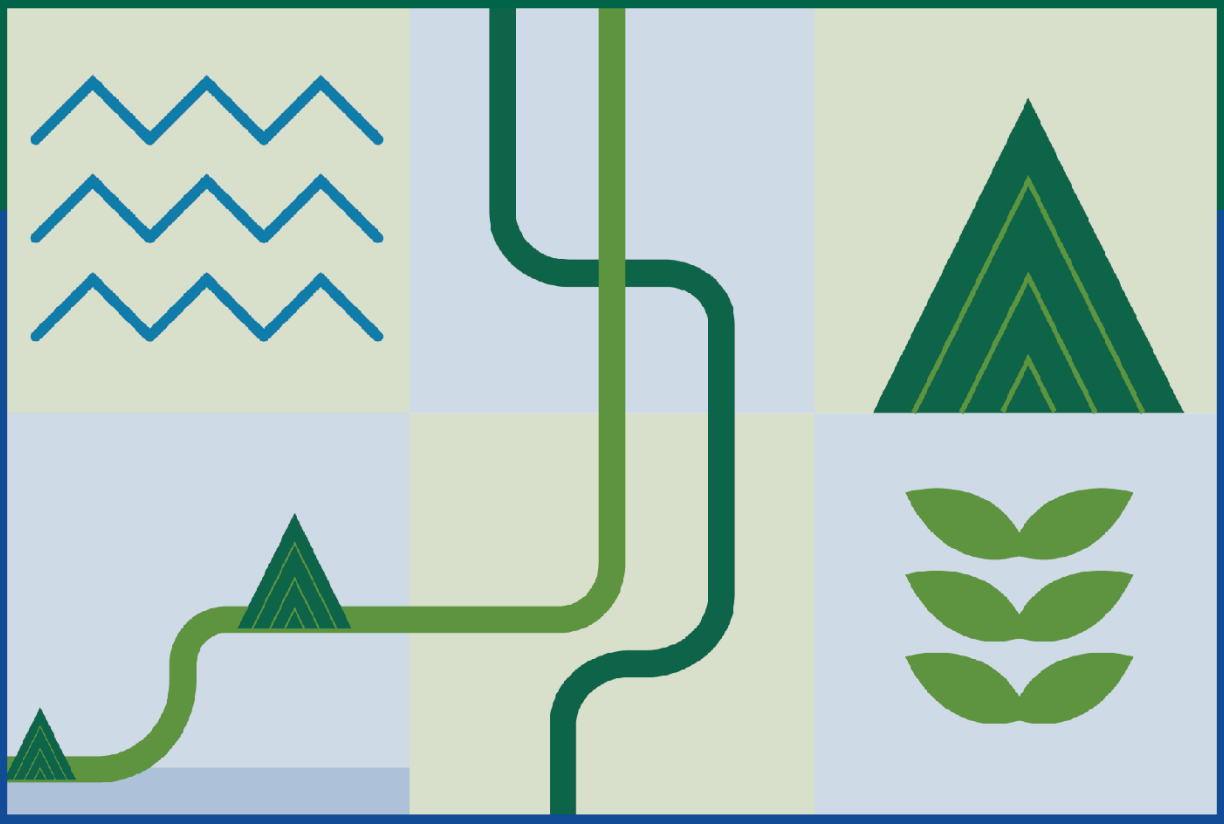
April 2024

City of Burnaby

Burnaby Mountain Trail Management Plan

Draft Background Report



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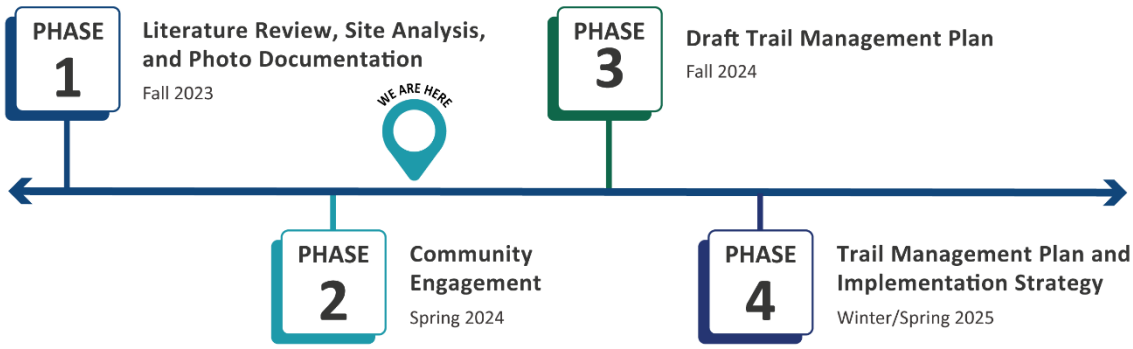
1. Introduction

1.1 Project Overview

The Burnaby Mountain Trail Management Plan (Plan) process began in Fall 2023. The City of Burnaby is preparing the Plan to properly inventory and provide direction for improving and managing, authorized trails to meet the needs of various user groups, while balancing the need for conservation. The planning process will progress in four (4) phases as shown below in Figure 1. A Communication and Engagement Strategy has been made for the Burnaby Mountain Trail Management Plan (Plan) to support and guide Phase 2.

Figure 1: Project Timeline



1.2 Purpose and Contents

This report aims to provide a high-level review of the current policy framework as it applies to Burnaby Mountain and an overview of the mountain's user groups and activities. The report also provides details on the field assessment and environmental reviews that were completed as part of Phase 1. Section 2 details key Provincial, regional and municipal policy documents that will shape the updated Burnaby Mountain Trail Management Plan. Section 3 details Burnaby Mountain's user and activity context and details the variety of user groups that visit the mountain. Section 4 provides a field assessment for the current conditions of the mountain.

1.3 Burnaby Mountain Conservation Area: A Brief History

What is now known as Burnaby Mountain is on the traditional, unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), Sel̓íl̓witulh (Tsleil-Waututh), and Kwikwetlem (kwikwəƛ̓əm) Nations. In 1903, the mountain was host to a sawmill and played a role in the region's burgeoning forest industry. Simon Fraser University (SFU) was established in 1965 and began building its campus on the top of the mountain, and has been the primary development on the mountain ever since. In 1996, SFU transferred 820 acres to the City of Burnaby and created the Burnaby Mountain Conservation Area (BMCA). The City approved a Management Plan for Burnaby Mountain Conservation Area in 2000, which has been the primary document that governed the management of the conservation area for the last 23 years.

In 2019, the Environmental Conditions Assessment identified the need for a trail management plan for Burnaby Mountain Conservation Area (BMCA) to improve the balance in managing conservation needs and recreational demands in the BMCA." The Environmental Conditions Assessment recommended several authorized and unauthorized trails be decommissioned due to erosion affecting the environment. The majority of the report's recommendations were not implemented due to complications arising from communications with the community and user groups. However, several trail improvements have been made since the assessment was completed in 2019.

2. Existing Policy Framework

This section will provide an overview of the existing policies relevant to the Burnaby Mountain Trails Management Plan.

2.1 City of Burnaby

2.1.1 Management Plan for Burnaby Mountain Conservation Area (2000)

The Management Plan for BMCA describes the conditions and policy justification of the conservation area. In September 1996, Simon Fraser University transferred 313 hectares to the City of Burnaby. By referendum, the new transfer areas were voted to be preserved as parkland and were merged with the existing Burnaby Mountain Conservation Area.

The Plan established the following vision for the Conservation Area;

> *"The Burnaby Mountain Conservation Area will be conserved in native forest cover and enjoyed through a system of public trails and related support facilities. Conservation area management will directly reflect the intent and principles of the City's Environmentally Sensitive Areas Strategy...The Conservation lands will be managed to achieve the protection and enhancement of habitat for birds, animals, and fish in balance with trail-oriented and other recreational activities appropriate to the natural setting."*

The Plan identified managing the area for recreation and conservation use as a key challenge. Finding a balance between conserving Burnaby Mountain as a highly valued regional ecological area and providing high-quality outdoor recreation facilities was highlighted as the key for all future decision-making.

The Plan highlights important recreational features at the time of writing, including the Centennial Rose Garden. The Centennial Rose Garden is a draw for tourists and lower mainland residents and includes public art, a restaurant, horticultural displays, playgrounds, open meadows, and walkways. The rest of the conservation area is composed of forested woodlands, consisting of approximately 30 kilometres of trails providing the dominant recreational rescore accessing much of the mountain except for portions of the steep north-facing slope.

The Plan includes guiding principles and recommendations for natural resources, recreational management, cultural resources, interpretation, and monitoring. The Plan also includes a comprehensive Trail Concept Plan, which is illustrated in Figure 2 & Figure 3. The Trail Concept Plan considers the closing of certain pre-2000 trails, protected habitat blocks, pedestrian trail use, cycling trail use, equestrian trail use, loop trails, cleared areas and open space, and future trail options.

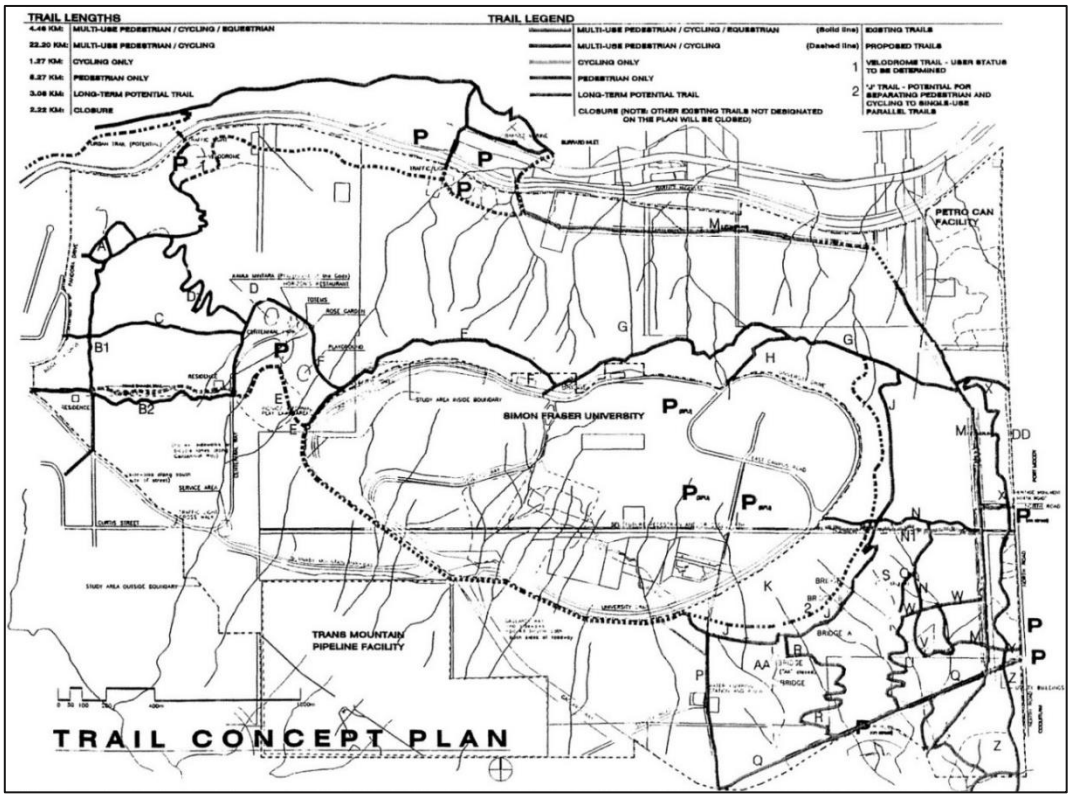


Figure 2: Trail Concept Plan - Burnaby Mountain Conservation Area Management Plan, 2000

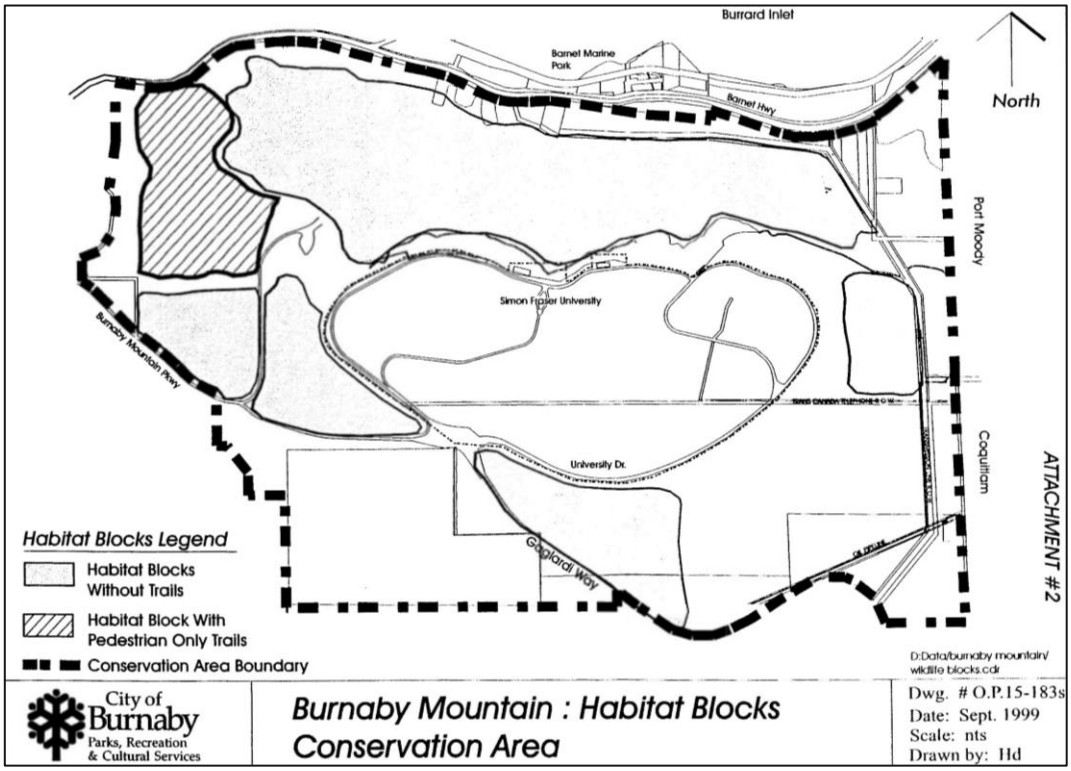


Figure 3: Habitat Blocks - Burnaby Mountain Conservation Area Management Plan, 2000.

2.1.2 Burnaby OCP, 2014

The Official Community Plan (OCP) is the City's primary land use policy document that summarizes strategic direction, framework and guidance for growth and development in Burnaby. The City is updating the OCP with the Official Community Plan (OCP): Burnaby 2050 process, which will replace the existing OCP adopted in 1998 and revised in 2014. A series of visioning dialogue events were held to engage the community on key topics, including parks, open spaces, recreation, etc., that may also inform the Burnaby Mountain Trails Management Plan.

In the current (2014) OCP, the existing land use designations for Burnaby Mountain Conservation Area (as shown in Figure 4) are mainly Recreation and Protected Natural Areas, while neighbouring areas like Simon Fraser University are designated Institutional and the Kinder Morgan property to the south-west is designated Industrial. Residential neighbourhoods surround the majority of the west and east sides of the mountain.

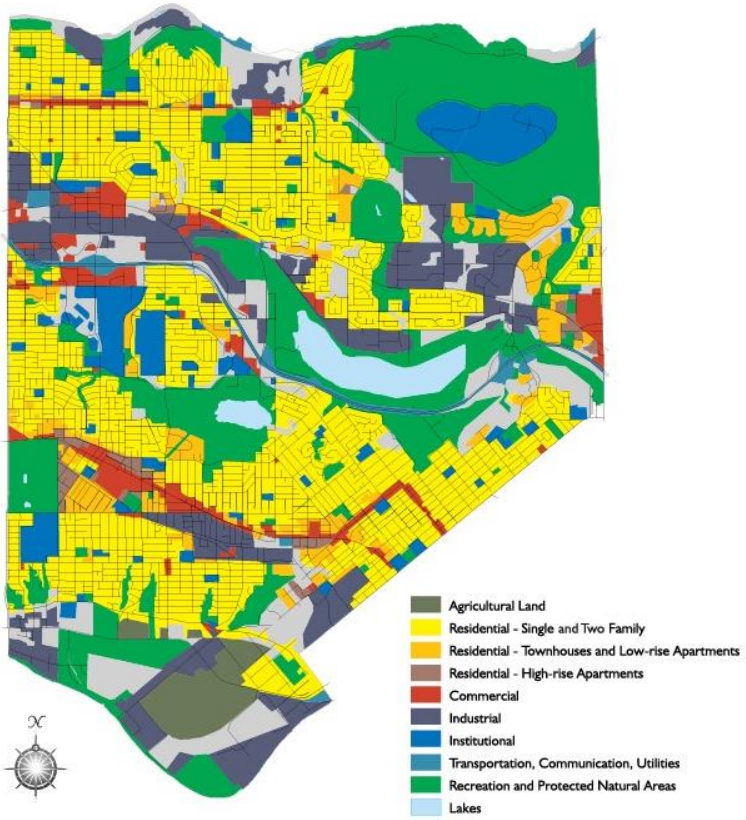


Figure 4: Existing Generalized Land Use - Burnaby Official Community Plan, 2014

The City of Burnaby's OCP classifies the BMCA as a Major City / Regional Park and is described as the City's most prominent natural feature. Major City / Regional parks have important natural elements and are critical open spaces for the City and regional population. The OCP also recommends the gradual acquisition of private holdings surrounding the mountain to increase the size of '*Burnaby Mountain Park and Conservation Area'* over time.

2.1.3 Connecting Burnaby – Burnaby Transportation Plan, 2021

Connecting Burnaby is a Transportation Plan recently adopted by Council in 2021. The Plan has a 30-year vision that will guide the City of Burnaby's transportation system to positively contribute to connecting people, places and goods.

The Plan includes long-term pedestrian and cycling network plans (Figure 5 and Figure 6) that connect around and through the BMCA. Priority Network Maps are also for improving the sidewalk and cycling networks over the next ten years.

Policies such as 4.6.1 Expand and Enhance the Cycle Network emphasize the importance of connecting the City of Burnaby to the park and conservation areas. Two actions specify connecting conservation assets to the active transportation network:

- Improve cycling connections to trails and pathways within and around parks and conservation areas in the City.
- Pursue opportunities to expand the City's trail and pathway network within parks and conservation areas.

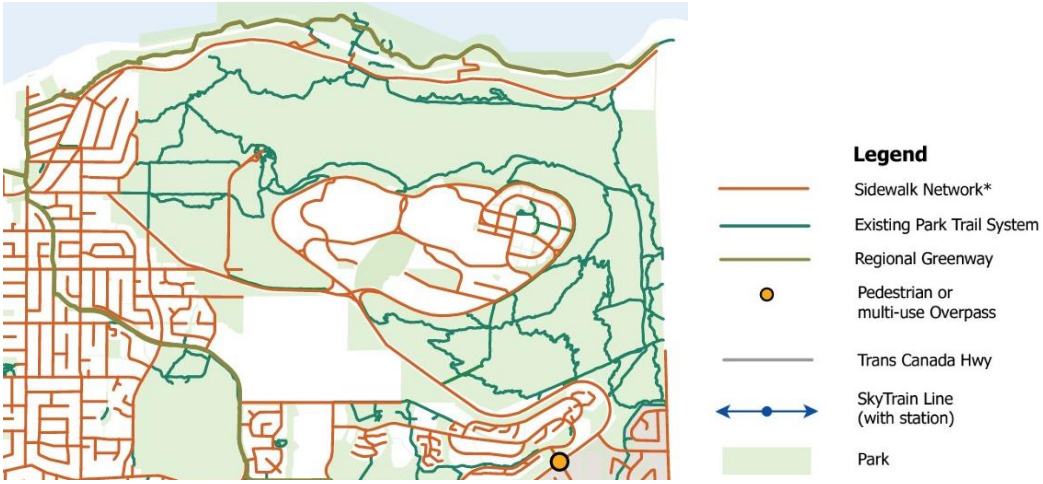


Figure 5: Long Range Pedestrian Network, Transportation Plan, 2021

Figure 6: Long Range Cycling Network, Transportation Plan, 2021

Figure 7: Priority Sidewalk Areas, Transportation Plan, 2021

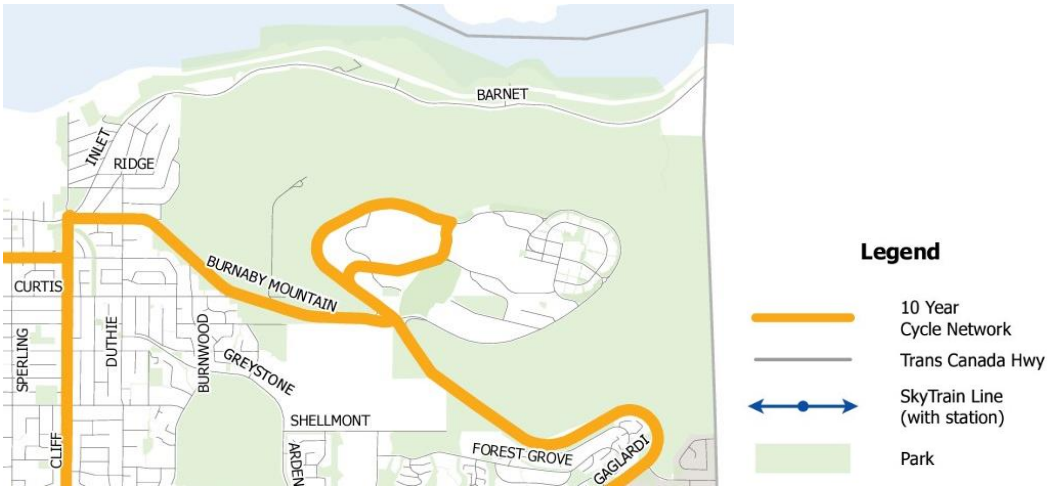


Figure 8: Priority 10-year Cycling Network, Transportation Plan, 2021

2.1.4 Mountain Air Bike Skills Course Redevelopment

The Mountain Air Bike Skills Park opened in 2008 and contains one of the largest outdoor wood pump tracks freely available to the public. The park is located in the Burnaby Mountain Conservation Area along Barnet Highway. The bike skills course attracts cyclists of varying skill levels to the Burnaby Mountain Area.

In spring 2022, the City of Burnaby launched the redevelopment project of the Mountain Bike Skills Course with van der Zalm + Associates (VDZ+A). Two rounds of public engagement were conducted in August 2022 and January 2023 to gather feedback and input on detailed design, layout, and new features. Burnaby City Council approved the plan to redevelop the Bike Skills Course on March 25, 2024. Once redevelopment is completed Mountain Air Bike Skills Course could attract more cyclists to the BMCA.

2.1.5 Environmental Condition Assessment – Burnaby Mountain Conservation Area (2019)

The 2019 Environmental Condition Assessment (ECA) was a critical document for accessing the BMCA and was the first comprehensive review of the area since the management plan was completed in in 2000. The purpose of the ECA is to support the long-term management of the environmental and recreational values of the Burnaby Mountain Conservation Area. The assessment provides an inventory of the natural assets (Table 1) within the 578-hectare conservation area, as well as the existing stressors and user impacts. The ECA includes management priorities and recommendations, and a subsequent implementation plan.

Table 1: Natural Assets in the Burnaby Conservation Area – ECA (Burnaby, 2019)

Vegetation Communities	Aquatic Resources	Fish, Wildlife, and Species at Risk
• Forest Areas • Shrubs/Herbs • Riparian • Manicured /managed natural areas	• Stoney Creek • Silver Creek • Eagle Creek	• Fish • Herptiles • Birds • Mammals and other wildlife • Rare and Endangered Species

2.1.5.1 Stressors and User Impacts

The ECA highlights major stressors in Burnaby Mountain, including erosion, invasive plant species, unauthorized trails and dog walking. Erosion of several trails in the area is likely due to heavy winter rainfalls in steep areas and intersections with creeks and streams due to the flashy nature of the high-gradient streams. These impacts are exacerbated by the change in hydrograph resulting from development at SFU.

The ECA highlights that invasive flora and fauna species pose a risk to the conservation area. Two species designated as noxious weeds were recorded in the area, including Japanese Knotweed and Yellow Flag Iris. Non-native invasive fauna include Norway Rats, European Starlings, and Pumpkinseed (fish). While these are common fauna species for the region, they are still non-native invasive fauna that reduce the biodiversity and environmental capacity of natural assets.

Unauthorized trail building, dog walking and mountain biking activity on Burnaby Mountain were also found to negatively impact the forest and riparian areas and disturb at-risk species and their associated habitats.

2.1.5.2 Management Priorities and Recommendations

The ECA's Implementation Plan included High Priority (1-2 years), Moderate Priority (3-5 years) and Low Priority (5-10 years) projects for improving the environmental health of the conservation area.

High-priority actions include creating an inventory of species at risk, addressing issues of unauthorized trail use, updating the BCMA Management Plan, decommissioning unauthorized trails and restoring habitats within 30 m of watercourses, designating user-specific trails, and discouraging motorized vehicles. Moderate priorities include creating an eradication of invasive species plan, developing a Trails Master Plan, and decommissioning and restoration of trails outside of riparian areas. As shown in Figure 11, mountain biking trails in the southeast region of the conservation area and sections in of the Trans-Canada Trail have been identified as high priorities.

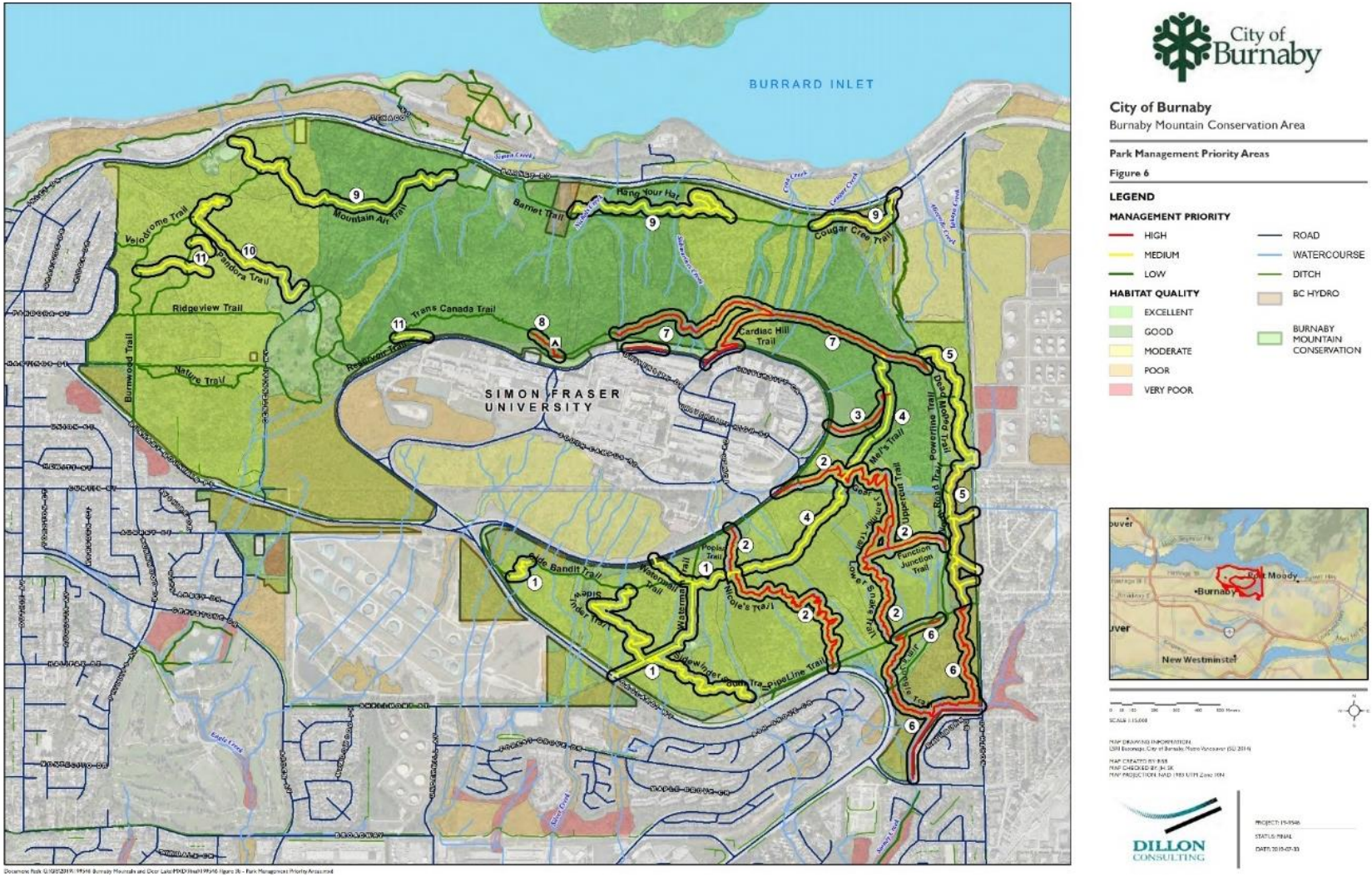


Figure 9: Park Management Priority Areas – Environmental Conditions Assessment, 2019

2.1.6 Parks Operation – Trail Management Review & Ecological Impacts (2020) (Presentation)

In 2020, the City of Burnaby Parks Operation Department put together a summary of the current state of the BMCA. This presentation was shortly made after the results of the ECA were made available. The information included how the BMCA's top priority was to be a conservation area and the challenges of trail and ecological deterioration due to trail use and extreme weather events causing erosion. Impacts on the mountain indicated there is a need for a Trail Management Plan to help conserve and protect the area.

2.1.7 Past Geotechnical Assessment Work

Burnaby Mountain has a complex topography and several steep areas that pose potential hazards. The City of Burnaby has undertaken high-level geotechnical assessments for several of these areas. As of 2019, geotechnical assessments have been carried out in the following areas (Figure 10):

1. High Level Assessment of North face steep grades/erosion, particularly at the NW side adjacent to Horizons
2. High Level Assessment of surrounding area at Bike Skills Park
3. High Level Assessment of Richard Bolton Park
4. High Level Assessment of all retention ponds and impacts during discharge
5. High Level Assessment of creek area and any environmental recommendations
6. High Level Assessment of Naheeno Park

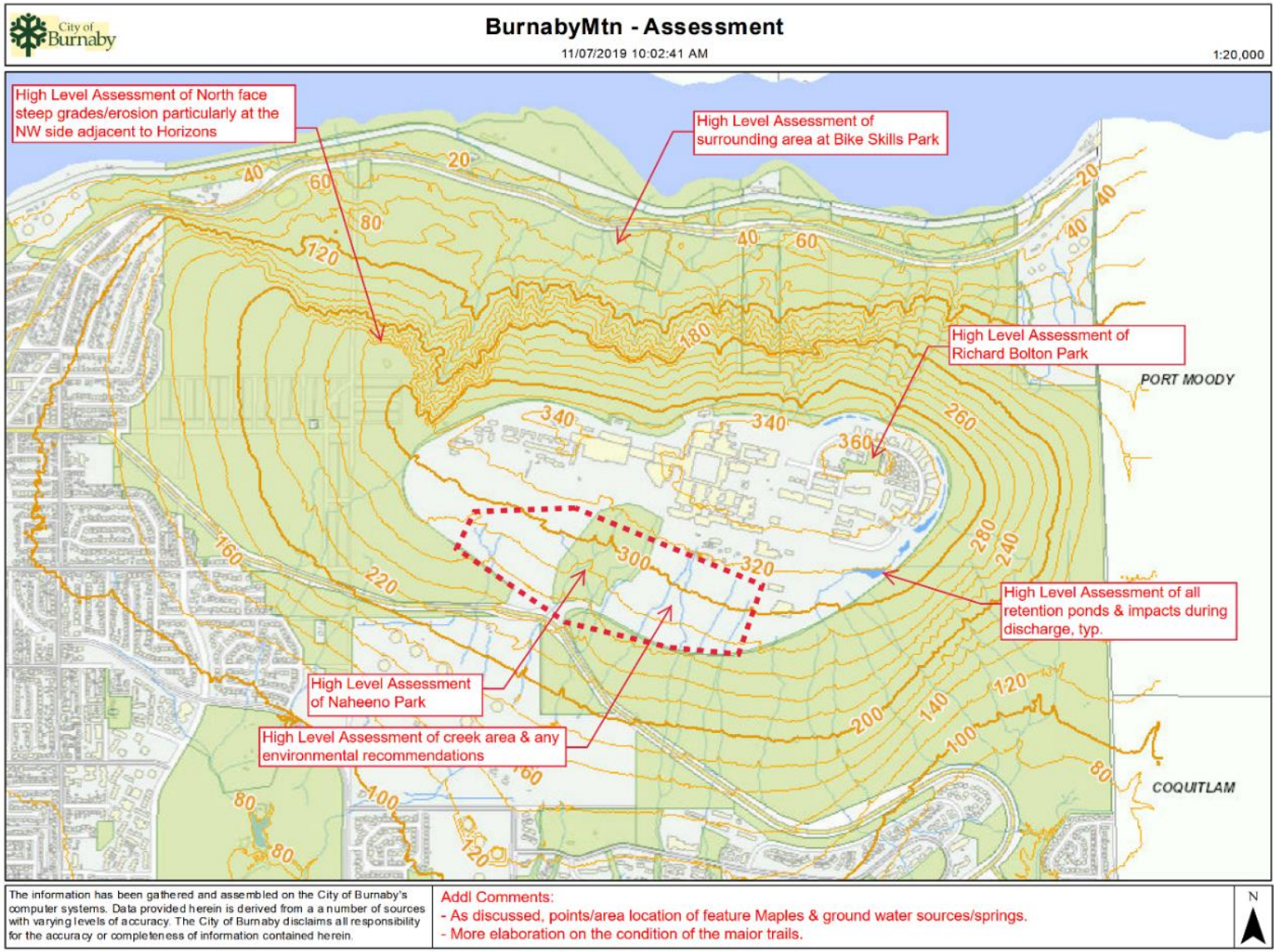


Figure 10: Geotechnical Assessments of Burnaby Mountain, 2019

2.2 Adjacent Municipalities

2.2.1 City of Port Moody

On the east side of Burnaby Mountain, the City of Port Moody's land uses abutting the BMCA are General Industrial and Single-Family Low Density. The Suncor Energy Svc Inc. property is in the General Industrial land use. The Port Moody Master Transportation Plan includes a long-term network of transportation modes. There are proposed shared-use lanes and some bicycle lanes within the residential Single- Family Low Density neighbourhood closest to the BMCA. There is a community shuttle proposed within an 800-meter buffer from the BMCA.

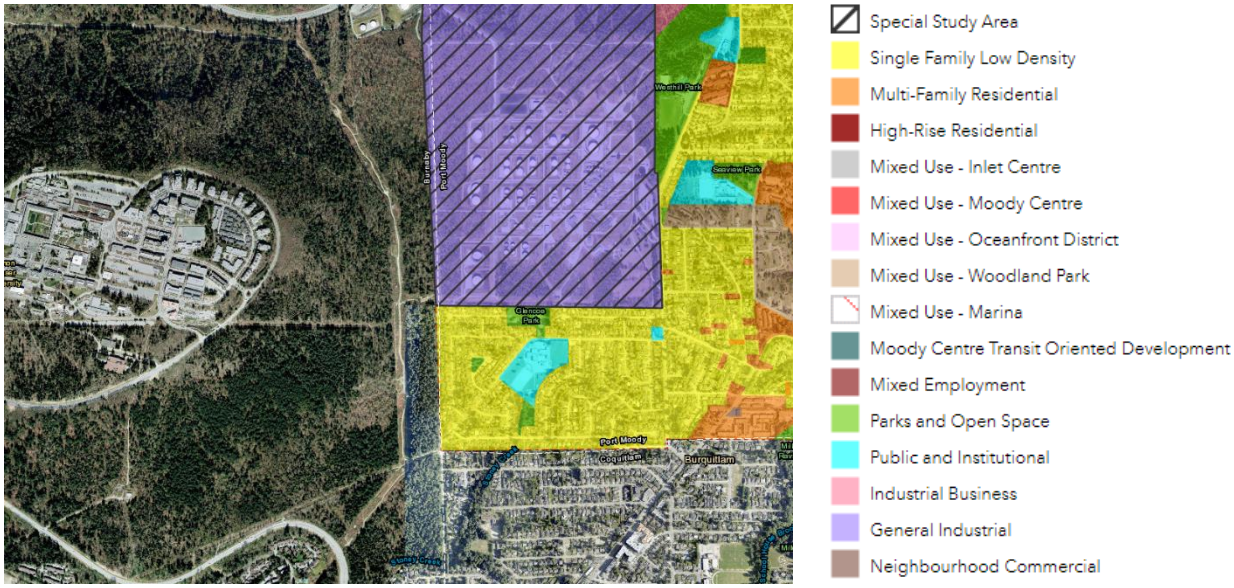
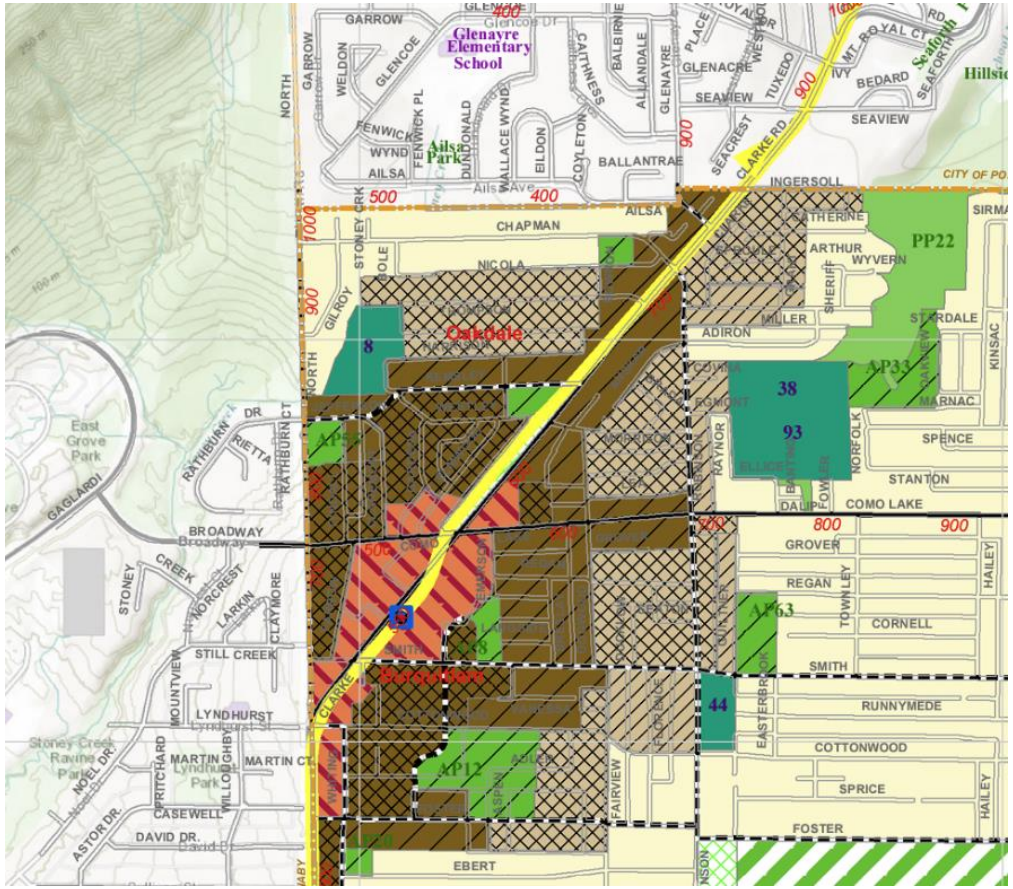


Figure 11: Land Use - City of Port Moody Official Community Plan, 2014

2.2.2 City of Coquitlam

The City of Coquitlam's general urban area also abuts the east side of the mountain south of the City of Port Moody. On the lands directly adjacent to the BMCA, there are residential land uses such as One Family Residential, Townhouse, and Medium Density Apartment Residential. Within 500 meters of the BMCA, Transit Village Commercial land use is identified surrounding the SkyTrain station. The City of Coquitlam has identified the neighbourhood as within the Burquitlam Frequent Transit Development Area. The Evergreen Line SkyTrain Station in Burquitlam is the closest station to the BMCA.



Designated Land Use

- Area Under Study
- Estate Single Family
- Baycrest Low Density Residential
- Large Single Family
- One Family Residential
- Compact Low Density Residential
- Compact One Family
- Compact One Family Residential
- Executive Single Family
- Suburban Residential
- Small Village Single Family
- Large Village Single Family
- Village - Low Density Residential
- Village - Medium Density Residential
- Village - High Density Residential
- Street Oriented Village Home
- Neighbourhood Attached Residential
- Cluster Housing
- Mobile Home Park
- Conventional Townhomes
- Townhousing
- Urban Townhousing
- Neighbourhood Centre
- Low Density Apartment Residential
- Medium Density Apartment Residentia
- High Density Apartment Residential
- Waterfront Village Centre
- Transit Village Commercial
- Local Commercial
- General Commercial
- Neighbourhood Commercial
- Agricultural
- Civic and Major Institutional
- School
- School/ Park
- Environmentally Sensitive Area
- Natural Areas
- Open Space
- Parks and Recreation
- Neighbourhood Parks & Natural Open Spaces (NECAP)
- Extensive Recreation
- Linear Park
- Rural Resource
- Rural Resource and Residential (NECAP)
- Development Reserve
- Protected Resource - Watershed
- Special Study Area
- Skytrain Station
- Future Neighbourhood Parks
- Arterial Street
- Collector
- Community Collector Street
- East-West Connector
- Main Street
- Major Road Network
- Municipal Arterial Street
- Municipal Collector Street
- North-South Connector
- Pedestrian Spine
- Pedestrian Walkway
- Provincial Highway
- Standard Collector Street
- Street Extension
- Skytrain Line

Figure 12: Designated Land Use - City of Coquitlam Citywide OCP, 2020

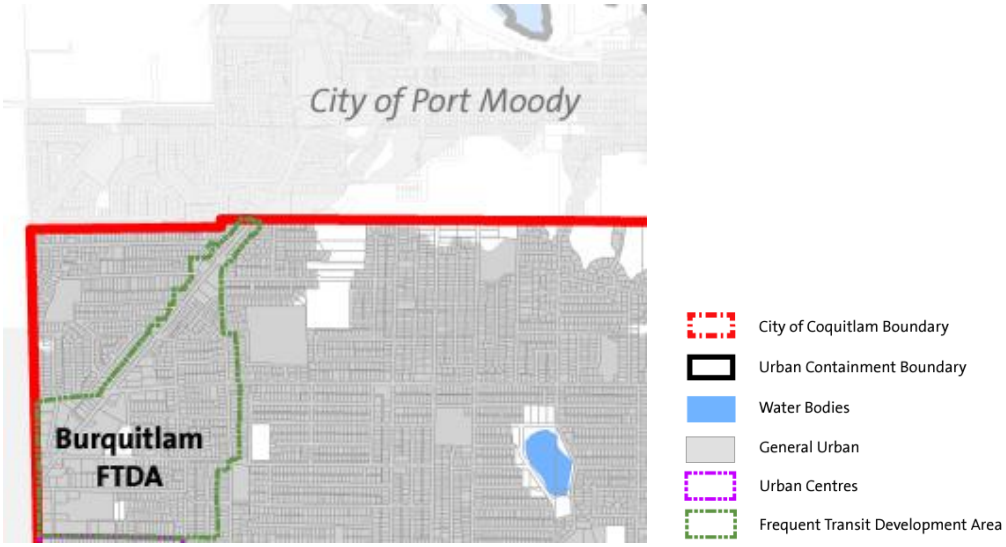


Figure 13: Urban and Local Centres, Citywide Official Community Plan, 2001

2.3 Meto Vancouver

2.3.1 Sustainable Transportation Study, MetroVan 2023

The Sustainable Transportation Research was conducted to capture the mode of transportation residents were using to visit Metro Vancouver regional and other large parks. The survey highlights that Burnaby Mountain Conservation Area has one of the top 9 highest percentage of sustainable transport users.

Survey respondents were asked if they would consider taking public transit, cycling or walking to a park or natural area. The BMCA was voted likely to be visited by public transit 25% of participants, cycling by 15% of respondents, and walking by 5% of participants. When participants voted for the limitations of taking public transit to parks or conservation areas, the most limiting factors were the ease, efficiency, and time it took to get to their destination. Planned improvements to the transit system may increase the number of visitors to the BMCA on transit in the future.

2.3.2 Sustainability Scholar Study – Factors Influencing Travel Mode Decisions to Access Regional Parks in Metro Vancouver

The Sustainable Scholar Study partnered and funded by Metro Vancouver, aims to understand visitor's transportation choices to access Metro Vancouver's regional parks. The report also gives recommendations to improve future access.

The study highlights that improvements to first and last-mile connections would be the most important for encouraging people to use sustainable modes of travel. The study also predicted

that as the City of Burnaby and Translink makes transportation improvements, barriers to sustainable transportation modes are will be reduced for BMCA visitors.

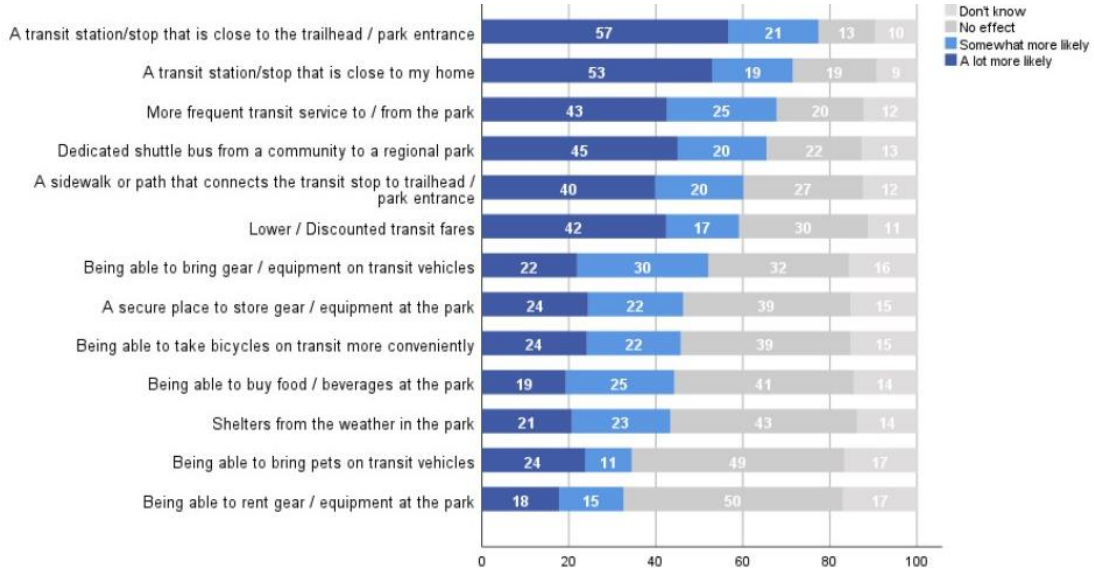


Figure 14: Factors encouraging visitors to use public transit to regional parks, MetroVan 2023

2.4 TransLink

2.4.1 TransLink – Burnaby Mountain Gondola

TransLink is currently planning the implementation of a fast, frequent, and reliable public transit gondola system that will connect the Production Way / University Station SkyTrain Station to the SFU Exchange atop Burnaby Mountain (**Figure 15**). The project will increase transportation options and total transit travel time by up to 13% for the approximately 25,000 daily users who travel up and down the mountain and the 7,000 people who live in the residential neighbourhood, UniverCity. TransLink anticipates that as more drivers switch to the SkyTrain and Gondola, there could be a reduction in daily auto congestion of a combined 490-700 hours.

Currently, public transit users experience unpredictable travel times and overcrowded buses. The Gondola will offer more frequent service, move more people per hour, and reduce greenhouse gas emissions, all at a lower operating cost than regular buses. Transport 2050 includes the Gondola as one of TransLink's major projects to be completed in the next ten years. Procurement for the project is anticipated to start in 2025, with an anticipated construction state date in 2026.

Figure 15: Burnaby Mountain Gondola Route, (TransLink, Burnaby Mountain Gondola, 2021)

2.5 Simon Fraser University

Simon Fraser University is located on the top of Burnaby Mountain, surrounded by the Burnaby Conservation Area. There are numerous formal and informal connections between the campus and the BMCA.

More than 37,000 students are currently attending SFU, with over 1,000 full-time faculty members and approximately 5,000 full-time residents at UniverCity and growing. Growth is anticipated to continue in the future as transportation networks improve and the campus continues to grow as envisioned in the 2065 SFU Campus Plan.

2.5.1 Simon Fraser University – Active Transportation Connection

The Vancouver to Simon Fraser University Active Transportation Connection currently runs along Frances-Union Bikeway, Burnaby Mountain Parkway and Gaglardi Way, as shown in Figure 16. This active transportation connection is a key link between the City of Burnaby neighbourhoods and the surrounding area.

Figure 16: Vancouver to SFU Active Transportation Connection, City of Burnaby, 2023

In March 2023, Infrastructure Canada announced that it is investing $5.7 million, along with City of Burnaby's contribution of $4 million, to upgrade active transportation connections to SFU to All Ages and Abilities (AAA) standards. The project is currently in Phase 1, which includes public engagement and data collection, and the project is anticipated to be completed in 2025-2026. As connections to the BMCA improve, more people will have access to the conservation area and its trail system.

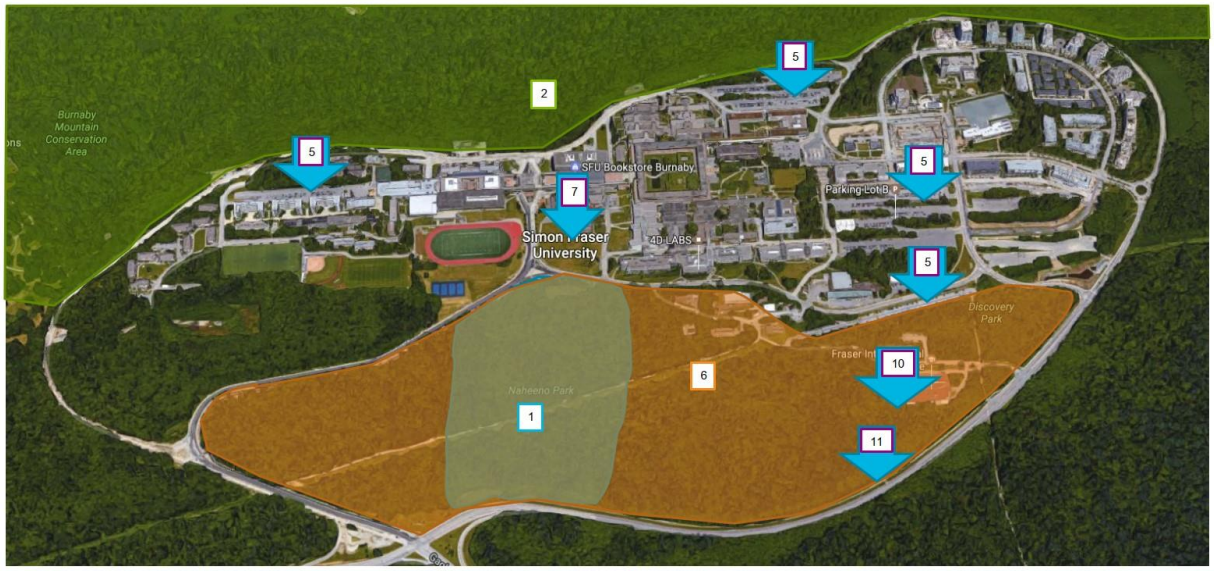
2.5.2 Stormwater Management Strategy Implementation Plan

The Stormwater Management Strategy Implementation Plan for SFU includes an analysis and recommendations for managing stormwater runoff, storage, and direction for the University. Key takeaways from this document, as they relate to the BMCA, are strategies for managing runoff and retention ponds. The large proportion of impermeable surfaces at SFU generates a large volume of runoff during rain events and snow pile melting in the spring.

Relevant actions from the Stormwater Management Strategy for managing stormwater on Burnaby Mountain Campus relevant for BMCA include:

- Action #4 - Adopt stormwater management policies and standards for rainfall detention requirements from the City of Burnaby.
- Action #5 - Retrofitting existing parking lots and snow removal procedures to retain and treat runoff.
- Action #6 - Coordinate with Burnaby Mountain Bike Association for trail maintenance and trail use education to adopt trail construction and rehabilitation standards.
- Action #10 - Investigate stormwater infrastructure (near Discovery 1) and include the detention pond within stormwater infrastructure inventory for regular inspection and maintenance.
- Action #15 - Harvesting rainwater for irrigation to reduce volume of stormwater discharged to creeks.

The action items impact the BMCA by reducing the discharge of stormwater volumes released down the mountain. The benefits of the actions include not harming the downstream environment and habitats, including the creeks.



Action #	Action Plan Item
1	Establish setback criteria for development within the South Neighbourhood.
2	Address Burnaby Mountain North Slope Drainage and Erosion Concerns.
3	Develop Erosion and Sediment Control Requirements.
4	Adopt Stormwater Management Policies and Standard.
5	Implement Stormwater Source Control Measures on Parking Lots.
6	Coordinate Burnaby Mountain Trail Maintenance and Trail Use Education with Burnaby Mountain Bike Association (BMBA).
7	Repurposing the meadow south of Maggie Benston building.
8	Implement a Stormwater Infrastructure Asset Management Program (Maintenance, Inspection and Renewal).

Action #	Action Plan Item
9	Develop a stormwater hydrologic and hydraulic model.
10	Revitalize and Maintain Discovery Park Detention Pond.
11	Address flooding of the sidewalk along University Drive East.
12	Online Stormwater Data Repository.
13	Implement an Adaptive Management Framework that monitors performance of the stormwater management strategy.
14	Promote use of organic substitutes for outdoor applications.
15	Rainfall Harvesting and Wastewater Re-use for Irrigation.

Figure 17: Stormwater Action Plan, SFU Stormwater Management Strategy Implementation Plan, 2017

2.5.3 The Campus Plan, SFU Burnaby 2065 Campus Master Plan (2020)

Currently, the connections between the University and the conservation area are limited and in poor condition. There are several crosswalks along University Drive that lead from the University to the BCMA, but the majority of these do not connect to accessible pathways, sidewalks or trails on the other side. Many of the existing trail connections to University Drive were highlighted as areas of concern in the 2019 condition assessment. The SFU Burnaby 2065 Campus Master Plan recommends some strategies to strengthen its relationship to the BMCA:

1) "Buffer and create an appropriate transition to the Conservation Area through the design of adjacent open spaces and landscapes" and
2) "Enhance trail connections and related wayfinding to encourage low impact recreational use and enjoyment, and improved connections between the campus, Naheeno Park, the Conservation Area, and the nearby Burnaby Mountain Park"

As seen in **Figure 18** and **Figure 19**, the connections for active transportation from the SFU campus and BMCA could be enhanced for future use. In **Figure 18**, proposed multi-use paths and proposed cycle paths are connecting through the campus and some are feeding into BMCA trails. In **Figure 19**, the proposed enhanced pedestrian crossings along University Drive also are main connections to BMCA trails.

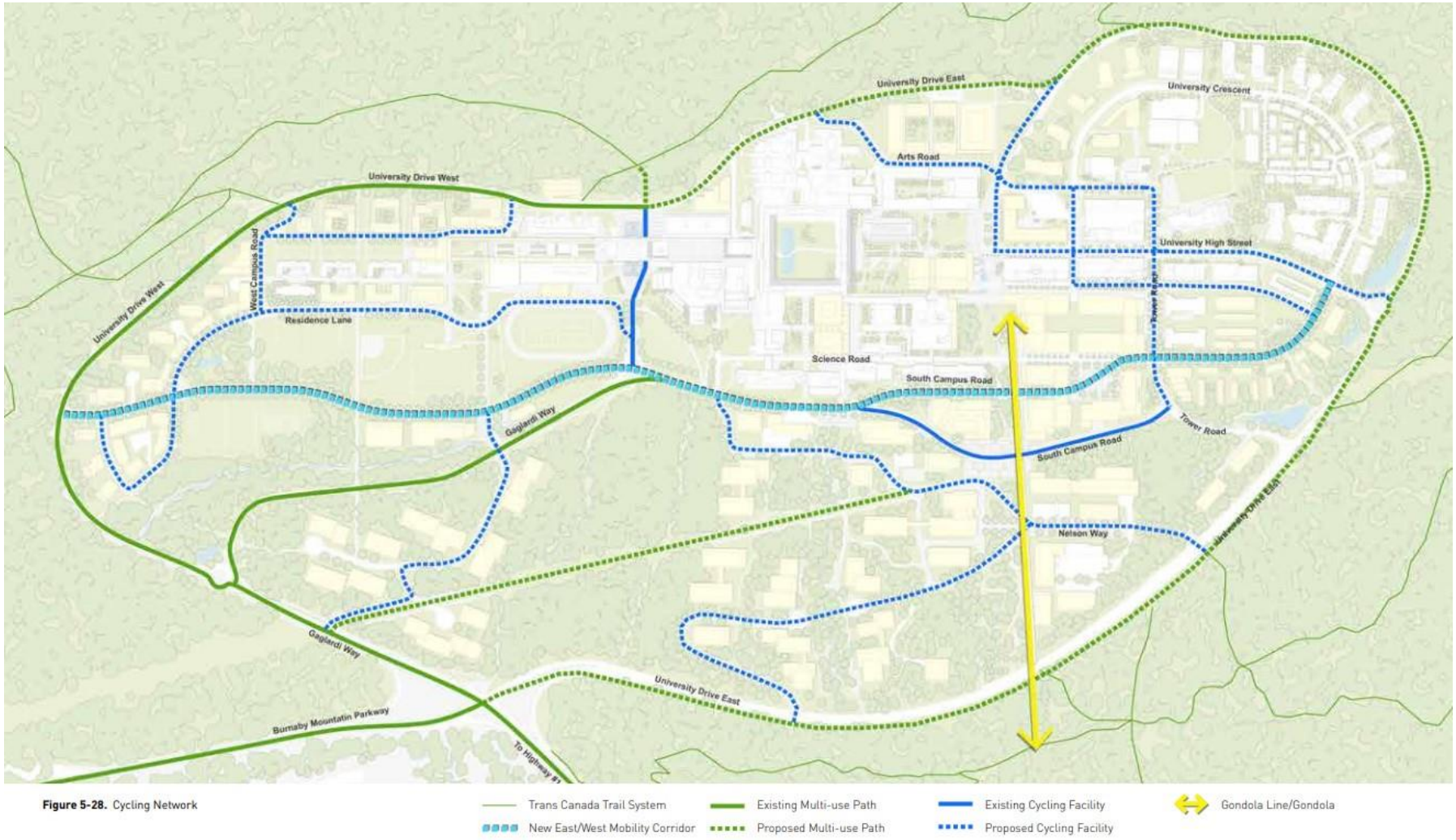


Figure 18: Proposed Cycling Network, The Campus Plan, 2020

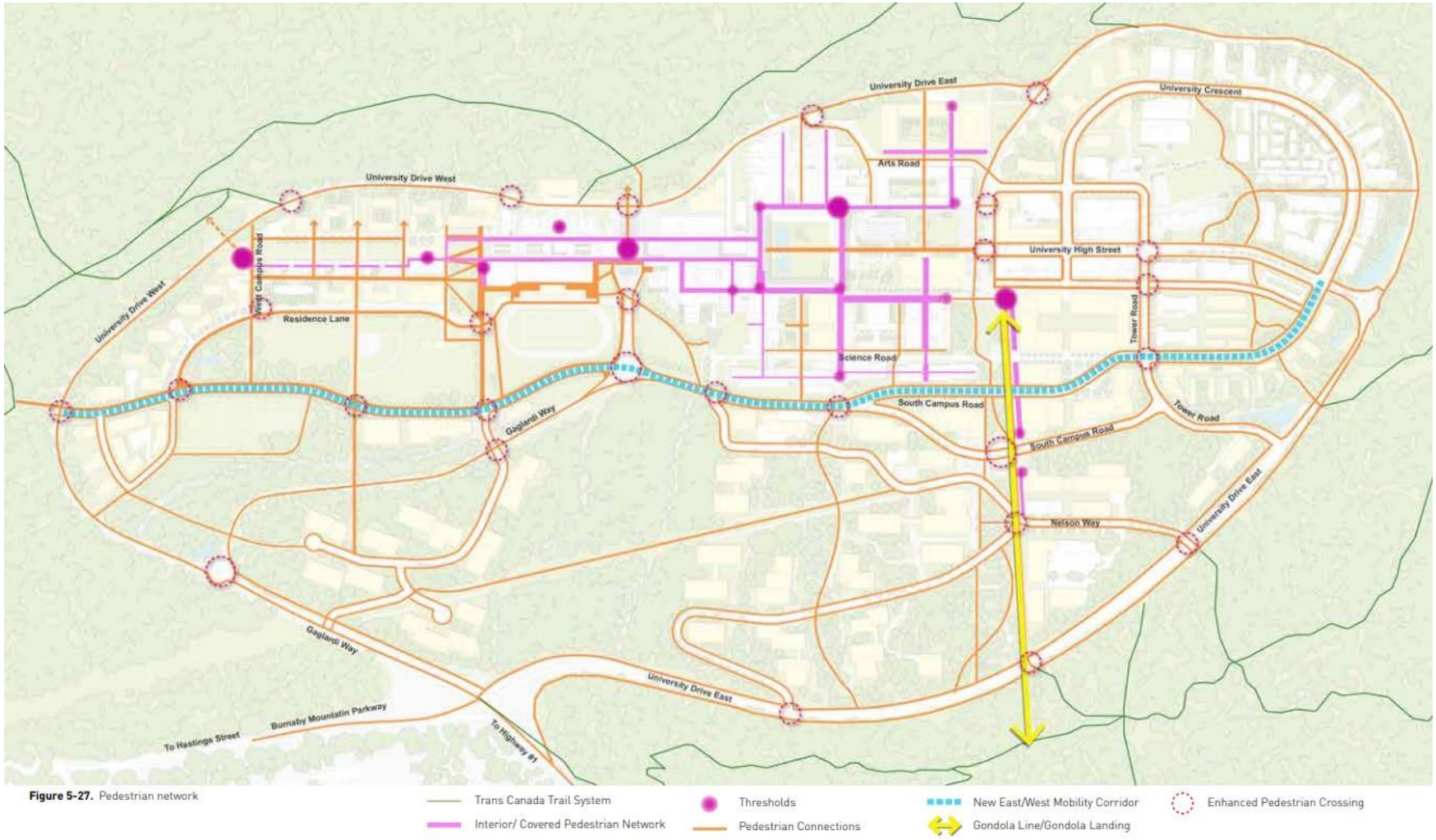


Figure 19: Proposed Pedestrian Network, The SFU Campus Plan, 2020

In addition to connections to the BMCA, Naheeno Park, while part of SFU and institutional land use, has been identified as a park connection between the BMCA and SFU campus. In the SFU Burnaby 2065 Campus Master Plan, Naheeno Park is highlighted as one of several "Green Fingers," providing several important ecological and connectivity functions. The Plan emphasizes opportunities for strategic management and environmental stewardship to repair and enhance the natural systems and functions in the park.

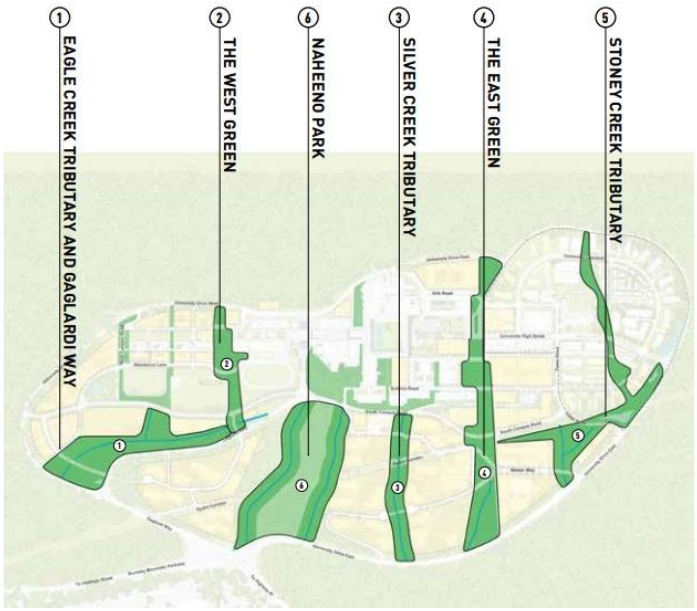


Figure 20: Green Fingers and Open Space Network, The SFU Campus Plan, 2020

Lastly, the Campus Development Framework (in Figure 21) illustrates areas for future expansion, including areas along the south side of the campus. Future development may further increase the amount of stormwater runoff to the BMCA if not properly managed.

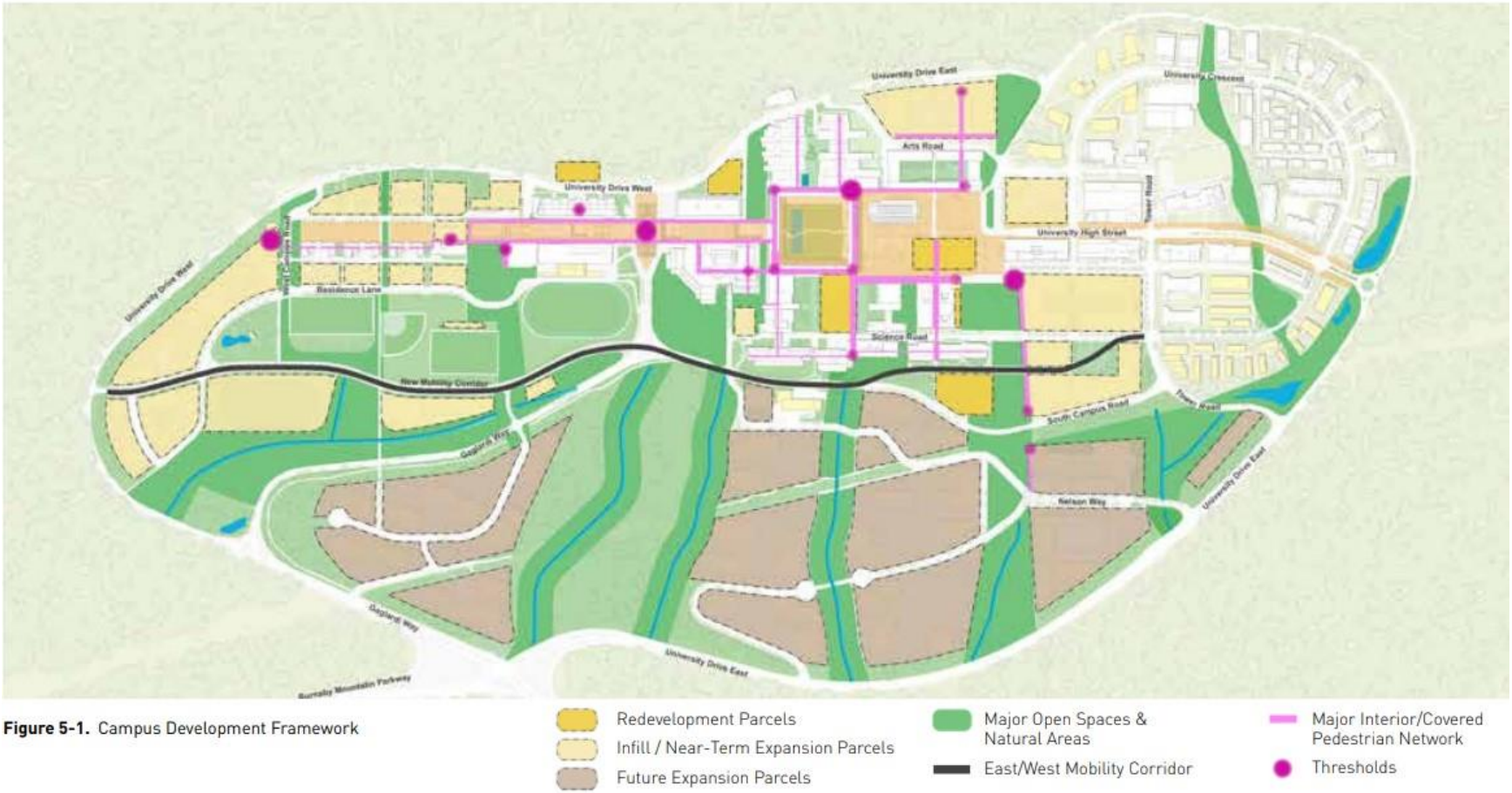


Figure 5-1. Campus Development Framework

Figure 21: Campus Development Framework, The SFU Campus Plan, 2020

2.6 Other Groups

2.6.1 Kinder Morgan, Trans Mountain Pipeline Project

The Trans Mountain Pipeline expansion project includes a 2.6-kilometre tunnel which travels under the western portion of Burnaby Mountain. The 2.6-kilometer tunnel will be constructed from an entry point at Westridge Marine Terminal to an exit portal at Burnaby Terminal, as shown in Error! Reference source not found.. The tunnel will be buried up to 130 metres below t he surface and require no cleared right-of-way. Since the pipeline is a tunnel underground, there will likely be minor impacts to Burnaby Mountain Conservation Area. However, there is a consideration for the impact and increase in traffic on either end of the tunnel during construction.

Figure 22: Trans Mountain Pipeline Expansion Route through Burnaby Mountain (Wilderness Committee, 2020).

3. User and Activity Context

3.1 Overview of mountain use today

While the intended main use of the BMCA is for conservation, the mountain also plays an important role as a recreation amenity for visitors from across the City and the lower mainland, including residents, staff and students at SFU. Existing user groups include hikers, dog walkers, trail runners, mountain bikers and others. There are 34 multi-use trails currently in the mountain's trail network that extend over 28 kilometres, as shown in **Figure 23**.

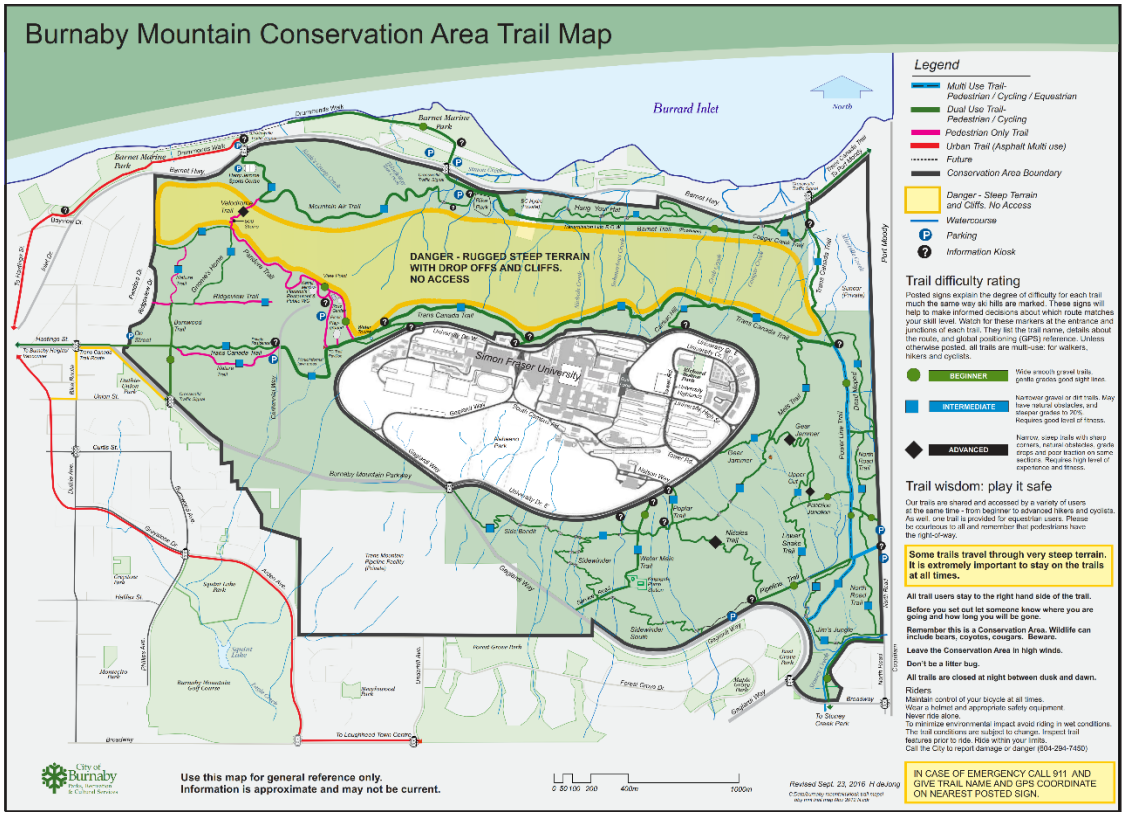


Figure 23: Burnaby Mountain Conservation Area Trail Map, 2016, City of Burnaby

3.1.1 Trail Use

3.1.1.1 AllTrails

All Trails is a widely used user-reported trail database that provides maps, reviews and other information to hikers. The site has almost 6,000 Reviews on the 14 'curated' trails recorded for hiking, biking and walking in the Burnaby Mountain Conservation Area. The top reviewed trail is the Burnaby Mountain Park Loop, located at the east and north sides of Burnaby Mountain, which was rated 4.4 Stars (1679 reviews). The top two trails with the highest ratings of 4.5 stars are on the mountain's southeast face.

The following list of trails are ordered by ratings out of 5 stars:

1. Burnaby Mountain East Side Loop 4.5 (145)
2. Burnaby Mountain Lower Snake Trail to Gear Jammer 4.5 (187)
3. Burnaby Mountain Park Loop 4.4 (1679)
4. Velodrome and Pandora Trail 4.4 (450)
5. Pandora and Trans Canada Loop Trail 4.4 (594)
6. Pipeline and Sidewinder Loop 4.4 (534)
7. Simon Fraser University Loop Trail MTB 4.4 (238)
8. Burnaby Mountain Eastside 4.3 (933)
9. Trans Canada, Cougar Creek, Barnet and Mountain Air Loop 4.3 (361)
10. Burnaby Mountain to Rose Garden 4.3 (295)
11. Pandora Trail 4.3 (99)
12. Burnaby Mountain Tour 4.2 (92)
13. Upper Cut Trail 4.1 (192)
14. Barnet Trail 4.0 (93)

3.1.1.2 Strava

Strava is a leading active exercise platform that collects movement and statistics of over 30 different athletic activities. Strava data is self-reported records of exercise activities and carries limitations in terms of its analysis. However, when seeking to determine how people use an area for recreation, Strava provides a useful data set that can be broken down by walking/running and cycling activity.

Walking, Hiking and Running

Figure 24 is a heat map of walking, running, and hiking activity collected from Strava. The most used paths in the BMCA are mainly the Trans Canada Trail, Mountain Air Trail and Barnet Trail on the north side of the mountain, and many in the southeast of the mountain trail network.

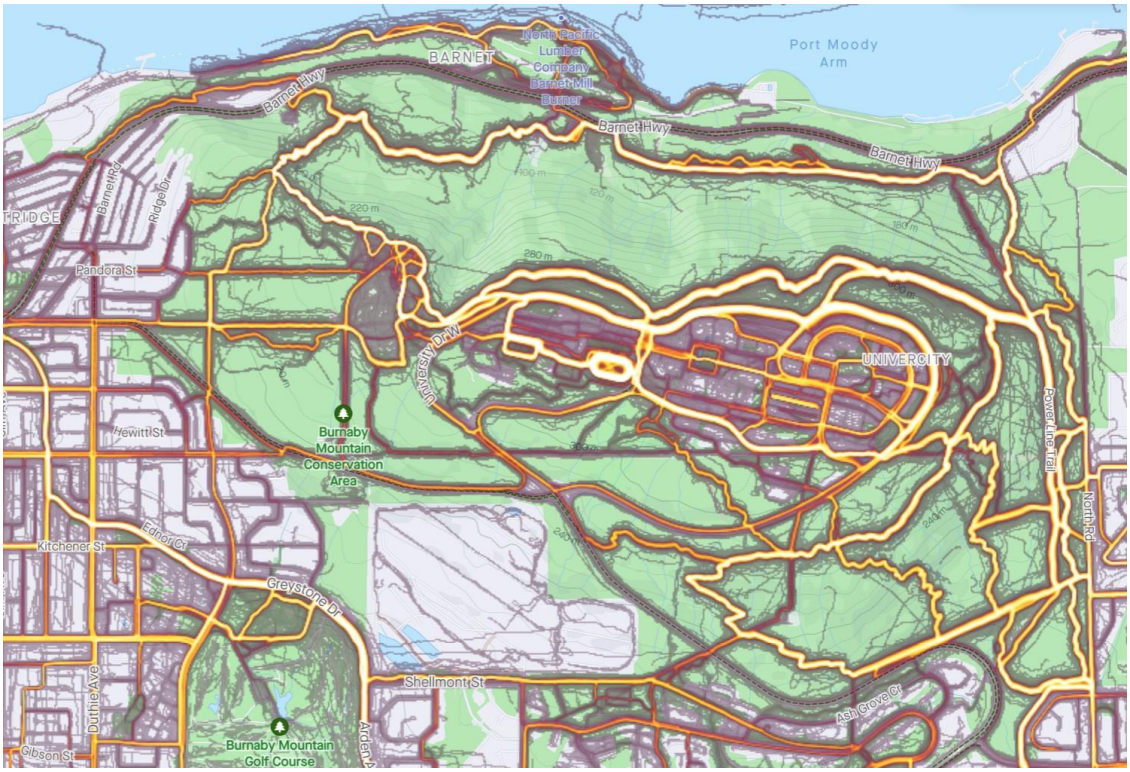


Figure 24: Pedestrian Heat Map for Walking, Hiking and Running, Strava, 2023

Cycling

Figure 25, is a heat map of cycling activity collected from Strava. The most used paths in the BMCA, are mainly the eastern portion of the Trans Canada Trail, as well as the southeast of the mountain trail network, such as Gearjammer, Nicole's, and Sidewinder. The map also shows a concentration of activity at the Burnaby Velodrome in the northwest corner of the study area. However, this activity occurs inside the velodrome and is irrelevant to the trail network.

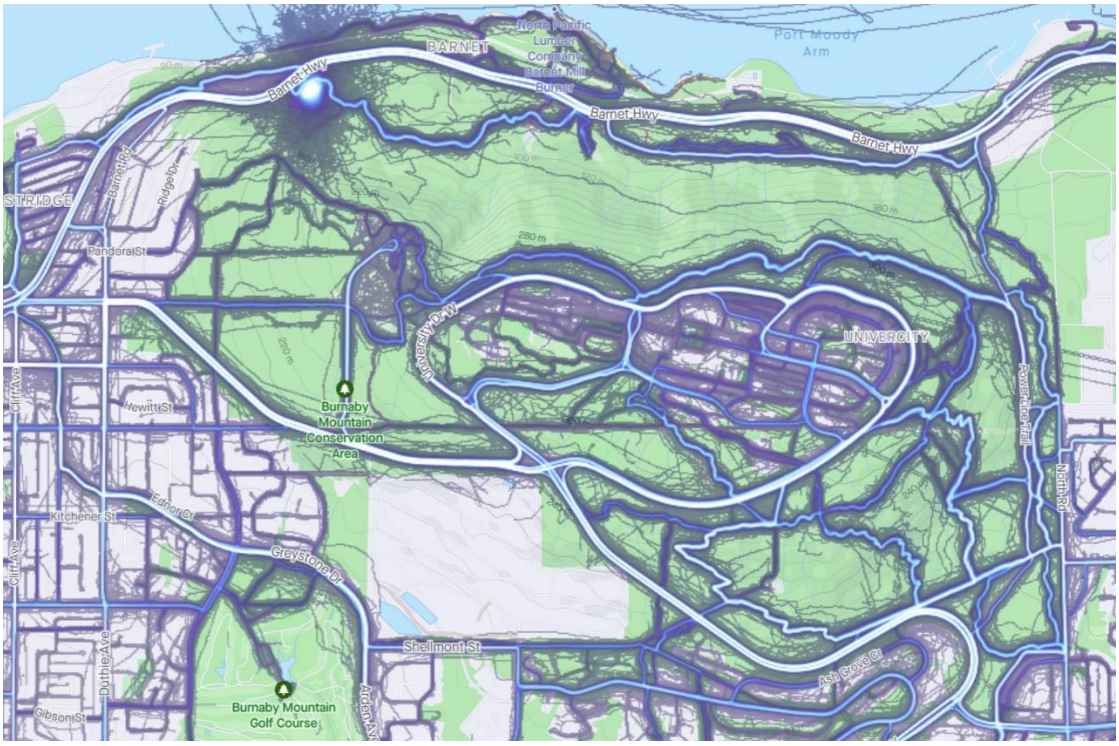


Figure 25: Heat Map for Cycling, Strava, 2023

3.1.1.3 Trailforks

Trailforks is another web-based trail database primarily focused on mountain biking. The website includes trail descriptions and the ability for users to leave trail reports and ratings. Trail ratings are aggregated to give a sense of the overall community popularity of certain trails. Figure 26 illustrates popularity ratings by trail in the BCMA. The most popular trails are again concentrated on the southeast side of the mountain and include trails such as Gearjammer, Nicole's, and Sidewinder, which achieve popularity ratings between 90 and 100 /100. Areas with high popularity ratings also have high Strava traffic (as shown in Figure 25).

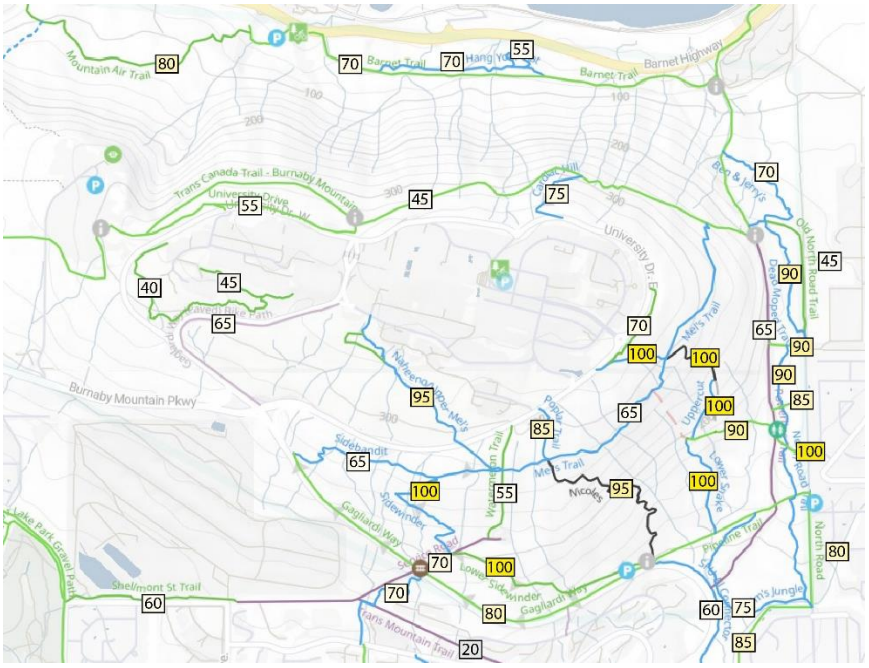


Figure 26: Annotated map from Trailforks, showing popularity score of trails, Trailforks, 2023

3.2 Trans Canada Trail

The Trans Canada Trail, known for being the longest trail network in the world, is a significant trail route that goes through the BMCA. The alignment of the trail runs for 5.5 km east-west on the north side of Burnaby Mountain, as shown below in **Figure 27**.

Figure 27: Trans Canada Trail through Burnaby Mountain Conservation Area, captured from online TransCanada Trail webmap, 2023

3.3 User Groups

3.3.1 Burnaby Mountain Bike Association (BMBA)

The Mountain Bike Association's goal statement on Trailforks reads:

> *"BMBA's goal is to promote the establishment and preservation of a mountain bike trail network on Burnaby Mountain that is innovative, accessible, sustainable, safe and challenging to a wide range of skill levels. We work under the supervision of the City of Burnaby"*

The BMBA is active on Facebook and Trailforks. The association hosts trail days (in 2023, approximately once every month) where volunteers help to maintain the trails with the help of sponsors funding for supplies, food and beverages.

The City of Burnaby has been working with the BMBA to improve trail conditions and reviews maintenance plans with the group regularly.

The mountain bike user group challenges the City of Burnaby's conservation efforts on social media. Historically, there have been miscommunications between these user groups and the City surrounding trail closures and erosion management. The Burnaby Mountain Biking Association (BMBA)is very engaged with all activities occurring in the BMCA.

3.3.2 Neighbouring Residents

Neighbouring residents include people living in the City of Burnaby, the City of Port Moody, the City of Coquitlam, and SFU. While there are local neighbourhood parks surrounding the BCMA and on campus, neighbouring residents would likely access the BMCA for hiking, walking, running or dog walking if they are looking for trails to enjoy. The southeast face has the highest concentration of neighbouring residents and the highest use. Many of these residents live in Port Moody and Coquitlam.

3.3.3 Dog Walkers

Dog walkers are another significant user group within the BMCA. Many are nearby residents who come to enjoy walking their dogs in nature. The City of Burnaby website states that dogs are welcome to the BMCA as long as they are on a leash at all times. This is explained to keep the conservation area safe, as it will keep the dog out of the streams and steep areas. It also thanks visitors for picking up after their dog.

3.3.4 Parking

While there are visitors of the BMCA who would travel and park to visit the conservation area for recreational purposes, some may use them for free parking to access SFU. A free Burnaby Mountain Parking lot is on the mountain's west side. Neighbouring parking lots at SFU are not free (monthly pass ranges from $75-110); thus, the BCMA parking lot may be a source of free parking used by SFU students.

Neighbouring residents in the City of Burnaby, City of Port Moody, and the City of Coquitlam have been impacted by BMCA visitors parking on local streets in the past as there are now signs indicating on roads "parallel parking available 8 am-10 pm" on some surrounding local streets. In addition, there are 'no parking' signs on some residents' properties, suggesting that visitors may have chosen to ignore the no parking signs.

4. Field Assessment

Field assessments were conducted on September 20th and November 15th. The purpose of each field assessment was to establish a current conditions assessment of each trail within the study area on Burnaby Mountain. A unique rapid conditions assessment was implemented to quickly capture data in the field and conduct further desktop analysis. This method involved using a bicycle with an attached 360 camera to document much of the trail network. Field notes and additional photographs were also documented in key areas. Two field assessments were conducted to assess conditions in different seasonal conditions.

The September 20th field assessment occurred between 2:00 pm to 5:00 pm. The weather was sunny, and the temperature was 18°C. It had rained for two days prior to the field assessment.

The November 15th field assessment occurred between 10:00 am to 4:00 pm. The weather was mixed conditions, with rain in the morning and a mix of sun and clouds in the afternoon. The temperature was approximately 7°C. It had rained for two days prior to the field assessment.

The two field assessments documented portions of, or the entire extent of, the following trails as defined in the Burnaby Mountain Trail Map.

- Barnet Trail
- Cardiac Hill
- Cougar Creek
- Gnome's Home Trail
- Lower Snake Trail
- Jim's Jungle
- Mel's Trail
- Mountain Air Trail
- Nicoles
- North Road Trail
- Pandora Trail
- Pipeline Trail
- Powerline Trail
- Ridgeview Trail
- Sidebandit
- Sidewinder
- Sidewinder (Lower)
- Trans-Canada Trail
- Upper Cut
- Upper - Lower Gear Jammer
- Velodrome Trail
- Burnwood Access

Detailed assessment tables are in Appendix A and include a high-level assessment of each of the listed trails above. The appendix includes observed weather conditions, time and date of assessment, trail length, observed usage, and observed trail issues. Each assessment table includes photographs from each of the September 15th and November 15th field assessments.

4.1 Condition Ratings

Inventoried trails were assessed according to observed field conditions. Trails were evaluated using a consistent scale to ensure each site and trail were rated according to the same criteria. The scale is based on a commonly used asset rating scale developed by the Institute of Public Works Engineering Australasia (IPWEA), the National Asset Management System (NAMS)[1]. The basic NAMS framework is widely used to track asset conditions and develop asset

[1] https://www.namscanada.org/aboutnams

management plans. At a high level, the condition grading model followed the following structure:

Table 2 Trai Condition Assessment Scale

CONDITION GRADING	DESCRIPTION OF CONDITION
1	**Very Good:** only planned maintenance required
2	**Good:** minor maintenance required plus planned maintenance
3	**Fair:** significant maintenance required
4	**Poor:** Significant renewal/rehabilitation required
5	**Very Poor:** physically unsound and/or beyond rehabilitation

4.2 Common Issue Summary

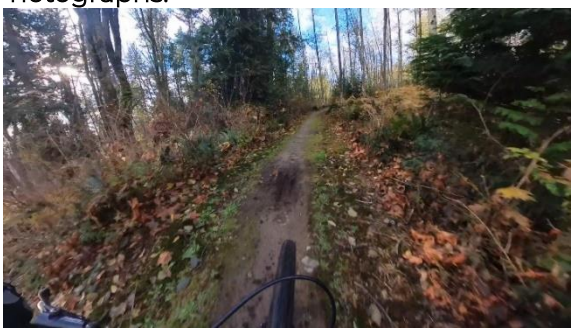
The condition of trails on Burnaby Mountain varies significantly depending on the trail type, area of the mountain and the Common issues across the study area included erosion, pooling water, and significant areas of exposed roots.. The mountain bike and hiking trails located on the southeast side of the study were observed to contain more issues than other areas, likely due to their steep and technical terrain and mountain bike traffic.

In addition, several wider multi-use pathways, such as the Trans Canda Trail, appeared to have recently been refurbished at the time of assessment. In general, multi use pathways through the study area were found to be in relatively good condition.

Trail Name	Length (m)	Condition Rating
Barnet Trail/Cougar Creek	1,900	2
Cardiac Hill	380	3
Gnome's Home Trail	550	3
Lower Snake Trail	475	4
Jim's Jungle	900	5
Mel's Trail	1,900	4
Mountain Air Trail	1,300	3
Nicoles	1,000	5
North Road Trail	1,200	5
Pandora Trail	900	3
Pipeline Trail	740	2
Powerline Trail	750	2
Ridgeview Trail	800	3
Sidebandit	700	3
Sidewinder & Lower Sidewinder	2,100	4
Trans-Canada Trail	5,500	2
Upper Cut	450	5
Upper - Lower Gear Jammer	450	4
Velodrome Trail	500	3
Burnwood Access	675	3
Watermelon Trail	520	2
Poplar Trail	250	3

5. Appendix A – Field Assessment Observations

Trail: Sidewinder & Lower Sidewinder	
Date: September 20, 2023, 2:00 pm	**Date**: November 15, 2023, 1:40 pm
Conditions: Sunny, 18°C	**Conditions**: Mixed conditions, 7°C
Trail length: 2,100 metres	**Trail length**: 2,100 metres
Observed usage: • Several hikers	**Observed usage:** • Several hikers
Observed issues: • Erosion	**Observed issues:** • Erosion • Pooling Water
Photographs: 	Photographs:  

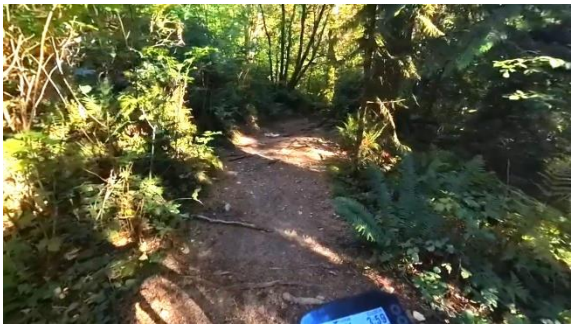
Trail: Sidebandit	
Date: September 20, 2023, 2:15 pm	**Date:** November 15, 2023, 1:55 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 700 metres	**Trail length:** 700 metres
Observed usage: • Two (2) hikers	**Observed usage:** • Two (2) hikers
Observed issues: • No Issues	**Observed issues:** • Mud patches
Photographs: 	Photographs:  

Trail: Mel's Trail	
Date: September 20, 2023, 2:20 pm	**Date**: November 15, 2023, 2:30 pm
Conditions: Sunny, 18°C	**Conditions**: Mixed conditions, 7°C
Trail length: 1,900 metres	**Trail length:** 1,900 metres
Observed usage: • Three (3) – five (5) hikers • SFU school field trip	Observed usage: • One (1) hiker
Observed issues: • Erosion • Rocky • Uneven terrain near the east entrance	Observed issues: • Erosion • Water pooling • Mud patches
Photographs:  	Photographs:  

Trail: Nicoles	
Date: September 20, 2023, 2:45 pm	**Date**: November 15, 2023, 3:45 pm
Conditions: Sunny, 18°C	**Conditions**: Mixed conditions, 7°C
Trail length: 1,000 metres	**Trail length:** 1,000 metres
Observed usage: • No activity	**Observed usage**: • One (1) mountain biker
Observed issues: • Significant erosion • Steep sections • Significant number of exposed roots	**Observed issues**: • Significant erosion • Steep sections • Significant number of exposed roots • Mud patches • Water pooling
Photographs:  	Photographs:   

Trail: Upper & Lower Gear Jammer	
Date: September 20, 2023, 3:00 pm	Date: November 15, 2023, 2:45 pm
Conditions: Sunny, 18°C	Conditions: Mixed conditions, 7°C
Trail length: 450 metres	**Trail length:** 450 metres
Observed usage: • No activity	Observed usage: • No Activity
Observed issues: • Significant erosion • Multiple exposed drainage pipes • Rocky terrain	Observed issues: • Significant erosion • Multiple exposed drainage pipes • Rocky terrain • Pooling water • Water running down the centre of the trail
Photographs:  	Photographs:   

Trail: Upper Cut	
Date: September 20, 2023, 3:15 pm	**Date:** November 15, 2023, 3:00 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 450 metres	**Trail length:** 450 metres
Observed usage: • No activity	**Observed usage:** • No Activity
Observed issues: • Rocky sections • Significant number of exposed roots • Steep sections • Erosion	**Observed issues:** • Rocky sections • Significant number of exposed roots • Steep sections • Erosion • Mud patches
Photographs:  	Photographs:  

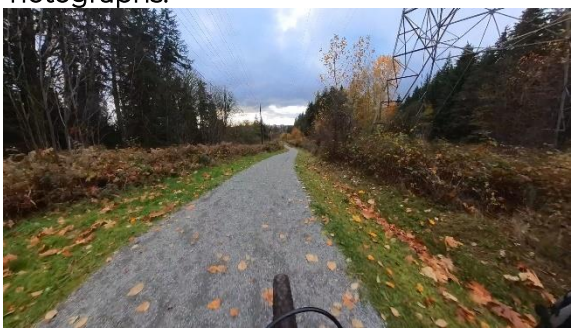
Trail: Lower Snake	
Date: September 20, 2023, 3:25 pm	**Date:** November 15, 2023, 3:15 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 475 metres	**Trail length**: 475 metres
Observed usage: • No activity	**Observed usage:** • No activity
Observed issues: • Erosion • Pooling water • Significant number of exposed roots	**Observed issues:** • Erosion • Mud Patches • Significant number of exposed roots
Photographs:  	Photographs:  

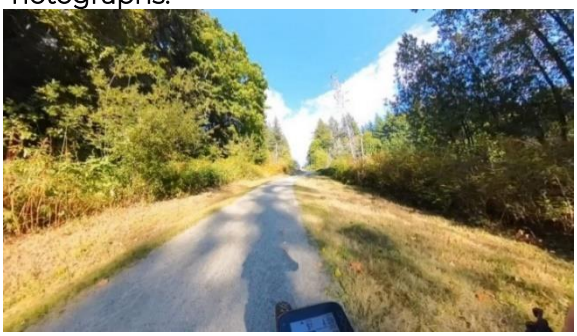
Trail: Watermelon Trail	
Date: September 20, 2023, 2:30 pm	**Date:** November 15, 2023, 2:20 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 520 metres	**Trail length:** 520 metres
Observed usage: • One (1) hiker	**Observed usage:** • No Activity
Observed issues: • No observed issues	**Observed issues:** • No observed issues
Photographs: 	Photographs: 

Trail: Poplar Trail	
Date: September 20, 2023, 2:35 pm	**Date:** November 15, 2023, 2:35 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 250 metres	**Trail length:** 250 metres
Observed usage: • No Activity	**Observed usage:** • No Activity
Observed issues: • No observed issues	**Observed Issues:** • No issues
Photographs: 	Photographs: 

Trail: North Road Trail	
Date: September 20, 2023, 3:00 pm	**Date:** November 15, 2023, 1:20 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 1,200 metres	**Trail length:** 1,200 metres
Observed usage: • No activity	Observed usage: • No Activity
Observed issues: • Significant number of exposed roots • Significant erosion	Observed issues: • Significant number of exposed roots • Significant erosion • Pooling water • Mud patches
Photographs: 	Photographs:  

Trail: Jim's Jungle
Date: November 15, 2023, 1:10 pm
Conditions: Mixed conditions, 7°C
Trail length: 900 metres
Observed usage: • Three (3) – five (5) dog walkers • Two (2) hikers
Observed issues: • Several rotting sections of boardwalks • Significant number of exposed roots • Mud patches
Photographs:    

Trail: Power line Trail	
Date: September 20, 2023, 4:00 pm	**Date:** November 15, 2023, 1:00 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 750 metres	**Trail length:** 750 metres
Observed usage: • Three (3) – five (5) hikers	**Observed usage:** • Three (3) – five (5) hikers
Observed issues: • No issues	**Observed issues:** • No issues
Photographs: 	Photographs: 

Trail: Pipeline Trail	
Date: September 20, 2023, 3:30 pm	**Date:** November 15, 2023, 1:30 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 740 metres	**Trail length:** 740 metres
Observed usage: • Two (2) hikers	**Observed usage:** • Three (3) – five (5) hikers
Issues: • No observed issues	**Issues:** • No observed issues
Photographs: 	Photographs: 

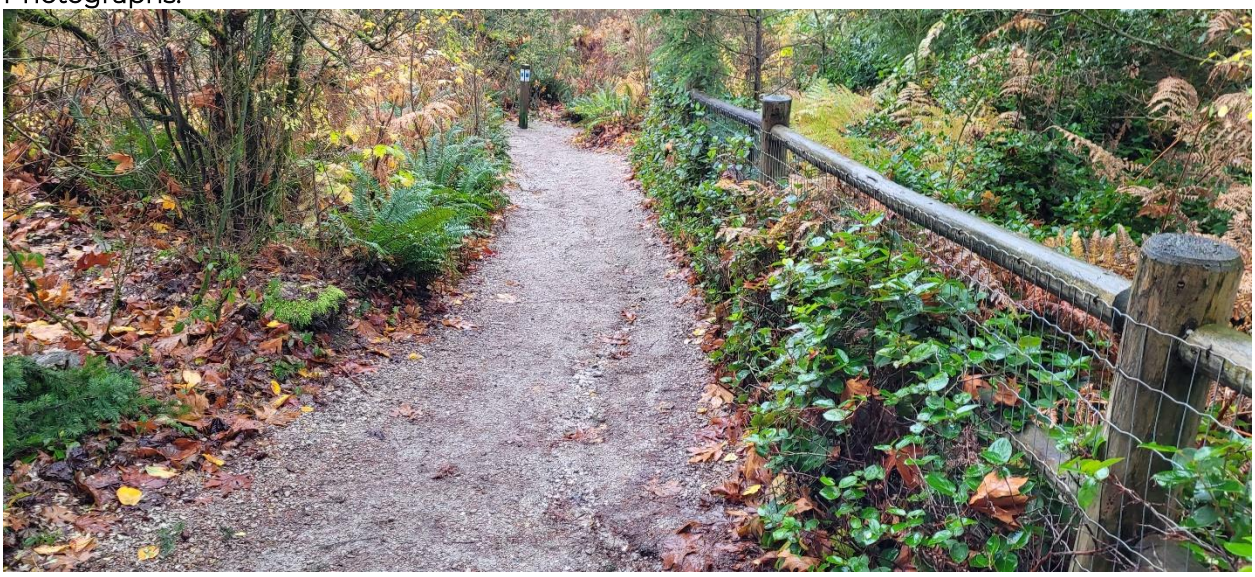
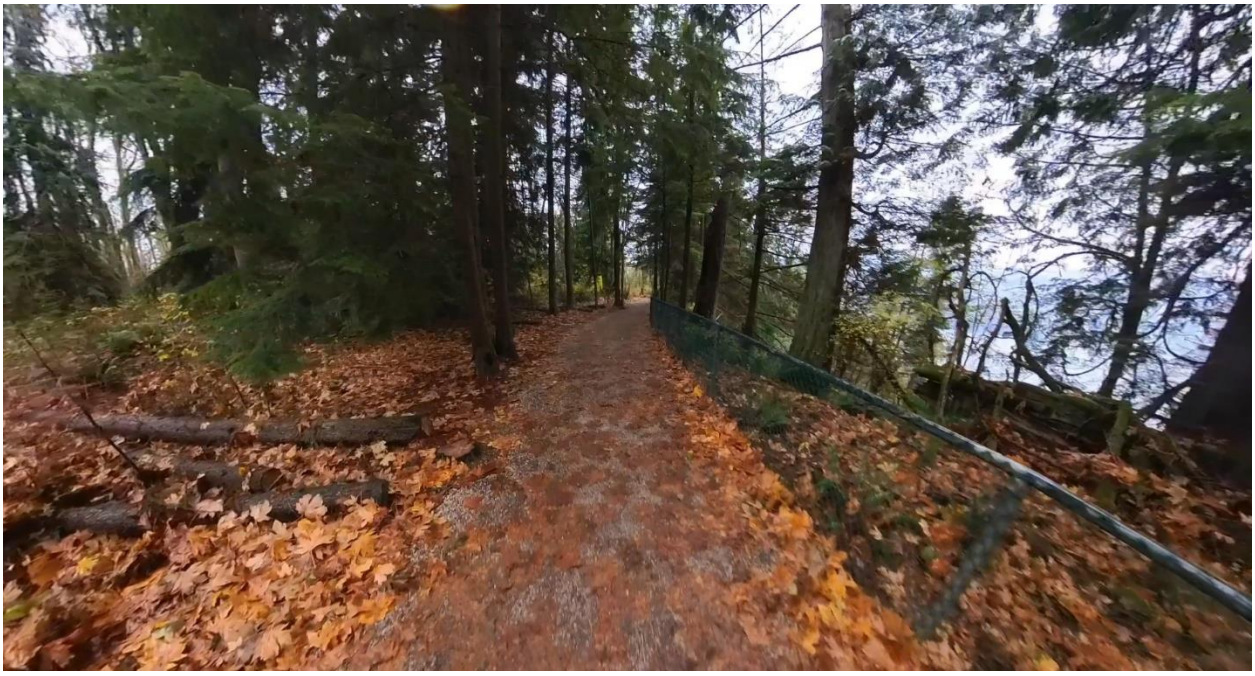
Trail: Trans Canada Trail	
Date: September 20, 2023, 3:45 pm	**Date:** November 15, 2023, 10:30 am
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 5,500 metres	**Trail length:** 5,500 metres
Observed usage: • Three (3) – five (5) hikers	**Observed usage:** • Three (3) – five (5) hikers
Observed issues: • No issues	**Observed issues:** • No issues
Photographs: 	Photographs:  

Trail: Cardiac Hill	
Date: September 20, 2023, 3:50 pm	Date: November 15, 2023, 10:20 am
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 380 metres	**Trail length:** 380 metres
Observed usage: • One (1) hiker	**Observed usage:** • One (1) hiker
Observed Issues: • No issues	**Observed Issues:** • No issues
Photographs: 	Photographs: 

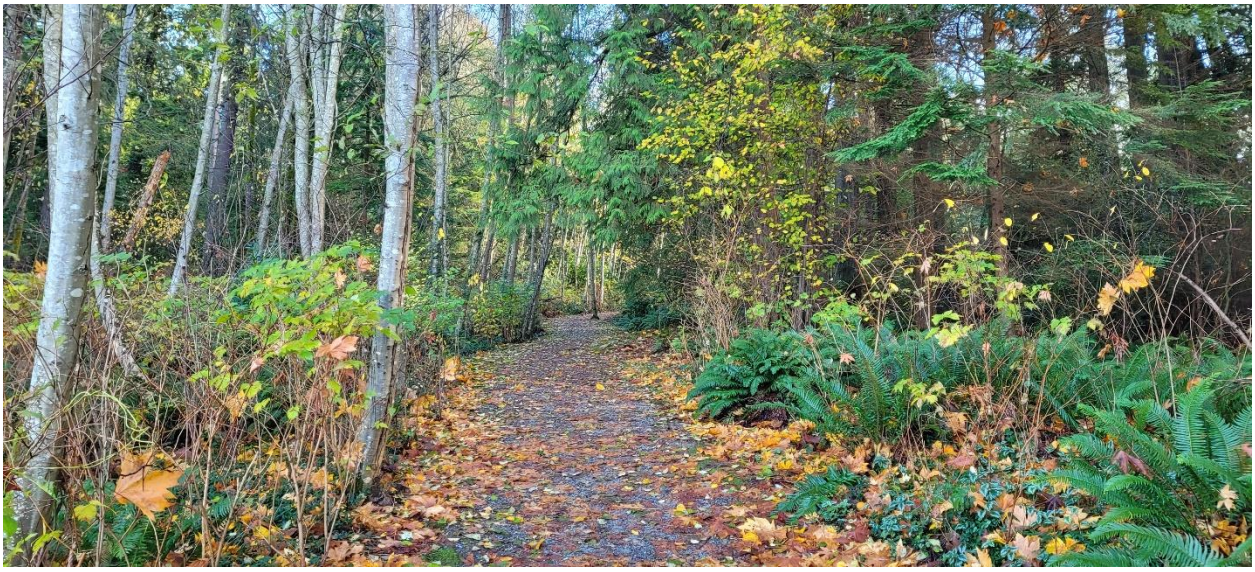
Trail: Barnet Trail & Cougar Creek Trail	
Date: September 20, 2023, 4:15 pm	**Date:** November 15, 2023, 12:30 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 1,900 metres	**Trail length:** 1,900 metres
Observed usage: • Two (2) hikers	Observed usage: • No Activity
Observed Issues: • No issues	Observed Issues: • No issues
Photographs: 	Photographs: 

Trail: Mountain Air Trail	
Date: September 20, 2023, 4:40 pm	**Date**: November 15, 2023, 12:20 pm
Conditions: Sunny, 18°C	**Conditions:** Mixed conditions, 7°C
Trail length: 1,300 metres	**Trail length:** 1,300 metres
Observed usage: • Two (2) hikers	Observed usage: • One (1) hiker
Observed Issues: • No issues	Observed Issues: • No issues
Photographs: 	Photographs: 

Trail: Velodrome Trail
Date: November 15, 2023, 11:00 am
Conditions: Mixed conditions, 7°C
Trail length: 500 metres
Observed usage: • No activity
Observed Issues: • Water pooling on steps • Rotting steps • Significant number of exposed roots • Steep sections
Photographs:

Trail: Pandora
Date: November 15, 2023, 10:45 am
Conditions: Mixed conditions, 7°C
Trail length: 920 metres
Observed usage: • Several hikers
Observed Issues: • Erosion • Steep sections
Photographs:    

Trail: Burnwood Access
Date: November 15, 2023, 11:30 am
Conditions: Mixed conditions, 7°C
Trail length: 675 metres
Observed usage: • One (1) dog walker
Observed Issues: • No issues
Photographs:    

Trail: Ridgeview Trail
Date: November 15, 2023, 11:45 am
Conditions: Mixed conditions, 7°C
Trail length: 800 metres
Observed usage: • One (1) dog walker
Observed Issues: • Rocky sections
Photographs:    

Trail: Gnomes Home Trail
Date: November 15, 2023, 12:00 pm
Conditions: Mixed conditions, 7°C
Trail length: 550 metres
Observed usage: • No Activity
Observed Issues: • Significant number of exposed roots • Overgrown vegetation
Photographs: