail planning, management and development in the Canmore Area.

During trail development, all requisite approvals and permits must be secured in accordance with federal and provincial laws, regulations and municipal bylaws. Although there are different terms for the organizations that manages or operates a trail, this document will use 'trail proponent' to include the trail manager, trail operator and other partners. To confirm the specific approvals and permits needed, trail partners should collaborate directly with the local land manager. It's important to note that legislative, regulatory, and bylaw/policy requirements may undergo changes or amendments. Therefore, ongoing communication with local authorities is essential to ensure compliance.

Throughout this document, references are made to legislation, policy and planning documents or directives as explained below.

Legislation

Legislation is the making or governing of laws. These may include codes, acts or bylaws, depending on the level of enforcement or governing body. Legislation is developed to stand the test of time.

Policy

Policy is a deliberate system of guidelines to help guide decisions. Policies are not enforced by law but are typically regarded at a similar level. Policy is developed to stand the test of time.

Planning

Planning is the process of developing a course of action. Plans may have a variety of time horizons, from a few months to decades, but all eventually expire. Plans may also have a variety of intentions, from annual operations to strategic direction.

4.1 Legislation and Regulation

Trail planning and development in Alberta must align with federal and provincial legislation and regulations that govern land use, environmental considerations, recreation and overall public safety. ***Table 3*** and ***Table 4*** outline specific federal and provincial legislation that guides trail planning and development within the project area. Note: The term trail proponent includes the trail manager, operator and partners.

Table 3. Federal legislation: Summary of trail-related federal legislation

Legislation/policy	Description	Relevance
Navigable Waters Protection Act, 1985	The purpose is to protect the public right of navigation. Responsible for controlling navigation routes and the location of moorings, dams, and bridges. The Canadian Coast Guard (division of the Federal Department of Fisheries and Oceans) is responsible for administering its application.	Need to take this act into consideration when building bridges over waters for trail development.
Fisheries Act, 1985	The purpose of the act is to protect fish and their habitat from harmful alteration, disruption or destruction of their habitat. DFO is responsible for administering its application.	A request for review (RFR) may be required if suitable fish habitat is identified and if, 1) there is risk of fish death or harmful alteration, destruction and displacement (HADD) occurring during construction and/or 2) applicable DFO measures to protect fish and fish habitat cannot be implemented, including applicable standards and codes of practice.

Legislation/policy	Description	Relevance
Canadian Environmental Assessment Act, 2012	Establishes several environmental assessment tracks, depending on the nature of the project and the likely environmental effects. All projects are screened initially but larger projects that may have a significant environmental impact may require a more detailed environmental assessment.	Need to take this act into consideration during the preliminary design of trail development. This act would apply to trail development should any federal funding be obtained for development.
Migratory Birds Convention Act (MBCA), 1994	Prohibits injury, disturbance and destruction of migratory birds and their nests. Environment and Climinate Change Canada is responsible for administering the act.	Avoidance and mitigation strategies will be needed to avoid impacts to species. Vegetation clearing and ground disturbance may require nest sweeps.
Species at Risk Act (SARA), 2002	Protects wildlife and wildlife habitat listed as threatened or endangered. Administration of the act is the responsibility of ECCC and DFO.	Avoidance and mitigation strategies will be needed to avoid impacts to listed species. If listed species are identified in conflict with construction requirements, permits may be required.

Table 4. Provincial legislation and regulation: Summary of trail-related acts and regulations

Legislation/policy	Description	Relevance
Alberta Land Stewardship Act, 2009	Provides direction and leadership concerning land, human settlement, species, natural resources and the environment while taking into account cumulative effects of human endeavors and other events.	Municipalities should ensure all relevant policies follow the *Alberta Land Stewardship Act* when creating trails policy.
Municipal Government Act, 2000	The *Municipal Government Act* is the guide for how municipalities operate and is the most significant legislation in the province.	All municipalities shall ensure that municipally approved policy documents follow the regulations contained in the *Municipal Government Act*.
Public Lands Act, 2000, and Public Lands Administration Regulation (PLAR)	Intended to manage the use of public lands. Public lands are all lands administered by the Minister of Forestry and Parks including most bed and shore of all permanent and naturally-occurring water bodies and provincially-owned lands but exclude lands managed under the *Provincial Parks Act*. The PLAR provides details about how the use of public lands is to be approved and managed. PLAR is the regulations for the *Trails Act*.	In accordance with the PLAR Table A1, trail proponents should work with the public land manager to determine what disposition(s) or authorization(s) will be granted to the trail manager for the development of the trail and associated infrastructure (e.g., staging areas, bridges, camping areas, toilets), trail maintenance and management activities and any events to be held on the trail. Trail proponents should obtain the written approval and disposition/authorization from the public land manager before trail construction begins. Trail proponents must understand the terms of the disposition/authorization as well as any conditions assigned to the disposition. Trail proponents should work with the public land manager to determine if provisions of the PLAR can be used to designate the trail, govern trail use and enable enforcement of trail use.

Legislation/policy	Description	Relevance
Trails Act, 2021	This act and PLAR (above) supports trails on public land to adapt to the growing demand of outdoor recreation. This act updates the legal framework to align trails and their management with how trails are currently used, helping ensure the sustainability of trails so that they will be enjoyed for years to come.	Trail proponents should ensure provisions contained in the *Trails Act*, including but not limited to the Trails Management Plan are adhered to, in order to obtain any trails approval (effective May 2022).
***Provincial Parks Act, 2000*, and regulations**	The act provides for the establishment, protection, management, planning and control of provincial parks, wildland parks and provincial recreation areas for the preservation of Alberta's natural heritage and ecological integrity, as well as for the benefit and enjoyment of current and future generations.	Trail proponents must abide by the regulations contained within the *Provincial Parks Act*, as the act provides guidance provides specific guidance for the various park types and recreation areas.
***Water Act, 2000*, and related Code of Practice**	Intended to manage all activities occurring on waterbodies. Waterbodies include watercourses and wetlands that may or may not contain water year-round.	Trail proponents should identify the classification of all water courses the trail crosses or is adjacent to. Trail proponents should work with the public land manager to determine if the trail project would be a) exempt from approval requirement completely, b) exempt from approval but subject to established codes of practice or c) require a *Water Act* approval. If the Codes of Practice is not applicable for an activity associated with trail development, an approval under the *Water Act* from Alberta's Ministry of Environment and Protected Areas is required (Alberta Environment 2001, AB 2014). Trail proponents apply the Code of Practice for watercourse crossings (a regulatory framework that provides guidelines when creating, altering or disturbing a watercourse crossing).
Wetland Policy, 2013	Intended to protect wetlands of highest value and ensure their benefits and services are conserved and restored. The policy directs that wetlands are to be managed by avoiding, minimizing and replacing lost wetland value.	For activities identified under a Code of Practice, a wetland assessment and impact form may be required. This is in addition to the Code of Practice notification and must be authenticated by a qualified wetland science practitioner. If permanent loss of wetland function will occur as a result of the trail project, a qualified wetland science practitioner must be engaged to undertake a wetland valuation through the Alberta Wetland Rapid Evaluation Tool to determine the wetland's replacement value. For any activities associated with the trail development that are not identified under a Code of Practice, a *Water Act* approval must be obtained. A qualified wetland science practitioner must complete a wetland assessment and impact report and wetland evaluation through the Alberta Wetland Rapid Evaluation Tool. The wetland assessment and impact report must demonstrate that the project design has attempted to follow the wetland mitigation hierarchy. This hierarchy

Legislation/policy	Description	Relevance
		states that a project must first show avoidance of the wetland feature, if possible, or at least minimize the extent of any impacts. If avoidance or minimization is not possible, then replacement as specified by the province is required.
Wildlife Act, 2000	Intended to protect wildlife species and associated habitats. Regulates works that impact breeding birds and other wildlife in the area (e.g., amphibians and reptiles) the act prohibits the willful, disruption or destruction of a wildlife nest or den. The protection of raptors and their nests/habitats falls under special provisions.	Trail proponents should work with the public land manager, local provincial biologist and/or a qualified wildlife biologist to review the trail project and determine which, if any, project-specific permits are required under the *Wildlife Act*. Trail proponents should plan the trail to avoid harm to any nest or den site of prescribed wildlife.
Environmental Protection and Enhancement Act, 2000 (EPEA)	Intended to regulate activities to project Alberta's land, air and water.	*EPEA* requirements are varied. Trail proponents should work with the local public land manager and *EPEA* regulator to determine whether the trail project will trigger any provision in *EPEA*.
Historical Resources Act, 20000	Intended to regulate land-based activities to avoid impacts to historic resources.	Trail proponents must plan trails to avoid or mitigate impacts to historic resources. All trail projects must obtain *Historical Resources Act* approval during the trail-planning process. If known historic resources may be impacted or if the proposed activity occurs within a high potential area, a qualified professional must undertake a historic resources impact assessment (HRIA). Trail managers may need to undertake further studies to determine how impacts to historic resources can be mitigated. Trail managers should consult the Ministry of Arts, Culture and Status of Women for direction. If, during construction, a historic resource is discovered, trail managers must stop construction and notify Alberta's Ministry of Arts, Culture and Status of Women. Construction in the area should not resume until directed by Alberta Arts, Culture and Status of Women.
Weed Control Act, 2008	Intended to regulate and control the spread of noxious weeds and prohibited noxious weeds.	Trail proponents should use construction practices that will avoid or minimize the chances of introducing or spreading noxious and prohibited noxious weeds. Trail proponents must manage any outbreaks of noxious or prohibited noxious weeds along the trail in accordance with the Act.

4.2 Provincial Policy

Provincial policy provides guidance and policy direction for trail planning and development. ***Table 5.*** lists relevant provincial policies applicable to trail development. In addition to the policy list in the table below, there are a number of species-specific recovery plans that are referenced later in this report in ***Section 10.***

Table 5. Provincial policy: summary of trail-related policy

Policy	Description
Grizzly Bear Response Guide, 2023	Alberta Parks introduced a policy in May 2023 that standardizes the approach and decision making framework for grizzly bear management and indicates how human-grizzly bear incidents are to be handled. The action and response are based on factors such as age, behavior, location, and incident history. The policy prioritizes preventative action when possible with an overarching goal of balancing the needs of wildlife with those of the public. The document can be referenced to classify a conflict and act accordingly.
Alberta Trail Development Guidelines for Public Land, 2019	The Alberta Trail Development Guidelines for Public Land provides guidelines for the development of trails and trail infrastructure on public land in Alberta. The document preceded the *Trails Act* and is the guiding document for trail classification and development.
Kananaskis Improvement District Land Use Order, 2009	The Kananaskis Improvement District (KID) established a land use order to provide the authorities and processes for land use planning and development. This is in accordance with the *Municipal Government Act* and other relevant policies. One of the overarching goals of the document is to balance development and growth of the area with environmental sustainability and protection. Trails fall under the definition of development within the land use order, which requires approval and a permit from the development authority if the proponent is not of the Government of Alberta. A land use order specific to Kananaskis Improvement District as directed by the related Ministerial Order MO 10/10 TPR. This land use order offers full direction to any party who is contemplating planning or development within Kananaskis Improvement District. To ensure compliance with legislation, contemplation of infrastructure development should be reviewed against this land use order.
Ministerial Order MO 10/10 TPR, 2010	A ministerial order supporting the application of the associated land use order. This ministerial order serves as the directive to ensure all land use planning and development within Kananaskis Improvement District are governed by the provisions of the associated land use order in accordance with the terms of the *Municipal Government Act* (*MGA*).
Special Event Policy	To conduct a race/event within the area, a variety of permits may need to be applied for. **Event Permit:** A permit specific to the event being organized outlining the date, location and details of the event. **Use of Parks and Facilities Permit:** If the race/event route includes parks, trails or public facilities, one may need a permit for their use. **Traffic Management Permit:** If the race/event involves road closures or affects traffic flow, one may need a permit for traffic management. **Environmental Impact Assessment:** Depending on the size and scope of the race/event, one may need to assess and mitigate any potential environmental impacts.
First Nations Consultation Guidelines, 2019	The Alberta Government's guidelines on consultation with First Nations on land and natural resource management are intended to clarify the expectations of all parties engaged in the consultation process. They provide an overview of the procedures to follow in the consultation process and demonstrate how government is seeking to fulfill its duty to consult.

4.3 Crown Lands Planning

The planning tools and processes for managing Crown lands include a combination of regional, subregional, area or issue-specific management and local operational plans (see ***Figure 2***).

Figure 2. Provincial planning hierarchy

Within the province of Alberta, the planning process for parks and public land are very similar; however, trail designations may differ based on land classification. Relevant plans are outlined below.

4.3.1 Provincial Level Policies and Plans

Table 6 outlines relevant provincial plans adopted by the province that may have relevance to trail development.

Table 6. Provincial level plans

Plan	Description
Alberta Forestry and Parks Business Plan, 2023-2026	The Alberta Forestry and Parks Business Plan is a document that details the description of the ministry business unit, desired outcomes, priority initiative and performance measures and indicators. It aligns with the Alberta Government's commitment to being transparent and accountable with the public.
Plan for Parks, 2009	The Plan for Parks identifies desired outcomes whereby parks provide recreational opportunities while conserving Alberta's natural heritage and supporting long-term sustainability of park ecosystems. The Plan for Parks involves the implementation of four integrated priority actions: involve Albertans, offer modern facilities, policies and programs, provide recreational opportunities and conserve landscapes. These strategies aim to ensure park management is undertaken in a responsible and accountable way.

Plan	Description
Alberta's Tourism Sector Strategy, 2024	This document guides the province's next steps to grow Alberta's visitor economy to $25 billion per year by 2035 through five key pillars which include working across government ministries to develop products and experiences that are sustainable and will enable emerging destinations to shine, address workforce needs, build capacity for travel and access and uphold commitments to partner with Indigenous tourism operators to expand their offerings. Alberta's actions will be guided by the principles of sustainable, community-driven economic growth.
Alberta Tourism Framework, 2013-2020	The Alberta Tourism Framework presents a foundation for growing the tourism industry by developing a collaborative framework within Alberta's tourism industry through unifying and focusing the efforts of both private and public partners in the tourism industry to meet the needs of travelers. An expressed driver of the tourism framework identifies a provision for Public land access relies on streamlining of Crown land access for tourism to be established.
Alberta's 20-Year Strategic Capital Plan, 2021	The 20-Year Strategic Capital Plan supports Alberta's Recovery Plan by focusing infrastructure planning on supporting jobs, growing communities, boosting economies and helping ensure Alberta remains a world-class destination for people to live, work and raise a family. The plan commits to sustaining Alberta's environment and building tourism destinations through a vision for the future of environment, public lands and parks infrastructure by acknowledging that Alberta's quality parks and public lands infrastructure provide exceptional recreational opportunities that continue to enable tourism and curate world-class experiences.
Alberta's Crown Land Vision, 2020	This plan guides a modern approach to managing Crown land that better meets the needs of without compromising conservation values and recreation opportunities. The implementation of this plan will benefit from the directives indicated by this vision document. Alberta's government has indicated a commitment to follow this vision by updating legislation, working with partners, supporting sustainable use of trails and backcountry land and considering socioeconomic and environmental impacts when reviewing major proposals.

4.3.2 Regional and Subregional Plans

Regional and subregional plans are developed to integrate provincial policies at a more localized level. They provide clarity for making land use decisions for municipalities, provincial business units, boards and agencies. ***Table 7*** outlines regional and subregional plans impacting the project area.

Table 7. Regional and sub-regional plans

Plan	Description
South Saskatchewan Regional Plan, 2018	The South Saskatchewan Regional Plan (SSRP) recognizes the Kananaskis region for its year-round recreational opportunities and for its potential to become an internationally-renowned, nature-based tourism destination. The SSRP pertains to provincial public land in the project area, and the Bow Valley Wildland Park. The SSRP identifies the need for additional recreational management planning building on existing plans and tourism destination management planning to enhance the region's potential as a tourism destination.
Kananaskis Country Recreation Policy, 1999	The Kananaskis Recreation Policy sets the development parameters for the area, clarifying that there will be no town sites and permanent or non-permanent residency. The intent of the policy is to preserve the wilderness character of Kananaskis Country. The surrounding communities are meant to be service centres for Kananaskis Country and no large-scale developments (over 15,000 square feet) are permitted in Kananaskis Country. Small-scale recreation developments are permitted in PRAs and public lands.

4.3.3 Integrated Resource Plans

Integrated Resource Plans (IRPs) are comprehensive planning documents developed to guide the sustainable management and use of resources within specific regions of the province. According to the Bow Corridor Local IRP, resources can include "anything that society perceives as having value". This could include land, wildlife, timber, minerals, ecosystems, tourism and recreation, for example. The IRP was written in the 1980s and is superseded by park management plans. The Bow Corridor IRP applies to public lands in the CATS project area.[21]

The Bow Corridor Local IRP was developed in 1992 to provide direction for the management and use of public resources to maximize benefits for Albertans. The plan was in response to increasing pressures on public land and resources for expansion of tourism, recreation, urban and minerals development and critical wildlife area designations. At this time, there was a growing interest in the Bow Corridor as both a tourism destination area and a growing service center to adjacent recreation and tourism areas. Canmore was experiencing visitation in several diverse outdoor recreation activities such as camping, rock climbing, mountaineering, trail riding and cross-country skiing, among others. To help manage the area, the IRP outlined sets of guidelines based on resource area values (fishing, historical, settlement, tourism and recreation, to name a few). Some guidelines relevant to trails include:

- identifying roadside access requirements, including signage, pullouts and trailhead parking,
- supporting the development and maintenance of a non-motorized trail system,
- assisting the development of tourism and recreation opportunities through the commercial tourism and recreation leasing process,
- providing information and direction to prevent loss of wildlife and maintain suitable habitat,
- assessing recreational activities on wildlife and
- implementing management techniques, such as trail closures, where wildlife presents a threat to human safety or property.

Overall, tourism and recreation are considered a resource value within the IRP having all the attributes necessary for development as a significant tourism destination area with the means to grow, maintain and protect tourism and recreation opportunities being identified. The IRP notes that if unmanaged, increased development could affect the natural landscape, opportunities and levels of use. The plan recommends "joint initiatives for coordinated research, planning and development among all the public sector interests in the Bow Valley to better manage the long-term implications of growth."

4.3.4 Park Management Plans

Park management plans provide direction for activities on a park-level. Parks management planning guides effective decision making and addresses land management challenges in parks. Management planning takes direction from the Alberta Land-Use Framework and the Plan for Parks. Park management plans provide detailed daily operational guidance for park management and define how a site will be managed to maintain the area's ecological health. Each plan describes the type and the extent of permitted activities, services and facilities provided, issues, concerns and conflicts and recommends efficient allocation of staff resources. Monitoring and evaluation are ongoing throughout the lifespan of the management plan and assess the park environment and implementation success of the plan. This ensures effective management actions are continuously being implemented to meet the objectives of the plan. ***Table*** 8 outlines park management plans relevant to the project area.

Table 8. Park management plans

Plan	Description
Canmore Nordic Centre Provincial Park Strategic Plan, 2010	The Canmore Nordic Centre Strategic Plan aims to offer clear direction to staff members, establish accountability to key stakeholders and rationalize the site's management within Alberta Parks and Alberta Tourism, Parks and Recreation (ATPR). The plan was written for the period 2010-2015. The plan supplements the Bow Valley Protected Areas Management Plan and supports the intent, objectives and priorities. The Canmore Nordic Centre Strategic Plan is centered around five core strategies: involve Albertans; offer modern facilities, policies and programs; provide recreation opportunities, conserve landscapes and develop high performance sport and event programs. The Canmore Nordic Centre Strategic Plan's vision is to create a park that inspires people of all

[21] Economic Planning Cabinet Committee, 1992.

Plan	Description
	ages and abilities to enjoy a variety of year-round recreational, training and competitive opportunities while maintaining the natural environment for current and future generations.
Canmore Nordic Centre Provincial Park Summer Trail Master Plan, 2009	The Summer Use Trail Master Plan was developed in 2009 to help the Canmore Nordic Centre strategize trail improvements and environmental protection while optimizing user satisfaction. A significant portion of the summer-use trails needed rehabilitation due to environmental damage. The plan included a site inventory, recommendations for trail improvements and description of construction standards. Recommendations were primarily centered around the sustainability of the trail network using the 'why, who and what' approach. The Summer Use Trail Master Plan for the Canmore Nordic Centre aimed to outline a strategic approach for enhancing the park while prioritizing environmental preservation and enhancing visitor experiences. The plan sought to strike a balance between protecting the natural environment and offering visitors enjoyable and sustainable recreational opportunities. The plan identified areas for improvement, trail development and visitor facilities, all while ensuring that the ecological integrity of the park remains a top priority. Note, a draft update plan was written in 2021; however, it is not yet completed.
Bow Valley Protected Areas Management Plan, 2002	The Bow Valley Protected Areas Management Plan protects public areas identified under the *Provincial Parks Act* to be maintained in a natural state for use by the public for recreation, education, or other purposes. This plan specifically pertains to the Bow Valley Wildland Park, Canmore Nordic Centre Provincial Park and the Bow Valley Provincial Park. The plan includes the type of use allowable within these areas as they relate to outdoor recreation and tourism opportunities.
Kananaskis Country Provincial Recreation Areas (PRAs) and Bragg Creek Provincial Park Management Plan, 2012	Kananaskis Country Provincial Recreation Areas (PRAs) Management Plan (2012), specific to Kananaskis Country, provides for a wide variety of recreation opportunities within the area. The plan includes management objectives and strategies that informs annual operating plans and budgets for the 52 PRAs within the area.

5 Interjurisdictional Collaboration

The project area has several different land managers, including adjacent land managers, such as Parks Canada, adding complexity. As such, several interjurisdictional plans and groups have been established to collaboratively manage issues across and adjacent to the plan area. ***Table 9*** lists the relevant plans and policies developed to manage the area collaboratively.

Table 9. Interjurisdictional collaboration

Document	Description
Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley, 2014	The Bow Corridor Ecosystem Advisory Group (BCEAG) was established in 1995 with partnering agencies including the Town of Canmore, Town of Banff, Municipal District of Bighorn, Banff National Park and the Alberta Government. Together, the BCEAG developed *Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley* in 1998, last updated in 2012. The guidelines were developed to protect corridors and habitat patches in response to the rapid population growth and expansion within the Bow Valley, namely Canmore and surrounding area. The document served as a set of identified guidelines for land managers to apply a consistent approach to development applications and standards for wildlife corridor and habitat patch design. Standards for design include parameters such as minimum length and width (interrelated), topography, and vegetation cover, along with additional principles to consider such as species, duration, speed of movement, edge to area ratio and others. The document presents a step-wise approach for evaluating development proposals that could potentially impact these areas. Considerations outlined in the standards include inputs such as shape or area, topography, and vegetation hiding cover. Existing wildlife corridors and habitat patches within the Bow Valley are identified, with recommendations for their management. The document outlines best practices for land use activities within and adjacent to these areas, which include scientific research, trail use, fencing, lighting and vegetation management. Best practices include perpendicular crossings, trails routed to the outside of the corridor, implementation of seasonal closures and educational signage, among others. Ultimately, the document aims to support the viability of wildlife corridors and habitat patches within the Bow Valley to facilitate preservation of functional wildlife habitats, wildlife movement and reduction of human-wildlife conflict.
Guidelines for Human Use within Wildlife Corridors and Habitat Patches in the Bow Valley, 1999	The BCEAG established a set of guidelines for human use within wildlife corridors and habitat patches in the Bow Valley in 1999. The purpose of the guidelines is to provide a coordinated approach to recommendations regarding the management of human use activities within wildlife corridors and habitat patches in the Bow Valley. The guidelines apply to member municipalities in the Bow Corridor Ecosystem, including Municipal District of Bighorn, the Town of Canmore, Banff National Park and the Alberta Government. These guidelines are a non-statutory advisory framework for decision making and it is recommended these guidelines be incorporated into the management plans for newly designated areas. These guidelines are a non-statutory advisory framework for decision making and it is recommended they be incorporated into the management plans for newly designated areas. Implementation of the guidelines is the responsibility of each partnering jurisdiction.
Open Space and Trails Plan, 2015	The Open Space and Trails Plan was developed in response to a lack of comprehensive open space and trail planning within the Town of Canmore. The plan follows the guiding principles of providing opportunities to gather and connect to the natural environment; providing a functional transportation network for pedestrians and cyclists; providing a sustainable trails network that is accessible, easy to navigate and suitable for a variety of skill levels and to respect the importance of wildlife habitat and connectivity within and beyond the Town of Canmore.

Document	Description
Recommendations of the Recreation Opportunities Working Group	The BCEAG also developed Recommendations of the Recreational Opportunities Working Group (ROWG) meant to provide recommendations for outside wildlife corridors and future outdoor recreation needs in the Bow Valley. The Recreational Opportunities Working Group (ROWG) was formed to incorporate a broader voice to make recommendations on the management of recreational opportunities. ROWG facilitated a number of public engagement techniques which highlighted the need for ongoing education, addressing user conflict and trail crowding, addressing parking and traffic and environmental considerations such as erosion and impacts on wildlife. General recommendations included: • ongoing education and information sharing such as trail signage and maps • continued research on human use of trails, the effects of use on wildlife, and wildlife movement • developing trail standards that incorporate design, construction and maintenance processes • considering physical impacts such as erosion, trail braiding, trail markings, protection of ecologically sensitive or unique areas and others • considering enforcement tactics including self-policing, appropriate legislated enforcement authorities and tools and action from the Provincial and Municipal jurisdictions • ROWG supports maintaining the integrity of wildlife corridors, habitat patches and other environmentally sensitive areas. The report included major trail-specific recommendations and stated the need for monitoring and adaptive management to address future changes and challenges.
Canmore Kananaskis Community Tourism Strategic Plan 2019-2029, 2019	The Canmore Kananaskis Community Tourism Strategic Plan 2019-2029 is aimed at advancing the region towards becoming a leader in sustainable tourism development. The strategic plan uses a triple bottom line approach considering economic, environmental and social factors for sustainability. The strategic plan includes goals, a strategy for marketing, an implementation plan and a funding strategy.
Canmore's Regenerative Tourism Framework, 2021	This framework was designed to facilitate the thriving tourism economy and address a major community concern: regenerating the essence of Canmore as an authentic and active mountain town that has a meaningful relationship with the natural environment and Indigenous culture and history. The framework revolves around addressing two capstones: truth and reconciliation and climate change. Strategic pillars such as tourism awareness, working together, ecological integrity, wildlife co-existence, affordability, informing visitors and sustainable funding are identified to support these capstones.

6 Municipal Land Management

6.1 Municipal Land Designations within the Project Area

There are three separate local government zoning implications within the CATS area.

- Town of Canmore
- Municipal District of Bighorn
- Kananaskis Improvement District

The municipalities within the project area are supportive and engaged in the CATS process as a project partner.

6.2 Municipal Management Mechanisms

The *Municipal Government Act* (MGA) recognizes the following statutory plans: intermunicipal development plans (IDP), a municipal development plans (MDP), area structure plans (ASP)/area redevelopment plans (ARP) and land use bylaws (LUB). A list of relevant plans and policies are in ***Table 10.*** Statutory plans must be consistent with one another and with higher order plans and policies. ***Figure 3*** shows the hierarchy of municipal plans in Alberta.

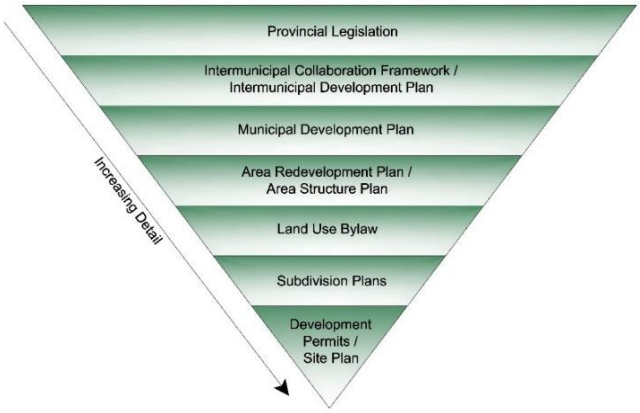


Figure 3. Province of Alberta planning policy hierarchy

6.2.1 Municipal Policy and Planning

Table 10. Applicable municipal policy and regulation

Legislation/policy	Description	Relevance
Intermunicipal Development Plans (IDP)	Intermunicipal Development Plans are a shared policy framework between two or more municipalities, relevant IDPs are: Rocky View County/MD of Bighorn IDP Town of Canmore/MD of Bighorn IDP	Municipal District of Bighorn and Rocky View County share an IDP. The Town of Canmore shares an IDP with the MD of Bighorn.

Legislation/policy	Description	Relevance
Municipal Development Plan (MDP)	The overarching framework for the future growth and development of the community provides high-level policy direction for decisions that ensure that the community's vision is integrated with this decision making. Relevant MDPs are: Town of Canmore MD of Bighorn	Any trail development must align with the MDP.
Area Structure Plan (ASP) **Area Redevelopment Plan (ARP)**	An ASP and ARP are high-level land use plans that provide area specific framework for future subdivision and development. They identify a conceptual layout for general land uses, utility infrastructure, roads, public spaces and recreation. The following Area Redevelopment Plans are active in the project area: • Bow Valley Trail Area Redevelopment Plan • Teepee Town Area Redevelopment Plan • Spring Creek Mountain Village Area Redevelopment Plan • Canadian Rockies Public School Lawerence Grassi Middle School Area Redevelopment Plan The following Area Structure Plans are active in the project area: • Three Sisters Village Area Structure Plan • Smith Creek Area Structure Plan • Stewart Creek Area Structure Plan • Silvertip Area Structure Plan • Palliser Trail Area Structure Plan • Indian Flats Area Structure Plan • Eagle Terrace Area Structure Plan • Upper Benchlands Area Structure Plan • Exshaw Mountain Gateway Area Structure Plan • Dead Man's Flats Area Structure Plan • South Exshaw Area Structure Plan	If a proposed trail is within an ASP/ARP there may be certain policies or parameters that need to be addressed before the design and development stage. Trail managers should review the relevant ASP/ARP for more information planned trails within ASP and ARP areas.
Land Use Bylaw	The Land Use Bylaw is used to regulate the type, location and intensity of land use and buildings within a municipality. • Town of Canmore Land Use Bylaw • MD of Bighorn Land Use Bylaw	Although there is no specific trail bylaw or policy within either land use bylaw, it does have statements that support trail development.
Development Permit/Site Plans	A development permit is required for all new construction and when new development is intended to change the use of a site, add additional structures or modify existing occupancy. Obtaining a development permit provides assurance that new development adheres to regulations set out in the land use bylaw and municipal development plan.	Development permits may be required for trail development at the municipal level.

7 Adjacent Land Management

7.1 Federal Land Designations Adjacent to and Within the Project Area

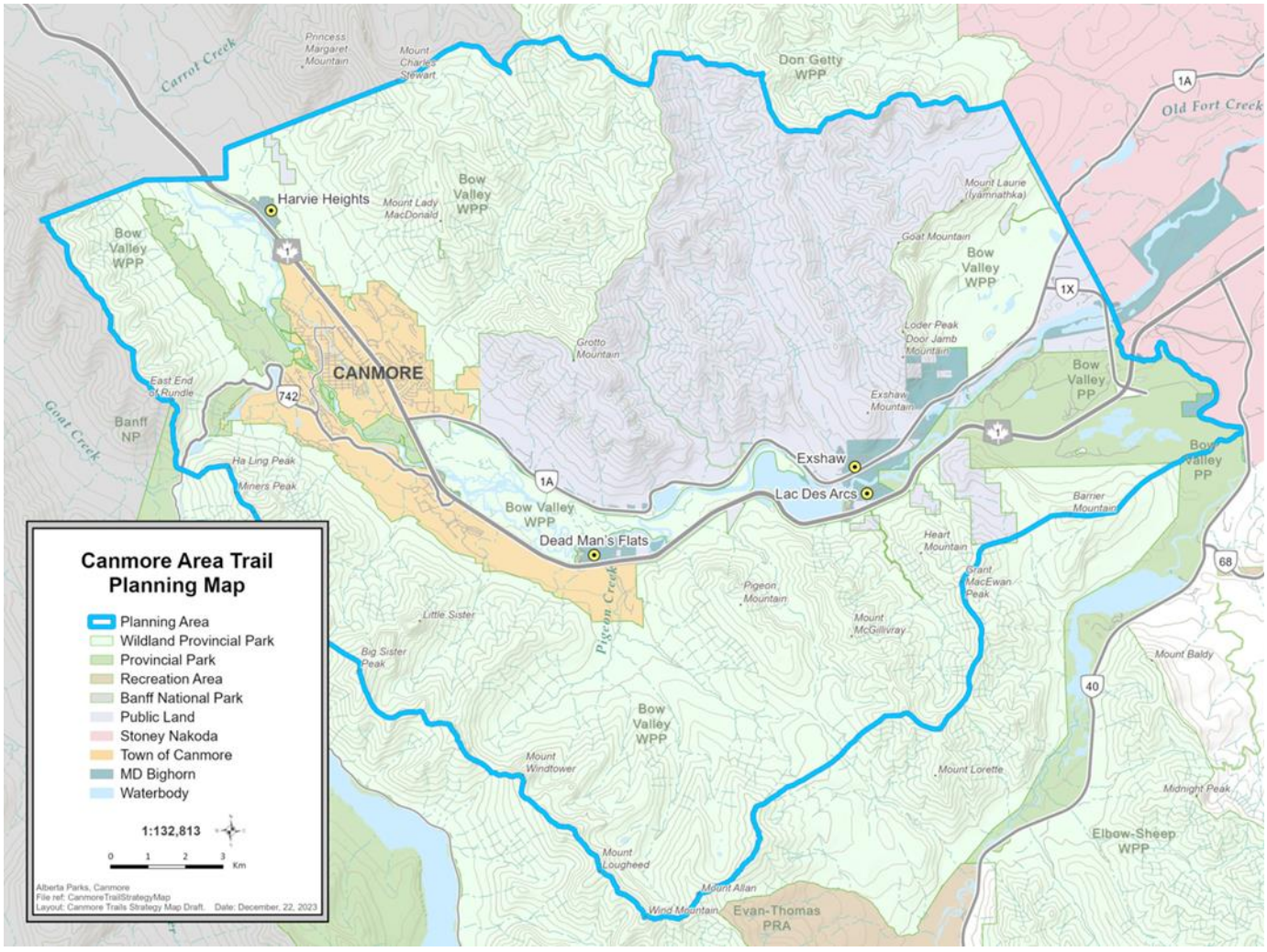


Figure 4. Project area with adjacent lands shown

This section provides an overview of the following adjacent land management areas: the Stoney Nakoda First Nations reserve to the east, Banff National Park to the west, and Kananaskis Country to the south (see ***Figure 4*** for project area with adjacent lands shown).

7.2 Indigenous Peoples' Rights

Section 35 of *The Constitution Act*, *1982* recognizes and affirms both aboriginal and treaty rights. As all of Alberta is currently covered by historic treaties the Alberta Government recognizes and has a responsibility to uphold the rights described within the treaties (treaty rights). Treaty rights are not absolute and are balanced with other relevant societal interests. Also part of the constitution is the *National Resources Transfer Agreement* of 1930 (the NRTA), between the Alberta provincial and federal governments, which modified some of the treaty rights. As a result, First Nations in Alberta now have the right to hunt,

fish and trap for food throughout the province, at any time of the year, on unoccupied Crown land or on land to which they have a right of access for such purposes.

Lands, territories and resources are subject to Aboriginal rights and title, affirmed by the Constitution of Canada, which include a range of cultural, social, political and economic rights, including the right to land and water, as well as to fish, hunt and practice one's own culture.

The Town of Canmore, in southern Alberta, is in Treaty 7 territory. This treaty encompasses the ancestral territories of several First Nations, including the Stoney Iyarhe Nakoda (comprising the Chiniki, Bearspaw, and Goodstoney Nations), Tsuut'ina, Siksika, Kainai/Blood Tribe, and Piikani Nations. Treaty 7, as modified by the NRTA, confers the rights described above to the Treaty 7 First Nations, and other rights, such as a right to land for reserves.

Acknowledging treaty rights in this context means recognizing the presence of these First Nations and their role as rights holders, when part of regional planning and environmental stewardship. There are several First Nations which consider the Canmore area their ancestral territory and their input and guidance is integral when considering land and environmental management strategies in and around Canmore. In addition, there are several First Nations reserves in and nearby Canmore that have cultural, historical, and environmental significance:

Tsuut'ina Nation: Located to the southeast of Canmore, near Calgary, the Tsuut'ina Nation Reserve is home to the Tsuut'ina people. While not in immediate proximity to Canmore, the reserve's management practices, cultural heritage and land use strategies may offer valuable insights for regional planning and collaboration, especially in the context of environmental stewardship and cultural preservation.

Stoney Iyarhe Nakoda Nation: Set apart for the Stoney Iyarhe Nakoda First Nations, which includes the Chiniki, Bearspaw, and Goodstoney bands, the Reserve at Mini Thni (Morley) is closer to Canmore and shares direct geographical and cultural ties with the region. The Reserve's management of land and natural resources, including their approach to cultural tourism and preservation of natural areas, could be relevant for collaborative regional planning and cultural exchanges.

Siksika Nation: Located further to the east of Canmore, the Siksika Nation Reserve is one of the largest in Alberta. While it is not in close proximity to Canmore, understanding their land management and cultural practices can contribute to a broader understanding of Indigenous land management strategies in Alberta.

7.3 Federal Management Mechanisms

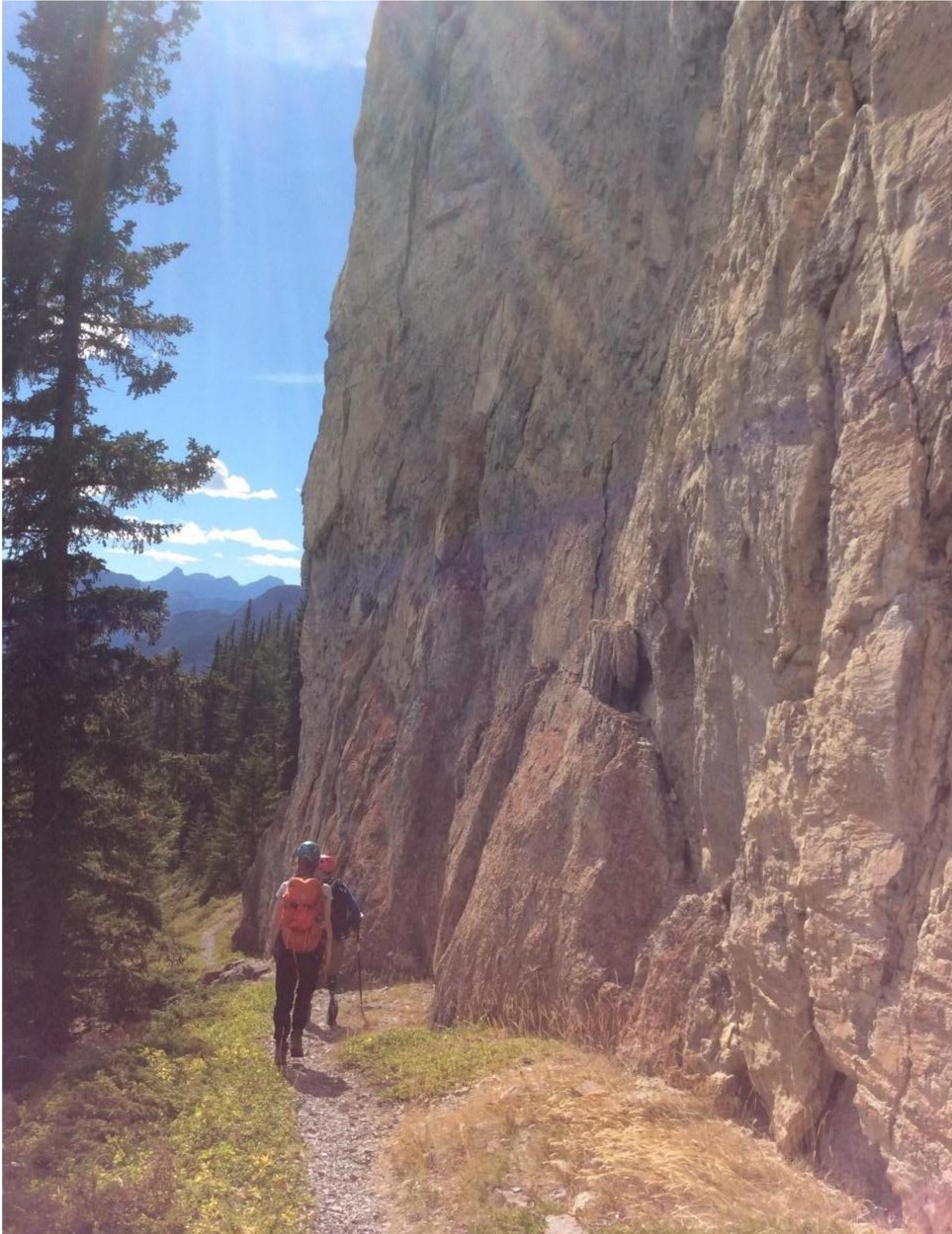
Traditionally, the federal government's role for managing trails is minimal as there is no specific legislation dedicated to trails. The federal government's role with managing water is to manage fisheries, protect fish habitat and oversee transportation safety. These federal legislations could affect trail design and management with respect to access points or bridges over streams, for example.

Federal regulations are enforced by agencies such as the Royal Canadian Mounted Police (RCMP), Conservation Officer Service, Fisheries and Oceans Canada (DFO) and Environment and Climate Change Canada (ECCC).

For federal lands, Parks Canada is responsible for managing and regulating many of the national parks, with Banff National Park adjacent to the project area including some trails that cross into it.

Banff National Park is managed by Parks Canada, which is an agency of the Government of Canada. This national park operates under a strict conservation mandate aimed at preserving natural ecosystems and wildlife habitats. Management practices are designed to maintain biodiversity, ecological integrity and landscape aesthetics, while also providing controlled public access and recreational use. The park's approach to trail management, particularly its strategies for minimizing ecological footprints and managing visitor impact, is pertinent to CATS trail planning, especially as visitors to Banff National Park are likely the same ones in the Canmore area. Some relevant Parks Canada policy and plans include:

- *Parks Canada Agency Act*
- Banff National Park Management Plan
- Parks Canada Guiding Principles and Operational Policies
- Parks Canada Visitor Experience Strategy



8 Dispositions and Permits

Beyond provincially and municipally managed lands, there are several leased lands within the project area. Such lands are referred to as a disposition. A disposition is a permit, license or lease that grants permission, identifies the location and sets the conditions (rules and standards) and fees for use of the land. Within the project area there are currently hundreds of active dispositions. ***Table 11*** below includes a breakdown of the active disposition types within the project area including examples of activities occurring under each type and a description of implications for trail development.

Table 11. Active dispositions within project area

Disposition type	Examples within CATS project area	Implications for trail development
Agricultural	There are currently a total of 18 active agriculture leases within the project area. The total area of land currently occupied by such leases is 5,862 hectares (14,487 acres). Agricultural leases within the area are allocated for grazing purposes.	Trails can exist but must be attentive to rights and conditions attributed to the leaseholder. Access permission must also comply with the Recreational Access Regulation.
Commercial	Within the project area there are 111 active commercial leases. The total area of land currently occupied by such leases is 2,551 hectares (6,304 acres). Activities occurring under such leases include but are not limited to cement plants, golf courses, telecommunications, commercial businesses, parks and sand/gravel plants.	Trails can exist but must be attentive to rights and conditions attributed to leaseholder under Part 3 of PLAR. Consent may be required by the disposition holder.
Industrial	There are currently a total of 559 active industrial leases within the project area. Activities occurring under this disposition type include but are not limited to access roads, bank stabilization, berms, communication lines, erosion protection, power easements, satellite sites, sewage lagoons, trails, water intakes, water pipelines, drainage and irrigation and public works.	Trails can exist but must be attentive to rights and conditions attributed to leaseholder under Part 3 of PLAR. Consent may be required by disposition holder
Miscellaneous	There are currently a total of 128 active leases that fall within the miscellaneous category. The total area of land currently occupied by this type of is approximately 3,488 hectares (8,620 acres). Miscellaneous leases within the project area are noted as being allocated for transportation and provincial/municipal governmental purposes.	Trails can exist but must be attentive to rights and conditions attributed to leaseholder under Part 3 of PLAR. Consent may be required by disposition holder

Table 11 may be further broken down by disposition holder type. Key disposition activities within the project area have been included and described below:

- Road Infrastructure
    - 184 active leases
    - Approximate area of 3,482 hectares (8,605 acres).
- Mineral Surface Lease

    - 53 active leases

- Utilities
    - 461 active leases
    - Approximate area of 5,351 hectares (13,224 acres)
- Environmental
    - 39 active leases
    - Approximate area of 5,471 hectares (13,520 acres)
- Housing or Residential
    - Five active leases
    - Approximate area of 121 hectares (299 acres)
- Recreational
    - 23 active leases
    - Approximate area of 206 hectares (509 acres)

In addition to formal dispositions, permits and authorizations are also issued for temporary activities in the area, such as guiding, filming, environmental studies, special events (trail-based ones described in ***Section 8***), access (e.g., helicopter, vehicle), maintenance and construction.

9 Indigenous Land Use and Historic Resource Values

9.1 Indigenous Land Uses

The Town of Canmore, in Southern Alberta, is in Treaty 7 territory. This treaty encompasses the ancestral territories of several First Nations, including the Stoney Iyarhe Nakoda (comprising the Chiniki, Bearspaw, and Goodstoney Nations), Tsuut'ina, Siksika, Kainai/Blood Tribe, and Piikani Nations. The Métis people of Alberta also share deep history with this land, which coincided with European settlement of the land.

Indigenous ancestral land use was widespread throughout the Bow Valley for hunting, food and medicinal plant gathering, fishing, travelling and living. The Bow River was a critical resource for fishing and the riparian areas surrounding the river supplied resources for food and tools. Trade and travel routes throughout the Bow Valley and along the river are well documented and there is significant evidence of traditional pit-house settlements around nearby Banff, which was once a trading center. Ancestral land use in the Bow Valley was severely restricted in 1885 when Banff National Park was created. In the early days of park creation and many years afterwards, traditional hunting and gathering was prohibited in the park, as was occupation of the land.

The land has provided food, medicine and enabled a way of life for Indigenous peoples since time immemorial. The land is connected to Indigenous stories and traditions that are important for intergenerational cultural transmission. The Canmore area is recognized as a cultural landscape since it is home to sacred sites and where many traditional use activities still take place. The trails in the Canmore area provide access for Indigenous peoples to continue those traditional use activities.

Through the Canmore Area Trails Strategy planning process, Indigenous communities and organizations are invited to share what they find appropriate relative to culturally important areas, plants and wildlife, their perspectives on existing trails and management and to contribute recommendations for future trail development and management, including appropriate education and interpretive signage to improve public awareness of Indigenous traditional land uses.

9.2 Historical Resources Act

Within Alberta, historic resources are protected under the *Historical Resources Act*. The Act defines historic resources as "…any work of nature or of humans that is primarily of value for its paleontological, archaeological, prehistoric, historic, cultural, natural, scientific or esthetic interest including, but not limited to, a paleontological, archaeological, prehistoric, historic or natural site, structure or object"[22]. The listing of historic resources, which is updated twice yearly by Alberta Arts, Culture and Status of Women, is one of the main tools designed to help land managers and users determine whether proposed development activities might affect historic resources.

The listing of historic resources identifies areas that contain, or have high potential to contain, historic resources. Four types of historic resources protected under the Act are considered in the listing: archaeological sites, paleontological sites, historic standing structure sites ('built heritage') and Indigenous traditional land use sites of a historic resource nature. The presence of these historic resources on the landscape and the required management approaches associated with each is represented in the listing's historic resource value (HRV) rating system. This four-tiered system ranges from HRV 1 ratings (which represent World Heritage sites and sites designated as provincial historic resources under section 20 of the *Historical Resources Act*) to HRV 3 (significant historic resources that are likely to require impact avoidance), HRV 4 (historic resources that may require either avoidance or further assessment) and HRV 5 (lands with high potential to contain historic resources).

Lands within the CATS project area possess HRV ratings of 1, 3, 4 and 5 in relation to sites of a historic resource nature (see ***Figure 5***). HRV 1 lands are associated with the designated provincial historic resources (PHRs) of Rat's Nest Cave, the Canmore Northwest Mounted Police post and Ralph Connor Memorial United Church, the latter two of which are located within the Town of Canmore. These sites have been specially designated as PHRs due to the possession of character-defining elements that represent aspects important to understanding Alberta's history within the region. HRV 3 lands (significant

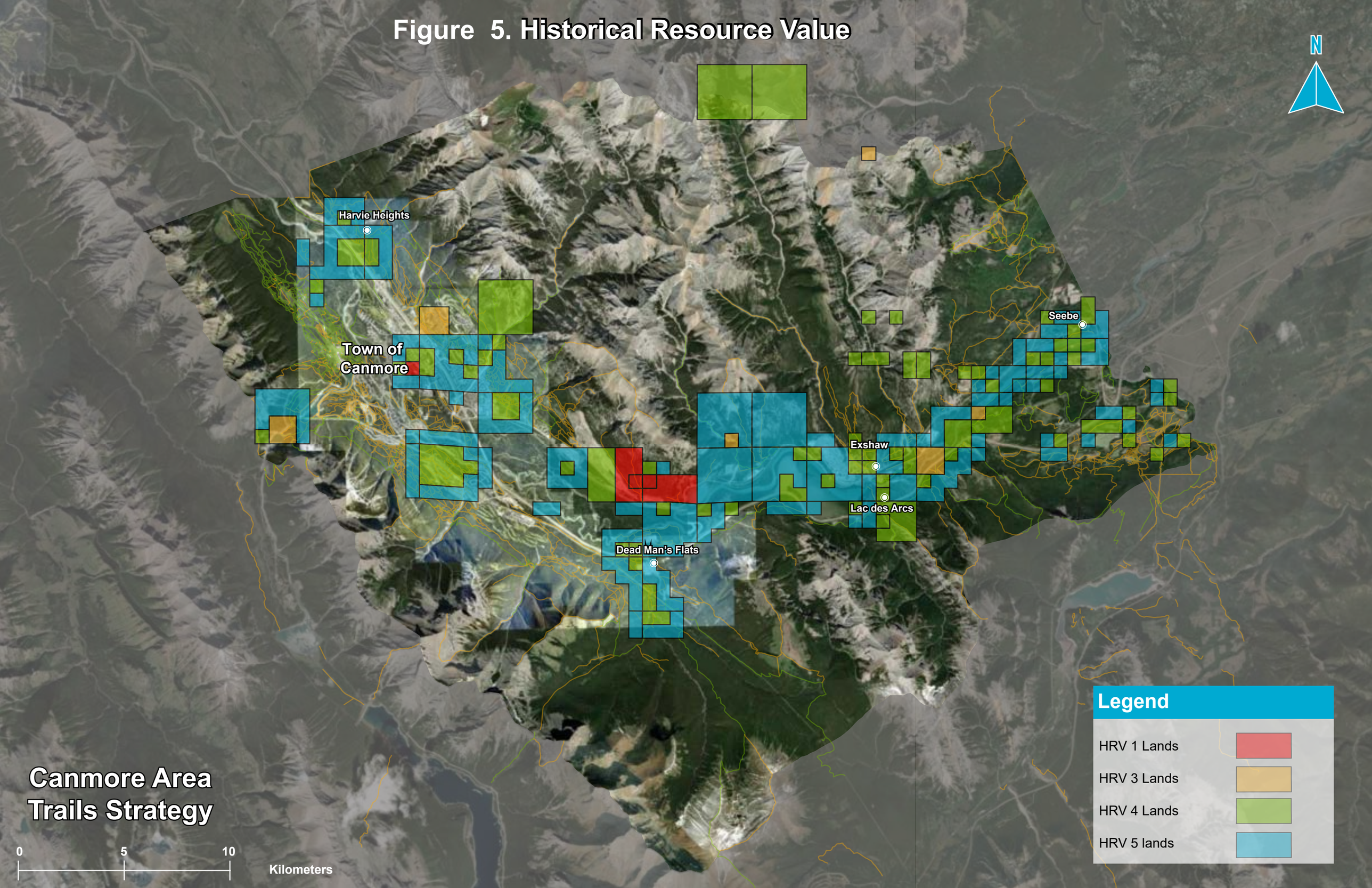
[22] Province of Alberta, 2022.

historic resources) include those surrounding the HRV 1 properties, which help preserve related historic resource sites that provide the context for understanding the HRV 1 locations. The HRV 3 lands also include other interpretively important paleontological localities and precontact campsites that are considered to be candidates for future PHR designation.

The HRV 4 lands are composed of those containing numerous pre-contact period campsites and sites related to the historic mining period and the non-Indigenous settlement that occurred as the result of the mining industry. HRV 4 paleontological sites are found in a number of areas within the mountains and valleys. In addition, the HRV 4 lands also protect locations of Indigenous traditional land use. Given that a number of significant historic resource sites have already been recorded within the CATS project area, there are also many lands within the region that have been identified with HRV 5 ratings (high potential lands). Most of these lie in areas adjacent to HRV 1, 3 and 4 lands, and encompass the lower valley bottom and mid-level terraces of Bow River and its numerous tributary valleys. Although no historic resource sites have yet been identified within these HRV 5 lands, the current pattern of historic resources site distributions suggests that these lands have very high likelihoods of yielding additional archaeological, paleontological, historic standing structure and Indigenous traditional land use sites of a historic resource nature.

Where developments or projects with potential ground-disturbing impacts may occur, applications describing the potential impacts will be reviewed through Alberta Arts, Culture and Status of Women's historic resources application process. Those projects whose footprints cross lands considered to have high historic resources site potential or those crossing locations of recorded historic resource sites will be required to undertake a historic resources impact assessment field investigation prior to the initiation of development. Some of these investigations will result in the identification of newly recorded historic resource sites, while others will help refine the understanding of the historic resource site potential. This information will be used to refine the listing of historic resources, which will lead to more effective planning and management that will ultimately aid in the preservation of significant historic resources in the CATS project area.

Figure 5. Historical Resource Value



9.3 Other Historical Values

Coal was the primary resource that drove the settlement, development and resource extraction industry in Canmore until the late 1970s. Canmore's colonial settler history began largely because of the coal reserves in the area, when Canmore was chosen as the 27th siding west of Medicine Hat along the Canadian Pacific Railway in 1883[23]. At the time, the abundant anthracite coal in Canmore and the surrounding area were an important source of fuel for the railway locomotives. Coal mining was expansive and wide-ranging in the Canmore area due to the prevalence of coal seams throughout the valley and their proximity to the surface. As a result of the intensive extraction of coal via room and pillar mining, there are over 3,000 km of legacy undermined, subsurface tunnels, particularly in the Three Sisters area of Canmore.

With the waning coal industry, Canmore's coal mines closed in 1979[24], and so began the shift toward a recreation and tourism-based economy following the Calgary Olympics.

Lime production in the valley dates back to 1885 and continues today with a wide range of lime and limestone products, including high calcium quicklime, hydrated lime, pulverized limestone and screened limestone. Timber harvesting has historically been another important natural resource in the Bow Valley and surrounding area and many of the roads used for resource extraction of timber or minerals have become access routes for recreation.

[23] Canmore Commons, 2021.

[24] Canmore Commons, 2021.


HIGHLINE
ENTERING
THREE SISTERS
MOUNTAIN VILLAGE
PRIVATE
PROPERTY
For questions about trail
use, please email CAMBA
at: contact@camba.ca

10 Environmental Values

10.1 Wildlife

The Bow Valley is widely recognized as one of the most important wildlife movement corridors in the Central Rockies ecosystem. The valley bottom of the project area is vital to a variety of animal species owing to its flat topography (relative to the surrounding alpine regions) and high plant productivity[25]. Many of the species inhabiting the Bow Valley, including many of those considered at-risk at the provincial and/or federal level, are negatively affected by anthropogenic modification of habitat. For some small bird species, anthropogenic linear features like highways and railways can significantly impede movement[26]. Many of these features also represent a mortality risk for small and large animals alike[27]. Despite the negative effects that anthropogenic features can have on wildlife, many animals are still attracted to these areas; these "ecological traps" can arise because many anthropogenic stimuli are unfamiliar to animals or resemble naturally beneficial stimuli[28,29,30]. Fortunately, mindful design and management of these structures can reduce their negative effects on wildlife, and this has been demonstrated many times in the Bow Valley[31],[32]. Designated Wildlife Corridors and Habitat Patches require special human use management to minimize the impacts of human use on wildlife and wildlife movement. BCEAG (***Table 9***) provides guiding principles for trail placement and alignments. Minimizing human use in wildlife corridors is a key tenant of the BCEAG guidelines.

Research indicates recreational use and recreational trails have significant impacts on wildlife habitat use and movement[33]. Noise and motion from recreation use can affect the behavior and movement of wildlife. Encounters between recreationists, dogs and wildlife can cause wildlife stress by increasing the metabolism of animals, causing them to burn more calories and expend more energy. The disturbance effect has been shown to be greater off trail, where human use is less predictable to wildlife[34]. Predictability of human use is important as wildlife will avoid high use areas and modify their use to times when people are inactive[35] . Wildlife behaviors alter in areas with high levels of recreation use as they seek food. Wildlife that become habituated to human food may have to be killed or relocated from their territories. Wildlife can also become ill from human disease or exposure to trash and food left by humans.

Microclimatic changes (increased sunlight, increased rainfall due to reduced canopy interception, increased wind, decreased humidity, altered temperature regime, etc.) occur within the edges adjacent to trails. The microclimatic changes could affect the site composition of vegetation and wildlife species, such as decreased nesting near trails, altered bird species composition

[25] Bow Valley Human, 2018.

[26] Belisle and St. Clair, 2002.

[27] Clevenger et al., 2003.

[28] Hale and Swearer, 2016.

[29] Robertson et al., 2016.

[30] Lamb et al., 2017.

[31] Whittington et al., 2019.

[32] Edwards et al., 2022.

[33] Whittington et al., 2022.

[34] Kays et al, 2017.

[35] Gaynor et al, 2018.

near trails[36] and increased predation due to predators' use of the clearings as corridors[37]. Trails can both facilitate the movement of wildlife and impede the movement and dispersal of animals that are reluctant to cross openings.

Recreational facilities and trails can reduce and fragment habitat for wildlife. Fragmentation of habitat occurs when continuous habitat is broken into smaller, isolated patches by a land use feature, like a road or trail. Research has shown that the survival of large mammals is dependent on the availability of large, unfragmented core areas (also called interior habitat). Core areas are measured by the amount of secure habitat (amount of native habitat patch beyond a specified buffer from human footprint).

Large animals generally have larger home range areas and are more likely to engage in harmful interactions with humans. These large mammals are charismatic species that attract tourists to the project area, and some of these charismatic species are considered at-risk.

The most well-known example of such a species is the grizzly bear (*Ursus arctos*), a species that holds great value to Bow Valley residents and visitors alike. The Alberta Grizzly Bear Recovery Plan recognizes the Bow Valley as a habitat linkage zone where efforts to maintain connectivity for grizzly bears is a priority. Grizzly bears, like many other large carnivores, occupy large home ranges[38] and are generally wary of humans. In 2010, *U. arctos* was listed as threatened in Alberta[39], emphasizing the need to ensure grizzly bears and humans can co-exist. Grizzly bears and wolves are particularly susceptible to anthropogenic (human-caused) disturbances of all kinds and have been observed increasing their movement rates near these disturbances[40,41,42] restricting their use of disturbed areas to times of day or seasons when humans are less active[43,44], or avoiding them altogether[45].

Mountain goat (*Oreamnos americanus*) and bighorn sheep (*Ovis canadensis*) ranges (including an 800 m disease buffer) encompass the entire project area. The recommended land use guidelines for mountain goat and bighorn sheep ranges in Alberta were developed to avoid disturbances that may have direct or indirect adverse effects on animal behavior and to avoid permanent alteration of mountain goat and bighorn sheep habitat. The guidelines apply specifically to industrial land use activities (e.g., construction) with the goal of reducing impacts to sensitive species. Activity is restricted to between July 1 and August 22 of any given year to avoid disturbance during the animals' spring lambing/kidding season, land use conflicts with hunters during late summer/fall and stresses on animals during the critical winter season[46].

Interactions with humans can be dangerous to humans and animals alike, particularly when animals become habituated to the presence of humans or are unable to perceive humans coming from far away[47]. Trails can be designed to reduce these risks by incorporating wider sight lines, improving an animal's ability to perceive oncoming recreators. Trail placement can also affect the likelihood and severity of human-wildlife interactions. Fundamentally, if a trail is constructed in an area used heavily by wildlife, the likelihood of human-wildlife interactions will naturally increase. Identifying areas that are most frequently used by wildlife can thus inform trail placement, in combination with factors contributing to the trail user's experience. Recreational

[36] Frey et al, 2016.

[37] Dickie et al, 2017.

[38] Graham and Stenhouse, 2014. https://www.canadianfieldnaturalist.ca/index.php/cfn/article/view/1600

[39] Alberta Environment and Parks, 2020.

[40] Roever et al., 2008.

[41] Finnegan et al., 2021.

[42] Goodbody et al., 2021.

[43] Gibeau et al., 2002.

[44] Mueller et al., 2004.

[45] Proctor et al., 2020.

[46] Government of Alberta, 2010b.

[47] Herrero et al., 2005.

trail use can also contribute to wildlife displacement and abandonment of high-quality habitat. Whittington et al. (2022) applied a predictive framework to forecast how the movement patterns of grizzly bears and wolves (*Canis lupus*) in the Bow Valley may be modified by increasing anthropogenic development in the Bow Valley[48]. These approaches can be used to: a) identify low-use and high-use areas for wildlife under current conditions, and b) predict how habitat use and movement patterns may change as new trails are developed.

[48] Whittington et al., 2022.

10.2 Species at Risk

Numerous species found within the Canmore area are listed as species-at-risk (SARA) and are covered under species-specific recovery strategies. These species are listed in ***Table 12*** and investigated in more detail in ***Section 10.***

Table 12. Species at risk in the project area

Species	Scientific name	SARA schedule 1 status
Common Nighthawk	*Chordeiles minor*	Threatened
Little Brown Myotis	*Myotis lucifungus*	Endangered
Olive-sided Flycatcher	*Contopus cooperi*	Threatened
Westslope Cutthroat Trout (AB population)	*Oncorhynchus clarkia lewisi*	Threatened
Whitebark Pine	*Pinus albicaulis*	Endangered
Woodland Caribou (southern mountain population)	*Rangifer tarandus*	Threatened

10.3 Listed Species

The Fish and Wildlife Management Information System (FWMIS) was queried, using the Fish and Wildlife Internet Mapping Tool (FWIMT), for any documented occurrences of special status wildlife species within the project area[49]. This section summarizes the listed wildlife species identified in the project area including their provincial[50] and federal[51] status.

Listed wildlife species are typically covered under federal or provincial management plans or recovery strategies, see ***Table 13***.

Table 13. Listed wildlife species in the project area

Common name	Scientific name	Provincial status	Federal status (SARA)	Common name	Scientific name	Provincial status	Federal status (SARA)
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive	Not at Risk	Harlequin duck	*Histrionicus histrionicus*	Sensitive	N/A
Bank Swallow	*Riparia riparia*	Sensitive	Threatened	Little brown myotis	*Myotis lucifugus*	May be at Risk	Endangered
Barn Swallow	*Hirundo rustica*	May be at Risk	Threatened	Long-tailed weasel	*Mustela frenata*	May be at Risk	N/A
Barred Owl	*Strix varia*	Sensitive	N/A	Long-Toed Salamander	*Ambystoma macrodactylum*	Sensitive	Not at Risk
Bobcat	*Lynx rufus*	Sensitive	N/A	Northern Pygmy-Owl	*Glaucidium gnoma*	Sensitive	N/A

[49] Government of Alberta, 2023c.

[50] AEPA, 2020.

[51] Government of Canada, 2021.

Common name	Scientific name	Provincial status	Federal status (SARA)	Common name	Scientific name	Provincial status	Federal status (SARA)
Boreal/Western Toad	*Anaxyrus boreas*	Sensitive	N/A	Pileated Woodpecker	*Dryocopus pileatus*	Sensitive	Migratory Birds Regulations Schedule 1[52]
Canada Lynx	*Lynx canadensis*	Sensitive	Not at Risk	Red-Sided /Common Garter Snake	*Thamnophis sirtalis*	Sensitive	N/A
Clark's Nutcracker	*Nucigraga columbiana*	Sensitive	N/A	Red-Tailed Chipmunk	*Neotamias ruficaudus*	Sensitive	N/A
Columbia Spotted Frog	*Rana luteiventris*	Sensitive	Not at Risk	Sharp-Tailed Grouse	*Tympanuchus phasinellus*	Sensitive	N/A
Common Nighthawk	*Chordeiles minor*	Sensitive	Special Concern	Short-Eared Owl	*Asio flammeus*	May be at Risk	Special Concern
Common Yellowthroat	*Geothlypis trichas*	Sensitive	N/A	Trumpeter Swan	*Cygnus buccinator*	Sensitive	Not at Risk
Golden Eagle	*Aquila chrysaetos*	Sensitive	Not at Risk	Wandering / Terrestrial Garter Snake	*Thamnophis elegans*	Sensitive	N/A
Great Blue Heron	*Ardea herodias*	Sensitive	Migratory Birds Regulations Schedule 1	Water Vole	*Microtus richardsoni*	Sensitive	N/A
Grizzly Bear	*Ursus arctos*	At Risk	Special Concern	Western Grebe	*Aechmophorus occidentalis*	At Risk	Special Concern

Source: Government of Alberta, 2023.

During preliminary/detailed design, areas of disturbance will be surveyed for the presence of listed species and their nests/dens/hibernacula to protect species and develop project-specific mitigation plans.

10.4 Habitat Zoning

The Bow River Valley has been designated as a key wildlife and biodiversity zone by the Government of Alberta[53] (see ***Figure 6***), recognizing the biodiversity and winter habitat for ungulate species in the area. The recommended land use guidelines developed for these zones apply specifically to industrial land use activities with the goal of reducing impacts to sensitive species. Activity in these zones is restricted between December 15 and April 30 each year to protect high quality habitats.

[52] Government of Canada, 2022c.

[53] Government of Alberta, 2015.

Figure 6. Designated key wildlife and biodiversity zone overlapping project area

The Grizzly Bear Recovery Plan[54] recognizes that the Bow Valley is an important habitat linkage zone and that increasing human use has an impact on grizzly bear movement and connectivity. The Bow Corridor Ecosystem Advisory Group (BCEAG, as referenced in ***Table 9***) mapped out a series of wildlife corridors and habitat patches which have since been updated to include the approved 2020 Three Sisters Corridor (***Figure 7***). Wildlife corridors are meant to facilitate movement of wildlife through the Bow Valley, both along the valley and across it. They may not all represent high quality habitat, but the habitat quality within wildlife corridors must be sufficient for wildlife to enter and move through them. High quality habitat is captured by the habitat patches, which are linked together by the corridors to maximize the secure habitat available to wildlife. Additionally, the Town of Canmore has a number of conservation easements in place to support corridors and connectivity, and a ministerial order closure exists on some town land, such as the Lady MacDonald corridor.

[54] Government of Alberta, 2022.

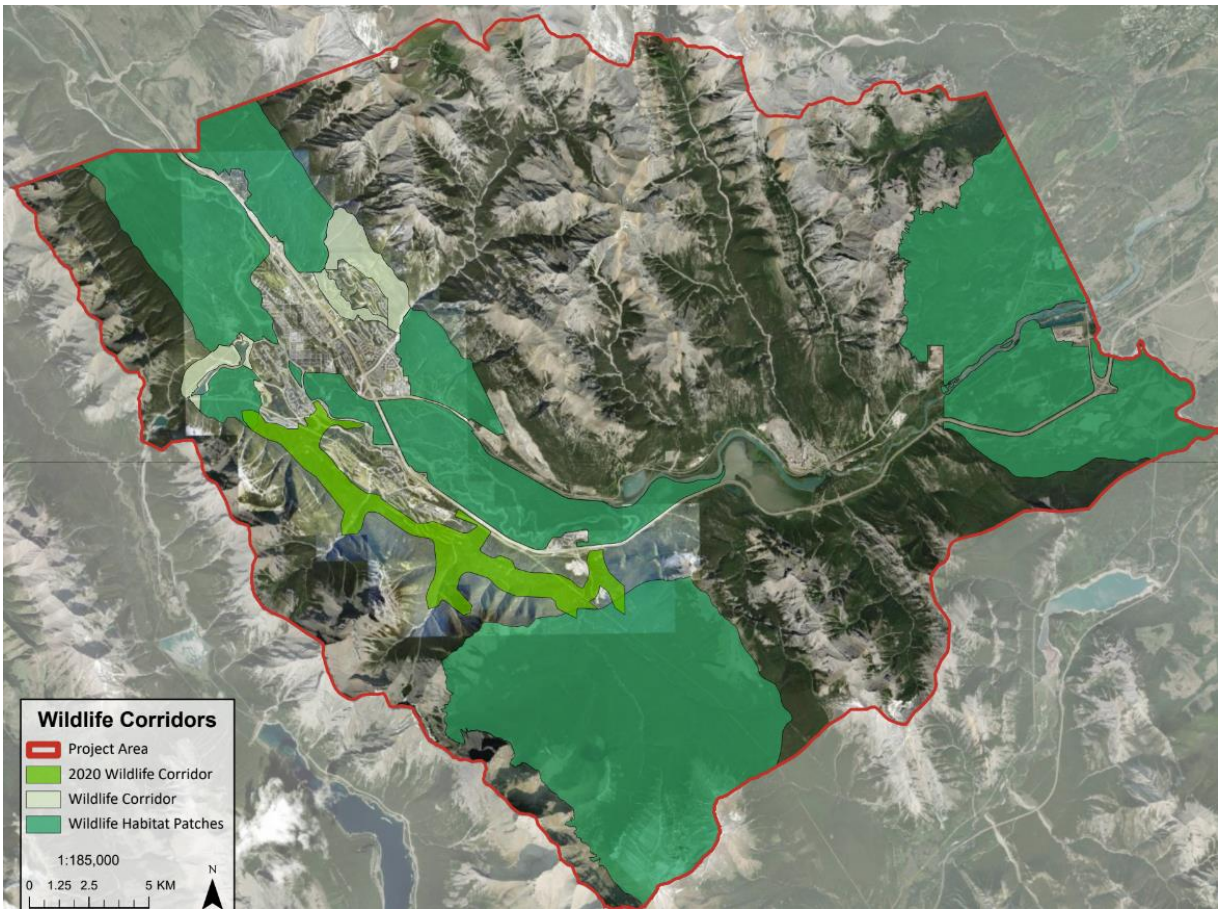


Figure 7. Wildlife corridors and habitat patches in the Bow Valley

To assist with the development of the Canmore Area Trails Strategy, habitat suitability modeling was conducted. This model related inputs of habitat quality, including topographic (elevation, slope, aspect) and environmental (vegetation classes, including non-vegetated, shrub, herbaceous, closed conifer and open conifer) to observed patterns of habitat use by grizzly bears and wolves, developed using both camera trap images and global positioning system (GPS) collars. The output of these analyses for the Bow Valley is depicted in ***Figure 8***.

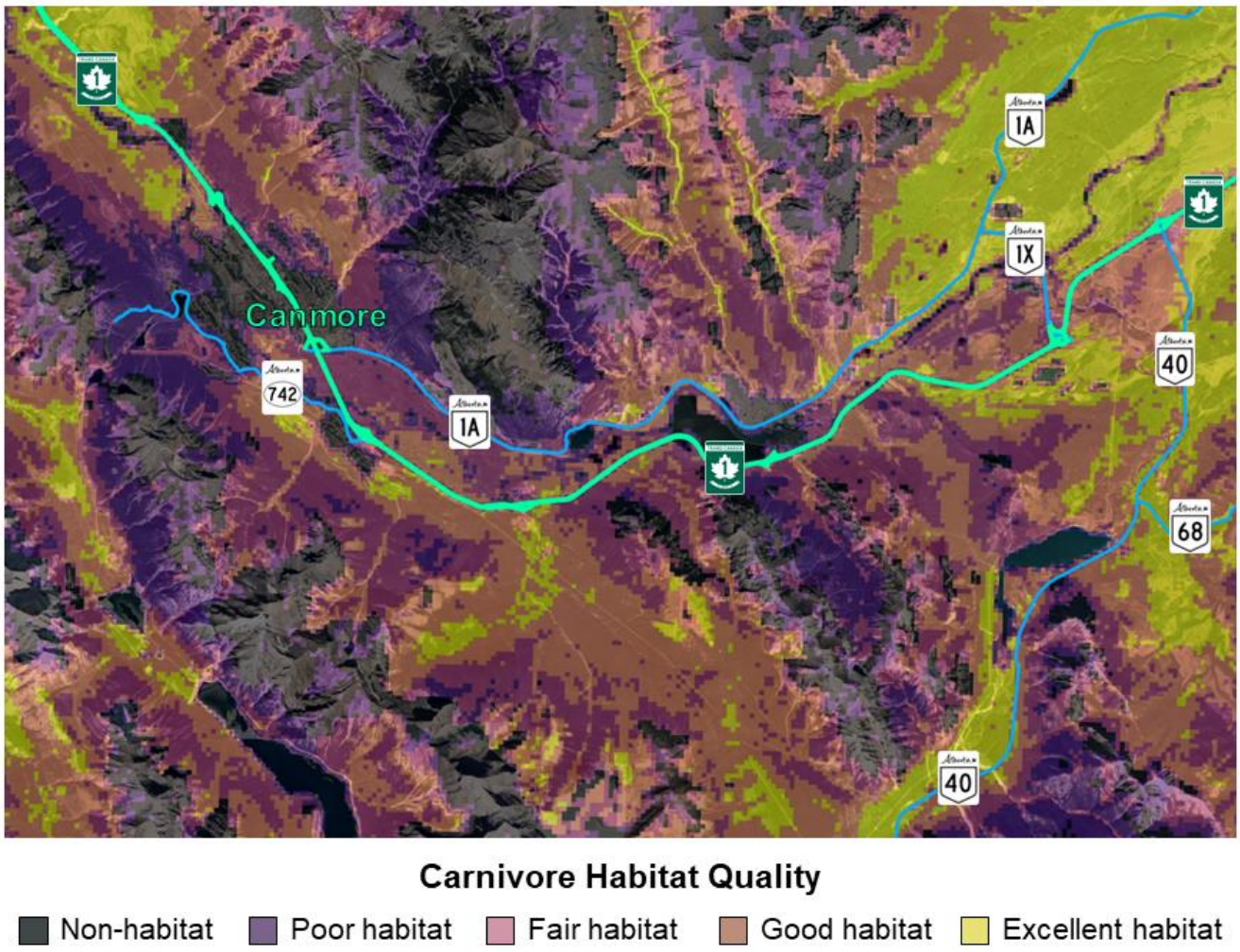


Figure 8. Habitat suitability modeling showing higher quality habitat as a brighter color (unpublished, Peter Thompson Analysis 2024)

10.5 Human Disturbance of Wildlife

An assessment of human-wildlife interactions in the focal region included an analysis of a camera trap dataset collected in the project area between 2007 and 2022. The analysis focused on grizzly bears and wolves, two species with thousands of detections across over 1000 camera traps. Both species have also been identified as wary of human activity, with the uncommon exception of individual habituated animals. The cameras also detected over one million instances of non-motorized human recreation across all the total camera activity. Notably, motorized human use (e.g., driving, boating, off-highway vehicles) and residential impacts (e.g., disturbance originating from residential areas, like the Town of Canmore), were not measured by camera traps and are excluded from the model as a result. The analysis applied Poisson point process models to the camera trap data, estimating the expected rate of detection for grizzly bears and wolves throughout the Bow Valley as a spatially varying function of environmental and anthropogenic covariates. To appropriately characterize non-motorized human recreation activity across the project area, estimates were created using camera-derived human density data. The model predicted how many recreationalists would use each trail based on information collected at nearby cameras, as well as data on the accessibility and environmental conditions along the trail. Since the detection rates of wary species are likely to decrease not just on trails with a high density of recreating humans, but also in areas near those trails, the models estimated the spatial distance of this effect as a parameter. Including environmental variables in the wildlife models (specifically elevation, slope, aspect, annual snow cover and landcover type) isolated the effect of human use from potential statistical confounds.

The models suggest that the effect of high-use anthropogenic features (i.e., busy trails) displace and disturb wary carnivores for over 2 km, an effect size that has been consistently understated in previous work (***Figure 9***). Wolves displayed a more extreme response to human use, a conclusion that generally corroborates findings from the literature. Using the parameters estimated by the grizzly bear and wolf models, the models produced a non-motorized recreation disturbance index for each species that, at each location in the project area, accounts for human use at all nearby areas (***Figure 9***). These maps resemble "smoothed" versions of the predicted human density layers and highlight the incredible levels of human disturbance that are currently present in the Bow Valley. The models suggest that these disturbance indices are far better predictors of wildlife use than simply evaluating human traffic at the focal site alone, and indeed, the observed detection rates across camera traps with varying levels of disturbance match closely with model predictions for both species (***Figure 10***). These results provide guidance for trail construction, regulation and management in that they quantify how high-use trails affect the habitat security and quality of sensitive areas for grizzly bears and wolves. The model can be used for trail planning to address how adding or removing a trail affects wildlife movement.

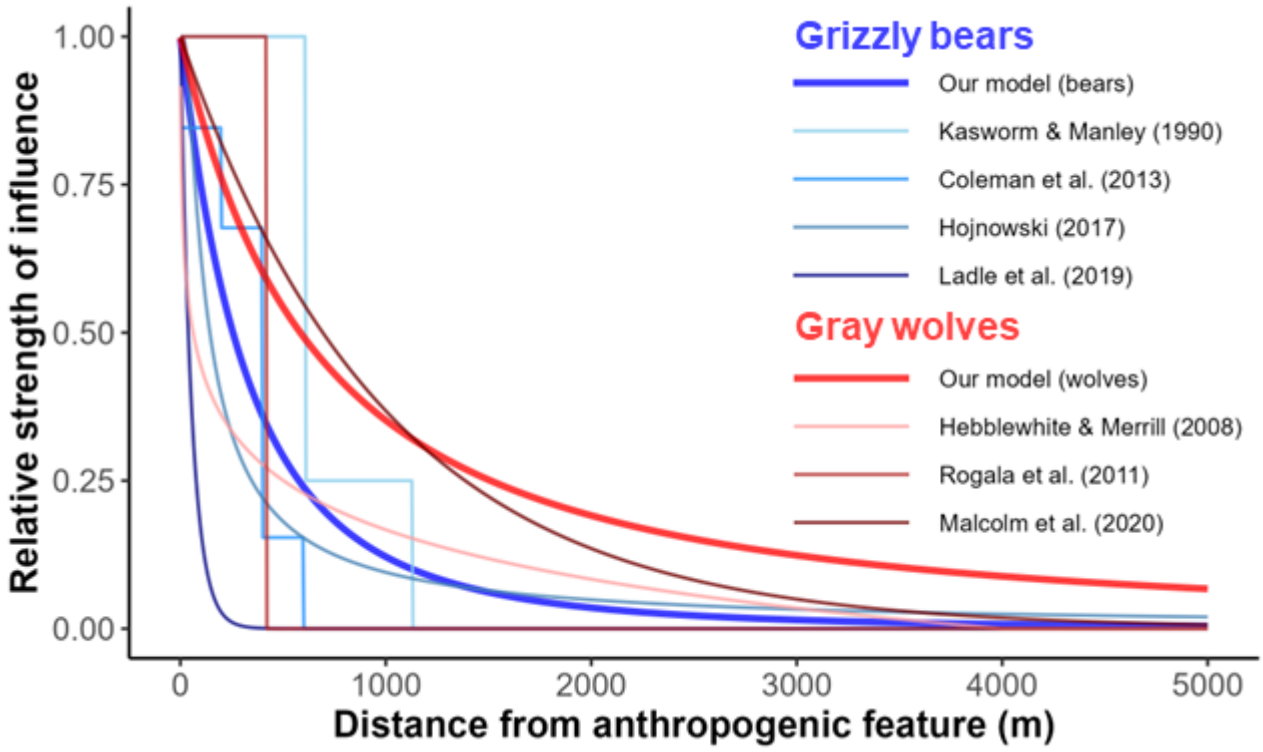


Figure 9. Negative effects of non-motorized human recreation on wildlife

Figure 9 shows a set of curves representing how the negative effects of non-motorized human recreation on wildlife (specifically, grizzly bears and wolves) change as a function of distance from that activity. The model-fitted curves described above (the thickest two lines) are displayed in comparison to existing studies that also estimated this relationship using a variety of different methods. These curves suggest a higher influence of faraway human activity than most existing work.

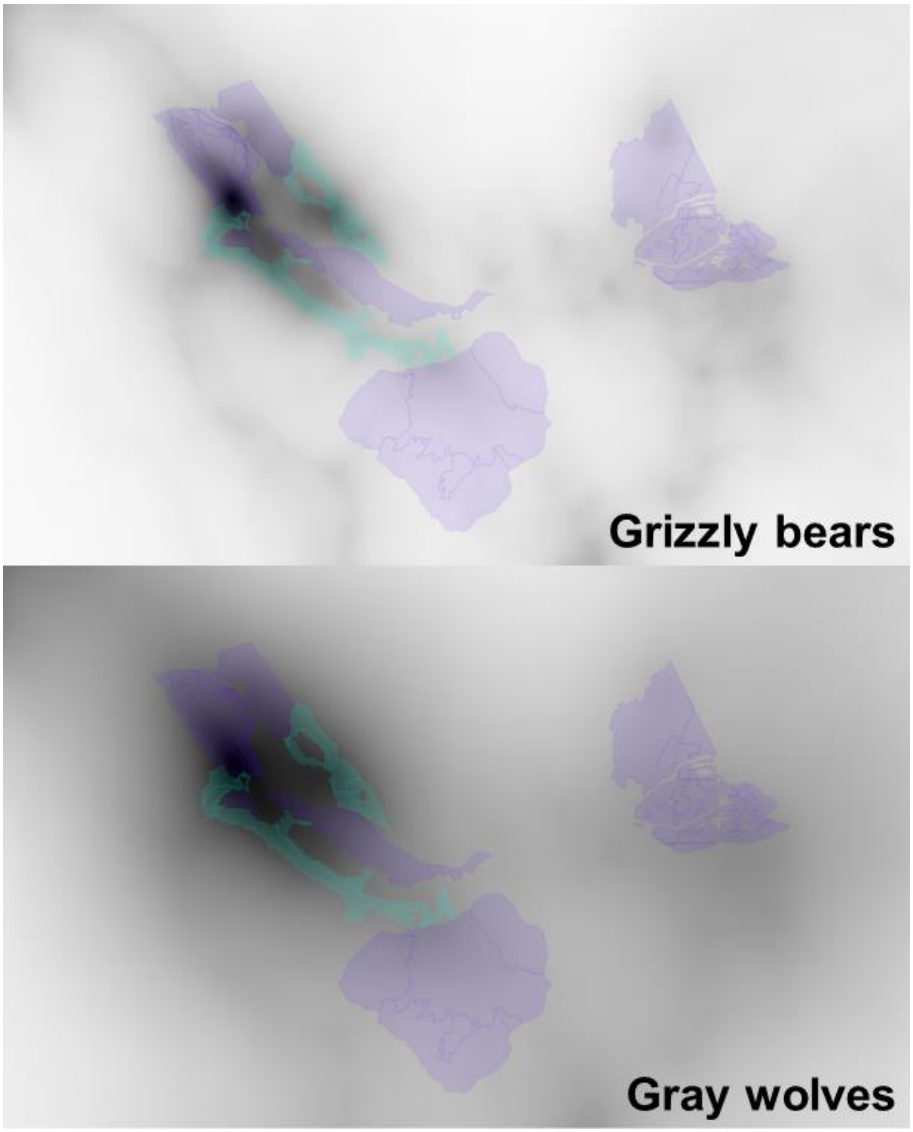


Figure 10. Mapped human disturbance indices estimated independently for each species (motorized and residential impacts are omitted from the model)

Figure 10 mapped human disturbance indices, estimated independently for each species using wildlife Poisson process models in the Bow Valley. The greater the disturbance, the darker the shaded background color. Wildlife corridors and wildlife habitat patches, defined using BCEAG guidelines, have been overlaid in cyan and violet, respectively.

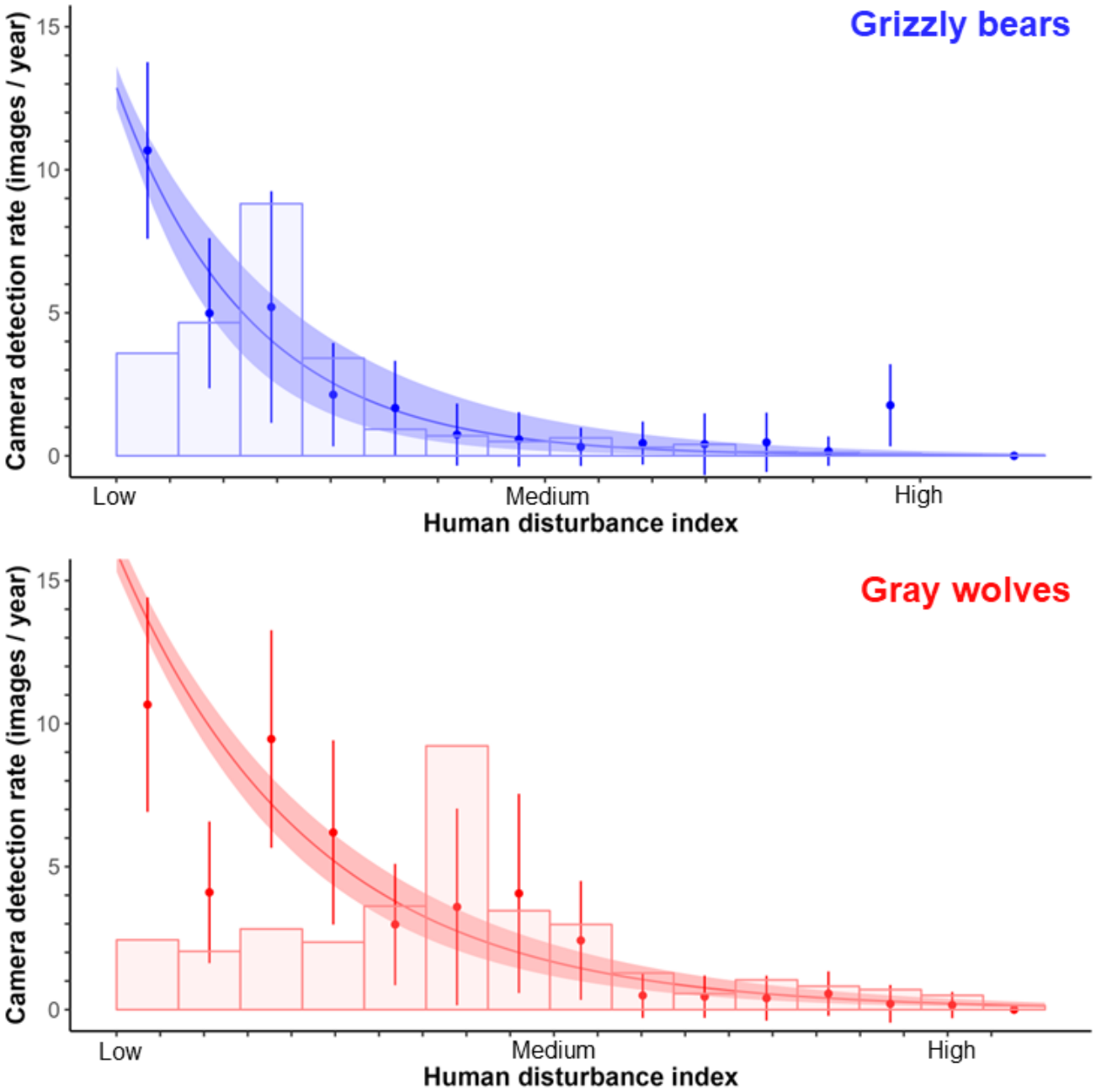


Figure 11. Effect of non-motorized human recreation on expected camera detection rate of grizzly bears and wolves

Figure 11 shows the effect of non-motorized human recreation, as quantified by the model-generated disturbance indices, on the expected camera detection rate (a proxy for habitat use) of grizzly bears and wolves in the Bow Valley. Smooth curves represent the model-estimated detection rate for each species at different levels of the disturbance index. Shaded regions around the curves represent 95 per cent credible intervals for that estimate. The histogram in each plot approximates the distribution of disturbance index values for all the camera sites included in the analysis. Dot-and-line plots represent observed detection rates (weighted mean +/- weighted standard deviation) at camera sites in the Bow Valley, within each of these disturbance index bins.

10.6 Temporal Wildlife Patterns

Many wild animals are more sensitive to human disturbance at certain times of year, particularly at times when reproductive responsibilities become a high priority. The Bow Valley is home to a myriad of bird species, almost all of which are migratory and nest in the early summer. Many of these species will have departed their breeding grounds entirely by mid-August, owing to the limited temporal extent of food availability at high latitudes. Elk (*Cervus canadensis*) are found year-round in the Bow Valley, but in late May, they give birth to their calves and are especially sensitive as a result[55]. It is recommended that trail construction be avoided when these and other animals are most sensitive to reduce harm to the animals and preserve the safety of humans in the area. Planning trail construction around these time periods can improve wildlife survival but, in some cases, seasonal restrictions on the use of anthropogenic features after construction can be even more effective (Whittington et al., 2019).

The project area overlaps with nesting zones B5, A4, and A3 with regional nesting periods of mid-April to late-August[56]. Vegetation clearing and any disturbance during the nesting period will require a qualified environmental professional (QEP) to complete pre-construction nest sweeps[57].

10.7 Watercourses and Aquatics

The project area is located in the Bow River Valley corridor, a network of significant waterways, each playing a vital role in the region's ecology, hydrology and recreational landscape. The most prominent waterway in the region is the Bow River, which flows through Canmore and the Bow Valley. Originating from the Bow Glacier, this river is a major tributary of the South Saskatchewan River, playing a crucial role in the regional hydrological cycle. The Bow River's flow regime is characterized by snowmelt-driven runoff, peaking in late spring and early summer. This river sustains a diverse aquatic ecosystem, including significant fish populations like the native Westslope Cutthroat Trout and Bull Trout, which are indicators of ecological health. Management of the Bow River involves maintaining water quality, ensuring sustainable flow rates for ecological integrity and mitigating flood risks. Recreational use of the Bow River, including fishing and boating, is also a consideration in its management, necessitating strategies to balance human activity with conservation efforts.

Another key waterway is Policeman's Creek, a tributary of the Bow River, flowing through Canmore. This creek plays a significant role in local biodiversity, serving as a habitat for various wildlife species. Policeman's Creek is characterized by its riparian zones, which are crucial for wildlife corridors and ecological connectivity within the urban environment of Canmore. The Spray River, also within the vicinity of Canmore Area is another significant tributary of the Bow River. Originating from the Spray Lakes, this river features a unique mountain stream ecosystem.

The Canmore area also includes numerous smaller creeks and streams, such as Three Sisters Creek and Cougar Creek. These waterways contribute to the overall hydrological network of the Bow Valley, supporting local ecosystems and providing recreational opportunities. The valley bottom has a high water table, meaning that low lying and poorly constructed trails will remain wet during times of flood. Management of these smaller waterways involves erosion control, flood mitigation and ensuring connectivity for aquatic species. Major watercourses and waterbodies are summarized in ***Table 14*** and ***Table 15*** including the FWIMT ID#, AEPA Class and Restricted Activity Period (RAP), fish presence, coordinates and/or comments. Unnamed watercourses are also found throughout the project area, with regional drainage to the Bow River. All watercourse crossings may be subject to the code of practice (COP) for watercourse crossings or field assessment and review by a qualified aquatic environmental specialist (QAES). Water quality and fish and fish habitat can be impacted by construction in and around waterbodies. Installation and decommissioning of trails should follow best management practices to avoid impacting water bodies. The *Code of Practice for Watercourse Crossings Canmore Management Area Map*[58] must be followed.

[55] Berg et al., 2023.

[56] Government of Canada, 2018.

[57] Government of Alberta, 2020.

[58] AEPA, 2006. Code of Practice (COP) Class Crossings Canmore Management Area. https://open.alberta.ca/dataset/1bdbc003-75a0-41dc-b33d-099c5bc536ad/resource/e9b616ef-ac98-4983-8dd6-1ddd70d8e212/download/canmore-codepracticecross-map-2006.pdf

Table 14. Major watercourses in the Canmore Area Trails Strategy Project area

Watercourse name	FWIMT ID#	Alberta COP Class [59]	RAP [60]	Comments
Bow River	1988	Class C	September 1 to April 30	Confirmed fish presence.
Bill Griffiths Creek	65619	Class A	Specific Requirements	Brown and Bull trout spawning habitat.
Policeman Creek	1365	Class B	September 1 to April 30	Brown and Bull trout spawning habitat.
Spring Creek	N/A	Class B	September 1 to April 30	Brown and Bull trout spawning habitat. Tributary of Policeman Creek.
Canmore Creek	256	Class B	May 16 to August 15 September 1 to April 30	Brown and Bull trout spawning habitat. Confirmed fish presence.
Goat Creek	667	Class C	September 1 to April 30	Tributary of Bow River. Confirmed fish presence.
Three Sisters Creek	1775	Class C	September 1 to April 30	Tributary of Bow River.
Fall Creek	565	Class C	September 1 to April 30	Tributary of Bow River.
Stewart Creek	1681	Class C	September 1 to April 30	Tributary of Bow River. Confirmed fish presence.
Marsh Creek	1058	Class C	September 1 to April 30	Tributary of Bow River.
Cairnes Creek	239	Class C	September 1 to April 30	Tributary of Bow River.
West Wind Creek	1890	Class C	September 1 to April 30	Tributary of Bow River.
Wind Creek	1934	Class C	September 1 to April 30	Tributary of Bow River.
Pigeon Creek	1332	Class C	September 1 to April 30	Tributary of Bow River.
Smith Creek	1598	Class C	September 1 to April 30	Tributary of Bow River.
Jura Creek	879	Class C	September 1 to April 30	Tributary of Bow River.

[59] Alberta Water Act Code of Practice (COP) Class – watercourse classification based on the sensitivity of the fish habitat.

[60] Alberta Water Act Code of Practice (COP) RAP – periods when there is a higher risk to do harm to fish populations.

Watercourse name	FWIMT ID#	Alberta COP Class [59]	RAP [60]	Comments
Exshaw Creek	559	Class C	September 1 to April 30	Tributary of Bow River. Confirmed fish presence.

Table 15. Major waterbodies in the Canmore Area Trails Strategy Project area

Waterbody name	FWIMT ID#	Coordinates	Comments
Whiteman's Pond	3540	471086.0069 5655276.1068	Downstream of Goat Creek. Upstream of the Bow River. Confirmed fish presence.
Rundle Pond	21051	472785.4723 5656741.996	Downstream of Goat Creek. Upstream of the Bow River. Confirmed fish presence.
Quarry Lake	6712	473890.2298 5655927.7829	Upstream of Canmore Creek. Confirmed fish presence.
Chilver Lake	4264	495520.1569 5655236.3597	No fish sampled to date.
Little Chilver Lake	20972	495874.6281 5655631.33	No fish sampled to date.
Youth Camp Lake #1	20971	497015.0548 5654958.0759	No fish sampled to date.
Youth Camp Lake #2	20970	496402.0372 5655012.0402	No fish sampled to date.
Youth Camp Lake #3	20969	496074.0577 5654890.4922	No fish sampled to date.
Bow Valley Lake	20973	493425.8624 5656123.1421	No fish sampled to date.
Laurie Lake #1	20980	493365.3297 5660543.8521	No fish sampled to date.
Laurie Lake #2	20981	494231.8575 5660332.7723	No fish sampled to date.
Base Lake #1	20979	492336.1669 5658783.6429	Located within a larger wetland complex. No fish sampled to date.

Waterbody name	FWIMT ID#	Coordinates	Comments
Base Lake #2	20978	492941.5167 5658528.4395	Located within a larger wetland complex. No fish sampled to date.
Door Lake	20974	492451.7394 5657818.9788	Located within a larger wetland complex. No fish sampled to date.
Jamb Lake	20975	492338.0445 5657753.8522	Located within a larger wetland complex. No fish sampled to date.
Upper Steel Brother's Pond	17884	490923.98 5655919.72	Located within a larger wetland complex. Confirmed fish presence.
Exshaw Lake	20985	487353.0147 5654529.699	Confirmed fish presence.
Grotto Mountain Pond	3476	485830.8 5654912.8961	Upstream of the Bow River. Confirmed fish presence.
Lac Des Arcs	3937	487151.6832 5653685.9698	Connected to the Bow River and located within a larger wetland complex. Confirmed fish presence.
McGillivray Pond	3481	486227.9983 5653513.0754	Separated from Lac Des Arcs by Highway 1. No fish sampled to date.
Hyway Ponds	20984	484402.925 5653438.0575	Located within a larger wetland complex. No fish sampled to date.
Gap Lake	4646	483612.7508 5653662.1431	Connected to the Bow River. Confirmed fish presence.

Source:. Government of Alberta, 2023c.

10.8 Aquatic Species at Risk

Review of the DFO's aquatic species at risk map identified bull trout (*Salvelinus confluentus*) within the project area[61]. This species is federally listed as threatened under SARA[62] and is provincially at risk[63]. Watercourses within the project area are not deemed critical habitat for bull trout; however, spawning habitat has been identified in Spring Creek, Policeman's Creek and Bill Griffith's Creek[64].

[61] DFO, 2023.

[62] Government of Canada, 2021

[63] AEPA, 2020.

[64] Government of Alberta, 2023c.

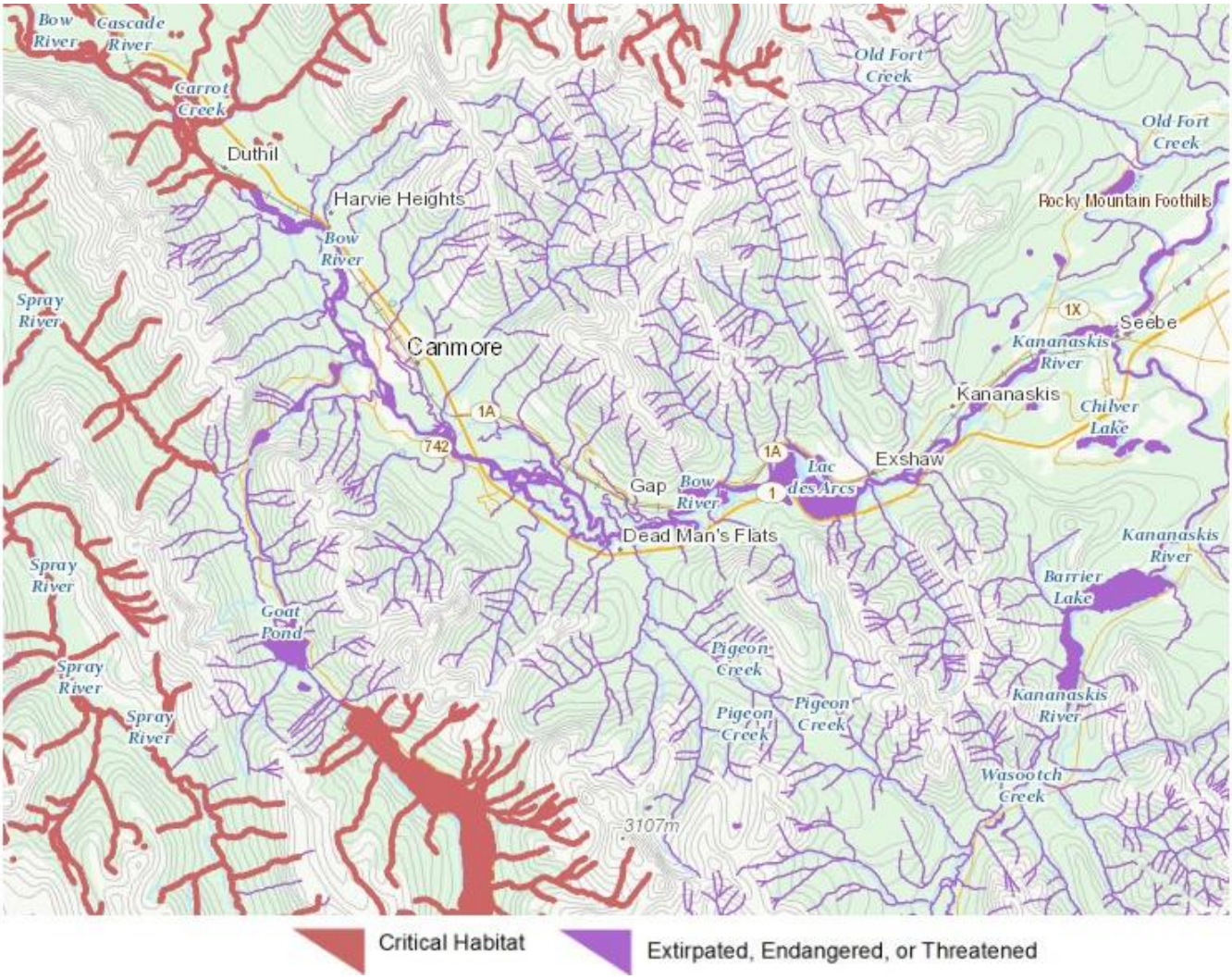


Figure 12. Map of Bull Trout habitat status

10.9 Wetlands

A detailed review of wetlands in the project area was not possible at the scale of this report; however, impacts may occur depending on proposed trail location within the project area. According to the Alberta Wetland Assessment and Impact Report Directive[65], projects that will directly impact wetlands require the submission of a pre-disturbance wetland assessment under the *Water Act*. This assessment may be one of two formats depending on the type of activity and the proposed impacts, including either a desktop assessment for short-term activities or those that have minimal permanent impact, or a report that includes both field and desktop assessment components. During detailed design of specific trails, field assessment to confirm the presence of wetlands will be required, including assessment by a qualified wetland science practitioner to determine associated regulatory activities required.

10.10 Natural Regions and Landforms

The Bow River valley bottom is located within the Montane Natural Subregion.

[65] Government of Alberta, 2017.

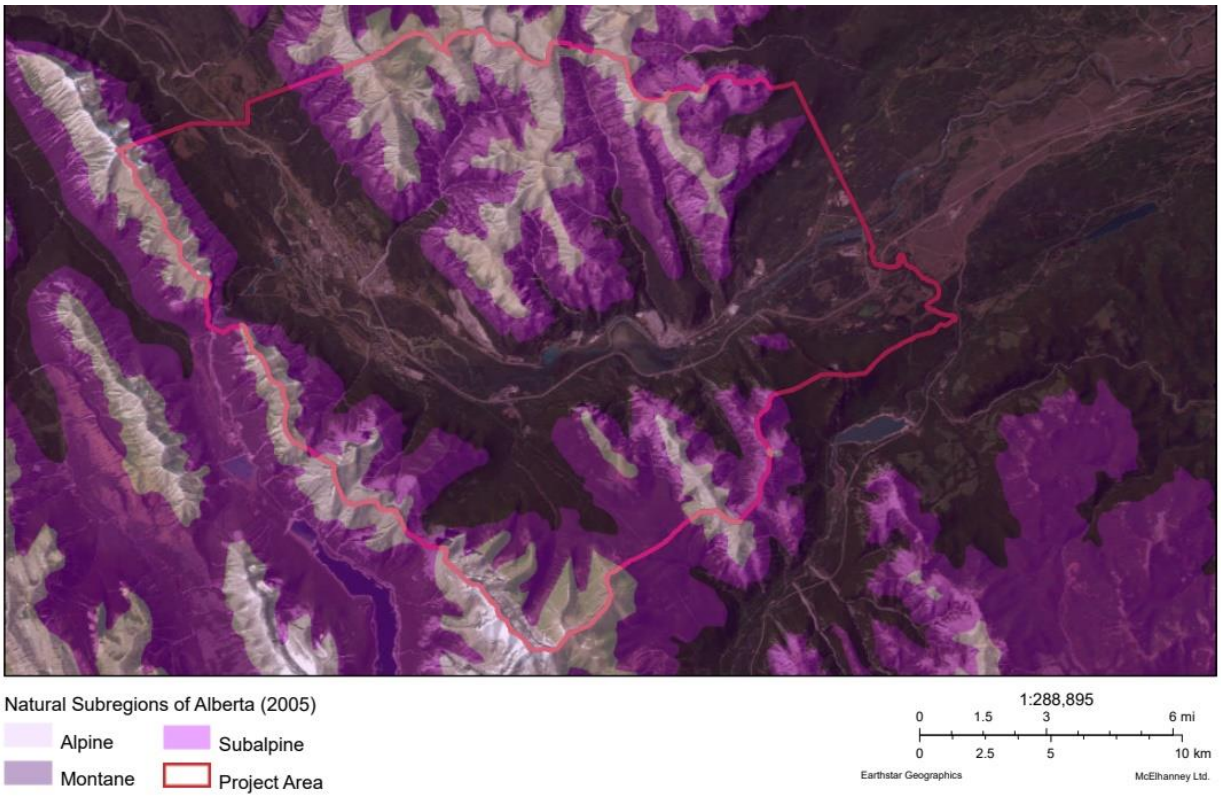


Figure 13. Natural subregions of the Canmore Area Trails Strategy

10.11 Sensitive Landscapes

The *Environmental Significant Areas* report and associated mapping data was reviewed to identify areas within Alberta that are important to maintaining biological diversity, landscape features and other natural processes over the long-term, on both local and regional scales[66]. There are three environmental significant areas (ESAs) of national and provincial significance found within the project area. The Bow Corridor Ecosystem Advisory Group identified a patchwork of *environmentally sensitive areas*, *wildlife corridors*, and *wildlife habitat patches* within the project area[67]. These areas cover much of the project area and include the Bow Valley Wildland Provincial Park, Bow Valley Provincial Recreation Area, numerous elements of conservation concern (wildlife, insects, plants, birds), rare/unique landforms, important wildlife habitat, important riparian areas, large natural areas and sites of recognized significance. Sensitive landscapes overlapping the Project Area are shown on ***Figure 14*** including national parks (NP), provincial parks (PP), provincial recreation areas (PRA), wildlife provincial parks (WPP) and environmental sensitive areas.

[66] Fiera, 2014.

[67] Bow Corridor Ecosystem Advisory Group, 2012

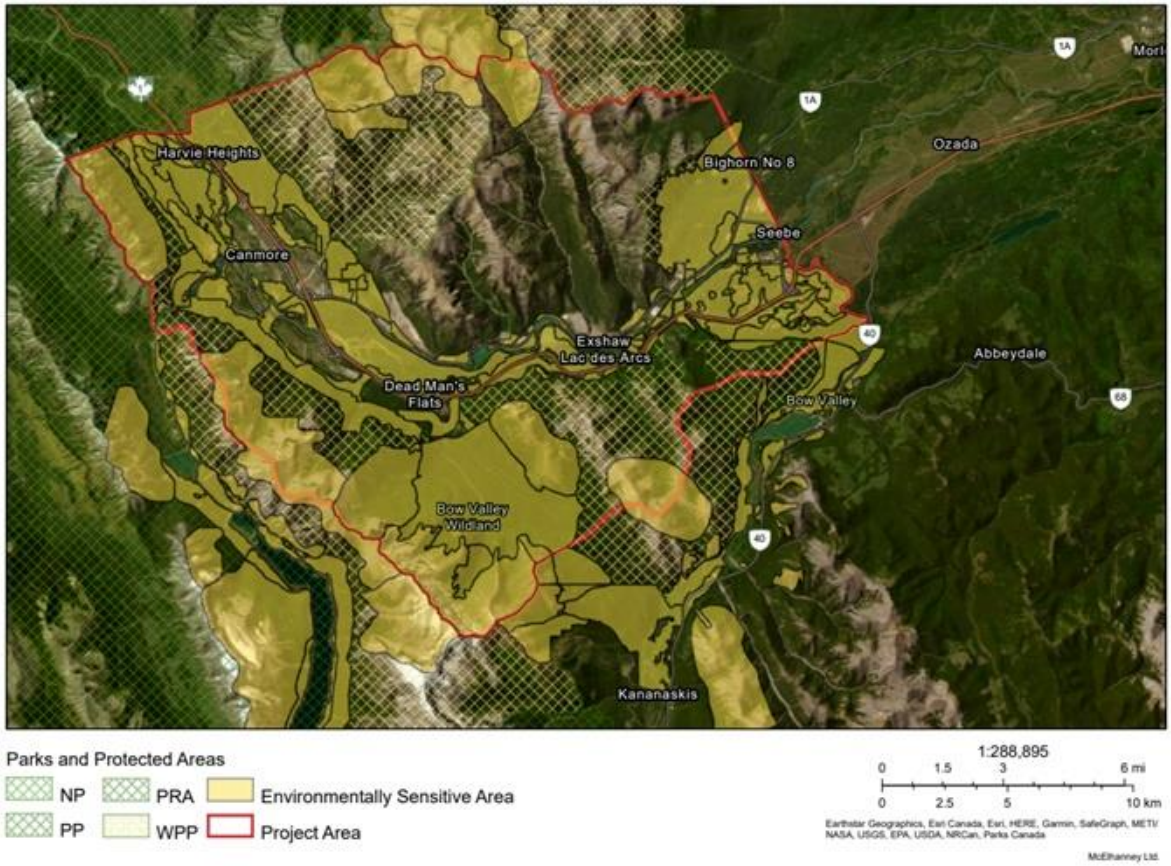


Figure 14. Parks and protected areas and environmentally sensitive areas overlapping the project area

10.12 Soils

The Bow River floodplain and alluvial fans within the Project area typically have orthic and cumulic regosolic soils with coarse textured material over gravels. Soils are well-drained with good topsoil development; however, the regions are subject to flooding and a seasonally high water table[68].

Brunisolic soils form in forests in dry and cool conditions and are usually found on steep slopes, glacial outwash areas and glacial deposits. Bedrock can be close to the surface and steep slopes can be prone to erosion.

Luvisolic soil have developed in scattered parts of the project area, such as floodplains, alluvial fans and glacial deposits. The area with less disturbance and warmer, wetter conditions, allow soils to develop better.

Organic peat deposits and gleysolic soils are an indicator of wetland presence and should be avoided. Additional assessment and approvals may be required for disturbance if these soils are identified[69].

Trail construction should be limited to soils that are well drained, while avoiding loose, fine, sandy soils which are highly erodible. Erosion and sediment control planning and measures to mitigate impacts to soil quality will require site-specific information on soil type. During preliminary/detailed design and environmental field surveys, soils will be assessed and those of conservation or construction concern will be identified.

[68] Knapik, 1974

[69] Knapik, 1974

10.13 Vegetation

South-facing slopes are dominated by Douglas-fir (*Pseudotsuga menziesii*) and lodgepole pine (*Pinus contorta*) while north-facing slopes are dominated by white spruce (*Picea glauca*) and lodgepole pine. Trembling aspen (*Populus tremuloides*) is found throughout the valley on higher disturbance landscapes, such as on alluvial fans that contain loose sediment prone to changes during flooding/rain events. The Bow River floodplain and moist riparian and wetland areas contain white spruce, balsam poplar (*Populus balsamifera*), river alder (*Alnus tenuifolia*) and willows (*Salix* species [spp]). Warmer and drier areas of the region consist of Douglas fir, juniper (*Juniperus communis*) and rough fescue (*Festuca campestris*)[70].

The Subalpine Natural Subregion, located above the Montane Natural Subregion on mountain slopes up to the tree line, display an open canopy with dominant species consisting of Engelmann spruce (*Picea engelmannii*), subalpine fir (*Albies lasiocarpa*), lodgepole pine, limber pine (*Pinus flexilis*), alpine larch (*Larix lyallii*) and occasionally whitebark pine (*Pinus albicaulis*)[25]. The Alpine Natural Subregion, located above the Subalpine Natural Subregion on the upper mountain slopes is characterized by low-growing vegetation with a limited growth season. Species include mountain heather (*Phyllodoce* spp.), mountain avens (*Dryas* spp.), and several species of lichen[25].

10.13.1 Sensitive Vegetation Communities

Numerous vegetation communities of conservation concern were identified in the Project area, as described below[27]:

- Bog birch/mountain rough fescue (*Betula pumila/Festuca campestris*)
- Limber pine/common bearberry/creeping juniper (*Pinus flexilis/Arctostaphylos uva-ursi/Juniperus communis*)
- Mountain rough fescue/hairy wild rye (*Festuca campestris/Elymus villosus*)
- Mountain rough fescue/tufted hair grass (*Festuca campestris/Deschampsia cespitosa*)
- Mountain sagewort/tall lungwort/hairy wild rye (*Artemisia borealis/Mertensia paniculata/Elymus villosus*)
- Northern wheatgrass/dragonwort/pasture sagewort (*Agropyron dasyanthum/Artemisia dracunculus/Artemisia frigida*)
- Northern wheatgrass/needle and-thread (*Agropyron dasyanthum/Hesperostipa comata*)
- Northern wheatgrass/slender wheatgrass (*Agropyron dasyanthum/Elymus trachycaulus*)
- White spruce / fern moss (*Picea glauca/Thuidium delicatulum*)
- White spruce/dwarf birch/beaked willow/bristle-leaved sedge (*Picea glauca/Betula nana/Carex eburnean*)

During detailed design and environmental field surveys, vegetation communities should be assessed and those of conservation concern identified.

10.13.2 Provincial and Federal At-Risk Vegetation

The Alberta Conservation Information Management System (ACIMS) database[71] and Environmentally Significant Areas Map[72] were searched to identify at-risk vegetation species within the project area. A variety of moss and vascular plants were identified in the environmentally significant areas map. Key vegetation species are detailed in ***Table 16.***

Table 16. Key provincial and federal listed vegetation species identified in the project area

Common name	Scientific name	Rank[73]	Federal status[74]	Species information[75]
Whitebark pine	*Pinus albicaulis*	S2	Endangered	Typically found on dry, rocky sites in upper subalpine forests between 1300-3700 meter elevations, typically defining the tree line. A long-lived and slow-growing species, with a minimum seed-bearing age of

[70] Natural Regions Committee, 2006.

[71] Government of Alberta, 2022.

[72] Fiera, 2014.

[73] NatureServe, 2023a.

[74] Government of Canada, 2020.

[75] NatureServe, 2023b.

Common name	Scientific name	Rank[73]	Federal status[74]	Species information[75]
		N2 G3		25-30 years. Reproduction entirely through seed, primarily by Clark's Nutcracker (*Nucifraga columbiana*). In decline due to white pine blister rust, mountain pine beetle, fire suppression and climatic stress.
Limber pine	*Pinus flexis*	S2 N2 G4	Endangered (Pending)	Typically found on dry, rocky sites between 1500–3600 meter elevations, typically defining the tree line and scattered throughout low-density forested regions; shade-intolerant. A long-lived and slow-growing species with a minimum seed-bearing age of 20-40 years. Reproduction entirely through seed, primarily by Clark's Nutcracker. In decline due to climatic stress, white pine blister rust and mountain pine beetle.

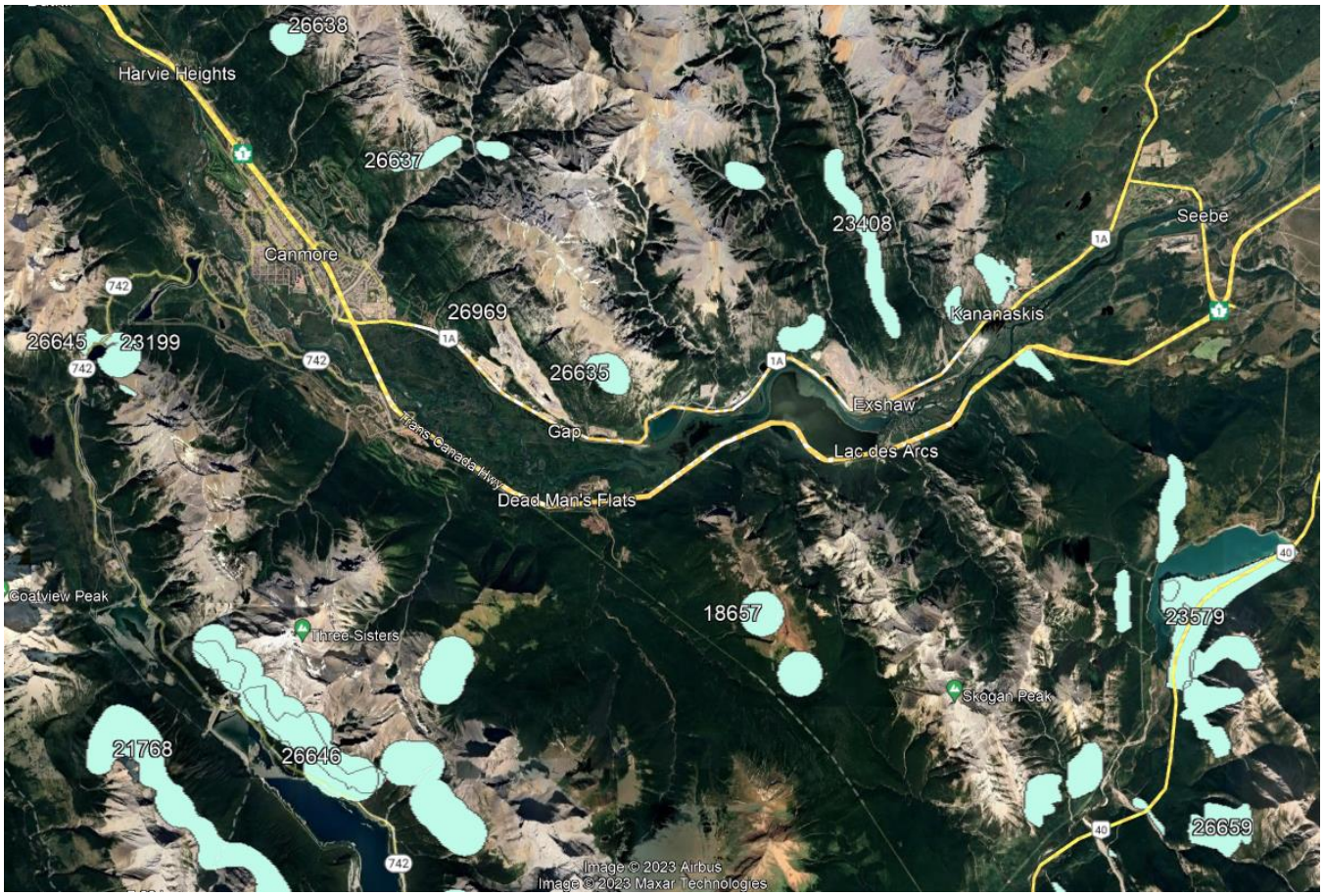


Figure 15. Whitebark and Limber Pine mapped locations

Whitebark pine is listed as endangered on schedule 1 of SARA. Sufficient individuals and suitable habitat currently exist for the species according to the *Recovery Strategy for the Whitebark Pine (Pinus albicaulis) in Canada*[76]; however, climate change and human activities may alter the distribution, quality and quantity of these habitats. Protection is required for individuals that are resistant to white pine blister rust for seed collection and assisted reproduction/revegetation. Limber pine is not a SARA

[76] Environment and Climate Change Canada, 2017.

schedule 1 listed species and therefore is not covered under a SARA recovery strategy, but habitats and methods of protection are similar.

During preliminary/detailed design, areas of disturbance shall be surveyed for the presence of rare and listed plant species. Removal of Whitebark and Limber Pine will be avoided.

10.13.3 Invasive Vegetation Species

Control of designated prohibited noxious and noxious species is required by the province under the *Weed Control Act*[77]. Invasive vegetation species discovered during project works will require management and/or monitoring to prevent their spread and to protect native and sensitive ecological communities.

10.13.4 Wildlife Trees

Wildlife trees will be present within the project area; their locations will require marking during project-specific environmental surveys. Wildlife trees are one of the most valuable components of stand-level biodiversity providing wildlife habitat, a present and future source of coarse woody debris, a source of native mycorrhizal fungi and habitat for invertebrates.

10.14 Summary of Environmental Timing Restrictions

Numerous timing restrictions or least-risk windows apply to construction work in environmentally sensitive areas. These have been introduced in previous sections and are summarized in ***Table 17*** for planning purposes.

Table 17. Timing restrictions in the project area

Timing consideration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain Goat and Bighorn Sheep Range						Jul 1 – Aug 22						
Key Wildlife and Biodiversity Zone					May 1 – Dec 14							
Nesting Period				Apr 15 – Aug 22								
Watercourse RAP					May 1 – Aug 31							
Watercourse RAP (Canmore Creek)						May 16 – Aug 15						

Red = No industrial activities permitted; Green = Industrial activities permitted; Orange = Industrial activities permitted with restrictions.

10.15 Climate Change – Wildlife Impacts

The Bow Valley will undoubtedly change in the future in ways that may be difficult to predict, but existing research suggests a warmer, drier climate, and expanding anthropogenic development in the area. Increased temperature and decreased moisture levels as a result of climate change are expected to increase the frequency of forest fires across Alberta[78]. Fire has complex, and often non-linear, impacts on wildlife populations[79,80], but, most notably, it presents danger to humans recreating in the project area[81]. Increases in the frequency and duration of wildfire events in the Bow Valley may require changes to how such threats are prevented and managed in the project area (for trail based climate change impacts see ***Section 12.7***).

The composition of ecological communities in the Bow Valley is expected to change greatly as a result of these climatic and anthropogenic trends. For example, warmer winters allow for the northward and eastward expansion of bark beetle

[77] Government of Alberta, 2023a.

[78] Tymstra et al., 2007.

[79] Driscoll et al., 2021.

[80] Aubry-Wake et al., 2022.

[81] Scott et al., 2007.

populations, influencing population declines in whitebark pine in the Canadian Rockies[82]. These declines are exacerbated by the introduction of other parasites that spread unpredictably up latitudinal and elevational gradients[83]. Alpine environments are fragile, sensitive, and narrow in range, rendering the species found in these areas especially sensitive to climate change[84]. Species that depend on heavy snowpack at some point during their life histories (e.g., American pika [*Ochotona princeps*]) are also at increased risk[85]. Even small changes in the onset (or variability in onset) of seasons can be extremely detrimental for many species, particularly those that alter their physical appearance to match seasonal changes (e.g., snowshoe hares [*Lepus americanus*][86]. Understanding these effects is important for properly managing the populations of at-risk species, but also for informing a coexistence-driven focus to trail user management. Understanding what species will be present in the project area, now and in the future, will allow for humans and wildlife to coexist in areas with high trail user density.

Climate change affects species distributions and biotic interactions in many ways through range shifts. Globally, increasing temperatures have led to many plant species advancing their elevational niche up mountain slopes[87]. This places alpine species at risk of encroachment by other warming biomes, but at all scales, this can produce mismatches within previously stable ecological communities. Slow-growing and endangered trees species, including whitebark pine and limber pine, are at a greater risk under climate change owing to their geographically narrow range, as some tree species already lagging behind their ideal climate niche[88]. Transitional zones, particularly between natural regions (Montane to Subalpine and Subalpine to Alpine), will be critical areas for conservation and minimal disturbance to reduce impacts on the leading edges of plant migrations from climate-induced range shifts and maintain functional connectivity of the landscapes[89,90]. Identifying spatial regions that are at particular risk of such range shifts is thus important and can be done using predictive biogeographical modelling. These areas can then be prioritized for limited human use, and trails can be primarily designed and sited elsewhere.

[82] Wong and Daniels, 2017. https://onlinelibrary.wiley.com/doi/10.1111/gcb.13554

[83] Tomback and Resler, 2007.

[84] McKelvey and Buotte, 2018.

[85] Beever et al., 2011.

[86] Zimova et al., 2014.

[87] Lenoir et al., 2008.

[88] Gray and Hamann, 2013.

[89] Koen et al., 2014.

[90] Schneider, 2023. https://openeducationalberta.ca/schneider/chapter/ecological-responses/


FOX

11 Trail Users

This section provides an analysis of the trail users within the project area. The types of use, including user objectives, are investigated, alongside the volumes of use, temporal patterns of use and origin of trail users.

11.1 Recreation and Tourism Overview

Canmore and the surrounding areas in the Bow Valley offer unique recreation and tourism experiences and provide opportunities for a wide variety of residents and visitors to participate in outdoor activities. The project area is a destination for hiking, biking, trail running, rock climbing/mountaineering and cross-country skiing. Immediately adjacent to the internationally renowned Banff National Park, the Canmore area offers similar recreation opportunities to Banff with fewer regulations regarding home ownership and land use. Access by car is a unique selling feature for recreation in Canmore. Canmore is easily accessed via Trans-Canada Highway 1, only an hour drive west of Calgary and a four-hour drive southwest of Edmonton, Alberta's two largest centers, each with an international airport. These factors, in addition to the absence of a work to reside clause (which exists within Banff National Park) has resulted in a large volume of second or vacation home purchases in Canmore. The ability to work remotely may also contribute to the desirability of the community. Numerous trail options are immediately accessible from the Canmore townsite. A short drive brings users to the popular Goat Creek trailhead and the High Rockies trail. In addition to mountain biking, there is a full view of many popular hikes and mountain summits such as Ha Ling Peak, East End of Rundle, Grotto Mountain and Mount Lady MacDonald from town.

The scenic mountain landscapes provide an extensive list of picturesque hiking trails for all user abilities to enjoy and remain the primary motivation for travel. The primary recreation opportunity in Canmore is hiking and other pedestrian-based activities in the summer and winter. The significant vertical relief of the mountains immediately adjacent to town provides a unique draw for users seeking to accomplish a mission such as summiting a mountain or reaching a viewpoint. The Bow Valley is an international destination for rock and ice climbing, scrambling and mountaineering. A prominent guiding industry exists in the project area, with the Association of Canadian Mountain Guides (ACMG) and many other commercial guiding operations leading and instructing recreationalists in the mountains, rivers, caves and canyons. Cross-country skiing is popular in the winter with the Canmore Nordic Center being home to the 1988 Olympics.

Canmore has great potential as a popular mountain biking destination that contributes to the local visitor economy. However, the trail experiences provided have not kept up with the diversity or increasing popularity of the sport. As a result, there has been a proliferation of illegal trail building. At the same time, mountain bike tourists tend to travel west to comparable mountain communities in British Columbia, where a greater diversity of designated trails (including the 'Enduro' and 'Downhill' sectors) has been purpose-built. Besides unique, well-known mountain biking attractions such as the Canmore Nordic Centre Provincial Park and periodic events held at that facility, mountain bike tourism remains a missed opportunity.

11.2 Types of Users

The Canmore area draws a wide variety of recreational users that have a wide range of desires, expectations and objectives. Regardless of what activity a user is participating in, every trail user is looking for a trail to provide the experience they desire. Trail user objectives (TUO), a concept developed and finessed by the US Bureau of Land Management in their guidelines for a quality trail experience[91], are the terms and definitions that describe the experience that trail users are seeking while partaking in any given trail activity. ***Table 18*** below shows the common TUOs. Whether intentionally or not, trail users are looking for one or more of these objectives when recreating.

[91] Bureau of Land Management, 2017.

Table 18. Trail user objectives
(From trail development guidelines for Alberta Public Land)

Trail User Objective	Different trail users may seek…
Nature	… the opportunity to connect to nature. Experiencing nature is an important objective for many trail users and can include travelling through urban forests to remote backcountry experiences.
Escape	…the opportunity to escape their daily grind and fully immerse in the trail experience. Often, trails will allow users to escape urbanized environments.
Solitude	… the opportunity to experience a sense of remoteness, isolation and aloneness where encounters with others are infrequent.
Challenge	… the opportunity to develop and refine their skills, fostering self-esteem and accomplishment.
Risk	… the opportunity to experience perceived risk including perceived exposure to danger, chance of harm or loss. Risk will create a thrill for trail users but will be managed through good trail and trail feature design as well as management practices that allow users to assess and determine their risk tolerance and abilities.
Fun & Playfulness	… the opportunity to engage in the trail activity purely for the enjoyment bringing a childlike wonder and excitement to the pursuit.
Exercise	… the opportunity to build fitness levels. For some trail users, this is a primary goal while for others, the fitness required to experience the trail is a barrier. The level of fitness required is essential in trail planning.
Variety	… the opportunity to experience variety. Variety comes in many different forms including trail type, difficulty, setting, ecosystems.
Connectivity	… designs that provide for connectivity. Connectivity enables trail users to customize their desired experience, build on a trail outing and easily adapt to changes in plans. It allows users of the same group but with different abilities to start the trail outing together, and allows users to easily find and utilize trail services and amenities.
Socializing	… the opportunity to meet, interact and build community with new people of similar and / or differing trail user types, backgrounds, and assorted trail user objectives.
Safety	… a trail experience that is free from unknown and unreasonable risks, with the necessary security of their personal belongings and well-being.
Efficiency	… a trail experience that enables them to access a trail or complete a task with the least amount of energy and effort expended. The trail designs should enable users to reach the desired trail experience without excessive and wasted effort (e.g. mountain bike climbing trails to reach the desired drop-in location).

A wide variety of trail users in the Bow Valley share common TUOs despite their desire for different recreational trail experiences. There are four primary categories of trail users that may be found in the Bow Valley: Mountain bikers, Pedestrians, Equestrian Users and Snow/Winter users.

11.2.1 Cyclists (Summer)

Many different disciplines of cycling are common in Canmore and the surrounding area. Significant variation exists in the trail experience cyclists are seeking and include the trail user objectives shown in ***Table 18*** above. The most popular summer disciplines of cycling in the Bow Valley are outlined below. In addition to these types of bikes, all bikes can be electric bikes, which are divided into classes based on level of assist and throttle. Pedal-assist e-bikes are defined as non-throttled electric powered bicycles that provide up to 500 watts of continuous max output, which stops assisting when either pedaling stops or 32 km/hr is reached.

Enduro: These mountain bikers ride trails in both directions, typically climbing with the sole purpose of experiencing the descent. These users ride bikes with more than 160mm of travel and a downhill oriented geometry that is also capable of riding uphill. Enduro is usually associated with blue, black or higher-level difficulty trails on the descent. Riders often wear more protection that can be associated with downhill riding.

Downhill: These mountain bikers rely almost exclusively on gravity for their trail riding. Downhill riders use assistance to ascend, either by chairlift at lift-accessed bike parks or by vehicle shuttles uphill. Downhill users ride bikes with triple crown forks, heavy duty components and high levels of protection. These users ride at higher speeds, seek out technical trail features and seek adrenaline.

Bikepacking: This discipline of cycling is often described as dirt touring, and these users have gravel or mountain bikes that can carry food, water, tools and camping supplies for a self-supported cycling adventure. Riders can be found riding on a variety of surfaces ranging from paved or gravel roads, to natural surface double or singletrack. These riders are seeking a longer ride, with the likelihood of camping overnight while on the ride.

Trail/All Mountain: Trail/All Mountain encompasses a vast majority of mountain bike trail users. These users seek quality single track experiences, in a variety of length, durations and levels of difficulty. All mountain riders are typically equipped with small amounts of water and food and are able to make trailside repairs if necessary. User ability ranges from Green Flow to Black Technical trails.

Hybrid: Hybrid bicycles offer tires that are slightly more capable of multi-surface riding than road tires but are narrower and have less rolling resistance than mountain bike knobby tires. Users are typically looking for easily accessible natural pathways for leisure, commuting and exercise. Rail trails, paved pathways, and interpretive trail networks are often favourable for these users.

Cross-country: These riders focus on speed, fitness and training. They are often on light bikes, with small amounts of travel that are optimized for speed. Generally, these riders can be found wearing clipless shoes and tight aerodynamic clothing.

Gravel Bike: Gravel bikes are a versatile form of bike that mirrors a road bike but with the capabilities of a fully rigid mountain bike. These riders often seek long-distance rides that may involve paved, gravel and singletrack surfaces. These bikes have narrow, yet grippy tires that allow users to travel reasonably fast.

Road: These riders often seek long-distance rides on roads and paved trails. These bikes have narrow, smooth tires that allow users to travel fast but limit them to paved surfaces.

Adaptive Mountain Bike: This term encompasses a wide range of users that cannot use a standard mountain bike and use a modified bike to accomodate their physical or neurological needs. Adaptive bikes often use three or four wheels and have an increased width.

11.2.2 Pedestrians and Climbers Access

Pedestrians represent a significant portion of the user base (both residents and visitors) in the Bow Valley. Ranging from low-intensity activities such as leisure or dog walking, to more destination-based activities such as mountain summit destination

Backpacking: These users are seeking a longer, self-supported hiking experience with a backcountry feel, and are often looking for views and natural features. They likely have a large backpack containing clothing, food, camping gear and safety supplies. They are capable of covering a substantial amount of distance and elevation.

Leisure/family: These trail users value a family/group experience, they often travel as a cohesive family unit, so they favour trails that are wider and less challenging.

Trail Running: Trail runners go running on off-road surfaces that vary from a gravel path to a summit hiking trail. These users wear running shoes with more aggressive tread for the terrain and often wear or carry gear with carry water and food.

Air Sports Launching: These users are focused on access to launch sites for sports such as paragliding. Trail use is solely for the purpose of launch site accessibility. They carry their method of flight, typically in a large backpack, under human power.

Trail Building: Trail builders use trails to explore new trail potential, new trail construction, and trail repairs and maintenance. Trail builders often carry hand tools and small power tools either on foot or by bike.

Dog Walking: Dog walkers value both trail experience with their dog, or in the case of a commercial dog walker, with their client's dog. Dog walkers often also value the ability to walk with their dog off leash.

Rock Climbing: These users have the primary objective of rock climbing, whether that is bouldering or lead/top-rope climbing. Trail use by these users is typically for the sole purpose of access. These users can be found carrying rope, bouldering crash pads, trad climbing gear and potentially route setting tools. They are often comfortable in terrain that is transitional from valley to alpine, both in terrain and exposure.

Mountaineering/Scrambling: These users are often hiking with an objective in mind, such as completing a specific mountain route, or reaching a mountain summit. They often utilize a fast and light approach, bringing only the necessary equipment for their objective. These users may be comfortable on more exposed trails and terrain such as scree slopes, and boulder fields up to class 4.

hiking or rock climbing. There are eight general classifications of pedestrian summer trail users in the project area. They are described below. Climbers may be further divided into boulderers, sport climbers, multipitch rock climbers and ice climbers, all with varying needs for access and conditions at a climbing location.

11.2.3 Equestrians

Equestrian trail users are limited to locations that are suitable for travel by horseback due to levels of other human use leading to conflict, trail corridor clearing or excessively difficult terrain. However equestrian riders are commonly observed trail users in the Bow Valley.

Equestrian trail riders ride a variety of trails and surface types with the goal of experiencing nature while atop their horse. These users may be out for a short or day length ride or may be packing gear for an extended backcountry experience. Their horse is typically transported to the trailhead by truck and trailer.

11.2.4 Motorized Users

Motorized users are often limited to areas that have sufficient space for staging or trails that can accommodate the extra width of quads, side-by-sides or full-size vehicles. The tremendous power of motorized machines allows users to access places that are otherwise quite challenging to reach such as the top of steep hills, lookouts and alpine areas.

Trials Motorbike Riding: These riders have lightweight, nimble motorbikes that are meant for technical riding that includes jumping on rocks and manouevering through difficult terrain using a slow and methodical travel technique.

Trail Motorbike Riding: These users are often more interested with travelling from A to B, rather than jumping onto obstacles. These motorbikes can negotiate tight and steep terrain while also being able to travel much faster than trials riders.

Four Wheel Riding: This group includes both quads and side-by-sides that provide more stability than motorbikes but a narrower width than full size vehicles.

Offroad or Overland Vehicles: These users aim to drive their full size or perhaps street-legal vehicles on wide trails to access views, camping or recreational shuttle locations.

11.2.5 Winter Users

Winter use is a major use type in the Bow Valley, as winter conditions can persist for up to six months of the year. There is significant variation in winter use, as many users seek purpose built and maintained winter trails while others continue to use summer optimized trails throughout the winter. Winters users are diverse, as there are a variety of modes of transportation such as skiing, hiking, snowshoeing, winter-modified cycling and ice climbing. These user types are shown and described below.

Backcountry XC/Touring: Using Nordic/Touring skis for exploration off of groomed trail systems into a more backcountry environment. Their skis have a wider base and may have metal edges. They may use groomed networks to access new areas for exploration.

Classic Skiing: Classic Nordic skiing requires the use of skis with traction on the base and is optimized in a groomed and set track.

Skate Skiing: Skate skiers primarily ski outside of a set track, but still on a groomed trail. Using a skating motion, these skiers can travel faster and cover more ground. They require adequate trail width to accommodate the motion of the skis while skating.

Winter Hiking: Winter hikers value trails that are accessible for use in the winter. Generally, these users are not equipped for severe deep snow or avalanche hazards. They may carry snowshoes or microspikes for traction, however trails with grades appropriate for slippery conditions are ideal for these users.

Snow Shoeing: These trail users have the ability to move through deep, soft snow, as well as groomed trails. Using snowshoes for traction and snow floatation, snowshoers can travel through a variety of terrains.

Skinny tire/stud mountain bike: These users are typically associated with commuting or plowed pathway riding in the winter. Due to the skinnier tires they are largely unable to ride in deep snow or on groomed trails, and are restricted to plowed pathways. Studded tires give these users the ability to ride on ice and slippery surfaces, allowing them to continue riding their bike year round.

Fat Biking: These users have bikes with tires wider than 3”, sometimes up to 5”, to allow them to “float” on top of soft surfaces such as snow. They often seek riding on groomed or packed snow trails. Fat bike users ride slower due to the resistance of the snow and their wider tires.

Ice Climbing: Thse users have the primary objective of ice climbing. Trail use by these users is typically for the sole purpose of accessing ice climbing routes. Ice climbers may approach on skis or by foot in the winter. They are comfortable with winter backcountry preparedness and exposure while climbing


Highline
Three Sisters
Connector
Biking Permitted
Keep Pets Leashed
No Littering
No Motorized
Vehicles

12 Trail System Analysis

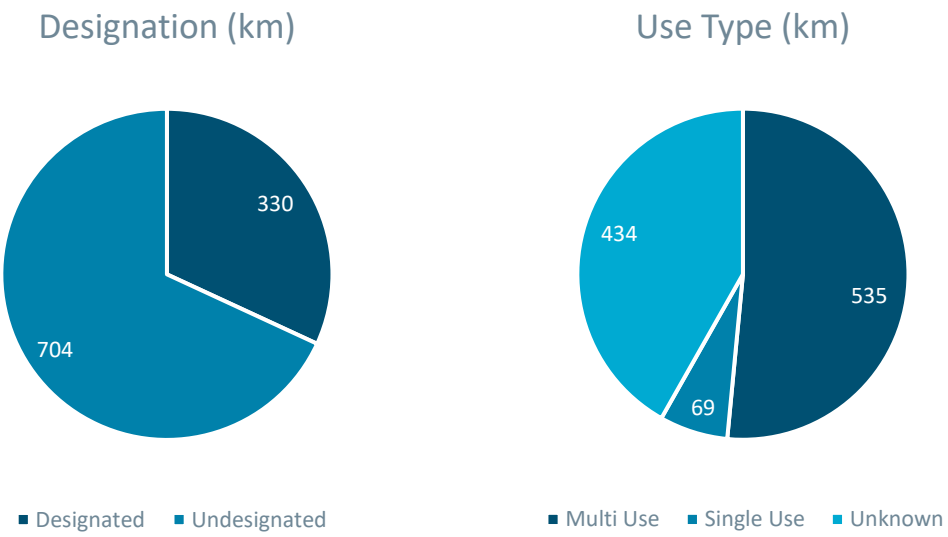
12.1 Trail Assessment Methods and Project Area Summary

1034 km of trail	113,056 Ha	Primary Season of Use: Snow Free
151km (22%) of trail distance with tread sustainability concerns		

McElhanney conducted an inventory and assessment of the Canmore Area trails throughout the snow free months of 2023. The primary objective was to collect trail condition data to establish a current state of trail conditions, supply and trail types and issues. Prior to trail inventory efforts, trail data collection methods were standardized to ensure consistency across each team member. Known trail alignments lines were verified or updated if required and informal or unmarked trails were also mapped and inventoried. Each trail was inventoried by a single person by bike or foot, and trails in the project area were assessed for general trail condition, physical design parameters, trail difficulty and sustainability concerns.

Sustainability concerns are presented as a percentage of total field reviewed trail distance; these concerns represent poor or failing conditions based on erosion, ponding, braiding or tread creep.

Trail designation and trail use type were determined through desktop review of trail segments and are reflective of all trails whether they were field reviewed or not. Where trail use type was indeterminant or unknown, use type was left unclassified. The single use category is for trails that are pedestrian (hike/run/walk) access only.



Trails that were estimated to have less than one group of users per year were classified as minimal use and excluded from the field assessment scope, although included in the planning unit and project area-wide trail calculations. The statistics for trail difficulty presented in this review represent solely trails on Crown land trails that were field reviewed.

12.2 Trail Conditions and Sustainability

Trail sustainability is a multi-faceted concept that refers not only to the physical sustainability of the trail tread and the surrounding environment, but also how the trail meets user expectations and will be managed. ***Figure 17*** describes the four pillars of sustainable trails. All four elements of trail sustainability were assessed for all trails during field data collection, as summarized in ***Table 19.***

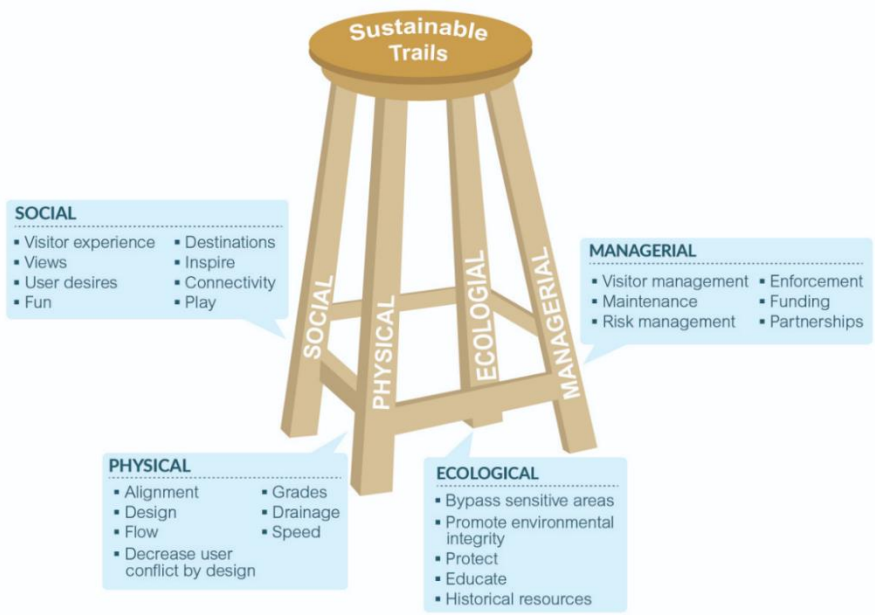


Figure 16. Four pillars of trail sustainability

Table 19. Data fields collected during the trail assessment

	Physical	Environmental	Social	Managerial
Field data element	• Tread Condition • Tread Width • Technical Trail Feature • Turn Style • Turn Radius • Protrusion • Height • Trail Grade • Corridor Clearance	• Stream • Environmental	• Trail Amenity • Trail Infrastructure • Attraction	• Anticipated Conflict • Signage • Trailhead

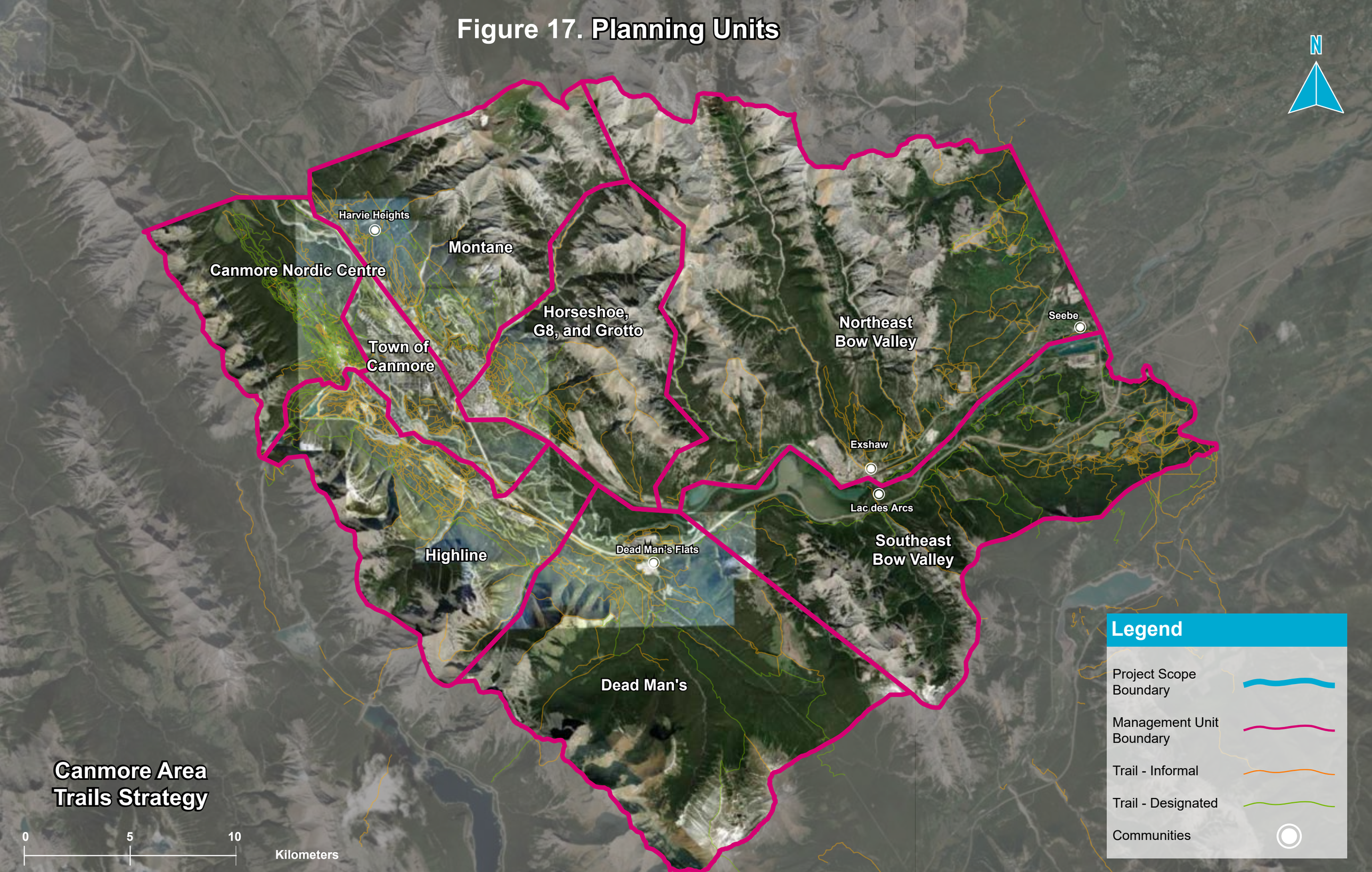
12.3 Planning Units

The project area was divided into eight planning units (see ***Figure 17***). These planning units correlate with commonly-referred-to area names. ***Table 20*** shows the approximate area of each planning unit in hectares.

Table 20. Approximate area of each planning unit in hectares

Planning Unit	Area (Ha)	Planning Unit	Area (Ha)
Montane	11,354.88	*Northeast Bow Valley*	*28,276.19*
Canmore Nordic Centre	6,941.69	*Southeast Bow Valley*	*16,781.26*
Deadman's Flats	19,291.22	*Highline (Including Quarry Lake)*	*17,386.10*
Horseshoe, Grotto, and G8	9,728.02	*Town of Canmore*	*3,297.55*

Figure 17. Planning Units



12.4 Volume and Distribution of Use

The volume and distribution of trail use throughout the project area was analyzed to better understand where users are coming from, how many users and temporal patterns of use, such as time of day/year. A variety of data sources were used:

- **TrafX Counters** – Trail counters have been tracking throughout the Bow Valley for more than 10 years. Vehicle traffic counts have been used extensively at the Canmore Nordic Centre since 2006. Human use (infra-red) counters have been placed at the Canmore Nordic Centre since 2008 and used in both the winter and summer seasons.
- **Wildlife Camera Data** – Wildlife cameras have been used extensively over the past decade to track both human and wildlife use of trails in the Bow Valley. The camera data has been compiled to provide a snapshot of user types on trails and often used to calibrate the trail counters.
- **Strava Metro** - Strava Metro data was made available for 2018-2022, including both pedestrian and cycling data.
- **Cellular Data Purchase** – Cellular phone data was acquired for years 2019-2022, and this data is aggregated by a reseller across several data providers (Note: cellular location services are typically only turned on by a small portion of users so use volumes need to be adjusted by an expansion factor).

Trail user volume data was collected for each planning unit and on some individual trails to understand user patterns. Trail use volume data availability varied across the four data collection sources listed above. Cellular and Strava Metro data were available throughout the entire project area, except for the far eastern extents of the northeast and southeast Bow Valley planning units where the Strava Dataset was not complete. Wildlife camera data was used to inform the wildlife models and to calibrate the TrafX trail counters.

User volume data from each of these four sources was compared to determine the accuracy of cellular location data. Cellular data was determined to be optimal for visualizing trail use and movement patterns rather than yielding absolute count data. TrafX trail counters were found to be the most consistent user data collection system, due to their intentional and ground-based user volume collection (***Table 21***).

Table 21. User volume for popular trails within the project area. Data collected by TrafX trail counters.

Trail	Average annual TrafX visitor count (2019-2022)
Montane	11,345
Grotto Mountain	6,376
Yamnuska	39,860
Highline Trail	20,678
Banff Trail	138,903
EKG*	47,223
Grassi Lakes*	140,614
Legacy Trail CNC	43,487
FYI	38,704
Canmore Nordic Centre Main Entrance	337,726

*Data only available for 2019-2021.

Using a metric known as common evening location (CEL, home locations) within the cellular location dataset, the town or city of residence for individual cellular devices was identified within the project area between 2019 and 2022. Only data from trail

users was used; non-trail users were removed from the dataset. Patterns of use were analyzed by the home location of trail users within particular planning units and throughout the project area as a whole (***Figure 18***, ***Figure 19*** and ***Figure 20***).

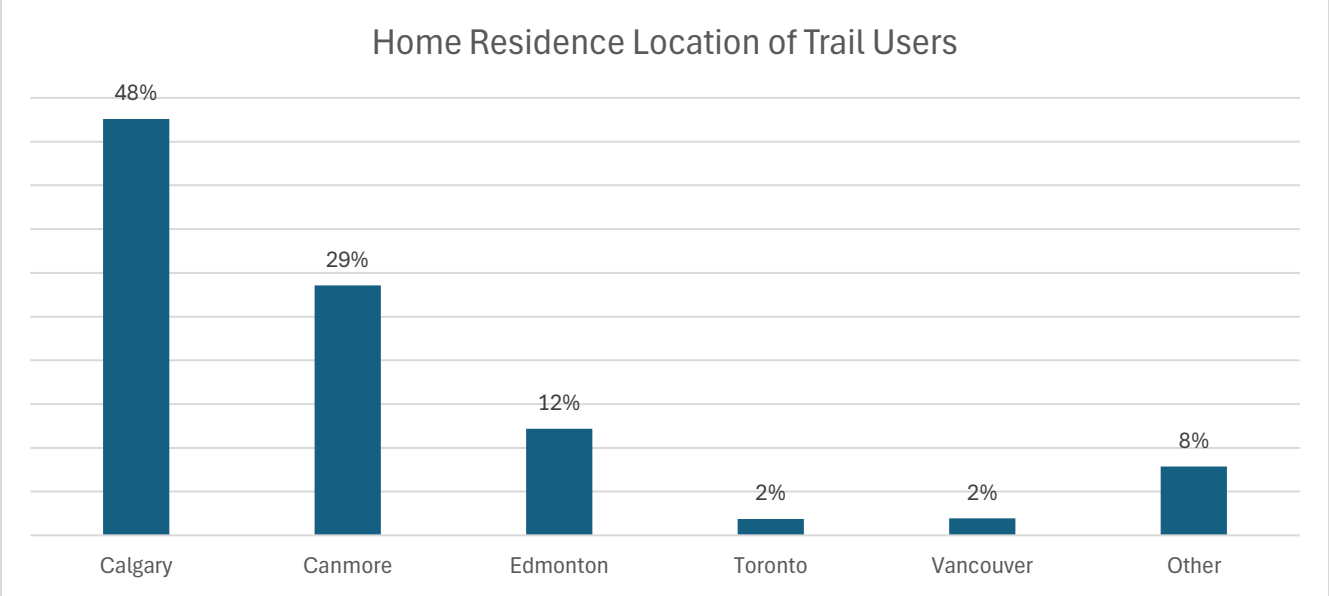


Figure 18. Home locations of trail users within the project area.

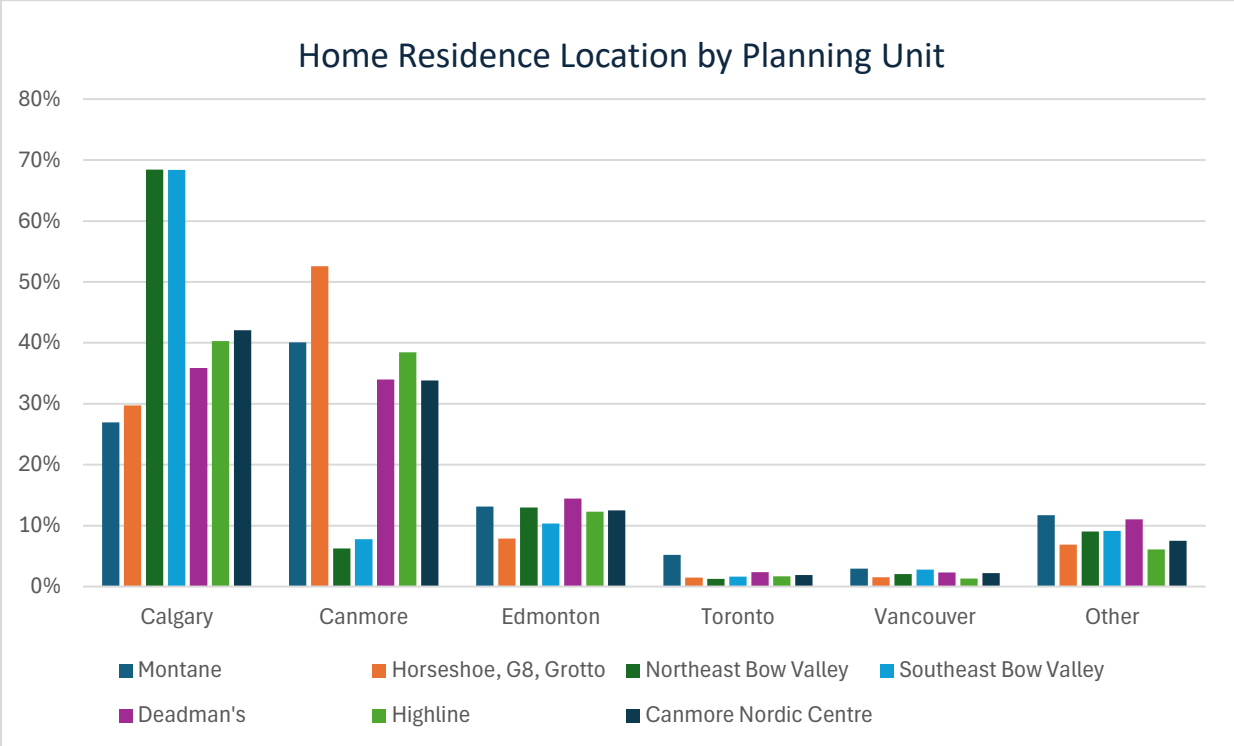


Figure 19. Relative home location of trail users by planning unit.

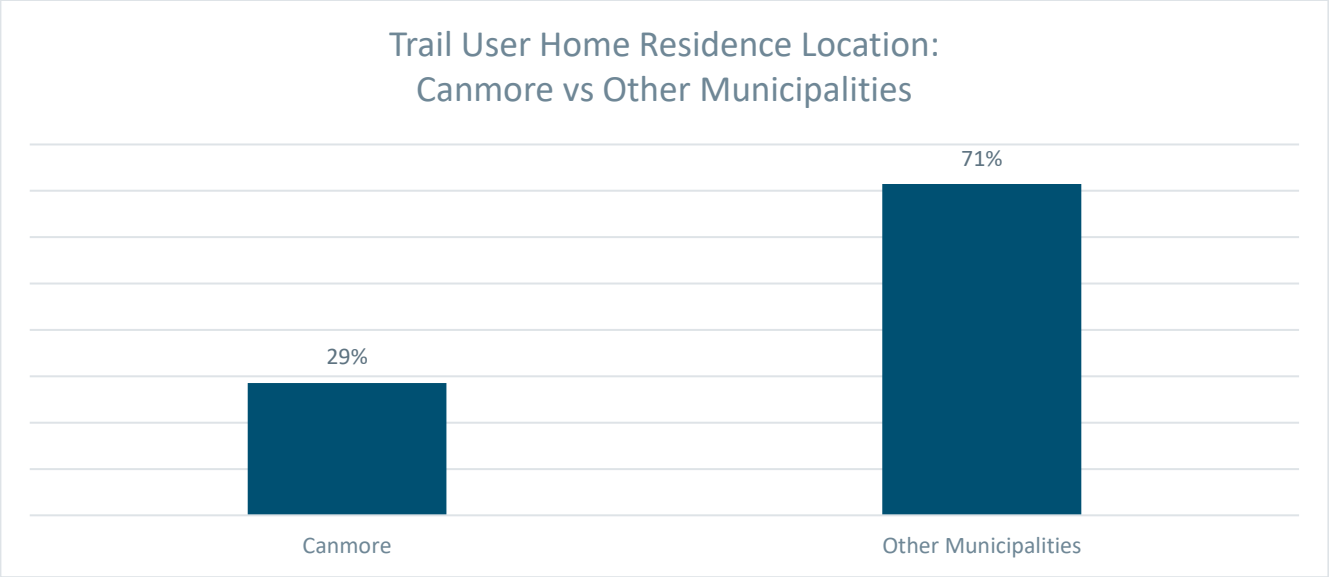


Figure 20. Home location of visitors comparing Canmore residents to other visitors from other municipalities.

The following are some general conclusions from the cell phone analysis:

- The largest representation of trail users within the project area are from Calgary (48 per cent).
- Non-local users account for more than two-thirds of the total trail use within the project area. This is on par with statistics from known recreation destinations like Squamish, Whistler and North Vancouver.
- Highline Planning Unit had higher user volumes than the other planning units, which is expected due to popular trails and recreational areas such as Grassi Lakes, Quarry Lake, Quarry Lake Dog park and Highline trails.
- The proportion of trail users from different towns and cities vary amongst planning units. A higher proportion of Canmore residents recreate in the Horseshoe, G8 and Grotto planning unit compared to Calgarians. At the Canmore Nordic Centre planning unit, more users are from Calgary than Canmore.
- Canmore trail users come from a variety of places, including major centres across Alberta and B.C.

12.5 Patterns of Use

Wildlife cameras, Strava Metro, TrafX and the cellular data provide information on temporal patterns of use. Cellular location data was the best source of detailed information on when and where users are recreating (***Figure 21***).

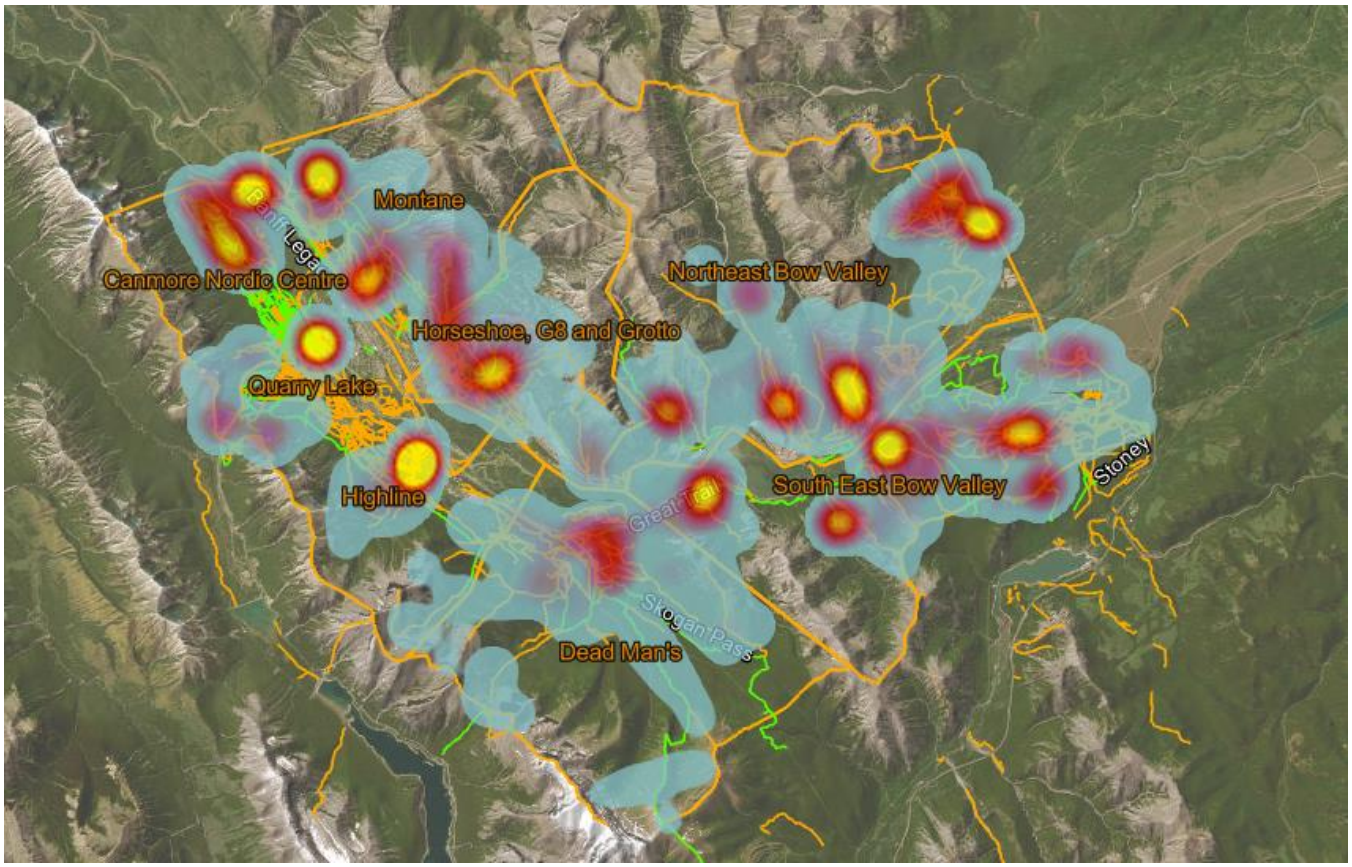


Figure 21. Trail use heatmap sourced from cellular data.

Temporal cellphone user data was plotted on three levels of granularity: monthly, daily, and hourly (***Figure 22, Figure 23,*** and ***Figure 24***).These charts show user patterns in each planning unit over the course of one year, one week, and one day, providing information about when and how many people are using trails in these time periods. User volume data within the Highline planning unit includes use at Quarry Lake and in the adjacent dog park, which were not removed from the cellular dataset even though they are on town land and not Crown land.

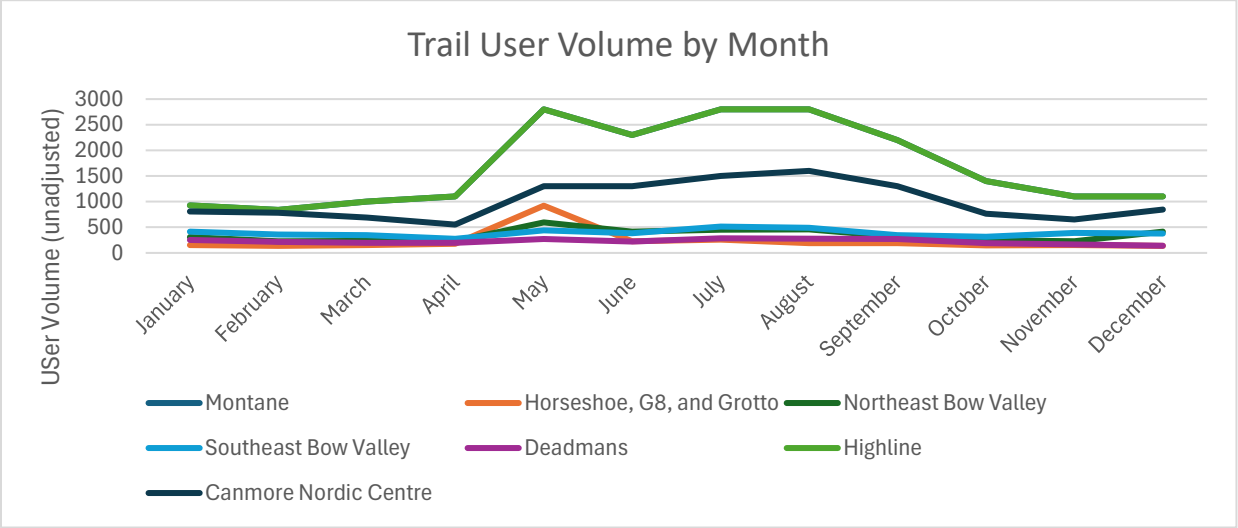


Figure 22. Trail user volume by month within the entire project area, by planning unit.

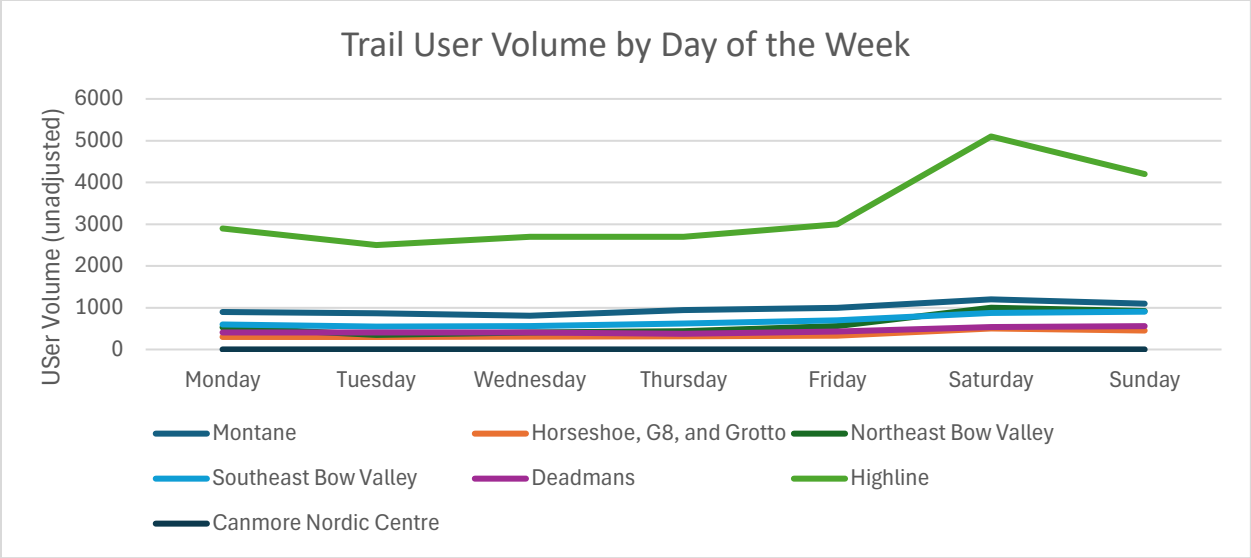


Figure 23. Trail user volume by day of the week within the entire project area, by planning unit.

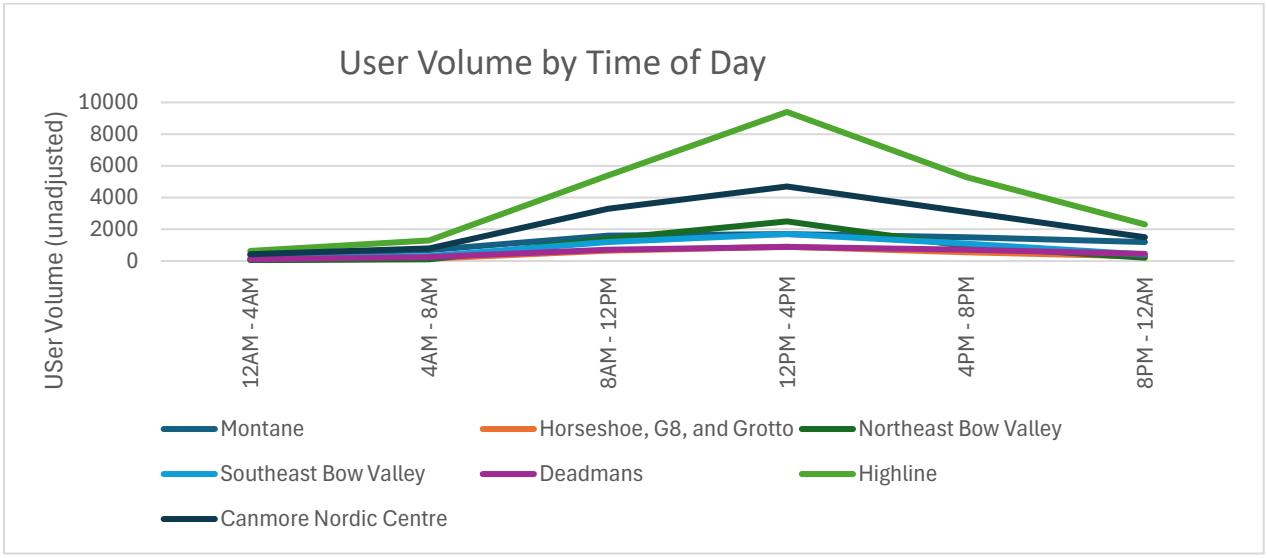


Figure 24. Trail user volume by time of day, divided into 6 four-hour time periods, within the entire project area, by planning unit.

The cellular dataset also provides a metric known as dwell time (***Figure 25***), which represents the length of time a user spends within a specified polygon. Polygons were specified for ten popular trails throughout the project area representing hike, mountain bike and cross-country ski, the three primary user types in the project area. These dwell times may be skewed by users who did not complete a trail in its entirety, affecting the average time.

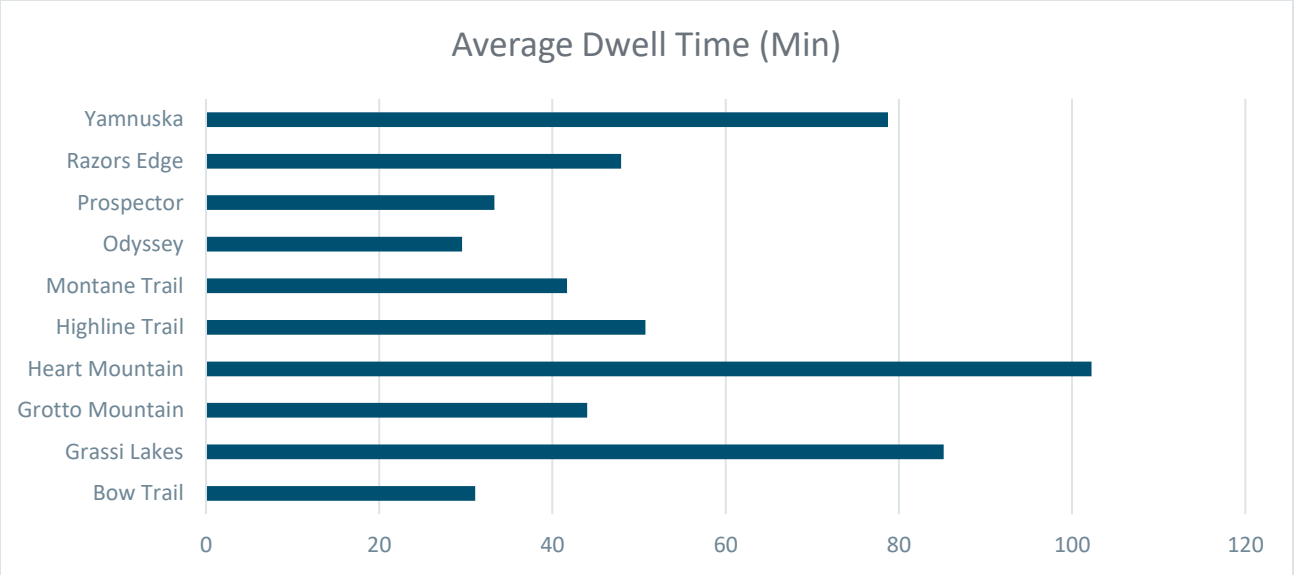


Figure 25. Average time spent on popular trails within the project area.

The following are some general conclusions from the analysis of trail use patterns:

- The dwell time is higher on trails that are primarily used for pedestrian activities.
- Trail user volumes are highest on weekend days and it is largely consistent throughout the week in many of the planning units.
- Trail use is typically higher during the summer months of July and August after a use spike in the month of May.
- Trail use volume in Horseshoe, G8 and Grotto increases in the spring. Trails in these areas dry out faster in the spring due to a south-southwest aspect and heightened sun exposure.
- Outside the hours of 8 a.m. to 8 p.m., trail users tend to recreate later in the evening rather than earlier in the day.

12.6 Social and User Considerations

12.6.1 Trail Supply

The 1988 Winter Olympics brought an influx of recreationalists into Canmore, and subsequently many trails were built with little long-term planning. Increasing numbers of visitors and residents, seeking destinations, like summits, viewpoints, and rock climbing areas led to the creation of new trails. The establishment of well-known climbing routes such as Yamnuska, Ha Ling Peak and Mt. Rundle and the large availability of climbable terrain combined to spark an explosion of new climbing routes and access trails. In addition to difficult mountain biking, mountaineering and climbing access, trails that have been developed in remote locations. There are also dense, lattice-like networks of trails close to residential neighborhoods, formed by repeated use. For example, ***Figure 26*** shows the network of mostly undesignated trails immediately adjacent to Canmore's Cougar Creek neighbourhood.

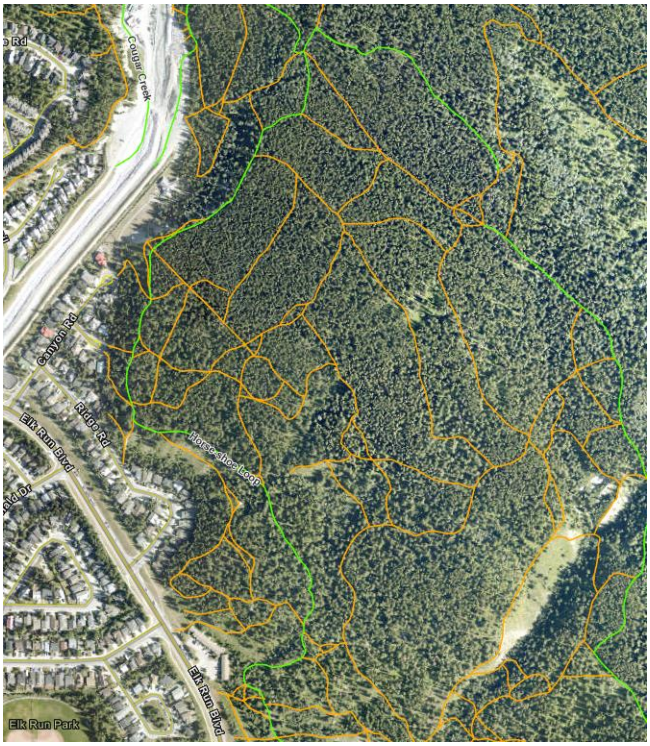
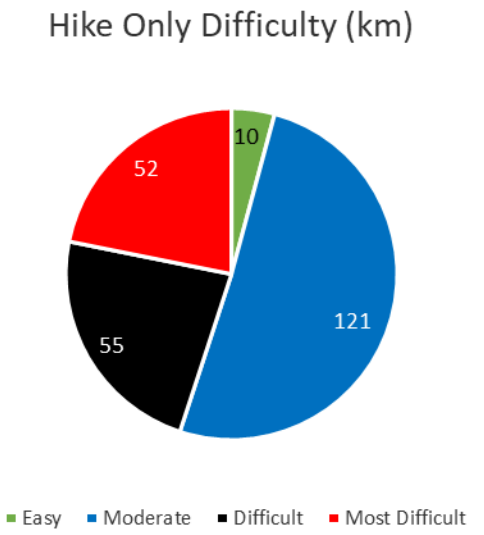
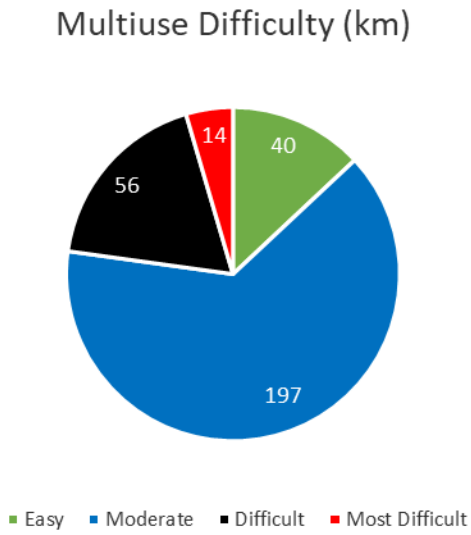


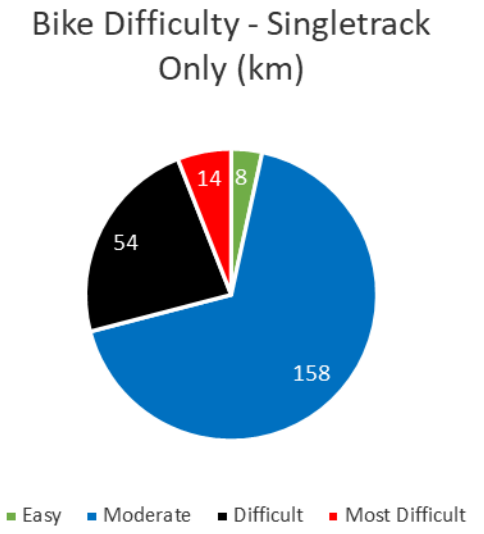
Figure 26. Network of high-density trails adjacent to Cougar Creek / Elk Run neighbourhood. Undesignated trails are shown as orange; designated trails are shown as green.

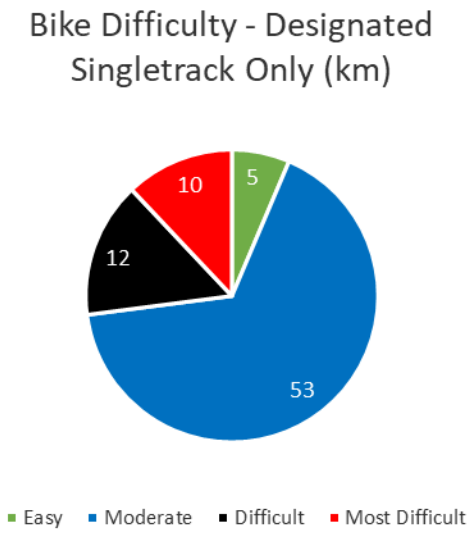
Many of the trails in the Bow Valley were developed organically by users following wildlife trails, historical linear disturbances or the easiest paths to destination points. Many of the trails were created on the most direct, simplest route without earthworks to manage for drainage, avoid sensitive habitat or reduce short cutting or trail braiding.

Trail difficulty was assessed for all trails that were reviewed during the field assessment. Trail difficulty ratings were assigned for the activity with the most risk involved or highest use. Trail attributes were collected to determine the difficulty rating for each user type. To ensure consistency across difficulty ratings, all multi-use trails were rated according to bike difficulty. For trails where hiking is the only observed activity, hiking difficulty ratings were assigned. Based on the assumption that singletrack trails are the most desired by mountain bikers, a difficulty analysis of the overall singletrack trail supply and the designated singletrack supply available to mountain bike users was also conducted to further understand the root cause of unauthorized mountain bike trail development.









The majority of trails in the project area are rough and rooty due to their creation by trampling and poor construction techniques. Most trails in the project area have a blue level of difficulty, which indicates a lack of variety in the trail supply, especially amongst designated singletrack bike trails.

12.6.2 Trail and Planning Unit Connectivity

Trail connectivity is the greatest in the planning units closest to the Town of Canmore where the highest density of trails exists.

The greatest barriers to connectivity are the Bow River and Trans-Canada Highway running through the entire valley. There are only a few crossing points over or under the highway, mostly located within the Town of Canmore, limiting connections between the planning units to the north and south of the highway corridor. Other features such as the Grassi Lakes reservoir, mining and plant operations near Exshaw and various residential or commercial developments limit trail connectivity. Geological and topographic features such as mountains, cliffs and water bodies constrain the space for trail connections. Topographic limitations such as Grotto Mountain and the steep terrain below Pigeon and Heart Mountains have limited the available space for trails running east-west in these locations.

12.6.3 Unauthorized Trail Development

Unauthorized trails in the project area outnumber designated trails by more than 2:1. Unauthorized trail development is at times unintentional, caused because a user does not know which is the formal trail and walks down a wildlife trail, which over time, with repeated use, becomes a well used trail. Trail development may also be intentional as users are either trying to create an experience that is missing or enjoy the activity of trail building itself. Trail building is an indication that user wants are not being met (see types of Trail User Objectives, ***Table 18***) by the designated trail system. Unauthorized trail development often lacks planning from a scale beyond the single trail being created and causes issues of confused users, poor quality trails, erosion and trail degradation and disturbance to wildlife and loss of wildlife habitat. Unauthorized trail construction can create user conflict on the trails as well as conflict within the broader community when all values of the land are not considered.

12.6.4 Trail Ecosystem

The trail ecosystem is a term used to capture the interconnected framework of how all the support amenities and organizations come together to support trail tourism.

Figure 27. The elements required for the trail ecosystem to be successful while protecting wildlife habitat (Figure courtesy Trans Canada Trail Tourism Readiness).

In a successful trail ecosystem, these elements function to serve each other in feedback loops that provide trail users with the experiences they desire (***Figure 28***). Currently in the Bow Valley, the proliferation of undesignated trails and evidence of recreational impact on the environment and wildlife indicates that some elements of the trail ecosystem need improvement.

Figure 28. Trail ecosystem with interconnected entities that are required to function together to support trail tourism (Figure courtesy Trans Canada Trail Tourism Readiness).

12.7 Environmental Considerations

12.7.1 Trampling

Trampling is a significant negative impact that is primarily associated with off-trail use and travel. The term refers to users damaging plants, soil organics and other ecological features by travelling outside of the designated trail tread (***Figure 29***). There is a progressive continuum of trampling effects ranging from trailside vegetation reduction, escalating to trail creep (widening) or braiding (multiple parallel trails). In locations where there is frequent dog-walking activity or popular areas near neighbourhoods, off-trail tramping effects are often widespread but dispersed. The effects of trampling are also observed near trails that have steep maximum trail grades, fall-line alignment, ice accumulation or poor water management leading to water accumulation and ponding. Trail users will seek trail edges to avoid these issues, which can lead to trail creep/braiding and erosion. Off-trail trampling has been found to cause persistent negative ecological impacts such as decreased plant cover, loss of biodiversity and soil compaction[92]. As a result, locations that have suffered trampling are less likely to revegetate naturally and are also more likely to propagate informal trails.

Figure 29. Trampling resulting in trail creep (widening) followed by erosion.

12.7.2 Erosion

Erosion has three primarily negative results: impacts to user experience, vegetation trampling as a result of braiding/creep and sedimentation into water ways. Erosion is the movement of surface material by water movement, foot strikes, tires, as well as trail damage from equestrian use. Trail-induced erosion, whether by water or trail tread wear, typically stems from trail grades that are too steep, for too long. In addition, erosion can be caused by trail treads without slope variability, improper outsloping of trail tread and poor management of natural water features. Erosion was assessed primarily with a tread condition rating, where there was evidence of soil or debris movement, water channelization on the trail tread or exposed rock as a result of erosion[79].

12.7.3 Hydrological Impacts

Trails in the Bow Valley are subject to numerous hydrological impacts. The widespread nature of trail development throughout the valley has resulted in many stream crossings. Streams in the valley are variable both in size and seasonality with many waterways exhibiting only ephemeral water flow. Water crossing management is a challenging design feature in the Bow Valley because of this ephemerality. Many streams that are dry or experience low flow throughout the summer may be susceptible to catastrophic volumes of water and debris flow during spring freshet. High flow events such as these may happen infrequently; however, they have the potential to cause significant damage to trails and particularly to water crossing infrastructure.

Conversely, trails in the valley are also a direct driver of many hydrological impacts to waterways with several downstream effects. Erosion driven by water movement directly leads to the transport and settling of surface materials such as soil and organics. When this occurs on trails near water bodies, or when large scale erosion events occur within a watershed, downstream sedimentation occurs. The deposition of sediment from trails surfaces leads to numerous ecological effects on both a small and large scale, namely impacting fish habitat. The impacts of erosion and sediment deposition may also be exacerbated by vegetation removal as a result of trampling and trail creep reducing the stability of the off-trail soil surface and infiltration capacity of the soil. These factors, combined with higher throughfall during rain events due to lower vegetation cover will promote overland flow of water and ultimately soil erosion and deposition of sediment.

12.7.4 Climate Change

Climate change is a significant and potentially impactful factor to consider in all present and future trail planning and assessment (see ***Section 10.15*** for climate change impacts on wildlife). The effects of climate change are largely unpredictable and have the potential to be wide ranging. The most apparent effects of climate change are extreme and erratic weather events, and these weather patterns may influence trails and trail use patterns. The most notable forms of weather

[92] Butler and Martin, 2017.

events that have been observed in recent years are prolonged extreme temperatures, drought, intense wildfire behaviour, unpredictable winter weather and flooding/debris flows. Climate change is constantly evolving and causing unpredictable and often unprecedented effects and will continue to be a critical consideration.

The effects of these climate-driven weather events on trail users are well documented, particularly in the extreme northern latitudes of the northern hemisphere. Climate change affects trail accessibility, stability of trail conditions and the safety of users. It has been shown that the effects of climate change decrease the number of usable trail days for trails that are dependent on snow; increase the volume of search and rescue efforts due to dangerous and variable trail conditions and have overall negative effects on the culture, health and general well-being of trail users[93]. Extreme heat and wildfires can have serious negative health effects such as smoke and heat exposure when participating in trail-based recreation. These weather extremes may alter use patterns of users as well. Users may shift timing of recreation to periods of decreased heat in the summer or increased warmth in the winter. An important concern in the summer months, as users shift to trail use earlier or later in the day, is increased overlap with wildlife such as large carnivores and ungulates that tend to be more active around the dawn and dusk hours of the day.

Extreme weather events such as wildfire, unpredictable winter weather and flooding also have the potential to physically damage trails and trail infrastructure through resultant burning, landslides, avalanches and severe erosion. The prolonged extreme weather observed in the 2021 heat dome, for example, caused severe flooding that destroyed the popular Berg Lake trail in Mt. Robson Provincial Park, which has yet to be fully repaired. The 2013 floods of a deep snowpack combined with extreme rains, washed out many trail bridges and culverts in the Bow Valley, often shifting the creek to a new channel as the previous one filled with debris. Less acute events that effect forest health, such as chronic heat stress or forest pest epidemics can also impact trails by causing mass tree die-off and large-scale windthrow events. Natural destructive events such as those listed above have the potential to exacerbate the damage they inflict on trails by restricting access for volunteers and maintenance crews.

12.8 Trail Management and Maintenance

12.8.1 Trail Maintenance

Trail maintenance tasks are often time and cost-intensive, which limits the volume of maintenance that can be completed in any given year. The maintenance challenges are compounded by a low maintenance budget and limited AFP staff. Fortunately, the burden of trail maintenance is shared among organizations in the Canmore area, with agreements in place to allow volunteers to lead trail maintenance activities on trails in the valley. Alberta Parks has partnerships with the Friends of Kananaskis Country (FKC) and Canmore and Area Mountain Bike Association (CAMBA) for trail maintenance.

CAMBA is the primary group for maintenance of mountain bike trails and has recently began using a paid seasonal trail crew of up to six members. FKC has historically conducted a large amount of trail maintenance at the Canmore Nordic Centre Provincial Park and has also been involved in mountain bike trail maintenance and construction elsewhere in Kananaskis. FKC is now focusing on pedestrian-oriented trails throughout the entire valley and further east.

Despite improvements and variable success with trail maintenance in the project area, there is significant work that is required to improve trails that have endured long periods without maintenance, experienced heavy use or were created without sustainability in mind. Most notably, many of the alpine hiking trails in the project area use fall line alignments that have resulted in serious braiding and erosion issues. Trails that were created without any planning and have trails placed in poor locations for drainage resulting in an abundance of protrusions (tree roots), severe creep, frequent braiding and a plethora of junctions. The overarching issue with these trails, and many others in the Bow Valley, is the lack of any formal trail development planning or process. The majority of trails in the project area were not originally intended to be formal trails and thus were not subject to the development of trail management objectives. Trail management objectives define the purpose of a trail and the design parameters that the trail should be designed, constructed and maintained to achieve. When trails lack trail management objectives, the construction and maintenance become far more subjective and the intended experience is difficult to achieve.

[93] Ford et al., 2023.

12.8.2 Signage

Outside Canmore Nordic Centre*, a total of 593 signage points were collected during the trail assessment and less than half (217) of these points were identified as wayfinding signs, markers or maps. In general, most of the trails in the valley bottom have a distinct lack of signage that contribute to user confusion and undesignated trail use as users are unaware of which trails they should or should not be on. This issue is especially pronounced and problematic in the Horseshoe, G8 and Grotto planning unit where there are a significant number of unmarked trails in relatively proximity to each other and signage has been continuously vandalized. A similar issue exists for trails with alpine destinations. The destination-based nature of these trail has resulted in users finding the path of least resistance to reach summits, viewpoints and other alpine features, typically with a steep fall line alignment. Heavy use on these trails, especially when lacking signage, results in a heavily braided trail tread, erosion and off-trail trampling and lost users often requiring rescue.

Most signs that were identified throughout the trail assessment process were regulatory signs, a total of 290 of the signage points identified were classified as regulatory. This sign type typically includes warning signs, information about trail rules and regulations and signs informing users of closures or hazards. The remaining signs identified were classified as interpretive signage, kiosks or other. This reinforces the overall trend that signage in the valley is informing users of where they should not be, or what they should not be doing as opposed to helping guide and direct their use. ***Table 22*** provides a complete summary of signage points collected.

Table 22. Signage type and quantity inventoried in the project area

	Gateway feature or monument	Interpretive	Kiosk	Regulatory	Wayfinding (map)	Wayfinding (name or other)	Other	Total
Point (sign post) observations	1	64	6	290	57	160	15	**593**
Total number of signs	1	66	7	461	67	202	16	**820**

* Signage at the Canmore Nordic Centre Provincial Park was not included in the scope of assessment. Source: Field Collection Data.

12.8.3 Visitor Amenities and Parking

Parking areas and amenities such as interpretive signs and washrooms exist throughout the project area. The demand for amenities such as picnic tables, benches and parking lots is high; some users create benches for themselves in locations where they are not offered. There are numerous examples of user-created picnic tables and benches along trails west of Canmore, near Harvie Heights. Throughout the project area trailheads and parking areas are not all clearly signed, especially in the eastern portions of the project area.

12.8.4 Visitor Safety and Emergency Response

In a wilderness and mountain setting such as the Bow Valley, user safety and emergency response are critical considerations in an effective and properly managed system. In the case of the Bow Valley and Kananaskis Country, Alberta Forestry and Parks manages Kananaskis Mountain Rescue (KMR, formerly Kananaskis Public Safety) that provides 24/7 backcountry search and rescue services in the Kananaskis Region. Kananaskis Mountain Rescue was first created in 1979 following the establishment of Kananaskis Country in 1978. KMR responds to an average of 370 calls per year, which peaked at 450 calls in 2020 and 2021 during the COVID-19 pandemic. Most calls are received during the peak visitor season in June-September. KMR is renowned as one of the best visitor safety teams in the world, often completing extremely challenging rescues from mountain cliffs with helicopter assist.

Kananaskis Mountain Rescue frequently responds to callouts on many of the more popular mountain hikes within the project area. ***Table 23*** shows the number of annual incidents responded to for each trail since 2015. The dramatic decrease in incidents on Mt Yamnuska since 2021 is a direct result of the trail refurbishment, signage, and safety improvements.

Table 23. Rescue statistics for the popular mountain peaks in the Bow Valley
(Data KMR as of July 2023)*

Trail Area	2023*	2022	2021	2020	2019	2018	2017	2016	2015
Yamnuska	4	6	5	25	24	21	31	29	23
Grotto	6	13	10	6	4	4	2	7	3
Lady MacDonald	0	1	0	7	13	7	1	8	6
EEOR	6	2	27	11	8	10	16	4	3
Ha Ling	4	2	7	8	4	5	8	13	11
Big Sister	3	5	1	0	0	2	3	1	3
Heart	4	6	4	10	9	9	5	9	8

12.8.5 Area and Temporal Closures

Some areas and trails are subject to closures to protect wildlife habitat during critical times for animal survival (see ***Section 10.14***) or to restrict human use when aggressive wildlife are seen or ground conditions are sensitive (see ***Table 24***).

Table 24. Closure Areas and Restrictions

Closure areas	Location	Restriction
P4A Wildlife Corridor Management Area	Bow Valley Wildland Provincial Park, north of Canmore	Use of designated trails only. No camping. Some trails in and adjacent Canmore Nordic Centre are closed December 1 to June 15.
P4B Wildlife Corridor Management Plan, MO27/05	Bow Valley Wildland Provincial Park, Adjacent Canmore Nordic Centre	Use of designated trails only. No camping.
P4C Wildlife Corridor Management Area, MO27/05	Bow Valley Wildland Provincial Park, south side of valley adjacent Canmore	Use of designated trails only. No camping.
West Wind Valley	Bow Valley Wildlife Provincial Park	Closed December 1 to June 15. Windy View Point Trail closed May 1 to June 15.
Pigeon Mountain Bighorn Sheep and Elk Alpine Winter Range	Bow Valley Wildlife Provincial Park	Closed December 1 to June 15.
Mt Lougheed Alpine Sheep/Bear Summer Range	Spray Valley Provincial Park, southern end of CATS area	No camping June 15 to September 30 except climbers bivouac. Centennial Ridge is closed April 1 to June 21.

Numerous other time periods of sensitivity have been identified for other large mammals, fish and vegetation; however, are not currently managed using a temporal closure. Temporal closures throughout the project area are dispersed throughout all planning units and range from valley bottom to alpine environments.

Alberta Forestry and Parks closes trails on a temporary basis when there are bears, cougars or aggressive wildlife are present. Trails may also be closed when areas are unsuitable for use due to the ground being wet, flooded and/or subject to deep rutting and erosion from recreational use.

12.9 Planning Unit #1: Montane

102 km of Trail	11,355 Ha	Primary Season of Use: Snow Free
26 km (40%) of trail distance with tread sustainability concerns		

12.9.1 Area Overview

Trails in the Montane planning unit provide a nature-based experience that feels slightly more remote than many other trail systems close to the Town of Canmore (see ***Figure 30***). Trails in this area provide an adventurous experience that feels like a user is covering ground and not just on a tightly contained “hamster wheel” trail system. Located to the northeast of the Town of Canmore, trail use in the Montane planning unit is dominated by residents of the nearby communities namely Eagle Terrace, Silvertip, and Harvie Heights. There is minor use observed from the highway parking lot trailhead, but many of the users use nearby trails for convenience, exercise or for walking dogs. Montane trails can be accessed via Cougar Creek to the east; however, the trailhead is small, trail entrance here is steep, challenging, and uninviting.

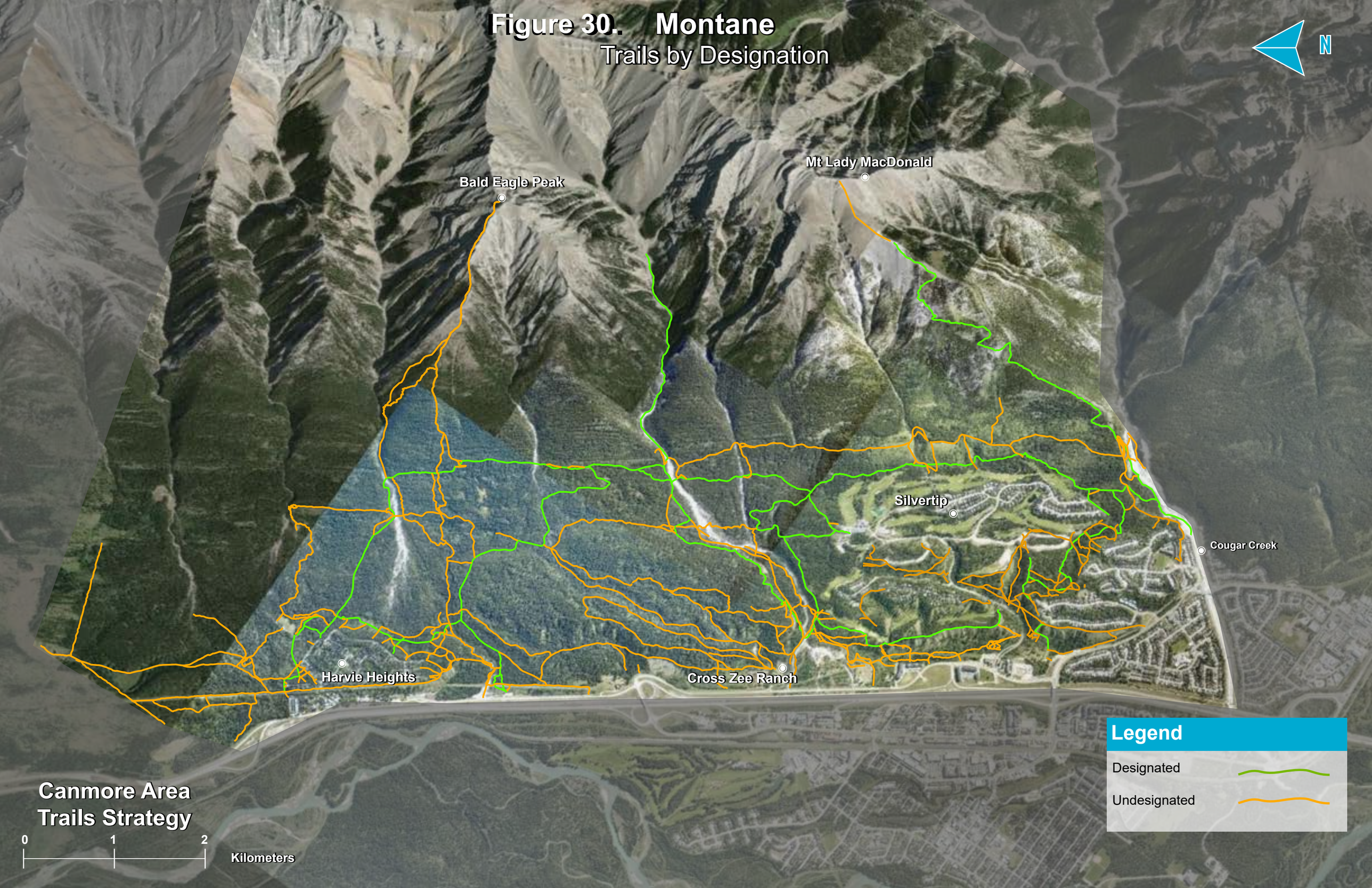
Trails in this planning unit are conveniently sited near residential areas and encourage local walking. Bald Eagle Peak and Mount Lady MacDonald also attract hikers and scramblers with the goal of reaching the peak of the mountains. There are three climbing areas in the north that are accessed through Harvie Heights, occasionally resulting in parking conflict issues with residents. The climbing area at Stoneworks Creek uses the Montaine Trail for access, with unofficial parking often in Silvertip to shorten the approach. Mountain biking in Montane is generally an old-school cross-country type of experience. Gravity-oriented trails are limited by the Silvertip golf course, although there are some engaging descent trails to the west. Trail planning was carried out during the planning and construction of the golf course, which considered user and wildlife conflict. The Cross Zee Ranch stables occupy an equestrian use disposition in the planning unit and there is noticeable equestrian use on the local trails.

12.9.2 Trail Sustainability

Trail sustainability varies throughout the Montane planning unit as trails are subject to varying levels of use, sun exposure, build quality and moisture retention. Most of the planning unit is south facing and, similar to the Horseshoe, G8 and Grotto planning unit that is discussed below, there are many areas of sparse vegetation and exposed soil below the benchlands. In these steeper, exposed areas and alpine trail locations, fall line trail alignment is a problem causing deep erosion and exposing loose round rocks. Many trails in the lower elevations and benchland areas are poorly aligned and poorly constructed, which can cause them to hold water. When combined with heavy pedestrian, equestrian or bike traffic they show pronounced cupping, tread damage and tread creep. Conversely, the trails constructed as a bench cut have less erosion and tread creep compared to many other trails in the project area. Forest cover is significantly denser in areas throughout the planning unit that retain more moisture; however, there has been forest thinning to reduce wildfire risk, resulting in trail braiding and the development of informal trails.

Figure 30. Montane

Trails by Designation



12.9.3 Trail Management

Trail management is relatively active in the Montane planning unit compared to other units in the project area. There is an active effort throughout the area to manage unauthorized trail development, undesirable activities and interactions with wildlife throughout wildlife corridors. AFP, FKC and CAMBA, conduct maintenance and management activities within the Montane trail system, as well as install and maintain signage. It is worth noting; however, that despite the management activities, nearly 73 per cent of the trails in the Montane planning unit are undesignated, compared to 27 per cent that are designated.

12.9.4 Environmental Sustainability

Aside from the above noted erosion and trail sustainability concerns, there has been reasonable effort to ensure environmental sustainability throughout the Montane trail system. Close to the Silvertip Golf Course, planning was undertaken to minimize conflicts between trails and their users with the adjacent wildlife corridor. Unfortunately, despite this planning, there are overarching environmental, and wildlife concerns adjacent to the residential and dense commercial development of Harvie Heights and Silvertip Resort. The golf course at Silvertip Resort attracts elk and bears that are then displaced onto the nearby trails, increasing the likelihood for human-wildlife interactions such as the death of a local in 2005. An additional concern is the wildlife closure along the Douglas fir bench, near Highway 1 which is poorly communicated to the public. Overall, wildlife interaction is the major concern for long-term environmental sustainability in the Montane planning unit.

12.9.5 Social and User Considerations

Trails in the Montane planning unit serve to satisfy several trail user objectives and are satisfactory overall in terms of social sustainability considerations. There are trail options to accommodate many different users in the system, including equestrian, leisure and dog walking, mountain biking and hiking (see ***Figure 31*** for trails ranked by difficulty). There is a series of stacked benches throughout the landscape that offer excellent viewpoints from dramatic drop-off points. Additionally, there are benches to sit on at many of these viewpoint locations that provide a destination for users to reach and enjoy the view. Most of these trails are relatively secluded and offer users a sense of remoteness that allows them to connect with nature and remove themselves from busier trail settings. Multiple options exist to create large loops that, in conjunction with the remoteness and viewpoints, allow users to feel as though they are truly going somewhere. A notable gap in the user experience offered in Montane is the poorly signed and difficult access route for Bald Eagle Peak, which has resulted in numerous informal trails developing that are not only unsustainable, but also exacerbate user confusion.

Figure 31. Montane
Trails by Difficulty

N

Legend

Trail Difficulty	Usage Multi / Single
Easy	
Moderate	
Difficult	
Most Difficultv	
Unrated	

Bald Eagle Peak

Mt Lady MacDonald

Silvertip

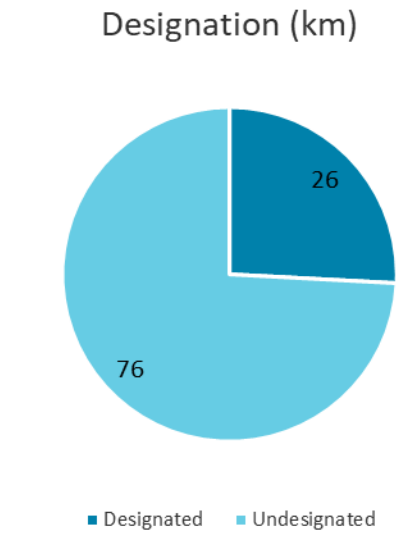
Cougar Creek

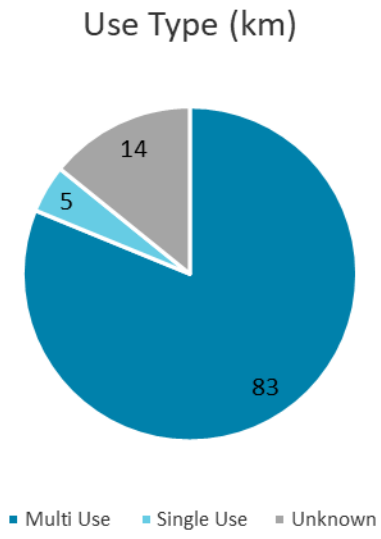
Harvie Heights

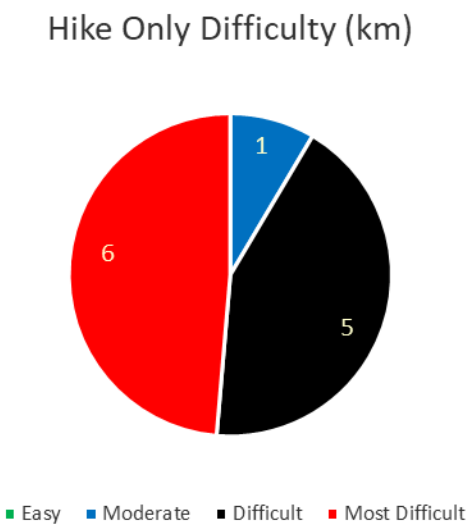
Cross Zee Ranch

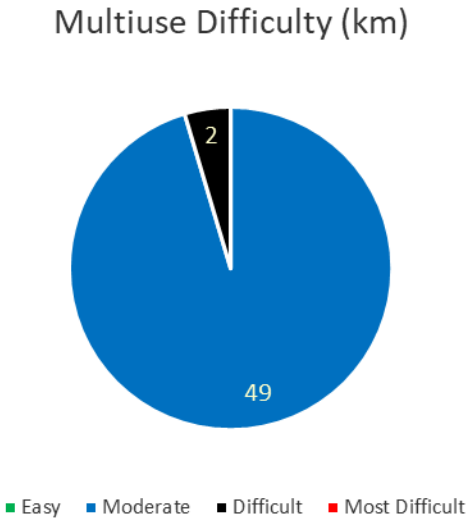
Canmore Area Trails Strategy

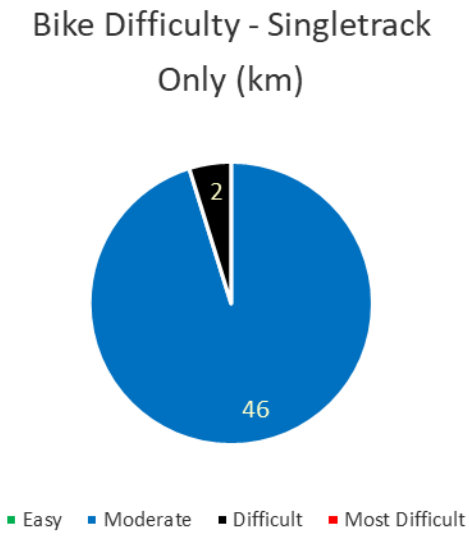
0 1 2 Kilometers

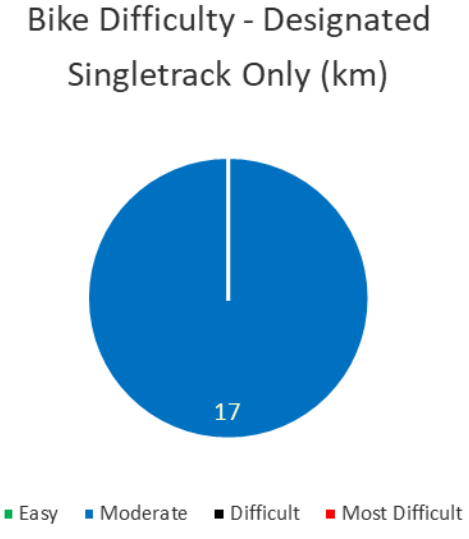

Designation (km)
26
76
Designated
Undesignated


Use Type (km)
14
5
83
Multi Use
Single Use
Unknown


Hike Only Difficulty (km)
1
6
5
Easy
Moderate
Difficult
Most Difficult


Multiuse Difficulty (km)
2
49
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Singletrack Only (km)
2
46
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Designated Singletrack Only (km)
17
Easy
Moderate
Difficult
Most Difficult

12.10 Planning Unit #2: Horseshoe, G8, Grotto

88 km of Trail	9,728 Ha	Primary Season of Use: Snow Free
35 km (53%) of trail distance with tread sustainability concerns		

12.10.1 Area Overview

The Horseshoe, G8 and Grotto planning unit is located on the north side of the Bow Valley between Exshaw and Cougar Creek. There is a dense supply of trails in the area that see heavy use by a variety of trail user types (see ***Figure 32***). Trails are frequently used by pedestrians for hiking, dog walking and trail running. Many trails in this area are also heavily used by equestrian riders and mountain bikers. Numerous factors drive a substantial amount of use by these various trail user types. Most of the terrain in this planning unit is south facing and becomes snow free earlier in the year, far before many other popular recreation locations in the Bow Valley. Additionally, the northwestern portion of the planning unit is directly adjacent to a heavily populated residential neighbourhood and residents use the area for casual recreation and dog walking.

Trails in the Horseshoe portion of this planning unit can be divided into the upper and lower bench areas. The overall difficulty is predominantly blue throughout both areas in the unit; however, there is more exposed bedrock in the upper reaches of the unit that is utilized for difficult level mountain bike trails. Aside from these rock slabs, there are relatively few purpose-built features or trail elements that engage the mountain bike user and the landscape and trails have a lot more potential than the current trail system provides. Many of the trails do provide a good equestrian trail experience; however, trail sustainability issues of ponding, widening and erosion are present. Hiking trails in the planning unit are optimized for efficiency to gain elevation for the purpose of summiting Grotto Mountain, reaching worthwhile viewpoints or accessing climbing areas such as Echo Canyon, Cougar Creek and others. These climbing areas are extremely popular with locals and tourists alike in the summer and winter, with a total of over 600 routes. As a result, trails in this area are quite steep and often follow a fall-line alignment.

12.10.2 Trail Sustainability

Many trails in this area have sustainability issues; there is frequent and widespread creep, trail braiding and erosion. The terrain dictates that trails are primarily located either on south facing slopes with steep ridges and gullies or in the forest where slope angles are lower. Trails along the ridges and on the south facing exposed slopes show signs of users travelling directly up and down the ridges creating fall line wear patterns. Fragile vegetation is trampled easily in these locations causing the formation of informal trails, leading to severe erosion. The low vegetation cover and fragile soil type compound this problem and further contribute to erosion.

In the forested areas of the planning unit, many of the trails have formed in the path of least resistance (usually the low point in the terrain) from repeated foot, bike and hoof traffic. Repeated trampling of understory vegetation and the exploration of animal trails throughout the forest has resulted in a dense network of informal trails. As a result of the organic development of these trails and the minimal tread maintenance, many trails are cupped leading to water retention and erosion. Subsequently, trail users have travelled outside of the trail tread to avoid water or exposed tree roots revealed by erosion and the trails have crept to be 1.5–5 m wide in many places.

Figure 32. Horseshoe, G8, and Grotto

Trails by Designation

Legend

- Designated
- Undesignated

N

Grotto Mountain

Cougar Creek

Alpine Club of Canada

Bow Valley
Riding Association

Rat's Nest Cave

Canmore Area
Trails Strategy

0 1 2

Kilometers

12.10.3 Trail Management

There is very little active trail management in this planning unit. Trail management across the designated trails is shared between AFP, CAMBA and Bow Valley Riding Association (BVRA), although these designated trails make up only a small portion of the trail supply in Horseshoe, G8 and Grotto planning unit. There have been historical issues with vandalism and unauthorized removal of trail signage throughout the trail system here. Trail maintenance, decommissioning and enforcement efforts have not been able to keep up with unauthorized trail development and use resulting in a large number of trails, significant trail creep throughout the system and vast trail braiding. Recent fire smarting has also opened up the understory in many locations, making it easier to create unauthorized trails. Part of this area contains a recreational lease for the Bow Valley Riding Association.

12.10.4 Social and User Considerations

Social and user pressures have been the primary driver for trail development in the Horseshoe, G8 and Grotto planning unit (see ***Figure 33*** for trails ranked by difficulty). The area encompassed within this planning unit is south facing and sees heavy mountain bike, hiking, and equestrian use in the springtime when many other trails in the valley are not yet snow-free. This often leads to undesirable interactions between mountain bike and equestrian users on the multi-use trails in the planning unit. Conflict between user groups, particularly mountain bike and equestrian users, requires consideration due to the multi-use user groups and popularity of this planning unit.

A significant driver for the prominence of informal and undesignated trails is the proximity of residential neighborhoods to the forested trail area where formal recreation decision making has been absent. There are approximately 15 informal access points from backyards and residential streets to access trails in the planning unit compared to one formal trailhead. These informal access points allow convenient nature-based dog walking, both on and off leash. Additionally, the one formal trailhead with parking, located along Cougar Creek, only accommodates 35 vehicles, and does not provide clear or direct access to the trail system.

12.10.5 Environmental Sustainability

There are many important habitat patches that have a very high density of trails within them. Additionally, there is noted bighorn sheep habitat that contributes to a multi-species seasonal closure in the area; however, this is poorly communicated to the public through signage or otherwise. There is limited forested space in the valley bottom portion of this planning unit, limited by Grotto Mountain upslope and highway, industrial and residential development downslope.

The high density of trails and high volume of several use types in this planning unit are not compatible with long-term environmental sustainability. There is high potential for negative human and wildlife interactions as these habitat patches are critical for wildlife movement throughout the valley and forage in the winter. This potential is heightened by the potential for human-wildlife interactions with off-leash dogs.

Figure 33. Horseshoe, G8, and Grotto

Trails by Difficulty

N

Grotto Mountain

Cougar Creek

Alpine Club of Canada

Bow Valley
Riding Association

Rat's Nest Cave

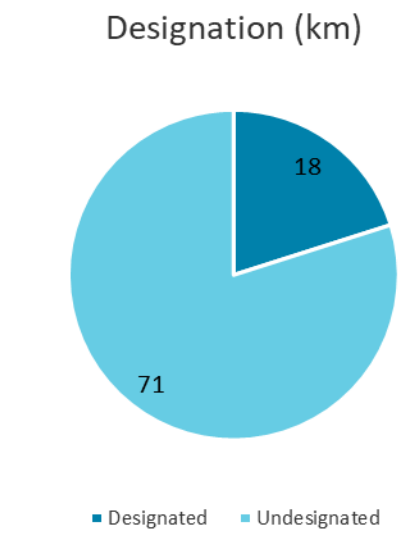
Legend

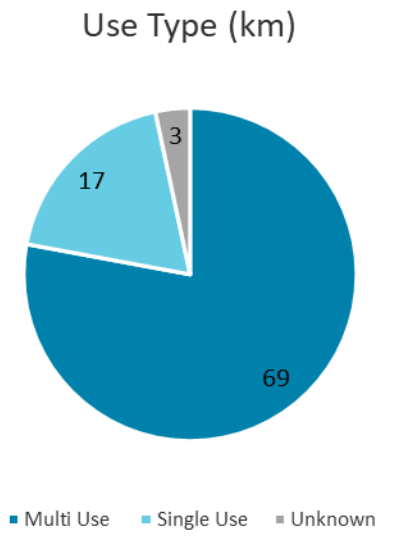
Trail Difficulty	Usage Multi / Single
Easy	
Moderate	
Difficult	
Most Difficultv	

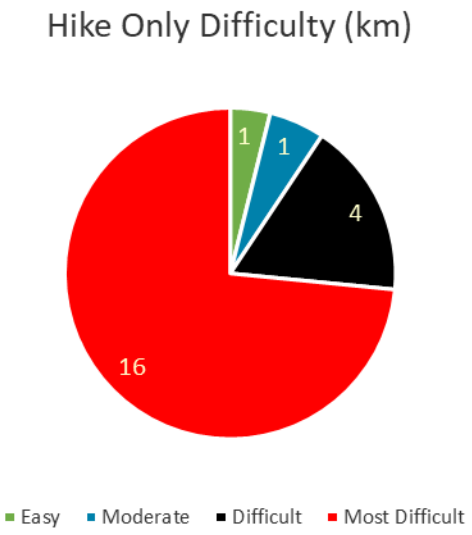
Canmore Area Trails Strategy

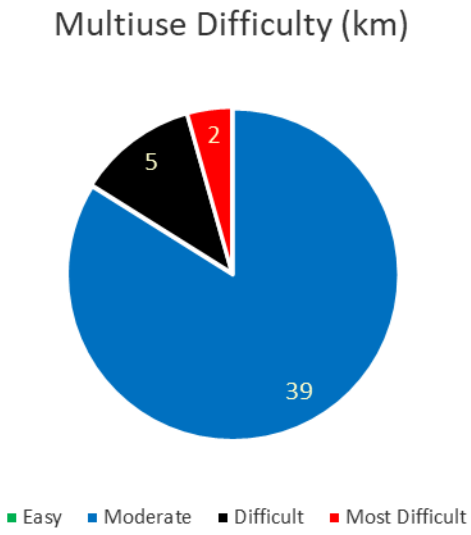
0 1 2

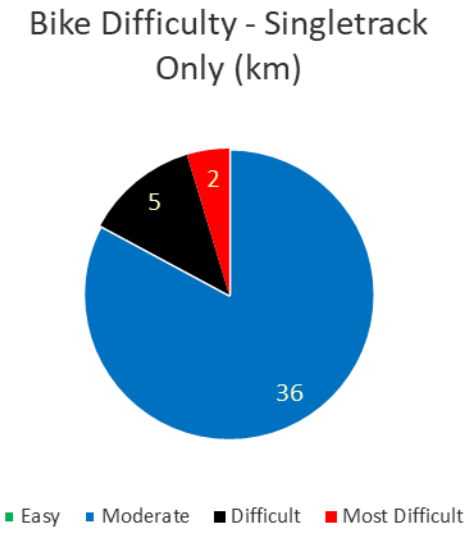
Kilometers

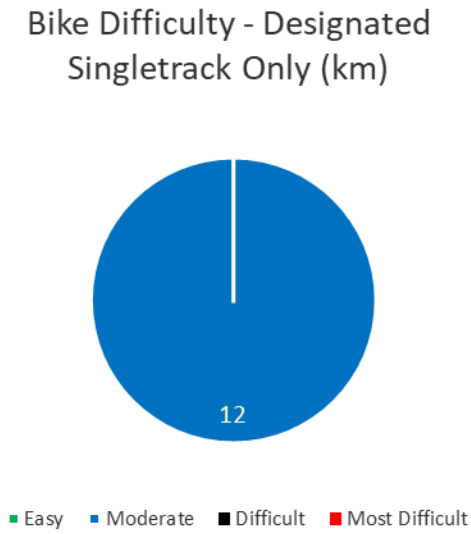

Designation (km)
18
71
Designated
Undesignated


Use Type (km)
3
17
69
Multi Use
Single Use
Unknown


Hike Only Difficulty (km)
1
1
4
16
Easy
Moderate
Difficult
Most Difficult


Multiuse Difficulty (km)
2
5
39
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Singletrack Only (km)
2
5
36
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Designated Singletrack Only (km)
12
Easy
Moderate
Difficult
Most Difficult

12.11 Planning Unit #3: Northeast Bow Valley

152 km of Trail	28,276 Ha	Primary Season of Use: Snow Free
16 km (18%) of trail distance with tread sustainability concerns		

12.11.1 Area Overview

The Northeast Bow Valley planning unit encompasses the area surrounding and including Exshaw and east to Seebe. The Exshaw area is a popular draw for mountain bike recreation due to the purpose-built and engaging trails, especially amongst enduro riders, even though all mountain bike trails are undesignated (see ***Figure 34*** for trails by designation). Due to the closer proximity to the city, many users travel from Calgary for the sole purpose of riding these trails.

This area also includes a number of peaks, which typically consist of an exposed rocky ridge to the summit and are only popular with local trail runners/scramblers. To the east, Mount Yamnuska is very popular for locals and tourists alike for hiking, scrambling and rock climbing. In 2021, it was refurbished to reduce the number of rescues and eliminate the vast shortcutting issues that were causing trampling and wildlife displacement from the entire mountain. Grotto Creek Canyon is popular for family hiking and guided rock and ice climbing due to the large steep canyon cliff walls while Jura creek is famous for the shaped rock pools in the creek. Challenging and long-distance trail running/mountaineering routes exist in this area.

Motorized use, particularly trials motorbike use, occurs near Jura creek on public lands near Exshaw. Trails provide access to technical rock challenges on the rocky ridge of Door Jam Mountain and Loader Peak. See ***Figure 35*** for trails by difficulty.

12.11.2 Trail Sustainability

There is a mixed level of trail sustainability throughout the Northeast Bow Valley planning unit. A modern approach was taken to many mountain bike trails with a “ride up to ride down” premise that incorporates exciting features such as rock slabs. Many of these trails offer a consistent user experience that generally meets trail user objectives and modern trail sustainability criteria. Trail maintenance is apparent, but some construction techniques are unsustainable and will require replacement or repairs. Most of the motorized trails around Jura Creek are generally sustainable due to their tread consisting purely of rock; however, trails with a soil construction are experiencing erosion from fall-line alignment or throttle-based erosion. Both the mountain bike and motorized trails that reach the alpine travel through sensitive vegetation types, such as white bark pine, which is locally abundant on the windblown rocky ridges.

Numerous alpine hiking trails lack signage, resulting in extensive trail braiding and long fall-line alignments prone to erosion. The Door Jam/Loader Peak trail has sections with 5-8 parallel trails that are all eroded and located through white bark pine habitat. Many of these informal alpine trails are placed on bedrock, but sections are worn into loose gravel and soil surfaces that are suffering from erosion. Recent trail refurbishment and signage improvements on Mount Yamnuska have significantly reduced off-trail use and improved trail sustainability.

Figure 34. Northeast Bow Valley

Trails by Designation

12.11.3 Trail Management

Trail management is generally absent in the northeast Bow Valley. There is little to no maintenance on hiking trails located on public lands. Trail signage is lacking in this planning unit, which has led to many parallel trails that aim to achieve the same destination. The Exshaw Trail Alliance conducts some trail maintenance activities on mountain bike trails in the area. Parking issues have been somewhat recently addressed with new signage on where visitors should park for trailhead access.

12.11.4 Environmental Sustainability

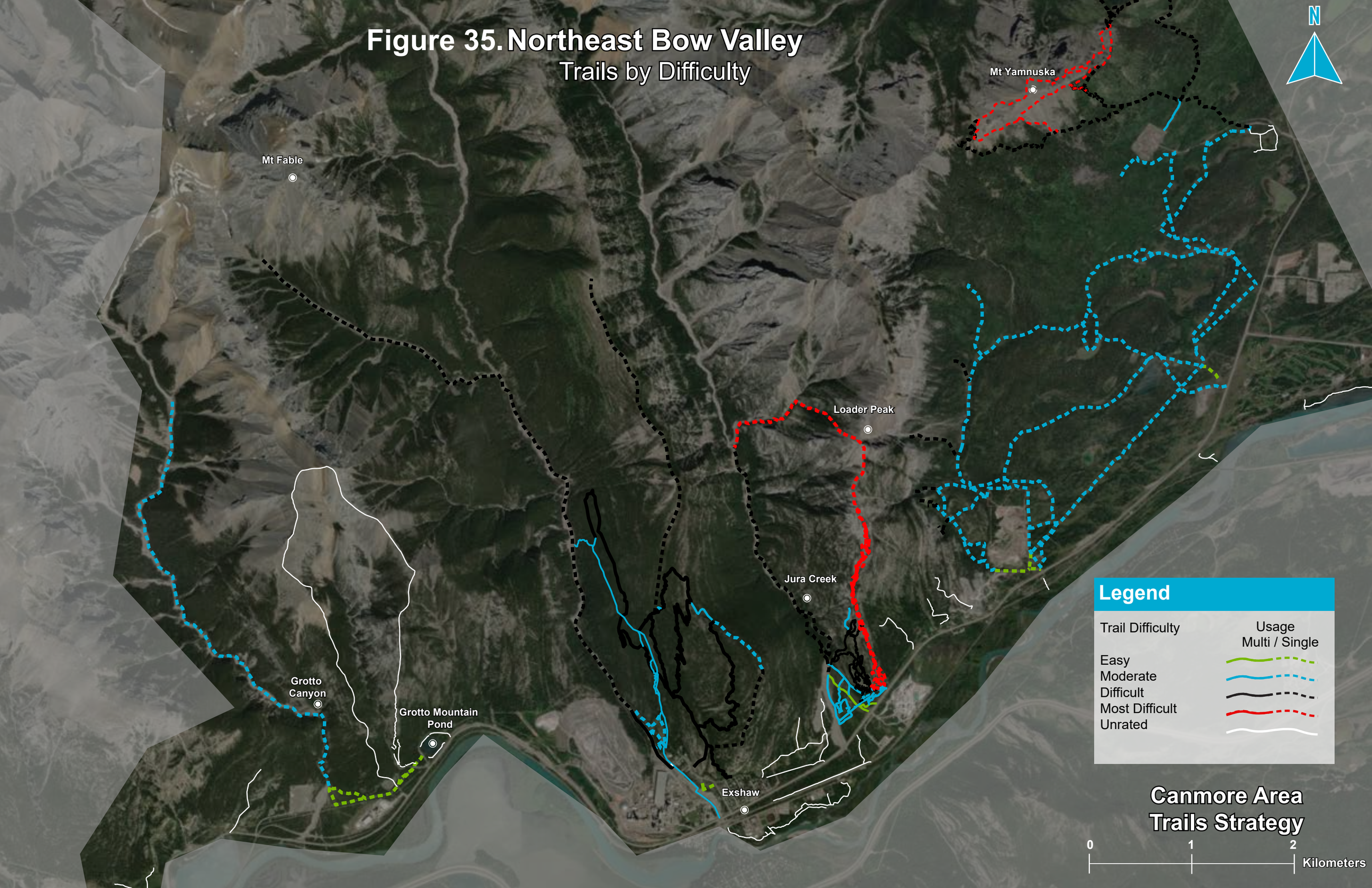
Widespread trail braiding has caused significant trampling and soil erosion in the northeast Bow Valley. These factors have and may continue to affect both watercourses and vegetation in the area. There are many wind-affected and exposed ridges along the mountains in this area which is prime habitat for whitebark pine. There is a significant population of these trees and many trails travel directly through their habitat.

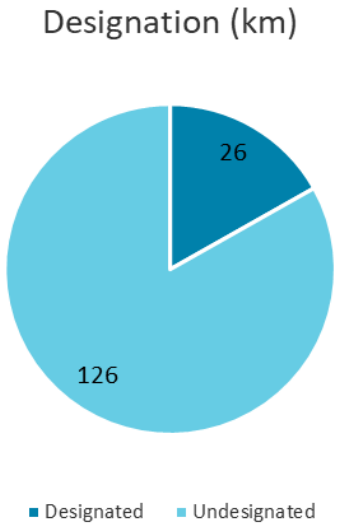
12.11.5 Social and User Considerations

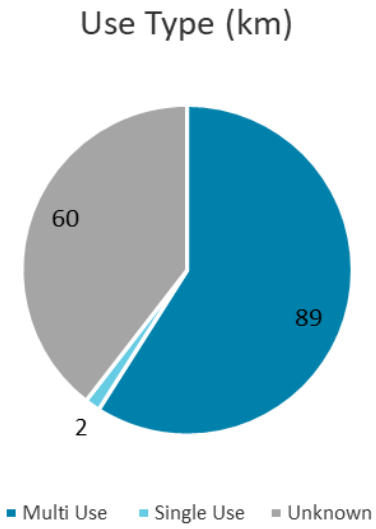
Evidence of human use is more prevalent in northeast Bow Valley due to the heavy industrial use and close proximity of Highways 1 and 1A. Noise pollution from industrial processes and highway traffic are consistently present throughout the planning unit. Gap Lake and Grotto Pond attract visitors for non trail-based recreation such as winter skating and summer fishing.

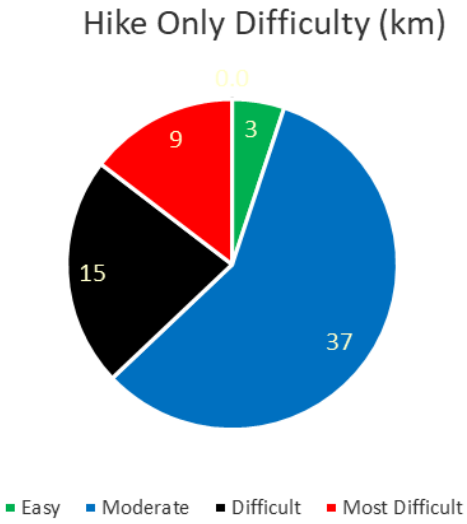
Figure 35. Northeast Bow Valley

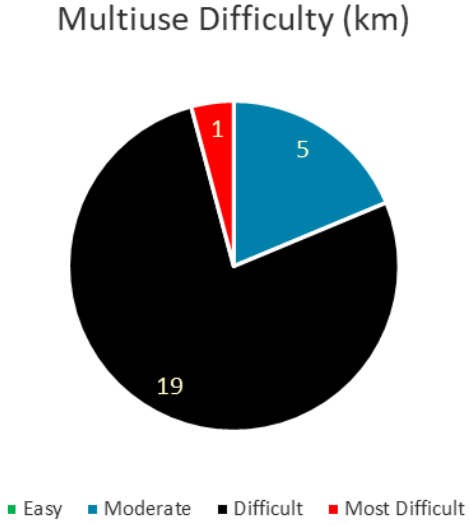
Trails by Difficulty

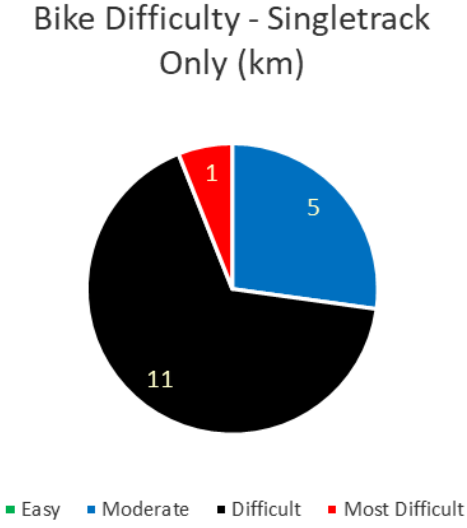


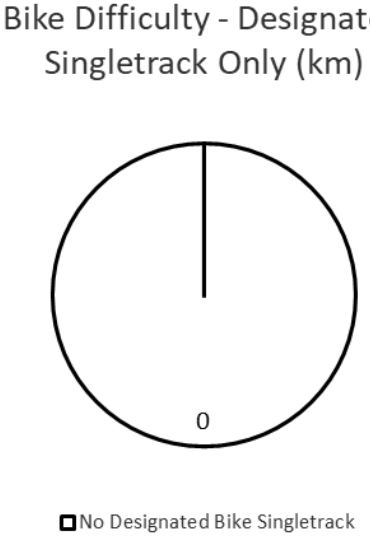

Designation (km)
26
126
Designated
Undesignated


Use Type (km)
60
89
2
Multi Use
Single Use
Unknown


Hike Only Difficulty (km)
0.0
9
3
15
37
Easy
Moderate
Difficult
Most Difficult


Multiuse Difficulty (km)
1
5
19
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Singletrack Only (km)
1
5
11
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Designated Singletrack Only (km)
0
No Designated Bike Singletrack

12.12 Planning Unit #4: Canmore Nordic Centre

151 km of Trail	6,942 Ha	Primary Season of Use: Year Round
3 km (5%) of trail distance with tread sustainability concerns		

12.12.1 Area Overview

The Canmore Nordic Centre, within the Canmore Nordic Centre Provincial Park, was constructed to accommodate cross-country skiing events in the 1988 Winter Olympics. Initial planning and development for the Nordic Centre included 20 km of snowmaking assisted trails and 45 km of natural snow ski trails. The trail network displays the benefits of good upfront planning and has continued to operate as a world class cross-country ski facility (***Figure 36***). Since its inception, the Nordic Centre has evolved to incorporate winter fat biking and snowshoeing trails and summer mountain bike trails.

A summer trail master plan was implemented for mountain bike and trail running that has since contributed to a logical, flowy and generally well-connected trail system (***Figure 37***). Historically, mountain bike trails at the Nordic Centre were purpose-built for specific races and constructed in unused spaces between ski trails. Many of these bike trails were orphaned singletrack; however, this has now been rectified and the mountain bike trail network is a series of well-connected and continuous loops of similar difficulty and experience type that offer users a fun and easy to navigate experience. Mountain biking, running and cross-country skiing are the primary activity types observed within this planning unit; however, there is a large volume of climbing traffic on the East End of Rundle (EEOR) and on other minimally used ice climbing routes.

12.12.2 Trail Sustainability

The cross-country ski trails are quite well constructed and maintained. The current level of maintenance can keep up with minimizing erosion on the fall line segments of trail. Some turf covered ski trails are exhibiting rutting due to maintenance vehicles always driving the same tracks.

The mountain bike trails are generally well located and constructed. Some trails do have inconsistencies with difficulty throughout the trail due to features such as rock protrusions that are not suitable for beginner singletrack. The current level of maintenance is mostly keeping up with the level of use, except where trail alignment has a high-speed straightaway to a sharp corner without a grade reversal or armoring (tree roots or rock). These locations see excessive brake bump formation and skidding induced erosion that could be mitigated by better maintenance or trail realignment. A significant contributing factor to improved trail sustainability in this planning unit is the northeast aspect of the terrain which retains moisture better than many other trail locations throughout the Bow Valley. As a result, trees grow larger to provide shade and soil stability and soil remains bonded for longer periods of time compared to trails on the opposite side of the valley. The north-facing aspect is ideal for snow retention needed for spring and winter cross-country skiing.

Figure 36. Canmore Nordic Center

Trails by Designation

N

Legend

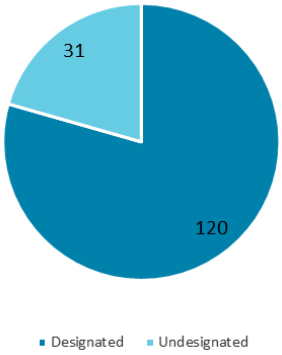
- Designated
- Undesignated

Canmore Area Trails Strategy

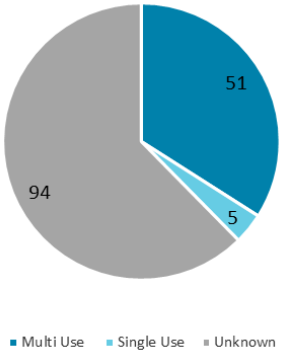
0 1 2

Kilometers

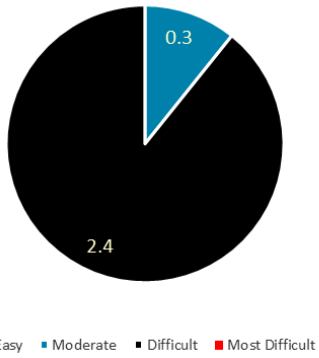
Designation (km)



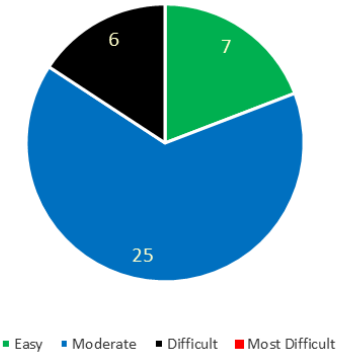
Use Type (km)



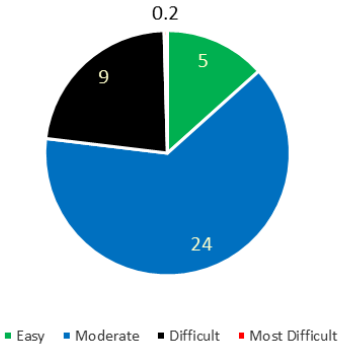
Hike Only Difficulty (km)



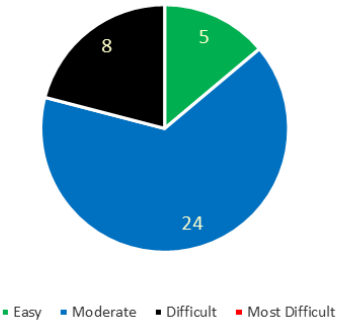
Multiuse Difficulty (km)



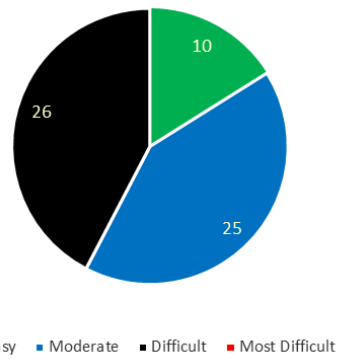
Bike Difficulty - Singletrack Only (km)



Bike Difficulty - Designated Singletrack Only (km)



Ski Difficulty (km)



12.12.3 Trail Management

Trails within this planning unit are well managed and display evidence of adequate and regular trail maintenance. Trail management and maintenance activities are done by the Canmore Nordic Centre staff with support from CAMBA and Friends of Kananaskis. Trail maintenance activities for cross-country skiing are well thought out and uphold the high-quality ski trail reputation. Snow is machine-made for part of the winter skiing loops and stored all summer to enable a 2-3 km ski loop in early fall for national team training. CAMBA also maintains and grooms trails for fat bike users throughout the snow season. See for ***Figure 38*** for a difficulty map for CNC winter season.

12.12.4 Environmental Sustainability

Trail construction, maintenance and management in the Canmore Nordic Centre generally exhibits adequate environmental sustainability practices. There is frequent wildlife presence in the area recognized by the BCEAG documented wildlife patch. A firebreak cleared along the northwestern edge of the Nordic Centre not only reduces the risk of wildfire spread but has also created important wildlife habitat. Additionally, the Mine Meadow is a trail left behind from past mining operations and the sparse trees and frequent berry bushes has created bear forage and habitat. The area is also sought after by trail users for the scenic views. Corresponding with this significant wildlife activity there are seasonal closures to accommodate wildlife movement and life history patterns. These closures are communicated through signage and are generally well respected.

12.12.5 Social and User Considerations

The majority of trails in this planning unit are planned and maintained to meet the needs of trail users. Trails in this area are generally enjoyable and act to meet intermediate level riders objectives of play, challenge, fitness and variety. Most trails in this planning unit are better quality than many others in the project area as they were designed with a purpose and maintained to uphold this. There are limited green and adaptive mountain bike trails, especially beginner singletrack oriented towards adults. The Rundle River Side Trail (located mostly in Banff National Park) connects to Banff and provides a longer distance adventure (albeit lower quality due to a rooty and technical trail tread).

Figure 37. Canmore Nordic Center

Singletrack Trails by Difficulty

N

Canmore Area Trails Strategy

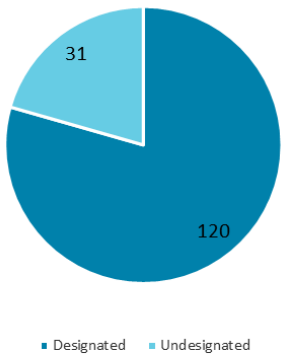
0 1 2

Kilometers

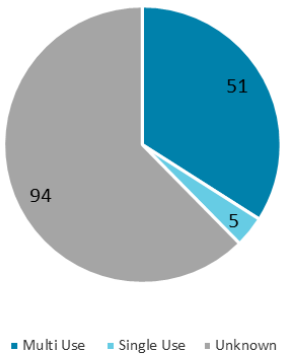
Legend

Trail Difficulty	Usage Multi / Single
Easy	
Moderate	
Difficult	
Most Difficult	
Unrated	

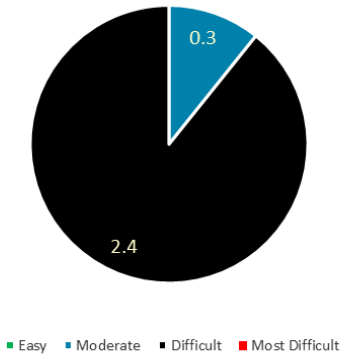
Designation (km)



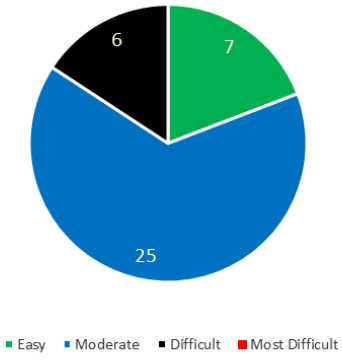
Use Type (km)



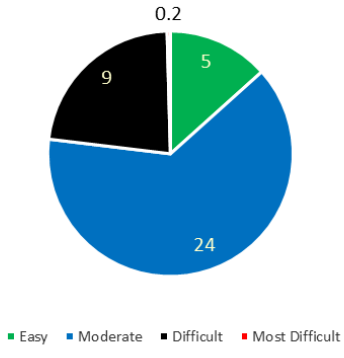
Hike Only Difficulty (km)



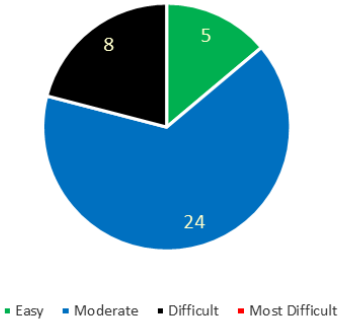
Multiuse Difficulty (km)



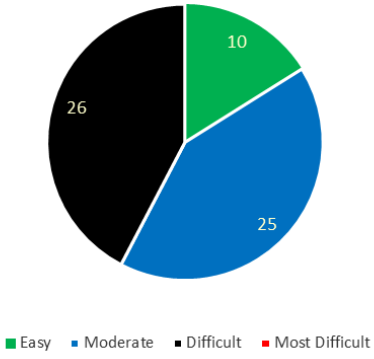
Bike Difficulty - Singletrack Only (km)



Bike Difficulty - Designated Singletrack Only (km)



Ski Difficulty (km)



12.13 Planning Unit #5: Town of Canmore

36 km of Trail	3,297 Ha	Primary Season of Use: Snow Free
4 km (18%) of trail distance with tread sustainability concerns		

For the Town of Canmore Planning Unit, areas assessed were limited to those on Crown lands, as such the statistics presented do not represent all the trails in the planning unit, see ***Section 12.1*** for further clarification.

12.13.1 Area Overview

The Town of Canmore Planning Unit contains the downtown core with the highest density of tourist amenities (see ***Figure 39***). Many activities originate from here with users walking/running/biking to the trails. Crown land trails that were assessed are mostly near the Bow River and include Larch Island and the South Canmore River Trails area. There is a spine network of wide gravel trails linking through the area which are extremely well used. Singletrack trails, located on the river flood plain with minimal elevation gain, are created by users following animal paths and are largely overgrown with willows or spruce trees. The singletrack network is largely user created by the desire to reach a destination such as following the river edge or by the desire for a narrower more engaging trail with solitude and variety (see ***Figure 41***). During the pandemic, user-created trails exploded in this area when people were exploring close to home. Dog walking is extremely popular on these trails.

12.13.2 Trail Sustainability

The natural surface trails typically do not have any drainage management and consequently are showing creep and braiding as users try to bypass the wet areas, which are only limited by the extremely thick vegetation. In areas where underbrush was cleared to reduce fire risk, trails have become braided and wider as users attempt to bypass the ponding and tree roots.

Figure 39. Town of Canmore

Trails by Designation

Legend

- Designated
- Undesignated

N

Canmore Area
Trails Strategy

0 1 2

Kilometers

12.13.3 Trail Management

Maintenance of the natural surface trail network is extremely limited with minimal interest in the area by organizations with capacity for trail improvements. Signs throughout the South Canmore River Trails area direct users to stay on the marked trails (***Figure 40***); however, use continues on all trails in the area.

Figure 40. Stay on trail sign

12.13.4 Environmental Sustainability

Primary environmental concerns relate to the sheer density and volume of trails in the habitat patches and the level of human use that is likely displacing animals away from this area. Vegetation trampling is extensive from the creation of new trails, and the trail braiding and widening. Erosion is minimal due to the lack of grade of the trails.

12.13.5 Social and User Considerations

This area is popular with the local residents who can walk or run from their house and experience nature and solitude within minutes. Dog walking is extremely common and many users let their dogs off leash to run. There are some equestrian trails located within a fenced grazing disposition.

Figure 41. Town of Canmore

Trails by Difficulty

N

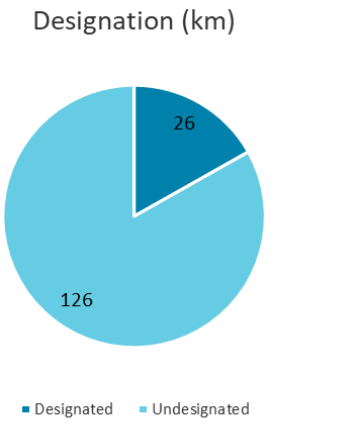
Legend

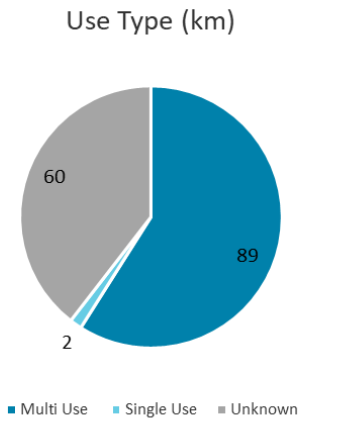
Trail Difficulty	Usage Multi / Single
Easy	
Moderate	
Difficult	
Most Difficult	
Unrated	

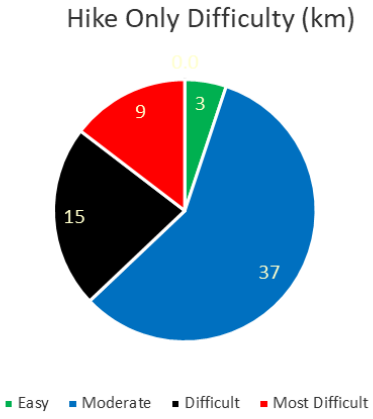
Canmore Area Trails Strategy

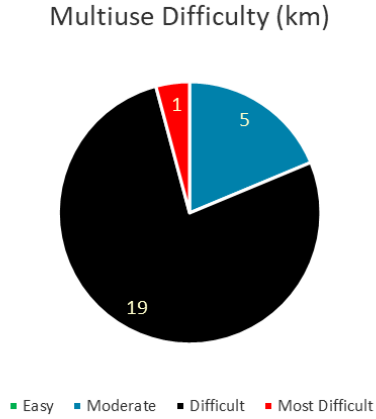
0 1 2

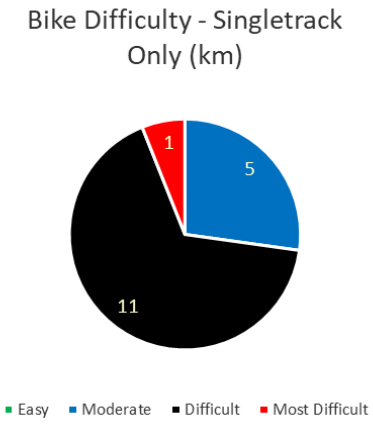
Kilometers

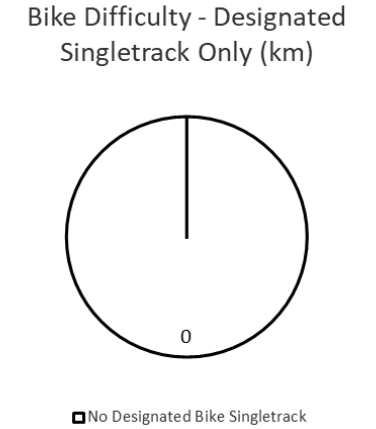

Designation (km)
26
126
Designated
Undesignated


Use Type (km)
60
89
2
Multi Use
Single Use
Unknown


Hike Only Difficulty (km)
0.0
3
9
15
37
Easy
Moderate
Difficult
Most Difficult


Multiuse Difficulty (km)
1
5
19
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Singletrack Only (km)
1
5
11
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Designated Singletrack Only (km)
0
No Designated Bike Singletrack

12.14 Planning Unit #6: Highline

157 km of Trail	17,386 Ha	Primary Season of Use: Snow Free
10 km (16%) of trail distance with tread sustainability concerns		

12.14.1 Area Overview

The northwest portion of the planning unit is characterized by the popular and fairly well managed Grassi Lakes trail which sees in the realm of 40,000 users per season, mostly by tourists (see ***Figure 42***). The views of the waterfalls, lakes and the rock climbing are all attractions to this area. Intertwined in this area are the only two vehicle shuttle-able mountain bike trails in the Bow Valley which are a very old school style of trails, Riders of Rohan and Reclaimer, with Riders being very prone to erosion.

The Highline trail network borders the planning unit, with four main access points and a high elevation route traveling above the wildlife corridor. The Highline trail is popular for mountain biking, trail running and hiking. Highline is currently ridden as a loop, often with a return on the Loki's trail through Three Sisters Mountain Village Land.

Relatively few summits in this planning unit are attainable by scramblers due to the rock strata being too vertical. The undesignated Grassi Knob hike has become very popular recently due to its proximity to town. It has a very steep north access and a more sustainable south access, and a portion of this undesignated trail travels through a wildlife corridor. This planning unit is home to many large rock faces that are climbed in both summer and in the winter, which also includes notable ski-descents. Climbs are accessible from Grassi Lakes parking, the Ha Ling parking area and from the Peaks of Grassi neighbourhood.

The entire Peaks of Grassi neighborhood backs onto these trails, and the trails are bordered by Three Sisters Mountain Village private land. Unauthorized trail building occurs in this area due to the access from historical resource roads, the attractive vertical relief, good soil conditions, and relatively low numbers of users. The Pirates is a trail network of undesignated trails located in the wildlife corridor which are characterized by steep difficult technical trails.

To the east of the area, a long-distance black difficulty technical undesignated mountain bike trail called Randy Savage was recently replaced with a designated blue difficulty multi-use trail with a purpose-built descent at the east end (see trails by difficulty on ***Figure 43***). Users typically loop back on the low lying Guy Lafleur Trail on Three Sisters Mountain Village (TSMV) lands.

12.14.2 Trail Sustainability

The trails at the north end of the planning unit are constructed on poorly graded gravel, missing the fine materials that bond soil together well. Consequently, when water is trapped on a steep trail, significant erosion occurs leaving loose round rock as the trail surface – as found on the Riders of Rohan trail.

The trails in the remainder of the planning unit are located on better quality soils with natural cliff bands present. The combination of better soils, native rock, prolific tree roots and moisture allow many of the trails to show far less erosion than anticipated for their grades when compared to the sunny side of the valley.

Figure 42. Highline

Trails by Designation

Legend

- Designated
- Undesignated

N

Quarry Lake

Grassi Lakes

Ha Ling Peak

Grassi Knob

Three Sisters Creek

Canmore Area Trails Strategy

0 1 2 Kilometers

12.14.3 Trail Management

Trail management in this planning unit is limited to the designated trails with active management of the Highline and Grassi Lakes by AFP with assistance by CAMBA and FKC. The presence of a large portion of private land that has been waiting for development has meant that little management has occurred on the unauthorized trails within TSMV land. The Pirate trails see some maintenance by those that use them. The undesignated Midline trail is an extremely popular trail both summer and winter, by pedestrians and bikers, to make a loop, either with Loki's or with Highline. It travels lengthwise through a wildlife corridor and private land.

12.14.4 Environmental Sustainability

With more bench-cut trails, moisture and tree density compared to the sunny side, there is less trail braiding and creep of trails. However, some of the fall line trails in the Pirates and Grassi Knob do show trail braiding/creep. The Pirates trails and walking trails from the back property of most residences adjacent Crown lands are in a wildlife corridor. Elk and other large mammals graze on the abandoned golf course and are at risk of disturbance from off-leash dogs. A 2015 conservation easement exists on portions of TSMV lands to protect the wildlife corridors and facilitate wildlife movement. This overlaps with the Three Sisters Primary Along Valley Multi-Species Wildlife corridor.

Social and User Considerations

Pirates trails network is well used by local mountain bike riders as it provides steeper and challenging riding meeting a previously unmet demand for this type of trail experience.

Figure 43. Highline

Trails by Difficulty

Legend

Trail Difficulty	Usage Multi / Single
Easy	
Moderate	
Difficult	
Most Difficultv	
Unrated	

N

Quarry Lake

Grassi Lakes

Ha Ling Peak

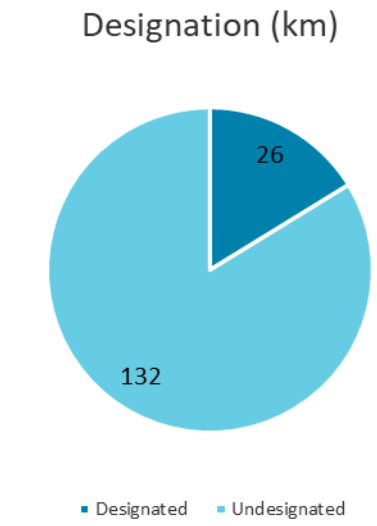
Grassi Knob

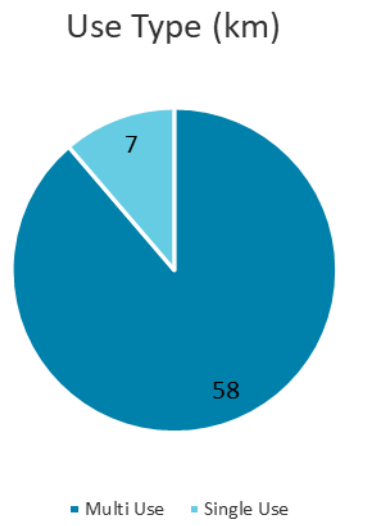
Three Sisters Creek

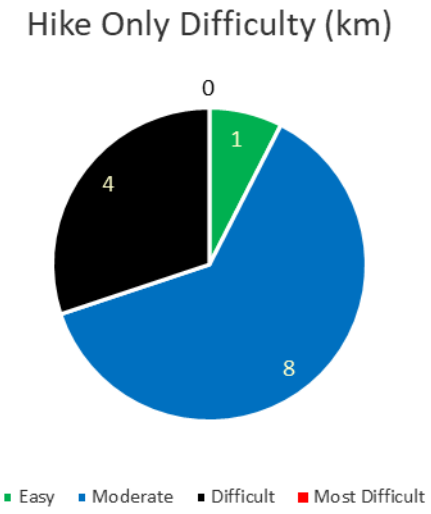
Middle Sister

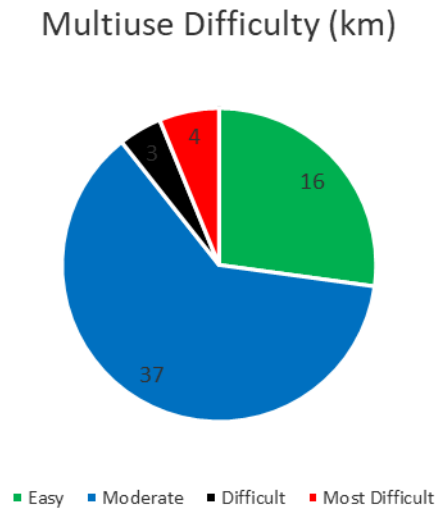
Canmore Area Trails Strategy

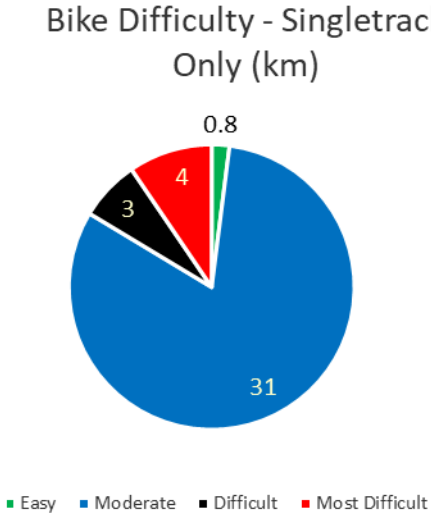
0 1 2 Kilometers

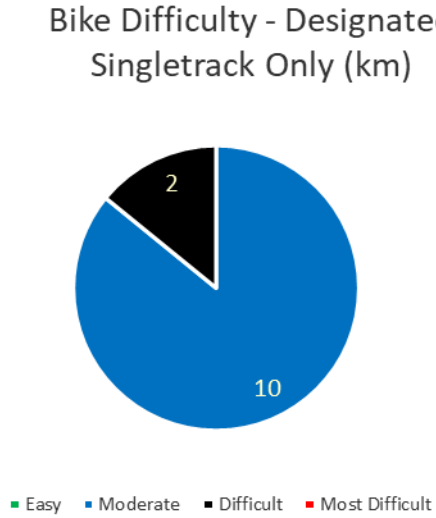

Designation (km)
26
132
Designated
Undesignated


Use Type (km)
7
58
Multi Use
Single Use


Hike Only Difficulty (km)
0
1
4
8
Easy
Moderate
Difficult
Most Difficult


Multiuse Difficulty (km)
4
3
16
37
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Singletrack Only (km)
0.8
4
3
31
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Designated Singletrack Only (km)
2
10
Easy
Moderate
Difficult
Most Difficult

12.15 Planning Unit #7: Dead Man's Flats

120 km of Trail	19,291 Ha	Primary Season of Use: Snow Free
22 km (30%) of trail distance with tread sustainability concerns		

12.15.1 Area Overview

Resource roads near Dead Man's Flats were not decommissioned and now provide access routes into the area for recreation (see ***Figure 44***). The key attractions are the mountain top views, such as on Wind Ridge, Centennial Ridge, Skogan Pass and Pigeon Mountain, and some new challenging mountain bike descents. See ***Figure 45*** for a map of trails by difficulty.

Closer to the valley bottom there is the Guy LaFleur Trail traveling from Dead Man's Flats to Three Sisters (undesignated and on TSMV lands). Guy LaFleur is constructed as a challenging cross-country mountain bike trail and serves as the unofficial return from the new Cloudline Trail and mountain bike trails off Wind Ridge and Pigeon mountains. The double track road is the official return trail for Cloudline; however, it does not meet the trail user objectives of challenging singletrack and most riders use the Guy Lafleur singletrack instead.

The area is less popular than others, due to its distance to communities and relative lack of singletrack. Equestrian use is present in this area particularly to access West Wind Valley and Skogan Pass. The open meadows and alpine meadows are attractive, with undesignated equestrian trails on Pigeon Mountain intertwined with the hiking and undesignated mountain biking trails. Climbing activity in Dead Man's Flats is notably lower than many of the other planning units in the project area, with most climbs accessed through West Wind Pass area towards the mountains of Rim Wall, Windtower or Peter Lougheed.

The community of Banff Gate Mountain Resort has a few undesignated trails on the abandoned ski hill and Dead Man's Flats also has a network of undesignated trails looping around the community. The main trail-based attraction at Dead Man's is the river with a beach and the Pigeon Creek flowing into the Bow River. Dog walking is extremely popular on these trails.

12.15.2 Trail Sustainability

The area has better soils and moisture than many and relatively few trails of note. The resource roads did experience some erosion during the 2013 flood and the West Wind Viewpoint access (old resource road used as a trail) has four bridges on it that would be susceptible to another large flood. The hiking trail to the top of Wind Ridge has grown wider from use resulting in extensive trampling of vegetation and associated erosion. Similarly, the undesignated hiking trail to the top of Pigeon and nearby undesignated mountain bike trails such as parts Velvet Trench are mostly fall line, showing trail braiding and erosion, particularly in the open meadows where trees do not contain users.

12.15.3 Trail Management

With minimal designated singletrack, very little maintenance is undertaken in this area as there is less interest in the doubletrack trails compared to designated singletrack networks. The designated trails are managed and maintained by AFP with support from FKC and CAMBA. The Trans Canada Trail, from Dead Man's Flats and parallel the highway east, travels through the cliff bands. While designated as multi-use, this trail is extremely difficulty as a cross country mountain bike ride with wooden steps and steep climbs. It is maintained by Alberta Forestry and Parks with support from Alberta Trail Net, Trans Canada Trail, and CAMBA, and FKC.

12.15.4 Environmental Sustainability

Vegetation loss and soil erosion are more prevalent on the trails above tree line where trails become fall line and there is less vegetation to retain soil. Some of the resource roads do show deep ruts from the 2013 flood. Much of this area is valued as important wildlife habitat and the increased use in some areas due to social media and recent undesignated trails is of concern.

12.15.5 Social and User Considerations

Use of West Wind Ridge has increased significantly in the past 10 years with social media drawing attention to the relatively short access for the incredible view and the growth Canmore and Dead Man's Flats' population.

Figure 44. Dead Man's
Trails by Designation

Legend

Designated

Undesignated

N

Dead Man's Flats

Banff Gate Mountain Resort

Pigeon Mountain

Wind Ridge

Skogan Pass

Canmore Area Trails Strategy

0 1 2

Kilometers

Figure 45. Dead Man's
Trails by Difficulty

Legend

Trail Difficulty	Usage Multi / Single
Easy	
Moderate	
Difficult	
Most Difficult	
Unrated	

N

Dead Man's Flats

Banff Gate Mountain Resort

Pigeon Mountain

Wind Ridge

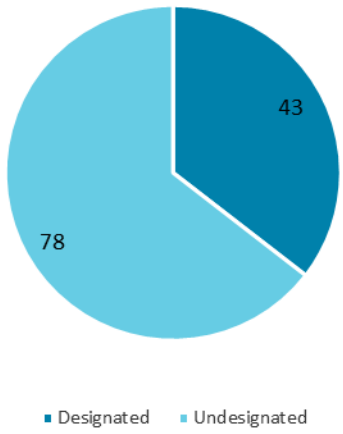
Skogan Pass

Canmore Area Trails Strategy

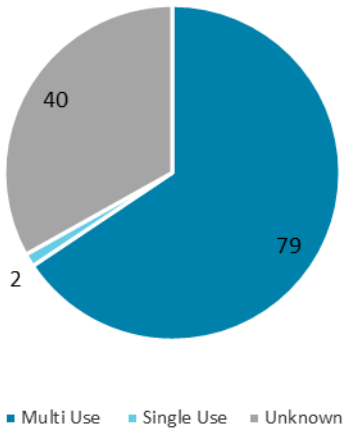
0 1 2

Kilometers

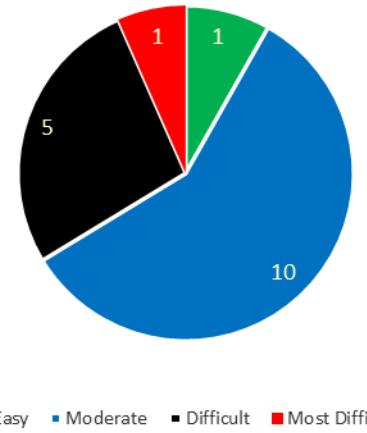
Designation (km)



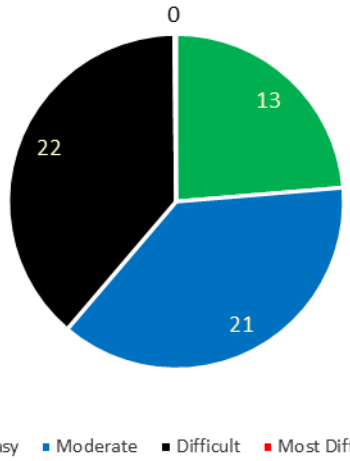
Use Type (km)



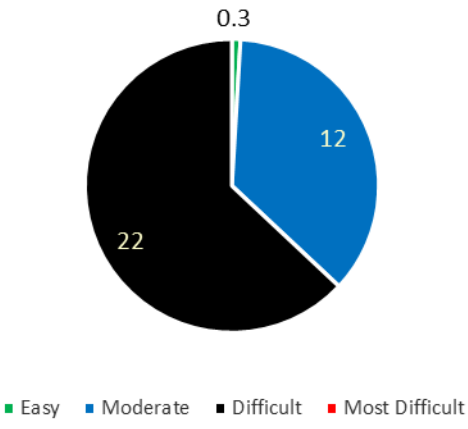
Hike only Difficulty (km)



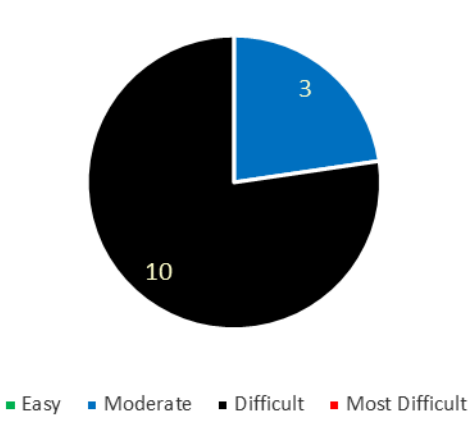
Bike Difficulty (km)



Bike Difficulty - Singletrack Only (km)



Bike Difficulty - Designated Singletrack Only (km)



12.16 Planning Unit #8: Southeast Bow Valley

137 km of Trail	16,781 Ha	Primary Season of Use: Snow Free
35 km (53%) of trail distance with tread sustainability concerns		

12.16.1 Area Overview

Hikers are drawn to the popular McGillivray Canyon (undesignated) and Heart Creek (designated) trails, both of which have very interesting rock formations due to the creeks eroding the rock. Heart Creek trail has a plethora of bridges, and the bridges and trail are very flood prone; however, the creek is the main attraction so retaining the bridges as low-cost sacrificial infrastructure is appropriate. Heart Mountain is very popular as a hiking loop trail, with a few steeper scramble sections where some users become confused and lost and require a rescue. Another popular attraction in the area is the Diefenbaker Cave (Heart Creek Bunker) which is an unfinished storage vault that tunnels nearly 50 m into the side of Mount McGillivray. The numerous direct access points to rock faces throughout this planning unit are used extensively by sport climbers and for bouldering or ice climbing in the winter, with some known internationally. Many of the access points have informal parking areas directly off of Highway 1. See ***Figure 46*** for trails by designation and ***Figure 47*** for a map of trails by difficulty.

The Quaite Valley Trail is an old resource road that runs up the valley to Quaite backcountry campground. The trail is also part of very popular loop that travels over Jewell Pass to Barrier Lake and back to Prairie View. Users then either take Razors Edge, a recently designated trail (provides a double black mountain bike experience) or return down Quaite Valley Trail.

Further southeast, the valley flattens and widens out and the area is popular for day trips by equestrian users and guided trips by Camp Chief Hector Camp and Rafter 6 Ranch. There are some provincial park campgrounds such as Bow Valley Provincial Park where use is predominantly on interpretive pedestrian trails. There are very few bike-specific trails in this eastern portion which helps to minimize user conflict.

12.16.2 Trail Sustainability

Many of the trails in this area are poorly constructed with significant fall line sections that catch and carry water and show erosion. The legacy resource roads that have become trails often parallel creeks and many washed out in the 2013 flood. The Quaite Valley and Heart Creek trails in particular are very flood prone. The poorly constructed trails have deep ruts, water pooling and areas within significant trail widening.

Figure 46. Southeast Bow Valley
Trails by Designation

Legend

- Designated
- Undesignated

N

Seebe

Bow Valley CPG

Rafter Six Ranch

Camp Chief Hector YMCA

Lac des Arcs

Quaite Valley Cpg

Heart Creek

Heart Mountain

Canmore Area Trails Strategy

0 1 2

Kilometers

12.16.3 Trail Management

Dispositions exist in this area for recreational use by the camps and equestrian users, with some trail signage and trail creation present from these disposition holders. CAMBA and FKC in partnership with AFP recently underwent the process to shift Razors Edge away from the highway right-of-way. The trail was designated nearly a decade ago; however, the trail construction was completed in 2022. These three groups do some maintenance in the area on designated trails. Heart Creek is the formal parking lot but users park along the highway shoulder to gain closest access to their preferred destinations.

12.16.4 Environmental Sustainability

The equestrian trails close to the Kananaskis River that are poorly constructed show erosion into the river and many others through flat terrain without a raised tread show deep ruts.

12.16.5 Social and User Considerations

Use on the west portion has key attractions of rock climbing, scrambling Heart Mountain and hiking Heart Creek. Heart Creek now has guided canyon tours, with a well trampled and eroded trail leading unknowing users off the traditional trail.

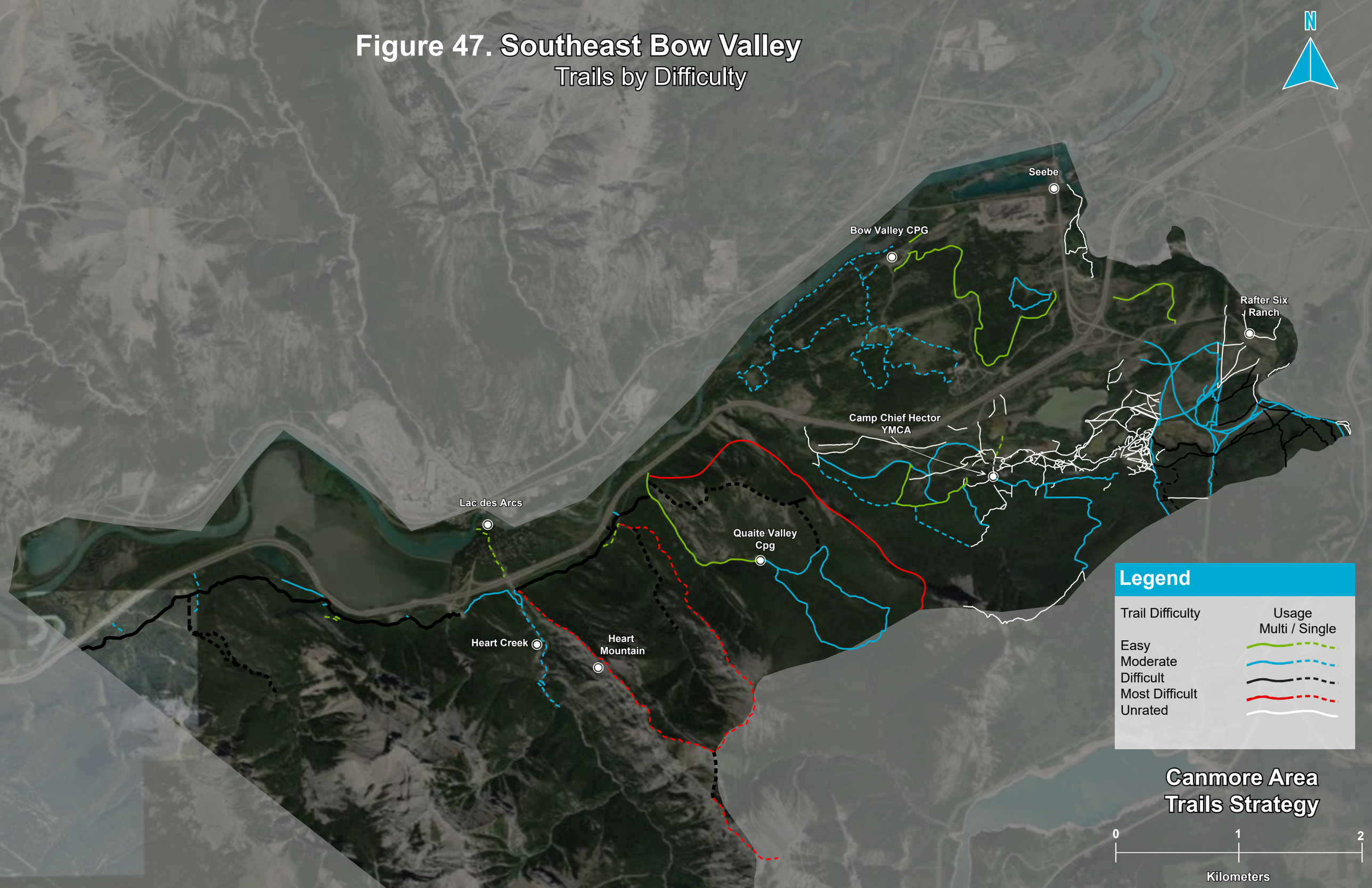
Razors Edge Mountain Bike Trail is rated as a double black difficulty and is well designed making good use of terrain variability (such as rock slabs) and natural viewscapes. This trail is also challenging for the rider. Consequently, it is very popular and draws riders from Calgary and the Bow Valley.

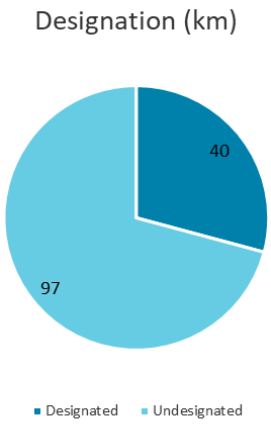
To the east, use is restricted to those permitted by the dispositions, with the old resource road Stoney Trail being the only designated public trail through the area.

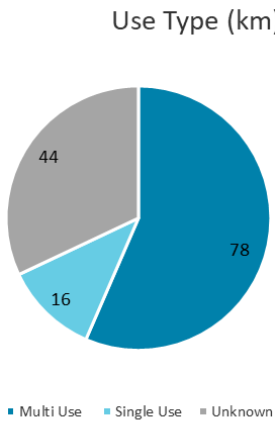
Trails in Bow Valley Provincial Park near the campground are primarily interpretive walking trails that enable visitors to learn about ecological features of the park. These trails are intended to show users unique landforms, ecological features, or views while educating them. Most of these trails are at an easy or moderate difficulty level which provides access for a wide range of pedestrians.

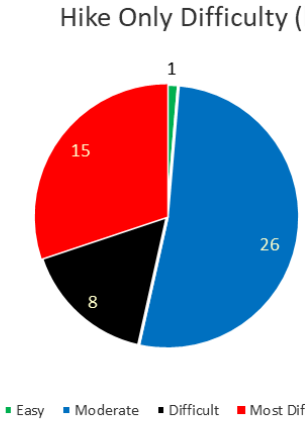
Figure 47. Southeast Bow Valley

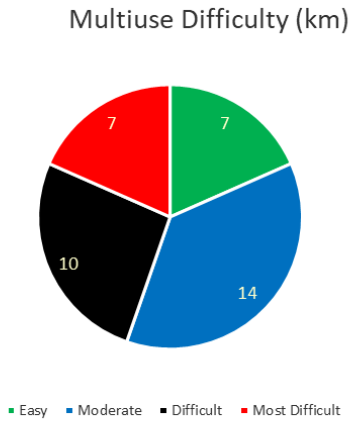
Trails by Difficulty

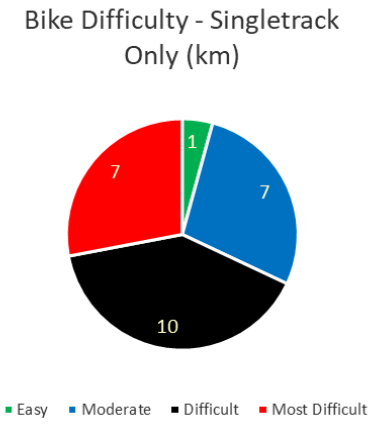


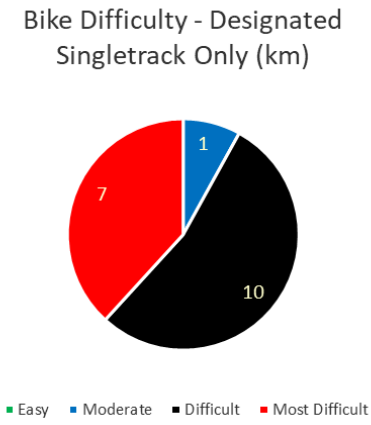

Designation (km)
40
97
Designated
Undesignated


Use Type (km)
44
78
16
Multi Use
Single Use
Unknown


Hike Only Difficulty (km)
1
15
26
8
Easy
Moderate
Difficult
Most Difficult


Multiuse Difficulty (km)
7
7
10
14
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Singletrack Only (km)
1
7
7
10
Easy
Moderate
Difficult
Most Difficult


Bike Difficulty - Designated Singletrack Only (km)
1
7
10
Easy
Moderate
Difficult
Most Difficult

13 Definitions

AFP – Alberta Forestry and Parks

Authorized Use – Designated trail or route uses may be defined by the trail type (summer, winter, all season); the mode of travel (non-motorized, mechanized, motorized, mixed use); the use type (single use, multi-use, or preferred use) or by the Activity Type (Mountain Bike, Hiking, Equestrian, or many others).

CAMBA – Canmore and Area Mountain Bike Association

Braiding – a trail that becomes multiple parallel trails due to users traveling off trail to avoid an undesirable condition.

Creep – a trail that becomes wider than the designed or intended width due to poor trail design and construction, improper maintenance, lack of anchors/corralling features or high levels of use.

Designated Trail – it must be approved by the landowner, mapped, marked and actively managed and maintained.

FKC – Friends of Kananaskis, a not-for-profit organization with the mandate to maintain trails through volunteers

Land Manager/Trail Manager – the individual or organization responsible for managing a trail or trails in an area.

Route – unmaintained trails. May be designated or undesignated.

Trail – a defined type of infrastructure that is purposefully designed and used for one or more trail-based recreation activities.

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