City of Camrose

Stoney Creek Trail Master Plan

April 12, 2024

McElhanney

CITY OF Camrose

Contents

The City of Camrose is a Municipality located on Treaty 6 territory, the traditional lands of the Indigenous and the Métis People. For as long as the sun shines, the rivers flow, and the grass grows, this land will be recognized as Treaty 6 Territory.

Introduction

As much as trail planners and designers try to create infrastructure that will last for millennia, all trails require maintenance and upgrades to address over or under use, changes in the environment, and evolving user types. This is the City of Camrose's (the City's) first trail master plan but it likely won't be the last.

Stoney Creek Park

Stoney Creek Park is a natural area running from 44 Avenue S to the Camrose city limits. It is the largest green space in the City at approximately 48 Ha (118 acres) and is officially classified as a park within the City. Stoney Creek Park contains a network of pedestrian, multiuse, cross-country ski, and mountain bike trails, as well as a biathlon range and multiple sheltered gathering areas.

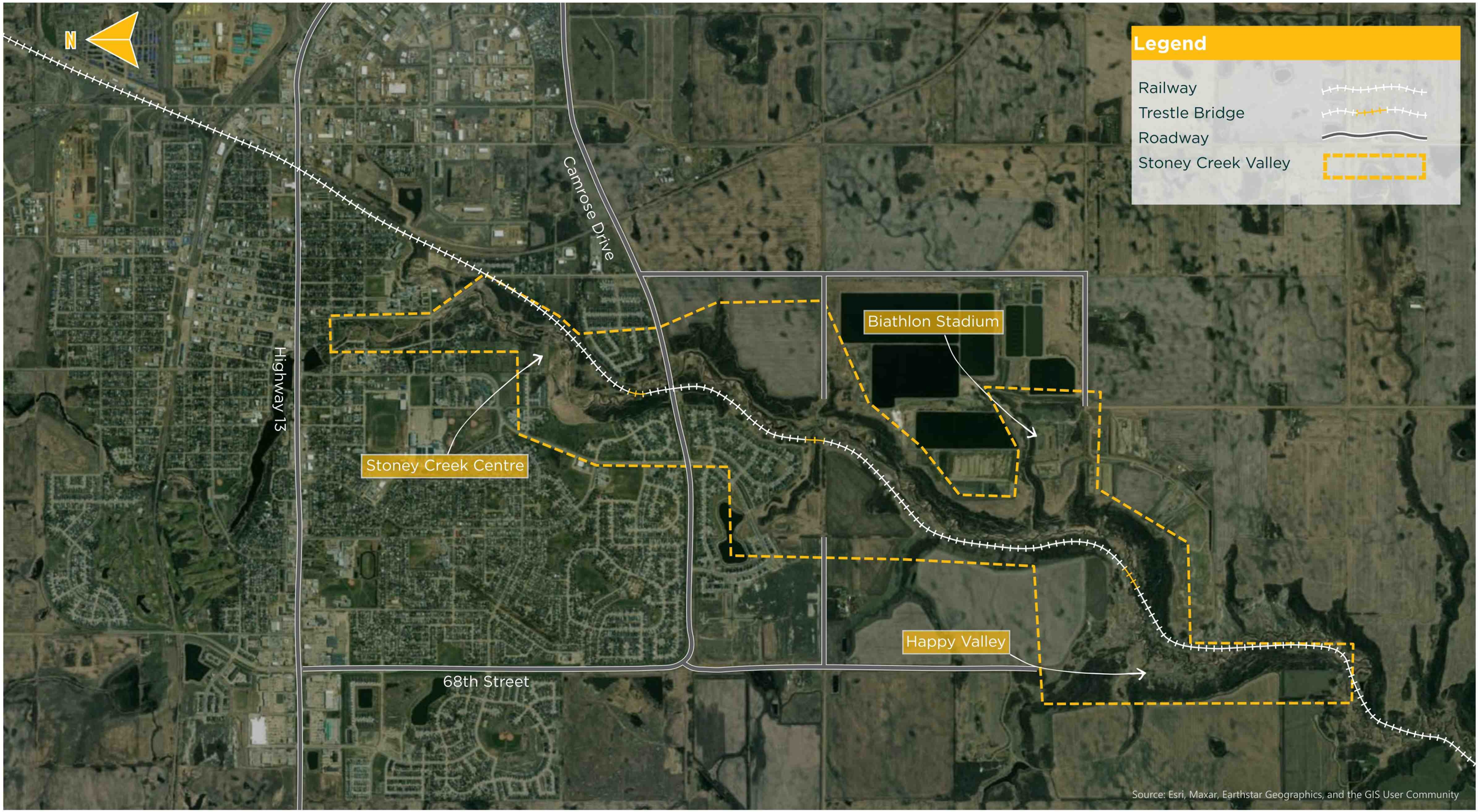
The Stoney Creek valley extends beyond the reaches of the Park both to the north and to the south. Trails in Jubilee Park and Happy Valley were both considered in the scope of this plan.

Vision Statement

The Stoney Creek valley is the natural heart of the City's park system. This large, green backbone provides a variety of trails and experiences that are accessible, safe, fun, and inclusive for outdoor recreation and nature enjoyment.

The Stoney Creek valley is recognized as the **backbone** of the Camrose green space system and can also be described as the **heart** of the outdoor recreation community.

Figure 1. Stoney Creek Valley



Plan Scope and Purpose

As illustrated in **Figure 1** this plan applies to the trails within Stoney Creek Park. The plan also provides direction on trail related infrastructure, including trailside amenities, trailheads, and bridges and other water crossings structures.

Beyond the physical characteristics of the trail system, trail user experiences, needs, and types are also considered as part of the plan formulation. Trail management relationships and staff and volunteer capacity also play a key role in recommendations. The interrelationship between these factors and the trail master plan is illustrated in **Figure 2**.

The complete trail master plan and supporting documents will deliver:

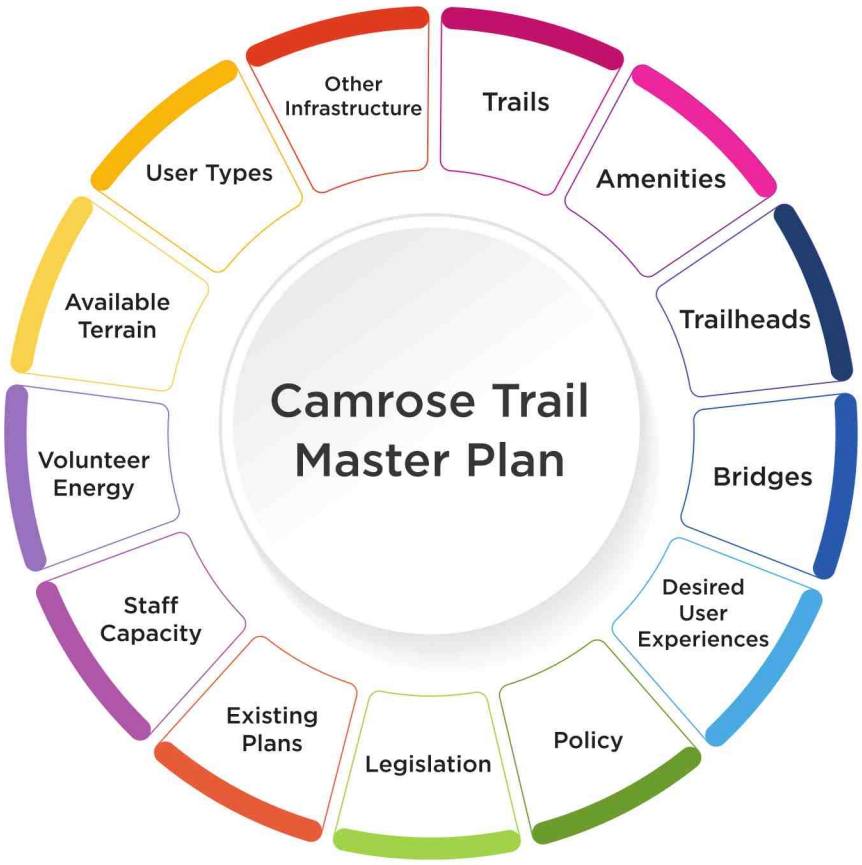
- Existing trail inventory and assessment
- Trail system design and development recommendations
- Implementation and phasing guidance.

Limitations of the trail master plan work can be found in **Appendix A**.

Following the vision and introduction, this plan is broken into seven sections:

1. Situational Review
2. Trail Inventory and Assessment
3. Community and Interest Holder Feedback
4. Trail Development Tools
5. Trail Network Recommendations
6. Trail Management Recommendations
7. Implementation Strategy

Figure 2. Camrose Trail Master Plan Influences and Considerations



Plan Background

The City is leading the trail master planning process in an effort to maintain the existing harmonious relationships between users in the park, trail developers and maintainers, and the City staff. The key impetus to this plan is threefold:

1. The Camrose Ski Club (CSC) wanted professional input to trail development and management.
2. The City of Camrose would like to review and formalize management and use agreements.
3. Mountain bike trail development is occurring and is being authorized without an established trail development standard or a formal group leading the process.

Planning Process

Several precursory steps are required to establish a strong foundation for a trail master plan. These include community and interest holder engagement; review of existing plans, policies, and legislation; and professional observations, as shown in **Figure 3**.

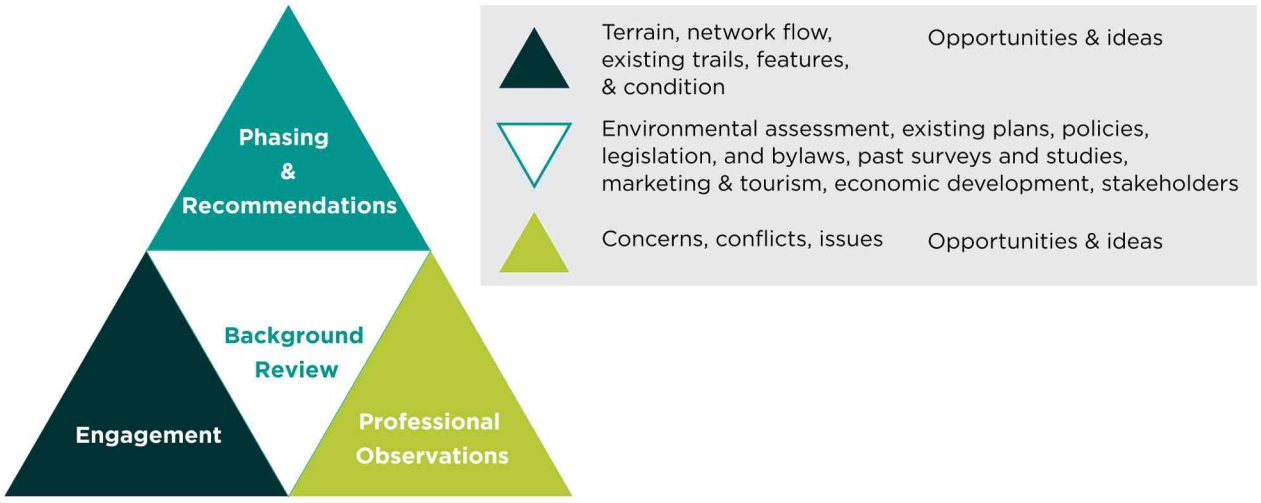
For the City of Camrose, the project team undertook a thorough background review during the early months of the planning process. This process included online research and soliciting City and CSC contacts for their knowledge on existing information. This phase's outcome was a thorough background review and the development of the project GIS database with many layers of information.

The **Inventory and Assessment Report**, **What We Heard Report** and **Community Framework** are all available as separate documents supporting this report.

Following the background review, the project team undertook community and interest holder engagement concurrently with the trail system inventory and assessment. A site visit in October involved a complete inventory and rapid assessment of all trails in the project area as well as in-person meeting with the CSC, the bike club, and a community open house. Additional virtual interviews with interest holders and city staff were held into November and an online public survey was circulated until the end of November. In January 2024, a second site visit occurred to investigate the winter use and dynamics of the trail system. Once these tasks were completed a detailed **Inventory and Assessment Report** and **What We Heard Report** were submitted to the City.

When the background review, **Inventory and Assessment Report**, and **What We Heard Report** were complete, the project team was positioned to prepare the final trail master plan. This report, and the accompanying Community Framework, is the culmination of the planning process and includes both recommendations and prioritization of future works.

Figure 3. Trail Planning Foundations



1. Situational Review

Stoney Creek Park is deeply connected to the surrounding City park system as well as trail networks on private land. Various already-completed plans, policies and legislation also apply to Stoney Creek Park and must be considered in the planning process.

1.1 Regional Context

Entrance points to the Stoney Creek Valley are concentrated within the City of Camrose, although the trail system extends south into Camrose County crossing private land at some points. While the scope of this plan is bounded in the City-managed Stoney Creek Park, this plan's recommendations were made with awareness of trail connectivity beyond the City and park context to ensure holistic trail system development. Further, there are several opportunities outlined in both this plan and the Community Framework that embrace the Stoney Creek Valley as a comprehensive recreation opportunity and identify opportunities outside of the City's limits.

1.2 Relevant Plans and Policy

Table 1 outlines the contents and implications of plans and policies that influenced the development of this trail master plan.

Table 1. Relevant Legislation, Plans, Polices, and Other Documents

Policy / Plan	Description	Implication
Transportation Master Plan (City of Camrose, 2019)	This plan provides a long-term vision of the transportation network in Camrose and how that network will support the transportation of goods and people throughout the City. The plan also provides recommendations to solve several specific transportation issues experienced in the City at the time of writing. The active transportation vision discussed in the plan incorporates ideas for pedestrian and cycling transportation via sidewalks and a network of both paved and unpaved trails.	The Stoney Creek Park trail system, and adjacent Mirror Lake trails, are recognized in the plan as an extensive network of trails that cater to a variety of users for recreation and commuting. Wayfinding signage is identified as a significant gap in Camrose trail networks overall, despite the extensive connectivity of significant destinations via trails.
Landscape Design Standards (City of Camrose)	These standards provide cross section drawings detailing the standards for numerous features that may be installed in natural areas. Standard drawings include asphalt trails; vinyl, chain-link, and cedar fencing; and tree and shrub installation and staking.	There are no standard drawings for natural surface trails of any width. Standard drawings for other typical trail amenity features such as benches, waste receptacles, and signage are not included in the City's Landscape Design Standards.
Green Space Master Plan (City of Camrose, 2014)	The Green Space Master Plan provides guidance to the future development and maintenance of green spaces within the City of Camrose to ensure a unified direction forward that achieves social, environmental, cultural, and, economic goals.	Trails, and the Stoney Creek Park, are discussed several times in the plan. The plan reinforces the importance of continual protection of the Stoney Creek Valley as Camrose grows and development continues. Recommendations pertaining to Stoney Creek Park include: the addition of green space nodes outside of Stoney Creek Park to provide green space destinations outside the park; reclassification of the park from green space to a natural area; and provision of additional paved trails in the park and shale trails where gaps exist. Noted gaps include connection to western Camrose, which is currently served by only one paved trail. The plan specifically includes a recommendation for the City to support the Ski Club in improving summer accessibility of the Stoney Creek Park trail network. Another specific recommendation of the plan is to improve the signage within the cross-country ski trail network. Other trail amenities such as seating and waste receptacles are also suggested. The Working With Walkability Initiative was addressed in the plan and discussed how green spaces, such as Stoney Creek Park, can contribute to increased walkability and bikeways.
Regional Recreation Master Plan (City of Camrose, 2019)	This plan acknowledges the value of public recreational services in the City of Camrose and Camrose County. The purpose of this plan is to analyze current and future planned recreational services and to provide a vision for future public investment in recreation services and service delivery. The 2019 value of indoor and outdoor recreational facilities in Camrose exceeded $170 million and the plan's engagement participants unanimously agreed in the community benefits of recreational opportunities.	As part of the Regional Recreation Master Plan, a needs assessment was completed for the outdoor recreation infrastructure in Stoney Creek Park. The assessment gives recommendations to enhance, maintain, or decrease service levels and facility offerings within Stoney Creek Park based on needs and public demand. The overall recommendation for the mountain biking and cross-country skiing trails within Stoney Creek Park was to maintain existing amenities, rather than decrease or enhance them. These amenities were ranked as mid-level priority in the context of all recreation services for maintenance and allocation of resources.

Policy / Plan	Description	Implication
Heritage Management Plan (City of Camrose, 2021)	This plan provides policy and tools for the management of the abundant heritage sites and resources in Camrose, as well as guidance for heritage program development. Through analysis of past heritage management, the extensive heritage program in Camrose, and a values-based approach to heritage resource identification and management, the plan makes specific recommendations to renew the vision and direction of the program.	No specific assessment or recommendations are included in the plan, except for reference to the 2014 Green Space Master Plan, where Stoney Creek Park is identified as a natural heritage resource.
Camrose Community Report (Walkable Alberta, 2012)	Walkable Alberta improves walkability and encourages citizens to walk more often. In 2012 the community report provided several recommendations to improve the walkability of Camrose.	Key findings in the report are centered around providing better walkways to get around urban areas. Accessibility and connectivity are key highlights, paired with improvements in wayfinding, so that the most accessible routes are easily navigable.
Animal Control Bylaw (City of Camrose)	The Animal Control Bylaw outlines Off-leash Zones in and around Stoney Creek Park.	*The Summer Off-leash Area* map designates Stoney Creek Valley south of Camrose Drive as a dog off-leash area when it is snow-free. No winter off-leash dog areas are currently specified in Stoney Creek Park.
Occupiers' Liability Act (Alberta, 2000)	The Occupiers' Liability Act outlines the duty an occupier of a premises owes to visitors of the premises.	**Section 6.1** outlines the occupiers' liability to recreational users. Recreational users are owed the same duty as a trespasser unless the user has paid a fee. This amendment was added to promote the development of recreation trails on private land.
Trails Condition Assessment Report (TetraTech, 2019)	TetraTech performed an assessment of all the paved trails within the City. This included 25km of paved trail and 3.6km of concrete.	Paved trails within the project area were generally rated between fair and excellent condition. Some acute instances of poor conditions were noted near Stoney Creek access from Jubilee Park and south of Camrose Drive. A continuous stretch of poor condition asphalt with one instance of very poor asphalt was noted along the upper portion of Stoney Creek Trail near the Parkview Community Gardens.

2. Trail Inventory and Assessment

The project team conducted a rapid assessment of the multiuse trail system in Stoney Creek Park in October 2023 with a subsequent follow up visit to assess the snow-season performance of the trail system in January 2024. The project team's inventory and assessment methods followed a standard procedure where staff focused on collecting or verifying trail alignments and difficulties, infrastructure points (including signage and benches), and any other observed areas of high risk, user conflict, or environmental concern. Trail and infrastructure data collected during the October 2023 and January 2024 field visits were summarized and compiled into an **Inventory and Assessment Report**.

Inventory and assessment efforts identified the trail composition of Stoney Creek Park and Happy Valley (**Table 2**), and revealed the following highlights, themes, and gaps:

- The multiuse paved trail network is sufficient.
- The multiuse natural surface trail system is deficient.
- Points of interaction between use-optimized networks cause safety and management challenges.
- The cross-country ski network is generally high quality and small areas of concern have clear direction for improvement.
- The mountain bike optimized system needs work to make a cohesive network that provides skill progression and user-friendly navigation.
- The mountain bike optimized system is too small to meet future user needs.
- Happy Valley is an asset to the network in Stoney Creek Park and physical and managerial connections are desirable to formally expand recreational opportunities. There is particular interest in natural surface, remote multiuse, and mountain bike optimized trails.

Table 2. Stoney Creek Valley Trail Composition by Trail Type

Trail Type	Stoney Creek (km)	Happy Valley (km)	Total Distance (km)
Multiuse Paved	8.9		8.9
Multiuse Natural Surface	3.1	14.3	17.4
Cross Country Ski Optimized	19.9		19.9
Mountain Bike Optimized	7.7	1.1	8.8
Total Distance (km)	39.6	15.4	55

3. Community and Interest Holder Feedback

Gathering feedback from the community and interest holders to guide the development of the trail master plan was a critical early step in the planning process.

Several engagement activities were hosted, including:

- Public online survey and interactive map
- Public open house
- In-person focus groups with CSC and mountain bike representatives
- Virtual interviews with Walkable Camrose, Waskahegan Trail Association, Happy Valley, and City of Camrose staff

The engagement activities were well attended. More than 30 individuals joined the CSC and mountain bike focus groups and there were nearly 200 online participants. The diversity and volume of responses gave the project team confidence that community interests were well represented.

Themes that came from the engagement activities include:

- The community is proud of the trail system in Stoney Creek and mostly agree that it meets the needs of the community.
- Conflict between trail users needs to be addressed:
  - Walking, dog-walking, and cross-country skiing
  - Pedestrian and cyclist use of paved trail network
- There is a desire for additional amenities within the trail system, including provision for year-round mountain bike trails, a bicycle skills park area, an enlarged disc golf course, and a safer tobogganing location.
- Wayfinding needs to be improved, including maps and signage.
- Connectivity within the trail system and to the trail system, especially from the north, was identified as an opportunity.
- Maintenance is front of mind, including major incidents such as eroding trails near the creek, and minor incidents including sweeping and sanding of paved system.
- Safety concerns, including better lighting on the trails, managing the homeless population, and litter from nearby roadways, were also raised by the community.

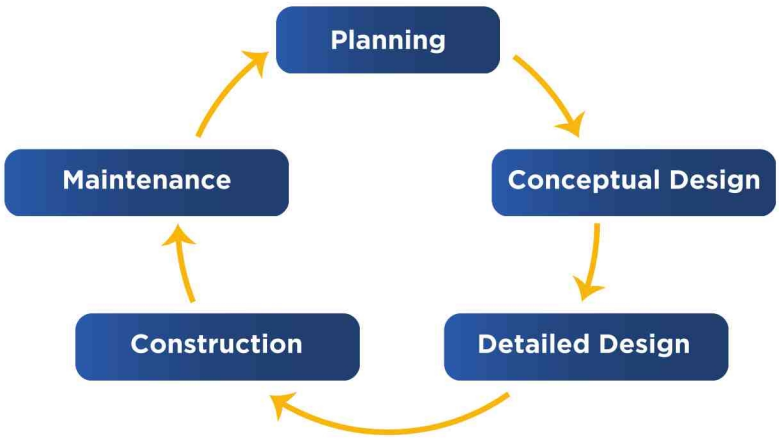
The complete **What We Heard Report** is available separately.

4. Trail Development Tools

4.1 Professional Design and Construction

Trail planning is a cyclical process (Figure 4) that may start with a bare landscape, or, in the case of Stoney Creek Park, start with a network of trails that can be improved. Each of these phases are discrete and some should not be combined.

Figure 4. The Trail Planning Process



Trail Planning

Trail planning is the process of identifying the opportunities and potential options for trails within a defined area. Trail plans provide a summary of desirable possibilities within the landscape. These considerations can then be used to assist with communication and informing next steps.

Conceptual Design

Conceptual design of a trail network combines desktop and field exercise to propose the routing of future trails. The conceptual design will lay out the proposed location and routing of the trails but will not be completely ground verified. Information such as elevation, water features, viewpoints, and vegetation is paired with the needs and desires of the community. Conceptually designed trails are close to their final configuration but should not be constructed verbatim. Concept alignments may be used for permitting or authorization processes.

The trail planning and concept design phases are often combined by experienced trail planners to provide a more complete illustration and feasibility of the completed network.

Detailed Design

Detailed design is the final design activity prior to construction. This phase of the process is almost exclusively completed in the field. Trails are grade flagged and then pin flagged, based on the trail management objectives. Trail features are identified and accommodated, including viewpoints, drainage features, and technical features and obstacles. The completion of detailed design leads to documentation that can be used to procure trail construction, including Class B or better cost estimates, drawings and specifications, accurate GIS data, and even measurement and payment clauses that could be used in contracting.

Some contractors like to combine the detailed design and construction phases by flagging the detailed trail alignment shortly before they start digging in 200m increments. This can be a more cost-effective way to procure trail construction, however, it does present risks where changes to the trail design may not always be approved by the client. Where funding permits, McElhanney typically recommends for detailed design to be separated from construction and for a construction supervisor familiar with the design to oversee the construction process.

Construction

Construction is the most exciting phase of trail development. This is when contractors or skilled volunteers complete the physical implementation of the trail. Trail design, construction, and construction oversight can often be included in one grant or project funding cycle and assigned to different contractors. Construction leads to "as-built" drawings and GIS information.

Maintenance

Maintenance cannot be avoided and should be considered throughout the planning and design process. While well planned, designed, and constructed trails require limited amounts of maintenance, none are free from maintenance. Over time trails may degrade or environmental events may impact them, leading to a refreshed trail planning and design process for re-routes or additions to networks. Things like changes in user desires (e.g., jumps and flow trails) also impact trail maintenance needs. Typical maintenance costs vary depending on the type of trail and the level of maintenance required (**Table 3**).

Table 3. Average Annual Trail Maintenance Cost Unit Rate for the Four Primary Trail Types in Stoney Creek Park

Trail Type	Annual Maintenance Cost ($/m, +/- 3%)
Multiuse Paved	2.3
Multiuse Natural Surface	2
Cross-country Ski	2.5
Mountain Bike Flow	2.5
Mountain Bike Technical	2

The City of Camrose should adopt the trail development cycle and ensure that all phases are addressed in the development or adoption of new trails.

4.2 Trail Classification

Trail classification is a multi-factor system (**Figure 5**) that classifies a trail based on a trail's type, intended mode of travel and use type, level of development, and difficulty rating. These elements provide an objective description of a trail that can be used to specify trail users and their desired experiences, as well as the trail's intended purpose.

Trail classification is an important part of trail planning and management because it allows trail managers to fully understand the trail supply and available trail experiences. Once trail classification is completed, gaps in the current trail supply, points of conflict, and consistency within a trail network can be identified and remedied.

Trail classification is often communicated in a format known as a Trail Management Objective (TMO). Each trail in a network should have a TMO, which is most often completed in a form or spreadsheet format. TMOs are the result of effective trail classification and are important for defining the purpose of a trail and the intended user experience. TMOs can be used not only for the construction of a trail, but also for the long-term management and maintenance of a trail. TMOs also provide physical design parameters such as tread width, average trail grades, clearing width, and other characteristics. These parameters provide direction to the trail builder and trail managers from construction through to trail maintenance, making sure the trail continues to meet the identified objectives.

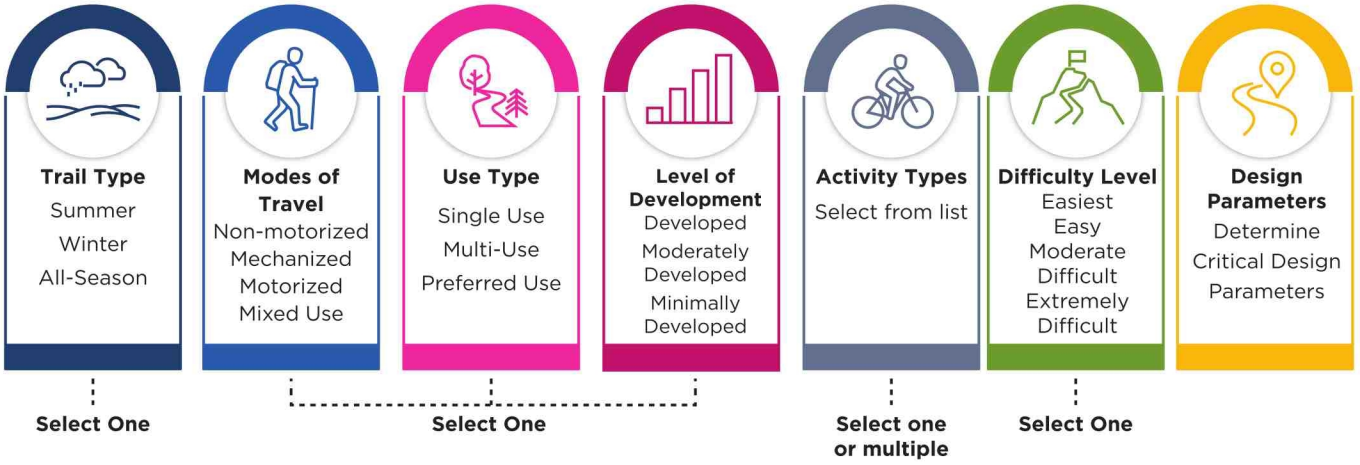
TMOs for all existing trails in Stoney Creek Park are provided in the Inventory and Assessment Report. TMOs for proposed trails are included in **Appendix B**. This detail is also reflected in the GIS layers submitted to the City with this trail master plan. **The City of Camrose should require TMO information prior to approval of new trails.**

The trail classification system culminates in trail design parameters. Design parameters are the link between trail classification and the physical design of the trail. Design parameter tables specify physical aspects of the trail so that a trail can be constructed and maintained to satisfy the designated trail classification and difficulty rating. Trail design parameters for the City to adopt are presented on pages 13 and 14.

It is important to note that the trail difficulty refers to the intended level of challenge for the typical user of the trail. Trail difficulty is a multi-faceted rating that considers factors such as terrain, trail design criteria, and technical trail features (TTFs).

Trail Classification includes identifying permitted user types, such as e-bikes or e-scooters. Typically Class 1 E-bikes are permitted on multi-use trails. Use may be restricted wtih appropriate signage and education. A Class 1 E-bike is defined as pedal assist with a maximum assisted speed of 32 km/h and maximum continuous wattage output of 500 watts.

Figure 5. Trail Classification System



Multiuse Trail Design Parameters

		Level of Challenge			
		Easiest	Easy	Moderate	Difficult
Description		Paved and accessible trail with no obstacles and minimal grade changes.	Paved, compacted or natural surface trail with few small obstacles and some grade changes.	Granular or natural surface trail with regular grade changes and some obstacles.	Natural surface trail with obstacles and grade changes. Challenges may include narrow trail width.
Clearing Limit	Clearing Width	2.0-3.0m	2.0-3.0m	1.5-2.0m	0.6-1.5m
	Clearing Height	3.0m	3.0m	3.0m	2.5m
Tread Width	Tread Width	1.0-2.5m	1.0-2.5m	1.0-1.5m	0.3-1.0m
	Structure Width (minimum width)	Tread + 0.15m each side	Tread + 0.15m each side	Tread + 0.15m each side	Same as tread
Surfacing	Surface Type	Paved	Compacted granular	Granular	Natural
	Protrusions	None	None	Occasional	Frequent
	Obstacles (max height)	Rare, max 0.15m height (e.g., bridges)	0.15m max height, no vertical steps	0.25m max height, occasional vertical steps	0.3m max height, vertical steps as required.
Grades	Target Grade	0%	0-10%	5-15%	15-30%
	Maximum Grade (short)	7%	15%	20%	35%
Cross Slope	Target Cross Slope	2-3% or crowned	2-3% or crowned	3-7%	5-15%
	Maximum Cross Slope	3%	3%	5%	10%
Turning	Target Turning Radius	1.8-2.4m	1.8-2.4m	1.2-2.4m	0.9-1.8m

Cross-Country Ski Trail Design Parameters

		Level of Challenge		
		Easy	Moderate	Difficult
Description		Wide and level trail with minimal grade changes and wide corner radii.	Level trail with moderate grade changes and varying corner radii. Few instances where tight corners are paired with steep grades. Moderate length sustained climbs/descents.	Level or off-camber trail with some steep grades and tight corners. Regular instances where tight corners are paired with steep grades. Longer sustained climbs/ descents.
Clearing Limit	Clearing Width	2.5-9.0m	2.0-9.0m	2.0 - 9.0 m
	Clearing Height (above average snow level)	3.0m	3.0m	3.0m
Tread Width	Tread Width	2.0-8.0m	1.5-8.0m	1.5-8.0m
		Single direction classic: 1.5 metre minimum Single direction classic/skate: 4.0 metre minimum Two direction classic: 3.0 metre minimum Two direction classic/skate: 5.0 metre minimum		
	Structure Width (minimum width)	5.0m	5.0m	5.0m
Surfacing	Surface Type	Groomed and / or track set	Groomed and / or track set	Groomed and / or track set
	Protrusions	None / rare	None / rare	None / rare
	Obstacles (max height)	None	Rare, max 0.15m height (e.g., bridges)	Rare, max 0.15m height (e.g., bridges)
Grades	Target Grade	0-5%	5-15%	5-30%
	Maximum Grade (short)	5%	20%	35%
Cross Slope	Target Cross Slope	0%	0-4%	0-4%
	Maximum Cross Slope	2%	5%	5%
Turning	Target Turning Radius	5-8m per grooming equipment	5-8m per grooming equipment	5-8m per grooming equipment

Mountain Bike Flow Trail Design Parameters

		Level of Challenge		
		Easy **	Moderate **	Difficult **
Description		Natural or hardened surfaced smooth trail with beginner level TTFs* such as berms and rollers.	Natural surfaced trail with smooth tread and TTFs such as medium-sized berms, rollers, and tabletop jumps.	Natural surfaced trail with smooth tread and frequent advanced TTFs such as berms, hip or step-up/down jumps, and rollers.
Clearing Limit	Clearing Width	2.5m	1.5-2.5m	2.0-3.5m
	Clearing Height	3.0m	3.0m	3.0m
Tread Width	Tread Width	1.2-1.5m	1.2- 2m	2.5-3m
	Structure Width (minimum width)	0.3m	0.5- 0.8m	0.8- 2.5m
Surfacing	Surface Type	Compacted mineral soil typically free from rocks or roots in the surface 0.15m, ideal soil type is “loam” on the soil triangle, with a high proportion of clay, silt, and sand.		
Grades	Target Grade	5%	8-10%	8-12%
	Maximum Grade (short)	7%	15%	35%
Cross Slope	Target	2-3%	2-5%	2-10%
	Maximum Cross Slope (in berms)	55 deg	75 deg	80 deg
Turning	Target Turning Radius	Depends on trail speed when entering the turn, 2.5-6m typical.		

*Technical trail features (TTF) are trail features constructed to increase trail difficulty or provide fun and challenge to trail users. TTFs can include jumps, drops, or obstacles and may be constructed from wood, soil, or rock.

**The orange background denotes a difficulty rating for a mountain bike flow trail as opposed to a moutain bike technical trail

Mountain Bike Technical Trail Design Parameters

		Level of Challenge		
		Easy	Moderate	Difficult
Description		Natural or hardened surfaced trail with small tread protrusions and low height obstacles.	Natural surfaced trail with occasional tread protrusions and obstacles and TTFs* such as tree roots, rock gardens, steep chutes, wood features, and small drops.	Natural surfaced trail with frequent tread protrusions and obstacles and frequent challenging TTFs such as steep chutes, rock gardens, wood features, and drops.
Clearing Limit	Clearing Width	1.2-2.5m	1.1-1.5m	1.0-1.5m
	Clearing Height	3.0m	3.0m	2.5m
Tread Width	Tread Width	1.0-1.8m	0.5-1.5m	0.2-1.0m
	Size of Berms, Jumps, and Rollers (Typical Height)	Tread + 0.15m each side	Tread + 0.15m each side	Varies
Surfacing	Surface Type	Compacted native mineral soil or hardened with imported materials.	Compacted native mineral soil with some tree roots or rocks projecting through the surface.	Compacted native mineral soil with frequent tree roots or rocks projecting through the surface.
	Protrusions	RARE, <0.1m	Common, <0.10m	Common, <0.15m
	Obstacles (max height)	RARE, <0.1m	Common, <0.30m	Common, <0.38m
Grades	Target Grade	< 5%	5-15%	10-20%
	Maximum Grade (short)	7%	15%	20% or greater
Cross Slope	Target	2-3%	2-5%	2-10%
	Maximum	5%	8%	10%
Turning	Target Turning Radius	2.5-3.5m	2.0-2.5m	1.5-2.0m
	Corner Characteristic	Flat corners or small berms.		Flat or off camber corners with obstacles.

*Technical trail features (TTF) are trail features constructed to increase trail difficulty or provide fun and challenge to trail users. TTFs can include jumps, drops, or obstacles and may be constructed from wood, soil, or rock.

4.3 Junction Design

Trail junctions are an inherent feature of any trail system with multiple loops and trail options. Junction design is a critical aspect of risk management and user safety in any trail system, particularly where there is mixed use. The type and scale of junction design is largely dependent on the recreation settings, activity types, and difficulty levels of the trails that are intersecting.

Some trail junction best practises include:

- Provide several junctions close to the trailhead for quick dispersal of users.
- Provide "junction ahead" warning signage as a last resort, for activities that travel at speed, where other slowing mechanisms are ineffective or not possible.
- Locate junctions on level ground to reduce incoming user speed. Utilize good sightlines and appropriate merge directions for all trails entering the junction.
- For minor trails approaching a major trail, have the minor trail conduct a series of turns or grade reversals to reduce user speeds approaching the major trail (**Figure 6**).
- Avoid multiple intersections located near each other. Each intersection requires signage and is a point of stopping and confusion for users. Instead align many small junctions as a single four-way or larger intersection known as a hub junction (**Figure 7**).

4.4 Bench Cut Trail Design

Proper bench cut trail design (**Figure 8**) and construction is a fundamental element of sustainable trail design. There are three primary components to an effective bench cut trail: the bench cut itself, tread out slope, and backslope. Bench cutting a trail involves removing a cut of earth from the side slope of a broadcasting it evenly downslope of the trail, using it as fill at another location, or removing it. Out slope (sometimes referred to as cross slope) refers to the slope of the trail tread itself, which should be sloping downhill to allow water to shed from the trail, rather than collecting. Backslope is the slope of the cut that is upslope of the trail tread. A proper backslope minimizes the impact of erosion and debris on the trail tread while also allowing extra space in the trail prism for trail users.

Figure 6. Slowing Minor Trail Users Where Approaching a Major Trail

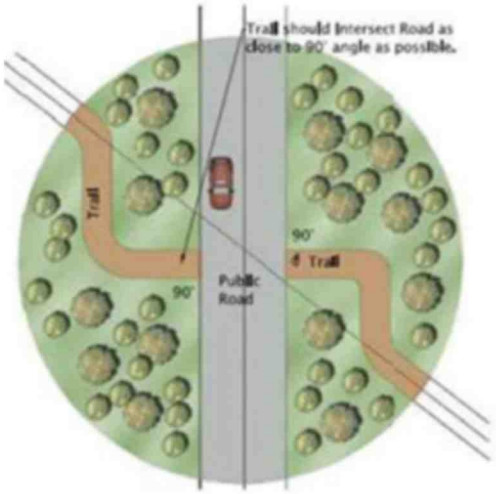


Figure 7. Typical Hub Junction (NOHVCC)

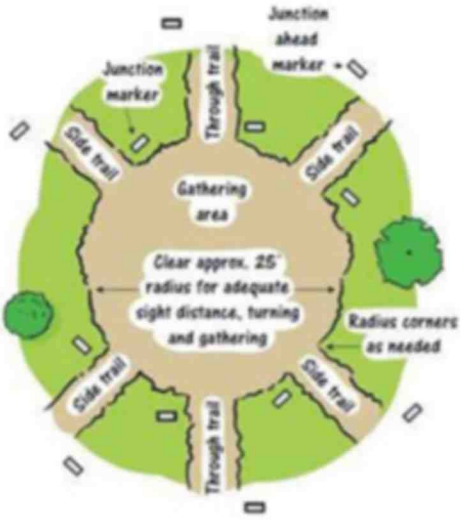
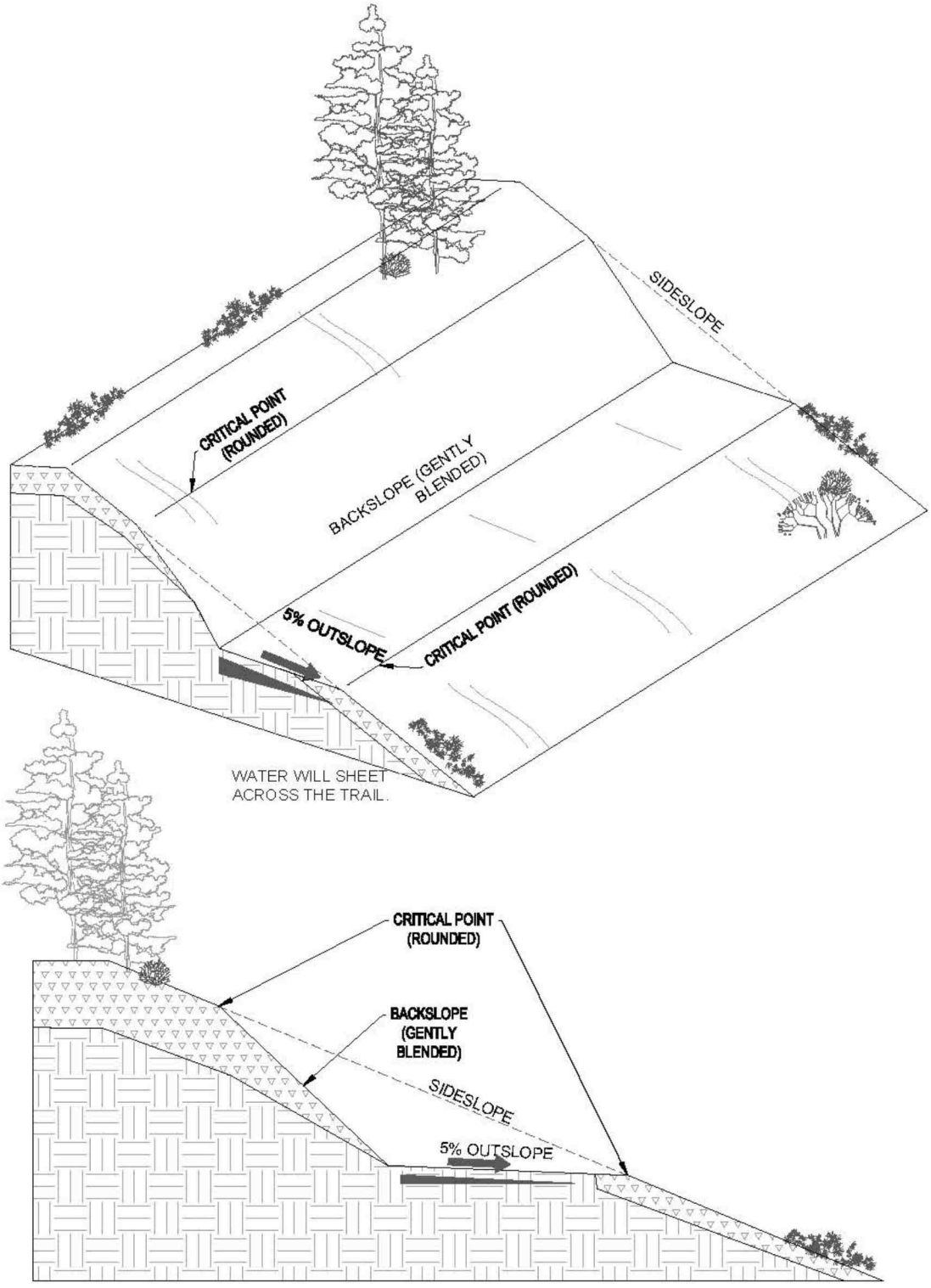


Figure 8. Bench Cut Trail Design



4.5 Trail Decommissioning

Trail decommissioning is an important and often overlooked step when trail networks are changed or improved. Proper trail decommissioning is essential in optimizing user safety, visual appearance, and ecological restoration of trails that are no longer deemed necessary. Trail decommissioning is generally divided into two levels of effort: complete decommissioning (**Figure 9**) and partial decommissioning (**Figure 10**). Both trail decommissioning efforts effectively aim to remove any visual clues of the decommissioned trail while trying to mitigate water flow and promote successful vegetation regrowth.

Trail decommissioning typically involves loosening the trail tread, replacing organics on the tread surface, and placing large logs or rocks on the trail to prevent use and provide a visual barrier. Complete trail decommissioning prescribes a further step, however, which involves replacement of soil and materials from the trail fill onto the loosened trail tread to provide a substrate for vegetation regrowth; this is typically done in rocky environments or locations where there is sparse topsoil and vegetation regrowth will not naturally occur. It may also be required where the tread of the trail is already susceptible to erosion and water will continue to erode the trail and destabilize the bank.

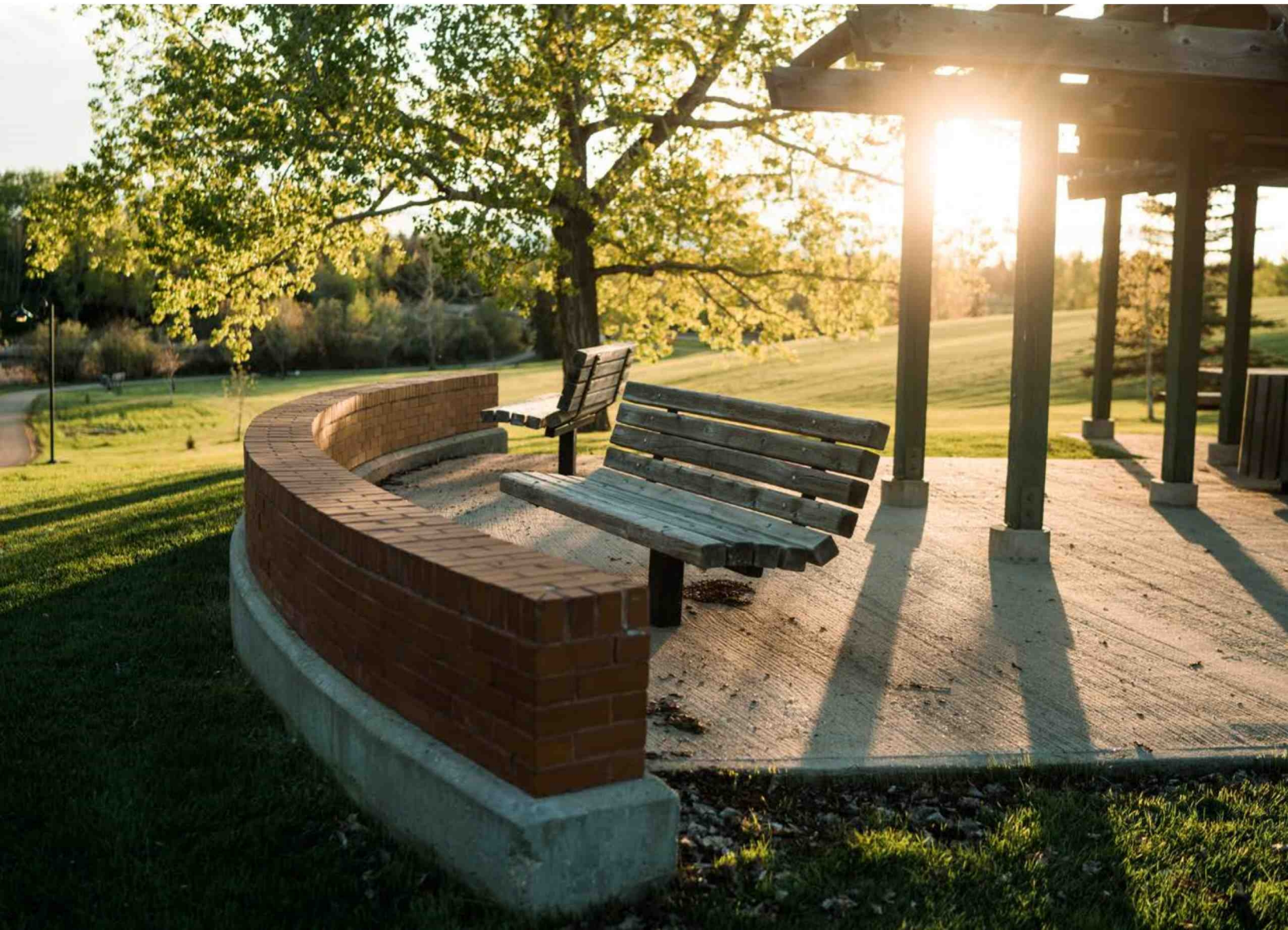
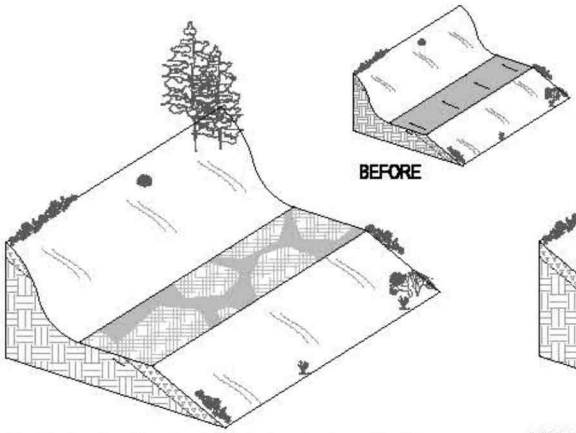
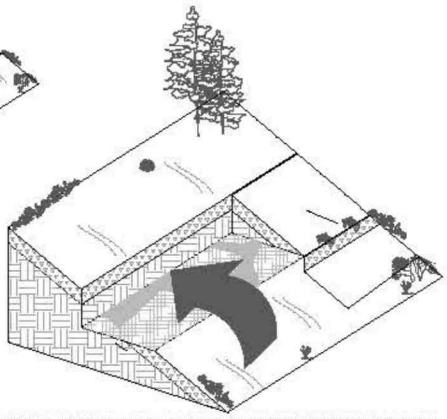


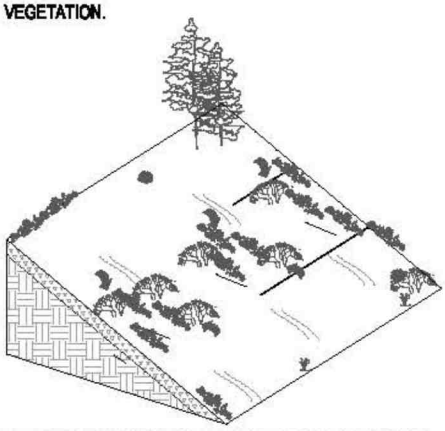
Figure 9. Complete Decommissioning



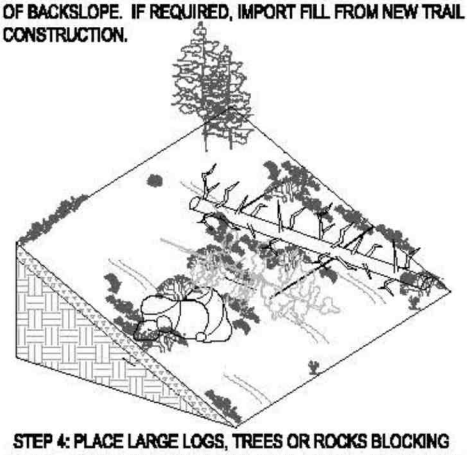
STEP 1: LOOSEN TRAIL TREAD IN A MANNER TO MINIMIZE DAMAGE TO LIVING VEGETATION AND ROOTS. MACHINE USE WILL NOT BE PERMITTED FOR TRAIL DECOMMISSIONING IF MACHINE WILL RESULT IN LOSS OR DAMAGE TO EXISTING VEGETATION.



STEP 2: IF EXISTING TRAIL TO BE DECOMMISSIONED WAS A BENCHCUT TRAIL, SCARIFY TRAIL TREAD AND MOVE MATERIAL FROM LOWER EDGE OF TRAIL UP TO UPPER EDGE OF BACKSLOPE TO BLEND IN WITH EXISTING VEGETATION AT TOP OF BACKSLOPE. IF REQUIRED, IMPORT FILL FROM NEW TRAIL CONSTRUCTION.

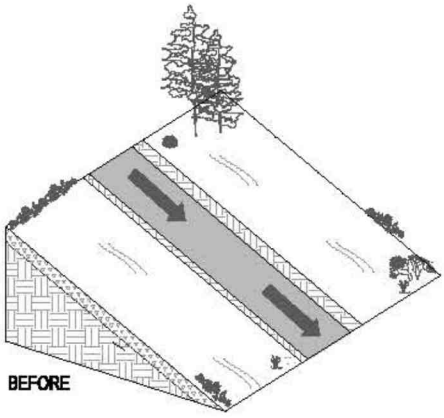


STEP 3:ADD ORGANICS FROM NEW TRAIL BUILD NEARBY (MOSS, SOD, TOPSOIL, AND VEGETATION). ORGANICS SHOULD COVER AT LEAST 70% OF THE SURFACE, 50MM DEEP OR GREATER



STEP 4: PLACE LARGE LOGS, TREES OR ROCKS BLOCKING TRAIL. ROCKS OR LOGS SHOULD BE LARGER THAN WHAT 1 STRONG PERSON CAN MOVE BY HAND

IF THE EXISTING TRAIL TO BE DECOMMISSIONED WAS CONSTRUCTED AS A FALL LINE TRAIL OR OTHERWISE CONVEYS DOWNHILL WATERFLOW, BUILD INFORMAL CHECK DAMS AND PLACE LOGS AND VEGETATION TO SLOW DOWN AND DISPERSE WATER FLOW.



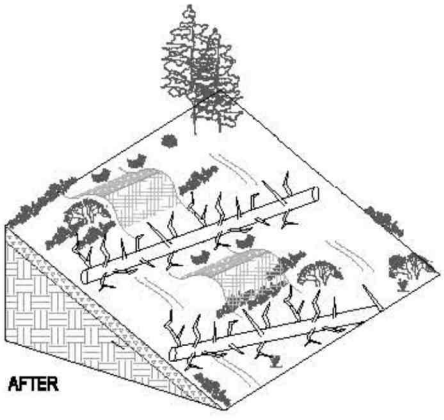
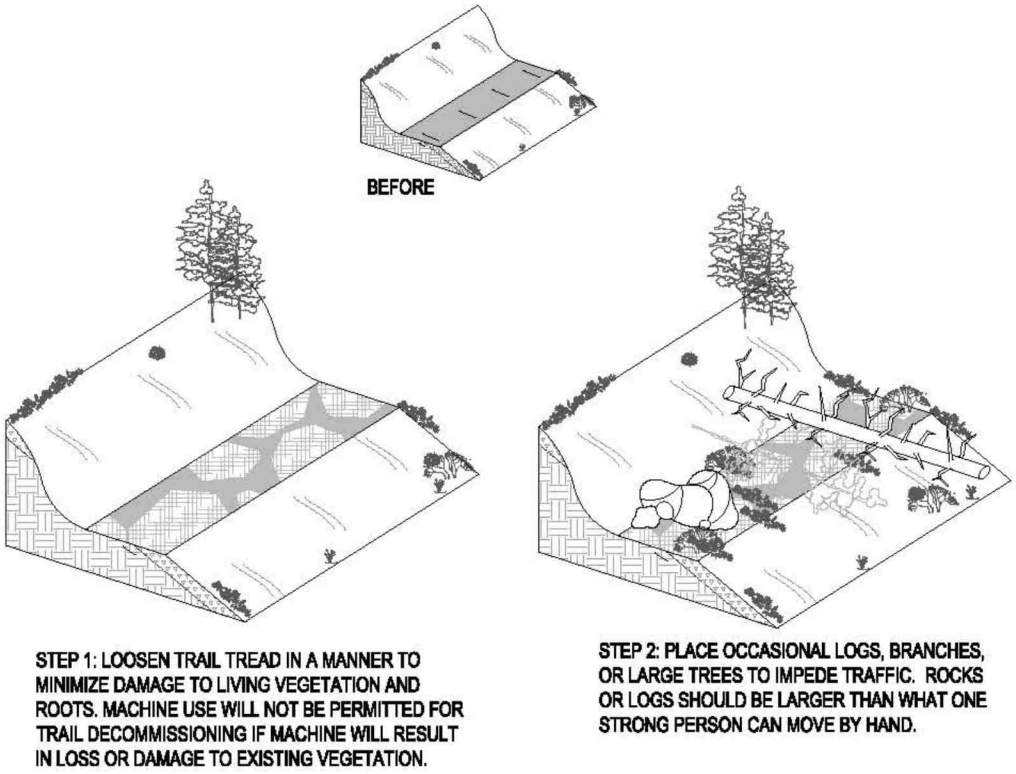


Figure 10. Partial Decommissioning



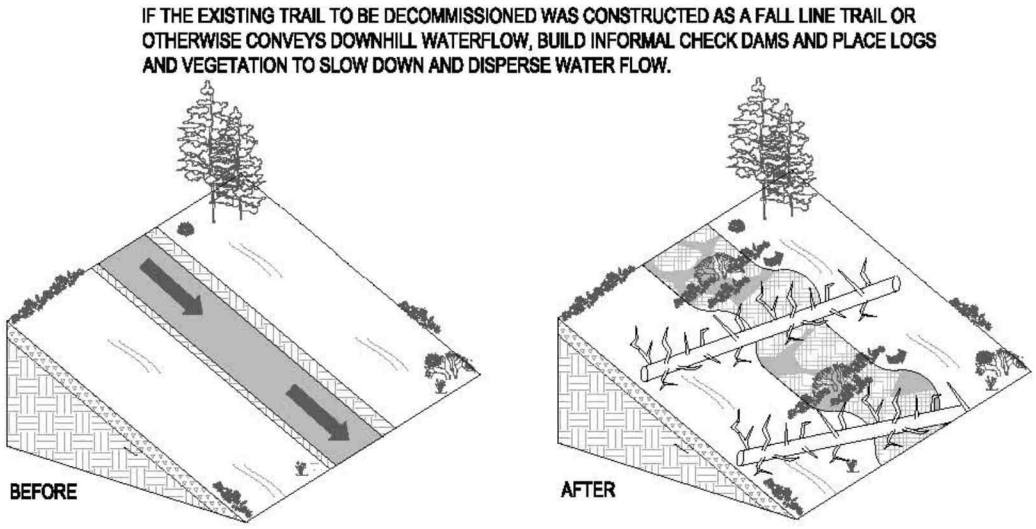
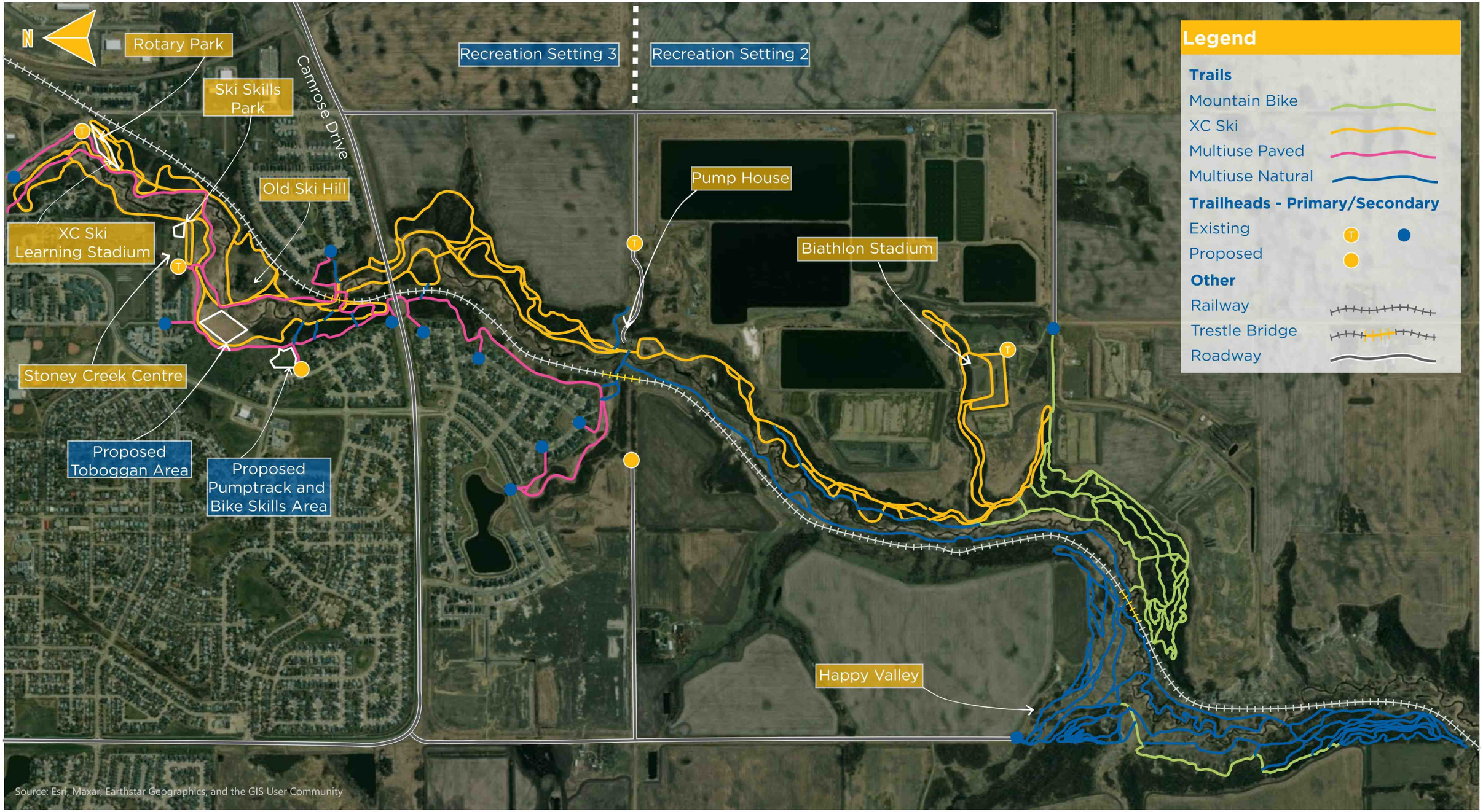


Figure 11. Trail Network Map



5. Trail Network Recommendations

5.1 Network, Trailhead, and Amenities

Recognize, Standardize, and Establish Primary and Secondary Trailheads

Primary trailheads are identified on the map (**Figure 11**) by T, indicating existing and proposed trailheads. These are also recommended within the Community Framework as primary nodes. Recognizing primary and secondary trailheads will provide basis for development of future primary nodes in City Planning

Primary trailheads are key staging areas for vehicular access to Stoney Creek Park. These trailheads are reasonably dispersed, recognizing that most users at these points will have the flexibility and ease of motorized travel. The primary trailheads are also key winter access points where more recreational equipment is required for activities within the park. For example, even users arriving to ski on foot will want a secure place to store their walking shoes and a place to sit down to change.

All primary trailheads, including existing and proposed, should be upgraded to include:

- Directory, wayfinding, and educational / interpretive signage
- Parking, including RV parking or bus access / egress
- Accessible / inclusive trails and walkways
- Washrooms, warming shelters, or facilities
- Garbage receptacles
- Access to services (water)
- Picnic Areas
- Park furnishings, features, and amenities
- Entry features to trails
- Bike racks
- Naturalization and landscape enhancements
- Camping (optional)
- Group use areas (optional)
- Commercial / retail pop-up locations or facilities (optional).

Secondary trailheads are identified as ● symbol on the map and include existing and proposed notations. As with the primary trailheads, these show up as secondary nodes in the Community Framework.

Secondary trailheads are access points for pedestrians or cyclists to Stoney Creek Park. Nearly half of park users arrive on foot, these are key relationship points between the neighbourhoods and park systems.

Secondary trailheads may include:

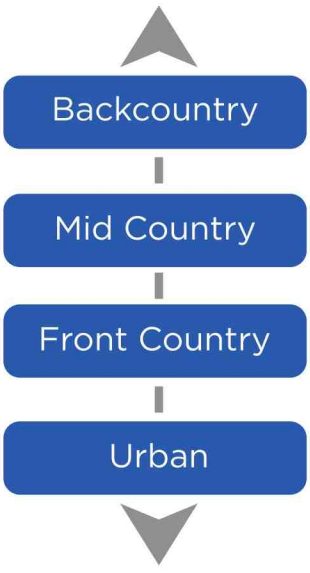
- Directory, wayfinding, and educational / interpretive signage
- Entry features
- Seat nodes
- Bike racks

Recognize Recreation Settings and Standards Within Stoney Creek Valley

Each recreation setting (**Figure 12**) within Stoney Creek Valley offers users a different combination of trail experiences and amenities. Standardization within these settings should be prioritized.

Stoney Creek Valley's various zones and areas are categorized by recreation setting in **Table 4**.

Figure 12. Recreation Settings

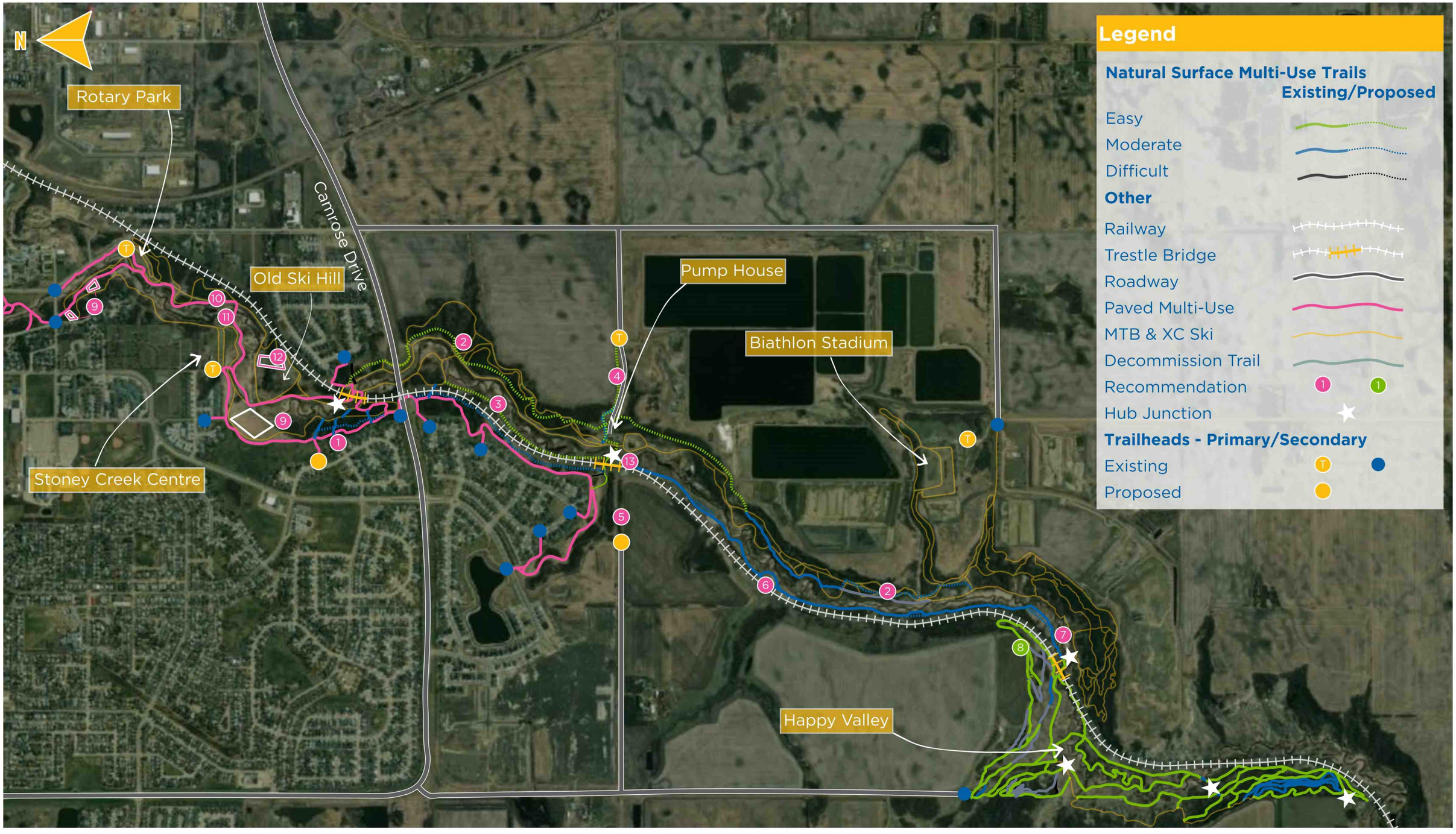


Recreation Setting	Description
1	The trail is located in a remote location and not readily accessible by vehicle.
2	The trail is located adjacent to a backcountry setting and has limited vehicle access.
3	The trail is located in a rural or setting with close proximity to a road.
4	The trail is located adjacent to an urban setting and is easily accessible by vehicle.
5	The trail is in an urban setting.

Table 4. Recreation Settings

Rec Setting	Urban (5)	Front Country (4)	Mid-Country (3)	Mid-Country (2)	Mid-Country (2)
Zone/Area	▪ Mirror Lake ▪ Jubilee Park	▪ Rotary Park to Camrose Drive	▪ Camrose Drive to Pump House	▪ Pump House to Happy Valley	▪ Happy Valley + South
Trailheads	▪ Street parking ▪ Toilet facilities ▪ Garbage cans	▪ Medium parking lots ▪ Toilet facilities ▪ Garbage cans	▪ Large parking lots ▪ Pit toilets ▪ Garbage cans	▪ Large parking lots ▪ Pit toilets ▪ Garbage cans	▪ Large parking lots ▪ Pit toilets ▪ Garbage cans
Access Points	Frequent	Frequent	Moderate	Few	Few
Trails	▪ Accessible for all users ▪ Traffic calming measures to reduce user speed	▪ Accessible for all users ▪ Traffic calming measures to reduce user speed	▪ Use optimized ▪ Traffic calming at intersections	▪ Use optimized ▪ Traffic calming at intersections	▪ Use optimized ▪ Traffic calming at intersections
Trail Types	▪ Multiuse paved	▪ Multiuse paved ▪ Multiuse natural surface ▪ Cross-country ski optimized	▪ Multiuse natural surface ▪ Cross-country ski ▪ Mountain bike	▪ Multiuse natural surface ▪ Cross-country ski ▪ Mountain bike	▪ Multiuse natural surface ▪ Cross-country ski ▪ Mountain bike
Trail Difficulty	▪ Easy – moderate ▪ Many short loop options	▪ Easy – moderate ▪ Many short loop options	▪ Easy – difficult ▪ Long loop options	▪ Easy – difficult ▪ Long loop options	▪ Moderate – difficult ▪ Long loop options
Trail Density	High	Moderate	Moderate	Low	Low
Trailside Amenities	▪ Signage ▪ Benches ▪ Activity areas ▪ Garbage receptacles ▪ Bridges (frequent)	▪ Signage ▪ Benches ▪ Activity areas ▪ Garbage receptacles ▪ Bridges (frequent)	▪ Signage ▪ Bridges (few)	▪ Signage ▪ Bridges (few)	▪ Signage ▪ Bridges (few)
Dogs	On leash	On leash	Off-leash	Off-leash	Off-leash

Figure 13. Multiuse Network



5.2 Multiuse System Recommendations

The multiuse trail system within Stoney Creek (**Figure 13**) is already well developed north of Camrose Drive. The paved trail system is functional and well connected to the rest of the trails within Camrose. The biggest weakness in the multiuse system is established and maintained natural surface multiuse trails that serve pedestrians as well as cyclists. These trails provide an important connection to nature and are an appropriate surface type for trails in non-urban recreation settings, such as south of Camrose Drive.

The project team's multiuse trail system recommendations cover five main topic areas:

5.2.1 Trail System Upgrades

1. Develop multiuse natural surface trail from community garden to Camrose Drive to support connectivity from future primary trailhead to southern mountain bike trail system.
2. Develop multiuse natural surface trail on east side of valley from Train Trestle / Camrose Drive. This trail will provide important loop connectivity to Old Timer for pedestrians as well as providing connection to the mountain bike optimized network.
3. Develop multiuse natural surface trail on west side of valley from Train Trestle / Camrose Drive to pump house.
4. Develop multiuse natural surface east-west trail from trailhead on Township Road 464 (east) to Pump House.
5. Develop multiuse natural surface east-west trail from (new) trailhead on Township Road 464 (west) to train trestle.
6. Improve existing "Old Timer" trail to meet design parameter for "moderate" natural surface trail.
7. Improve trail connection between Old Timer and Happy Valley to meet design parameter for "moderate" natural surface trail.
8. * Reorganize (decommission and re-develop) trails at northeast end of Happy Valley to improve junctions and wayfinding. See also recommendation MTB 11.

5.2.2 Landscape Improvements

9. Plant semi-mature trees on toboggan hills or fence along trail. Focus tobogganing activities in Jubilee Park and in the new proposed area south of Stoney Creek Centre.
10. Move bench on east side of Stoney Creek north of Stoney Creek Centre to the west side of the paved trail to minimize interaction between pedestrians and skiers in winter months.
11. Widen causeway across Stoney Creek to better accommodate winter multiuse and snow removal on the paved trail. Adjust paved trail alignment. Add fencing for snow farming and better winter delineation.
12. Plant semi-mature trees on old ski hill and provide tobogganing across the way in service area.
13. Adopt bridge across Stoney Creek at Pumphouse / Township Road 464 into the multiuse natural surface trail system.

- Formally adopt and post signage to indicate off-leash dog areas. In the summer months the entire multiuse and cross-country ski trail network south of the Trestle Bridge is appropriate for off-leash dog use. In the winter months only the multiuse natural surface trails are appropriate for off-leash dog use. The high speed of cross-country skiers on the more difficult trails south of the Trestle makes combined dog / cross-country ski use inappropriate.
- Review and adopt TMO for multi-use trails, including identification of user types such as E-Bikes and E-Scooters

**Recommendations for Happy Valley trail system shown with green icon.*

5.2.3 Key Trailheads

All trailheads identified on the overview map are important for pedestrian users of the Stoney Creek Park trail system. Secondary trailheads will be used primarily by pedestrians. Primary trailheads will be used by a mixture of pedestrians, active transportation, and vehicles. Bike racks at trailheads will encourage cycle commuting to and from the park.

5.2.4 Recognize, Standardize, and Establish Hub Junctions in Trail System

Hub junctions, or "tertiary nodes" in the Community Framework, are key intersections and / or rest stops along the trail system. These hubs are often key decision points for trail users where they decide to turn back with a loop option or continue further to a longer loop. Seating opportunities should be provided every 500m in developed recreation settings to promote accessibility and inclusivity. Hub junctions are denoted by ★ symbol on the map.

These junctions should include:

- Wayfinding signage (maps and signs)
- Educational / interpretive signage
- Seating (optional in more remote settings)

5.2.5 Recommended Loops and Routes

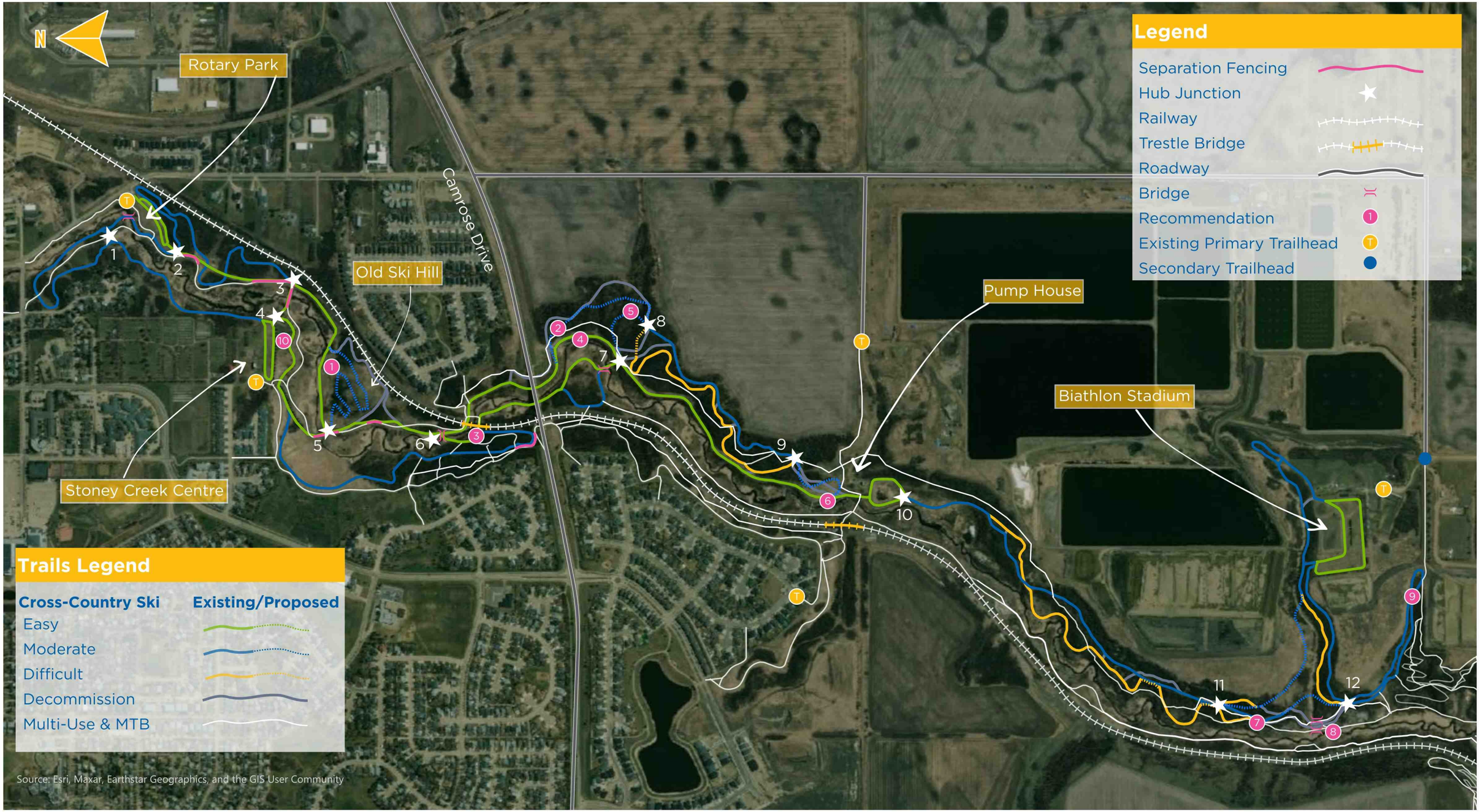
While the multiuse trail network can be navigated in any configuration, provision of recommended loops or routes provides new users with an easier introduction to the trail system.

Table 5 outlines recommended routes and loops within Stoney Creek Park.

Table 5. Recommended Routes and Loops (Multi-use Trails)

Easiest	Stoney Creek Trail (paved)	The Stoney Creek Trail is the main paved artery through Stoney Creek Park from Jubilee Park to the Trestle Bridge north of Camrose Drive. This trail is generally flat and evenly surfaced with regular rest nodes. Near the Stoney Creek Centre the "Stoney Creek Park Loop" can be added for more challenge by way of elevation changes.	3.0-4.5km
	Stoney Creek Trail with Stoney Creek Park Loop and Valley View Trail (paved)	Off-shoots of the core Stoney Creek Trail include the "Stoney Creek Park Loop" near the Stoney Creek Centre and the "Valley View Trail" southwest of the Trestle Bridge and Camrose Drive. These can be added to the Stoney Creek Trail for more challenge by way of elevation changes.	7.0km
Moderate	Middle Loop (proposed)	The Middle Loop will incorporate two proposed multiuse natural surface trails, one on the east and one on the west of Stoney Creek, between the Trestle Bridge and the Pump House. This loop will incorporate the natural feel of the forest and the soft tread of a natural surface trail, but the width to walk and talk with friends two-abreast.	2.8km
	Old Timer Loop (proposed / improved)	The Old Timer Loop will incorporate the existing Old Timer trail with improvements to make it double-wide on the west side of Stoney Creek from the Pump House to Happy Valley. The new proposed return trail on the east side of Stoney Creek will incorporate single track sections in wooded areas and return to the Pump House.	5.1km
	Happy Valley	Loops in Happy Valley can be added and incorporated to extend the distance of the Stoney Creek Loops or to add challenge with elevation changes.	1.0-6.0km

Figure 14. Cross-Country Ski Optimized Network



5.3 Cross-Country Ski Optimized Recommendations

The cross-country ski optimized network (**Figure 14**) is popular and heavily used by the community. The trail network generally meets the community's needs and most of the concerns and changes to the trail system relate to junction safety, minimizing trail user conflict, and improving the efficiency of maintenance programs.

The project team's cross-country ski optimized trail system recommendations cover five main topic areas:

5.3.1 Trail System Upgrades

1. Develop new moderate cross-country ski optimized trail across old ski hill. Decommission existing difficult trail alignments.
2. Develop new moderate cross-country ski optimized trail south of Camrose Drive, connecting to Middle 7.5km. Decommission existing difficult trail alignment.
3. Investigate separating paved trail and cross-country ski optimized trail under trestle on west side. This will require permission from railway to cut another opening in the trestle to divide traffic.
4. Repair slumping Rotary Trail south of Camrose Drive. This repair requires an engineering solution for bank stabilization, most likely rip-rap or similar. If repair is not possible, consider re-routing trail further east into bank and upgrading difficulty to moderate.
5. Adjust trail junction to improve safety. Construct new moderate route with grade reversal before junction and from Upper 7.5km to Rotary Trail. Decommission two existing connector trails. Construct new connector for Middle 7.5km to hub junction.
6. Adjust trail junction for safety. Establish hub junction at south end of Middle and Upper 7.5km. Decommission existing directional trails to Rotary Trail. Construct new moderate two-directional trail between upper trails and Rotary Trail.
7. Address ice flow at top of Double Bridge Hill. In areas where seeps, springs, or slow-moving water create thick ice layers in the winter, the solution is to make the water move faster so it does not layer and thicken. This can be done by increasing grades or creating deep V ditches that accelerate water flow. In this particular location the suggestion is to deepen the watercourse into the trail intersection and then stack two smaller culverts on top of each other, with reasonable grades, to help the water exit across the trail.
8. Decommission bridges at Double Bridge. Realign existing trails to provide an moderate two-direction trail to the hub junction at the bottom of Heartbreak Hill and an moderate west-only directional trail from Biathlon. Bridges or crossing structures will be required on both trails. Investigate potential for ford or armoured crossing, given winter use of trails.
9. Install culvert at top of Heartbreak Hill to divert water across trail. Add water breaks in upslope ditch along Heartbreak Hill to prevent erosion and water on trail tread. Widen trail to minimum one-way classic / skate parameter.

5.3.2 Landscape Improvements

10. Improve ski playground. Utilize snowmaking capabilities and / or enhanced grooming equipment to mould snow, rather than earthwork.

- Review and formalize all bridges as they reach end of life.
- Install fencing between paved and cross-country trails where winter encroachment of maintenance causes issues. Shown on map with ~~
- Upgrade light standards for night skiing.
- Install snowmaking system at Stoney Creek Centre to service trails between Stoney Creek Centre and Rotary Park.
- Update trail difficulty ratings throughout system to match new trail classification.
- Name cross-country ski trails as segmented in the maps by difficulty. Consider using a blaze or colour theme to recommend loops as presented.

5.3.3 Key Trailhead Identification

As a minimum these trailheads should provide parking, heated toilet facilities and / or gathering areas, and secure storage.

Important winter trailheads are identified as:

- Four Seasons Rotary Park: important trailhead for beginner skiers and pedestrian visitors coming from Augustana.
- Stoney Creek Centre: primary club and cross-country competition venue
- Township Road 463 (East): biathlon competition and training venue

5.3.4 Recognize, Standardize, and Establish Hub Junctions in Trail System

Hub junctions, or "tertiary nodes" in the Community Framework, are located key intersections and / or rest stops along the trail system. These hubs are often key decisions points for trail users where they decided to turn back with a loop option or continue further to a longer loop. Seating opportunities should be provided every 500m in developed recreation settings to promote accessibility and inclusivity. Hub junctions are denoted by ★ on the map.

These junctions should include:

- Wayfinding signage (maps and signs)
- Educational / interpretive signage

5.3.5 Recommended Loops and Routes

While the cross country ski optimized trail network can be navigated in numerous configurations, provision of recommended loops or routes provides new users with an easier introduction to the trail system.

Table 6 outlines recommended routes and loops within Stoney Creek Park.

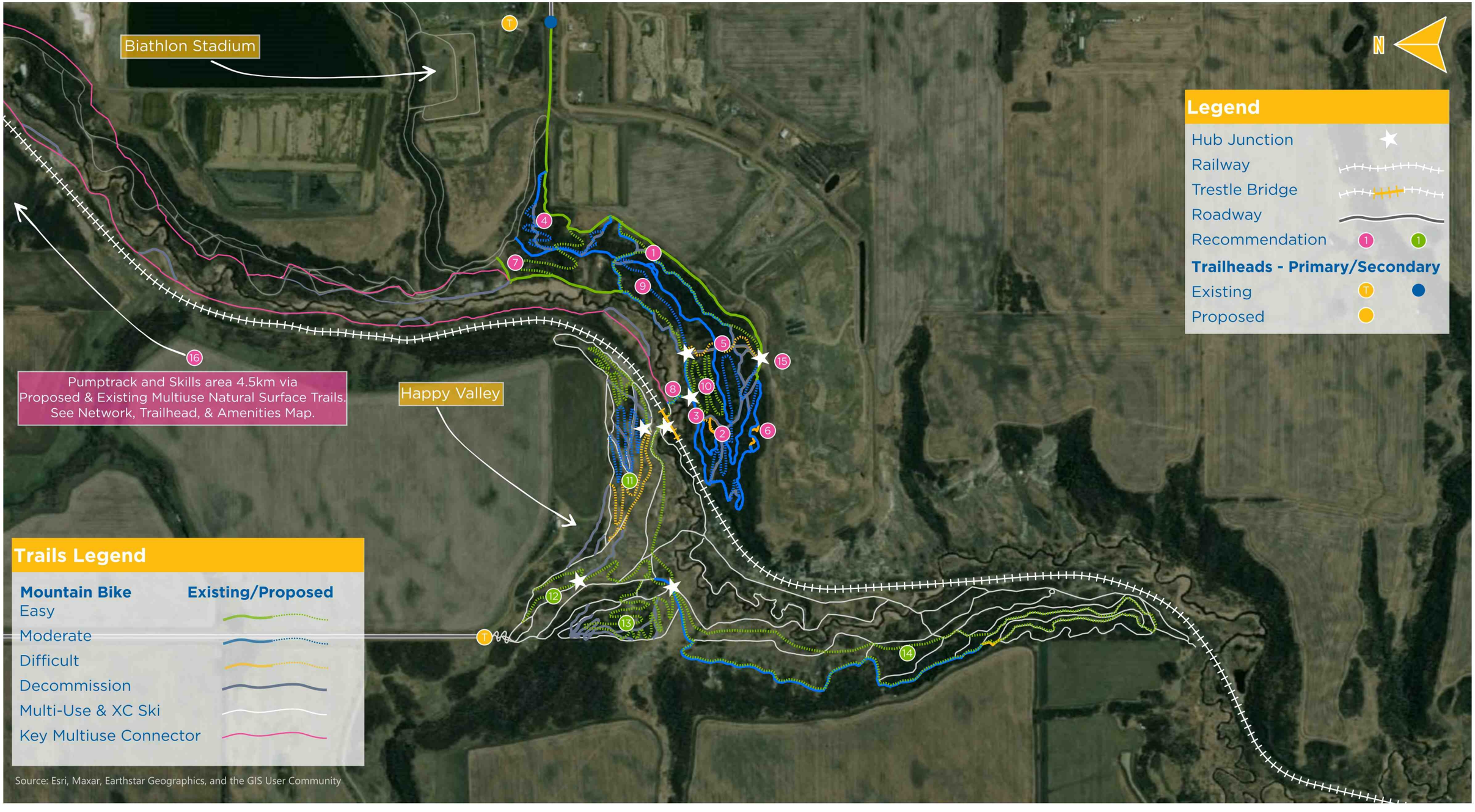
Table 6. Recommended Routes and Loops (Cross-Country Ski Optimized)

Easiest	Rotary Trail Mainline	Starting at Rotary Park, ski south on Rotary Trail until it's time to turn around. The furthest point on the Rotary Trail is the Pump House.	3.5km one-way 7.0km round-trip
	Rotary Trail with Stoney Creek Centre Trail Loop	Starting at Rotary Park, ski south on Rotary Trail to Junction 5 and return in a short loop via the Stoney Creek Centre Trail. The Stoney Creek Centre Trail adds some minor challenge with elevation changes.	2.3km
	Rotary Trail with Rotary Trail North Loop	Starting at Rotary Park, ski south on Rotary Trail to Junction 7 and return in a short loop via the Rotary Trail North Loop and Stoney Creek Centre Trail. The additional loops add challenge with distance and elevation changes.	4.5km
Moderate	North Loop	Starting from Stoney Creek Centre, ski the North Loop and return directly to Stoney Creek Centre.	2.5km
	Western Blue	Starting from Stoney Creek Centre, ski east to the Rotary Trail and then south to the Rotary Trail North Loop. Deviate from the Rotary Trail North Loop to return on the Western Blue.	4.4km
	Upper Connector	Starting from a location of your choice, access the Upper Connector Trail just south of Camrose Drive. Ski south on the Upper Connector and return via Rotary Trail or vice versa.	2.0km+
	Northern Blue Combinations	Starting from Stoney Creek Centre, the North Loop, Upper Connector, and Western Blue can be skied in a clockwise direction (or counterclockwise in reverse order) to provide a longer, moderate level experience.	8.7km
	South Artery, Heartbreak Hill, and Biathlon Loop	From the end of Rotary Trail, or starting from the Biathlon area, Heartbreak Hill, Biathlon Loop and South Artery (two-way) can be skied in a loop formation in a counterclockwise direction. Note the directionality of Heartbreak Hill and Biathlon Loop.	4.6km
Difficult	Middle 7.5 km	This more difficult trail parallels the Upper Connector and Rotary Trail and may be skied as an option to the Upper Connector, but only in a southward direction. A more challenging loop from Stoney Creek Centre would be to ski south on the Middle 7.5km and return on the Upper Connector.	4.5km
	South Loop	Heading south from the end of Rotary Trail, South Loop can be skied in a southward direction toward the Biathlon Area as an alternative to the South Artery. The South Artery can provide the return option.	2.7km
	Biathlon	Starting from the Biathlon Range, the Biathlon Loop, Biathlon Descent, and Heart Break hill provide a challenging loop option	3.4km

Grooming and Mowing Map:

A map with proposed grooming and mowing routes is provided in **Appendix C**.

Figure 15. Mountain Bike Optimized Network



5.4 Mountain Bike Optimized Recommendations

The mountain bike trail network (**Figure 15**) is a recently developed and generally uncoordinated series of trails at the south end of Stoney Creek Park and Happy Valley. While the network is diverse and interesting the lack of planning has caused difficulties for navigation, inconsistencies in flow, and trail tread sustainability concerns. Recommendations for improvement include ways to make the network more accessible and usable in the winter months, more fun and sustainable, and inclusive of beginner riders. The multiuse natural surface trail recommendations support access to the mountain bike network as well.

The project team's mountain bike optimized trail system recommendations cover five main topic areas:

5.4.1 Trail System Upgrades

1. Rebuild Classic Trail and Traverse trails as a easy difficulty to provide more easy options and easier winter use.
2. Decommission Bonus (already severely damaged by erosion).
3. Improve Spring Fling Alt (open up corridor and complete earth works). Revise alignment so trail links up with Spring Fling / CN Junction.
4. Make Silverback one way (north to south) only.
5. Construct an overpass bridge for Lumberjack to cross above 5 Peaks to provide a safe junction across the high-speed trail.
6. Replace decaying wooden features on Lumberjack and Oscar feature lines and replace with soil or rock features / jumps.
7. Develop new easy trail on the northeast end of the mountain bike network will provide an uphill route for fatbike users in the winter rather than using Heartbreak Hill.
8. Develop a new easy loop for beginner riders accessing trails from west side of the mountain bike network.
9. Develop a new moderate trail to provide connectivity throughout the lower portion of the mountain bike network.
10. Replace bridge access from Old Timer to mountain bike optimized network and ensure snowmobiles can cross for fatbike grooming.
11. * Develop series of flow trails below on slopes at northeast end of Happy Valley. An easy, moderate, difficult stacked loop system is proposed, with an easy climb to access all flow options. Decommission existing trails, except East Loop, Little Loop, and Emmy's way, which will be preserved for pedestrian uses. See also recommendation MU 8.

    Develop an easy flow trail from existing trail access point at end of Range Road 204a with an easy climb return.
12. Optimize trail network in northwest corner of Happy Valley to have one multiuse loop, a mountain bike climb, and a flow or technical descent with a single multiuse trail on the periphery.
13.
14. Develop one core mountain bike optimized loop that "circles" Happy Valley (summer and winter use, with added difficulty options). Add a moderate/difficult technical descent near Hailey's Hoodoos. Reconstruct Ross' Ridge to improve mountain bike ride quality and optimize for northward riding.
15. Redesign 5 Peaks trail to provide a safe and fun difficult downhill trail to replace the current fall-line alignment.

** Recommendations for Happy Valley trail system shown with green icon.*

5.4.2 Landscape Improvements

16. Develop mountain bike skills park and pump track at Parkview Park south near community gardens.

- Complete earthworks on all trails to improve tread, remove stumps, increase clearing width, and ensure trails meet difficulty appropriate physical design parameters.
- Revise trail alignments (decommission and redevelop) wherever necessary to ensure trail appropriate turn radii and trail grades are met as described in trail design parameters and to improve trail junction design and safety.

5.4.3 Key Trailheads

Many of the primary and secondary trailheads in Stoney Creek Park will be used by mountain bikers to access the trail system if they're riding from other locations in Camrose to the mountain bike network. No special accommodations are required for visitors arriving on bike.

The following trailheads are identified as key locations where visitors will arrive by vehicle or meet to start a ride. These locations should have amenities outlined for primary trailheads:

- Township Road 463 (East)
- Township Road 464 (East) - Current
- Township Road 464 (West) - Future
- Parkview Drive / Community Garden - future location of bike skills park.

5.4.4 Recognize, Standardize and Establish Hub Junctions in Trail System

Hub junctions, or "tertiary nodes" in the Community Framework, are located at key intersections and/or rest stops along the trail system. These hubs are often key decisions points for trail users where they decided to turn back with a loop option or continue further to a longer loop. Seating opportunities should be provided every 500m in developed recreation settings to promote accessibility and inclusivity. Hub junctions are denoted by ★ on the map.

These junctions should include:

- Wayfinding signage (maps and signs)
- Educational/interpretive signage

5.4.5 Recommended Loops and Routes

While the mountain bike optimized trail network can be navigated in any configuration, provision of recommended loops or routes provides new users with an easier introduction to the trail system.

Table 7 outlines recommended routes and loops within Stoney Creek Park.

Table 7. Recommended Routes and Loops (Mountain Bike Optimized)

Easiest	West Green Loop	A small green loop accessed immediately after crossing Stoney Creek from Old Timer to provide an introduction to beginners in the network.	550m
	CN Traverse Loop	A green loop that travels through the network, adding some elevation for riders to climb and descend. Allows riders to experience forested singletrack.	2.4km
	Stoney Creek East Loop (proposed)	Easily accessible green loop from the east end of the network with climbing, descending, and singletrack.	1.5km
	Happy Valley East Flow (proposed)	Users will climb the proposed Stoney Creek East Loop to access the proposed Happy Valley East Flow that returns to the start of the climb. This is an easy-to-lap loop with a rewarding downhill.	800m
Moderate	Silverback Loop	A fun and flowy short downhill loop accessed from the east end of the network along the upper edge of the valley followed by a short climb back up to the valley edge that can be lapped repeatedly.	1km
	Classic Oscar Loop	From the west end of the network users will climb up Classic to access Oscar where they will have a fun and twisty singletrack descent through the forest.	1.0km
	Classic Spring Fling Loop	From the west end of the network users will climb up Classic to access Spring Fling where they will have a fun and twisty singletrack descent through the forest.	900m
	Happy Valley East Flowier (proposed)	Users will climb the proposed Stoney Creek East Loop to access the proposed moderate “Happy Valley East Flowier” that returns to the start of the climb. This is an easy-to-lap loop with a rewarding downhill.	1.6km
	Happy Valley Outer Limits	A cross-country style loop designed to be ridden clockwise that takes users across the entire extent of Happy Valley. Loop can be made longer by connecting with one of the Happy Valley flow loops.	3.5km
Difficult	Classic 5 Peaks Loop	From the west end of the network users can climb Classic to access 5 Peaks where they can ride a high speed and flowy downhill and then return to Classic. This is an easy and rewarding loop to lap.	750m
	Stoney Creek Ultra Loop	This loop will take riders along the outermost periphery of the mountain bike trail network providing a longer and more challenging loop.	3.2km
	Happy Valley East Flowiest (proposed)	Users will climb the proposed Stoney Creek East Loop to access difficult Happy Valley East Flowiest that returns to the start of the climb. This is an easy-to-lap loop with a rewarding downhill.	2.5km

6. Trail Management Recommendations

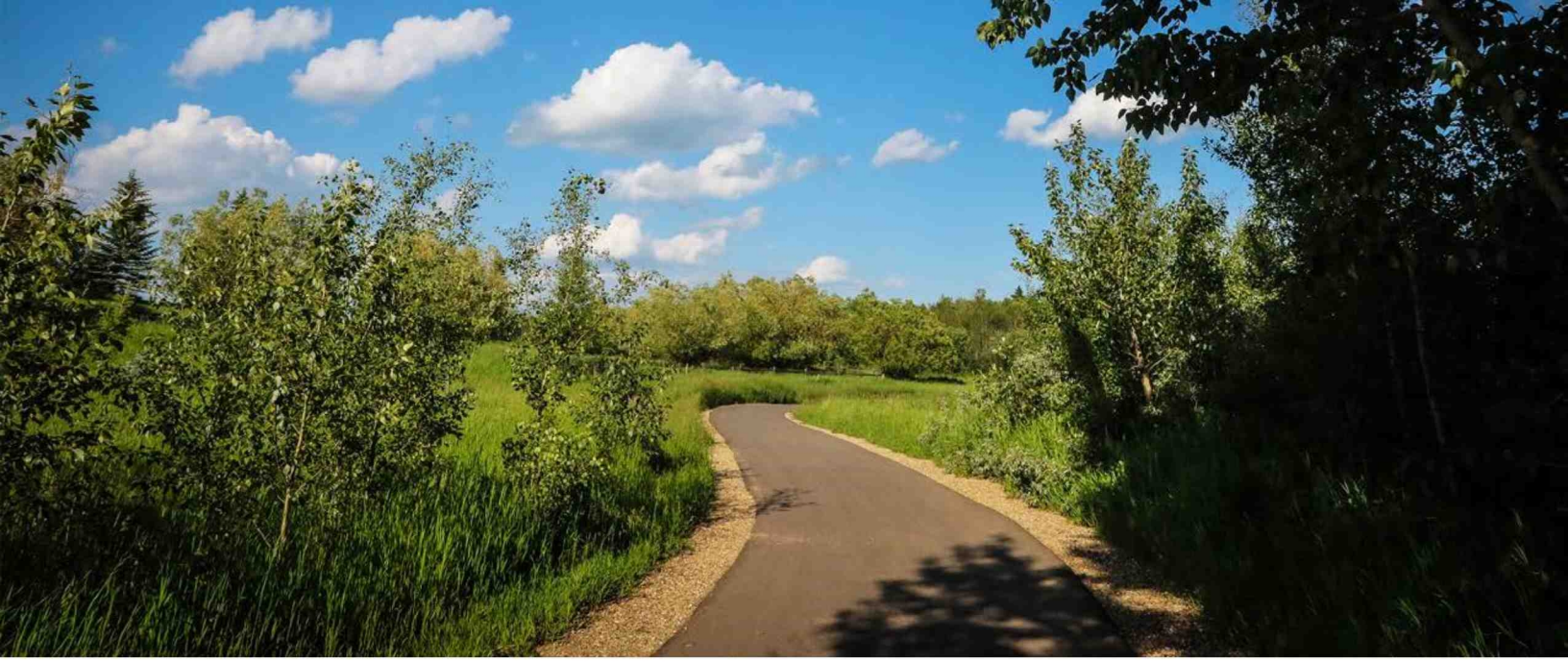
Physical improvements to the trail system in Stoney Creek Park will be eased with some adjustments to the management structure of the Park. Currently, the City has a maintenance agreement with the CSC to maintain the cross-country ski optimized trails. This relationship has been very successful, but challenges are growing; the costs of maintenance are increasing, complexity has been added by introducing multiuse natural surface and mountain bike optimized networks. Further, the adoption of trails on private land into the formal network may be eased with changed management oversight.

6.1 Trail System Management and Oversight

The City should formally establish a trail advisory group for the Stoney Creek Park. This group should be formally established as a not-for-profit organization with a terms of reference, liability insurance, and formal bylaws outlining board composition. The membership of the organization may be limited to board members so that annual meetings and organization oversight activities are streamlined.

The trail advisory group should be structured to **include representation from** the City, the CSC, mountain bike community, an organization who represents the pedestrian community, and private landowners who have recreational trails on their land.

This advisory group can be tasked with implementing recommendations from this trail master plan and the development of future trail master plans. Further, this structure may be used to apply for grants and public funding and oversee joint user type projects and projects on privately owned land. The insurance acquired by the organization would cover liability of recreational use for both the trail developers and land managers, including private landowners.



The advisory group can be tasked with developing a formal trail authorization process for new trail development or major trail maintenance. This process may be included in City bylaws or simply referenced in City policy. The policy should include application requirements, including TMO forms, proposed trail alignments, and funding and maintenance capacity confirmation.

One of the first activities the advisory group (or the City) may undertake is to formally **adopt all existing trails that are not recommended to be decommissioned** into the official trail network.

The advisory group (or City) should also prioritize the following management actions:

- Formally adopt trail classification and design parameters, including bench cut trail and trail decommissioning, presented in this plan.
- Develop and adopt a trail and infrastructure maintenance policy (sometimes called an asset management plan), including minimum inspection and maintenance frequencies, to guide trail maintenance activities. (See also **Section 6.1** on Trail Maintenance.)
- Develop and adopt worker safety plans and safe work practises for all trail maintenance activities that account for both staff and volunteer safety.
- Adopt trail user metrics and performance indicators. This program may include the installation of TrafX counters at key locations on the trail system and purchase of, or access to, cell phone user data. The combination of these two systems allows for accurate user counts and understanding of how trail users interact with the trail system and natural areas within the trail system. Use can be tracked year over year and performance of major trail maintenance or new trails can be evaluated. Strava Metro was accessed as part of this planning process but due to the lack of formally adopted trails the data was significantly lacking for Stoney Creek Park. This is already being addressed by City staff.
- Establish a formal use agreement with Happy Valley and other landowners along Stoney Creek, south of the Stoney Creek Park. The relationship with these landowners will allow easy expansion of the trail network without an increase in trail density, thus preserving the trail experiences of more remote settings. It will also facilitate a future connection to the Battle River, making Camrose the starting point for future adventure activities.
- Consider developing a commercial or event use policy for Stoney Creek Park to recoup additional costs associated with high volume use. These policies typically include application processes, insurance requirements, per participant fees and, sometimes, flat rate fees for exclusive use of public spaces including parking lots. The advisory group should be clear on what an appropriate number of events in a given year is and any other parameters that will impact public use of the Park.

6.2 Trail Signage

Signage is an often overlooked, yet critical feature of any trail network that keeps users oriented within the network and aware of the challenges that lay ahead of them on the trails. Wayfinding and signage systems need to be intuitive, attractive, and recognizable to create a positive user experience. Placing effective signage in strategic locations will enable trail users to make informed decisions when they are planning their activity and while they are in the trail system. It is important that signage is concentrated in the correct areas such as near parking and at the trailhead but kept to an appropriate minimum throughout the trail system depending on the recreation setting. Too much signage along with too many junctions can easily overwhelm and confuse trail users. Signage should be placed at the start of each trail at every trail junction, and signage colour and symbols should be consistent with the difficulty and / or style of the trail.

A trail signage plan should be

undertaken as a priority as the trail system is expected to expand and change over the next 5-10 years. A detailed signage plan is itself a large project. A detailed signage plan will include locations, styles, sizes, and content design of all signs in the trail system, which leads to detailed cost estimates. The signage plan will include regulatory, warning, and interpretive signage, in addition to basic trailhead and wayfinding signage.

Based on the trail inventory and assessment report, the following recommendations apply to the future signage plan:

- Incorporate Stoney Creek Park branding signage throughout the Stoney Creek trail system – in and out of the official Park boundaries if the trail system expands.
- Adopt standard trailhead signage for secondary and informal access points.
- Incorporate distance signage for multiuse trail loops south of train trestle.

6.3 Trail Maintenance

Trail maintenance is an important part of any trail network. Trail maintenance activities include removal of fallen or hazard trees, tread maintenance, and addressing erosion or other water issues. Infrastructure on trails, including culverts, rock armoured features, bridges, or technical trail features require additional maintenance and inspections.

A simple trail maintenance and infrastructure maintenance policy should be developed as part of a formal agreement for trail management between the City, Happy Valley Landowners, and the CSC (see also recommendations in **Section 6.1**).

This policy should include things like:

- Inspection frequency: recommend once per year in the spring or fall depending on trail type.
- Maintenance frequency: recommend “as needed” within a month following inspection or reported hazards on trail, relative to risk associated with hazard or issue.
- Documentation and forms to record trail inspection and maintenance activities.
- Identification of responsible group for each type of maintenance (e.g.,CSC responsible for cross-country ski optimized network maintenance)

For budgeting purposes, the costs of trail maintenance can range from 2-8% per year of the original capital cost of the trail development (see also **Table 3**). The major variables for trail maintenance include the climate, soil types, quality of design and construction, amount of infrastructure, and volume of use. For example, a trail with many bridges and only a small amount of use will require a fair amount of oversight, while a trail that's regularly used and has no features will require less maintenance. These values will, of course, vary across the three primary trail types that are located within the Stoney Creek Park and with the age, level of establishment, and current condition of each trail.

Maintenance is an important part of risk management and applies to the Occupiers' Liability Act (OLA) as outlined in **Section 6.4**. Should an accident or incident occur that results in a lawsuit against the landowners or trail managers, inspection and maintenance records will be reviewed for compliance between what is agreed upon and what is completed. As such, it is typically recommended that a low threshold for inspection and maintenance be set, especially in cases where volunteers are responsible for the work, to ensure it can be accomplished.

Examples of trail inspection and maintenance standards for Parks Canada are found here: **http://parkscanadahistory.com/publications/trail-classification-system-e.pdf**

A noted maintenance recommendation for the Stoney Creek Park is to **adjust the winter snow removal equipment so that the width of the equipment does not exceed the width of the paved path**, or to install fencing between the paved pathways and cross-country ski optimized trails. The removal and sanding equipment that is currently used infringes on the cross-country ski trails resulting in additional maintenance requirements for groomed trails to remove sand and snow bank hazards.

6.4 Risk Management

Trail operators use risk management to identify and control potential dangers on their trails and minimize the negative effects of accidents. Engaging in trail-based recreation inherently involves various levels of risk for enthusiasts. However, how trails are planned, designed, maintained, managed, and communicated can either increase or decrease the risk for enthusiasts and the legal exposure for trail operators.

The Occupiers' Liability Act governs the legal responsibilities of property owners or occupiers towards individuals who enter their premises. According to the OLA, all trail operators have a responsibility to provide a reasonable "duty of care" to facilitate the safety of trail users. The act states that an occupier (like a trail operator) can be held liable for damages in case of death or injury to a user resulting from the occupier's deliberate or grossly negligent conduct. "Deliberate" conduct involves intentional actions to cause harm, while "reckless" conduct implies serious negligence on the part of the trail operator.

As noted above, the basic duty of care disallows deliberate or grossly negligent conduct. This is a very low hurdle and was written to better allow the creation of recreational trails on private land across Canada. Essentially, unless an owner or occupier had an intent to do harm or an awareness that harm may accrue from their actions, it is difficult to prove negligence.

It's important for trail operators to recognize, however, that a higher duty of care is owed to children and in cases where fees are charged for admittance or use. Children may be less aware of dangers along a trail and may have difficulty making reasonable choices to avoid those dangers. Admission fees suggest that a higher level of maintenance and operation is provided and thus incur a higher duty of care. Club membership fees, when not a prerequisite for using a trail or facility, have typically not been looked upon as admission fees.

Trail operators need to be aware that anyone who suffers damages while using a trail has the right to file a civil case against the trail operator. To safeguard against such legal challenges, it's crucial for a trail operator to consistently demonstrate:

- **Professional Design and Construction:** The trail and its infrastructure adhere to industry best practices in design and construction.
- **Effective Inspection System:** A robust system is in place for inspecting trails. This includes documenting findings and promptly addressing any unsafe conditions discovered during inspections.
- **Clear Communication:** Ensure that the level of challenge posed by the trail and the frequency and intensity of inspections are clearly communicated to trail enthusiasts. This transparency is essential for users to make informed decisions about their participation.

By maintaining these practices, trail operators not only enhance the safety of their trails but also establish a defensible position in the event of legal challenges, demonstrating due diligence in trail management.

7. Implementation Strategy

The recommendations presented in this report have been optimized for a three-phase implementation: Immediate, Near-Term, and Long-Term. While the following implementation strategy assigns each of the recommendations a phase, multiple recommendations can be enacted simultaneously and out of order, as resources, staff, and volunteer abilities dictate. A phased implementation strategy provides direction to the execution of this master plan over multiple years, assists in budgeting time and money, and helps secure grants and funding. An additional benefit of the phased approach is the flexibility to scale administrative and trail development as funding and resources ebb and flow.

The phasing approach discussed below was based on the following priorities:

- Implement management and administrative recommendations to set a solid foundation for future trail and infrastructure development.
- Prioritize improvements to the multiuse trail system to mitigate user conflict as soon as possible.
- Provide upgrades to the cross-country ski and mountain bike trail systems once immediately pressing and foundational recommendations have been addressed.
- Prioritize trail development and improvement projects based on factors such as trail usage, connectivity, and environmental considerations.

A complete phasing table can be found in **Appendix D**.

7.1 Cost Estimates

Construction cost estimates at the conceptual design stage can be quite difficult to prepare and are often subject to a large contingency amount to account for the limited knowledge around ground conditions, detailed alignments, and the cost of labour during construction. Cost estimates for the recommendations outlined in this master plan were calculated using 2024 unit rates based on the project team's experience with trail planning, development, and construction (**Table 8**). A complete cost estimate can be found in the phasing table in **Appendix D**.

Table 8. Trail Design and Construction Unit Rates (2024)

Trail Type	Detailed Design Unit Rate ($/m)	Construction Unit Rate ($/m)	Contingency
Cross-country Ski	2.5	50	30%
Multiuse Natural Surface	2.5	30-40	
Mountain Bike Flow	3	35-50	
Mountain Bike Technical	2.5	30-40	
Trail Decommissioning Complete	N/A	30	
Existing Trail Upgrades (Bench cutting, corridor clearing)	1.5	30	

Appendix A

Statement of Limitations

Appendix B

Trail Management Objectives

Appendix C

Grooming and Mowing Map

Appendix D

Phasing and Cost Estimates

McElhanney

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