July 2018 – City of Cold Lake, Alberta

Cold Lake Bicycle Skills Park & Trails - Ride / Training Centre, Master Plan Proposal







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1. OVERVIEW

A. Introduction

In summer 2017, the City of Cold Lake and members of the mountain bike community contacted Hoots Ltd. for guidance in the planning of a Bicycle Skills Park & Trails – Ride / Training Centre within a Park Reserve located centrally in the City. Jay Hoots met with City staff, community members and local riders, and engaged a comprehensive site review to assess the potential for the area to support Bike Park and trail facilities. Research and planning continued and in early summer 2018, Jay facilitated a public Open House with the City to provide information on the project, and garner input and ideas from the community to help shape the Master Plan proposal. Ultimately, the project offers great promise, expanding upon the existing natural and cultural setting; and creating an exciting cycling, recreation and tourism destination for local and surrounding communities.

B. Cold Lake & Lakeland Area

Cold Lake has a population of over 15,000 and home to the 4 Wing – Canadian Air Force base. The area is known for its natural setting, wildlife, Provincial Park, sports and recreation facilities, trails, and various outdoor pursuits. The population continues to grow and, as documented in the *2013 Open Space and Linkages Plan (aka. 2013 Plan)*, has a younger demographic than the provincial average with close to 25% under age 15. An inventory study carried out under the *2013 Plan* found that Cold Lake hosts 8% or 480 hectares (ha) of passive and active outdoor recreational spaces with facilities located in the north, south, citywide &/or 4 Wing area.

C. Project Site – Assessment, Site Conditions, Facilities & Significance

The proposed project site is located within a dedicated 120 acre (49 ha) Park Reserve with coniferous Boreal Forest and encompassing the Cold Lake / Canadian Air Force Museum, Cold Lake Motorcross Race Track to the north, and informal multi-use trails around African Lake to the east. Moderate slopes and valley floor provide for undulating topography with predominately clay and sand based soils in this area.

The site is located centrally between the north and south of the City, with visitors coming to enjoy the local attractions &/or various outdoor activities. The Cold Lake Museum and Air Force provide road access and parking, with beautiful views to the west and south, alongside jets flying in the distance or overtop. The Museum is open spring to fall, while the private Motorcross Track is open late May until ground freezing. The area also attracts people year-round to its trails and features, and various recreational activity including the paved access road for 'training runs'.

Future planning for the Museum includes a 15m high lookout tower at the west side, program development and expansion of venue to host activities and outdoor events, and roadway improvements. Other possible plans include a new City Public Works / Yards / Facility Operation building infrastructure east of the Museum. At the time of this document, planning discussions included development of connecting 3 km trail between the Park Reserve and Cold Lake Energy Centre to the north adding a substantial and critical link .

In addition, the *2013 Plan* outlines initiatives to formalize and connect the existing 5 km multi-use African Lake Trail to the north and south residential areas of the City. Built on private and Crown land in the 1990's and overseen by the Tri-Town Trails Society, the trail has been without management or maintenance since 1996, and has been ravaged by quad and motorbike activity making it non-usable for any non motorized application.

D. Neighbouring Facilities & Activities

Other relevant facilities in the surrounding area include:

- The Millenium Trail: a paved, multi-use, year-round trail connecting north and south Cold Lake as well as 4 Wing over ~11-12 km that passes due west of the project site
- Cold Lake Energy Centre: an indoor / outdoor sports and recreation centre north of project site with potential land use discussions in process for new municipal facility expansion and multi-use trail connection to Park Reserve

- École Voyageur: francophone school west of project site and attended by many students from CFB-4 Wing families
- CFB-4 Wing: located southwest of project site with many families and avid cyclists, and who have been hosting a mountain bike race event annually over the last decade with upwards of 200 – 250 children and youth participating
- Cold Lake Provincial Park: located 3 km east of City and known for natural setting, wildlife, water activity, summer and winter recreation including 9 km of formalized hiking / mountain biking trails that are popular heavily used.

E. Current Uses / User Groups & Local Clubs

Local riders and community members visit the Museum trails and informal trails in and around the site as well as the roadway. Throughout the year, people come on a daily, weekly and monthly basis to ride, walk / dog walk, run, cross-country ski &/or snowshoe, also engaging in ATV / OHV / quad / motorcross, snowmobile and equestrian activity. In the summer, people visit the Museum and use the roadway from 69th Avenue for hill training on a weekly basis.

Although there is no formal 'Trail club' in Cold Lake there are a significant number of mountain bikers, and several organized running clubs that regularly use the trails including the Speed Demons XC Club and cyclists on CFB-4 Wing Base. The former participates in cross-country (XC) mountain bike race events, and avidly supports and promotes bringing a local Bicycle Skills Park & Trails - Ride / Training Centre to Cold Lake. Members also participate in the annual mountain bike race event hosted by CFB-4 Wing and its local club. Despite the existence of many mountain bikers in the area alongside CFB-4 Wing club and Speed Demons, riding activities are spread out and networking still to be established with no central place / hub or formal facilities currently existing and very limited natural surface trails to recreate on.

2. SITE & PLANNING CONSIDERATIONS – OPPORTUNITIES & CHALLENGES

A. Location & Context - Property, Access & Facilities

The proposed project draws visitors who come to enjoy the Museum and natural setting, informal trails, African Lake trail and private motorcross facility. With essential infrastructure already in place, the roadway entrance from 69th Avenue also provides ready access encircling the Museum, connecting to parking and offering view points. Riders and visitors can easily commute to area with opportunity for family and users to stage comfortably out of current facilities.

In planning development of the Bicycle Skills Park & Trails - Ride / Training Centre, consideration needs to be given to:

- Land ownership, access, private and Crown land with respect to government (municipal, regional, provincial), industry and First Nations
- Utilities and hydro (including overhead power lines adjacent to entrance roadway and in the center of the bike park) which will require an agreement for the Bike Skills Park facility
- Current and future land development for facilities and natural resource activities including planned Museum enhancement, roadway improvements, municipal development, and possible resource based operations
- Historical mandate and objectives of the Museum in and around their property / fenceline
- Safety and liability in terms of management, signage, awareness and safe practices
- Zoning, access and limitation of motorized user groups (ATV / OHV / quad, motorcross, snowmobilers and other)
- Fenced property boundary, motorized access and activity at private motorcross track facility
- Future expansion, development and connection of African Lake Trail to north and south residential areas of City

B. Natural Setting & Conditions

The Park reserve offers favourable grades and unique topography that support natural drainage and development through sustainable water management, and provide opportunity for a comprehensive bike skills park and trails system that works its feature progression through the existing terrain. The site, setting and conditions lend well to development of a facility that can accommodate all levels of riding through various proposed skills riding zones and multi-use trails.

In planning development of the Bicycle Skills Park & Trails – Ride / Training Centre, consideration needs to be given to:

- Existing soils and availability of on-site material for construction
- Efficient use of local resources and materials (imported and on-site)

- Import / transport of construction materials with minimal impact to environment
- Building on slopes and implementation of sustainable construction methods and techniques
- Existing drainage and building on wet, low-lying areas with sustainable construction methods and techniques which may include raised tread, boardwalks &/or other drainage and management practices
- Environmental concerns and potential impact on habitat and wildlife values

C. Local Interest Group, Advocacy & Cold Lake Trail System Survey

With no centralized, networked or formal facilities that currently exist, members of the riding community including those from the Speed Demons XC team have come together to outreach and promote development of a local Bicycle Skills Park & Trails – Ride / Training Centre. In fall 2016, the group gave a presentation to City Council outlining the following mission and goals:

- Advocate for the development of a non-motorized single track trail system in the Lakeland area that will be used all year long for mountain biking, XC skiing, snow biking, trail running, geocaching, snowshoeing, and so on
- Work collaboratively with the City to develop, build and maintain single track trail network, as well as promote development of permanent freeride, skills & potential BMX park.
- Integration of hiking trails, picnic sites and biathlon shooting range as part of long-term development plan

In the presentation, the group also identified the value, significance and benefits of the facility with respect to:

- Environmental stewardship with natural reserve and carbon sink
- Uniting north and south areas of the City with centralized park
- Potential to host Summer & Winter games, as well race events
- Relatively low cost to create 'Legacy' for community
- Outdoor recreation / alternative sport / variety of opportunities for every age in all seasons
- Local business benefit and employment opportunities for local contractors
- Encourages healthy lifestyles and family oriented fun
- Potential youth employment (summer camps, coaching; programming)
- Attracting people to Cold Lake, increase tourism and supporting economy

The group also administered a Cold Lake Trail System on-line public survey to garner input / feedback from the community with the following results from 264 respondents:

- Interest towards year-round non-motorized single-track trail system devoted to sports like XC mountain biking, snow biking, snow shoeing and x-country skiing: 97.7%

- Benefits / main reasons the community sees for having such a trail system developed:
    - Promotes active & healthy lifestyle for all ages: 92.6%
    - Adds additional sports & recreational opportunities for youth teams / clubs in Cold Lake: 86%
    - Supports community school sports and recreation programs (such as Cold Lake Mountain Bike Race): 72.8%
    - Supports opportunity for Cold Lake to host Summer and Winter games: 57.2%
    - Other: attracts people to our community / tourism / will help tourism / vacationing / opportunity to spend time; makes me faster / confidence building; activity / get active; interest in specific activity i.e. snow shoe, BMX; encourages family time / more safe family activities; would be great to have; would be a waste of tax payers money; makes community stand out; would be so much fun!

- Suggestions of what activities / features the community would like to see at the facility:
    - XC mountain biking: 87.5
    - X-country skiing: 79%
    - Mountain Bike Skills Park: 72.4%
    - Snow shoeing: 68.9%
    - Dirt jump / pump track: 61.5%
    - Biathlon trails & target practice: 47.5%

  - Snow biking (Fat bikes): 42.4%
  - Other: BMX track; running / running trails / x-country running; public outdoor workout, ninja obstacles / Parkour; Cyclocross; hilly sections near rivers & lake; snowboarding

- Interest in helping with development and in what capacity:
  - Promoting use of trail system on Facebook: 72.6%
  - Building trail: 42.3%
  - Joining the committee: 23.6%
  - Financial support in the form of donation: 23.1%
  - Other: applying for grants; race organization; integrating with physical education program; using it; making poster about trail; telling others to take this survey

- Interest in being contacted with additional information on development of XC Mountain Bike Trail System in Cold Lake with informative videos, web links, etc.: 56.8%

Results from survey indicate majority interest in developing trails, mountain bike and recreation opportunities for Cold Lake in support of active healthy lifestyle, community-building and quality of life; event planning and school programming; skills development and confidence building; and family friendly fun and tourism. People were most interested in seeing mountain bike trails alongside skills park with dirt jump and pump track facilities, as well as variety of year-round activities including x-country skiing, snow shoeing, biathlon, fat biking, running and BMX. Several people indicated they could help in promoting, trail building, joining committee and donating / seeking funding, being pro-active and supporting events and programs. Over half expressed interest in being contacted with development updates.

D. 2013 Open Space & Linkages Plan

In 2013, the Open Space and Linkages Plan *(2013 Plan)* for Cold Lake was released detailing results from a series of public open houses, community stakeholder meetings, and input from City Council / staff. Values related to the natural setting / environment (i.e. the Lake, parks, green space and trails) topped the discussion, while the most frequently mentioned service the City should improve or increase funding to included parks, green space, and recreational facilities. Ultimately, the *2013 Plan* document offers relevant information and guidance to sustaining and improving the quality of life in Cold Lake, alongside strategies for enhancing recreational opportunities, maintaining the City's natural assets, and providing an accessible open space system for a variety of active and passive recreation, sports and leisure pursuits.

With reference to the Canadian Parks and Recreation Association and Canadian Council on Social Development, the *2013 Plan* recognizes the many benefits and opportunities that parks, opens spaces, linkages and trails offer in terms of:

- Contributing to well-being of individuals, families, communities at local, regional and national level
- Providing neighbourhood meeting places, low-cost and accessible options for physical activity and play
- Attractive corridors connecting community, enhancing the urban landscape and preserving habitat
- Great attractions to draw tourists while creating employment opportunities for local residents
- Improving value of property and at the same time, revenues in adjacent pieces of land

The *2013 Plan* also states that awareness of community values and demand towards recreation and open spaces helps inform the design of facilities / services that meet and respond to community needs over the long-term noting:

- Youth could benefit from spaces and facilities that target their interests to help them become active more often
- Trails continue to be one of the most demanded 'facilities' and popular forms of leisure and active transportation
- Nature-based tourism as a growing market, with a focus on family recreation and 'destination' facilities

The *2013 Plan* outlines accessibility, connectivity, sustainability, character, and safety as key principles. It highlights the importance for facility planning to incorporate and build upon unique features and opportunities, and provide variety and diversity of year-round outdoor recreation activity. The proposed design and development of a Bike Skills Park and multi-use trail system would adhere to these principles and provide a unique asset for the Cold Lake community.

E. Local / Regional Initiatives

Development of a Bicycle Skills Park & Trails – Ride / Training Centre, Cold Lake could tie into the existing corridor of bike and recreation destination communities through northern Alberta. These include Sunridge Ski Area in Edmonton which houses multiple XC trails and hosts the annual Race the Ridge Mountain Bike XC – Alberta Cup event; Bike Park facilities in Devon, Sherwood Park, Hinton, Edson (currently in Phase 1), Whitecourt (currently in Phase 2), and Fox Creek Trails and Bike Park. Cold Lake itself could also host regional / provincial events including the Alberta Summer / Winter Games.

F. BMX Facilities

There are nearly a dozen race track facilities officially recognized through the Alberta BMX Association, with limited opportunities north of Edmonton. Establishing a high level Bike Skills Park and multi-use trail system that accommodates all levels and types of riding would compliment existing facilities in Alberta. With notable interest from community for a BMX race track in Cold Lake, opportunities should be explored beyond the Bike Skills Park & Trails development looking at potential areas and outfits in the City that could house and facilitate such a venue.

At the time of this document there was overwhelming support for Bicycle Skills Park & Trails – Ride / Training Centre development with the hope that it might inspire a BMX club and initiative to move forward in the future. Recommended sites would include the Cold Lake Energy Centre and CFB 4-Wing base.

G. Bike Parks & Trail Facilities, Rider Types & Styles

The following provides an overview list for bike parks and trails facilities in terms of components and features, as well as mountain biking rider types and styles, with the operations and sport continuing to grow and take on various forms.

Components & Features

- Bike Parks
- BMX Race Tracks
- Start Hills / Decks / Spectator-Staging Areas
- Jump Lines
- Table Tops, Gap Jumps, Hips, Shark Fins, Step Ups & Step Downs
- Pump Tracks
- Berms
- Rollers & Whoops / Rhythms
- Skills Features
- Drops
- Singletrack Trail
- Doubletrack Trail
- Flow Line / Flow Trail
- Up Trail / Return Line
- Perimeter Trail
- Fall Zones

Rider Types & Styles

- Beginner & Recreational Riders
- Cross-Country (XC) Mountain Bikers
- Dirt Jumpers & BMXers
- Downhillers (DH Riders)
- Freeriders
- Fat Bikers

Other Recent Riding Styles

- All Mountain (Enduro) Riding
- Dual Slalom Riding
- Slopestyle Riding

Detailed information and descriptions can be found in Appendix A: Terms of Reference - Bike Parks & Trail Facilities - Components & Features, Rider Types & Styles from Hoots Ltd., IMBA, Whistler literature, and open sources on-line.

3. CONSULTATION PROCESS

A & B. Open House Presentation & Survey Results

The following provides an overview of findings from feedback garnered at the Cold Lake Bike Park & Trails - Open House held on June 6, 2018, with nearly 100 people attending and contributing input / ideas to help inform planning and development of the Bicycle Skills Park & Trails – Ride / Training Centre facility. 73 participants completed the Open House feedback / comment and survey form with several answering on behalf of their spouse, family &/or children.

Responses to survey questions indicate the following:

1. Age of respondents: 10 to 64 (specifically: 8 in early - late teens; 10 in 20's; 31 in 30's; 20 in 40's; 2 in 50's; 2 in 60's)
2. Place of residence: majority from Cold Lake (i.e. 34 from north end; 16 from south end; 4 adjacent to Park Reserve; 6 from CFB-4 Wing; remainder in general vicinity); as well 5 people came from outer communities 20 – 50 km away
3. Frequency of visits to Park Reserve Area:
   Daily: 6 Weekly: 27 Monthly: 23 Infrequent / Never / Did Not Know / No Answer: 15
4. Activities at Park Reserve Area:
   Museums: 14 Ride Bike: 36 Trail Walk / Run: 30 Walk Dog: 13 Winter Activity: 12 Picnic: 3 Other: 8
5. All respondents indicated they would be interested in a Bike Skills Park and year-round, non-motorized trail system for mountain biking and multi-use activities in the City
6. In addition to 6 respondents who said they would like to see all activities supported, specific activities people would like to have the Bike Skills Park and Trail system support are:
   Mountain Biking: 64 BMX Riding / Racing: 20 Walking / Running / Hiking: 40 Snow / Fat Biking: 33
   X-Country Skiing: 30 Biathlon Trails & Target Practice: 11 Other: 5
7. Member of bike or trail club: Yes: 21 No / No Answer: 52
   - Clubs listed:
     - Speed Demons XC (7) and of note that following Open House, 21 people signed-up for Club
     - Cycling related (3) incl. Cold Lake Cycling Club, ABA Cold Lake Bicycle Association, AB Triathlon Association
     - Running Club (2)
     - Cold Lake Snowmobile Club (1)
     - BC Lung Association (1) as Trek member / volunteer
     - Trail Building work with various organizations (1)

   Consideration in becoming member: Yes: 33 No / Maybe / Not Sure / Do Not Know: 11
8. All respondents agreed promoting and creating recreation facilities for mountain biking and trails benefits Cold Lake
9. Comments, questions or concerns put forth about the current status and use of the Park Reserve Area:
   - Nearly a dozen and a half people mentioned concern over motorized vehicles with a few referencing African Lake trail which is in disrepair from lack of maintenance and use by motorcross / motorbike / quads / ATV / OHV. Several inquired how unauthorized vehicles may be prevented / prohibited from Bike Park and Trails
   - A few people brought up concerns over garbage being left at the site and illegal / unauthorized dumping).
   - Two people asked about the dates of when the project will kick-off, as well as who is responsible for building, machinery and cost associated with maintenance. A few others brought up concerns in terms of sustainability and permanence of facility.
   - A few offered suggestions for future Bike Park and Trail development, specifically:
     - Providing signage and advertising
     - Providing longer trails / extending and connecting bike trails to residential areas (2)
     - Explore ways for more stakeholder agreement by making multi-use trails (incl. fixing African Lake Trail)
     - Work with Museums to integrate facility in complementary manner that supports their venue and mandate / objectives, visitors, events, programming and future plans / development
   - One respondent asked what happened to an earlier site plan where the campground was to be built in the beginner area and if there was possibility to still incorporate
   - There were also several comments of support for Bike Park & Trail development in the Park Reserve Area
10. 37 respondents have visited bike park / trail facilities in Alberta, British Columbia and other locations in Canada and U.S. specifically:
    - 20 different facilities in Alberta with Canmore / the Nordic Centre, Hinton Bike Park, Calgary / Calgary Olympic Park, and Edmonton / Edmonton River Valley visited most
    - 17 different facilities in British Columbia with Whistler Bike Park, Devon, Fernie and Sun Peaks visited most
    - Other locations visited include Saskatchewan, Yukon, Quebec, Nova Scotia and New Brunswick, as well as Moab, Utah and Montana
11. On whether people would pay a user fee for a Bike Skills Park:
    Yes: 30 Maybe: 36 No: 7

12. On whether people would pay to use a Bike Skills Park if maintained in great condition all the time:
    Yes: 48 Maybe: 20 No: 4
13. Bike skill level:
    Beginner: 12 Intermediate: 40 Intermediate / Advanced: 2 Advanced: 7 Advanced / Expert: 2 Expert: 3
14. Respondents indicated a range of preferences for various bike park features with some dominant types namely:
    - Wide and raised ladder bridges, as well as narrow (beginner to advanced - expert)
    - Wide and narrow log rides, and log rolls (beginner to advanced - expert)
    - Wood wall rides (intermediate to advanced - expert)
    - Ramp Drops (beginner to advanced – expert)
    - Pump track and berm / roller features (beginner to advanced - expert)
    - Progressive jump line table set (beginner to advanced - expert)
    - Flow Style Jumps (beginner to advanced - expert)
15. Kind of bikes owned:

Full Suspension Mountain Bike	Hardtail / XC Mountain Bike	Road Bike	BMX / Dirt Jumper	Regular / Hybrid / Touring	Downhill	Cruiser	Fat Bike / Fat Tire Unicycle	Other: Unicycle, Recumbent	Strider (no pedal run bike)
40	22	11	9	3	2	2	2	2	1

Type of riding would like to do more of:
- Trails in general (12)
- XC / single track (11)
- Mountain biking in general (6)
- Dirt jumping / jump lines / jumps (5)
- Various types / styles of mountain bike trails including Flow trail (1), Downhill (1), Slopestyle (1), Fat bike (1)
- Technical riding / obstacles / skills (3)
- Everything (1)
- Individual comments of note:
  - Easy and for family to learn / bike on
  - Races
  - Road

16. Types of features that interested respondents most:
    - Trails
      - Trails / XC / longer XC trails / single track (14)
      - Flow trail / flowy trails with some technical / slalom / downhill (7)
      - Mountain bike only trails / more than basic trails / advanced-expert trails (3)
      - X-country ski (2)
      - Running (1)
    - Skills, balance and technical riding (29)
    - Jumps (13)
    - Pump track (5)
    - Natural terrain / woods / wood or sand structures / unpaved on dirt (5)
    - As well, 1 or more individuals provided other comments of note namely:
      - Anything fun / challenging; love progression / beginner-advanced so children learn
      - Bike / walk friendly interconnected trails throughout Tri-City area & Provincial
      - Tri / road (smooth asphalt)
      - Race
17. On what respondents felt <u>does not belong</u> or <u>does not interest</u> them in the Bike Skills Park:
    - Motorized vehicles / motorcross / motorbikes / quads / OHV (8)
    - Paved & wide trails that invite ATV's / concrete fixtures / concrete paths / skatepark surfaces (4)
    - Similar concerns mentioned in #9 were also mentioned with regards to inappropriate behavior, namely:
      - Booby traps / bad attitudes / jerks (2)

- Broken glass [litter] / anything of high value that is easily vandalized (2)
- Little children just wandering around [could be risk]

18. On suggestions and input on what would make the Park better:
    - Bike Skills Park design and development
        - BMX track & park, air bag & foam
        - Explore ski hill for downhill runs / lift system / lift access trails
        - Investigate way to get water on jumps as the area is very dry
    - Trail design and development
        - Bike specific trails; multi-use trails
        - Trails not paved (perhaps wood chips)
        - XC ski / backcountry skiing in winter
        - Directional paths to avoid collision & enable for speed / comfort
        - Connection to African Lake Trail / to other trails not on the road so it is safe to bike to
    - Overall facility design & development, programming, recreation & sport
        - Accessible to ALL; multi-use year-round
        - Family friendly for younger children; all ages (adults & advanced, not just for kids)
        - Races for all ages from May – August
        - Opportunity to host AB Winter Games for XC ski
        - Toboggan hill / rolling hills
        - Free use for schools to improve racing team
    - Support & Development of Attractions
        - Work with Museums to integrate facility in complementary manner that supports venue and mandate
        - Better connection to Air Force Museum & 4 Wing as a whole
    - Safety & Maintenance
        - Security / fencing / closed gate at night to keep clear / monitor
        - No motorized vehicles including ATV, motorbikes & skidoos / prevent / fine motorized vehicles
        - Maintenance plan / proper maintenance or disrepair like African Lake Trail
        - User fee for upkeep & way to watch overnight
        - Consideration for risk, injuries & cost for injury recovery
    - Amenities
        - Bathroom & amenities / washrooms not outhouses
        - Picnic areas, water / water fountains, food trucks
        - Cook house shelter / shelter / covered area for group use & families / shelter to protect from weather & sun
        - Pro shop / fix repair station stand w/ pump & tools
        - Benches near kids so parents / caregivers can watch over
        - Adequate parking to avoid bike damage

4. MAINTENANCE

A. Current Activities & Considerations

Currently, general maintenance in the area is concentrated around the Museum facilities, parking and roadway for regular mowing, snow plowing, and pick-up / removal of litter and recycling from disposal bins. Future development may include Museum enhancements, roadway improvements, and City Public Works / Yards / Facility Operation built in the adjacent open space east of the Museum. The Motorcross Race Track operates under a non profit association within a fenced area; and no maintenance occurs on the African Lake Trail on private and Crown land. With regards to infrastructure / utilities, Hydro power lines run parallel to the roadway with maintenance and servicing as needed.

B. Bicycle Skills Park & Trails - Ride / Training Centre: Infrastructure, Facilities & Amenities

The Bike Skills Park and multi-use trails will require additional infrastructure, facilities and amenities, alongside maintenance. These include management for added litter / recycling bins in parking and staging areas, trailheads /

entrances / junctions, passive areas; mowing / snow plowing; and caring for signage and furnishings (picnic tables, benches, bike racks).

C. Bicycle Skills Park & Trails - Ride / Training Centre: Bike Skills Nodes

The skills nodes will require raking, shovel shaping and compaction of features, ride lines and surfaces, clearing of organics / debris & cutback / pruning of trees and shrubbery a minimum twice a year in spring and fall to keep the performance experience of the facility up to its original design intent. All dirt features including start / return hill, pump tracks, jumps, Flow Trail, roller and berm features will require existing soil material to be blended with imported clay / sand mix, and care taken to wet and compact features thoroughly to withstand rider impact and heavy rain events.

D. Bicycle Skills Park & Trails - Ride / Training Centre: Multi-use Trails System

Key training trails will be built with natural surface tread, and built with minimal to moderate grades using natural surfacing, blending existing soil with imported gravel / clay / sand mix as needed and topped with crush gravel to create more durable surface requiring less overall maintenance and smoother faster ride.

Trails should be maintained to enhance durability, enjoyment, safety, predictability, and reduce liability. It is important to establish performance standards and conditions, and be consistent for the entire trail to avoid surprises or barriers.

The multi-use trails should be duly monitored and maintained. As trails development is part of a municipal initiative and within the City's boundaries, the municipality and partners should take an active role in maintenance. As the trails become more specialized, the local advocacy / interest group(s) and riders should become more involved in maintenance, particularly for trails built for &/or by the riders. Agreements could be established to confirm roles and responsibilities of various parties.

All trails need to be built to a suitable standard and monitored for issues related to user safety and trail condition. This will require cooperation of the riders, the local advocacy / interest group(s), and municipal staff to identify issues and address maintenance aspects in a meaningful and timely manner. Degradation of a trail is compounded by continued use and weather, so it is important to identify and address issues as soon as possible.

Wood bridge and log technical trail features (TTF) generally do not require extensive maintenance when built / fastened properly with positive water drainage directed away from feature footings. These wood features will have a 5-15 year life cycle depending on application and should be checked regularly for structural stability and relevance in 'ride line'.

E. Long Term Sustainability – Environmental Impacts, Drainage & Soils

Applying 'best practices' for sustainable trail design, construction and drainage will minimize environmental impacts and intended / unintended use / erosion from water, wear and tear. All riding zones and trail will require a proper blend of on-site and imported material, layering and compaction to withstand traffic, use and rider impact. Appropriate drainage infrastructure and grading will be implemented to direct water away from all features, with on-going monitoring and clearance of any obstructions. Wood and log skills will require regular monitoring and servicing to be carried out.

Adherence to sustainable design and construction, and on-going monitoring and maintenance will enable the Bicycle Skills Park & Trails – Ride / Training Centre to accommodate higher use and traffic. Using existing natural drainage and infrastructure will help facilitate positive water flow, minimize erosion and keep construction budgets minimized.

F. Roles, Amenity Ownership & Schedule

The Bicycle Skills Park & Trails - Ride / Training Centre will require key maintenance applications and practices with respect to supervision, operations and performance to facilitate proper management, on-going care and safety, namely:

- Regular site supervision and recorded inspections to oversee operational maintenance, minimizing / avoidance of hazards, conditions of ride components / features, and clearance of debris / discarded materials

- Operational maintenance / on-going site management including regular trash / recycle pick up, repairs / mitigation measures, assurance of proper drainage and good condition of signage / amenities
- Performance supervision and regular maintenance, shaping / tuning / testing ride components and features to meet design intent through professional builder services, trained user group or specialist in field

As outlined in detail in the Master Plan on keeping the Bicycle Skills Park & Trails - Ride / Training Centre maintained, the duty of care, adherence to standards, design intent and related budgeting can be facilitated and overseen through Municipal Control, Club / Local Advocacy Group Control or Combined Control (Municipality and Club working together)

G. Costs

The cost of the Bike Skills Park and subsequent maintenance is often a reflection of the level of planning, quality of design, use of skilled experienced builders, construction methods, and materials used with dollars provided through capital funding, the municipality &/or local support.

Costs can be reduced through training and having people / groups involved in the maintenance and care of the facility which in turn will provide a greater sense of ownership and care. As well, there could be an agreement established where required volunteer time is put in to maintain the venue in order to use the facility for events.

5. CONCEPT LAYOUT PLAN

A. Vision, Goals & Objectives

The proposed Concept Layout is based on meetings with Cold Lake staff, stakeholders and members of the community, background research, and comprehensive site evaluation. The Concept was shaped through ideas / feedback garnered from the Cold Lake Trails System Survey, Open House and survey; and informed by the following design vision, goals, opportunities and benefits, and objectives alongside maintenance aspects, environmental impacts and sustainable development applications.

Design Vision - What is a Bike Skills Park?

- welcome mat to world of mountain biking
- diverse skills / riding zones, trails
- includes natural obstacles, pump tracks, progressive dirt jumps, flow lines & trails, woods skills & balance features
- integrates with park setting / surroundings, unique terrain, forest / trees, local resources & materials
- progression based for all levels of riders to develop skills gradually
- 100% managed environment, utilizing & updating existing access & support amenities

Goals & Benefits of a Bike Skills Park

- opportunity to educate & experience ‘free’
- all ages of riders in fun, structured, safe, managed area
- gathering point, social, family friendly
- recreation programming – revenue generation
- contributes to tourism & economy
- public / private partnership
- due diligence for unauthorized building

Objectives of Bike Skills Park:

- Provide multi-sport, multi-purpose recreation facility that accommodates all user groups, skill levels and abilities
- Build upon and enhance existing natural and cultural setting, providing variety of activities and opportunities
- Highlight landscape and natural features through bike skills zones and multi-use trails that integrate topography and terrain, and passive / rest areas that offer vantage points
- Share, integrate and compliment existing facilities with expanded / updated amenities including parking / staging areas, picnic areas, change rooms, signage and lighting

- Welcome visitors to attraction through additional active and passive recreational facilities, encouraging Museum 'buy-in' and shared ownership from seeing value in people spending more time at venue
- Provide exciting recreation destination that supports the City, complements and connects to neighbouring and surrounding facilities (African Lake trail, Millenium Trail, Cold Lake Energy Centre, CFB-4Wing), and engages community-building and local / regional partnerships
- Contribute to community via destination that attracts riders, visitors and families from local and surrounding areas
- Establish exciting tourism attraction that enriches City, and supports long term vision for engaging local and surrounding communities
- Develop active recreational space that is recognized as a community asset, and for growth and interest
- Develop and implement programming that could include ride clinics / workshops, racing events, family fun / social / community-building activities
- Provide year-round multi-disciplinary / complimentary activities including snowshoeing and fat biking, as well as opportunities for informal backcountry skiing on selected trails, and tobogganing / sledding on existing hill.
- Improve upon quality of life for the community through activity, socializing and civic pride
- Implement best practices and standards for design, construction and maintenance, ensuring long term sustainability, and safe and easy access that encourages use by all residents and visitors
- Establish high level ride training area that compliments existing riding and recreation destinations in northern Alberta for teams and riders to 'train' on.

6. CONSTRUCTION COSTS

A. Contributing Factors & Estimating Costs

The Master Plan outlines various factors that affect budget and cost estimating including:

- Selection of Components & Features
- Type of Terrain
- Location
- Hand or Mechanized Tools
- Individual Labour Rates
- Professional or Volunteer Labour
- Mobilization Costs for Contractor
- Cost Reduction - Approaches / Strategies
- Estimating Costs – Determining & Anticipating through Various Aspects / Aproaches

B. Estimating Costs – Exclusive to Trail Development

The Master Plan also outlines various factors that affect budget and cost estimating specific to trails development, providing typical trail construction costs and outlining considerations with regards to design, building aspects, machine / hand construction, as well as labour intensive features and facilities that may be included in design.

7. COST ANALYSIS OF BIKE SKILLS PARK & TRAILS - DESIGN & CONSTRUCTION (Cost Estimate Charts 1A - C)

Sub-totals and total cost estimate are provided for the design-build of the following:

- Bike Skills Park Nodes: $461,896 - $655,454
- Proposed Trail Development: $245,990 - $428,707
- Overall Bike Skills Park & Trails Facility Area – Signage & Amenities: $15,000 - $35,000
- GRAND TOTAL – Design-Build of Complete Bike Skills Park & Trails: $722,886 - $1,119,161

8. MAINTENANCE COSTS

The cost to maintain a bike skills park and multi-use trail system will vary depending on features, components and areas to be serviced, equipment / resources needed, logistics, frequency and conditions; alongside operational costs for on-going safety, management and upkeep. Maintenance can be completed 'as needed' but having professionals come back to ensure it is kept up to design and performance standards is recommended. Regularly scheduled maintenance will help ensure proper drainage, safe and enjoyable riding / trail surfaces and structures, durability and reduce liability.

Maintenance, safety and management duties contributing towards costs include:

- Regular site supervision and recorded inspections
- Operational maintenance / on-going site management
- Performance supervision and regular maintenance, shaping / tuning / testing ride and trail components and features to meet design intent

Maintenance manuals and checklists also play a key part to ensure proper upkeep, design performance and intent, alongside monitoring / documenting of conditions and addressing any issues in timely manner to ensure due diligence.

Costs can be reduced through training and including volunteers in maintenance and care of facility. Maintenance activities and finished product should be professionally carried out and completed, aesthetically pleasing, and employ sustainable practices to ensure long-term sustainability and minimize maintenance.

9. COST ANALYSIS OF BIKE SKILLS PARK & TRAILS – MAINTENANCE (Cost Estimate Charts 2A - C)

Sub-totals and total cost estimate are provided for the maintenance of the following:

- Bike Skills Park Nodes: $35,800 - $71,100
- Proposed Trails: $59,200 - $231,300
- Overall Bike Skills Park & Trail Facility Area – Signage & Amenities: $2,700 - $5,400
- ANNUAL TOTAL – Maintenance of Complete Bike Skills Park & Trails: $97,700 - $307,800

10. ECONOMIC OPPORTUNITIES – TOURISM, PARTNERSHIPS, FUNDING & REVENUE

- Collaborate and work with nearby and surrounding communities to leverage support for unique and diverse Bicycle Skills Park & Trail - Ride / Training Centre that compliments existing recreational facilities to attract visitors, and help establish Cold Lake as a bike destination and tourism area
- Work with the Cold Lake / Canadian Air Force Museum to support and compliment their historical mandate / objectives, programming and events; and share in budget for upcoming improvements and enhancements
- Collaborate with Military / CFB - 4 Wing in programming, events, races, and family-fun activities including their annual mountain bike race event; and open dialogue / engage discussion on potential BMX race track on base
- Coordinate and partner with City and Cold Lake Energy Centre in planning and developing 3 km connecting trail between Park Reserve and Energy Centre, and promoting need to provide arterial routes for recreational use.
- Explore potential of Energy Centre as staging area for trails related events and racing
- Partnering potential on shared infrastructure to membership development between mountain bikers and Motocross track
- Partnering opportunities with community organizations, groups, First Nations and others should be considered.
- Explore regional partnerships with next closest regions and recreation destination facilities in northern Alberta, and outreach / brand Cold Lake in position where it lies in midst of other riding areas with activity on all sides
- Establish 'trails' committee with representatives of various local riding groups, clubs, organizations and user groups
- Seek funding from grants, local business sponsorships, municipal, Provincial and National levels
- Advertising within Bike Skills Park areas on benches, signs, bike racks and maps has potential to stimulate revenue inside Park and also promote local business
- Explore opportunities to pledge funds towards facilities / features in exchange for donation plaque or naming rights
- Explore potential to enact fees for parking (vs. fees for users) with all collected revenue turned back to bike park maintenance and not to general revenue

11. COMMUNITY ENGAGEMENT & OPPORTUNITIES

- Outreach and educate community and riders on proper building methods and maintenance practices so they understand value of sustainable design and construction, and can be active in on-going maintenance
- Engage communities and volunteers in development and maintenance activities to encourage on-going care, sense of ownership and meaningful community-building
- Schedule and facilitate educational workshops and volunteer work bee events
- Work with schools to deliver training workshops and facilitate exchange where schools help in maintenance for free programming opportunities and community volunteer hours
- Work with local business and organizations for sponsorship, support, donated equipment and materials
- Consider an Adopt-a-Park program to encourage community to have greater ownership and help maintain quality of bike skills park and trail facility components

12. COMMUNITY OPPORTUNITIES & 'BUY-IN'

- Collaborate with local riders, clubs, organizations, community and businesses to plan, prepare and host bike events and related programming
- Engage / collaborate with clubs and user groups involved in related recreational activity
- Facilitate orienteering / geocaching activities within natural setting, amongst forest, trees and unique landscape
- Engage in programming and development to support women's events, family fun, kids and youth activities
- Explore opportunity to support future sports events including the Alberta Summer Games and 2019 winter games
- Partner with local businesses to help increase bike friendly amenities to support active community
- Implement street art or building mural with cycling / trails in the imagery to help showcase / promote facility
- Outreach and message on easy access to facility

13. MARKETING UNIQUE OPPORTUNITIES & ACTIVITIES

- Promote fat biking to, from and within Cold Lake highlighting facility and trails
- Develop a theme to hinge the project on
- Promote trail facilities as an all season opportunity
- Promote the facility as central 'key' developed facility that is unique and exciting to the area
- Promote local events, activities and related programming taking place at facility, and work in partnership with other operations hosting related events such as CFB-4 Wing and their annual mountain bike race
- Cross-promote the facility and area as part of the Cold Lake branding and 'go to' destination area with Bike Skills Park & Trails – Ride / Training Centre that compliments the natural setting, Museum venue and cultural experience
- Launch / host social media / photo / video clip contests in facility featuring action and lifestyle theme shots
- Promote / facilitate photo contest for scenic landscape shots featuring natural and cultural setting
- Promote orienteering / geocaching activities in within natural setting
- Create promotional literature, maps and recreation information / material and disseminate to public
- Target Northern Alberta and Saskatchewan markets in non traditional sport/quality of life opportunity

14. NEXT STEPS & RECOMMENDATIONS – SHORT, MEDIUM & LONG TERM

It is recommended that the following approaches be considered in regards to potential direction, decision-making and development priorities for the Bicycle Skills Park & Trails – Ride / Training Centre to facilitate the best return on investment that offers more opportunity for a greater and more diversified user group:

- Comprehensive evaluation of public input and ideas, and the needs, interests and concerns of all community
- Engage discussion and agreements for surrounding / immediate property in terms of land ownership, access, private and Crown land, potential expansion and possible natural resource based operations / activities
- Explore zoning, access and limitation of motorized user groups (snowmobilers, quad / ATV / OHV users, motorcross and other)
- Explore connection to future expansion, formalization and development of African Lake trail

- Identify and prioritize key development areas / features / components
- Explore construction development approach / one time build or potential phasing into the Park reserve project area
- Evaluate impact of various phased approaches to costs in terms of value and asset to community
- Evaluate budget and investigate partnerships to support development
- Engage in design services to have 'shovel ready' opportunity that could be phased
- Research and evaluate potential contractors and partnering companies to ensure product delivery

15. NEXT STEPS – OPERATIONAL CONSIDERATIONS

Many Municipalities have different capacities when dealing with citizens / volunteer organizations and internal staff regarding capital and maintenance projects. Some of the more common are outlined below.

1. The City or Town owns the land, makes choices on the amenity then designs and constructs internally (City Staff) or with contractors then permits or 'leases' the area to a club or organization for their specific activity or event.

2. A user group or proponent will approach Municipal staff / Council providing 'letter of support' and demonstrating idea for amenity fits in with community values and is needed / desired. Staff will work with proponent to ensure adherence to criteria set and policy developed as the land manager, and report to Council. Public meetings may be required to garner appropriate feedback and if granted by Council, staff will work with proponent to ensure design, construction, supervision and maintenance conditions will be met. The proponent will find funding and participate in development of project, then be given permit or lease agreement for operations.

3. A user group or proponent such as a 'coalition' will approach Municipal staff / Council with idea for amenity. Staff will work with proponent to ensure adherence to criteria set and policy developed as the land manager, and report to Council. Public meetings may be required to garner appropriate feedback and if granted by Council, staff will work with coalition to ensure design intent, construction, supervision and maintenance conditions will be met. Once amenity has been completed, the coalition is dismantled and the municipality takes over all maintenance aspects and administration.

4. Several user groups pull together an 'umbrella' organization (non profit) to speak as unified voice for the interests of the different organizations while each of the organizations work independently. Municipal staff will work with proponent to make sure proposed ideas adhere to criteria set and policy developed as the land manager, and report to Council. Public meetings may be required to garner appropriate feedback and if granted by Council, staff will work with proponent to ensure design, construction, supervision and maintenance conditions will be met. The proponent will find funding and participate in the development of the project, then be given a permit or lease for operations.

5. A non-profit membership driven group made up of various representatives and users / user groups comes together to represent and voice their interests. An example of this is the Valemount Association Recreation Development Association (VARDA) made up of local business and backcountry users who engage and support the interests of the user groups. Key goals and energy may be devoted to public education and improving riding and recreational experiences through outreach and support of sustainable practices, respect for environment, safety and caring for facilities, alongside helping to oversee maintenance, winter grooming and managing motorized vehicle use.

VARDA also assists in overseeing the Sustainable Resource Management Plan (SRMP) for the backcountry territory regarding protection for public access to crown land, sustainable growth of outdoor recreation activity, as well as security of investments. All told, VARDA is a significant example of a non-profit association that engages with local business, government and user groups, and is a leader in facilitating sustainable recreation and riding practices, land stewardship, outreach education, safety and improvements for backcountry activity year-round.

16. COLLABORATIVE EFFORT & COMMUNITY CHAMPIONS

We recommend that the so called 'umbrella' organization outlined above be further explored through creation of an organized coalition &/or non-profit group that is made up of members and representatives from user groups, stakeholders and the community. The local advocacy group has shown themselves to be community champions with

enthusiasm and willingness to promote and facilitate development of a Bicycle Skills Park & Trails – Ride / Training Centre in Cold Lake, and experience to work in partnership with municipality to take on the project.

As such, we would recommend consideration of the following:

- Create a cycle/trails based economic-tourism position / coalition / non-profit group in the City to engage development initiatives and activities to move project forward
- Use position to create terms of reference and strategy for scheduling developments, grant writing initiatives, development of social media marketing, and liaison with user groups, Municipal and maintenance staff
- Bring all user groups, organizations and proponents to table to understand their membership / operational agreements / status, and encourage and facilitate a collaborative effort amongst the balance of users

17. BEST PRACTICES & STANDARDS

Best practices and design / construction standards should be implemented to ensure long-term sustainability, accommodate riders of all levels and abilities, and create an engaging venue. There are examples of best practices that include professional guidelines for design intent, development and implementation. These include:

A. Design & Construction - Methods & Techniques

- Whistler Trail Standards, by the Resort Municipality of Whistler: Whistler Trail Standards
- International Mountain Bike Association (Canada) is a national organization for clubs, trail design and construction standards. Two excellent reference books include:
  IMBA Resources Trail Solutions: IMBA - trail building
  Managing Mountain Biking: IMBA - Managing Mountain Biking
  Bike Parks: Bike Parks: http://www.imbacanada.com/resources/freeriding
- Hoots Ltd. Bike Parks Guidelines

B. Other Suggested Resources

- Trail Type Classification by Parks Canada
  http://www.imbacanada.com/resources/organizing/land-managers/national-parks (see bottom weblink)
- Alberta Recreation Corridor & Trails Classification System
- Natural Surface Trails by Design, by Troy Scott Parker: Natural Surface Trails by Design
- Lightly on the Land: The SCA Trail Building and Maintenance Manual (Birkby 2006) as a field guide for trail construction. The manual covers basic techniques, from building with timbers to rock construction and environmental reconstruction: SCA - Lightly on the Land

C. BMX Race Track Development

- UCI (Union Cycliste Internationale) BMX Track Guide
  http://www.uci.ch/mm/Document/News/News/18/23/58/UCIBMXTrackGuide2017_English.pdf
- Objectives, benefits and overview for a proposed BMX racing facility
  http://fmcloughlinhealy.ie/proposal-build-regional-standard-bmx-racing-facility-newbridge-area
- Track Building Guidelines – Guidance on art of BMX Track Building
  http://www.bmxireland.ie/category/tracks/
- Alberta Bicycle Association & BMX
  http://www.albertabicycle.ab.ca/bmx
- Alberta BMX Association with links to facilities & locations
  http://www.albertabmx.com/tracks.html

18. SIGNAGE

The following provides signage recommendations for the Bike Skills Park and area:

- Develop simple and easy to understand mapping and signage to indicate layout and difficulty levels
- Provide signage to encourage positive etiquette, shared and responsible use
- Locate signage at access points, junctions / intersections, and ride lines / features that warrant caution
- Include messaging on etiquette, shared, safe and responsible use
- Mount to posts or in small kiosk that could contain other community / related information; signage should be printed on weather proof sheet or laminated for durability; simple markers can be mounted to wood posts or plastic delineators, with durable stickers to show difficulty level and issue caution for advanced / expert features
- Standard international symbols should be used to indicate acceptable use, difficulty level, and caution
- Interpretive signs can be developed to illustrate historical, cultural or environmental aspects pertaining to area

Consideration need also be given to:

- Support and engage non-motorized users / user groups while at the same time addressing challenge in limiting access to other user groups (i.e. motorized vehicle users of ATVs, OHVs, quads, motorcross and snowmobilers). This will need to be worked out with municipality to provide appropriate signage / messaging, as well as physical barriers. Coordination with the Cold Lake Motorcross Association to fence and block the trail off at the east area of the site will also need to be undertaken.

19. PROVINCIAL AGENCIES & POLICIES

As referenced in the *2013 Plan*, the following provincial / regional governmental documents, plans and studies, bylaws / municipal policies and standards may be consulted with respect to the Bicycles Skills Park & Trails – Ride / Training Centre design, planning, development, construction and maintenance:

- City of Cold Lake Municipal Development Plan 2007
- City of Cold Lake Parks Plan 2006
- City of Cold Lake / M.D. of Bonnyville Intermunicipal Development Plan 2009
- City of Cold Lake Land Use Bylaw 2010
- Area Structure Plans and Area Redevelopment Plans

In addition, the following Provincial policies and agencies may be consulted in regards to trail development, access, and consultation requirements:

- Alberta Land Use Planning Framework (LUPF)
- Environment and Sustainable Resource Development (ESRD)
- Tourism Development & The Regional Tourism Advisory Committee
- Alberta Tourism Recreational Leasing Process (ATRL)
- Regional Advisory Council & Regional Land-Use Plans
- Alberta's Rural Development Strategy
- Active Alberta 2011-2021
- Alberta Community Facility Enhancement Program

1. OVERVIEW

A. Introduction

In summer 2017, the City of Cold Lake and members of the local mountain biking community contacted Hoots Ltd. to seek guidance and expertise in the planning of a Bicycle Skills Park & Trails – Ride / Training Centre. Centrally located between the north and south residential areas of the City, the proposed project site lies within a 120 acre Park Reserve adjacent to a motorcross race track, multi-use trails, and the Cold Lake / Canadian Air Force Museum.

Jay Hoots visited Cold Lake over fall 2017 engaging in meetings with City staff, community members and local riders, conducting site reviews to assess and evaluate the potential for the area to support a Bike Park and multi-use trail system. Work continued over 2018 with an Open House presentation taking place in June 2018 in Cold Lake where the community, riders, stakeholders, interest groups and public were invited to hear about the project, and provide their input and ideas towards the Bike Park and Trails Master Plan. With all parties recognizing the value and significance in providing active and passive recreational opportunities, the project offers great promise, integrating and expanding upon the existing natural and cultural setting; and creating an exciting and diverse cycling, recreation and tourism destination for the local / surrounding communities and greater region.

The following provides an overview of Cold Lake and the project area in terms of setting, conditions, local facilities and significance, current uses and user groups.

B. Cold Lake & Lakeland Area

Located beside one of the larger lakes in Alberta, Cold Lake has a population of over 15,000 with many residents working in the oil / gas industry, retail, government and tourism. It is also home to the 4 Wing – Canadian Air Force base. Cold Lake and the Lakeland area are known for its natural setting, lakes, wildlife, fishery and birds, as well as Provincial Park, sports and recreation facilities, rural and urban trails, and various outdoor leisure pursuits. The population continues to grow with many families locating to the area and, as documented in the *2013 Open Space and Linkages Plan (aka. 2013 Plan)*, has a younger demographic than the provincial average with close to 25% under age 15.

As shown in the chart below, an inventory study carried out under the *2013 Plan* found that Cold Lake hosts 8% or 480 hectares (ha) of passive and active outdoor recreational spaces with facilities located in the north, south, citywide &/or 4 Wing area.

Table 1. Cold Lake Passive &/or Active Outdoor Recreational Space / Facility	Area in City	No.	Area (ha)
Parkette (incl. 14 playgrounds)	North, South, 4 Wing	18	3.32
Neighbourhood Park (incl. 7 playgrounds)	North, South, 4 Wing	8	9.18
Community Park (incl. 4 playgrounds)	North, South, 4 Wing	6	25.23
*Regional Park (incl. 1 playground)	North, South, 4 Wing	3	131.79
**Active Parkland (incl. various sports fields / courts, ice / curling rinks, sledding, skateboarding, dog park, camping)	North, Citywide, 4 Wing		213.15
***Trails & Linear Open Spaces (incl. Heritage & Millenium Trails, Heritage & Memorial Park, municipal reserve & public utility lots)	North, Citywide, 4 Wing		24.39
Natural Areas (incl. environmental reserve, urban forest & storm ponds)	North, Citywide		28.68
Other Open Spaces (incl. parks, cemeteries, landscaped & schoolyards)	North, Citywide, 4 Wing		49.53
Total			**479.27**

*Regional Parks - primary attraction / major recreation facilities & open space for residents, surrounding area & larger region [p.32]
**Active Parkland - includes variety of facilities & that require significant management / maintenance with continuous investment [p.33]
***Trails & Linear Open Spaces - provide for multi-purpose, alternative, 2-way commuter use & connection to various recreational areas [p.34]

C. Project Site – Assessment, Site Conditions, Facilities & Significance

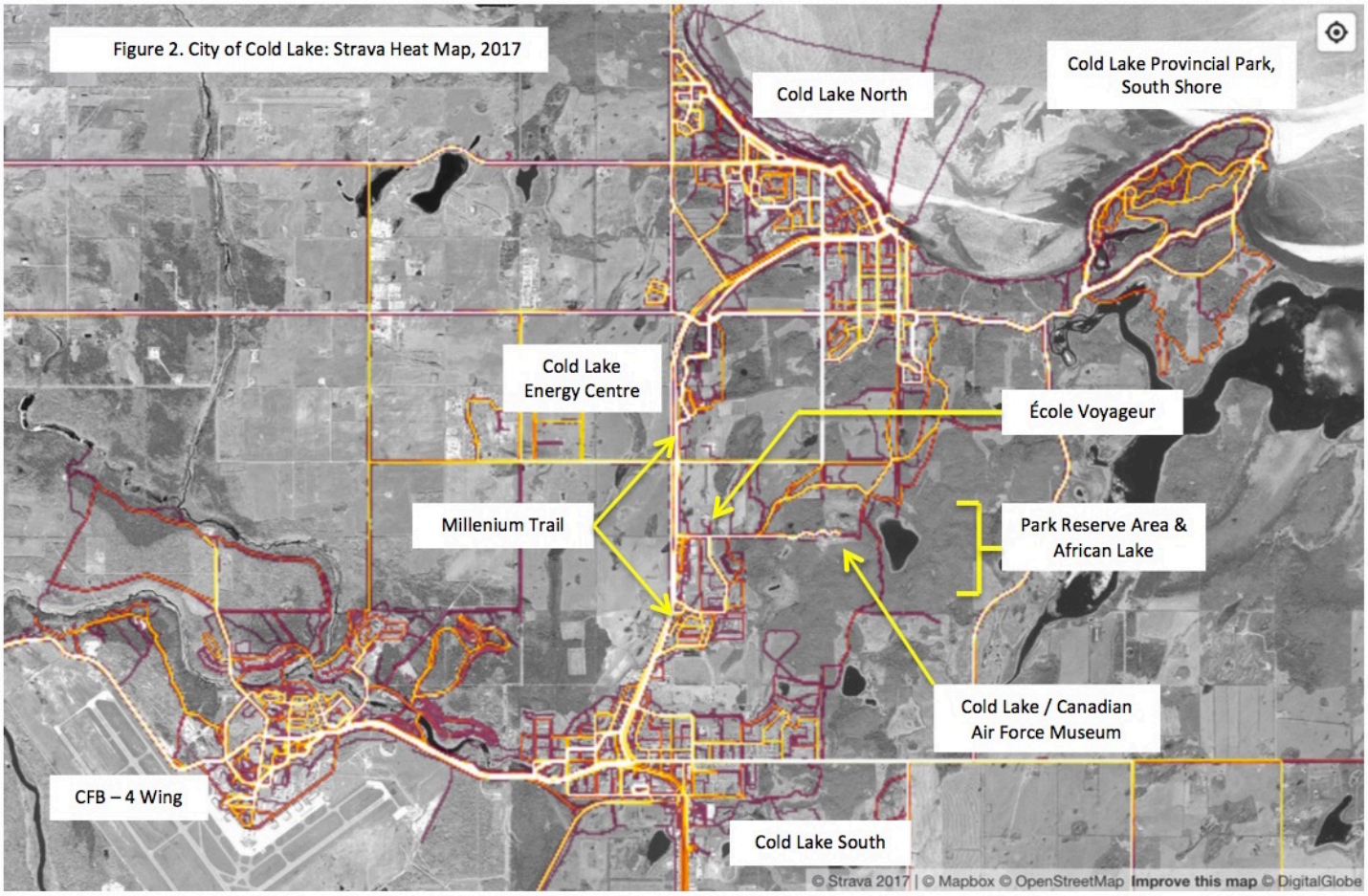
The proposed project site is located within a dedicated 120 acre (49 ha) Park Reserve surrounding the Cold Lake / Canadian Air Force Museum with the Cold Lake Motorcross Race Track to the north, and informal multi-use trails around African Lake to the east. The Park Reserve area is covered by coniferous Boreal Forest consisting primarily of mature pines, spruce, larch and fir alongside poplar, birch, aspen &/or cottonwood. Moderate slopes and valley floor provide for undulating topography with predominately clay and sand based soils in this area.

Figure 1. City of Cold Lake: Project Area – Location & Context

The site is located centrally between the north and south of the City, and frequented by residents and visitors who come to enjoy the local attractions &/or participate in various outdoor activities within the natural setting. The Cold Lake Museum (http://www.coldlake.com/content/museums) and Air Force Museum (https://www.cafconnection.ca/Cold-Lake/Facilities/Cold-Lake-Air-Force-Museum.aspx) provide road access and parking, with buildings located in flat upper area overlooking the sloped banks and beautiful views to the west and south, alongside jets flying in the distance or overtop. The Museum is open from late May to early September to the public, while the private Motorcross Track (http://www.coldlakemotocross.com/contact.htm) is open late May until ground freezing. The area also attracts people year-round with existing trails and features for visitors to engage in various recreational activity and training, including the use of the paved access road for 'training runs'.

Future planning for the Museum includes building of a 15m high lookout tower at the west side, program development and enhancement / expansion of venue to host various activities and outdoor events, and roadway improvements. Other possible plans in the area include a new City Public Works / Yards / Facility Operation building infrastructure east of the Museum facility. At the time of this document, planning discussions included the development of connecting 3 km trail between the Park Reserve and Cold Lake Energy Centre to the north adding a substantial and critical link.

In addition, the *2013 Plan* outlines initiatives to formalize, expand and connect the African Lake Trail to the north and south residential areas of the City. The current informal trail is a 5 km long multi-use path that circumnavigates African Lake east of the project site. Built on private and Crown land in the 1990's and overseen by the Tri-Town Trails Society, the trail has been without management or maintenance since disbandment of the Society in 1996 and has been ravaged by quad and motorbike activity making it non-usable for any non motorized application.



D. Neighbouring Facilities & Activities

Other relevant facilities in the surrounding area include:

- The Millenium Trail: a paved, multi-use, year-round trail connecting north and south Cold Lake as well as 4 Wing over ~11-12 km that passes due west of the project site.
- Cold Lake Energy Centre (http://www.coldlake.com/content/cold-lake-energy-centre): an expansive indoor and outdoor sports and recreation centre located north of the project site with potential land use discussions in process between new municipal facility expansion. This includes the potential creation of a 3 km multi use trail connection between the Centre and Park Reserve.
- École Voyageur (http://centreest.ca/voyageur/en/) francophone school located west of project site and attended by many students from CFB-4 Wing families
- CFB-4 Wing (http://www.rcaf-arc.forces.gc.ca/en/4-wing/index.page) located southwest of project site with many families and avid cyclists on staff, and who have been hosting a mountain bike race event annually over the last decade with upwards of 200 – 250 children and youth participating
- Cold Lake Provincial Park (https://www.albertaparks.ca/parks/northeast/cold-lake-pp/) located 3 km east of the City and known for its natural setting, wildlife, water activity, summer and winter recreation. 9 km of formalized hiking and mountain biking trails exist in the South Shore of the Park which are very popular and heavily used.

E. Current Uses / User Groups & Local Clubs

As indicated by the Strava Activity Use Heat Map and through meetings with the City, local riders and community members visit the existing Museum trails and informal trails in and around the site as well as the roadway. Throughout the four seasons, people come on a daily, weekly and monthly basis to ride, walk / dog walk, run, cross-country ski &/or snowshoe in the area, also engaging in ATV / OHV / quad / motorcross, snowmobile and equestrian activity. In the summer, people visit the Museum and use the roadway from 69th Avenue as a popular spot for hill training, with runners / running groups making multiple trips on a weekly basis.

Although there is no formal 'Trail club' in Cold Lake there are a significant number of mountain bikers, and several organized running clubs that regularly use the trails including the Speed Demons XC Club and cyclists on CFB-4 Wing Base. The former is a local AMBA (Alberta Mountain Bike Association) team stemming from the now dispersed Cold Lake Cycling Club with over 30 members aged 7 to 45. The team supports and participates in cross-country (XC) mountain bike race events, and avidly supports and promotes bringing a local Bicycle Skills Park & Trails - Ride / Training Centre to Cold Lake. Members of the Speed Demons also participate in the mentioned annual mountain bike race event hosted by CFB-4 Wing and its local club. Despite the existence of many mountain bikers in the area alongside CFB-4 Wing club and Speed Demons team, riding activities are spread out and networking is still to be established with no central place / hub or formal facilities currently existing and very limited natural surface trails to recreate on.

2. SITE & PLANNING CONSIDERATIONS – OPPORTUNITIES & CHALLENGES

A. Location & Context - Property, Access & Facilities

Located centrally within the City of Cold Lake, the proposed project area already draws visitors who come to enjoy the Museum together with the natural setting, existing informal trails, African Lake trail and private motorcross facility. With essential infrastructure already in place, the roadway entrance from 69th Avenue also provides ease of access as it encircles the Museum, connecting to parking areas and offers view points overlooking the sloped banks to the west and south. Riders and visitors can easily commute to the area with opportunity for family and users to stage comfortably out of the current parking and facilities.

In planning for the development of the Bicycle Skills Park & Trails – Ride / Training Centre, consideration will need to be given to:

- Land ownership, access, private and Crown land with respect to government (municipal, regional, provincial), industry and First Nations
- Utilities and hydro (including overhead power lines adjacent to entrance roadway and in the center of the bike park) which will require an agreement for the Bike Skills Park facility
- Current and future land development for facilities and natural resource activities including planned Museum enhancement / expansion of venue, roadway improvements, municipal development east of Museum, and possible resource based operations
- Historical mandate and objectives of the Museum in and around their property / fenceline
- Safety and liability in terms of management, signage, awareness and safe practices
- Zoning, access and limitation of motorized user groups (ATV / OHV / quad users, motorcross, snowmobilers and other)
- Fenced property boundary, motorized access and activity at private motorcross track facility
- Future expansion, development and connection of African Lake Trail to north and south residential areas of City as per *2013 Plan*

B. Natural Setting & Conditions

The Park reserve setting offers favourable grades and unique topography amongst the undulating wooded slopes and valley floor that support natural drainage and development through sustainable water management, and provide great opportunity for a comprehensive bike skills park and trails system that naturally works its feature progression through the existing terrain. Ultimately, the existing site, setting and conditions lend well to the development of a facility that can accommodate all levels of riding from beginner to advanced-expert through various proposed skills riding zones and multi-use trails.

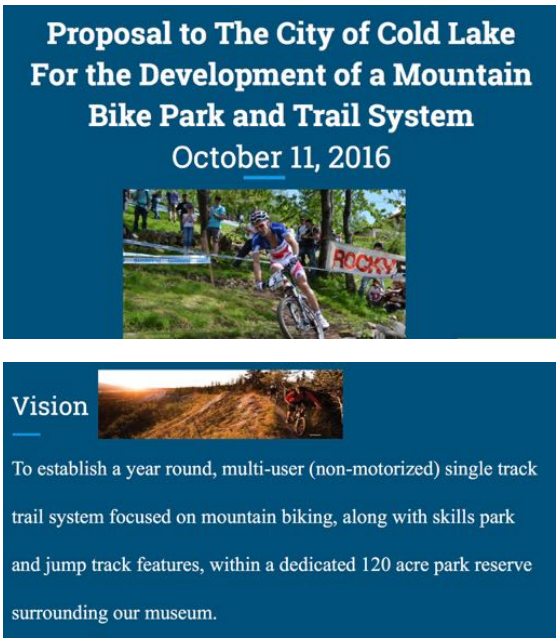
In planning for the development of the Bicycle Skills Park & Trails – Ride / Training Centre, consideration will need to be given to:

- Existing soils and availability of on-site material for construction
- Efficient use of local resources and materials (imported and on-site)
- Import / transport of construction materials with minimal impact to environment
- Building on slopes and implementation of sustainable construction methods and techniques
- Existing drainage and building on wet, low-lying areas with sustainable construction methods and techniques which may include raised tread, boardwalks &/or other drainage and management practices
- Environmental concerns and potential impact on habitat and wildlife values including threatened Woodland Caribou and potential nesting birds.

C. Local Interest Group, Advocacy & Cold Lake Trail System Survey

Although there are many mountain bikers in the Cold Lake area, riding activities are spread out and there is no centralized, networked or formal facilities that currently exist. In light of this, members of the riding community including those from the Speed Demons XC team have come together to outreach and promote the development of a local Bicycle Skills Park & Trails – Ride / Training Centre. In advocating for the facility, the group gave a presentation to City Council in Fall 2016 outlining the following mission and goals:

- Advocate for the development of a non-motorized single track trail system in the Lakeland area that will be used all year long for mountain biking, XC skiing, snow biking, trail running, geocaching, snowshoeing, and so on
- Work collaboratively with the City to develop, build and maintain single track trail network, as well as promote development of permanent freeride, skills & potential BMX park.
- Integration of hiking trails, picnic sites and biathlon shooting range as part of long-term development plan



In the presentation, the group also identified the value, significance and benefits of the facility with respect to:

- Environmental stewardship with 120 acre (49 ha) natural reserve and carbon sink
- Uniting north and south areas of the City with centralized park
- Potential to host Summer & Winter games, as well as annual / regular races in all seasons
- Relatively low cost to create ‘Legacy’ for community
- Outdoor recreation / alternative sport / variety of opportunities for every age in all seasons
- Local business benefit and employment opportunities for local contractors
- Encourages healthy lifestyles and family oriented fun
- Potential youth employment (summer camps, coaching; programming)
- Attracting people to Cold Lake, increase tourism and supporting economy

As part of the presentation and pitch to Council, the group also administered a Cold Lake Trail System on-line public survey to garner input / feedback from the community with the following results from 264 respondents:

- Interest towards year-round non-motorized single-track trail system devoted to sports like XC mountain biking, snow biking, snow shoeing and x-country skiing: 97.7%

- Benefits / main reasons the community sees for having such a trail system developed:
    - Promotes active & healthy lifestyle for all ages: 92.6%
    - Adds additional sports & recreational opportunities for youth teams / clubs in Cold Lake: 86%
    - Supports community school sports and recreation programs (such as Cold Lake Mountain Bike Race): 72.8%
    - Supports opportunity for Cold Lake to host Summer and Winter games: 57.2%
    - Other individually counted responses including: attracts people to our community / tourism / will help tourism / vacationing / opportunity to spend time (7); makes me faster / confidence building (4); activity / get active (2); interest in specific activity i.e. snow shoe (2), BMX (1); encourages family time / more safe family activities (2); would be great to have; would be a waste of tax payers money; makes community stand out; would be so much fun!

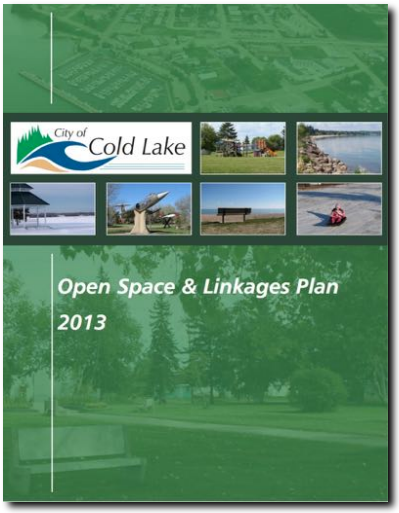
- Suggestions of what activities / features the community would like to see at the facility:
    - XC mountain biking: 87.5
    - X-country skiing: 79%
    - Mountain Bike Skills Park: 72.4%
    - Snow shoeing: 68.9%
    - Dirt jump / pump track: 61.5%
    - Biathlon trails & target practice: 47.5%
    - Snow biking (Fat bikes): 42.4%
    - Other individually counted responses including: BMX track (7); running / running trails / x-country running (7); public outdoor workout, ninja obstacles / Parkour (3); Cyclocross; hilly sections near rivers & lake; snowboarding

- Interest in helping with development and in what capacity:
    - Promoting use of trail system on Facebook: 72.6%
    - Building trail: 42.3%
    - Joining the committee: 23.6%
    - Financial support in the form of donation: 23.1%
    - Other individually counted responses including: applying for grants; race organization; integrating with physical education program; using it; making poster about trail; telling others to take this survey

- Interest in being contacted with additional information on development of XC Mountain Bike Trail System in Cold Lake with informative videos, web links, etc.: 56.8%

An overview of results from the public survey indicates a majority of interest in developing trails, mountain biking and recreational opportunities for Cold Lake in support of an active healthy lifestyle, community-building and quality of life; event planning and school programming; skills development and confidence building; and contributing to family friendly fun and tourism. In terms of activities and features, people were most interested in seeing mountain biking trails alongside skills park with dirt jump and pump track facilities, as well as a variety of year-round activities including x-country skiing, snow shoeing, biathlon and fat biking, running and BMX. A significant number of people indicated they could help with development through promoting, trail building, joining committee and donating / seeking funding, being pro-active and supportive with events and programs. More than half of respondents expressed interest in being contacted with ongoing development updates.

D. 2013 Open Space & Linkages Plan



In 2013, the Open Space and Linkages Plan *(2013 Plan)* for Cold Lake was released detailing results from a series of public open houses, community stakeholder meetings, and input from City Council / staff compiled from the previous years. This includes a Community Engagement & Visioning Project completed in 2009 where participants in phone surveys, interviews, focus groups and workshops were asked to identify important community values and services. Values related to the natural setting / environment (i.e. the Lake, parks, green space and trails) topped the discussion, while the most frequently mentioned service that the City should improve or increase funding to included parks, green space, and recreational facilities. Ultimately, the *2013 Plan* document offers relevant information and guidance to sustaining and improving the quality of life in Cold Lake, alongside strategies for enhancing recreational opportunities, maintaining the City's natural assets, and providing an accessible open space system for a variety of active and passive recreation, sports and leisure pursuits.

With reference to the Canadian Parks and Recreation Association and Canadian Council on Social Development, the *2013 Plan* recognizes the many benefits and opportunities that parks, opens spaces, linkages and trails offer in terms of physical, social, environmental and economic aspects namely:

- Contributing to well-being of individuals, families, communities at local, regional and national level
- Providing neighbourhood meeting places, low-cost and accessible options for physical activity and play
- Attractive corridors connecting community, enhancing the urban landscape and preserving habitat
- Great attractions to draw tourists while creating employment opportunities for local residents
- Improving value of property and at the same time, revenues in adjacent pieces of land

The *2013 Plan* also states that awareness of community values and demand towards recreation and open spaces helps inform the design of facilities / services that meet and respond to the needs of the community over the long-term significantly noting:

- Youth could benefit from spaces and facilities that target their interests to help them become active more often
- Trails continue to be one of the most demanded 'facilities' serving popular forms of leisure and active transportation
- Nature-based tourism as a growing market, with a focus on family recreation and 'destination' facilities

In providing recommendations for open space planning, the *2013 Plan* outlines accessibility, connectivity, sustainability, character (i.e. retaining natural character and aesthetic quality of space), and safety (to facilitate enjoyable and attractive space for greater range of users) as key principles. It highlights the importance for facility planning to incorporate and build upon the unique features and opportunities, and provide users with variety and diversity of options for outdoor recreation activity throughout the seasons. The proposed design and development of a Bike Skills Park and multi-use trail system would indeed adhere to these principles and planning for a facility that would provide a unique asset for the Cold Lake community.

E. Local / Regional Initiatives

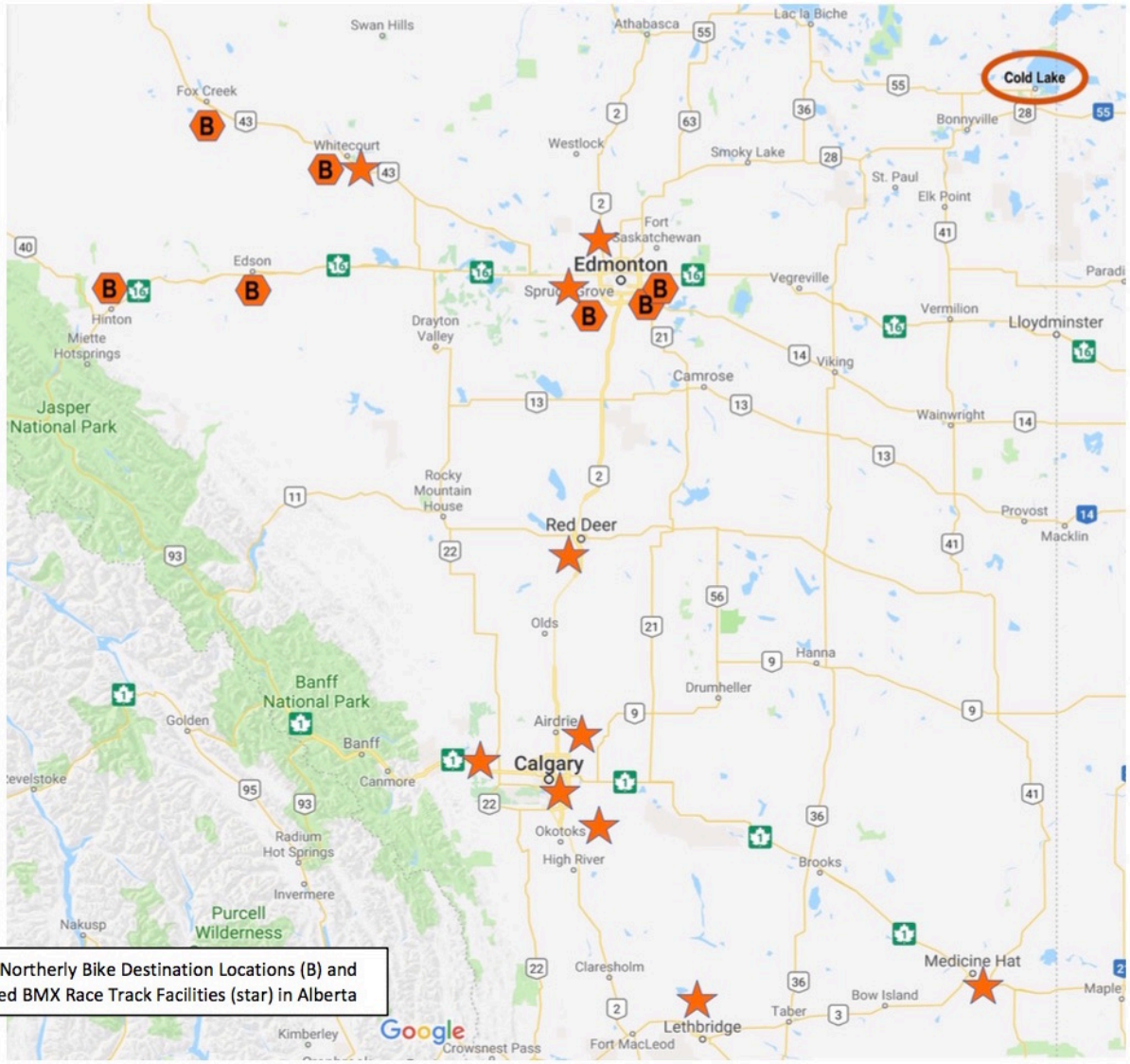


Figure 3. Northerly Bike Destination Locations (B) and Recognized BMX Race Track Facilities (star) in Alberta

Through development of a Bicycle Skills Park & Trails – Ride / Training Centre, Cold Lake could tie into the existing corridor of bike and recreation destination communities that connect through northern Alberta. These include the Sunridge Ski Area in Edmonton which houses multiple XC trails and hosts the annual Race the Ridge Mountain Bike XC – Alberta Cup event; Bike Park facilities in Devon, Sherwood Park, Hinton, Edson (currently in Phase 1 development), Whitecourt (currently in Phase 2 development), and Fox Creek Trails and Bike Park. Cold Lake itself could also play host to regional / provincial events including the Alberta Summer and Winter Games.

F. BMX Facilities

There are nearly a dozen race track facilities officially recognized through the Alberta BMX Association, with limited opportunities north of Edmonton. Establishing a high level Bike Skills Park and multi-use trail system that accommodates all levels and types of riding would compliment the existing facilities in Alberta. With notable interest from the community in having a BMX race track in Cold Lake, opportunities should be explored beyond the Bike Skills Park & Trails development looking at potential areas and outfits in the City that could appropriately house and facilitate such a venue.

At the time of this document there was overwhelming support for the current Bicycle Skills Park & Trails – Ride / Training Centre development with the hope that it might inspire a BMX club and initiative to move forward in the future. Recommended sites would include the Cold Lake Energy Centre and CFB 4-Wing base.

Resources and information on BMX race tracks and their planning and development can be found in Section 17 – BEST PRACTICES & STANDARDS on page 65 below.

G. Bike Parks & Trail Facilities, Rider Types & Styles

The following provides an overview list for bike parks and trails facilities in terms of components and features, as well as mountain biking rider types and styles, with the operations and sport continuing to grow and take on various forms.

Components & Features

- Bike Parks
- BMX Race Tracks
- Start Hills / Decks / Spectator-Staging Areas
- Jump Lines
- Table Tops, Gap Jumps, Hips, Shark Fins, Step Ups & Step Downs
- Pump Tracks
- Berms
- Rollers & Whoops / Rhythms
- Skills Features
- Drops
- Singletrack Trail
- Doubletrack Trail
- Flow Line / Flow Trail
- Up Trail / Return Line
- Perimeter Trail
- Fall Zones

Rider Types & Styles

- Beginner & Recreational Riders
- Cross-Country (XC) Mountain Bikers
- Dirt Jumpers & BMXers
- Downhillers (DH Riders)
- Freeriders
- Fat Bikers

Other Recent Riding Styles

- All Mountain (Enduro) Riding
- Dual Slalom Riding
- Slopestyle Riding

Detailed information and descriptions of each of the above can be found in Appendix A: Terms of Reference - Bike Parks & Trail Facilities - Components & Features, Rider Types & Styles which have been excerpted from Hoots Ltd., IMBA and Whistler literature, as well as related open source on-line resources.

3. CONSULTATION PROCESS

A. Open House Presentation, Attendees & Community Engagement

The following provides an overview of findings from feedback garnered at the Cold Lake Bike Park & Trails - Open House held on June 6, 2018 with the community, riders, stakeholders, interest groups and general public. The event was hosted by the City in collaboration with Jay Hoots who presented material on Cold Lake and the 120 acre park reserve project area, local and surrounding attractions and facilities, and bike park / trail development opportunities. Members of the Speed Demons XC – local mountain bike race club also presented and shared their positive experiences through biking and related activities.

Nearly 100 people attended engaging in discussion and the follow-up question-answer period, contributing input and ideas to help inform future planning and development of the facility. Information boards were on display at the Open House, as well as a series of image panels showing a variety of features and components that can be found at bike parks for beginner to advanced-expert level riders. Feedback / comment forms with survey questions were also provided for attendees to complete and share their interests in recreation activities &/or riding opportunities they would like to see at the project site; preferences towards the various bike features and components; and needs and concerns regarding the project and area.

B. Open House Survey Results – Interests, Needs & Concerns of Community and Underlying Themes

73 participants completed the feedback / comment and survey form with several answering on behalf of their spouse, family &/or children. Findings are summarized below and include Figures 4 & 5: Matrix Chart for User Preferences regarding bike park features and components. Responses to survey questions indicate the following information, preferences and common themes:

1. Age of respondents (age 10 to 64 including parents / grandparents and children):
   - youth, teens & teenagers (8)
   - people in their 20's (10)
   - people in their 30's (31)
   - people in their 40's (20)
   - people in their 50's (2)
   - people in their 60's (2)

2. Place of residence:
   - The majority of respondents were residents of Cold Lake with 34 coming from the north end of City, 16 from the south, 4 people in area adjacent to the Park Reserve, half a dozen from the CFB-4 Wing area and the remainder indicating they were from the general vicinity
   - In addition, there was 1 person that came from Ardmore (~33km southwest), 2 people from Cherry Grove (~20km south southeast), and 2 people from MD Bonnyville (~50km southwest)

3. Frequency of visits to Park Reserve Area:
   - As indicated, a significant number visited the Park on a weekly or monthly basis, while a few visited daily
   - A fairly high number said they had not been, did not know about area or did not answer, and 1 stated they never visited believing it was for dirt [motor] biking

Daily	Weekly	Monthly	Infrequent / Never / Did Not Know / No Answer
6	27	23	15

4. Activities at Park Reserve:
   - Nearly half of visits to the Park are to ride bike while a significant number trail walk / run. The remainder of people were similarly spread amongst visiting the Cold Lake / Air Force Museums, walking dog &/or engaging in winter activity, with a few people picnicking, and the remainder participating in other activity.

A: Museums	B: Ride Bike	C: Trail Walk / Run	D: Walk Dog	E: Winter Activity	F: Picnic	G - Other
14	36	30	13	12	3	8

5. All respondents indicated they would be interested in a Bike Skills Park and year-round, non-motorized trail system for mountain biking and multi-use activities in the City.

6. Activities people would like to have Bike Skills Park and Trail System Support:
   - Half a dozen people indicated they would like to see ALL activities
   - The majority favour mountain biking, over half are interested in walking / hiking / running, and significant number in snow / fat biking as well as x-country skiing
   - One person discussed trails designed to standard in order to host school / provincial races usable by bikers, runners and x-country skiers
   - Quite a few indicated riding / racing and snow shoeing, while nearly a dozen checked biathlon activity though 1 person suggested biathlon shooting can be done at the Cold Lake Range which means less liability
   - Other people mentioned tobogganing, backcountry skiing, alongside x-country skiing, as well as archery

A: Mountain Biking	B: BMX Riding / Racing	C: Walking / Running / Hiking	D: Snow / Fat Biking	E: Snow Shoeing	F: X-Country Skiing	G: Biathlon Trails & Target Practice	G - Other
64	20	40	33	22	30	11	5

7. Member of bike or trail club; consideration in becoming member:
   - 21 respondents are members of various Clubs, some which are named including,
     - Speed Demons XC - mountain biking racing club (7) and of note is that following the Open House, the Club had 21 people sign-up!
     - Cycling-related Clubs as member / facebook member (5) including the Cold Lake Cycling Club, ABA Cold Lake Bicycle Association, and AB Triathlon Association
     - Running Club (2)
     - Cold Lake Snowmobile Club (1)
     - BC Lung Association (1) as Trek member / volunteer

Yes (club member)	No / no answer	Yes (would consider becoming club member)	No/ maybe / not sure / do Not Know
21	52	33	11

   - A significant number of people are not member of a bike or trail related Club (or did not answer) though many said they would consider joining
   - Nearly a half dozen people said they would maybe / potentially join a Club with the other half saying they were unsure / did not know
   - 1 person mentioned they have built trails in nearby Bragg Creek, AB and Rossland, BC recognizing the power of a strong active trails society which is good for everyone!
   - *As well, 1 person said they would like to be part of maintenance and building as one can always lend an extra hand when wielding a shovel

8. All respondents agreed that promoting and creating recreation facilities for mountain biking and trails is of benefit to Cold Lake with some very enthusiastic responses accompanied by exclamation marks!

9. The following documents comments, questions or concerns that respondents put forth about the current status and use of the Park Reserve Area:

   - Nearly a dozen and a half people mentioned concern over motorized vehicles with a few referencing the state of nearby African Lake trail which is in disrepair from lack of maintenance and years of being subjected to motorcross / motorbike / quads / ATV / OHV use. Several inquired how unauthorized vehicles may be prevented / prohibited from entering the Bike Park and Trail area and dealing with trespassing.

   - A few people brought up concerns over garbage being left currently at the site and 'fly tipping' (illegal / unauthorized dumping).

   - Two people asked about the dates of when the project will kick-off, as well as who is responsible for building, machinery and cost associated with maintenance. As well, a few others brought up concerns in terms of sustainability and permanence of facility.
   - A few offered suggestions for future Bike Park and Trail development, specifically:
     - Providing signage and advertising
     - Providing longer trails / extending and connecting bike trails to residential areas (2)
     - Explore ways for more stakeholder agreement by making multi-use trails (including fixing African Lake Trail)
     - *Work with Museums to integrate facility in complementary manner that supports their venue and mandate / objectives, visitors, events, programming and future plans / development

   - One respondent asked what happened to an earlier site plan where the campground was to be built in the beginner area and if there was possibility to still incorporate

   - There were also comments of support for Bike Park & Trail development in the Park Reserve Area namely:
     - Didn't realize the space… love the vision
     - Anything like this is an asset
     - Build it, we will be there
     - Go for it!

10. Numerous bike park / trail facilities in Alberta, BC and other areas have been visited by half (37) of respondents with Canmore / the Nordic Centre alongside Whistler Bike Park being frequented the most, followed by Hinton Bike Park. The remaining have not visited a facility &/or indicated they would like to, and a couple other people mentioned they have skied in areas that have mountain biking. Below lists the various locations ridden.

    Bike Park / Trail Facilities in Alberta
    - Canmore / Nordic Centre (11)
    - Hinton Bike Park (8)
    - Calgary / Calgary Olympic Park (5)
    - Edmonton / Edmonton River Valley / Goldbar (5)
    - Banff / Banff Tunnel Mountain including Top Notch & Star Wars (3)
    - Bragg Creek (3)
    - Red Deer (3)
    - Sherwood Park (3)
    - Jasper (2)
    - Rabbit Hill (2)
    - Other places mentioned including Fort MacMurray, Lethbridge, Nordegg & St. Albert
    - Local Park / Provincial Park such as Cold Lake, Bonnyville, Marial Lake, Whitney Lake, Lac La Bic & Vermillion

    Bike Park / Trail Facilities in British Columbia
    - Whistler Bike Park (11)
    - Devon (5)
    - Fernie (4)
    - Sun Peaks (3)
    - Comox / Cumberland (2)
    - Golden (2)
    - North Shore (2)
    - Mount Washington (2)
    - Other places mentioned including Bear Mountain, Delta, Kelowna Rutland area, Kicking Horse, Langley, Panorama, Rossland, Silverstar, Valemount

    Other Bike Park / Trail Facilities in Canada and United States
    - Moosejaw, Saskatchewan; Whitehorse, Yukon; Tremblant / Bromont / Mont. St. Anne, Quebec; Nova Scotia; Sugarloaf, New Brunswick
    - Moab, Utah (3); Whitefish, Montana
    -

11. Responses were divided between 'Yes' and 'Maybe' on whether people would pay a user fee at a Bike Skills Park with the remainder circling 'No'. Several questions / comments to take note of include:

Yes	Maybe	No
30	36	7

    - How would the user fee be monitored?
    - Volunteers would be needed
    - Maybe there is possibility to incorporate with Energy Centre membership?
    - Need more details to decide

12. More affirmation over user fees came when people asked if they would pay to use a Bike Skills Park if maintained in great condition all the time

Yes	Maybe	No
48	20	4

13. As indicated, bike skill levels ranged from beginner up to expert with a concentration amongst the intermediate and a dozen beginner, and a hearty young-un indicating they were 'out of this world'

Beginner	Intermediate	Intermediate / Advanced	Advanced	Advanced / Expert	Expert	Space Alien
12	40	2	7	2	3	1

14. From the various examples of bike park features posted up, respondents indicated a range of preferences with some similarities, differences and a few dominant themes. The Matrix Charts below provide a summary of responses based on checks for 'like' and crosses for 'don't like' indicating overall preferences for:

- Wide and raised ladder bridges, as well as narrow (beginner to advanced - expert)
- Wide and narrow log rides, and log rolls (beginner to advanced - expert)
- Wood wall rides (intermediate to advanced - expert)
- Ramp Drops (beginner to advanced – expert)
- Pump track and berm / roller features (beginner to advanced - expert)
- Progressive jump line table set (beginner to advanced - expert)
- Flow Style Jumps (beginner to advanced - expert)

	VERSION A - shows total checks within item grouping	PREFERENCES FOR BIKE PARK FEATURES - COMMUNITY INPUT FROM COLD LAKE BIKE SKILLS PARK & TRAILS OPEN HOUSE - JUNE 6, 2018																			
	BIKE PARK FEATURE TYPES & PICTURE PANEL REFERENCE NO.	0		5		10		15		20		25		30		35		40			
Ride Level	Naturalized Wood / Rock Skills & Balance Features																				
B / I / A / E	Wide Ladder Bridges - 1A / 1B / 1C / **1i** / **4D**																	40.6			
I / A / E	Narrow Ladder Bridges / Skinnies - **1K** / **1M** / 1N / **1O**														34.5						
I / A / E	Raised Ladder Bridges - **1J** / **1L** / **4L**																	41.6			
B / I / A / E	Skills Grouping / Complex - **1P** / 2A / **2B** / **4B** / **4C**													31.2							
I / A / E	Technical Balance Features - **4E** / **4F** / **4G**												28.1								
B / I / A/ E	Wide Log Rides - 1G / **1H** / **2F**															37.0					
I / A / E	Narrow Log Rides / Log Ride Obstacles - **2G** / **2H** / **2i**														33.6						
B / I / A / E	Log Rolls - 1E / 1F / **2K** / 2O														34.8						
B / I / A / E	Rock Path / Garden - **1D** / 3C / 3D												30.0								
B / I / A / E	Wood Platform Ramp / Wood Ramps / Rock Ramps - **3B** / **4A** / **4H**													31.8							
I / A / E	Wood Wall Ride - **4J** / **4K**														34.8						
B / I / A / E	Ramp Drops - **2C** / 2D / **2E**														34.8						
Ride Level	Dirt Riding Surfaces / Shaped Features																				
B / I / A / E	Berms & Rollers / Pump Track - **2J** / **2L** / **3A** / 3P / **4M**															36.8					
B / I / A / E	Progressive Jump Line Table Set - 2M / 3F														33.5						
I / A / E	Semi-Gap Jumps / Step Up / Step Down - 2N / 3M / 3N													32.0							
A / E	Gap Jumps / Advanced Jumps - 3i / 3J / **3K**													31.9							
A / E	Combined Ramp Jumps / Ramp Jumps - **3E** / **3G** / 3H / 3L / 4i														32.6						
B / I / A / E	Flow Style Jumps - **2P** / 3O																38.0				
Ride Level	Hardscape Ride Surfaces																				
B / I / A / E	Pre-fabricated / Asphalt Pump Track - 4N / **4O** / **4P**													30.9							
	Note: bolded reference no. indicates features 'really liked'																				

Figure 4. Matrix Chart for Community Input – Preferences for Bike Park Features Based on Total Checks within Item Grouping

	VERSION B - shows total checks w/in item grouping less crosses	PREFERENCES FOR BIKE PARK FEATURES - COMMUNITY INPUT FROM COLD LAKE BIKE SKILLS PARK & TRAILS OPEN HOUSE - JUNE 6, 2018																			
	BIKE PARK FEATURE TYPES & PICTURE PANEL REFERENCE NO.	0		5		10		15		20		25		30		35		40			
Ride Level	Naturalized Wood / Rock Skills & Balance Features																				
B / I / A / E	Wide Ladder Bridges - 1A / 1B / 1C / **1i** / **4D**																38.4				
I / A / E	Narrow Ladder Bridges / Skinnies - **1K** / **1M** / 1N / **1O**													30.7							
I / A / E	Raised Ladder Bridges - **1J** / **1L** / **4L**																	40.9			
B / I / A / E	Skills Grouping / Complex - **1P** / 2A / **2B** / **4B** / **4C**											26.6									
I / A / E	Technical Balance Features - **4E** / **4F** / **4G**									21.0											
B / I / A/ E	Wide Log Rides - 1G / **1H** / **2F**													31.6							
I / A / E	Narrow Log Rides / Log Ride Obstacles - **2G** / **2H** / **2i**													31.0							
B / I / A / E	Log Rolls - 1E / 1F / **2K** / 2O													30.2							
B / I / A / E	Rock Path / Garden - **1D** / 3C / 3D									21.5											
B / I / A / E	Wood Platform Ramp / Wood Ramps / Rock Ramps - **3B** / **4A** / **4H**											27.1									
I / A / E	Wood Wall Ride - **4J** / **4K**														34.3						
B / I / A / E	Ramp Drops - **2C** / 2D / **2E**														32.6						
Ride Level	Dirt Riding Surfaces / Shaped Features																				
B / I / A / E	Berms & Rollers / Pump Track - **2J** / **2L** / **3A** / 3P / **4M**															35.0					
B / I / A / E	Progressive Jump Line Table Set - 2M / 3F													30.5							
I / A / E	Semi-Gap Jumps / Step Up / Step Down - 2N / 3M / 3N												29.1								
A / E	Gap Jumps / Advanced Jumps - 3i / 3J / **3K**											27.2									
A / E	Combined Ramp Jumps / Ramp Jumps - **3E** / **3G** / 3H / 3L / 4i												29.0								
B / I / A / E	Flow Style Jumps - **2P** / 3O															37					
Ride Level	Hardscape Ride Surfaces																				
B / I / A / E	Pre-fabricated / Asphalt Pump Track - 4N / **4O** / **4P**											27.0									
	Note: bolded reference no. indicates features 'really liked'																				

Figure 5. Matrix Chart for Community Input – Preferences for Bike Park Features Based on Total Checks Less Crosses within Item Grouping

15. Respondents ride / have a variety of bike types with a significant number being full suspension or hardtail xc mountain bike style, as well as BMX and dirt jumpers. 1 said they had access to any / all bike types at any time.

Full Suspension Mountain Bike	Hardtail / XC Mountain Bike	Road Bike	BMX / Dirt Jumper	Regular / Hybrid / Touring	Downhill	Cruiser	Fat Bike / Fat Tire Unicycle	Other: Unicycle, Recumbent	Strider (no pedal run bike)
40	22	11	9	3	2	2	2	2	1

In the second part of #15, respondents indicated the various types of riding they want to do more of from easy-going to technical be it on trails or specific mountain bike facilities with 1 person mentioning road riding. Below lists the different types of riding opportunities outlined.

- Trails in general (12)
  - Trail riding
  - Exciting, good, varied trails
  - Scenic trail to enjoy nature (including longer one around Lake)
  - Trail to exercise, have good workout
  - Easy, accessible trails
- XC / single track (11)
- Mountain biking in general (6)
- Dirt jumping / jump lines / jumps (5)
- Various types / styles of mountain bike trails
  - Flow trail (1)
  - Downhill (1)
  - Slopestyle (1)
  - Fat bike (1)
- Technical riding / obstacles / skills (3)

As well, there were a few individual comments of note namely:
- Easy and for family to learn / bike on
- Races
- Road
- Everything [all types of riding] looks awesome

16. The types of features that interested respondents most are:

- Trails
  - Trails / XC / longer XC trails / single track (14)
  - Flow trail / flowy trails with some technical / slalom / downhill (7)
  - Mountain bike only trails / more than basic trails / advanced-expert trails (3)
  - X-country ski (2)
  - Running (1)
- Skills, balance and technical riding
  - Features / obstacles / technical riding / North Shore / a few stunts for all abilities (9)
  - Skills / skills park / skills area / training balance / complex (9)
  - Wood bridges / ladders / log rides / balance beams / elevated wood & narrow / skinnies (7)
  - Rock garden / rock combos (2)
  - Drops (1)
  - Wall ride (1)

- Jumps
  - Dirt jumping / jumps (7)
  - Small jumps (2)
  - Intermediate jumps (2)
  - Table (1)
  - Ramp / gap (1)

- Pump track (5)
- Natural terrain / woods / wood or sand structures / unpaved on dirt (5)

As well, 1 or more individuals provided other comments of note namely:
- Anything fun / challenging (4)
- Love progression / beginner-advanced so children learn (2)
- Bike / walk friendly interconnected trails throughout Tri-City area & Provincial (Millenium Trail does not count in its current layout)
- Tri / road (smooth asphalt)
- Race

17. On what respondents felt does not belong or does not interest them in the Bike Skills Park, responses reflect both similarities and differences amongst respondents especially when compared with responses to #9 and ensuing #18 namely:

- Motorized vehicles / motorcross / motorbikes / quads / OHV (8)
- Paved & wide trails that invite ATV's / concrete fixtures / concrete paths / skatepark surfaces (4)

As well, a few individuals mentioned specific bike features they were not personally interested in namely:
- Advance jumps & vertical features / huge kickers (2)
- BMX but would not deny anyone with passion
- XC trails
- Skinnies / thin wood sections
- Rock riding

Similar concerns mentioned in #9 were also mentioned with regards to people perhaps not fully respecting the Park and inappropriate behavior, namely:
- Booby traps / bad attitudes / jerks (2)
- Broken glass [litter] / anything of high value that is easily vandalized (2)
- Little children just wandering around [could be risk]

There were also comments in support of the Bike Skills Park regardless namely:
- Looks fun / everything looks great / everything interest us (4)
- Everything belongs if others / family are interested (2)

18. Regarding suggestions and input on what would make the Park better, the following range of responses were given, several of which build upon aspects brought up in #9 and #17:

- Bike Skills Park design and development
  - BMX track & park
  - Air bag & foam
  - Explore deal with MD ski hill for downhill runs
  - Lift system / chair lift / location at Kinosoo Ridge Snow Resort for lift access trails (2)
  - Investigate way to get water on jumps as the area is very dry

- Trail design and development
  - Emphasis on bike specific trails for bike use (runners / walkers not permitted)
  - Multi-use for runners
  - Trails not paved (perhaps wood chips) & wide enough to host XC ski
  - XC ski / backcountry skiing in winter (2)
  - General use perimeter loop great idea
  - Directional paths to avoid collision & enable for speed / comfort (2)
  - Connection to African Lake Trail
  - Way to get to other trails not on the road so it is safe to bike to
  - Investigate way to get water on trails as the area is very dry

- Overall facility design & development, programming, recreation & sport
  - Should be accessible to ALL to promote health & wellness for all
  - Multi-use year-round
  - Family friendly for younger children
  - All ages (adults & advanced, not just for kids)
  - Races for all ages from May – August
  - Opportunity to host AB Winter Games for XC ski
  - Toboggan hill / rolling hills (2)
  - Free use for schools to improve racing team

- Support & Development of Attractions
  - *Work with Museums to integrate facility in complementary manner that supports their venue and mandate, visitors, events, programming and future plans / development
  - Better connection to Air Force Museum & 4 Wing as a whole

- Safety & Maintenance
  - Consideration for security / *possible fencing / have closed gate at night to keep clear / monitor (4)
  - No motorized vehicles including ATV, motorbikes & skidoos / prevent / fine motorized vehicles (3)
  - Need maintenance plan / properly maintained or disrepair like African Lake Trail (2)
  - Idea of user fee for upkeep & way to watch overnight
  - Consideration for risk, injuries & cost for injury recovery

- Amenities
  - Bathroom & amenities / washrooms not outhouses (3)
  - Picnic areas (2)
  - Water / water fountains (2)
  - Food trucks
  - Cook house shelter / shelter / covered area for group use & families / shelter with partial roof & no walls to protect from weather & sun (3)
  - Pro shop / *fix repair station stand w/ pump & tools (2)
  - Benches near kids so parents / caregivers can watch over
  - Adequate parking to avoid bike damage

(*where respondent indicated they can help provide further insight / guidance, skilled labour &/or donation of goods)

4. MAINTENANCE

A. Current Activities & Considerations

Currently, general maintenance in the area is concentrated around the Museum facilities in and around the building, parking and roadway in terms of regular mowing, snow plowing, and pick-up / removal of litter and recycling from disposal bins on site. Future development may include Museum enhancements / expansion of venue, roadway improvements, and a City Public Works / Yards / Facility Operation to be built in the adjacent open space east of the Museum. The Motorcross Race Track operates under the management and care of a non profit association within a fenced area; and no maintenance occurs on the nearby African Lake Trail built on private and Crown land since the disbandment of the Tri-Town Trails Society nearly 20 years ago. With regards to infrastructure / utilities, Hydro power lines run parallel to the roadway with maintenance and servicing taking place as needed.

B. Bicycle Skills Park & Trails - Ride / Training Centre: Infrastructure, Facilities & Amenities

Implementation of the Bike Skills Park and multi-use trails will require additional infrastructure, facilities and amenities, alongside corresponding maintenance services. These include management for added litter and recycling bins in parking and staging areas, trailheads / entrances / junctions, passive recreation and picnic areas; mowing and snow plowing activities; and caring for signage and furnishings (picnic tables, benches, bike racks).

C. Bicycle Skills Park & Trails - Ride / Training Centre: Bike Skills Nodes

Based on experiences with similar projects, the skills nodes will require raking, shovel shaping and compaction of features, ride lines and surfaces, clearing of organics / debris & cutback / pruning of trees and shrubbery a minimum of twice a year in spring and fall in order to keep the performance experience of the facility up to its original design intent. All dirt features including start / return hill, pump tracks, jumps, Flow Trail, roller and berm features will require the existing soil material to be blended with imported clay / sand mix, and care taken to wet and compact the features thoroughly in order to withstand rider impact and heavy rain events.

D. Bicycle Skills Park & Trails - Ride / Training Centre: Multi-use Trails System

Key training trails will be built with natural surface tread. It is recommended that multi-use trails will be built with minimal to moderate grades using natural surfacing blending existing soil material with imported gravel / clay / sand mix where needed and topped with crush gravel surfacing in order to create a more durable surface that will require less overall maintenance and a smoother faster ride experience.

The maintenance requirements for the different trails can vary greatly. Trails should be maintained to enhance durability, interest, enjoyment, safety, predictability, and reduce liability. It is important to establish performance standards and conditions for the trails, and to be consistent and predictable for the entire trail to avoid surprises or barriers.

The multi-use trails will require the highest level of scrutiny, to ensure that they are maintained in a condition conducive to use by the general public. As the development of the trails is part of a municipal initiative and within the City's boundaries, it will be prudent for the municipality and partners to take an active role in trail maintenance. As the use of trails becomes more specialized, the local advocacy / interest group(s) and riders should become more active participants in trail maintenance, particularly for those trails specifically built for &/or by the riders. Agreements could be established to confirm the roles and responsibilities of the various parties.

All trails need to be built to a suitable standard and subsequently monitored for issues related to user safety and trail condition. The process need not be onerous, but will require the cooperation of the riders, the local advocacy / interest group(s), and municipal staff to identify issues and to address maintenance aspects in a meaningful and timely manner. Degradation of a trail is compounded by continued use and weather, so it is important to identify and address issues as soon as possible.

Best practices for sustainable trail design and construction are recommended and attached to this document with consideration of the Whistler Trail Guidelines / Standards. Please see Section 17: Best Practices & Standards below on page 64 and Appendix F: Recommended Trail Resources.

With regards to wood bridge and log technical trail features (TTF), these generally do not require extensive maintenance when built / fastened properly with positive water drainage directed away from the feature footings. These wood features will have a 5-15 year life cycle depending on application and should be checked with regularity for structural stability and relevance in 'ride line'.

E. Long Term Sustainability – Environmental Impacts, Drainage & Soils

Applying 'best practices' for sustainable trail design, construction and drainage will significantly minimize environmental impacts and intended / unintended use / erosion from water and general wear and tear. All riding zones and trail including start / return hill, pump tracks, jumps, Flow Trail, roller and berm features will require a proper blend of on-site and imported material (sand, clay &/or crushed gravel), layering and compaction processes in order to withstand traffic, use and rider impact. Appropriate drainage infrastructure and grading practices (grade reversals, drain pipes, out-sloping, swales, curbing, percolation, boardwalks and water crossings, raised tread &/or armouring) will be implemented to direct water away from all features, with on-going monitoring and clearance of any obstructions. Wood and log skills features generally do not require extensive maintenance when built / fastened properly with positive drainage away from the components will nevertheless require regular monitoring and servicing to be carried out.

Adherence to sustainable design and construction, and on-going monitoring and maintenance will enable the Bicycle Skills Park & Trails – Ride / Training Centre to accommodate higher use and traffic as the park draws more users over time. Using existing natural drainage and infrastructure will help facilitate positive water flow, minimize erosion and keep construction budgets minimized. Please see Section 17: Best Practices & Standards below on page 64 and Appendix F: Recommended Trail Resources for sustainable building development.

F. Roles, Amenity Ownership & Schedule

The Bicycle Skills Park & Trails - Ride / Training Centre will require key maintenance applications and practices with respect to supervision, operations and performance in order to facilitate proper management, on-going care and safety.

Supervisory Activities

- daily / monthly / yearly visual and recorded inspections to review and report on operational maintenance of area
- regularly conduct visual checks to ensure the site is devoid of hazards and potential injury
- review and monitor all trails, skills / riding zones, jump lines and features, shaping and spacing of components, and ride surfaces together with wood features, fasteners and supports to ensure good condition, proper functioning and no adverse dangers or risk
- ensure the entire area is clear of discarded matter, hardware, woody debris, loose degraded logs, miscellaneous piles, bits and garbage

Operational Maintenance

- guarantee that the Bike Skills Park & trails are an acceptably managed asset with regularly scheduled litter / recycle pick up and review / repair of 'general features' at the site including mitigation measures against weathering, exposure and other forces of nature
- ensure proper drainage, assurance of signage and any other site amenities are in proper condition
- on-going and appropriate recording and documentation

Performance supervision

- final shaping and tuning of riding zones and trails with attention to take-off and landing transitions of jump lines and features, as well as final testing of all ride lines and features to ensure they meet the design intent

- all ride lines and features subject to performance reviews, and shaped / maintained by a professional builder, trained user group &/or specialist in the field

Bike Skills Park & Trails - Maintenance Roles

Three main examples of Bike Park maintenance scenarios exist with respect to keeping the Bike Park maintained. Each of the scenarios require serious consideration with respect to the balance of duty of care, attention to standards, design intent and associated budgets.

Municipal Control

- Supervisory, Operational and Performance maintenance operations are the responsibility of the City and all funding for the Park is managed by City maintenance to train and schedule Municipal staff to engage in regular winter and summer maintenance services AND/OR hire third party professional for specialized services
- The City owns or is responsible for the land
- Insurance is held by the Municipality as a 'unique parklands' Asset and all Duty of Care lies on the Municipality

Club / Local Advocacy Group Control

- Supervisory, Operational and Performance maintenance operations are the responsibility of a Not for Profit volunteer group and funding for the Park is managed by a bike / trails club to train and schedule regular winter and summer maintenance services AND/OR hire third party professional for specialized services
- The City owns or is responsible for the land and the Not for Profit enters an Operating Agreement with the City
- The Not for Profit can get funding through grants &/or sponsorship opportunity
- Insurance is held by the Municipality as a 'unique parklands' Asset and all Duty of Care lies on the Municipality

Combined Control

- Supervisory, Operational and Performance maintenance operations are divided up between the City staff and Not for Profit Club AND/OR hire third party professional for specialized services
- The City owns or is responsible for the land and the Not for Profit enters an Operating Agreement with the City
- The Not for Profit can get funding through grants and/or sponsorship opportunity
- Insurance is held by the Municipality as a 'unique parklands' Asset and all Duty of Care lies on the Municipality

A working example of the aforementioned relationship might look like the following:

Maintenance	City Roles	Club Roles / Local Advocacy Group	Professional Role
Supervisory	- Bi-yearly inspections / review - Removal of stored refuse	- Bi-yearly inspections / review - Put refuse in defined pick-up areas	- Inspection review / consultation
Operational	- Litter & recycle pickup - Clear / repair main drainage - Sign & amenity assess / repair - Trail surface stability / pack	- Site litter pick-up to trash bins - Repair site feature drainages - Track & jump feature upkeep - Trail organics trimmed	- Complete trail/corridor repair
Performance		- Shape / pack jumps & features	- Shape jumps & features

Note: There are fewer than a dozen Canadian companies that Design and Construct Bike Skills Parks and even fewer that offer professional maintenance services. Maintenance service work is a different level of 'Duty of Care' than Capitol Project construction and should be considered before hiring professional services.

G. Costs

The level of effort and the cost of the Bike Skills Park and Trails maintenance is a reflection of the quality of the design, construction methods, and materials used. By investing in diligent planning, the use of skilled or experienced builders, and suitable materials will result in a higher quality product that is more durable and ultimately enhance the user experience. The facility should be implemented when sufficient capital funding is available to build to the appropriate standards, which will reduce the long term maintenance costs.

Costs can be reduced through training and having more people involved in the maintenance and care of the facility. Ultimately, the more people / groups involved, the greater the sense of ownership and care. As well, with a well designed, constructed and maintained facility, different groups / clubs will be attracted to use and there could be an agreement established where required volunteer time is put in to maintain the venue in order to use the facility for events. Maintenance training could be provided through a dedicated training seminar, hands-on workshop / volunteer work bee.

5. CONCEPT LAYOUT PLAN

The following provides an overview and description of the proposed Cold Lake Bicycle Skills Park & Trails - Ride / Training Centre in terms of skills park nodes, trail facility development, and the overall area. It is accompanied by a Concept Layout Design outlining the overarching plan for the Skills Park Nodes, Trails & Features, as well as Concept Layout with photos and notes describing the existing conditions, character and elements associated with area (see Figures 6 & 7: Cold Lake Bicycle Skills Park & Trails, Ride / Training Centre - Proposed Concept Layout, Photos of Site & Area and Proposed Concept Layout, Skills Nodes & Trails below.

A. Vision, Goals & Objectives

The proposed Concept Layout is based on meetings with Cold Lake staff, stakeholders and members of the community (local riders and user / interest groups), background research, and comprehensive evaluation of the site. The Concept was shaped through ideas / feedback garnered from the Cold Lake Trails System Survey, Open House and Community Input Session with survey; and informed by the following design vision, goals, opportunities and benefits, and objectives alongside maintenance aspects, environmental impacts and sustainable development applications.

Design Vision - What is a Bike Skills Park?

- welcome mat to world of mountain biking
- diverse skills / riding zones, trails
- natural obstacles (rocks, logs, dirt features)
- pump tracks with route options & transitions
- progressive dirt jumps, flow lines & trails
- imaginatively constructed features including woods skills & balance components
- landscaped to blend with park setting / surroundings
- works with unique terrain, forest / trees, local resources & materials
- progression based for all levels of riders to develop skills gradually
- 100% managed environment, utilizing & updating existing access & support amenities

Goals & Benefits of a Bike Skills Park

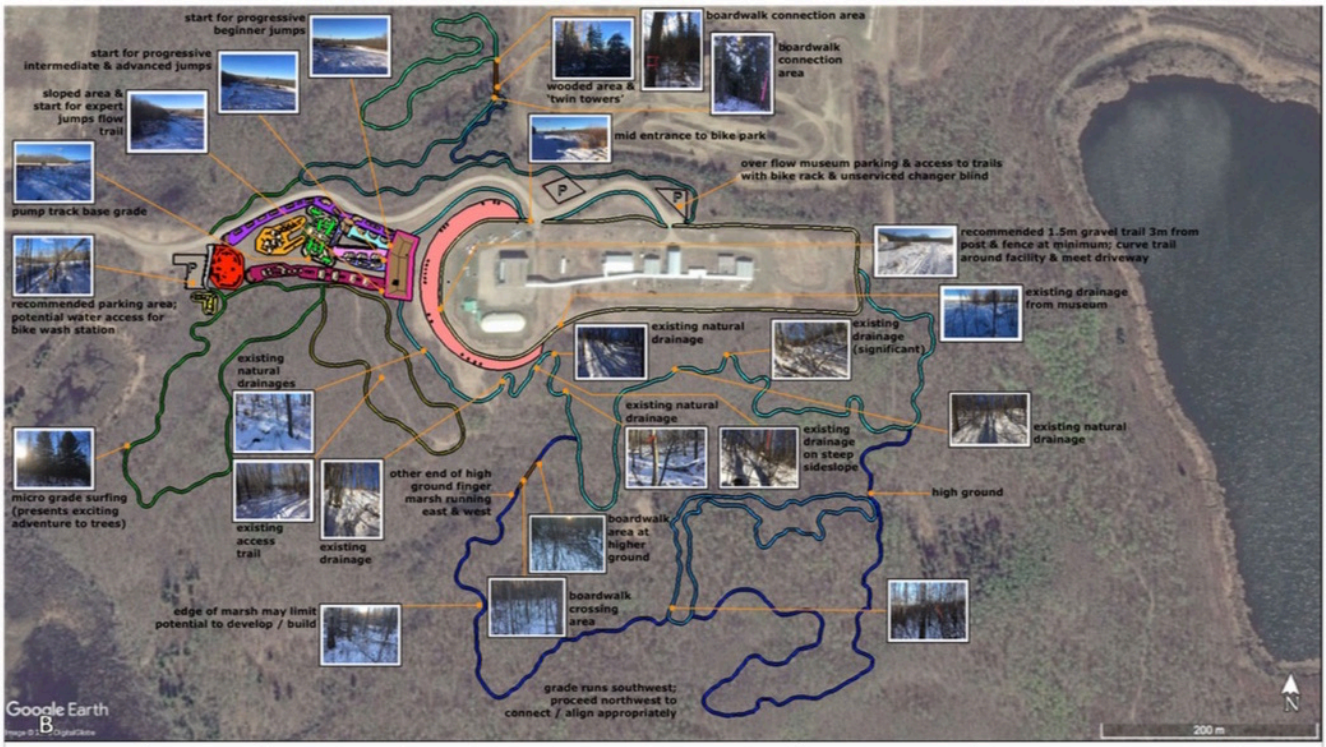
- opportunity to educate & experience 'free'
- all ages of riders in fun, structured, safe, managed area
- gathering point, social, family friendly
- recreation programming – revenue generation
- contributes to tourism & economy
- public / private partnership
- due diligence for unauthorized building

Objectives of Bike Skills Park - Adhering to best practices and standards, and responding to the interests, needs and concerns of the community, the proposed concept design aims to:

- Provide multi-sport, multi-purpose recreation facility that accommodates all user groups, skill levels and abilities
- Build upon and enhance the existing natural and cultural setting, providing for a variety of activities and opportunities in backdrop of Park reserve, wooded area and natural terrain

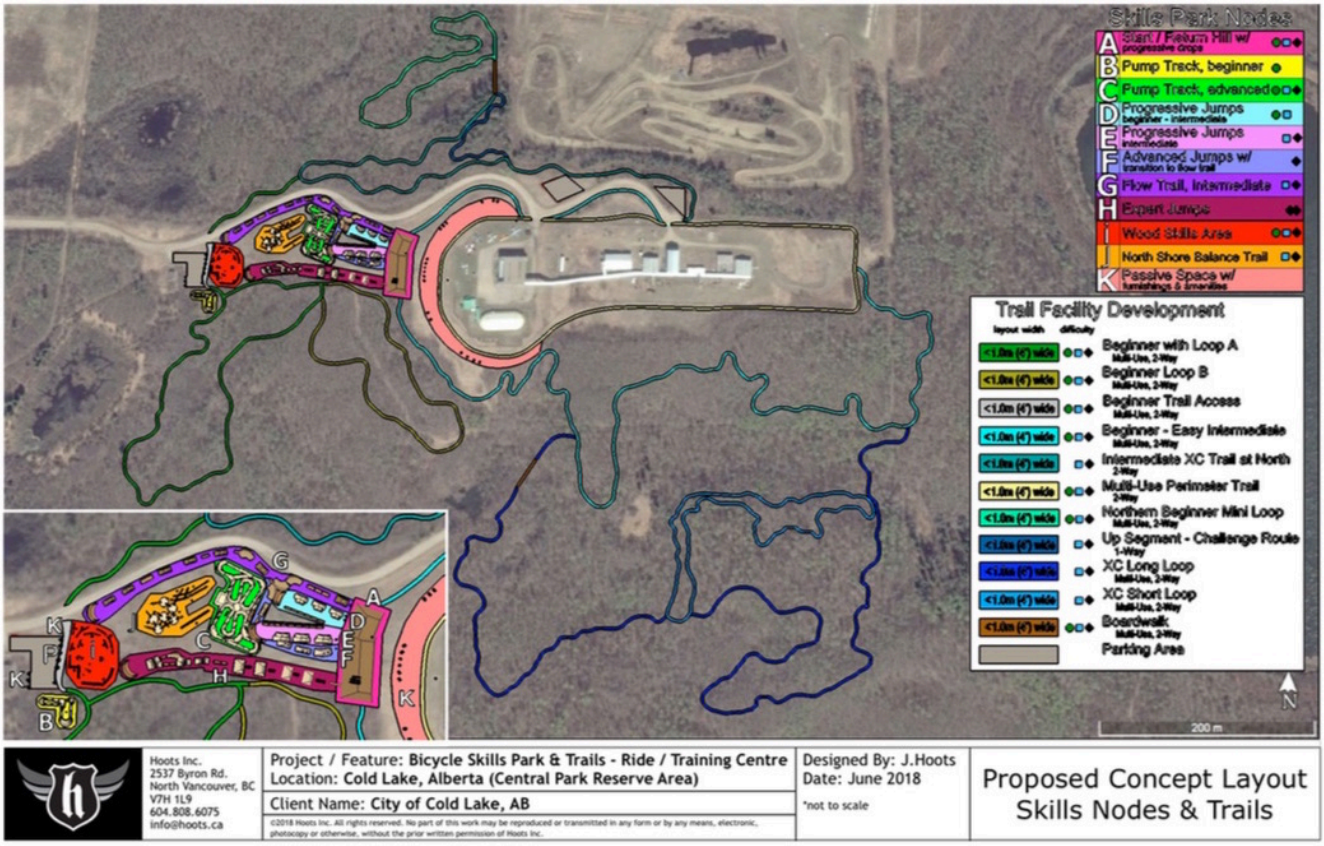
- Highlight landscape and natural features through bike skills zones and multi-use trails that integrate unique topography and terrain, and passive / rest areas that offer vantage points, lookouts and natural vistas
- Share, integrate and compliment the existing facilities with expanded / updated amenities including parking / staging areas, picnic areas, change rooms, signage and lighting
- Welcome visitors to attraction through additional active and passive recreational facilities, encouraging Museum 'buy-in' and shared ownership from seeing value in people spending more time at venue
- Provide exciting recreation destination that supports the City, complements and connects to neighbouring and surrounding facilities (African Lake trail, Millenium Trail, Cold Lake Energy Centre, CFB-4Wing), and engages community-building and local / regional partnerships
- Contribute to community through exciting destination place that attracts riders, visitors and families from local and surrounding areas to engage further in local attractions and community
- Establish exciting tourism attraction that enriches the City, and supports the long term vision for engaging local and surrounding communities
- Develop active recreational space that is recognized as a community asset, and for growth and interest
- Develop and implement programming that could include ride clinics / workshops, racing events, family fun / social / community-building activities
- Provide for year-round multi-purpose / multi-disciplinary / complimentary activities including snowshoeing and fat biking where the former helps pack trail for snow riding, as well as allocating opportunities for informal backcountry skiing on selected trails, and tobogganing / sledding activity on the existing hill.
- Improve upon quality of life for the community through activity, socializing and civic pride
- Implement best practices and standards for design, construction and maintenance, ensuring long term sustainability, and safe and easy access that encourages use by all residents and visitors
- Establish high level ride training area that compliments existing riding and recreation destinations in northern Alberta for teams and riders to 'train' on.

Figure 6. Cold Lake Bicycle Skills Park & Trails, Ride / Training Centre – Proposed Concept Layout: Photos of Site & Area



Hoots Inc. 2537 Byron Rd. North Vancouver, BC V7H 1L9 604.808.6075 info@hoots.ca	Project / Feature: **Bicycle Skills Park & Trails - Ride / Training Centre** Location: **Cold Lake, Alberta (Central Park Reserve Area)** Client Name: **City of Cold Lake, AB**	Designed By: J.Hoots Date: June 2018 *not to scale	Proposed Concept Layout Photos of Site & Area

Figure 7. Cold Lake Bicycle Skills Park & Trails, Ride / Training Centre – Proposed Concept Layout: Skills Nodes & Trails



B. Design & Layout – Proposed Bike Skills Nodes A to K

The Skills Nodes will accommodate a wide range of ride levels enabling users to practice and hone their skills, and take on various degrees of challenge in a progressive manner.

The Start / Return Hill will provide an elevated area where riders can gather, socialize and then use the hill to help with momentum as they head into the Progressive Jump lines or Flow Trail. Each start ramp length and angle is designed to give the rider the appropriate speed to manage the intended jump line. Progressive Drops featured on the Start / Return Hill will provide added navigational challenge for rider's balance and skills.

The Beginner Pump Track will have gentle elongated rollers and small berms, while the Advanced will house rollers and berms at a higher technical level alongside transition platforms.

The Progressive Jumps will allow riders to work on and evolve their abilities by providing a series of beginner to intermediate table top jumps, while the Advanced-Expert Jumps will feature a variety of technical dirt jumps including gaps and semi-tables with big berms and rollers.

The Flow Trail will allow riders to experience a roller coaster feeling through a continuous line of table jumps, rollers and corner berms, while the Wood Skills Area and North Shore Balance Trail will enable riders to work on slow speed balance and maneuvering techniques with a variety of wood-rock features and elevated components.

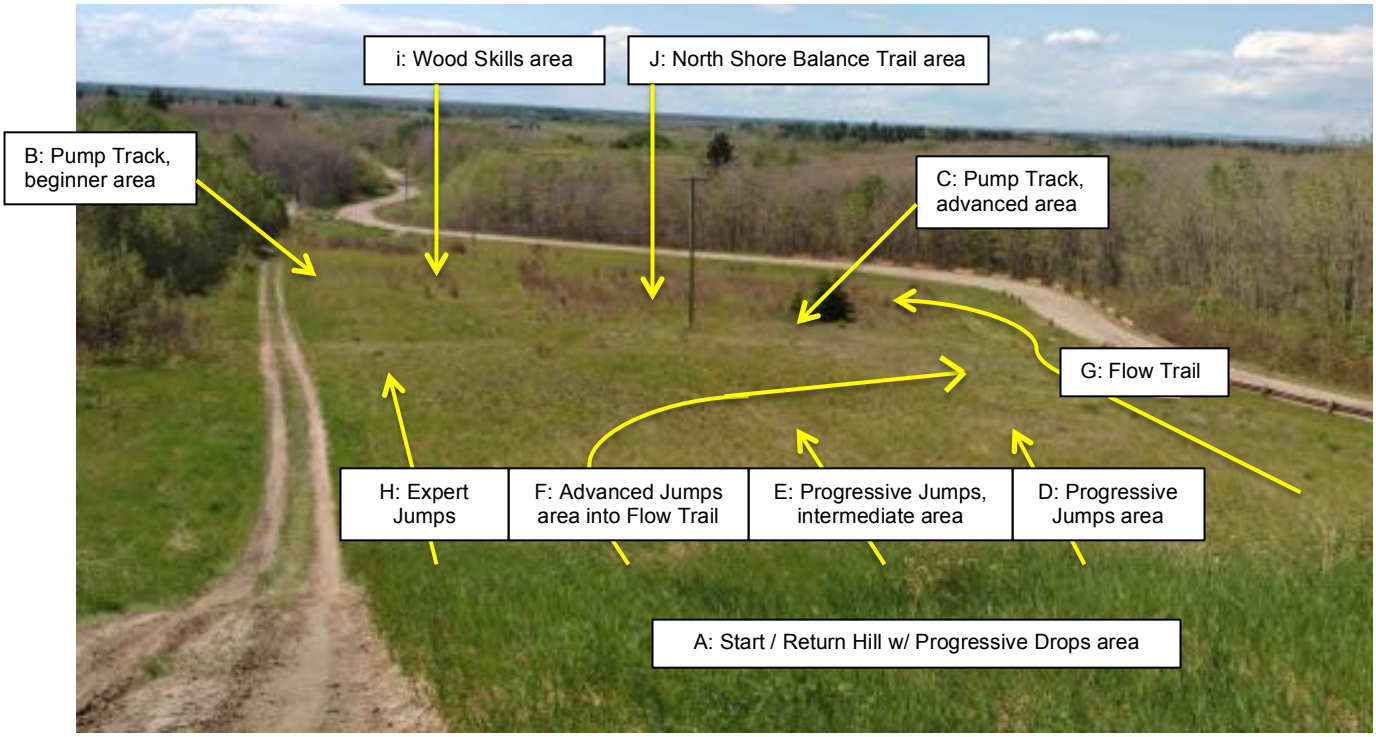


Figure 8. Labeled View from Hill Top Looking Westward onto Bike Skills Park Project Area

A. Start / Return Hill with Progressive Drops

- Difficulty / Rating / Direction: beginner to advanced
- Length & Width / Area: ~55m x ~20m
- Proposed Layout / Features: start deck built into hill with ladder bridge ramps & drops
- Materials: start / return hill to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders; wood, logs, boulders & rocks alongside hardware to be locally sourced
- Construction Notes: level grade; some clearance of scrub / vegetation
- Machine &/or Hand-Built: both
- Cost: $78,910 - $110,474

Notes: Welcome gathering area for beginner to advanced riders to position themselves for ride lines and approach with speed / momentum as required for each level of ride line. Ladder bridge ramps and drops are provided so that riders can challenge themselves and hone their navigational, balance and technical riding skills.

B. Pump Track, Beginner

- Difficulty / Rating / Direction: beginner, 2-way
- Length & Width / Area: ~21m x ~18m
- Proposed Layout / Features: gentle, elongated small rollers & berms
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders
- Construction Notes:
- Machine &/or Hand-Built: both
- Cost: $9,505 - $13,307

Notes: Pump Track designed for kids 'run' or 'push' bikes and novice riders on BMX and mountain bikes. Some importing of materials may be necessary to meet fill volume. Consideration of clay import for performance and sustainability. This feature is the first skills ride node in Bike Skills Park and is the starting point for progression.

C. Pump Track, Advanced

- Difficulty / Rating / Direction: beginner to advanced, multiple direction
- Length & Width / Area: ~50m x ~43m
- Proposed Layout / Features: medium to large rollers, berms & transition platforms
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders
- Construction Notes:
- Machine &/or Hand-Built: both
- Cost: $74,520 - $104,328

Notes: Importing of materials will be necessary to meet fill volume. Consideration of clay import for performance and sustainability. Some vegetation clearing may be required to open space.

D. Progression Jumps, Beginner to Intermediate

- Difficulty / Rating / Direction: beginner to intermediate, 1-way
- Length & Width / Area: ~46m x ~15m
- Proposed Layout / Features: series of small to medium table jump lines with return rollers & berms
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders
- Construction Notes: machine build with hand shape/pack and finish
- Machine &/or Hand-Built: both
- Cost: $17,214 - $24,100

Notes: Two skill levels of table top style jumps starting at beginner and Intermediate. Importing of materials may be necessary to meet fill volume. Some vegetation clearing may be required to open space.

E. Progression Jumps, Intermediate

- Difficulty / Rating / Direction: intermediate, 1-way
- Length & Width / Area: ~58m x ~12m
- Proposed Layout / Features: series of medium to large table jump lines with return rollers & berms
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders
- Construction Notes: machine build with hand shape/pack and finish
- Machine &/or Hand-Built: both
- Cost: $22,680 - $31,752

Notes: Two skill levels of table top style jumps starting at lower level intermediate with adjacent more challenging / higher level intermediate. Some importing of materials may be necessary to meet fill volume. Consideration of clay import for performance and sustainability.

F. Progression Jumps, Advanced

- Difficulty / Rating / Direction: advanced, 1-way
- Length & Width / Area: ~80m x ~8m
- Proposed Layout / Features: series of large semi-table jumps into return roller
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders
- Construction Notes: machine build with hand shape/pack and finish
- Machine &/or Hand-Built: both
- Cost: $22,824 - $31,752

Notes: Advanced jump line joins with the Intermediate Progression Jumps line (E) directional berm and continues to the Intermediate Flow Trail (G). Importing of materials will be necessary to meet fill volume. Consideration of clay import for performance and sustainability. Advanced jump zone may require small trees to be removed to enable open, cleared space. Advanced jumps to be integrated in trees, alongside use of open, cleared spaces.

G. Flow Trail, Intermediate

- Difficulty / Rating / Direction: intermediate, 1-way
- Length & Width / Area: ~183m x ~9m
- Proposed Layout / Features: series of table jumps, rollers & berms
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders
- Construction Notes: machine build with hand shape/pack and finish
- Machine &/or Hand-Built: both
- Cost: $47,440 - $66,416

Notes: Trail that enables riders to combine jumps, rollers and berms. Jump and roller features can be built from materials on site and imported materials, jumps not to exceed intermediate level. Importing of materials will be necessary to meet fill volume. Consideration of clay import for performance and sustainability.

H. Expert Jumps

- Difficulty / Rating / Direction: expert-double black, 1-way
- Length & Width / Area: ~128m x ~12m
- Proposed Layout / Features: series of gap jumps & landings with wood & dirt take off ramps, rollers & berms
- Materials: to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders; wood take-off ramps to be pre-built
- Construction Notes: machine build with hand shape/pack and finish
- Machine &/or Hand-Built: both
- Cost: $110,90 - $155,386

Notes: A technical ride line that incorporates jumps, berms and rollers in a tighter combination with gap jumps on more direct descent. Riders will need experienced intermediate and advanced skills to navigate the lines successfully on this jumps line. Jump and roller features can be built from materials on site. Some importing of materials may be necessary to meet fill volume. Consideration of clay import for performance and sustainability.

i. Wood Skills Area

- Difficulty / Rating / Direction: beginner to advanced, multi-directional in shared in-control setting
- Length & Width / Area: ~38m x ~27m
- Proposed Layout / Features: various wood-rock skills & balance features on relatively flat level ground with some features meandering through wooded area
- Materials: natural surface with blended compacted gravel binders; wood, logs, boulders & rocks alongside hardware to be locally sourced
- Construction Notes:
- Machine &/or Hand-Built: both
- Cost: $50,991 - $71,387

Notes: Log and ladder bridge balance ride features are installed so that riders can challenge themselves and as they progress, can find the lines that connect all the wood features together with minimal ground contact. Welcoming practice areas for beginners to advanced riders. Close vicinity to wooded area.

J. North Shore Balance Trail

- Difficulty / Rating / Direction: intermediate to advanced, multi-directional in shared in-control setting
- Length & Width / Area: ~49m x ~24m
- Proposed Layout / Features: various wood-rock skills & balance features on relatively flat level ground with some features elevated and installed on dirt mounds
- Materials: Materials: elevated mounds to be sourced from on site, as well as imported sand / clay dirt mix & crushed gravel / blended compacted gravel binders; wood, logs, boulders & rocks alongside hardware to be locally sourced
- Construction Notes:
- Machine &/or Hand-Built: both
- Cost: $79,332 - $111,065

Notes: Log and ladder bridge balance ride features are installed so that riders can challenge themselves and as they progress, can find the lines that connect all the wood features together with minimal ground contact. Welcoming practice areas for intermediate to advanced riders.

K. Passive Space with Furnishings & Amenities

- Difficulty / Rating / Direction: N/A
- Length & Width / Area: ~366m x ~21m (~7,800m2 footprint)
- Proposed Layout / Features: resting / spectator / staging area in open area around the west end of Museum
- Materials: picnic tables, bike racks, litter receptacles / recycle bins & other suitable park amenities to be locally sourced/built
- Construction Notes:
- Machine &/or Hand-Built: both
- Cost: TBD - apportioned from Overall Bike Skills Park & Trail Facility area costing of $15,000 - $35,000

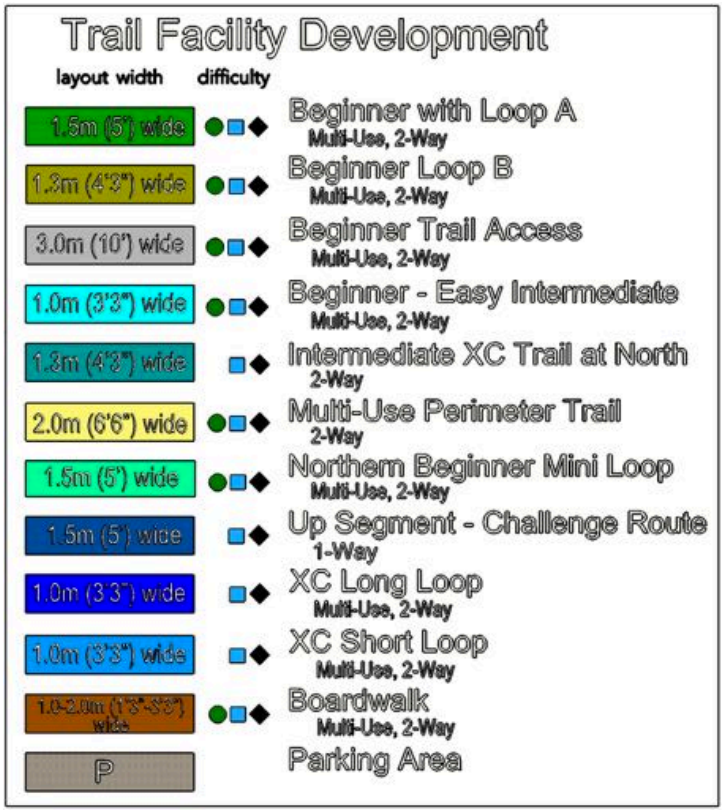
Notes: This passive resting area will be located in the open space around the west end of the Museum facilities, sharing in amenities & providing for staging opportunities with easy access off the entrance roadway. With the sloped banks to the west and south, riders and visitors will have views of the Start / Return Hill & various bike skills nodes, as well as natural vistas of the Park reserve area and woods.

C. Design & Layout - Proposed Trails Development

Trails development will provide ~8km of paths with connections and loops to enable users opportunity to explore the Park reserve area through different route options, and traveling over undulating terrain alongside the wooded slopes and valley floor.

The trail system will accommodate the needs of a wide range of user types, ages, mobility, and skills from beginner to advanced level. Be it walking, running, hiking, riding, fat biking and snowshoeing.

The trail network will provide a range of opportunities through the seasons, and offer opportunity to multiple user types. In general, the trails closest to the Museum facilities will be multi-user, to encourage visits by the greatest number for off-road travel and leisure. As distances increase in length, the trail may require greater levels of physical fitness &/or riding skill, with more vigorous trails potentially developed to address the needs of a specific user group in order to provide challenge and stimulus at all levels.



Beginner with Loop A

- Difficulty / Rating / Direction: multi-use, beginner, 2-way
- Length & Width:
  - North Entrance Access Trail (from lower parking & adjacent to driveway): ~156m long, 1.5m wide
  - Loop A (south of parking area & skills nodes) ~750m long, 1.3m wide
- Proposed Layout / Features:
  - North Entrance Access Trail: moderate grades through wooded & connecting to intermediate XC trail
  - Loop A (south): less than 5% grade introduction to trail through wooded with connection to Beginner Loop B
- Materials:
  - North Entrance Access Trail: Materials: natural surface with blended compacted gravel binders
  - Loop A (south): compacted gravel
- Construction Notes:
  - North Entrance Access Trail: 116m on light side slope; 40m may require raised tread
  - Loops A (south): light bench / raised tread, minimal side slope, proximity to drainages & micro grade
- Machine &/or Hand-Built: both
- Cost North Entrance Access Trail: $2,352 - $5,616
- Cost Loop A (south): $15,000 - $27,000

Notes: Beginner Loop A provides easy access from entrance roadway & parking onto beginner level multi-use trail. The potential to have adjacent / optional skills features may be explored.

Beginner Loop B

- Difficulty / Rating / Direction: multi-use, beginner, 2-way
- Length & Width: ~536m long, 1.3m wide
  - Proposed Layout / Features: beginner loop through wooded with light climb, less than 5% grade introduction to trail
- Materials: compacted gravel
- Construction Notes: light bench / raised tread, minimal side slope, proximity to drainages & micro grade
- Machine &/or Hand-Built: both
- Cost: $10,464 - $19,296

Notes: Beginner Loop B provides another multi-use trail that connects from Beginner Loop A to facilitate a longer journey at a beginner level. The potential to have adjacent / optional skills features may be explored.

Beginner Trail Access

- Difficulty / Rating / Direction: multi-use, beginner, 2-way
- Length & Width: ~48m long, 3m wide
- Proposed Layout / Features: lower parking & trail access
- Materials: compacted gravel
- Construction Notes: raised tread
- Machine &/or Hand-Built: both
- Cost: $2,160 - $2,880

Notes: This trail integrates with lower parking & passive space with picnic table seating / potential staging area, facilitating easy access & supervision for the Beginner Pump Track, Beginner Loop A trailhead & Wood Skills Area.

Beginner – Easy Intermediate

- Difficulty / Rating / Direction: multi-use, beginner-easy intermediate, 2-way
- Length & Width:
  - Central Trail A: ~151 - 160m long, 1m wide
  - Central Trail B: ~1,450m long, 1m wide
- Proposed Layout / Features:
  - Central Trail A: access to Bike Skills Park from mid & upper parking, access to Upper Perimeter Trail
  - Central Trail B: moderate to steeper grades & through wooded areas along side slope with existing natural drainage features flowing west & south from bank, access to Bike Skills Park from mid parking
- Materials: natural surface with blended compacted gravel binders
- Construction Notes:
  - Central Trail A: 10% corridor, 700m bench on good side slope, 100m near boardwalk with micro grades next to drainage
  - Central Trail B: 7-10 drainages on west & south that will require 10’-15’ x 4’ bridges
- Machine &/or Hand-Built: both?

- Cost Central Trail A: $1,812 - $5,436
- Cost Central Trail B: $39,000 - $70,200 (includes cost of $18,000 for bridges at $30 / ft2)

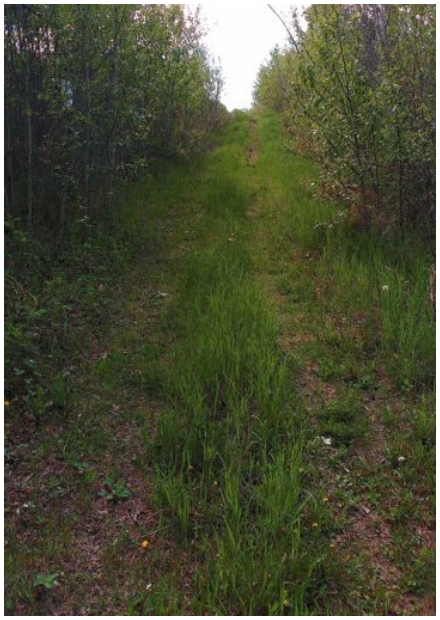
Notes: Central Trail A provides a short multi-use beginner level track with easy access & connections in the upper area while Central Trail B provides a longer route that meanders through wooded area with connections to the Bike Skills Park & eastmost part of the Upper Perimeter Trail. The potential to have adjacent / optional skills features for one or both sections may be explored.

Intermediate XC Trail at North

- Difficulty / Rating / Direction: intermediate, 2-way
- Length & Width: ~800m long, 1.3m wide
- Proposed Layout / Features: moderate to steeper grades through wooded along side slope, connects with Beginner Trail, Up Segment – Challenge Route, Northern Beginner Mini Loop & mid / upper parking lots
- Materials: to be sourced from on site, as well as natural surface with blended compacted gravel binders
- Construction Notes: 10% corridor, 700m bench on good side slope with ~100' long x 4' wide boardwalk micro grades next to drainage
- Machine &/or Hand-Built: both
- Cost: $15,600 - $31,800 (includes cost of $3,000 for boardwalk at $30 / ft2)

Notes: This trail connects the upper wooded areas linking with the Beginner Trail & providing option to jump on the Up Segment trail as a challenging technical short cut to the Northern Beginner Mini Loop.

Multi-Use Perimeter Trail



- Difficulty / Rating / Direction: multi-use, beginner, 2-way
- Length & Width: ~992m long, 2m wide
- Proposed Layout / Features: less than 5% grade with trail servicing Museum guests, beginner riders, caregivers / parents with strollers & trail a bikes / push / run bikes; provides amazing views & benches overlooking Bike Skills Park, alongside amenities
- Materials: hardened gravel
- Construction Notes: 4 drainages that will require 10'-15' x 8' bridges
- Machine &/or Hand-Built: both
- Cost: $52,096 - $76,160 (includes cost of $14,400 - $21,600 for bridges at $30 - $45 / ft2)

Notes: This trail will provide an accessible multi-use ~1km loop in the upper area connecting to the Museum & existing amenities, as well as passive space & rest area with natural vistas.

Northern Beginner Mini Loop

- Difficulty / Rating / Direction: multi-use, beginner, 2-way
- Length & Width: ~528m long, 1.5m wide
- Proposed Layout / Features: easy trail loop through wooded on minimal grades, connects with boardwalk over drainage
- Materials: to be sourced from on site, as well as natural surface with blended compacted gravel binders
- Construction Notes: 400m light bench cut & medium build, 128m raised tread with micro grades next to drainage
- Machine &/or Hand-Built: both
- Cost: $11,136 - $19,008

Notes: A short easy loop in the upper area that links from the Intermediate XC Trail at North & Up Segment trail. The potential to have adjacent / optional skills features for one or both sections may be explored.

Up Segment – Challenge Route

- Difficulty / Rating / Direction: intermediate-advanced, 1-way
- Length & Width: ~171m long, 1.5m wide
- Proposed Layout / Features: 15% corridor with steeper climbs to create harder intermediate trail segment
- Materials: to be sourced from on site, as well as natural surface with blended compacted gravel binders
- Construction Notes: easy bench on steep side slope
- Machine &/or Hand-Built: both
- Cost: $2,052 - $6,156

Notes: A short challenging stint to engage technical riding & maneuvering skills.

XC Long Loop

- Difficulty / Rating / Direction: multi-use, intermediate-advanced, 2-way
- Length & Width:
  - West Leg: ~575m long, 1m wide
  - East Leg: ~770m long, 1m wide
- Proposed Layout / Features:
  - West Leg: trail through wooded along light to moderate side slope & micro grades, connects with boardwalk over drainage in northwest.
  - East Leg: trail through wooded & across valley floor with steep side slope
- Materials: natural surface with blended compacted gravel binders
- Construction Notes:
  - West Leg: 100m bench & raised tread on moderate side slope, 362m raised tread on light side slope, micro grades & sits on finger through drainage to 120’ x 4’ boardwalk
  - East Leg: 100m bench & raised tread with potential 65’-130’ x 4’ boardwalk across valley floor (or potential turnpike); 670m steep side slope with easier build conditions
- Machine &/or Hand-Built: both
- Cost West Leg: $27,000 - $42,300 (includes cost of $14,400 - $21,600 for boardwalk at $30 - $45 / ft2)
- Cost East Leg: $26,040 - $51,120 (includes cost of $15,600 - $23,400 for boardwalk at $30 - $45 / ft2; does not include potential turnpike infrastructure - TBD)

Notes: These trails are longer distance upwards of 5 – 7km requiring a higher level of fitness & endurance as they travel into the south area of the Park reserve through undulating terrain, slopes & valley floor.

XC Short Loop

- Difficulty / Rating / Direction: multi-use, intermediate-advanced, 2-way
- Length & Width: ~830m long, 1m wide
- Proposed Layout / Features: trail through wooded & along valley floor
- Materials: natural surface with blended compacted gravel binders
- Construction Notes: 200m bench & raised tread, 630m steep side slope with easier build conditions
- Machine &/or Hand-Built: both
- Cost: $12,360 - $29,880

Notes: This trail provides a shorter option or additional loop to the XC Long Loop travelling into the south area of the Park reserve.

Boardwalk

- Difficulty / Rating / Direction: multi-use, beginner, 2-way
- Length & Width: see above for Beginner - Easy Intermediate Central Trail B, Intermediate XC Trail at North, Multi-use Perimeter Trail, XC Long Loop - West & East Legs
- Elevation Profile & Proposed Layout / Features: boardwalk / bridge connection to access trail over drainage
- Materials: wood / logs, rock ramps & hardware to be locally sourced
- Construction Notes:
- Machine &/or Hand-Built: both
- Cost: incorporated into costing for
  - Beginner - Easy Intermediate Central Trail B (page 47 above)
  - Intermediate XC Trail at North (page 48 above)
  - Multi-use Perimeter Trail (page 48 above), and
  - XC Long Loop - West & East Legs (page 49 above)

Parking Areas

- Difficulty / Rating / Direction: N/A
- Length & Width / Area:
  - Lower Parking Lot: ~620 m2
  - Mid Parking Lot: ~512 m2
  - Upper Parking Lot: ~390 m2
- Proposed Layout / Features:
  - Lower Parking Lot & Area:
    access to Bike Skills Park & Beginner Trails; mowed grass areas to east & west for passive space with picnic tables, bike racks, accessible amenities & changeroom (unserviced); on site fire hydrant & water service / bike wash / water fountains
  - Mid Parking Lot & Area:
    access to trails; mowed grass areas to east & west for passive space with picnic tables, bike stand, accessible amenities & changeroom (unserviced)
  - Upper Parking Lot & Area:
    access to trails; includes bike rack, accessible amenities & changeroom (unserviced)

- Materials: gravel to be locally sourced
- Construction Notes: hardened, compacted gravel
- Machine &/or Hand-Built: both
- Cost Lower Parking Lot & Area: $11,780 - $17,050
- Cost Mid Parking Lot & Area: $9,728 - $14,080
- Cost Upper Parking Lot & Area: $7,410 - $10,725

D. Design & Layout – Overall Bicycle Skills Park & Trail - Ride / Training Centre Facility Area

Signage (Cost: $15,000 - $35,000)
It is recommended that official Bicycle Skills Park & Trails - Ride / Training Centre signage and structures be developed and installed in key areas (i.e. bike skills node features, trail entrances / junctions) to provide important and relevant key messaging for all users and visitors, namely:

- Way-finding, access & contact information
- Trail, skills / riding zone & 'Slope Line' jump feature ratings / difficulty level
- General Park rules & regulations, etiquette
- Interpretive information such as on the history, background, community involvement / support, flora & fauna related to the area
- Museum and City information

Amenities (Cost: TBD - apportioned from Overall Bike Skills Park & Trail Facility area above costing of $15,000 - $35,000)
Currently there exists several amenities to support the Museum facility, general maintenance, upkeep and users / visitors to the area. These include parking, litter / disposal bins, hydro and water access. As well, there is a fire hydrant, perhaps requiring 4" hose, at the west end of the area at the bottom of the hill. It is recommended that connections to water be established and a management program put in place to address aspects such as garbage, materials, maintenance and safety to support the facility and increased usage and traffic that will occur. Provision of key amenities and infrastructure to accommodate riders, user groups and various recreation activities is also important. Such provisions can include:

- Seating / benches / picnic tables
- Spectator / gathering / viewing areas
- Staging area / changeroom facilities
- Additional litter receptacles / recycling bins
- Bike racks / stands / wash station
- Water collectors / rain barrels / water receptacles & hoses for maintenance
- Storage / tool shed
- Fencing & gates

6. CONSTRUCTION COSTS

The cost to implement a bike skills park and trail system will vary significantly depending on the facility to be developed, elements to be incorporated, equipment / resources needed, logistics and build conditions. The following outline for development, time and costs are based on professional experience and services for labour, equipment, and overall construction work (including layout, site preparation, and construction of amenities / components / features / trails employing sustainable building methods and techniques). These will vary depending on the specific project and circumstances.

A. CONTRIBUTING FACTORS & ESTIMATING COSTS

Selection of Components & Features

The facility, area, components, trail type and style, alongside mix of anticipated users plays a fundamental role in building time and cost in terms of selection and nature of components and features alongside amenities to be developed, and what materials, equipment and resources are needed to construct.

Type of Terrain

Time and effort increase drastically as soil gets harder, roots and rocks increase, vegetation gets thicker (more challenging to clear brush) and the grade gets steeper (beyond 35% sideslope). Similarly, if the soil base on site consists of organic material that requires additional resources to be brought in, this will also increase time, effort and costs with deep excavations and replacement and compaction of construction grade soils. A clay / sand base ratio of 80 : 20 with loamy properties with no rock or organic is ideal for dirt features and trail building however, this also depends on site conditions (dry, wet, exposed) specific to the project area which may vary. From initial observations at the Park Reserve area it was deemed that the base is of a silty, sandy nature on moderate side slopes.

Location

The proximity of the work site to vehicles, materials, tools, and workers will affect both cost and time.

Hand or Mechanized Tools

Mechanized tools can reduce construction time and cost. The use of specialized machinery is required when constructing bike skills park features / trails, and type of machine and operator specialty varies depending on the component or feature being built. Though many bike park / trail elements can be built primarily by machine, all require hand work finishing; while other elements may require more hand work than machine. Also important is that rates for builders using mechanized tools may increase to reflect the skill involved in operating the machinery, as well as machinery maintenance and transportation costs.

Specific to trails, a three-person crew using a mini dozer / excavator can build 100 metres to 120 metres or more of finished trail per day. A three-person crew using only hand tools, by contrast, may only build 75 metres on a good day. The average labourer building a trail by hand earns $15 to $45 per hour, whereas the average trail builder using mechanized tools earns $30 to $100 (again the higher rate reflecting the specialized / skilled contractor labourer involved in operating the machinery as well as machinery maintenance and transportation costs; while the lower rate reflects the general labourer working as a non-profit).

Initially, it may appear that hand labourers are a comparative bargain. In most cases, however, machine-built components, features &/or trails are actually less expensive to construct, since mechanized tools significantly cut labour hours and the overall cost of the project.

Individual Labour Rates

Specialized labourer: *$55 to $65 per hour*
Skilled Labourer: *$45 to $55 per hour*

Professional or Volunteer Labour
The cost and time required for an experienced professional builder using conventional hand tools depends on the nature and type of component or feature to be constructed, alongside locational factors, logistics and build conditions. More challenging situations and intensive work will increase cost and time. If you use volunteers, construction costs are much lower, but the work takes much more time to account for education, training and supervision.

For trailwork on average, one experienced pro using conventional hand tools can build 3 metres of bench cut trail per hour, or 25 metres per day. In steep, rocky, or heavily forested conditions, that average can drop to as little as 0.5 metres per hour or 4 metres of finished trail in a single day. If you use volunteers, construction costs are much lower, but the work takes much, much more time.

Regardless of whether the work is done by a specialized / skilled contractor, general labourer &/or volunteer, all the landscape work, activities, clean-up during and after, and finished product should be professionally carried out and completed, aesthetically pleasing, and employ sustainable practices and proper drainage to ensure long-term sustainability and minimize maintenance.

Mobilization Costs for Contractor
Cost of equipment rental, delivery, maintenance, fuel
Housing / food / per diem for contracted services

Cost Reduction
-Volunteer labour from clubs and/or service groups
-In-kind donation of services or equipment by local trades.
-Donated materials such dirt / clay, gravel, timber, logs, rocks / boulder, hardware, etc.

Estimating Costs
Construction time and costs are also determined by the number of labour intensive features for the bike skills park / trails, with other factors and considerations including potential drainage concerns, access or materials challenges based on terrain or topography, or environmental considerations and mitigation of impacts.

Anticipated costs can be determined on a per bike skills node &/or per trail basis. This would allow for the phasing of construction based on available funds, with the skills nodes &/or trails selected based on priority, availability of resources, and construction timing. In addition, the anticipated costs can be used to establish future funding requirements, for municipal planning and construction initiatives, organizing of club initiatives, and potential grant applications.

Please refer to Appendix E: 'Hoots Ltd. 2016 Brochure with Rate Sheet' (second last page) for a general idea of bike skills park and trail construction costs and services.

B. CONTRIBUTING FACTORS & ESTIMATING COSTS – EXCLUSIVE TO TRAILS DEVELOPMENT

Using machines for trail building, such as small excavators, a builder could prepare up to 120m / day (i.e. 1 week for 1 km) of trail to a rough condition. Hand work for the final finish, completed by an experienced crew, would progress at 70m–100m / day.

Typical Trail Construction Costs

Multi-User Trails
- 2m wide gravel surface 100mm thick, under 7% grade – beginner *$38 - $55/m or $60/m*
- 1m wide gravel surface 100mm thick, under 7% grade – beginner *$20 - $23/m or $30/m*

Riding Trails
- up to 1m wide sustainable natural surface, under 10% grade – intermediate *$12/m - $25/m*

- up to 1m wide natural surface sustainable trail. 10% or > - intermediate *$12/m - $25/m*
- up to 1m wide natural surface sustainable trail. 10% or > - advanced *$36/m - $50/m*
- natural surface FLOW trail. Beginner – Advanced difficulty *$55/m - $65/m*
- technical trail features on natural surface. Beginner – Advanced difficulty *$55/m - $65/m*
- brushing, tree removal, grubbing, etc. *$6/m-$8/m*

Note: The primary access trail in a trail system may need extensive construction work to achieve the necessary wide and smooth tread. On the other hand, a 1.0m wide, singletrack trail could be built with fewer resources.

Trail Design
The scale and complexity of the project, including the difficulty in determining a proper trail alignment and details of the final design will contribute to costs. Variables include topography, hydrology, slope, ground surface, forest type and thickness, rider skill target, and construction access. Proper trail design requires a combination of desktop and in-field layouts for review and approval, alongside ensuring sustainable design development resulting in minimized maintenance.

Trail Build Price Considerations
Berms / advanced drainage techniques
Technical feature size and complexity
Material types & availability (dirt / clay, gravel, logs, timber, rocks / boulders, hardware, etc.)
Hydrology

Trail Construction by Machine / Hand
Easy conditions: *$12.00 per metre / $12,000 per kilometre*
Intermediate conditions: *$24.00 per metre / $24,000 per kilometre*
Hard conditions: *$36.00 per metre / $36,000 per kilometre*

Trail Features (may or may not include)
Inslope / Climbing Turns: $300 to $600 each
Switchback Construction: $1,500 to $2,500 per switchback
Wooden Bridge: $30 to $45 per square foot of decking
Metal Bridge: $50 and up per square foot of decking
Rock Work: $200 per square metre
Turnpike: $500 to $750 per linear metre

Trailhead Facilities (may or may not include)
Change rooms / Restrooms: $15,000 to $50,000 each
Gravel Parking Lot: $15,000 to $35,000
Trailhead Kiosk: $2,000 to $5,000
Trail Markers: $5 to $35 each

7. COST ANALYSIS OF BIKE SKILLS PARK & TRAILS - DESIGN & CONSTRUCTION

Cost Estimate Charts 1A - C:

Design-Build of Proposed Skills Nodes, Trails Development, and Overall Bike Skills Park & Trails Facility Area

Key / Symbol	Facility & Rating	Build Notes length / description / features	Build Conditions	Cost (low)	Cost (high)
DRAFT DESIGN-BUILD COST ESTIMATE - BIKE SKILLS PARK NODES					
A	Start / Return Hill w/ Prog. Drops, Beginner to Advanced	-start / return hill -progression drops (3)	-layout / ground truthing / flagging -site clearance, preparation, grading & compaction -on-site / local materials sourcing -sustainable design-build & drainage strategies	$78,910	$110,474
B	Pump Track, Beginner	-berms (4) & rollers (8)		$9,505	$13,307
C	Pump Track, Advanced	-berms (13), rollers (45), double rollers (3) -transition platforms (5)		$65,000	$85,000
D	Progression Jumps, Beginner to Intermediate	~46m long x ~15m footprint, 1-way with -table Jumps, beginner (3); table jumps, intermediate (3) -berm (1) & rollers (6)		$17,214	$24,100
E	Progression Jumps, Intermediate	~58m x ~12m footprint, 1-way with -table jumps, intermediate medium (3) & large (3) -berm (1) & rollers (9)		$22,680	$31,752
F	Advanced Jumps with Transition to Flow Trail, Advanced	~80m x ~8m footprint, 1-way with -semi-table jumps (3) & table jump (1) -transition jump into berm (1) & roller from berm (2) -directional berm (1)		$22,824	$31,954
G	Flow Trail, Intermediate	~183m x ~9m footprint, 1-way with -table jumps, large (2) & medium (5) -berms (4) & rollers (5)		$47,440	$66,416
H	Expert Jumps, Double Black	~128m x ~12m footprint, 1-way with -single rollers (6), double roller (1) & berms (2) -gap jumps w/ wood take-off ramps (4) -gap jumps & landings (5 lines)		$68,000	$110,000
I	Wood Skills Area, Beginner to Advanced	-ladder bridges (10 sets) -log rides (6 sets) & log ride & stump (1) -micro skinnies (2 sets) -log ladder roll over (1) -log roll over (1 set) & logstables (1 set)		$50,991	$71,387
J	North Shore Balance Trail, Intermediate to Advanced	-dirt mounds (6) -skinnies cluster w/ rock ramps (1 group set) -ladder w/ drop (1) & ladder ramp drop (1) -ladders, log rides & skinnies between mounds (3 each) -balance line ladders (1 group set) & balance log lines (1 group set) -dragonback log & humpback log -wood rollers (4 sets)		$79,332	$111,065
K	Passive Space with Furnishings & Amenities	Mown area with picnic tables, litter receptacles & bike racks (see Overall Bike Skills Park & Trails Facility Area)		TBD	TBD
			SUB-TOTAL (DESIGN-BUILD - BIKE SKILLS PARK NODES)	**$461,896**	**$655,454**

NB. Costing does not include taxes or mobilization costs (travel, per diem & accommodation) which will need to be given due consideration
NB. Significant cost savings upwards of $200k through donation of materials (dirt, wood, logs, hardware, rocks, crusher dust, gravel)
NB. Significant cost savings through donation of machinery / equipment
NB. Significant cost savings through complete build-out of Bike Skills Nodes vs. phased approach
NB. Skills Node C - Pump Track, Advanced costed out as dirt track; paved option would increase cost to ~$140,000 from original dirt costing estimated at $65,000 low to $85,000 high for granular volume & asphalt surfacing of ride lines)

Key / Symbol	Facility & Rating	Build Notes length / description / features	Build Conditions	Cost (low)	Cost (high)
DRAFT DESIGN-BUILD COST ESTIMATE - PROPOSED TRAIL DEVELOPMENT					
	Beginner with Loop A (North Entrance Access Trail), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~116m long, 1.5m wide, 2-way -40m may require raised tread	74% easy @ 116m 26% intermediate @ 40m	$2,352	$5,616
	Beginner with Loop A (South), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~750mlong, 1.3m wide, 2-way -light bench cut / raised tread & micro grade adj. drainages	33% easy @ 250m 67% intermediate @ 500m	$15,000	$27,000
	Beginner Loop B, Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~536m long, 1.3m wide, 2-way -light bench cut / raised tread & micro grade adj. drainages	37% easy @200 m 63% intermediate @ 336m	$10,464	$19,296
	Beginner Trail Access, Multi-Use	Compacted Gravel (CG) ~48m long, 3m wide, 2-way -raised tread	100% compact gravel @ 48m	$2,160	$2,880
	Beginner - Easy Intermediate (Central Trail A), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~151m long, 1m wide, 2-way -10% corridor; bench cut & micro grade adj. drainage	100% easy @ 151 m	$1,812	$5,436
	Beginner - Easy Intermediate (Central Trail B), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~1,450m long, 1m wide, 2-way -will require 10'-15' x 4' wide drainage bridges (7-10)	79% easy @1,150m 21% intermediate @ 300m Boardwalk @ 600 f2	$39,000	$70,200
	Intermediate XC Trail at North	Natural Surface (NS) / Compacted Gravel (CG) ~800m long, 1.3m wide, 2-way -10% corridor; bench cut & micro grade adj. drainage -will require 100' x 4' drainage bridge	69% easy @ 550m 31% intermediate @ 250m Boardwalk @ 100ft2	$15,600	$31,800
	Multi-Use Perimeter Trail	Hardened Compacted Gravel (CG) ~992m long, 2m wide, 2-way -will require 10'-15' x 8' wide drainage bridges (4)	100% compact gravel @ 992m Boardwalk @ 480 f2	$52,096	$76,160
	Northern Beginner Mini Loop, Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~528m long, 1.5m wide, 2-way -will require raised tread -light bench cut / raised tread & micro grade adj. drainage	24% easy @128m 76% intermediate @ 400m	$11,136	$19,008
	Up Segment - Challenge Route, Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~171m long, 1.5m wide, 1-way -15% corridor; easy bench	100% easy @ 171m	$2,052	$6,156
	XC Long Loop (West Leg), Multi-Use Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~462m & ~113m long, 1m wide, 2-way -100m bench cut & raised tread -362m + 113m raised tread & micro grade -120' x 4' boardwalk b/w raised tread & micro grade	17% easy @ 100m 83% intermediate @ 475m Boardwalk @ 480 f2	$27,000	$42,300
	XC Long Loop (East Leg), Multi-Use Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~770m long, 1m wide, 2-way -bench cut & raised tread -may require boardwalk 65'-130' x 4' (or 20-40m turnpike)	87% easy @ 670m 13% intermediate @ 100m Boardwalk @ 520 f2	$26,040	$51,120
	XC Short Loop, Multi-Use Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~830m long, 1m wide, 2-way -bench cut & raised tread	76% easy @ 630m 24% intermediate @ 200m	$12,360	$29,880
	Boardwalk (North & South), Multi-Use Beginner	Raised Decking with Stringers, Footers & Rock Ramps over Drainage (integrated into other trail facilities above)	-	-	-
	Parking Area (Lower Lot) with Furnishings & Amenities	Hardened, Compacted Gravel ~620m2 -passive space with picnic tables, bike racks, accessible changeroom & connection to water source (see Overall Bike Skills Park & Trails Facility Area)	100% compact gravel @ 310m	$11,780	$17,050
	Parking Area (Mid Lot) with Furnishings & Amenities	Hardened, Compacted Gravel ~512m2 -passive space with mown areas & picnic tables, bike stand & accessible changeroom (see Overall Bike Skills Park & Trails Facility Area)	100% compact gravel @ 256m	$9,728	$14,080
	Parking Area (Upper Lot) with Furnishings & Amenities	Hardened, Compacted Gravel ~390m2 -passive space w/ bike rack & accessible changeroom (see Overall Bike Skills Park & Trails Facility Area)	100% compact gravel @ 195m	$7,410	$10,725
			SUB-TOTAL (DESIGN-BUILD - PROPOSED TRAILS DEVELOPMENT)	**$245,990**	**$428,707**

NB. Costing does not include taxes or mobilization costs (travel, per diem & accommodation) which will need to be given due consideration
NB. Significant cost savings through donation of materials (dirt, wood, logs, hardware, rocks, crusher dust, gravel) and machinery / equipment
NB. Significant cost savings through complete build-out of trails system vs. phased approach?

Key / Symbol	Facility & Rating	Build Notes length / description / features	Build Conditions	Cost (low)	Cost (high)
DRAFT DESIGN-BUILD COST ESTIMATE - OVERALL BIKE SKILLS PARK & TRAILS FACILITY AREA					
	Signage	-way-finding & contact information -ratings / difficulty level -rules & regulations / etiquette -interpretive	-	$15,000	$35,000
	Amenities	-accessible changerooms (3) -seating / benches / picnic tables (TBD) -spectator areas / viewing platforms (TBD) -bike racks / bike stands (TBD) -litter / recycling receptacles (TBD) -water service / bike wash / water fountains (TBD) -storage / tool shed (TBD)	-	TBD	TBD
		SUB-TOTAL (DESIGN-BUILD - OVERALL BIKE SKILLS PARK & TRAILS FACILITY AREA)		**$15,000**	**$35,000**

NB. Costing does not include taxes or mobilization costs (travel, per diem & accommodation) which will need to be given due consideration
NB. Significant cost savings through donation of materials, amenities, machinery / equipment

GRAND TOTAL - Design-Build of Complete Bike Skills Park & Trails: $722,886 - $1,119,161
(NB. If Skills Node C - Pump Track, Advanced ride lines are paved, cost would increase to ~$140,000 from original dirt costing estimated at $65,000 low - $85,000 high for granular volume & asphalt surfacing of ride lines

8. MAINTENANCE COSTS

The cost to maintain a bike skills park and multi-use trail system will vary significantly depending on the features, components and areas to be serviced, equipment / resources needed, logistics, frequency and conditions. On top of that are operational costs for on-going safety, management and upkeep. Typically, maintenance can be completed on an 'as needed' basis but having professionals come back to ensure it is kept up to design standards is recommended. Regularly scheduled maintenance can keep performance at its highest level helping to ensure proper drainage, safe and enjoyable riding / trail surfaces and structures, durability and reduce liability.

The following outlines maintenance, safety and management duties contributing towards costs based on professional experience and services.

- Carry out regular site supervision and recorded inspections to oversee operational maintenance, minimizing / avoidance of hazards, conditions of ride and trail components / features, and clearance of debris / discarded materials
- Carry out operational maintenance / on-going site management including regular garbage / recycle pick up, repairs / mitigation measures, assurance of proper drainage and good condition of signage / amenities
- Carry out performance supervision and regular maintenance, shaping / tuning / testing ride and trail components and features to meet design intent through professional builder services, trained user group or specialist in field

Investing in diligent planning, the use of skilled or experienced builders, suitable materials and sustainable practices, will result in a higher quality product that is more durable and ultimately enhances the user experience. Maintenance manuals and checklists also play a key part to ensure proper upkeep, design performance and intent, alongside monitoring / documenting of conditions and addressing of any issues in timely manner to ensure due diligence.

Costs can be reduced through training, including volunteers involved in the maintenance and care of the facility. Regardless of whether the work is done by a specialized / skilled contractor, general labourer &/or volunteer, the maintenance activities and finished product should be professionally carried out and completed, aesthetically pleasing, and employ sustainable practices to ensure long-term sustainability and minimize maintenance.

9. COST ANALYSIS OF BIKE SKILLS PARK & TRAILS - MAINTENANCE

Cost Estimate Chart 2A – C:

Maintenance of Proposed Skills Nodes, Trails Development and Overall Bike Skills Park & Trails Facility Area

Key / Symbol	Facility & Rating	Maintenance Notes length / description / features	Materials / Components	Labour/ Staff	No. of Days	Hours per Day	Hourly Rate	Cost per Visit	Frequency per Year	Total (low)	Total (med)	Total (high)
DRAFT MAINTENANCE COST ESTIMATE - BIKE SKILLS PARK NODES (covers riding season excluding winter)										x2 visits	x3 visits	x4 visits
A	Start / Return Hill w/ Prog. Drops, Beginner to Advanced	-start / return hill -progression drops (3)	-dirt material (70 : 30 clay : sand) -[crusher dust]	2	2	10	$45	$1,800	2, 3 or 4	$3,600	$5,400	$7,200
B	Pump Track, Beginner	-berms (4) & rollers (8)	-dirt material (70 : 30 clay : sand) -[crusher dust] -drainage features / pipes	2	1	10	$45	$900	2, 3 or 4	$1,800	$2,700	$3,600
C	Pump Track, Advanced	-berms (13), rollers (45), double rollers (3) -transition platforms (5)		2	2.5	10	$45	$2,250	2, 3 or 4	$4,500	$6,750	$9,000
D	Progression Jumps, Beginner to Intermediate	~46m long x ~15m footprint, 1-way with -table Jumps, beginner (3); table jumps, intermediate (3) -berm (1) & rollers (6)		2	1	10	$45	$900	2, 3 or 4	$1,800	$2,700	$3,600
E	Progression Jumps, Intermediate	~58m x ~12m footprint, 1-way with -table jumps, intermediate medium (3) & large (3) -berm (1) & rollers (9)		2	1.5	10	$45	$1,350	2, 3 or 4	$2,700	$4,050	$5,400
F	Advanced Jumps with Transition to Flow Trail, Advanced	~80m x ~8m footprint, 1-way with -semi-table jumps (3) & table jump (1) -transition jump into berm (1) & roller from berm (2) -directional berm (1)		2	2	10	$45	$1,800	2, 3 or 4	$3,600	$5,400	$7,200
G	Flow Trail, Intermediate	~183m x ~9m footprint, 1-way with -table jumps, large (2) & medium (5) -berms (4) & rollers (5)		2	2	10	$45	$1,800	2, 3 or 4	$3,600	$5,400	$7,200
H	Expert Jumps, Double Black	~128m x ~12m footprint, 1-way with -single rollers (6), double roller (1) & berms (2) -gap jumps w/ wood take-off ramps (4) -gap jumps & landings (5 lines)	-dirt material (70 : 30 clay : sand) -[crusher dust] -drainage features / pipes -wood, metal framing & hardware	2	2	10	$45	$1,800	2, 3 or 4	$3,600	$5,400	$7,200
I	Wood Skills Area, Beginner to Advanced	-ladder bridges (10 sets) -log rides (6 sets) & log ride & stump (1) -micro skinnies (2 sets) -log ladder roll over (1) -log roll over (1 set) & logstables (1 set)	-dirt material (70 : 30 clay : sand) -[crusher dust] -drainage features / pipes -wood / logs, boulders & hardware	2	2	10	$45	$1,800	2, 3 or 4	$3,600	$5,400	$7,200
J	North Shore Balance Trail, Intermediate to Advanced	-dirt mounds (6) -skinnies cluster w/ rock ramps (1 group set) -ladder w/ drop (1) & ladder ramp drop (1) -ladders, log rides & skinnies between mounds (3 each) -balance line ladders (1 group set) & balance log lines (1 group set) -dragonback log & humpback log -wood rollers (4 sets)	-dirt material (70 : 30 clay : sand) -[crusher dust] -drainage features / pipes -wood / logs, boulders & hardware	2	2.5	10	$45	$2,250	2, 3 or 4	$4,500	$6,750	$9,000
K	Passive Space with Furnishings & Amenities	Mown area with picnic tables, litter receptacles & bike racks (see Overall Bike Skills Park & Trails Facility Area)	-furnishings & amenities (see Overall bike Skills Park Area)	-	-	-	-	-	-	-	-	-
			Equipment						lump	$2,500	$3,500	$4,500
			Mobilization	-	-	-	-	-	-	-	-	-
									SUB-TOTAL (MAINTENANCE - BIKE SKILLS PARK NODES)	$35,800	$53,450	$71,100

NB. Costing does not include taxes or mobilization costs (travel, per diem & accommodation) which will need to be given due consideration
NB. Cost savings through training & volunteerism, as well as donation of materials, machinery / equipment

Key / Symbol	Facility & Rating	Maintenance Notes length / description / features	Materials / Components	Labour/ Staff	No. of Days	Hours per Day	Hourly Rate	Cost per Visit	Frequency per Year	Total (low)	Total (med)	Total (high)
DRAFT MAINTENANCE COST ESTIMATE - PROPOSED TRAIL DEVELOPMENT (note: covers riding season at 3-6 visits or year round at 12 visits to include winter trail activity)										x3 visits	x6 visits	x12 visits
	Beginner with Loop A (North Entrance Access Trail), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~116m long, 1.5m wide, 2-way -40m may require raised tread	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes	2	0.5	5	$45	$225	3, 6 or 12	$675	$1,350	$2,700
	Beginner with Loop A (South), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~750mlong, 1.3m wide, 2-way -light bench cut / raised tread & micro grade adj.	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes	2	2	10	$45	$1,800	3, 6 or 12	$5,400	$10,800	$21,600
	Beginner Loop B, Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~536m long, 1.3m wide, 2-way -light bench cut / raised tread & micro grade adj.	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes	2	1.5	10	$45	$1,350	3, 6 or 12	$4,050	$8,100	$16,200
	Beginner Trail Access, Multi-Use	Compacted Gravel (CG) ~48m long, 3m wide, 2-way -raised tread	-crusher dust / gravel -drainage features / pipes (#)	1	0.5	10	$45	$225	3, 6 or 12	$675	$1,350	$2,700
	Beginner - Easy Intermediate (Central Trail A), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~151m long, 1m wide, 2-way -10% corridor; bench cut & micro grade adj. drainage	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes	2	0.5	10	$45	$450	3, 6 or 12	$1,350	$2,700	$5,400
	Beginner - Easy Intermediate (Central Trail B), Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~1,450m long, 1m wide, 2-way -will require 10'-15' x 4' wide drainage bridges (7-10)	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes	2	4	10	$45	$3,600	3, 6 or 12	$10,800	$21,600	$43,200
	Intermediate XC Trail at North	Natural Surface (NS) / Compacted Gravel (CG) ~800m long, 1.3m wide, 2-way -10% corridor; bench cut & micro grade adj. drainage -will require 100' x 4' drainage bridge	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes (#)	2	2	10	$45	$1,800	3, 6 or 12	$5,400	$10,800	$21,600
	Multi-Use Perimeter Trail	Hardened Compacted Gravel (CG) ~992m long, 2m wide, 2-way -will require 10'-15' x 8' wide drainage bridges (4)	-crusher dust / gravel -drainage features / pipes (#)	2	2.5	10	$45	$2,250	3, 6 or 12	$6,750	$13,500	$27,000
	Northern Beginner Mini Loop, Multi-Use	Natural Surface (NS) / Compacted Gravel (CG) ~528m long, 1.5m wide, 2-way -will require raised tread -light bench cut / raised tread & micro grade adj.	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes (#)	2	1.5	10	$45	$1,350	3, 6 or 12	$4,050	$8,100	$16,200
	Up Segment - Challenge Route, Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~171m long, 1.5m wide, 1-way -15% corridor; easy bench	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes (#)	2	0.5	10	$45	$450	3, 6 or 12	$1,350	$2,700	$5,400
	XC Long Loop (West Leg), Multi-Use Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~462m & ~113m long, 1m wide, 2-way -100m bench cut & raised tread -362m + 113m raised tread & micro grade -120' x 4' boardwalk b/w raised tread & micro grade	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes (#)	2	1.5	10	$45	$1,350	3, 6 or 12	$4,050	$8,100	$16,200
	XC Long Loop (East Leg), Multi-Use Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~770m long, 1m wide, 2-way -bench cut & raised tread -may require boardwalk 65'-130' x 4' (or 20-40m	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes (#)	2	2	10	$45	$1,800	3, 6 or 12	$5,400	$10,800	$21,600
	XC Short Loop, Multi-Use Intermediate to Advanced	Natural Surface (NS) / Compacted Gravel (CG) ~830m long, 1m wide, 2-way -bench cut & raised tread	-dirt material (70 : 30 clay : sand) -crusher dust / gravel -drainage features / pipes (#)	2	2	10	$45	$1,800	3, 6 or 12	$5,400	$10,800	$21,600
	Boardwalk (North & South), Multi-Use Beginner	Raised Decking with Stringers, Footers & Rock Ramps over Drainage (integrated into other trail facilities	Boardwalk @ f2 Boardwalk @ f2	2	0.5	10	$45	$450	3, 6 or 12	$1,350	$2,700	$5,400
	Parking Area (Lower Lot) with Furnishings & Amenities	Hardened, Compacted Gravel ~620m2 -passive space with picnic tables, bike racks, accessible changeroom & connection to water source (see Overall Bike Skills Park & Trails Facility Area)	-crusher dust / gravel -drainage features / pipes (#) -furnishings / amenities (see Overall Bike Skills Park Area)	-	-	-	-	-	-	-	-	-
	Parking Area (Mid Lot) with Furnishings & Amenities	Hardened, Compacted Gravel ~512m2 -passive space with mown areas & picnic tables, bike stand & accessible changeroom (see Overall Bike Skills Park & Trails Facility Area)	-crusher dust / gravel -drainage features / pipes (#) -furnishings / amenities (see Overall Bike Skills Park Area)	-	-	-	-	-	-	-	-	-
	Parking Area (Upper Lot) with Furnishings & Amenities	Hardened, Compacted Gravel ~390m2 -passive space w/ bike rack & accessible changeroom (see Overall Bike Skills Park & Trails Facility Area)	-crusher dust / gravel -drainage features / pipes (#) -furnishings / amenities (see Overall Bike Skills Park Area)	-	-	-	-	-	-	-	-	-
			Equipment						lump	$2,500	$3,500	$4,500
			Mobilization	-	-	-	-		-	-	-	-
									SUB-TOTAL (MAINTENANCE - PROPOSED TRAILS)	$59,200	$116,900	$231,300

NB. Costing does not include taxes or mobilization costs (travel, per diem & accommodation) which will need to be given due consideration
NB. Cost savings through training & volunteerism, as well as donation of materials, machinery / equipment

Key / Symbol	Facility & Rating	Maintenance Notes length / description / features	Materials / Components	Labour/ Staff	No. of Days	Hours per Day	Hourly Rate	Cost per Visit	Frequency per Year	Total (low)	Total (med)	Total (high)
DRAFT MAINTENANCE COST ESTIMATE - OVERALL BIKE SKILLS PARK & TRAIL FACILITY AREA										x2 visits	x3 visits	x4 visits
	Signage	-way-finding & contact information -ratings / difficulty level -rules & regulations / etiquette -interpretive	-signs / signboards -post / base -kiosk	3	1	10	$45	$1,350	2, 3 or 4	$2,700	$4,050	$5,400
		-accessible changerooms (3) -seating / benches / picnic tables (TBD) -spectator areas / viewing platforms (TBD) -bike racks / bike stands (TBD) -litter / recycling receptacles (TBD) -water service / bike wash / water fountains (TBD) -storage / tool shed (TBD)	TBD									
			SUB-TOTAL (MAINTENANCE - OVERALL BIKE SKILLS PARK & TRAILS FACILITY AREA)							$2,700	$4,050	$5,400

NB. Costing does not include taxes or mobilization costs (travel, per diem & accommodation) which will need to be given due consideration
NB. Cost savings through training & volunteerism, as well as donation of materials, amenities, machinery / equipment

ANNUAL TOTAL – Maintenance of Complete Bike Skills Park & Trails: $97,700 - $307,800

10. ECONOMIC OPPORTUNITIES – TOURISM, PARTNERSHIPS, FUNDING & REVENUE

Many communities have made the choice to develop recreational facilities through trail and riding opportunities competing for tourism revenues. There are municipal partnering initiatives that bring towns together, as well as a wide array of grants available. Local business, operations and attractions can also contribute in meaningful ways. The following outlines possible opportunities for tourism, partnerships, funding and revenue that can be explored:

- Collaborate and work with nearby and surrounding communities to leverage support for a unique and diverse Bicycle Skills Park & Trail - Ride / Training Centre that compliments existing recreational facilities to attract visitors, and help establish Cold Lake as a bike destination and tourism area. Leverage and support can also come through trail development that in turn, can help alleviate the pressure and use of the mountain bike trails on the South Shore of Cold Lake Provincial Park which are very popular and heavily used
- Work with the Cold Lake / Canadian Air Force Museum to support and compliment their historical mandate / objectives, programming and events; and share in budget for upcoming improvements and enhancements to further attract and engage visitors. This can include:
  - Joint efforts in bringing a concession stand, food truck, canteen &/or cafeteria to the grounds and providing for picnic opportunities / staging areas
  - Joint planning and development of multi-use perimeter trail facilities to provide for rest spots, viewing areas and photo opportunities for special events such as weddings, parties and celebrations
  - Joint planning and development of proposed 15 m tower lookout at the west to provide additional vantage and viewing opportunities of the Bike Skills Park, perhaps even exploring the possibility of having a zipline from the tower whizzing alongside the jump lines and features with a playful airplane / flight related theme!
  - Cross-promotion opportunities
- Collaborate with the Military / CFB - 4 Wing through programming, events, races, and family-fun activities. Specifically, coordinate with CFB - 4 Wing and its local riding club in facilitating fun skills building and training opportunities that in turn, encourage and support families and participants in their annual mountain bike race event which draws upwards of 200 - 250 children and youth each year from CFB - 4 Wing and local communities. As well, open dialogue and engage discussion on potential BMX race track on base
- Coordinate and partner with the City and Cold Lake Energy Centre in planning and developing 3 km connecting trail between the Park Reserve and Energy Centre, and promoting the need to provide arterial routes for recreational use
- Explore potential of the Energy Centre as a staging area for trails related event venues like triathlons, trail races, provincial mountain biking races, club races
- Partnering potential on shared infrastructure to membership development between mountain bikers and Motocross track
- Partnering opportunities with community organizations, groups, First Nations and others should be considered
- Explore regional partnerships / partnering with next closest regions and recreation destination facilities in northern Alberta and outreach, promote and brand Cold Lake in a position where it lies in the midst of other current developed riding areas with activity on all sides
- Establish 'trails' committee with representatives from various local riding groups, clubs, organizations and user groups
- Seek funding for the facility which can come from grants, local business sponsorships, municipal, Provincial and National levels including:
  - Canadian Grants (IMBA): http://www.imbacanada.com/resources/fundraising/canadian-grants
  - Bike Industry: http://www.imbacanada.com/resources/fundraising/bike-industry
  - Alberta Community Facility Enhancement Program: https://www.alberta.ca/community-facility-enhancement-program.aspx
- Advertising within the Bike Skills Park areas on benches, signs, bike racks and maps has the potential to stimulate revenue inside the Park and also promote local business
- Explore opportunities to pledge funds towards facilities and features such as a boardwalk, trail or trail segment in exchange for a celebratory donation plaque or naming rights

- Explore potential to enact fees for parking (vs. fees for users) with all collected revenue turned back to bike park maintenance and not to general revenue.

11. COMMUNITY ENGAGEMENT & OPPORTUNITIES

There is significant interest from the community, local riders and user groups to participate and be involved in the sustainable planning, development, on-going maintenance and activities at the proposed Bicycle Skills Park & Trails - Ride / Training Centre over the long-term. This is especially important as many grants provide support for facility development and do not include maintenance in their funding protocol. The following outlines initiatives that can be undertaken to engage the community:

- Promote, outreach and educate the local community and riders of all ages / skill levels on proper accepted building methods and maintenance practices so that they understand the value of sustainable design and construction, as well as having the capacity to be active in on-going maintenance
- Engage communities and volunteers in development and maintenance activities to encourage on-going care, sense of ownership and meaningful community-building
- Schedule and facilitate educational workshops and volunteer work bee events
- Work with schools to deliver training workshops and facilitate an exchange where schools help in maintenance and upkeep for free programming opportunities and fulfillment of community volunteer hours
- Work with local business and organizations for sponsorship, support, donated equipment and materials
- As suggested through the *2013 Plan*, consider initiating an Adopt-a-Park program to encourage the community to have greater ownership and help in maintaining the quality of the bike skills park and trail facility components

12. COMMUNITY OPPORTUNITIES & 'BUY-IN'

The City of Cold Lake has very enthusiastic and active local riders, recreationists and user groups who are well aware of the potential and value for developing a progressive and diverse facility that can be enjoyed by all, and play host to a variety of local events and programming. Strategies to encourage community opportunities and 'buy in' for riding, recreation and trail-based activities can include:

- Collaborating with local riders, clubs, organizations, community and businesses to plan, prepare and host bike events and related programming such as mountain bike / BMX races, festivals and skills sessions / clinics, and group led rides from beginner and up
- Engaging and collaborating with clubs, organizations and user groups involved in related recreational activity such as trail running, walking, hiking, fat biking, snowshoeing and cross-country skiing
- Facilitating orienteering / geocaching activities within natural setting, amongst forest, trees and unique undulating landscape and terrain
- Programming and development to support women's events, family fun, kids and youth activities
- Exploring opportunity to support future sports events including the Alberta Summer Games and 2019 winter games (http://www.coldlake.com/content/city-seeking-volunteers-55-plus-winter-games-2019)
- Partnering with local businesses to help increase bike friendly amenities to support active community such as bike racks, storage / lock-ups, and DIY tool service stations at stores and downtown business, and which can include cross-promotional signage
- Implementing street art created from bike parts or as building mural with cycling / trails in the imagery to help message on / showcase / promote the Bicycle Skills Park & Trails - Ride / Training Centre activities and users (can feature local riders, athletes, clubs, organizations and such)
- Outreach and messaging on easy access to the facility

13. MARKETING UNIQUE OPPORTUNITIES & ACTIVITIES

- Promote fat biking to, from and within Cold Lake and the facility highlighting high quality grooming in the Bicycle Skills Park & Trails - Ride / Training Centre and established trail system
- Develop a theme to hinge the project on
- Promote trail facilities as an all season opportunity
- Promote the facility as central 'key' developed facility that is unique and exciting to the area
- Promote local events, activities and related programming taking place at facility, and work in partnership with other operations hosting relevant events such as CFB-4 Wing and their annual mountain bike race for kids and youth
- Cross-promote the facility and area as part of the Cold Lake branding and 'go to' destination area with Bike Skills Park & Trails – Ride / Training Centre that compliments the natural setting, Museum venue and cultural experience
- Launch / host and facilitate photo / video clip contests for social media in the Bike Skills Park and multi-use trails featuring action and lifestyle theme shots (content generation)
- Promote and facilitate photo contest for scenic landscape shots featuring the natural and cultural setting
- Promote orienteering / geocaching activities within natural setting, and amongst forest and trees
- Create promotional literature, maps and recreation information / material and disseminate to the public
- Target Northern Alberta and Saskatchewan markets in non traditional sport / quality of life opportunity

14. NEXT STEPS & RECOMMENDATIONS – SHORT, MEDIUM & LONG TERM

The centrally located project area has great topography, elevation and grade that lends well to fun, natural, and diverse ride and trails development in the forested area and in and around the Museum facilities, ultimately creating a very unique feeling within the natural and cultural setting. The proximity of parking and current infrastructure / amenities of the Museum provide for easy access and a great recreational destination area.

It is recommended that the following approaches be considered in regards to potential direction, decision-making and development priorities for the Bicycle Skills Park & Trails – Ride / Training Centre in order to facilitate the best return on investment that offers more opportunity for a greater and more diversified user group:

- Comprehensive evaluation of public input and ideas, and the needs, interests and concerns of community embracing all existing and potential user groups
- Engage discussion and agreements for surrounding / immediate property in terms of land ownership, access, private and Crown land, potential expansion and possible natural resource based operations / activities
- Explore zoning, access and limitation of motorized user groups (snowmobilers, quad / ATV / OHV users, motorcross and other)
- Explore connection to future expansion, formalization and development of the African Lake trail to the north and south residential areas of the City as per the *2013 Plan*
- Identify and prioritize key development areas / features / components
- Explore construction development approach / one time build or potential phasing into the Park reserve project area
- Evaluate impact of various phased approaches to costs in terms of value and asset to community
- Evaluate budget and investigate partnerships to support development
- Engage in design services to have 'shovel ready' opportunity that could be phased
- Research and evaluate potential contractors and partnering companies to ensure product delivery

15. NEXT STEPS – OPERATIONAL CONSIDERATIONS

Many Municipalities have different capacities when dealing with citizens / volunteer organizations and internal staff regarding capital and maintenance projects. Some of the more common are outlined below.

1. The City or Town owns the land, makes choices on the amenity then designs and constructs internally (City Staff) or with contractors then permits or 'leases' the area to a club or organization for their specific activity or event. In many cases the park or recreation area has no permit or lease and users groups will take ownership of the area irrespective of the design intent, which ultimately leads to friction when designated users come to the area. As an example: dog walkers taking over a trail used by bikes or a local neighbourhod path.

2. A user group or proponent will approach Municipal staff / Council with an idea for an amenity and then be required to obtain a 'letter of support' from advisory committees by demonstrating that their idea fits in with community values and is needed / desired. Municipal Staff will work with the proponent to make sure the idea will fit within the criteria set and policy developed as the land manager, and then report to Council. Public meetings may be required to garner appropriate feedback on the idea and if granted by Council, staff will work with the proponents to ensure design, construction, supervision and maintenance conditions will be met. The proponent will find funding and participate in the development of the project, then be given a permit or lease agreement to operate their event operations.

3. A user group or proponent will approach Municipal staff / Council with an idea for an amenity. If the group is un formalized without potential to stay formalized then a 'coalition' is formed in which the users work with Municipal Staff to make sure the idea will fit within the criteria set and policy developed as the land manager, and then report to Council. Public meetings may be required to garner appropriate feedback on the idea and if granted by Council, staff will work with the coalition to ensure design intent, construction, supervision and maintenance conditions will be met. Once the amenity has been completed, the coalition is dismantled and the municipality takes over all aspects of the maintenance and administrative operations.

4. Several user groups wanting the same type of recreational opportunity so an 'umbrella' organization (non profit) will be created to speak as a unified voice for the interests of the different organizations while each of the organizations work independently. The umbrella organization will be able to create more significant and inclusive grants, have a larger user base, coordinate and communicate between the member associations and act as a project manager for the clubs and the municipality.

Municipal staff will work with the proponent to make sure the proposed ideas will fit within the criteria set and policy developed as the land manager, and then report to Council. Public meetings may be required to garner appropriate feedback on the idea and if granted by Council, staff will work with the umbrella organization to ensure design, construction, supervision and maintenance conditions will be met. The proponent will find funding and participate in the development of the project, then be given a permit or lease agreement to operate their event operations.

5. A non-profit membership driven group made up of various representatives and users / user groups comes together to represent and voice their interests. An example of this is the Valemount Association Recreation Development Association (VARDA) made up of local business and backcountry users who engage and support the interests of the user groups. Key goals and energy may be devoted to public education and improving riding and recreational experiences through outreach and support of sustainable practices, respect for environment, safety and caring for facilities, alongside helping to oversee maintenance, winter grooming and managing motorized vehicle use.

Furthermore, VARDA also assists in overseeing the Sustainable Resource Management Plan (SRMP) for the backcountry territory with respect to protection for public access to crown land, sustainable growth of outdoor recreational activity, as well as security of investments. All told, VARDA is a significant example of a non-profit association that Through engagement with local business, government and user groups, a strong non-profit group can lead the way in facilitating

sustainable recreation, land stewardship, outreach and education, alongside safety and improvements for year-round activity in both summer and winter.

16. COLLABORATIVE EFFORT & COMMUNITY CHAMPIONS

Based on feedback and information received from Municipal staff, local riders, interests groups and the public, we recommend that the so called 'umbrella' organization outlined above be further explored through creation of an organized coalition &/or non-profit group that is made up of members and representatives from user groups, stakeholders and the community. The local advocacy group has shown themselves to be community champions having the enthusiasm and willingness required to promote and facilitate development of a Bicycle Skills Park & Trails – Ride / Training Centre in Cold Lake, and experience to work in partnership with the municipality to take on the project.

As such, we would recommend consideration of the following:

- Create a cycle/trails based economic-tourism position / coalition / non-profit group in the City to engage development initiatives and activities to move project forward
- Use that position to create terms of reference and strategy for scheduling developments, multiple grant writing initiatives, development of social media marketing, and liaison with user groups, Municipal and maintenance staff
- Bring all user groups, organizations and proponents to the table to understand their membership / operational agreements / status, and encourage and facilitate a collaborative effort amongst the balance of users

17. BEST PRACTICES & STANDARDS

In the planning, development and building of a Bicycle Skills Park & Trails – Ride / Training Centre, best practices and design / construction standards should be implemented to ensure long-term sustainability, accommodate riders of all levels and abilities, and create an enjoyable, engaging venue for the community. There are examples of best practices that include professional guidelines for design intent, development and implementation. These include the Whistler Trail Standards, International Mountain Bike Association (IMBA), and Hoots Ltd. Design-Build Guidelines outlined below.

A. Design & Construction - Methods & Techniques

- Whistler Trail Standards, by the Resort Municipality of Whistler: Whistler Trail Standards
- International Mountain Bike Association (Canada) is a national organization for clubs, trail design and construction standards. Two excellent reference books include:
  - IMBA Resources Trail Solutions: IMBA - trail building
  - Managing Mountain Biking: IMBA - Managing Mountain Biking
  - Bike Parks: Bike Parks: http://www.imbacanada.com/resources/freeriding
- Hoots Ltd. Bike Parks Guidelines

B. Other Suggested Resources

Alongside referencing the above mentioned examples of best practices seen at Bike Skills Parks, the Whistler Bike Park and Hoots Ltd. projects, other key suggested resources include:

- Trail Type Classification by Parks Canada
  http://www.imbacanada.com/resources/organizing/land-managers/national-parks (see bottom weblink)
- Alberta Recreation Corridor & Trails Classification System
- Natural Surface Trails by Design, by Troy Scott Parker: Natural Surface Trails by Design
- Lightly on the Land: The SCA Trail Building and Maintenance Manual (Birkby 2006) as a field guide for trail construction. The manual covers basic techniques, from building with timbers to rock construction and environmental reconstruction: SCA - Lightly on the Land

Please also see Appendix F: Recommended Trail Resources

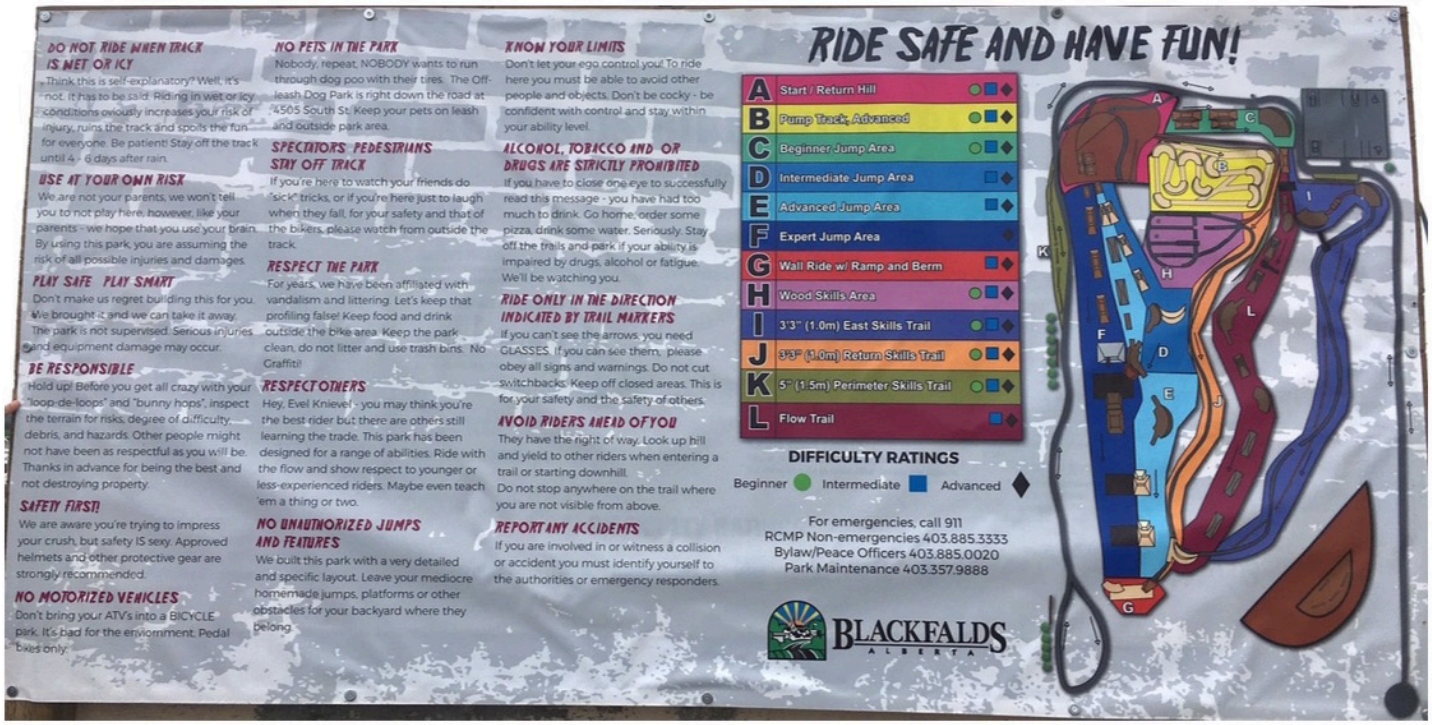
C. BMX Race Track Development

- UCI (Union Cycliste Internationale) BMX Track Guide
  http://www.uci.ch/mm/Document/News/News/18/23/58/UCIBMXTrackGuide2017_English.pdf
- Objectives, benefits and overview for a proposed BMX racing facility
  http://fmcloughlinhealy.ie/proposal-build-regional-standard-bmx-racing-facility-newbridge-area
- Track Building Guidelines – Guidance on art of BMX Track Building
  http://www.bmxireland.ie/category/tracks/
- Alberta Bicycle Association & BMX
  http://www.albertabicycle.ab.ca/bmx
- Alberta BMX Association with links to facilities & locations
  http://www.albertabmx.com/tracks.html

For additional information, contact Cycling BC (https://cyclingbc.net) for their BMX Racing Development Kit (2006) that provides a step by step process for planning and developing BMX facilities.

18. SIGNAGE

To assist riders and visitors in becoming familiar, determining suitable areas and trails to explore, and navigating safely at the Bicycle Skills Park and Trails – Ride / Training Centre, a simple and easy to understand system of signage and way-finding should be developed, and strategically located at points of access and critical intersections.

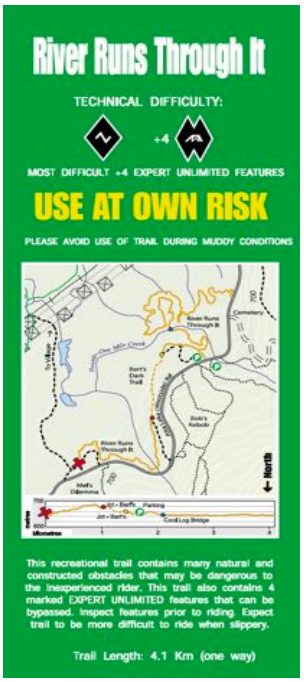


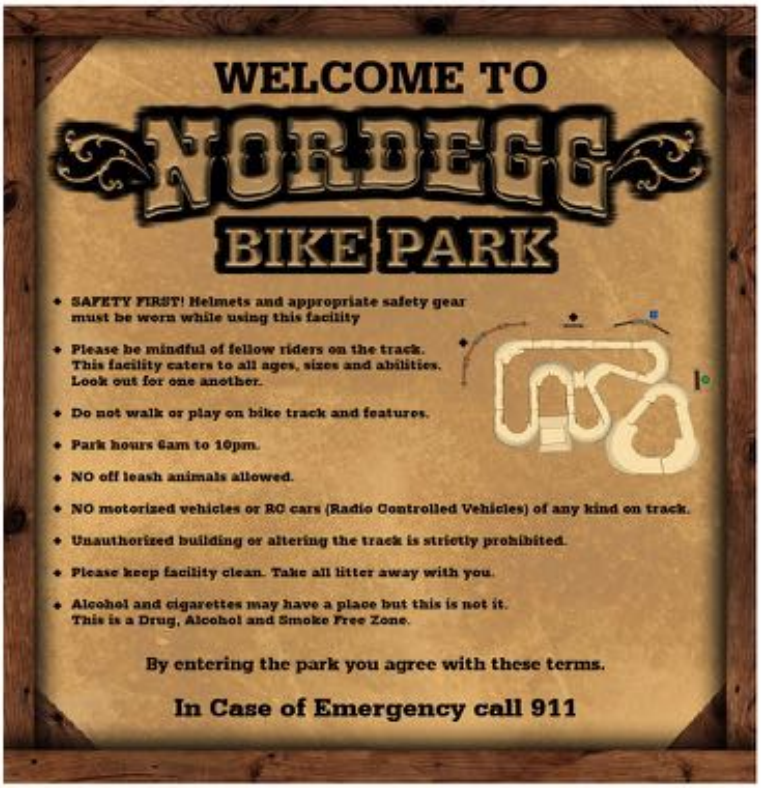
In addition to any existing signboards, formal mapping and signage indicating layout, ride lines and difficulty levels could be mounted to posts or in a small kiosk, which could also contain other community or park and trail information, alongside messaging on etiquette, shared, safe and responsible use.

Signage can be printed on weather proof sheet or laminated for durability, and mounted to wood posts or plastic delineators, with inexpensive and durable stickers to show user, difficulty and length using standard international symbols.

The following provides signage recommendations for the Bike Skills Park and area:

- Develop simple and easy to understand mapping and signage to indicate layout and difficulty levels
- Provide signage to encourage positive etiquette, shared and responsible use
- Strategically locate signage at points of access, junctions / critical intersections, and advanced / expert ride lines and features that warrant caution
- Provide signage where features and trails meet / begin / end at entrance roadway with consideration for sightlines
- Include messaging on etiquette, shared, safe and responsible use
- Signage can be mounted to posts or in small kiosk which could also contain other community or related information; signage should be printed on weather proof sheet or laminated for durability
- Simple markers can be mounted to wood posts or plastic delineators, with inexpensive and durable stickers to show level of difficulty and issue caution for advanced / expert features
- Standard international symbols should be used to indicate acceptable use, difficulty level, and caution
- Interpretive signs can be developed to illustrate historical, cultural or environmental aspects pertaining to area





Consideration need also be given to:

- Establishing a facility that supports and engages non-motorized users / user groups while at the same time addressing challenge in limiting access to other user groups (i.e. motorized vehicle users of ATVs, OHVs, quads, motorcross and snowmobilers). This will need to be worked out with the municipality to provide appropriate signage / messaging, as well as physical barriers such as fencing, gate, barricades &/or control points (i.e. entry way bollards, boulders). Coordination with the Cold Lake Motorcross Association to fence and block the trail off at the east area of the site will also need to be undertaken.

19. PROVINCIAL AGENCIES & POLICIES

As referenced in the *2013 Plan*, the following provincial / regional governmental documents, plans and studies, bylaws / municipal policies and standards may be consulted with respect to the Bicycles Skills Park & Trails – Ride / Training Centre design, planning, development, construction and maintenance:

- City of Cold Lake Municipal Development Plan 2007 with primary goal to develop and maintain a city-wide integrated system of parks, open space, trails and recreation facilities in order to satisfy the present and future active and passive needs of local residents
- City of Cold Lake Parks Plan 2006 which seeks to address the need to effectively and efficiently allocate land for parks and open space
- City of Cold Lake / M.D. of Bonnyville Intermunicipal Development Plan 2009 established for managing the use and development of lands adjacent to the boundary of the City of Cold Lake with key objectives to provide residents with varied recreation opportunities, to preserve / maintain recreation spaces for the enjoyment of present and future generations, to encourage private and community involvement in the development and operation of parks and open space, to link parks and open spaces, and cooperate through intermunicipal agreements to provide recreation spaces.
- City of Cold Lake Land Use Bylaw 2010 which regulates the use and development of land and buildings, and outlining protective setbacks when developing near environmentally sensitive lands, including those subject to flooding and adjacent to watercourses and steep slopes.
- Area Structure Plans and Area Redevelopment Plans which provides direction and requirements where possible for sustainable natural areas to be integrated into the design of new development areas to form part of the linked and integrated parks and open space system

In addition, the following Provincial policies and agencies may be consulted in regards to trail development, access, and consultation requirements:

Alberta Land Use Planning Framework (LUPF)
LUPF defines key land-use issues and how they should be planned, implemented and managed. Relevant responsibilities include Aboriginal relations, agriculture and rural development, environmental protection and conservation, municipal affairs, tourism, parks and recreation, and sustainable resource management.

Environment and Sustainable Resource Development (ESRD)
The ESRD will review for compliance with the Sustainable Resource Management Strategy.

Environmental Impact Assessment (EIA) may be required if the City wishes to develop physical structures on &/or modify environmentally-sensitive landscapes.

The Public Lands Administration Regulation (PLAR) governs all recreation and trails activity occurring on undesignated public lands managed by ESRD. Under PLAR, a Public Land Use Zone (PLUZ) is established for protecting and managing industrial, commercial, recreation activities and resources on specific lands. Cold Lake may not have a designated PLUZ.

Off-Highway Vehicles (OHVs) are permitted on public trails unless otherwise posted.

Tourism Development
The Regional Tourism Advisory Committee is tasked with developing a Tourism Development Guide with a region specific recreational and tourism plan. The City of Cold Lake is situated in the Municipal District of Bonnyville, but a plan may not yet be established.

Alberta Tourism Recreational Leasing Process (ATRL)
Tourism and recreational development on public lands require provincial approval and may require that the land be leased or purchased through the Alberta Tourism Recreation Leasing Process (ATRL). Bike Skills Park & trail development in the City of Cold Lake should consider working with the municipality and the ESRD through the ATRL process.

Regional Advisory Council & Regional Land-Use Plans
Regional Advisory Councils and Regional Land-Use Plans were developed to ensure that local communities develop and grow according to provincial sustainability, economic, social and ecological priorities. The City of Cold Lake is situated in the Municipal District of Bonnyville.

Alberta's Rural Development Strategy
Amongst economic, strategic, market, industrial and competitiveness initiatives, the Government of Alberta identified trail-related tourism initiatives as part of its rural development strategy. Trails mapping programs for motorized and non-motorized use, feasibility studies for various provincial parks, a pilot Visitor-Friendly Assessment Program, and a range of investment attraction activities were reported in 2010. It is recommended that the City of Cold Lake explore its eligibility and opportunities under this strategy.

Active Alberta 2011-2021
The policy outlines a collaborative approach for communities and non-profit organizations to promote recreation.

Alberta Community Facility Enhancement Program
Up to $125,000 per year is available to communities to construct, renovate and redevelop public-use facilities that help enhance the quality of life and citizen well-being in communities across the province. There is an emphasis on facility projects that make use of partnerships and local volunteers. 50% matching funds are required and may include in-kind labour donations. Alberta Land Trust Grant Program grants are available to land trust organizations for the purchase of conservation easements and the administration and management of new conservation projects on private land. There may be opportunities to work with private landowners to create low-impact trail connections within key trail corridors for conservation and education purposes.

APPENDIX A:

TERMS OF REFERENCE
PART 1: BIKE PARK & TRAIL FACILITIES - COMPONENTS & FEATURES
PART 2: RIDER TYPES & STYLES

TERMS OF REFERENCE

PART 1: BIKE PARK & TRAIL FACILITIES - COMPONENTS & FEATURES

The following provides a general overview of bike park facilities in regards to components and features, with the venues continuing to grow and take on various forms and styles. Descriptions have been excerpted from Hoots Ltd., IMBA and Whistler literature, as well as related open source on-line resources. Bike Park elements that are described include:

- Bike Parks
- BMX Race Tracks
- Start Hills / Decks / Spectator-Staging Areas
- Jump Lines
- Table Tops, Gap Jumps, Hips, Shark Fins, Step Ups & Step Downs
- Pump Tracks
- Berms
- Rollers & Whoops / Rhythms
- Skills Features
- Drops
- Singletrack Trail
- Doubletrack Trail
- Flow Line / Flow Trail
- Up Trail / Return Line
- Perimeter Trail
- Fall Zones

BIKE PARKS (Bicycle Skills Parks)

Rotary Bike Park, Brantford, ON

Also known as bike skills parks, freeride parks or challenge parks, these playgrounds are popping up all over, and riders are coming far and wide to use lthem. They include a variety of natural obstacles such as rocks and logs and imaginatively constructed features like teeter totters, ladder bridges and dirt jumps.

While these parks come in different shapes and sizes, they share the common thread of helping make technically challenging mountain biking more readily available to the public - especially kids. They usually accommodate a wide range of abilities, with opportunities for skill building and progressively difficult challenges. Riders return to these parks again and again to session the obstacles and improve their riding.

Bike parks do much more than mimic terrain found in nature. They also offer unique obstacles that stretch the imagination. They are not a replacement for traditional trails. Rather, they serve as an additional outlet for riders, one that is technically oriented, convenient, controlled - and a whole lot of fun; and providing opportunity for riders who seek more challenging terrain, jumps, constructed obstacles, and a place to hone their skills.

Bike parks provide communities ‘free’ opportunity to educate and experience bike riders, especially children, in a structured, safe and managed low risk area. They offer gathering points for neighbours and members of the community to take part in healthy activity and can provide revenue generation for Parks and Recreation programming

Equally significant, bike skills parks provide opportunities for land managers who want to reign in unauthorized trail building and provide new recreation options in a central, easily managed location. They offer a risk management solution to unauthorized jumps and features in municipalities with ever increasing removal budgets and provides great opportunities for public, private partnership and non profit, volunteer club involvement.

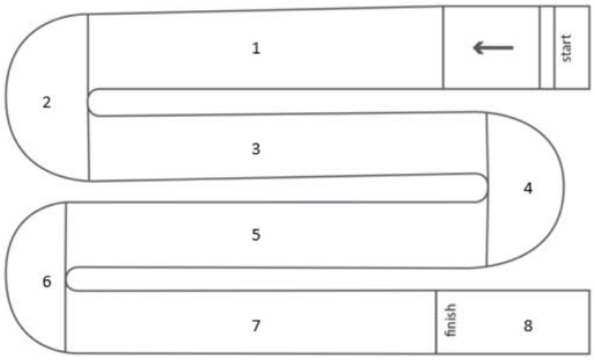
BMX RACE TRACKS


source: www.foothillsbmx.com

BMX racing began in the 1970's in North America with youth modifying their bikes and racing around hand-built tracks of dirt modelled after motorcross venues. In time, BMX races became more formalized with events held all over and sanctioning bodies coming about. As one of the fastest emerging sports, it is now a recognized Olympic activity.

The design of a BMX track is quite specific with some variations depending on the purpose of the track where it may be a venue focusing on riders learning, training and developing their skills &/or a facility to host official / major events. The riding surface will be laid out and shaped to include straightaways with jumps and rollers and corners with banked berms, and be made up of natural materials (clay / sand), asphalt or concrete and can include paving stones and high grip paint.
As per the UCI (Union Cycliste Internationale), a standard BMX track consists of the FOP (Field of Play) made up of 4 key areas:

- The **Start Hill** with start gate and access ramp / stairs
- The **BMX Track** (1-7) composing the riding surface which includes jumps and rollers within the straights and banks / berms in the corners
- The **Infield** area between the straights and around the outside track edges, up to and including boundary fencing
- The **Finish Area** (8) with finish line and braking area



source: www.uci.ch/mm/Document/News/News/18/23/58/UCIBMXTrackGuide2017_English.pdf

A BMX track should provide an appropriate level of technical challenge, features and obstacles that match the abilities of the users and enable riders to safely race in close proximity to each other. Whether it be a grassroots venue or official racing facility, BMX race tracks offer a unique opportunity for riders to practice their biking skills and learn how to race.

START HILLS / DECKS / SPECTATOR-STAGING AREAS


Moose Jaw Bike Park, Sask.

In general, start hills or start decks refer to a common hill where riders can roll down into the various bike park elements such as jump lines, pump tracks, balance lines etc. They provide a vantage point for riders and facilitate speed and momentum. They often serve as gathering point / spectator / staging areas, and may offer seating alongside informative bike park signage in terms of layout, components and features, difficulty level, rider etiquette and contact information.

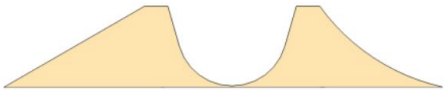
JUMP LINES


Rotary Bike Park, Brantford, ON

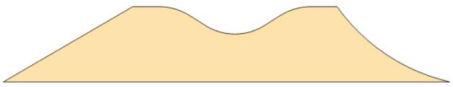
Jump lines refer to a series of jumps placed in order to create a particular progression or feel. Jump lines can offer a variety of challenge, from easy to large features and ranging from beginner rollers to table tops into more advanced gap jumps, hips, shark fins, step ups & step downs. Bike parks typically have a diversity of lines to enable users of different abilities to progress and build upon their skills with jump lines often laid out with options to be able to transfer from one set to another.

TABLE TOPS, GAP JUMPS, HIPS, SHARK FINS, STEP UPS & STEP DOWNS

Table tops are jumps with a level top that enables riders to roll up and over the jump without necessarily getting air. The table is the flat top area of the dirt jump between the take off and landing transition, with the take off lip and landing lip being on the same elevation.



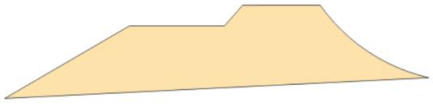
Gap jumps, also known as doubles / double jumps, have a take off and landing ramp with a concave space or gap in between. Riders are challenged to engage their bike skills, confidence, coordination, speed and timing in order to take-off and land the jump on the other side, clearing the gap. Gap Jumps are not rollable features and considered to be advanced – expert level.



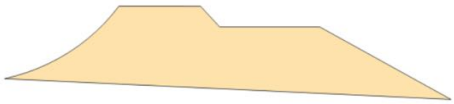
Semi Table tops are Table jumps that have material removed from the center top of the table so that the rider can feel like they are jumping a gap however they can opt to roll the feature if unsure. These are traditionally intermediate, advanced jumps.

Hips jumps that are shaped and angled in such a way that changes the direction of the rider with the take off transition on the same plane as the landing transition. Hip Jumps enable riders to veer left or right &/or transfer to another designated feature. They create variability and turns in the ride line that might otherwise be straight. Hips provide a natural progression for intermediate to expert level riders to engage / progress in rider flow and style.

Shark Fins combine a launching pad area and curved berm (or actual wood structure) to enable the rider to bike into the feature and use their speed and momentum to take off in a sideways transfer fashion into a landing.



Step Ups have a jump take off that is lower than the landing ramp. Often step up ramps are built before large hills (inclines) to allow a rider to start low and jump up to the top of the hill often resulting in riders losing speed on the landing ramp.



Step Downs describe a jump where the take off is higher than the landing ramp, with riders gaining speed on the down ramp. Step Downs generally have a landing that is oversized to accommodate the lack of visibility and allowing for an easier landing, and require experienced rider levels as speed plus technique is required.

It is recommended that jumps are laid out in a consistent and legible manner, and not provide any unexpected surprise features. As examples, if a jump in the line is a Table Top, than the others should also be of the same nature; and not to put a Gap Jump within a line that functions otherwise as a rollable line.

PUMP TRACKS

Hastings Park Pump Track, source: Vancouver Dirt Jump Coaltion

Pump tracks are a series of rhythmic rollers placed in a circuit format providing wheeled fun for riders and a perpetual motion machine for riders to figure out how to get momentum from 'pumping' each roller to continue around the track without pedaling. Pump tracks provide initial progressions into the world of cornering, momentum and speed control, enhancing basic bike handling skills through a safe low risk track. These tracks also offer handling skills that prepare riders for jumping and trail riding.

Construction practices predominately include the use of dirt however tracks can include rock, wood, asphalt and concrete. Pump Tracks come in a variety of closed loop layouts and can be incorporated into trails or destination pathways. Tracks can fit footprints of all sizes and layout, are easily built, environmentally friendly and easily naturalized for aesthetics.


Pedawawa Bike Park, ON

Pump tracks provide communities 'free' opportunity to educate and experience bike riders, especially children, in a structured, safe and managed low risk area. They offer gathering points for neighbours and members of the community to take part in healthy activity and can provide revenue generation for Parks and Recreation programming.

BERMS

Berms are banked corners that help riders keep cornering control, gaining g-force to enable them to increase or decrease speed and to be able to change direction with optimal traction. Berms can be open (under 180 degrees) and used to define a riders direction (left of right) or closed (180 degrees or over) and used as entrance and return features. Berms are common features incorporated into pump tracks, jump line returns, and mountain bike trails.

ROLLERS & WHOOPS / RHYTHMS

Rollers are small rounded table tops that encourage and facilitate pumping action to gain speed and momentum. The are common features incorporated into pump tracks, jump lines, and mountain bike trails. Rollers are placed in in groups at different spacing from top of roller to top of roller creating a rhythm for a rider. Change up in roller transition size and profile combined with spacing and timing create the personality of rhythm and flow in pumptracks, bmx race tracks, trails and dirt jump lines.

SKILLS FEATURES

Hinton Bike Park, AB

Skills Features describe bike skills park components that enable riders to practice and build upon their bike handling, balance and navigation. Alongside the many bike park elements outlined from the various jumps, berms and rollers, skills features include wood / rock structures such as raised / elevated elements, wood bridges / ladders / skinnies, rock gardens, teeter-totters, log rides and wall rides. Skills Features are meant to mirror natural forms, obstacles and technical trail features that riders would find on mountain bike trails. They can be found in and around a bike park &/or within a designated skills zone, and offer an array of features from beginner to advanced to allow users to practice and progress in their riding through engaging in a variety of challenges in a safe area.

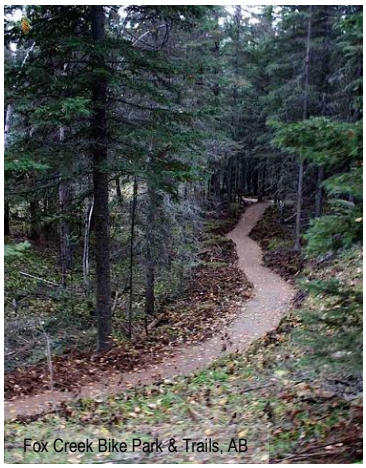
DROPS

These features refer to a vertical drop to a transitioned landing, possibly at the end of a log, off a rock or at the edge of a start hill / deck. The level of difficulty and technical ability required depends on the vertical drop &/or the angle of descent, with a good amount of speed being necessary. Drop features can often be rolled front wheel/back wheel at slower speeds or 'dropped' two wheels down at faster speeds.


Hinton Bike Park, AB

SINGLETRACK TRAIL

A singletrack trail is one where users must generally travel in single file. The tread of a singletrack trail is typically 18 – 24" wide, though it can be as narrow as 6" or as wide as 36". Singletrack trail tend to wind around obstacles such as trees, large rocks, and bushes. As compared to roads, singletrack trails blend into the surrounding environment, disturb much less ground, and are easier to maintain. The tread of singletrack is almost always natural surface, in contrast to the gravel or pavement of roads. Singletrack enables riders to experience a close connection to nature and a higher degree of challenge from the narrow and frequently rough, tight and twisty nature. Singletrack trails tend to slow mountain bikers as they demand constant focus and a slow to moderate speed to navigate.


Fox Creek Bike Park & Trails, AB

DOUBLETRACK TRAIL

A doubletrack trail allows for two users to travel side by side, or to pass without one user having to yield the trail. Doubletrack trails are often old forest roads &/or may have originated as an off-road motorized vehicle or fire road. They therefore have 2 tracks often with a green grass growing down the middle. Doubletrack trails are wide enough to accommodate motorized vehicles and may be used for such enabling for well-delineated lines for trail users to follow.


source: www.dblanchard.net

FLOW LINE / FLOW TRAIL

All trails have a "rhythm," a place where mountain bikers can find their groove. This is often referred to as Flow. Flow Trails take mountain bikers on a terrain-induced roller coaster experience, with little pedaling and braking necessary. This style of trail typically contains features like banked turns, rolling terrain, various types of jumps, and consistent and predictable surfaces. Conspicuously absent are abrupt corners or unforeseen obstacles. As a rider carves back and forth, and up and down, he or she develops a rhythm and *flows* down the trail.


Blackfalds Bike Park, AB

Flow trails are what you make them: leisurely rides with your kids where beginners can roll over dirt features and bypass technical ones, or an exploration of skills and airtime for fast, talented riders who want to turn the trail into the ultimate playground.

UP TRAIL / RETURN LINES

Up trails are designated one-way routes where users travel in only one direction, in this case up. One-way, mountain bike-only trail allows for tight single-track with short sightlines and blind corners, without the risk of collisions. Sometimes up-trails can be shared-use in that mountain bikes travel in one direction and other users travel in the opposite direction. Though such a case requires clear sightlines in order to be safe and effective, it allows slower visitors to be channelled in one direction and faster users (mountain bikers) in the other to help reduce conflict.


source: www.trailforks.com

PERIMETER TRAILS

Perimeter trails encircle the bike park enabling riders and users to make their way around the facility while staying out of everyone's way and safely view and access the various areas or watch from afar. Perimeter trails may include amenities along the route such as seating / rest areas, bike racks, litter receptacles, washrooms, water fountains and signage.


Rotary Bike Park, Brantford, ON

FALL ZONES

Fall Zone refers to the area in which a rider will land should they fall. Fall Zone areas should be clear and free of structures, obstacles, debris and litter to help ensure they are safe and minimize risk / injury. Fall Zone areas increase as the level of difficulty and skill / ability of the rider increases.

PART 2: RIDER TYPES & STYLES

The following provides a general overview of rider types in regards to mountain biking with the sport continuing to grow and take on various forms and styles. Information and descriptions have been excerpted from IMBA literature and other open source on-line resources. Descriptions of the various types include:

- Beginner & Recreational Riders
- Cross-Country (XC) Mountain Bikers
- Dirt Jumpers & BMXers
- Downhillers (DH Riders)
- Fat Bikers
- Freeriders

Other Recent Riding Styles
- All Mountain (Enduro) Riding
- Dual Slalom Riding
- Slopestyle Riding

BEGINNER & RECREATIONAL RIDERS

Beginner mountain bikers, families with members having varying skill levels and infrequent casual trail users may be considered recreational cyclists. Skill level is generally lower than the above categories and length of trail covered and amount of time on the trails may thus be shorter.


source: www.holidaycottages.co.uk

CROSS-COUNTRY (XC) MOUNTAIN BIKERS

XC riders use trails for recreational enjoyment and for exercise. Riders may use trails several times a week. Tight technical trail with challenging sections and open flowing sections are desirable for variety of terrain and physical challenge. As skills and endurance develop, longer trails are sought.

Beginner XC riders tend to like gentle, relatively short trails. As they become more skilled, the often seek longer, more difficult routes. Rough, arduous, or twisty sections satisfy the need for technical challenge and help control speed. Trails that are fun discourage mountain bikers from riding off trail to find more exciting routes.


source: www.whisttler.com

More experienced riders will carry water, food, tools and repair kits, and sometimes a first-aid kit. Avid XC riders are comfortable in the backcountry. These experienced cyclists are typically self-sufficient and seek trails that let them cover from 10 to 100 kilometres and upwards in search of solitude, nature, and challenge. Desirable trails feature several kilometres of connecting loops with natural obstacles.

DIRT JUMPERS & BMXers

Dirt jumpers and BMXers will typically only use trails to access the skills park and typically will not use the trails for recreational enjoyment or for exercise, due to the fact that a specific dirt jump or BMX is not a comfortable bike for long extended pedaling. Dirt jumpers and BMXers will stay in a specific area.

It is to be noted that this group is typically comprised of a younger demographic of users and the development of a facility is beneficial to a local community's youth and young adults more so than to traveling trail tourists. Dirt jumps are an excellent area for riders to foster the development of various skill sets found within the sport of mountain bicycling and BMXing, many of which are applicable to other aspects of the sport other than dirt jumping / BMXing.

DOWNHILLERS (DH RIDERS)

Downhillers or DH riders are usually advanced riders who use sophisticated equipment specifically designed for descending steep and technical trails. The most sustainable trails for downhillers are rocky contours with many grade reversals. Downhillers seek long challenging descents. Since downhill bikes are heavy and not designed to climb hills, users will often walk or shuttle to the top of a trail using a vehicle so it is helpful to have access to a road. Ski areas that provide summer lift service are popular with downhillers.

FREERIDERS

Freeriding is a type of mountain biking originating from both the North Shore and Interior BC regions, where mountain bikers either started elevating trails above saturated ground to stay out of water and mud, or rode down extremely steep scree slopes. They originally built structures such as boardwalks to bypass wet terrain. These evolved into purposefully built technical challenges such as elevated ladder bridges, drop offs, skinnies, teeter totters, and so forth. These man-made structures are considered a type of "technical trail feature" (TTF).

In the past couple of years freeride mountain bikers have begun to add more challenges into the trails by sculpting dirt berms and jumps, and incorporating more flow into the trails. Similar to XC riders, freeriders may desire a long trail with features incorporated into or alongside the trail as an optional experience. Alternatively, similar to dirt jumpers, freeriders may focus their time on one specific area and "session", or repeatedly ride features in order to develop skills.

Some freeriders want these technical features within cross-country rides, while others prefer them as stand-alone experiences. One solution is special-use areas (similar to snowboard parks at ski resorts) called challenge parks, also referred to as terrain parks or skills areas. On backcountry trails, technical features should blend with nature and be built well.

The installation of these structures and construction of unauthorized trails is a concern for land managers due to the impact on the natural environment and the safety of the users. The liability of these structures is therefore a common concern for public land managers, and a motivating factor for land managers to work collaboratively with mountain bikers to create an area, or areas for this style of riding.

FAT BIKERS

Fat bikers are the newest trail users, with riders primarily riding on snow and making use of bikes with wide rims and fat tires that can be wider than 3.5 inches for deep snow coverage, and tire pressure often less than 10 PSI. Essentially, riding with a set up that enables enough floatation that you can travel over snow without leaving a rut deeper than 1 inch and sufficient traction that you are able to safely control your bike and ride in a straight line. With the growing popularity of fat biking and sharing of winter trails and facilities such as ski areas, proper etiquette includes only riding at ski areas that allow and encourage biking, yielding to all other users when riding (skiers don't have brakes but you do!), and riding on the firmest part of the track.


source: www.gearjunkie.com

In the right conditions, a fat bike can be the ultimate winter backcountry travel tool. Frozen conditions and minimal snow coverage (1-5 inches) means access to areas that are impassible during the warmer months.

OTHER RECENT RIDING STYLES

ALL MOUNTAIN (ENDURO) RIDING

Also known as Enduro, All Mountain riding is a step up from XC in that the bikes have heavier duty frames, components and significant dual suspension travel while at the same time allowing for agility and reasonable light weight for riding, ascending and descending over a range of terrain. In the race circuit, All Mountain riding is taken up as Enduro Racing and can involve anything from challenging climbing and descents over a long course on various XC to DH type trails, or courses where the uphill sections are not timed. Though Enduro Racing can be quite competitive, the nature of the riding is more casual and fun, calling into play both endurance and technical abilities.


source: www.bikeradar.com

DUAL SLALOM RIDING

Like Dual Slalom ski racing, Dual Slalom in the mountain biking world refers to two riders or racers navigating their way down a slope on similar tracks side by side. Dual Slalom courses are typically shorter and may ride well under a minute, incorporating various features along the way to challenge, engage and stimulate riders. This may include dirt jumps, gap jumps and berms to name a few.


source: www.pinkbike.com

SLOPESTYLE RIDING

Similar to Slopestyle Skiing, Slopestyle Riding features big-air for riders to showcase their stunts and tricks. It is a relatively newer form of freeride style mountain biking that is also a big spectator sport attracting professional athletes during competition where riders can showcase their skills, line choice navigation and big-air savvy, BMX style tricks and stunts for points. A Slopestyle course is often housed within a mountain bike park facility making use of the big jumps, drops, wood skills features and big berms and often, these features are created specifically for competition events and venues.


source: www.vitalmtb.com

APPENDIX B:

FEEDBACK / COMMENT FORM WITH SURVEY QUESTIONS
COLD LAKE BIKE PARK & TRAILS OPEN HOUSE - JUNE 6, 2018

Bike Skills Park & Trails – Ride / Training Centre
Public Input & Feedback – Survey Comment Sheet

Cold Lake, Alberta – June 6, 2018

Thank you for contributing to the design of the Cold Lake Bike Skills Park & Trail - Ride / Training Centre and providing your input on the Survey Questionnaire Sheet.

Please ask questions and discuss ideas. Let us know what you are thinking by providing your comments below, or email them to jay@hoots.ca. Feel free to approach any of us to discuss further.

1. Name _____ Age ___ Email _____

2. Where do you live? (address OR postal code) _____

3. How often do you currently visit the Park Reserve Area? (circle) Daily Weekly Monthly

4. When visiting the Park Reserve Area do you? (circle) A - Visit the Cold Lake / Air Force Museum(s) B - Ride Bike C - Trail Walk / Run D - Walk Dog E - Engage in Winter Activity F - Picnic G - Other

5. Would you and your family be interested in a Bike Skills Park and seeing a year-round, non-motorized trail system devoted to mountain biking and multi-use activities in Cold Lake? (circle) Yes No

6. Which activities would you like to see the Bike Skills Park and Trails system support? (circle)
A - Mountain Biking B - BMX Riding / Racing C - Walking / Hiking / Running D - Snow / Fat Biking
E - Snow Shoeing F - X-Country Skiing G - Biathlon Trails & Target Practice H - Other _____
_____
_____

7. Are you a member of a bike or trail club? Would you consider becoming one?
_____
_____
_____

8. Do you think promoting and creating recreation facilities for mountain biking and trails is a benefit for Cold Lake? (circle) Yes No

9. Do you have any comments, questions or concerns about the current status & use of the Park Reserve Area?
_____
_____
_____

10. Have you been to other Bike Parks? List top 10?
_____
_____
_____

11. Would you pay a user fee for a Bike Skills Park? (circle) Yes Maybe No

12. Would you pay to use a Bike Skills Park if it was maintained in <u>great condition</u> all the time? (circle) Yes Maybe No

13. Circle your bike skill level: Beginner Intermediate Advanced Expert Space Alien

14. From the examples of bike park features A – P, give a checkmark for the ones you like, and an 'X' for the ones you don't like. (More checkmarks in a box indicates you really like it!)

1	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
2	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
3	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
4	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**

15. What kind of bike(s) do you have? What type of riding would you want to do more of?

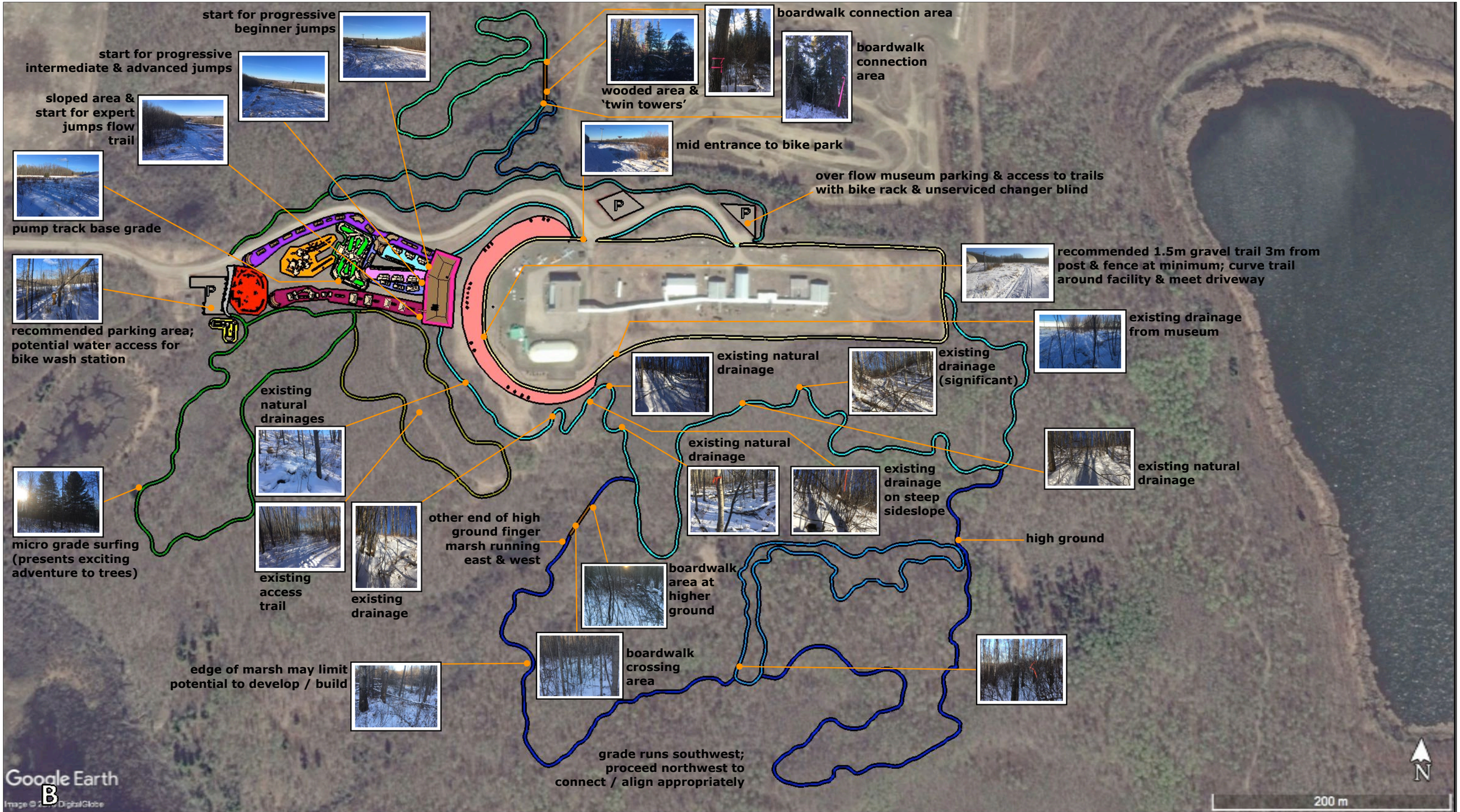
16. What types of features interest you the most? Write or sketch your ideas (below / bottom of page).

17. What <u>does not belong</u> or <u>does not interest you</u> in the Bike Skills Park?

18. Any other suggestions? What would make the Park better?

APPENDIX C:

COLD LAKE BICYCLE SKILLS PARK & TRAILS, RIDE / TRAINING CENTRE: PROPOSED CONCEPT LAYOUT – PHOTOS OF SITE & AREA



Hoots Inc.
2537 Byron Rd.
North Vancouver, BC
V7H 1L9
604.808.6075
info@hoots.ca

Project / Feature: **Bicycle Skills Park & Trails - Ride / Training Centre**
Location: **Cold Lake, Alberta (Central Park Reserve Area)**

Client Name: **City of Cold Lake, AB**

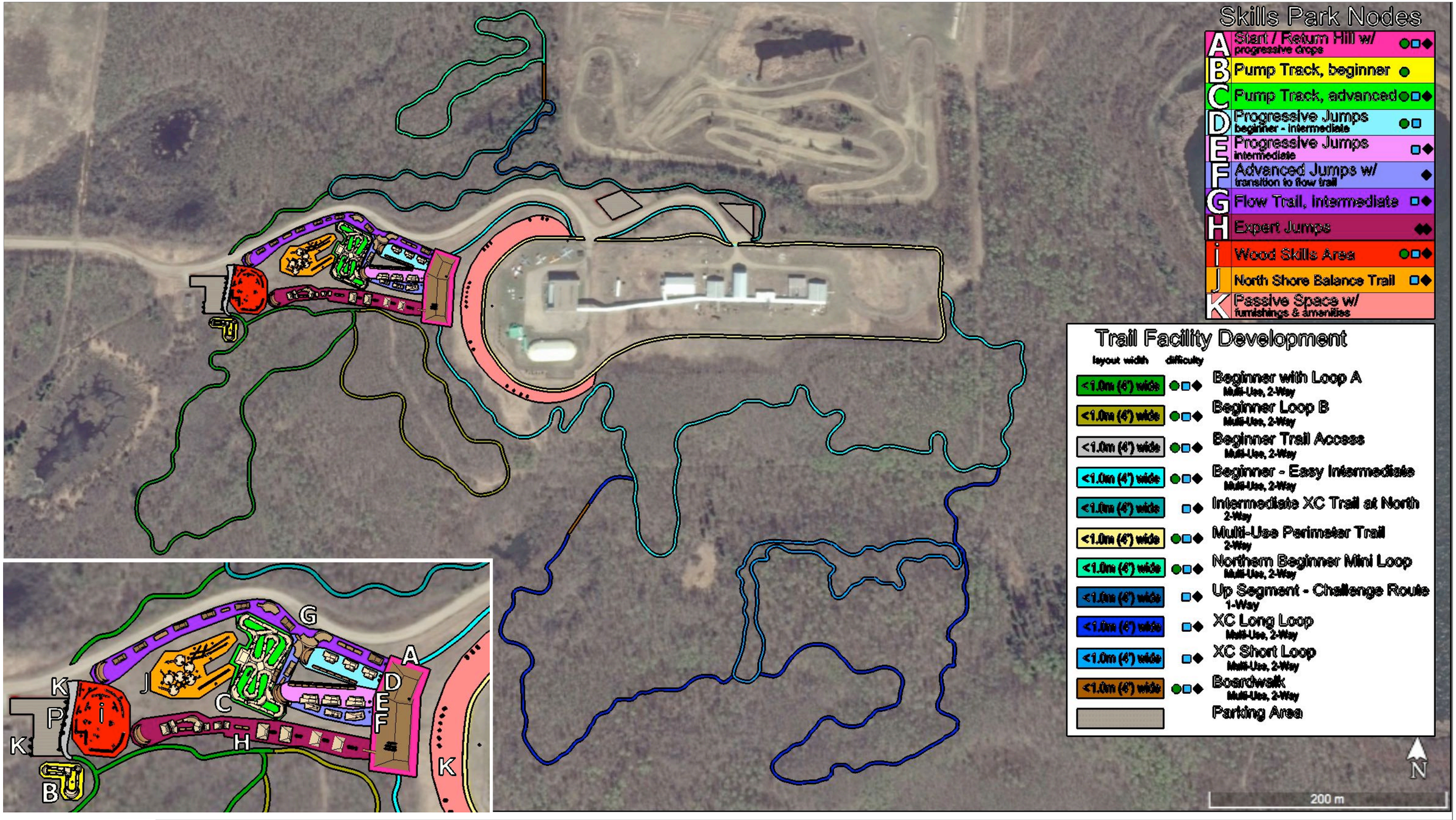
Designed By: J.Hoots
Date: June 2018

*not to scale

Proposed Concept Layout Photos of Site & Area

APPENDIX D:

COLD LAKE BICYCLE SKILLS PARK & TRAILS, RIDE / TRAINING CENTRE: PROPOSED CONCEPT LAYOUT – SKILLS NODES & TRAILS



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Client Name: **City of Cold Lake, AB**

Designed By: J.Hoots
Date: June 2018

*not to scale

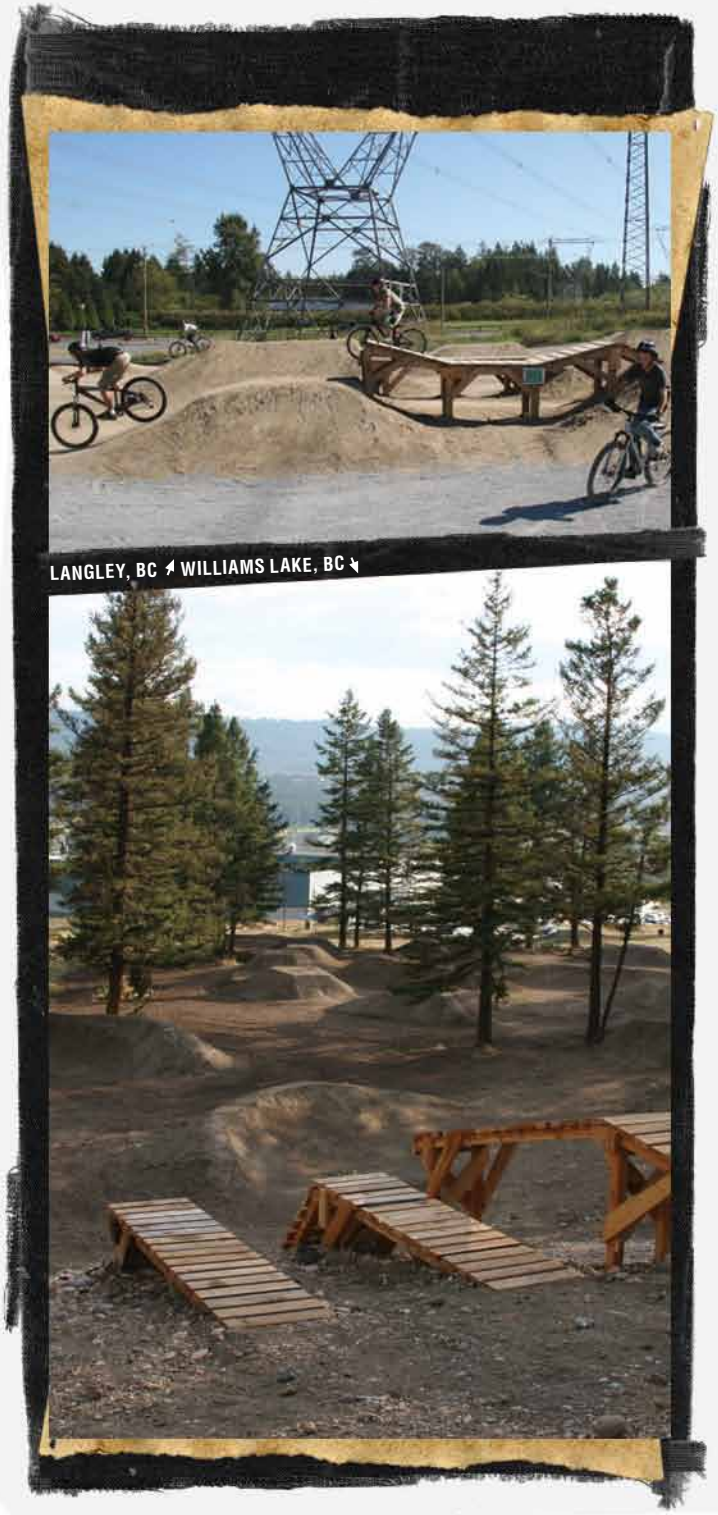
Proposed Concept Layout Skills Nodes & Trails

APPENDIX E:

HOOTS LTD. BROCHURE WITH RATE SHEET

hoots

SALES PACKAGE



THE LEADER IN THE DESIGN & CONSTRUCTION OF COMMUNITY BASED BIKE SKILLS PARKS AND TRAIL SYSTEMS

COMPANY PROFILE

Hoots Inc. is an active contributing member to the International Mountain Bike Association and Professional Trail Builders Association.

With over 50 projects built in the past 7 years, Hoots Inc. is an accomplished design/build company focusing on bike skills parks and trails. Committed to the creation of alternative play spaces and non-traditional sport infrastructure, Hoots Inc. excels at meeting the changing needs of communities and developing relationships with clients to exceed their goals.

Hoots Inc. has paved the way for skills park development both in North America and around the world. With creative design and flow in mind, and efficient processes, Hoots Inc. delivers a high quality, user-friendly product every time.

The evolution of mountain biking has led to the increased need for bike skills parks within communities. Riding culture is a worldwide phenomenon with more people on bikes every year. Every community can participate by providing a space for active living, bike culture, and naturalized play space.

Hoots Inc. understands private-public partnerships, the importance of community involvement and what it takes to make projects a reality. Having successfully completed projects both nationally and internationally, Hoots Inc. maintains networks worldwide to encourage skills park and trail development.

Our dedicated crew, ranging from riders to licensed landscape architects is committed to delivering a finished product that exceeds expectations and ensures fun and flow for everyone. Our trained staff will see your project is met with the professionalism our reputation is built on.

JAY HOOTS

Jay Hoots, founder of Hoots Inc. is making his mark with his 14th year as a professional mountain bike rider with the Norco Factory Team. With experience in several demands, including downhill, freeride, and dirt jumping, Jay can provide design and build solutions for all levels and types of riders. Extensive travel and riding combined with coaching certificates and contest background gives Jay Hoots the ability to recognize what riders want and current industry trends.

Jay is an active cycling advocate and presents regularly at conferences, most recently at TEDx in Sechelt, Fall 2011. Throughout traveling, riding, designing and building, Jay maintains a Faculty position at Capilano University as the lead instructor for beginner and advanced trail building courses for the Mountain Bike Operations Certificate Program.

If you would like to learn more about the services we offer please contact us directly. We can provide you with information pertaining to the process, financial investment and support opportunities to find a suitable solution for your community.

PHONE: 604.808.6075
EMAIL: INFO@HOOTS.CA

EVERY PROJECT ENCOMPASSES TWO MAIN PHASES:
DESIGN & BUILD

SERVICES

With over 40 skills park projects built in both large city and small town environments, Hoots Inc. leads the way in bike skills park development. All aspects of design incorporate the highest level of technology working seamlessly with planning departments while prioritizing the engagement of public input/ feedback through organized workshops.

Hoots Inc. can work with volunteer groups during the building phase. Volunteer labour is an opportunity to reduce labour costs while increasing park ownership.

Hoots Inc. has played a key role in the emerging bike park market by offering quality service and on-going education. Processes have been created to set a high standard for the development of skills parks. The demand for mountain biking trails, jumps and skills parks continue to grow worldwide. Our unwavering belief in skills park and trails is our commitment to healthy lifestyles, lifelong learning and alternative play spaces.

DESIGN INCLUDES:

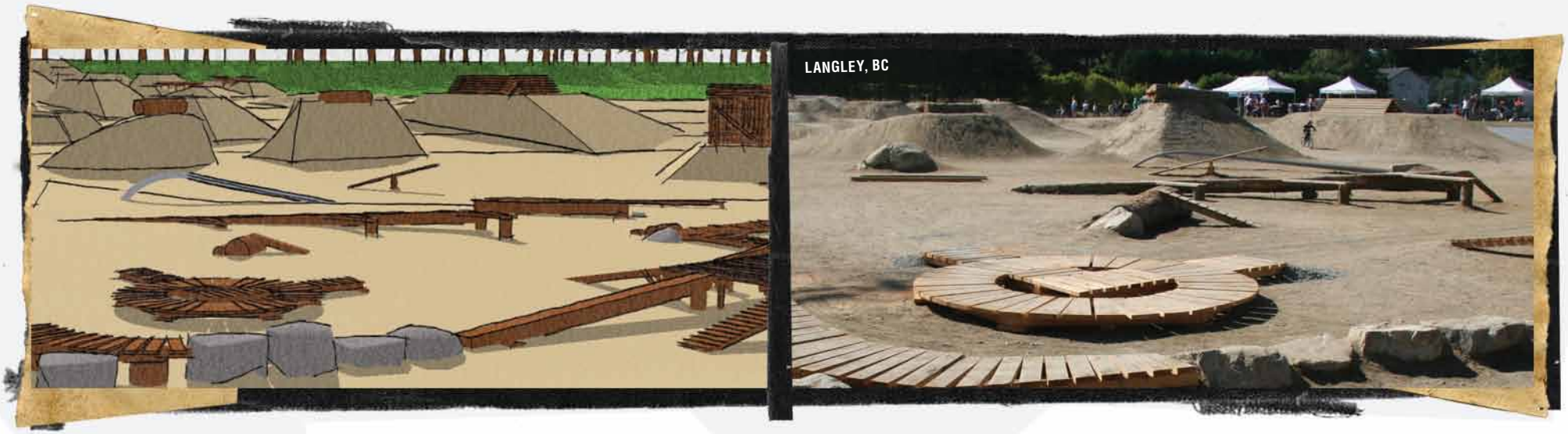
- Consultation meetings and feasibility assessment
- Site Analysis/Visioning
- Staff & Council presentations/meetings
- Coordinate development with local riding community
- Design (Concept, CAD, 2D & 3D virtual modeling showcasing multiples park angles)
- Materials lists (macro – full park, micro – feature specific)
- Examples of site appropriate signage options
- Approximate project cost breakdown (including labour, construction and materials)
- Construction plan
- Planning/organization of volunteer involvement

BUILDING INCLUDES:

- Grading
- Drainage
- Traffic Management
- Volunteer Coordination
- Safety Planning
- Feature Construction
- Dirt Shaping
- Compaction
- Park management documentation

Hoots Inc. design and construction specialties include skills parks, pump tracks, trails and maintenance. Our crew can bring all aspects of the riding experience together by offering additional services such as:

/ Risk management
/ Club development
/ Signage
/ Events



ROBSON FLETCHER/THE FITZHUGH

HINTON, AB ↗ WEST VANCOUVER, BC ↘

WHAT CAN A SKILLS PARK OFFER YOUR COMMUNITY?

A SKILLS PARK OFFERS RIDERS OF ALL AGES AND SKILL LEVELS A SAFE ENVIRONMENT TO PRACTICE CYCLING OF ALL TYPES.

SKILLS PARKS

The process of identification, measurements, controls and minimization of risks begins during the design phase and continues throughout construction. Hoots Inc. offers the following as risk management tools in skills parks:

- Park boundaries using fence/natural materials
- Internal signs indicating skill levels, rules and etiquette
- Progression and filters
- Surface textures
- Fall zones
- Height/width ratios
- Build to guidelines and standards
- Insurance and liability
- Inspection and maintenance plan
- Emergency plan

Skills parks are the welcome mat to mountain biking and offer opportunities for riders of all ages on all types of bikes to learn and practice bike handling in a planned, safe and natural environment. They allow skills succession through progression based features that are all within a dynamic, self taught environment.

Skills parks can include dirt jumps, wooden bridges, wall rides, drop zones, progression trails, pump tracks and teeter totters all methodically placed in the park for a fun and managed recreational experience.

Skills parks provide a free opportunity to educate and increase experience for bike riders, especially children, in a safe and managed area. Parks offer gathering points for neighbors and members of the community to take part in healthy activity and can provide revenue generation for parks and recreation programming.

Skills parks offer a risk management solution to unauthorized jumps and features in municipalities with minimal budgets for their removal. They provide great opportunities for public-private partnerships and non-profit/ volunteer club/community involvement.

WHY ARE TRAILS IMPORTANT FOR EVERY COMMUNITY?
TRAILS CONNECT PEOPLE TO THE NATURAL WORLD.

TRAILS

With the world slowly backing away from roads and returning to trails to connect communities together Hoots Inc. can provide all the services required to design and build any kind of trail from access walking path to tight and twisty mountain bike switchbacks.

The value of trails as sustainable infrastructure in our communities is increasing. By providing communities with options for installation and maintenance, there is vast return on investment by increasing quality of life for residents, allowing them to become immersed and connected with nature.

While specializing in mountain bike trails of all types, Hoots Inc. brings experience in both hiking and motorized trails and can comfortably mediate public feedback and staff concerns with projects for optimum input and final product.

Hoots Inc. ensures trails are completed using sustainable building techniques and standards. With training and years of experience developing both hand and machine built trails, the Hoots Inc. crew deals with each project on an individual basis.

WHAT IS A PUMP TRACK? PUMP TRACKS PROVIDE INITIAL PROGRESSION INTO THE WORLD OF CORNERING, MOMENTUM AND SPEED CONTROL.

PUMP TRACKS

Pump tracks are a series of rhythmic rollers placed in a circuit format providing two-wheeled fun for kids and a perpetual motion machine for riders that figure out how to get momentum from 'pumping' each roller to continue around the track without pedaling. Pump tracks provide initial progressions into the world of cornering, momentum and speed control, enhancing basic bike handling skills on a safe, low-risk track. These tracks also offer handling skills that prepare riders for jumping.

Construction practices predominately include the use of dirt however tracks can include rock, wood, asphalt and concrete. Pump tracks come in a variety of closed loop layouts and can be incorporated into trails or destination pathways. Tracks can fit footprints of all sizes and layout, are easily built, environmentally friendly and easily naturalized for esthetics. Pump tracks provide communities 'free' opportunity to educate and experience bike riders, especially children, in a structured, safe and managed low-risk area. Like entire skills parks, pump tracks contribute to risk management solutions for unauthorized jumps and features in municipalities.

With over twenty different wooden and dirt pump tracks built, Hoots Inc. brings rhythm and flow to every project no matter what size of scope. Offering consultation globally on the pump track phenomena, Hoots Inc. leads the way in track development in North America.

With the option of affordable custom track design or choice from our current catalogue, each project is developed using our complete 'Best Practices' guidelines manual to supplement construction projects. Pump tracks are a great feature whether they are stand alone or incorporated into a community bike skills park.

NORTH VANCOUVER, BC ➚ CANMORE, AB ➘

INCREASED DEMAND OF USERS, SEASONAL AND ADVERSE WEATHER CONDITIONS, COMBINED WITH SITE SETTLEMENT AND WEAR REQUIRES REGULAR MAINTENANCE.

MAINTENANCE

Proper maintenance of a bike park will increase user experience and decrease potential liability concerns from a risk management perspective. While not-for-profit and public partnerships initiatives can offer substantial community 'buy in', lowering overall responsibility and costs for a municipality, the bottom line is professional inspection and regularly scheduled maintenance can be cost effective and a great way to keep community members in touch with design specifications for the park and its features.

Compared to traditional sports facilities, bike parks require marginal funding when it comes to maintenance. Our specialized equipment and trained staff ensures an efficient approach and minimal disturbance to the area.

Creating sustainable bike parks, trails and pump tracks is important to Hoots Inc. To ensure that these amenities will be long lasting, we incorporate the following into every build:

- Identify, understand and comply to build guidelines and standards
- Encourage stewardship and partnership with local riders and bike clubs
- Provide training programs
- Provide water drainage solutions
- Use corrosion and rot resistant materials
- Encourage responsible building choices

CASE STUDY - HINTON BIKE PARK
HOW CAN YOUR COMMUNITY WORK TOGETHER TO BUILD A SKILLS PARK?

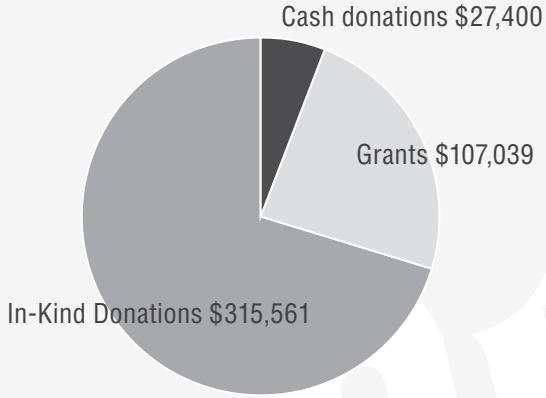
Here's a snapshot of how a community skills park, valued at $450,000, was built over a four year period in Hinton, AB.

Fast Facts

Bike Park Size	37 Acres
Designer and Builder	Jay Hoots
Project Management	Hinton Mountain Bike Ass.
Volunteer Contribution	3,200 hours = 400 days
Project Value	$450,000
Construction Timeline	2008-2011

Leadership from the Hinton Mountain Bike Association and the Town of Hinton:

- One of the Largest in Canada
- Joint Operating Agreement between the HMBA and the Town of Hinton to maintain the Hinton Bike Park



TOTAL PROJECT VALUE $450,000

Over 50 sponsors, endless volunteer hours and grants made this park a reality. With land zoned for recreational use given to the Hinton Mountain Bike Association, local and regional businesses quickly jumped on board to help build this community facility. As a multi-phased project, it allowed the community to embrace mountain biking as a recreational opportunity in Hinton.

Not only was this project an exercise in community building but community enhancement - the building of this bike park resulted in visitors from all over Alberta and eastern BC. The Hinton Mountain Bike Association hosts an annual bike festival attracting regional visitors and creating a community sponsored event.

Maintenance is an ongoing opportunity for the bike club and the community to maintain the park while at the same time allowing Hoots Inc. to modify and add features to keep the park fresh.

The success of the park was so overwhelming that Hoots Inc. was invited back to build a second, mini park in a different area of town that includes dirt jumps and a pump track.

The continued success of the Hinton Bike Park is a showcase of community volunteerism, support and dedication. Hoots Inc. is proud to be a part of this project and hopes that communities will look to places like Hinton for inspiration to build community bike parks.

HOOTS INC. RATE SHEET

Hoots Consultation
$500-$850/day

Design Rate/Hoots Specialized Design
$85/hr

Labour Rates

Hoots Specialized Labour	$65/hour
Hoots Machine Operator	$65/hour
Hoots Qualified Labour	$45/hour

Machine Rates

Hoots Mini 35D	$300/day with attachments
Hoots SK350	$200/day with attachments

Travel Rates

Per diem (accommodations/food)	$200/day per person
Travel days	$200/day per person
Flights/Rental Vehicles/Ferries	
Mileage	55 cents/km

Trail Construction
Conditions determined by soil types, slope, forest density, trail type, etc.

	Easy/Average Conditions	Difficult Conditions
Planning/Design	$500/day	$850/day
Clearing/Grubbing	$5-$8/meter	$8-$12/meter
Trail Construction including Finish	$12-$24/meter	$36/meter
Additional Trail Enhancements	Prices based on site requirements	
Bridges / Technical Trail Features / Switchbacks / Rock Features		

Pump Track Construction
Rates includes machines, labour and travel rates - does not include materials, volunteer labour or applicable taxes

Consultation/Design	$1,000-$5,000
Earthworks/Grading	Site specific
Beginner	Approximate size 80'x25' $8,000-$12,000
Intermediate	Approximate size 80'x80' $12,000-$24,000
Advanced	Approximate size 225'x60' $24,000-$40,000
Custom	Built to request

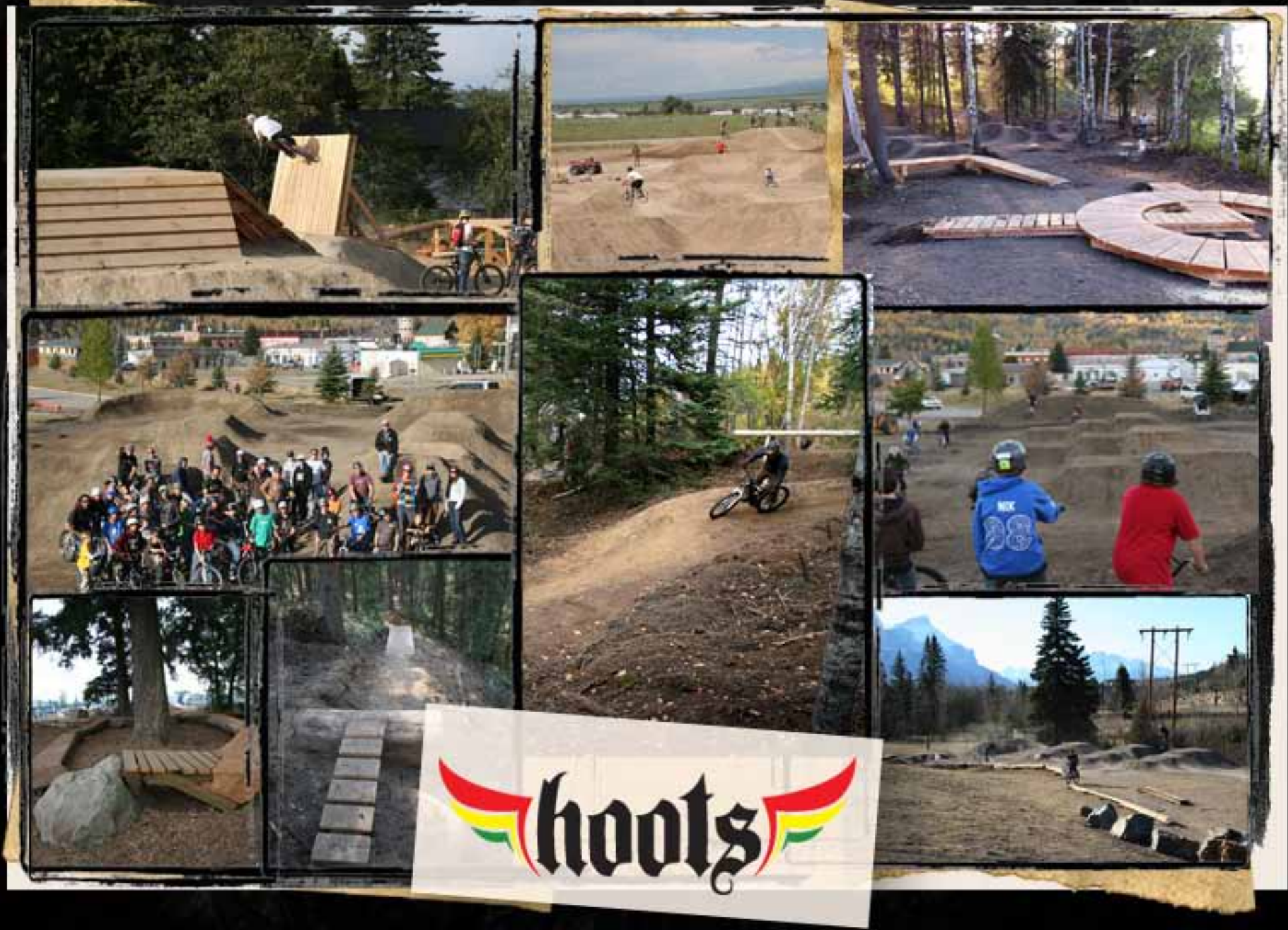
Skills Park Construction
Rates includes machines, labour and travel rates - does not include materials, volunteer labour or applicable taxes. Every project requires four to six Hoots Inc. builders. Equipment needs include, but are not limited to a dozer, a loader, skid steer, small, medium and large excavators.

Consultation/Design	$7,000-$12,000	
Earthworks/Grading	Site specific	
Small Park - Approximate size:	0.5 acre or 45mx45m	$65,000-$100,000
Approximate build time - 2 weeks		
Mid-Size Park - Approximate size:	1 acre or 63mx 63m	$100,000-$200,000
Approximate build time - 3 weeks		
Large Park - Approximate size:	2 acres or 90m x 90m	$200,000-$300,000
Approximate build time - 4 weeks		
Mega Park - Approximate size:	3 acres or 110m x 110m	$300,000+
Approximate build time - 2 weeks		
Dirt Jump Park	$45,000-$65,000	
Approximate build time - 2 weeks		

Additional Opportunities:
Special Events / Trail Building Clinics / Municipal Staff Training / Trail Assessment

Additional Cost Considerations:
Signage / Rental Machines / Dirt Lumber/Logs/Fasteners

Cost Reduction Opportunities:
Material Donations / Volunteer Labour / Equipment Donations



THE LEADER IN DESIGN AND CONSTRUCTION OF COMMUNITY BASED BIKE SKILLS PARKS AND TRAIL SYSTEMS

PHONE: 604.808.6075 EMAIL: INFO@HOOTS.CA WEBSITE: HOOTS.CA

APPENDIX F:

RECOMMENDED TRAIL RESOURCES

(excerpted from 'Mountain Bicycling Trails Masterplan – Valemount, British Columbia v2.0' December 2012)

RECOMMENDED RESOURCES

Conflicts on Multiple-Use Trails. Roger Moore. U.S. Federal Highway Administration, 1994. (www.fs.fed.us/cdt/carrying_capacity/conflicts_trails_synthesis_1994.pdf)
This resource offers a comprehensive review of the research literature related to recreation conflict, and has served as an invaluable resource for trail managers, volunteers, and advocates for more than a decade.

Fromme Mountain Sustainable Trail Use and Classification Plan. District of North Vancouver, 2008 (http://www.dnv.org/article.asp?c=988)
This document is a good example of system-wide trail master plan. It was created through a 5-year process, and formalizes a shared-vision for the trails on Fromme Mountain. The document includes assessment of each system trail to provide an overall vision, best practices for environmental sustainability, and provides trail guidelines for future trail projects.

Lightly on the Land: The Student Conservation Association Trail-Building and Maintenance Manual. Robert Birkby, SCA, 2005 (www.imba.com)
Lightly on the Land focuses on crew leadership and the nuts and bolts of trail construction and maintenance. It contains detailed instructions on many technical skills such as building with rock, felling and buckling, building with timber, bridge construction, transplanting, and environmental restoration. Explains tools, tool repair, knots, and rigging. Instead of photos, it uses hundreds of fine illustrations to depict specialized techniques such as surveying, rigging, stonework, chainsaw skills, timber joinery, and bridge building.

Managing Mountain Biking: IMBA's Guide to Providing Great Riding. IMBA, 2007 (www.imba.com)
Managing Mountain Biking offers a collection of best practices for planning, designing, and managing successful trail networks and bike parks. More than 50 experts—including land managers, recreation ecologists, professional trail builders, and experienced advocates—contributed to Managing Mountain Biking, creating a complete reference. Managing Mountain Biking details overcoming user conflict, minimizing environmental impact, managing risk, and providing technically challenging riding. While IMBA's 2004 book, Trail Solutions covers trail construction, Managing Mountain Biking focuses on solving mountain biking issues through innovative trail design, effective partnerships, and visitor management strategies.

Mountain Biking: A Review of the Ecological Effects, Prepared by Michael Quinn and Greg Chernoff, February 2010. (ftp://goliath.rockies.ca/public/greg/Ecol_Effects_MTB/EcoEffects_MTB_2010_Miistakis_FINAL_bilingual_summary.pdf)
In order to inform an activity assessment of mountain biking within Canada's national protected heritage places, Parks Canada commissioned the following literature review on the ecological effects of mountain biking. The purpose of this review was to summarize the nature of the ecological perturbations or effects arising from the disturbance of recreational mountain biking. Extensive searches and cross-references were conducted using the most relevant on-line databases

available through the University of Calgary library. Searches of the World Wide Web via leading search engines and focused reviews of known mountain biking and trail associations were also conducted. The intent of the initial search was to identify as many papers, reports and theses as possible that addressed topics related to mountain biking. Source materials were then filtered to identify those references that addressed ecological effects of the activity. The research described in this report is concurrent with a complementary effort to understand the demographics, culture, and social effects of mountain biking as a recreational activity.

Natural Surface Trails by Design: Physical and Human Design Essentials of Sustainable, Enjoyable Trails. Troy Scott Parker, 2007 (www.imba.com)
This groundbreaking book explores trail design from a theoretical perspective, covering the physical and human forces and relationships that govern trails—how we perceive nature, how trails make us feel, how trail use changes trails, and how soils, trail materials, water, drainage, and erosion behave.

Recreational Trail Study for British Columbia: Phase 1 – Background Report. Ministry
of Tourism, Culture and the Arts, Ministry of Environment, and Province of British Columbia, 2007
(www.tsa.gov.bc.ca/sites_trails/docs/Provincial_Trails_Strategy/Trail_Strategy_Appendix1_May23.pdf)
The first phase of this multi-phased project is the creation of this background report. This document is a great reference for information on Canadian laws and rules related to trails, best trail management practices from across North America, and discussion on the overall benefits of trails. It also includes a comprehensive survey, and the results, to help create a vision for the provincial trail planning, potential funding sources, and a province-wide trail inventory.

Region 5 Mountain Bike Management Strategy: Situational Assessment and Implementation Toolbox. Garrett Villanueva. U.S. Forest Service, 2007.
(http://www.fs.fed.us/r5/mountainbikes/)
This management strategy and situational assessment characterizes existing mountain bike trail conditions and provides methods for management. This document is written specifically for Region 5 in California, but its format, as a toolbox provides trail management advice that can be applied in any trail system. It is also a good example of a system-wide master plan.

Sea to Sky Corridor Recreation Trail Strategy. British Columbia, Ministry of Tourism,
Culture and the Arts, 2007
(http://www.tsa.gov.bc.ca/sites_trails/Initiatives/SeatoSky-Strategy/sea_to_sky_strategy.htm)
The Ministry of Tourism, Culture and the Arts (MTCA) developed this comprehensive strategy to provide guidance on the management of this regional trail system. The strategy provides a framework for legal authorization and establishment of the vast majority of previously unauthorized trails on Crown land, recommends a process and organizational structure for ensuring a Corridor-wide coordinated approach to management of the extensive trail network, identifies opportunities and actions required to ensure a sustainable and economically beneficial network, and outlines and recommends trail construction, maintenance

and sign standards and guidelines. This document is a useful example of a regional trail master plan.

Trail Construction and Maintenance Notebook. Woody Hesselbarth, Brian Vachowski,
and Mary Ann Davies. U.S. Forest Service, 2007
(www.fhwa.dot.gov/environment/rectrails/trailpub.htm)
This pocket-sized notebook is oriented to the needs of a trailworker. It pulls together basic trail construction and maintenance information in an easy-to-understand format. It includes a lot of the information detailed in Trail Solutions, plus a few additional strategies for trails in wet areas. It is concise with lots of illustrations – a perfect book to keep in a backpack out on the trail.

Trail Planning, Design, and Development Guidelines. Minnesota Department of Natural Resources, Trails and Waterways Division, 2007
(www.comm.media.state.mn.us/bookstore)
This comprehensive guide to shared-use paved trails, natural surface trails, winter use trails and bikeways is an excellent reference, well organized with tabs and an easy to follow lay-out. The book features dozens of useful reference illustrations and pictures for each specific topic (i.e. 6 pictures of different types of water caused erosion). Some information is Minnesota specific, but most is relevant to all climates and situations.

Trail Solutions: IMBA's Guide to Building Sweet Singletrack. IMBA, 2004.
(www.imba.com)
This comprehensive trail building resource combines cutting-edge trail building techniques with proven fundamentals in an easy-to-read format. The book is divided into eight sections that follow the trail building process from beginning to end. Readers are guided through the essential steps of trail planning, design, tool selection, construction, and maintenance. Additionally, Trail Solutions provides detailed advice on banked turns, rock armouring, mechanized tools, freeriding, downhilling, risk management, and other pioneering techniques. Trail Solutions is an essential tool for land managers and volunteer trailbuilders aspiring to raise their shared-use trail systems to the next level.

Trail System Concept Vision For Fundy National Park of Canada. Alain Boudreau, Mark Schmidt, Matthew Smith. Parks Canada, 2010.
This report outlines staff and stakeholders' vision for the trail system in FNP, conceptualizes potential trail projects, and identifies potential trail development priorities for Fundy National Park. The information held within was used extensively when developing the trail plan found within this document.

Wetland Trail Design and Construction. U.S. Forest Service, 2007.
(www.fhwa.dot.gov/environment/fspubs.)
This manual describes common techniques for building a wetland trail. Starting with identifying the type of wetlands, this manual outlines how to build a dozen different types of wetland crossing structures (with and without foundations), what tools and materials to use, and instruction on maintaining drainage to minimize environmental impacts. This book is written for wetland trails, the techniques described can also be used for correcting other poorly drained low areas in existing trails.