

Management Plan #1 Squamish Community Forest Community Forest Agreement K5Y



February 1, 2022

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Acronyms

AOA	Archaeological Overview Assessment
AU	Analysis Unit
BC	British Columbia
BEC	Biogeoclimatic
CFA	Community Forest Agreement
CWD	Coarse woody debris
CWH	Coastal Western Hemlock
Dbh	Diameter at breast height
DOS	District of Squamish
DSQ	Sea to Sky Natural Resource District (formerly the Squamish Forest District)
FAIB	Forest Analysis and Inventory Branch
FCRSA	Forestry Consultation and Revenue Sharing Agreement
FG	Free Growing
FPPR	Forest Planning and Practices Regulation
FRPA	Forest and Range Practices Act
FSP	Forest Stewardship Plan
FSR	Forest Service Road
GWMs	General Wildlife Measures
IWMP	Integrated Watershed Management Plan
LRMP	Land and Resource Management Plan
LP	Limited Partnership
LU	Landscape Unit
MAI	Mean Annual Increment

MFLNRO	BC Ministry of Forests, Lands and Natural Resource Operations
MFLNRORD	BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MH	Mountain Hemlock
nd	no date
NDT	Natural Disturbance Type
OCP	Official Community Plan
OGMA	Old Growth Management Area
RCRPU	Ring Creek Residents' Planning Unit
RFI	Recreation Features Inventory
SAS	Squamish Access Society
SDBA	Squamish Dirt Bike Association
SI	Site Index
SLRD	Squamish Lillooet Regional District
SN	Squamish Nation
SORCA	Squamish Off-Road Cycling Association
SQCF	Squamish Community Forest
SQCFC	Squamish Community Forest Corporation
SSISC	Sea to Sky Invasive Species Council
THLB	Timber Harvesting Land Base
TSA	Timber Supply Area
TSR	Timber Supply Review
TWN	Tsleil-Waututh Nation
VLI	Visual Landscape Inventory

VRI Vegetation Resource Inventory

WHA Wildlife Habitat Area

WTRA Wildlife Tree Retention Area

1 Introduction

The landbase for the Squamish Community Forest (SQCF) consists of 11,303 hectares (ha) on the hillsides east of the District of Squamish municipal boundary, in the watersheds of Shannon Creek, Raffuse Creek, Ring Creek, Stawamus River, Mashiter Creek, Cheekye River and the lower Mamquam River and a small area southwest of Alice Lake Provincial Park. The lands are entirely within the Traditional Territory of Squamish Nation/Skw̓xwú7mesh Úxwumixw. The Squamish People have inhabited and stewarded these lands since time immemorial and the lands are interconnected with their culture. The majority of the Community Forest is also within the Tsleil-Waututh/səl̓ilwətaɣ̓ Consultation Area and the southern portion is within the Musqueam Nation/xʷməθkʷəy̓əm Consultative Area. The lands contain many recreation features, which regularly see high levels of use by the local community and visitors.

The Squamish Community Forest Community Forest Agreement (CFA) will be held by the Squamish Community Forest Limited Partnership (SQCF LP), a collaboration between the Squamish Nation (SN) and the District of Squamish (DOS). Squamish Community Forest Corporation (SQCFC) is the General Partner of the LP and the SN (through their company SN Limited Partner Holdings Limited) and DOS are Limited Partners. The SN and DOS are equal shareholders of SQCFC.

All operational planning and operations on the SQCF will be managed by Sqomish Forestry LP, under agreement with SQCFC. Sqomish Forestry LP is a forestry management company wholly owned by Squamish Nation, and will be responsible for the planning and implementation of forest management activities within the SQCF consistent with the Management Plan.

This Management Plan for the Community Forest Agreement (CFA) application for CFA K5Y (SQCF) has been prepared in accordance with the March 2017 CFA Application Requirements. The purpose of this Management Plan is to link the communities and their values to the management of the Community Forest and to establish an annual allowable cut (AAC) for the CFA (BC MFLNRO 2015a).

1.1 Consistencies and Related Planning Documents

This management plan is consistent with

- all relevant forestry legislation, and
- applicable Higher Level Plans under the *Forest and Range Practices Act (FRPA)*.

In addition to this Management Plan, the SQCF will operate in accordance with an approved Forest Stewardship Plan (FSP), which is a high level operational plan that identifies specific legal planning and practice requirements, including those laid out in the Higher Level Plans applicable to the SQCF area. Forest management decisions in the SQCF will be strongly guided by Squamish Nation's X̓ay Temíxw (Sacred Land) Land Use Plan and the Squamish Nation – British Columbia Agreement on Land Use Planning.

Management guidance and recommendations put forth through other related plans provide important context for SQCF management and will be considered and implemented where relevant and feasible.

1.1.1 Higher Level Plans

The Higher Level Plans applicable to the SQCF area are the Sea-to-Sky Land and Resource Management Plan (LRMP)(2008), and the Landscape Unit Plans for each of the two Landscape Units (LUs) within the SQCF – the East Howe LU (6375 ha of the SQCF total area) and the Mamquam LU (4929 ha). Landscape

Unit Planning is a key component of the forest planning system in British Columbia (BC). Landscape Units are important for designing strategies, objectives and patterns for landscape level biodiversity and for managing other forest resources (BC MOF and BC MELP 1999).

Developed through a multi-year, multi-stakeholder process, the Sea-to-Sky LRMP is a sub-regional strategic land use plan approved by the Minister of Agriculture and Lands in April 2008. It provides strategic direction for managing the long-term sustainability of ecological, social, cultural and local economic development values.

The LRMP has been given legal force through government orders including the Ministerial Order for Land Use Objectives for the Sea-to-Sky Land and Resource Management Plan (as amended August 13, 2013) and the Sea-to-Sky Wildland Area Order (2011). These orders include legal designations for places of high cultural value for Squamish Nation such as the Síiyamín ta Skw̓xwú7mesh (cultural sites).

This Management Plan is consistent with the legally established land designations, zones and management directions stemming from the LRMP.

1.1.2 X̓ay Temíxw Land Use Plan

Completed by the Squamish Nation in 2001, the X̓ay Temíxw (Sacred Land) Land Use Plan describes the Squamish Nation's vision for the future of the forests and wilderness of the traditional territory and how to care for it. Based on interviews with members of the community, the plan identifies values and uses of the land that members care about and their land management priorities. The SQCF lies within the Forest Stewardship Zone – which is identified by X̓ay Temíxw to be managed for many uses including cultural uses, forestry, hunting, tourism, and outdoor education (Squamish Nation nd). Squamish Nation values for this zone are integrated into the list of values for the SQCF (section 2.3). A portion of the SQCF is within the Mamquam River Restoration Area, portions of which have been noted as candidate areas for the restoration of natural values that have been compromised by historic logging and other development.

1.1.3 Squamish Nation – British Columbia Agreement on Land Use Planning

The Squamish Nation and the Province of British Columbia signed an Agreement on Land Use Planning in July 2007. The Agreement outlines jointly agreed management direction for a portion of Squamish Nation territory within the Sea-to-Sky LRMP area and was the basis for harmonizing the X̓ay Temíxw Land Use Plan and the Sea-to-Sky LRMP (BC MAL 2008).

The Agreement contains management direction for areas including Kwékwayex̓ Kwelháynexw ta Skw̓xwú7mesh Temíxw (Squamish Nation Wild Spirit Places), Síiyamin Síiyamin ta Skw̓xwú7mesh (cultural sites), Úxwumixw (village sites) and Skw̓xwú7mesh-úhl Snewáyelh (cultural training areas) (Squamish Nation and BC 2007, BC MAL 2008). Key elements of the Agreement have been legally established, such as the designation of Síiyamín ta Skw̓xwú7mesh (cultural sites), two of which are located within the Community Forest.

1.1.4 District of Squamish Plans

District of Squamish planning documents relevant to the SQCF Management Plan include:

- District of Squamish Official Community Plan (OCP)(adopted June 5, 2018)
- Powerhouse Springs Well Protection Plan 2014
- District of Squamish Community Wildfire Protection Plan 2017 Update

- District of Squamish Community Climate Action Plan (April 2020)
- District of Squamish Trails Master Plan

Two areas of the SQCF lie within District of Squamish municipal boundaries. One is the Debecks Hill area, south of Alice Lake Park, and the other is in the lower Mamquam River area. Both areas have a land use designation of “Resource and Recreation” in the current OCP, with policy direction to support forestry.

1.1.5 Squamish Lillooet Regional District

Portions of the Community Forest outside the Squamish municipal boundaries are within the Squamish Lillooet Regional District (SLRD) Electoral Area D. SLRD plans that provide context for management of the SQCF include:

- Official Community Plan for the SLRD Electoral Area D 2013
- Squamish-Lillooet Regional District Electoral Area D Community Wildfire Protection Plan 2016 Update

1.1.6 Shannon Basin Visitor Use Management Project

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development is partnering with Squamish Nation, and collaborating with BC Parks to co-develop a visitor use management strategy for the greater Shannon Basin – an area encompassing the Stawamus Chief and Shannon Falls Provincial Parks and the Shannon Creek Watershed. A large portion of Shannon Basin lies within the Squamish Community Forest. A public online survey was conducted in 2019 to gather input about what people value about the area, how they recreate there, and what is most important for future management of the area. The results of the survey were released in spring 2020, and will inform the planning process for future management of Shannon Basin (BC and Squamish Nation 2020).

1.1.7 Other Related Plans

Other plans and reports that may offer guidance and context for management of the Community Forest now or in the future include:

- Squamish Mountain Bike Management Plan (2005)
- Howe Sound Cumulative Effects Project - Current Condition Assessment Reports. As of the time of writing, assessment reports have been completed for Aquatic Ecosystems, Forest Visual Quality, Grizzly Bear, Roosevelt Elk, and Marbled Murrelet
- Squamish Nation Marine Use Plan for Howe Sound (under development)
- Comprehensive planning for Howe Sound (under development).

1.2 Management Plan Scope

This management plan has been written as a requirement for the application for a CFA license. The plan is not intended to convey all of the specific operational procedures to be adopted. SQCF may over time develop more detailed operational guidelines.

2 Mission Statement, Guiding Principles and Values

2.1 Mission Statement for Squamish Community Forest

To steward the Squamish Community Forest in a manner reflecting and sustaining environmental and cultural values while providing social and economic benefits to its member communities for generations to come.

2.2 Guiding Principles

As per the Limited Partnership Agreement, the Community Forest Agreement will be managed in accordance with the following principles:

- a) forestry operations will be operated to show a profit, and demonstrate the value and viability of forestry to the District of Squamish and the Squamish Nation;
- b) subject to provincial requirements in the Community Forest Agreement and the terms of the Agreement on Land Use Planning, forest planning and operations will be conducted to maximize long-term security of employment and contracting opportunities in preference for District of Squamish and local residents including Squamish Nation members;
- c) forest planning and operations will follow the best model sustainable forestry practices;
- d) forest planning and operations will respect the land use plans and the cultural, recreational, educational and aesthetic values/objectives of both the Squamish Nation and the District of Squamish, including without limitation management of viewscales, recreational trails and riparian values; and
- e) decisions will be made by consensus where possible, recognizing both cultural and sustainability interests of the Partners.

2.3 Values

Management of the Squamish Community Forest recognizes and respects a set of shared community values. These values were identified through responses to a questionnaire distributed at the open houses, feedback received at open houses, meetings with stakeholder groups and through the Squamish Nation's X̱ay Temíxw Land Use Plan.

Values for the Community Forest include:

- Balance (between environmental, social and economic goals)
- Respect for all interests and resource values
- Environmental sustainability
- Financial sustainability
- Community engagement and social licence
- Outdoor recreation opportunities
- Educational opportunities
- Squamish Nation cultural values
- Other cultural values
- Cooperation
- Innovation

3 Social, Economic and Resource Management Goals

The broad social, economic and resource management goals for the Squamish Community Forest are as follows:

Social Goals

1. Strengthen and grow relationships and partnerships among the District of Squamish, Squamish Nation and community members
2. Practice strong community engagement and communication
3. Facilitate cultural use
4. Support training and capacity building
5. Respect and consider all land users and other tenure holders
6. Integrate safety in all aspects of operations, for forest workers and the public
7. Provide education and research opportunities for community members, First Nations, visitors and academics

Economic Goals

8. Provide economic benefits/revenue for Squamish Nation and the District of Squamish
9. Provide employment opportunities for local community members
10. Support local secondary manufacturing

Resource Management Goals

11. Manage and conserve biodiversity, ecosystem function and integrity
12. Manage and conserve wildlife and wildlife habitat
13. Maintain an appropriate level of old growth
14. Protect fish habitat and riparian areas
15. Support a well-managed outdoor recreation network of trails and features in balance with other resource values
16. Protect cultural and heritage values and sites
17. Minimize wildfire risk and manage for a wildfire resilient forest
18. Protect and maintain community water supply quality and quantity
19. Maintain visual quality and viewscales
20. Grow and harvest timber at a rate that is socially and ecologically appropriate and in balance with all other values

4 Linkage of Squamish Community Forest Goals with Provincial Community Forest Program Goals

The British Columbia (BC) provincial government has set a series of goals for the Community Forest Program (BC MFLNRO 2015a). These are to:

1. provide long-term opportunities for achieving a range of community objectives, values and priorities
2. diversify the use of and benefits derived from the community forest agreement area
3. provide social and economic benefits to British Columbia
4. undertake community forestry consistent with sound principles of environmental stewardship that reflect a broad spectrum of values
5. promote community involvement and participation
6. promote communication and strengthen relationships between Aboriginal and non-Aboriginal communities and persons
7. foster innovation
8. advocate forest worker safety

Goals for the SQCF are consistent and linked with the provincial Community Forest Program goals in multiple inter-connected ways, as summarized in Table 1. SQCF goals are strongly aligned with providing long-term opportunities for a range of community values, including culture, recreation, and economic benefits. The goals lean towards diversifying use and benefits of the CFA area by facilitating cultural use and protecting cultural values, respecting all land users, supporting education, protecting environmental values and more. SQCF provides social and economic benefits to British Columbia by supporting education, providing employment, stewarding ecosystems and drinking water supply, managing recreation and other values across the landscape that are important to residents and visitors, minimizing wildfire risk and harvesting timber. Environmental stewardship reflecting a broad spectrum of values is a core theme running through most of the SQCF goals. Community involvement and participation is emphasized through the goals for strengthening relationships and partnerships, practicing strong community engagement, and providing education and research opportunities and employment. Promoting communication and strengthening relationships between Aboriginal and non-Aboriginal communities and persons is a goal that is both directly stated for SQCF and that SQCF will strive towards in the process of implementing all goals and activities. SQCF will strive for innovation across all goals, including environmental stewardship, operational practices and approaches to community relationship building. Safety will be a key consideration integrated into all aspects of operations, for forest workers and also for the public.

Table 1: Linkage of Community Forest Program Goals with SQCF Management Goals

SQCF Social, Economic and Broad Resource Management Goals	Responds to Program Goal #s
1. Strengthen and grow relationships and partnerships between the District of Squamish (DOS), Squamish Nation (SN) and community members	1, 5, 6
2. Practice strong community engagement and communication	5,6,7,8
3. Facilitate cultural use	1,2,4, 6
4. Support training and capacity building	1,6,7,8
5. Respect and consider all land users and other tenure holders	1,2
6. Integrate safety in all aspects of operations, for forest workers and the public	7, 8
7. Provide education and research opportunities for community members, First Nations, visitors and academics	1,2,3,5,6,7
8. Provide economic benefits/revenue for SN and the DOS	1,6,7
9. Provide employment opportunities for local community members	1,3,5,6,7,8
10. Support local secondary manufacturing	1,2,3,6,7
11. Manage and conserve biodiversity, ecosystem function and integrity	1,2,3,4,6,7
12. Manage and conserve wildlife and wildlife habitat	1,2,3,4,6,7
13. Maintain an appropriate level of old growth	1,2,3,4,6,7
14. Protect fish habitat and riparian areas	1,2,3,4,6,7
15. Support a well-managed outdoor recreation network of trails and features in balance with other resource values	1,2,3,6,7
16. Protect cultural and heritage values and sites	1,2,3,4,6
17. Minimize wildfire risk and manage for a wildfire resilient forest	1,3, 4,6,7,8
18. Protect and maintain community water supply quality and quantity	1,3,4,6
19. Maintain visual quality and viewsapes	1,3,6,7
20. Grow and harvest timber at a rate that is socially and ecologically appropriate and in balance with all other values	1,3,4,6,7,8

5 Botanical Forest Products

Botanical forest products are forest resources other than timber that are harvested for commercial, personal or traditional purposes. These include wild edible mushrooms, floral and greenery products, medicinal and pharmaceutical products, wild berries and fruit, and craft products (BC MAL 2008).

Squamish Community Forest does not plan to harvest botanical forest products or other non-timber forest products for commercial purposes. Botanical forest products will be considered in SQCF forest management for conservation and cultural use, so that they will continue to thrive and be present across the landbase. As such, they are further addressed in section 8.8.

SQCF supports the rights of Squamish Nation and other First Nations to gather food, medicinal and craft materials for individual and community use. The Community Forest will be managed in such a way as to support First Nations cultural use.

6 Consultation and Communication with Other Forest Users

6.1 First Nations and Stakeholders

The SQCF landbase is entirely within the Traditional Territory of Squamish Nation. The majority of SQCF is also within the Tsleil-Waututh Consultative Area and the southern portion is within the Musqueam Nation Consultative Area.

Stakeholders identified as having potential interests in the SQCF are also listed below. Specific stakeholder individuals and groups may change over time. SQCF will endeavour to maintain an up to date list of relevant contacts to facilitate information sharing and consultation in the case of proposed operations that may affect First Nations and stakeholders identified.

First Nations

- Squamish Nation
- Tsleil-Waututh Nation
- Musqueam Nation

Communities, Community Groups and General Public

- Squamish area residents
- Ring Creek residents
- Other private landowners
- Community groups, including
 - Squamish Off-Road Cycling Association (SORCA)
 - Squamish Dirt Bike Association (SDBA)
 - Squamish Trails Society
 - Squamish Access Society (SAS)
 - 99 Trials Association
 - Run Squamish
 - Squamish Environment Society
 - Squamish River Watershed Society
 - Squamish Streamkeepers
 - The Future of Howe Sound Society
 - Howe Sound Biosphere Region Initiative Society
 - Howe Sound Community Forum
 - Sea to Sky Forestry Centre Society
 - Squamish Valley Rod and Gun Club (member of the BC Wildlife Federation)
- Squamish Chamber of Commerce
- Tourism Squamish
- Coast to Cascades Grizzly Bear Initiative
- Sea to Sky Invasive Species Council
- Squamish & District Forestry Association
- School District 48
- Quest University
- Coast Mountain Academy
- Additional groups and individuals that self-identify

Other Land users and Businesses

- Sea to Sky Gondola
- Water licence holders (domestic, commercial and municipal)
- Commercial recreation tenure holders
- Trapline holders
- Mineral tenure holders
- Road permit holders
- Utility Right of Way holders
- Neighbouring forest tenure holders
- Local forest based businesses
- Other Crown tenure holders

Governments and Government Agencies

- District of Squamish
- Squamish Lillooet Regional District
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
- BC Ministry of Environment and Climate Change Strategy
- BC Parks
- Recreation Sites and Trails BC

6.2 Consultation Objectives

Through ongoing consultation and public engagement processes the SQCF aims to collaborate with Squamish Nation, other First Nations and relevant stakeholders regarding forest management planning and high level direction. SQCF will provide timely information about and seek feedback on proposed forestry activities, listen to and acknowledge concerns and aspirations, and share how the input influenced forest management decisions. The engagement level will range from “Consult” to “Collaborate”, as defined on the IAP2 Spectrum of Public Participation (International Association for Public Participation 2018).

6.3 Measures to Consult

Measures to consult include referral processes for Squamish Nation, Tsleil-Waututh Nation, and Musqueam Nation, and a public engagement process for the broader public, with particular consideration of trails and recreation management.

Within the first three years of operation, the SQCF has an objective to:

- Establish and fine tune the overall communications and engagement processes in collaboration with Squamish Nation, other First Nations, community groups and other stakeholders,
- Establish a Community Advisory Group made up of representatives of diverse community interests,
- Enter into a trails master planning process with all interested groups, and
- Enter a process with Ring Creek residents to guide management within the Ring Creek Residents’ Planning Unit.

6.3.1 First Nations Referral and Engagement Process

Consultation regarding operational/block level activities will be carried out with all First Nations within whose Traditional Territory the activities are proposed i.e. Squamish Nation for all activities, and Tsleil-Waututh Nation and Musqueam Nation for planned activities within their Traditional Territories or

stated Consultative Areas. Details of the consultation process will be laid out in the Forest Stewardship Plan and will be consistent with the relevant Forest Consultation and Revenue Sharing Agreements for those Nations. At a minimum the process will include the SQCF providing the First Nations with maps and information describing the new proposed activities, requesting comments on any impacts to cultural rights and title, and values to be considered, and communicating about options for how to address potential impacts.

SQCF will also develop a process for regular communication with Squamish Nation, Tsleil-Waututh Nation and Musqueam Nation about activities they would like to be involved with in the Community Forest such as the stewardship and harvesting of traditional plants foods and medicines and accessing wood for firewood, carving and other cultural uses. These aspects are further discussed in sections 7.10, 7.11, 8.7 and 8.8.

SQCF will offer to meet annually with each First Nation to provide information about and seek feedback on Community Forest operations and management. SQCF will seek direction from Squamish Nation, Tsleil-Waututh Nation and Musqueam Nation regarding their preferred meeting formats, timing and participants. For example, meetings could take the form of First Nation community open houses or meetings with First Nation representatives.

6.3.2 Public Engagement and Consultation Process

SQCF aims to develop and maintain positive working relationships and effective communication with all potentially affected stakeholders identified as having interest in the Community Forest landbase. Potentially affected stakeholders are defined as those stakeholders with an identified interest in, or with the responsibility to manage, specific resource values within the Community Forest. This includes community groups and organizations, industrial tenure holders, commercial recreation tenures, government agencies and the general public using portions of the SQCF landbase.

The SQCF will also develop communication strategies to provide information to the general public and other interested parties who self-identify.

Consultation regarding operational/block level activities will be carried out on an ongoing basis with all known potentially affected stakeholders. Where forest management activities are contemplated, the SQCF will identify any interests and resource values with the potential to be affected. SQCF will notify potentially affected stakeholders of planned activities and invite them to share their comments or concerns relating to management of the identified value or resource. SQCF will consider all comments and input received and incorporate them as much as possible in management decisions and activities.

Measures for ongoing communication with stakeholders may include emails, letters, phone calls and/or meetings as needed to address specific concerns. A website will also be developed as a means to broadcast information. The appropriate timelines and method of notification will be unique to each stakeholder and situation. The overarching goal and intent is to develop and maintain positive working relationships and strong communications with all relevant stakeholders.

Public open houses (in person or online) will be held at least once per calendar year, during which recent and planned activities will be presented and opportunity for feedback provided. Additionally, a web site will be developed as a source of information. It is envisioned that the website will provide information regarding overall management and planning in the SQCF, current and proposed forestry activities,

upcoming public engagement events and how to provide input (e.g. contact information where to direct comments and questions).

All proposed road construction and harvest plans will be made available for public review and comment before being submitted to the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD) for permitting. To the extent possible, proposed harvest/road plans will be presented at a public open house as part of the public consultation process.

6.3.2.1 Trails and Recreation Engagement and Consultation

The existing trail network and other recreation features such as climbing areas within the SQCF are highly valued by Squamish residents and visitors, forming a central part of the local lifestyle and outdoor recreation culture (see section 8.13 for inventory details). One of the most significant anticipated interactions (i.e. that involving the largest number of people) in the SQCF is between SQCF operations and trail users. SQCF will take a collaborative approach to managing trails and the trail network while planning and completing operations in a safe and efficient manner. This will require effective ongoing communication with trail users and other recreation stakeholders. The following section is intended to outline the approach to engagement specifically around trails in the SQCF.

SQCF approaches the management of trails from the viewpoint that the development and use of the trail system is a dynamic process occurring in a dynamic environment. Trail locations and trail riding experiences are not static and the user experience on any given trail may change over time. The level of use and key characteristics of a trail may also change over time. Key or high value features will be identified through a collaborative process and afforded appropriate protection.

SQCF will collaborate with trail and recreation groups regarding management and planning. Community groups actively involved in the creation, maintenance, use of, and advocacy for trails and other recreation features include the Squamish Trails Society, Squamish Off-Road Cycling Association (SORCA), Squamish Dirt Bike Association (SDBA), Squamish Access Society (SAS), 99 Trials Association and special event groups. Trails and recreation consultation will take place primarily with representatives from these groups, while remaining open to input from individuals who may be independent from them. Processes will include both a near-term process, and a long-term collaborative strategy that will be developed over time.

Near-term Site Level Approach

In the near term (i.e. before and while a longer term strategy and plan are being developed) SQCF will work with the recreation community to manage the trails/recreation/timber harvesting interface on a block by block/case by case basis as follows:

- Areas being considered for timber harvest/road building will be reviewed with representatives of the recreation community before any significant engineering or planning work is conducted. Information on known recreation features (i.e. location, specific valued characteristics) will be requested.
- During site level assessments, SQCF field crew will also gather information on any trails and other recreation features that exist in the potential harvest area.
- SQCF will seek agreement with recreation community representatives regarding the appropriate management for trail/recreation features in the block (e.g. leave a buffer along or around, leave retention along sections, harvest over then rebuild, consider access decommission or relocate).

- Management decisions will consider factors such as the unique/defining characteristics of the trails and recreation features, how sensitive those are to change, the amount of use, type of trail (e.g. connector, downhill, climbing), current condition (e.g. in plantation, closed forest or other), ranking of significance of current condition (low to high, how much does it matter if it changes).
- The timing of any needed temporary closures will be considered during operational planning, to minimize impacts to recreation as much as possible, with communication and signage to keep users informed of use and access restrictions.

An additional near-term goal for SQCF recreation management is to provide user groups with general information regarding stewardship protocols with the intention that this information is shared with group members and commercial recreation clients. This process will promote responsible use of the SQCF area and seek to decrease environmental impacts (e.g. irresponsible public use, fires, damage to sensitive riparian areas, garbage, and human waste).

Long-term Approach

Within the first three years of operations, SQCF will enter into a trails and recreation master planning process with all interested groups with the aim to develop a trails management strategy, including inventory, operational guidelines and phased harvest plans in the context of trails.

Ideally, the trails inventory will identify any specific features associated with each trail, which are unique or contribute to a specific experience. The inventory information will guide development, through consultation with user groups, of the range of measures which may be applied to manage individual trails and the trail network. Where overlap of a trail by planned forestry operations is identified, the long-term strategy will offer operational guidelines for site level trail management. SQCF is aware that SORCA is currently undertaking a mountain biking trails inventory project. It is hoped that the information gathered in that project can be integrated and applied in SQCF planning.

Concurrently, SQCF will work towards developing a three to five year harvest plan that identifies the general areas and timing of future harvesting activities within that time frame. This plan will be helpful for the trails and recreation community, to know which areas of the Community Forest would not be harvested in a given period. The information will assist the trails community with prioritizing areas for trail development and maintenance.

New Trail Development

SQCF will work with SORCA and other trail groups to review and give feedback on proposals for new trail development, and to facilitate approvals from Recreation Sites and Trails BC.

The SQCF managers can provide valuable input in the development of new trails. SQCF participation in trail development and authorization proposals can support the quality and content of applications, consistent with MFLNRORD standards and help ensure that the range of resource values requiring consideration during trail development are addressed at the application stage. Collaboration between SQCF and trail development groups at the development/construction stage can provide trail developers with valuable information such as harvest plans in relation to proposed trail location, management of environmentally sensitive areas, cultural heritage features and other management issues that may be present.

Events and Commercial Recreation Tenure Use

A number of biking and trail running events occur annually on the trail network within the Community Forest. There are also a number of commercial recreation tenure holders who operate within the area. Communication between the Community Forest and event organizers is essential. Coordination with SQCF is needed to ensure that forestry operations do not conflict with planned events and that appropriate plans are in place to address safety, and protect environmental and resource values. SQCF is prepared to help event planners with the BC government permit/approvals process where appropriate. Specifically, event plans should address participant safety, road use, parking/staging areas, litter management, course clean up and the need for washrooms.

For commercial recreation operators the Community Forest intends to establish communications to ensure commercial recreation activities are completed in a manner that recognizes and respects the landbase, goals and objectives for recreation management. The primary goal is to ensure clear communication channels exist to inform operators of road use and access restrictions resulting from harvesting operations, ensuring proper road use protocols are in place for radio use, driving, parking and environmental stewardship (e.g. no litter, no unauthorized trail building).

Communications Plan/Protocols

The SQCF aims to develop communications plans and protocols in partnership with trail and recreation groups, in order to provide clear information about the harvest plans and important safety information and considerations e.g. regarding shared road use.

After the collaborative trail and recreation management decisions are made and block plans are complete, SQCF will communicate to trails and recreation groups and commercial operators at least two weeks prior to commencing harvest operations:

- The location, timing and type of planned harvesting activities and identification of any trails which will be directly impacted by planned activities,
- A description of any expected impacts to trails from planned activities including expected duration of trail closure,
- A summary of the completed trail consultation process and a description/rationale for the trail management strategy that was developed,
- The timing, duration and location details of any necessary road use or access restrictions, parking restrictions, and when active logging truck traffic can be expected on forestry roads.

6.3.2.2 Ring Creek Residents Planning Unit and Process

The Ring Creek community is a Rural Residential Neighborhood of approximately 120 residents within 40 private residential lots, located along a short section of Ring Creek Forest Service Road and Garibaldi Park Road. It is immediately adjacent to the Community Forest and Garibaldi Park. It is outside the District of Squamish municipal boundary and within Squamish-Lillooet Regional District Electoral Area D. Ring Creek residents have expressed specific interests and concerns regarding how future forestry activities may affect their neighborhood. In response, an area around the community has been designated as the Ring Creek Residents' Planning Unit (RCRPU)(see map in Appendix 1). The SQCF will enter into a process with Ring Creek residents to guide future management within the Planning Unit, prior to any harvesting being actively considered. The planning process will be open to all Ring Creek residents and it will include, but not be limited to information and discussion on the following issues:

- i) Inventory and identification of all the land within the RCRPU showing just exactly which areas could potentially be harvested over time, as well as identifying all areas that are reserved from harvesting. This step will include inventory/identification and consideration of Ring Creek community recreation trails, resident values and special interests unique to the Ring Creek neighborhood and community.
- ii) The designation of additional no harvest zones, or “protection” areas if they can be rationalized in the context of the broader SQCF management goals and objectives.
- iii) A detailed plan that indicates the amount and location of harvesting (if any), within the RCRPU and the timing of that harvesting.
- iv) The development of safety protocols for the use of roads used to access to the Ring Creek residential area, and for conducting active harvesting near to or adjacent to Ring Creek residences.
- v) A detailed strategy to control/manage any potential access related issues within the RCRPU associated with roads and harvesting. The strategy will include identification and consideration of the impacts to Ring Creek community from expanded access and road construction. This will include measures to reduce or avoid wildfire risks, camping and litter, noise, shooting, etc. that may take place on forestry sites within the RCRPU.
- vi) The establishment of a formal communication protocol between the SQCF and the Ring Creek residents.

6.3.3 Community Forest Advisory Group

Within a year of issue of the CFA licence, a Community Forest Advisory Group will be established. It will be comprised of individuals representing the diversity of community interests, stakeholders and First Nations. These include trail users, environmental stewardship groups and others as identified during the SQCF engagement process. Group members will be nominated and selected by, and report to the SQCF Corporation Board of Directors.

The process for Advisory Group member selection, duration of term, roles and responsibilities will be determined during the first year of the SQCF licence. The Group will not be empowered to make management decisions but will be asked to give information and input on management direction, as advisors to the managers. The group is intended to represent and express various community interests, and serve as a communications link between the SQCF and stakeholder groups. The communication process will allow a two-way flow of information and input to help ensure that forest management activities contemplated by the SQCF are consistent with community values.

6.4 Annual Reporting Plan

The Squamish Community Forest will report annually (i.e. every calendar year) to the partner communities and key stakeholders. Annual reporting will include a publicly available written report describing the year’s activities and performance on the SQCF guiding principles and values, social, economic and resource management goals and provincial Community Forest Program goals. The information will be published on the SQCF website and sent to an email list of people who have expressed interest. If possible, a hard copy of the report will be made available for viewing at a specified location. Annual reporting will include at least one public open house (held online or in person), at which

the reporting information, and current harvesting plans will be presented, with opportunity for feedback and discussion.

7 Timber Inventories and Management

Timber supply information in the following sections is compiled and summarized from the Timber Harvesting Land Base (THLB) summary for the SQCF, as prepared by MFLNRORD (Appendix 2). THLB refers to land that is available and suitable for timber harvesting and contributes to the AAC. The MFLNRORD analysis showed that out of the total SQCF area of 11,303 hectares (ha), 4162 ha (37%) are classified as the THLB (contributing and partially contributing Crown forest), 4147 ha (37%) are non-contributing to timber supply due to other land use designations, and 2995 ha (26%) consist of rock, ice, non-forested areas or non-Crown lands.

7.1 Biogeoclimatic Classification

The SQCF land base includes four forested biogeoclimatic (BEC) zones - CWHdm, CWHvm1, CWHvm2 and MHmm1 as well as high elevation sparsely treed and alpine areas (MHmmp). The relative amount of area within each BEC zone and subzone/variant is illustrated in Table 2 and their location across the SQCF landscape is shown on the Forest Cover and Biogeoclimatic Zones map in Appendix 1.

Table 2: Biogeoclimatic Subzone by Area in the Squamish Community Forest

BEC zone/subzone/variant	Total area within SQCF*
CWHdm Coastal Western Hemlock - Dry Maritime	3470 ha
CWHvm1 Coastal Western Hemlock - Submontane Very Wet Maritime	584ha
CWHvm2 Coastal Western Hemlock- Montane Very Wet Maritime	2626 ha
MHmm1 Mountain Hemlock - Windward Moist Maritime	3207 ha
MHmmp Mountain Hemlock - Windward Moist Maritime parkland	1342 ha

*Total area does not add up to gross area of the SQCF due to limitations in data availability

7.2 Natural Disturbance Types

For the purpose of setting biodiversity objectives, five natural disturbance types (NDTs) are recognized as occurring in British Columbia ranging from ecosystems with rare-stand initiating events (NDT 1) to those with frequent stand-maintaining fires (NDT 4). The SQCF area consists primarily of NDT 1 (66% of the total SQCF landbase or 7423 ha), one quarter NDT 2 (2872 ha), and a smaller amount of NDT 5 – which represents the subalpine parkland ecosystems (9% or 1009 ha) (Table 3).

Ecosystem distribution and natural disturbance patterns are predicted to shift with climate change. By the 2050s, climate envelopes for current CWH and MH zones are predicted to shift about 200 - 300m upward in elevation and 35 - 55km northward. Natural disturbances are predicted to be more frequent and severe (BC MFLNRO 2016).

Table 3: Summary of Natural Disturbance Types in the Squamish Community Forest

NDT Type	Description	Area in SQCF	Percentage of SQCF landbase
NDT 1	Ecosystems with rare stand-initiating events	7423 ha	66%
NDT 2	Ecosystems with infrequent stand-initiating events	2872 ha	25%
NDT 5	Alpine Tundra and Subalpine Parkland ecosystems	1009 ha	9%

7.3 Species Composition

The tree species profile of the SQCF THLB consists primarily of western hemlock, Douglas-fir, amabilis fir (balsam), western redcedar, and smaller amounts of other conifers such as western white pine and deciduous species. Lodgepole pine may occur on dry and nutrient poor sites, and Sitka spruce on low elevation floodplain sites. Leading tree species at higher elevations include mountain hemlock and yellow cedar.

Deciduous (broad-leaf) trees including red alder, bigleaf maple and black cottonwood are found at low levels across the SQCF, generally as dispersed individual stems or small clumps within forested stands dominated by conifers. Deciduous trees are often found at higher density within riparian areas or on disturbed sites (old roads and landings) within previously harvested areas. They constitute an important element of biodiversity.

7.4 Age Class Distribution

According to the volume summary information provided by MFLNRORD, the current age class distribution of the Timber Harvesting Land Base (THLB) is characterized by a predominance of immature stands, with 61% (2309 ha) of the THLB in stands less than 61 years old, and 39% (1853 ha) in mature stands (i.e. greater than 60 years old).

The Forest Cover and Biogeoclimatic Zones map (Appendix 1) illustrates a more detailed picture of age class distribution across the forested SQCF landbase. The age class distribution based on that map is shown in Table 4.

Table 4: Forest Age Class Distribution in the Squamish Community Forest

Forest Age Class	Area in SQCF	Percentage
Logged (SR and NSR)	253 ha	2%
Old Growth (250yrs+)	3282 ha	34%
Mature Forest (121-249 yrs)	354 ha	4%
Immature Forest (61-120 yrs)	2278 ha	24%
Greenup/Free to Grow	3482 ha	36%
Total	9649 ha	100%

7.5 Site Productivity

MFLNRORD provided an estimate of annual yield for SQCF based on the Sea to Sky Natural Resource District average Mean Annual Increment (MAI) of 5.13m³/ha/year. The actual MAI for the SQCF landbase is likely higher than the District average, due to a larger proportion of higher productivity areas in the THLB. The estimation that the MAI is higher within the CFA area is supported by the data provided below which compares productivity and site indices within the SQCF THLB to the Soo Timber Supply

Area (TSA) THLB. The Soo TSA represents the same landbase as the Sea to Sky Natural Resource District, minus the areas within area-based forestry tenures (e.g. woodlots, Tree Farm Licence 38).

Site index (SI) is a unit used to reflect the productive capacity of a stand, expressed as the height (in metres) that the best trees on the site will be at 50 years breast height age. Based on local professional knowledge, estimated average site indices for productive forest across the SQCF range from 12-15 for slower growing high elevation stands to 36 for a stand on a typical good growing site.

In Timber Supply Review 3 (TSR 3), productivity Analysis Units were created by grouping areas with similar stand attributes (e.g. species, site index). Each AU is associated with a range of site indices. A comparison of the distribution of Analysis Unit (AU) classes from TSR3 found that SQCF THLB has a larger proportion (29%) of area in the Good AU class (i.e. the class with the highest site indices) and less in the Poor and Medium classes as compared to the Soo TSA THLB, which had 23% of its area in the Good AU Class (Figure 1). These results are based on 2007 Vegetation Resource Inventory (VRI) data.

Figure 1: Comparison of distribution of TSR3 Analysis Units within Soo TSA THLB and Squamish Community Forest THLB

Analysis Unit data from TSR3 Resultant, based on 2007 VRI

TSA Total THLB		CFA Total THLB	
AU Class	Area %	AU Class	Area %
Poor	44%	Poor	41%
Medium	33%	Medium	29%
Good	23%	Good	29%

Definition of analysis units (Soo TSA Data Package)

Analysis unit	Inventory type groups	Site index range (metres)
Douglas-fir (Fd) – Good	1 – 8	≥ 26
Douglas-fir (Fd) – Medium	1 – 8	20.0 to 25.9
Douglas-fir (Fd) – Poor	1 – 8	< 20
Cedar/Spruce (Cw/Sw) – Good/Med	9 – 11, 21-25	≥ 20
Cedar/Spruce (Cw/Sw) – Poor	9 – 11, 21-25	< 20
Hemlock/Balsam (Hw/Ba) – Good	12 – 20	≥ 25
Hemlock/Balsam (HwSw) – Medium	12 – 20	20.0 to 24.9
Hemlock/Balsam (Hw/Sw) – Poor	12- 20	< 20

Source: Soo Timber Supply Area Timber Supply Review Data Package 2008, Table 4.

A second productivity comparison (Figure 2) was made based on site indices from the 2018 VRI Forest Cover data, which reflect site index adjustments applied to managed stands and Douglas Fir and western redcedar plantations. This comparison again showed that the SQCF THLB has a larger area distribution of forest with higher site indices compared to the Soo TSA THLB. Over 55% of the SQCF THLB showed site indices over 25, whereas about 29% of the Soo TSA THLB area had site indices in that class. Likewise, the SQCF THLB showed a smaller amount of area (17.43%) with site indices less than 20, whereas for the Soo TSA THLB this number was 37.51%.

Figure 2: Comparison of area distribution of Site Index classes within Soo TSA THLB and Squamish Community Forest THLB *



*SI Values grouped to match AU Definitions as per Figure 1. SI values are from 2018 VRI Forest Cover.

7.5.1 Site Productivity Objectives

The goal with regards to site productivity is to conserve and maintain site productivity. To meet this goal SQCF will undertake a range of actions – for example protection of soil (section 8.1), prompt reforestation and other silviculture activities such as stand tending (section 7.12), monitoring and managing forest pests and reducing wildfire risk (section 8.9). During operational planning, SQCF will identify post-free growing areas which are suitable for productivity improvement activities (e.g. stem improvement treatments, thinning, spacing, fertilization) and determine which activities would be appropriate. When available, project funding may be applied for to carry out site productivity and stand improvement treatments.

7.6 Growing Stock

The THLB confirmation and volume summary provided by MFLNRORD (dated February 16, 2021) estimates a total THLB timber volume of 1,198,887 m³ on the SQCF with an annual yield of 21,350m³/yr. The THLB growing stock consists primarily of Hemlock (35%), Fir (33%), Balsam (19%) and Cedar (11%). The volume per species group is summarized in Table 5.

Table 5: Timber Harvesting Land Base Growing Stock Volume by Species

	Fir	Cedar	Hemlock	Balsam	Other Conifer	Deciduous
Volume m³	393,191	129,839	414,617	223,635	11,374	26,367
Percentage	33%	11%	35%	19%	1%	2%

7.7 Timber Harvest Objectives

The objective for timber within the SQCF is to optimize the commercial value of timber relative to changing market conditions and opportunities. More specific objectives related to timber are to:

- Maintain the diversity of stand types and species mixes across the licence area by applying a variety of harvesting, silviculture and reforestation strategies.
- Maintain flexibility in harvest timing plans to prioritize timber harvest from stands affected by forest health factors (e.g. root disease, wind damage or other biotic/abiotic factors) to mitigate the loss of timber values and/or site productivity.
- Identify stand/stem improvement opportunities and pursue funding opportunities to undertake them.

7.8 Timber Harvesting Systems and Equipment

SQCF will utilize a range of timber harvesting systems including overhead cable systems and ground based techniques, and potentially a small amount of helicopter logging. Priority considerations for the selection of harvest system include engineering/operability constraints, worker safety and the protection of soil, riparian and vegetation resources.

7.9 Timber Harvest Specifications and Utilization

The utilization level defines the maximum stump height, minimum top diameter (inside bark) and minimum diameter at breast height (dbh) that must be removed from harvested areas. All utilization levels are mandated by government policy of the day and are subject to change.

Timber utilization and waste and residue allowances will be consistent with the regional/provincial standards. Management of waste and residue at the site level will also be consistent with the *Wildfire Act* of BC, for wildfire hazard risk mitigation. SQCF will strive to recover as much volume as possible and will explore new markets for salvage and small pieces.

As a starting point, timber harvest specifications for SQCF will be consistent with the utilization levels applied in Timber Supply Review 3 for the Soo Timber Supply Area to calculate merchantable stand volume (Table 6).

Table 6: Utilization Levels

Leading Species	Minimum dbh (cm)	Maximum stump height (cm)	Minimum top diameter (cm)
Pine	12.5	30	10
Other < 121 years	12.5	30	10
Other > 121 years	17.5	30	15

Source: BC 2008. Soo Timber Supply Area Timber Supply Review Data Package 2008

7.10 Coarse Woody Debris Management and Salvage

Non-merchantable wood waste remaining on harvested sites will be managed to ensure a minimum amount of coarse woody debris is distributed across the harvested area to support biodiversity and soil values. This will be balanced with reducing the amount of fine woody materials on site in order to minimize wildfire risk.

SQCF will explore ways to facilitate salvage opportunities for Squamish Nation and Squamish community members and will develop a program that makes waste wood available to the public as firewood and/or will develop opportunities for commercial firewood operators.

SQCF will also explore non-traditional market opportunities (e.g. wood waste to energy, composting material) to increase fibre use and reduce wood waste.

7.11 Timber for Cultural Uses

In addition to facilitating salvage opportunities, the SQCF will help Squamish Nation members to source suitable cultural wood for longhouses, canoes and other cultural uses such as carving.

7.12 Silviculture Practices

Silviculture is the art and science of managing the establishment, growth, composition, health and quality of forests to meet the needs and values of the landowners and society on a sustainable basis (BC nd). Aspects of silviculture include harvesting, regeneration (e.g. site preparation, tree planting, sowing), stand tending (e.g. spacing, pruning) and protection of forest health.

The overall silviculture strategy for the SQCF is to ensure prompt reforestation of all harvested areas and to design harvesting and stand management activities so that the diversity of tree species, stand types and structure are compatible with the natural range of variability at the stand and landscape level.

The following sections describe how the overall silviculture objectives will be implemented through the choice of silviculture system, reforestation and stand tending practices.

7.12.1 Silviculture Systems

The term “silviculture system” refers to the pattern of harvesting that is applied to achieve a desired structural outcome. Silviculture systems encompass a variety of harvest patterns ranging from clearcut systems which remove all trees within a harvest area at one time to retention and group selection systems which retain a portion of the trees in various spatial patterns.

The choice of silviculture system will take into account a number of factors including natural disturbance pattern, pre-harvest stand structure and the level of protection required for identified values on the site such as existing plant communities and culturally valued botanicals, soil conditions, wildlife habitat, riparian, recreation and visual values. The evaluation of the natural disturbance type, existing values and the level of protection required for each (as assessed during site plan development stages) will determine the silviculture system and the number and distribution of trees to be retained. The choice of silviculture system also considers topography, operability constraints, and safety issues.

SQCF will strive to implement a variety of ecologically appropriate silviculture systems in order to create a mosaic of harvest patterns, species, ages and stand types. Harvesting patterns are anticipated to consist primarily of small patch cuts and retention systems, with some use of selection systems where feasible. SQCF will strive to arrange retention (group retention and individual stem retention) so that the majority of harvested cutblocks are consistent with a retention silviculture system. Over the first five years, SQCF will work with the Board of Directors and Community Advisory Group to refine operational guidelines.

7.12.2 Reforestation

Regeneration is a critical element of sustainable forest management. Key considerations in reforestation planning include tree species diversity, genetic diversity, forest health and climate change.

Reforestation of harvested areas is a legal obligation for the SQCF. During the site plan development stage, the prescribing forester will identify the biogeoclimatic zone/subzone/site series combinations found within the planned harvest area and will select a stocking standard to apply to the reforestation phases. The stocking standard will identify the desired species mix, distribution, density and timelines for monitoring and achieving the objectives defined by the applied standard, for successful reforestation. The overall reforestation objective is to maintain an ecologically suitable diversity of tree species compatible with the range of natural variability at the landscape level.

The stocking standards to be applied within the SQCF are developed for the range of sites and conditions found across the license area. Where available, new information regarding the impact of climate change upon British Columbia's forested ecosystems and implications for stocking standards will be taken into account.

The overall objective for reforestation of harvested areas is to establish a healthy stand of trees which meet the height and density requirements for Free Growing (FG), within the timeline specified by the relevant stocking standard. SQCF will strive to plant all harvested areas within a maximum of one year from the date of harvest completion. Young seedlings may need to be protected from browsing by deer, and Roosevelt Elk, especially in the Mamquam and Stawamus drainages. It is recognized that this may increase reforestation costs. Following initial reforestation activities all replanted areas will be monitored on appropriate timelines to ensure regeneration success and that the objectives of reforestation defined by the assigned stocking standard are achieved.

In consideration of First Nations cultural values, planting of western redcedar and yellow cedar will be prioritized where ecologically appropriate.

7.12.3 Stand Tending

Post Free Growing (FG) there are a number of stand tending activities which can be performed to improve the quality, volume or economic value of the stand at the time of future harvesting (e.g. spacing, commercial and pre-commercial thinning, pruning, fertilization). SQCF will identify post FG stands that are appropriate for stand tending or forest health improvement activities and work with district and regional MFLNRORD staff to gain access to funding to perform activities on identified candidate areas. Stand tending activities can simultaneously be designed to restore and enhance wildlife habitat and to achieve community wildfire protection goals, and these factors will also be considered in that context.

7.12.4 Deciduous Species

SQCF will seek to maintain deciduous species across the landscape, with consideration of their cultural, biodiversity and ecosystem values. If merchantable deciduous stems are present in active harvest areas, and if market opportunities are identified, deciduous trees may be harvested where appropriate. Where conditions are suitable, small areas of the SQCF may be managed for deciduous species, considering guidance from the Hardwood Management Strategy for the Coast Forest Region (Silviculture Working Group nd).

8 Non-Timber Values Inventory, Conservation and Management

This section describes the non-timber resource values (cultural, social and environmental) found across the SQCF and outlines high level management direction. Each of these values has been identified as important to the Squamish Nation and Squamish community. Spatial inventory information was sourced primarily through BC government data.

See section 9 for a description of how the values described in this section were considered in the determination of the proposed Allowable Annual Cut (AAC).

8.1 Soils

The dominant forest soil type in the region is a ferrohumic podzol (Agriculture Canada and BC MOE 1978). Soils are typically well-drained, gravelly sandy loams, and are generally medium to coarse-textured, but local variability is high.

Protecting soil properties and soil ecosystem functions is a critical aspect of sustainable forest management. The overall goals for soils management are to minimize soil disturbance and to maintain and, where needed, restore, soil structure, productivity, stability and ecosystem and hydrologic function.

The primary forest management activities which lead to soil disturbances are road construction and maintenance and timber harvesting. Prior to any potential soil disturbance activities, soil assessments will be carried out by a qualified person to determine local soil types, and the level of risk for impacts from forestry activities. To ensure protection of forest soils, site specific plans, prescriptions and operational measures will be developed by a forest professional to guide primary forest activities based on the results of soil assessments. Terrain stability assessments will be commissioned as needed to identify areas of potential slope instability and provide measures for minimizing risks to soil and other forest resources from landslides or mass wasting events.

8.2 Biodiversity

Conservation, enhancement and, where needed, restoration of biodiversity are important goals for the Community Forest. Measures that will be applied to protect and conserve biodiversity are integrated throughout this Plan, distributed among many sections. Measures include maintaining a component of old growth across the landbase, establishing Wildlife Tree Retention Areas (WTRAs), use of retention silviculture systems and individual tree retention strategies at the site level, protecting wildlife and species at risk and their habitat, establishing riparian buffers, leaving an appropriate amount of coarse woody debris across harvested areas, and reforesting harvested areas with a diverse mix of ecologically suited species.

8.2.1 Old Growth

Old growth is a generic term to describe forests with old trees. Old growth generally has a complex stand structure with many microhabitat niches that have developed over a long period of time. While there is no single definition, in British Columbia, for management purposes, old growth is often described based on the age of the trees - usually 250+ years on the coast and 140+ in the interior (Old Growth Review Panel 2020). For the purpose of this Management Plan, old growth refers to a stand of trees 250 years or older. Most of the operable area of the SQCF landbase has been previously logged, with most of the remaining old growth located at higher elevations and in difficult to access areas.

Maintaining an appropriate level of old growth is one of the overarching goals for the Community Forest. SQCF is committed to managing for old growth through the application of provincial and district policies such as Landscape Unit Plan objectives. The primary mechanisms for managing and maintaining a component of old growth stands and structure within the Community Forest at the landscape and at the stand level are through consistency with established objectives for Old Growth Management Areas (OGMAs) and Wildlife Tree Retention Areas (WTRAs). Old growth structure will be maintained or promoted through appropriate harvest systems and block level retention strategies. When applied in younger stands, these strategies improve structural diversity and can lead to the development of old growth structure over time. Old growth may be recruited by not logging some areas that were previously logged.

Various areas of the SQCF are prioritized for non-timber values and in which timber harvest is prohibited or restricted (i.e. Cultural Sites, Wildland Zone, Wildlife Habitat Areas and Ungulate Winter Ranges). Portions of these areas contain old growth or include younger stands which will develop into old growth over time, thus also contributing to the maintenance and recruitment of old growth values.

8.2.2 Old Growth Management Areas

Old Growth Management Areas (OGMAs) are legally established across the Community Forest with the objective of maintaining a component of intact old growth stands across the landbase. The SQCF contains a total of 1076 ha of established OGMAs in 36 polygons (Appendix 1: Forest Cover and Biogeoclimatic Zones map). Timber harvesting within OGMAs is restricted to only minor alterations for specific reasons and is subject to requirements to ensure suitable replacement areas are identified and established.

SQCF will operate consistent with the land use orders establishing old growth areas restricted from harvest and these stands will contribute to representative old growth features and values being maintained across the landscape.

8.2.3 Wildlife Tree Retention Areas

The primary purpose of WTRAs is to provide stand-level biodiversity attributes and habitat for wildlife tree users on every cut block. In addition to valuable habitat, wildlife tree retention provides a present and future source of coarse woody debris (CWD), a source of native mycorrhizal fungi and locally adapted tree seed, arboreal lichen, and invertebrates. Patch retention also maintains understory shrubs and herbs in an undisturbed state that can result in protection of other elements of biological value and provides for recolonization of the cut block. In general, WTRAs provides for some structural diversity both now and in the future (BC 2006). A total of 131 ha across the SQCF area are designated as WTRA.

Legal objectives for WTRA targets are established across the SQCF landbase. The targets are defined as the WTRA percentage required to be retained for each cut block. Areas designated as WTRA will be retained for the long term (i.e. until the trees on the net area to be reforested of the cut block to which the WTRA relates have developed attributes that are consistent with a mature seral condition).

The selection of areas for WTRAs will prioritize areas containing wildlife trees or trees with increased biodiversity values (e.g. broken tops, perching platforms, nesting cavities, nests, bear dens) and areas with evidence of wildlife use (e.g. game trails, day beds). Riparian areas which generally contain higher ecological diversity values will also be prioritized for designation as WTRAs. Other objectives, including

protection of culturally valued botanicals and plant communities will also be considered when identifying suitable WTRAs.

SQCF will operate to meet or exceed the legal requirements for the amount of each cutblock harvested that is retained as WTRA. Consistent with FRPA, FPPR, and the Mamquam and East Howe Landscape Unit Plans, the minimum WTRA target percentage is 7%.

8.2.4 Individual Tree Retention

Biodiversity will also be promoted at the site level by retaining individual trees. Trees chosen for retention will include a range of species, ages, diameter classes and heights. Retention trees will be selected to cover the range of variability found within the stand, to maintain representation of the current stand values, and to enhance or restore structural diversity for the longer term. During block design, SQCF managers will strive to arrange retention (group retention and individual stem retention) so that the majority of harvested cutblocks are consistent with the definition of a retention silviculture system. Individual tree retention will typically range between 5-20sph on any given block. Very small cutblocks may meet the definition of a retention system without in-block tree retention.

8.2.5 Stand Structure Enhancement and Restoration

The Community Forest contains some areas of young, dense, closed canopy second growth stands with relatively low biodiversity and wildlife habitat values. Some of these previously logged areas were planted with only one species. Through the course of forest harvesting design and subsequent reforestation, SQCF will seek to gradually diversify the stand structure and species in these stands and across the landbase.

SQCF will consider conducting silviculture treatments (e.g. thinning, pruning, underplanting) to diversify stand structure and habitat if the activities are financially viable, and/or partnership funding is available.

8.3 Wildlife

Management and conservation of wildlife and their habitat is a management priority and goal for the Community Forest. A wide range of wildlife species inhabit the lands within the SQCF, some of which have been identified as requiring special consideration during forest management. These include regionally important wildlife and ungulate species such as Mountain Goat and Black-tailed deer and various species at risk.

All forest management and harvesting activities will be consistent with the objectives set by government for protection of Identified Wildlife species and their habitat. "Identified Wildlife" can be broadly described as umbrella species, and protection of these species and their habitats translates to benefits to a number of other forest dwelling wildlife species. SQCF will work cooperatively with wildlife management agencies and interested citizen science groups to monitor wildlife populations.

8.3.1 Wildlife Species at Risk and Wildlife Habitat Areas

Within the SQCF, Marbled Murrelet (*Brachyramphus marmoratus*) is the only species at risk with established Wildlife Habitat Areas (WHAs) and General Wildlife Measures (GWM). The purpose of WHAs is to conserve those habitats considered most limiting to a given species. WHAs designate critical habitats in which activities are managed to limit their impact on the wildlife species for which the area was established (BC MOE nd). GWMs are the specific legally defined practices by which the WHAs are managed.

There are additional species at risk with potential to be present within the SQCF, such as Coastal Tailed Frog (*Ascaphus truei*), Northern Goshawk (*Accipiter gentilis laingi*), Pacific Water Shrew (*Sorex bendirii*), Grizzly Bear (*Ursus arctos horribilis*), and Peregrine Falcon (*Falco peregrinus*) for which no WHAs have been established within the boundaries of the SQCF and which will be addressed through other measures at the site level. In addition, specific wildlife features identified during site planning (e.g. bear dens, mineral licks, raptor nests, high value forage areas) will be managed to preserve or maintain their function.

For some of the above listed species and other species, WHAs have been established outside the SQCF, in other parts of the Sea to Sky Natural Resource District (DSQ), in habitats that were considered of higher value. A process is underway to establish WHAs in the DSQ for Northern Goshawk.

8.3.1.1 Marbled Murrelet

The Marbled Murrelet is a small, north pacific seabird (BC MELP 1998). Along the British Columbia coast, Marbled Murrelets nest primarily on mossy platforms high up in the canopy of large old growth conifer trees located generally within 50km of marine foraging areas” (BC MFLNRORD 2018a). The federal recovery strategy (Environment Canada 2014) and the BC provincial implementation plan (BC MFLNRORD 2018a) for Marbled Murrelet recovery lay out short-term and long-term conservation objectives for Marbled Murrelet populations and distribution.

There are two established Marbled Murrelet WHA polygons within the SQCF, totalling 276 ha in the Mashiter Creek watershed, with associated GWMs (Appendix 1: Cultural Features, Water and Wildlife map).

The purpose of the existing WHAs is to protect key Marbled Murrelet habitat. The WHAs will be managed in accordance with the GWMs, which specify:

- No primary forest activities are permitted except for in certain limited circumstances, and
- Do not develop sites, trails, facilities or structures for recreational purposes.

Outside of the WHAs, much of the operable area of the SQCF has a low likelihood of containing the biophysical and structural attributes needed for Marbled Murrelet nesting habitat, due to the predominance of younger age classes. However there are some patches of old growth, and the entire Community Forest lies within 20 km of Howe Sound (an ocean fiord) and thus is potential nesting habitat in terms of its distance from the ocean. All proposed harvest areas will be assessed as to whether they contain suitable nesting habitat. If presence of either habitat or the species is detected, measures will be taken to protect them. Such measures will be developed in consultation with a Marbled Murrelet habitat specialist.

The recently completed Marbled Murrelet - Current Condition Report of the Howe Sound Cumulative Effects Project (BC MFLNRORD 2018b) identifies the two main Landscape Units in the Community Forest (East Howe and Mamquam LUs) as showing a moderate risk of exceeding nesting habitat depletion thresholds by 2032. Management considerations and recommendations put forth through the report and related decision-support tools (when available) will be taken into account and considered for implementation where relevant and feasible.

8.3.1.2 Coastal Tailed Frog

Coastal Tailed Frog is a unique species with very specialized habitat needs, occupying cool, clear, fast-flowing mountain streams with adjacent older forest. Management of Coastal Tailed Frog habitat simultaneously addresses site level water quality management. A management plan for the species has been prepared by the federal and provincial governments (Environment and Climate Change Canada 2018).

SQCF will manage for Coastal Tailed Frogs through site level assessments and management strategies such as the following:

- During layout and site plan field work all streams within and adjacent to planned cut blocks will be assessed by a qualified professional to determine if the riparian feature contains Coastal Tailed Frog populations or high value habitat attributes.
- Records will be kept of Coastal Tailed Frog sightings.
- Any Coastal Tailed Frog sightings will be reported to the BC Conservation Data Centre.

For streams identified as containing Coastal Tailed Frog populations or high value habitat attributes, management strategies such as the following will be applied:

- Machine crossing of streams will not be permitted except on a designated road crossing.
- Road crossings of streams will be minimized as much as practicable.
- Site Plans will include a streamside Riparian Management Area retention plan to protect and conserve Coastal Tailed Frog habitats.

The goal is to implement the strategies through creative block design and the use of existing mechanisms such as WTRAs, where the WTRAs are concentrated for streamside retention.

8.3.1.3 Northern Goshawk

There are currently no established WHAs or objectives, or Forest Planning and Practices Regulation (FPPR) Section 7 Notices in effect for Northern Goshawk (*Accipiter gentilis laingi*) in the Sea to Sky Natural Resource District (DSQ). In 2019, the DSQ District Manager issued a letter to Licensees regarding the provincial management approach for Northern Goshawk, with which this Plan aims to be consistent. The *laingi* subspecies is listed as Threatened in Canada by COSEWIC under the Federal Species at Risk Act, listed as Imperiled by the BC Conservation Data Centre, and is a Red-Listed / Endangered Species provincially. The *laingi* subspecies is also the subject of a federal recovery strategy. The *atricapillus* subspecies is not listed federally, is listed as a Species of Special Concern by the BC Conservation Data Centre, and is a Blue-Listed / Species of Special Concern provincially. It is believed that both subspecies are present in the Sea to Sky Natural Resource District and potentially within the SQCF.

When planning and conducting primary forest activities, the Licensee will adhere to the following strategies for the management of Northern Goshawk:

- Prior to initiating fieldwork, field staff will be trained in the identification of Northern Goshawks, their calls, nesting habitat and nests.
- If a potential Northern Goshawk nest is found, call playback surveys will be performed to determine if a Northern Goshawk is present in the area.
- If a Northern Goshawk or an active Northern Goshawk nest is detected, a Qualified Person will determine appropriate measures to implement in accordance with the *Wildlife Act*, the Implementation Plan for the Recovery of Northern Goshawk, *laingi* Subspecies (*Accipiter gentilis laingi*) in British Columbia (BC MFLNRORD 2018c), the Science-Based Guidelines for Managing

Northern Goshawk Breeding Areas in Coastal British Columbia (McClaren et al. 2015) and other pertinent guidance and legislation. Measures developed by the Qualified Person will be implemented by the SQCF to avoid disturbance to the nest or individual goshawks.

- These measures include, but will not be limited to: timing restrictions on activities with potential to disturb nesting goshawks and/or delineating no-work zones of an appropriate width on active nest sites. Buffer width and management considerations will be based on site specific features such as nest activity, nest location, surrounding topography, forest cover and habitat types, auditory screening characteristics of the landscape and the types of activities expected to occur adjacent to the nest.
- If a Northern Goshawk or Northern Goshawk nest is encountered when planning or conducting primary forest activities it will be reported to the BC Conservation Data Centre and Ministry of Forests Lands, Natural Resource Operations and Rural Development as soon as practical.
- Additional direction and management recommendations from the provincial government will be incorporated when available.

The goal is to implement the strategies through creative block design and the use of existing mechanisms such as WTRAs to protect the Northern Goshawk habitat where applicable.

8.3.1.4 Pacific Water Shrew

At the time of writing there are no provincial level requirements to manage for Pacific Water Shrew habitat and no WHAs have been established for this species. The current documented range of the Pacific Water Shrew in British Columbia includes the Fraser Valley, Lower Mainland and as far north as Squamish. Where site level assessments indicate presence of this species and their habitat, management for Pacific Water Shrew will be undertaken through strategies such as protection of wetlands and riparian habitats.

8.3.1.5 Grizzly Bear

The SQCF does not contain any established WHAs for Grizzly Bear. The SQCF is located within the Garibaldi-Pitt Grizzly Bear Population Unit area. The Grizzly population in this unit is considered threatened and has an extremely low population size (i.e. 2 bears). However, because of its geographical location between more numerous but at-risk grizzly bear populations in the Squamish-Lillooet and Stein-Nahatlatch grizzly populations, Garibaldi-Pitt serves as an effective critical east-west linkage habitat (Coast to Cascades nd). Habitat values for Grizzly Bears within the SQCF are generally low, in part due to high levels of human activity and high road density. Some pockets or corridors of good habitat do exist. For example, portions of the Stawamus River have some feed opportunities and connectivity to the Indian River watershed (BC MFLNRORD 2018d). There is a possibility that Grizzly Bears may travel through the Community Forest as a migration corridor.

In consideration of Grizzly Bears, the SQCF will focus on maintaining and enhancing the ability for Grizzlies to travel through and across the SQCF landbase. Measures to facilitate Grizzly travel include the establishment and maintenance of riparian reserve corridors, in-block tree retention, minimizing sight lines from roads as much as possible, minimizing new road construction and deactivating unnecessary roads.

SQCF will follow best practices for safeguarding any habitat values that are encountered during field assessments. Management considerations and recommendations put forth through the Grizzly Bear - Current Condition Report of the Howe Sound Cumulative Effects Project (BC MFLNRORD 2018d) will be

taken into account and considered for implementation where relevant and feasible. For example, the report notes that the development of a future Garibaldi-Pitt GBPU management plan should explore the value/risk of managing the Stawamus River watershed as a Grizzly Bear forage and travel corridor.

Any Grizzly Bear sightings will be reported to the Coast to Cascades Grizzly Initiative and the BC Conservation Data Centre.

8.3.1.6 Peregrine Falcon

Peregrine Falcons are birds of prey that nest on rock cliffs above features/areas where abundant prey is nearby. They are known to regularly nest on rock ledges on the Stawamus Chief, which is within two kilometers of the SQCF.

There is potential for the SQCF to contain cliff habitat suitable for Peregrine Falcon nesting. In the case that forest activities are being planned near a large cliff, field surveys will be carried out to assess whether any Peregrine Falcons are nesting in the area. If an active Peregrine Falcon nest is located near the planned block, recommended measures from a qualified professional will be applied. These will likely include prohibition of forestry activities during the nesting period that may cause disturbance (e.g. road building, timber harvesting).

8.3.1.7 Spotted Owl

While WHAs for Spotted Owl (*Strix occidentalis*) have been established within the Sea to Sky Natural Resource District, none of the areas are located within the SQCF. The closest designated WHAs are Long Term (no harvest) and Managed Forest (conditional harvest) Spotted Owl Habitat Areas on the west side of the Squamish River.

In the low likelihood that a Spotted Owl is sighted, the sighting will be reported to the BC Conservation Data Centre and SQCF will work with habitat specialists to determine appropriate management measures.

8.3.1.8 Other Wildlife Species at Risk

Other wildlife species at risk will be managed through completion of site level assessments during block layout and site plan development. Assessments will include office review of reported occurrences, available habitat descriptions and best management practices and a field review to determine the presence of the species or their preferred habitat. Available species-specific management direction or best management practices will be applied for species at risk and their habitat where identified.

8.3.2 Ungulate Winter Ranges

Within the SQCF, species specific ungulate winter ranges (UWRs) have been established through provincial legal orders to provide for and protect spatially defined areas containing high suitability habitat attributes considered to be required for the winter survival of two identified ungulate species – Mountain Goat (*Oreamnos americanus*) and Black-tailed deer (*Odocoileus hemionus*) (Table 7 and Appendix 1: Cultural Features, Water and Wildlife map). The orders provide measures for the management of each UWR polygon.

In some UWRs (i.e. Mountain Goat Winter Range, Deer Winter Range – Retention) timber harvesting is not permitted. In other UWRs (i.e. Deer Winter Range – Rotational Units) some harvesting is permitted but only consistent with specific management requirements to protect key habitat features.

All activities within 500 metres of a Mountain Goat winter range polygon, with the potential to disturb overwintering goats (e.g. timber falling, yarding, road building, blasting, helicopter flights, loading, hauling) must occur between May 1st and October 31st of any given year.

Table 7: Ungulate Winter Range Types and Area in the Squamish Community Forest

Type of Ungulate Winter Range	Area
Deer Winter Range – Rotation	206 ha
Deer Winter Range – Retention	90 ha
Mountain Goat Winter Range – No Harvest	515 ha

In addition to the legally defined measures, SQCF will apply best practices to further protect habitat at the site level. Examples include protection of unique habitat features such as mineral licks, day beds, and travel corridors, the use of retention silviculture systems, and retention of large crown trees to provide snow interception cover. These features will be protected through strategic placement of WTRAs or individual tree retention.

8.3.3 Roosevelt Elk

Roosevelt Elk (*Cervus canadensis roosevelti*, also known as *Cervus elaphus roosevelti*) is a provincially blue-listed species that was locally extirpated due to historic hunting pressure. Elk were re-introduced into the Mamquam River Watershed in 2011 and the Indian River watershed in 2006. They remain present in those areas and have moved into adjacent areas including the Stawamus River watershed.

Both Squamish Nation and Tsleil-Waututh Nation have identified through consultation that Elk is a culturally important species. In the 2007 Squamish Nation-BC Agreement on Land Use Planning and the subsequent Sea-to-Sky LRMP, Squamish Nation identified a series of Wildlife Focus Areas as important for habitat, or having special importance for Squamish Nation members for hunting or other cultural activities. The Wildlife Focus Area for Elk overlaps a large portion of the SQCF. Management intent for the Elk Wildlife Focus Area as noted in the SN-BC Agreement and the LRMP is “To expand the provincial elk reintroductions within the Squamish Territory in order to restore naturally occurring populations, and, provided conservation needs have been met, to provide future opportunities for Squamish Nation hunting for social and ceremonial purposes.”

While there are no legally established management objectives for this species, there is a Management Plan for Roosevelt Elk in BC, with objectives to maintain or increase Elk populations including in the SQCF area (BC MFLNRO 2015b). That plan and the Roosevelt Elk - Current Condition Report of the Howe Sound Cumulative Effects Project note that the Elk population in the SQCF area is increasing. On the other hand there is a high population sustainability risk, largely due to historical forest harvesting which has created current seral stage distribution that are not ideal for elk forage/cover attributes (BC MFLNRORD 2018e). The creation of small openings can diversify the seral stage distribution across the landscape towards a range that is beneficial for Elk.

Roosevelt Elk will be considered in SQCF management consistent with the Squamish Nation and LRMP direction. The provincial Elk Management Plan and recommendations of the Howe Sound Current Condition Report for Elk will also be taken into account and recommendations considered for implementation where relevant and feasible.

To maintain and promote Elk and Elk habitat the following guidelines will be applied in portions of the SQCF where Elk are known to occur:

- To reduce potential for illegal hunting and accidental vehicle strikes, roads not required for future harvest which provide access to or within new cutblocks, will be decommissioned to restrict vehicle access following harvest completion;
- To provide security cover, for cutblocks adjacent to permanent roads managers will consider strategically placing retention to provide visual screening from roadside areas;
- Harvest patterns will be designed in a way that creates a well distributed mix of open young seral stage forage areas and areas of sufficient canopy to provide security and thermal cover.

Many of these same measures also make the SQCF landscape more supportive for Grizzly Bear travel (as noted in section 8.3.1.5).

8.3.4 Furbearers

Through the Squamish Nation-BC Land Use Agreement and the LRMP, Squamish Nation identified two Fur Animal Reintroduction Areas, including one in the Mamquam watershed that lies partly within the SQCF. These areas were identified by the Squamish Nation as important habitat areas or as areas with special importance for Squamish Nation members for hunting or other cultural activities associated with these species (BC MAL 2008). The management intent is “to maintain or increase furbearer populations”, with implementation direction that “Resource developers will include management strategies to maintain furbearer habitat when operating in this area.” Furbearers refers to species trapped for fur such as Snowshoe Hare, American Marten, Lynx, and Fisher (BC MAL 2008, Squamish Nation – British Columbia Agreement on Land Use Planning 2007).

In the SQCF, furbearers will be managed through the application of general wildlife habitat and biodiversity measures at the landscape and site level, which provide protection for a wide range of species (e.g. OGMAs, UWRs, WHAs, WTRAs).

8.4 Plant Species and Ecological Communities at Risk

A number of plant species and ecological communities at risk are either known to or have potential to occur within the SQCF land base. As for the procedure for wildlife species at risk, plants species and ecological communities at risk will be managed through completion of site level assessments during block layout and site plan development stages to determine if they are present or reported to be present. Where a new occurrence or a previously reported occurrence is identified within an area of planned harvest, available best management practices and/or recommendations from a qualified professional will be applied to protect the occurrence.

8.5 Water, Riparian Areas and Fish Habitat

8.5.1 Rivers, Streams, Lakes and Wetlands

Numerous rivers, streams, wetlands and small lakes are found throughout the SQCF, representing a range of riparian classes. Main watercourses flowing through the Community Forest include the Stawamus River, lower Mamquam River, Shannon Creek, Raffuse Creek, Ring Creek and Mashiter Creek. Cheekye River runs along the northern boundary. Named lakes include Petgill Lake, Stawamus Lake and Omer Lake.

Maintenance of water quality and quantity, riparian area function and fish habitat are important objectives for the SQCF. The Licensee will manage riparian areas to maintain a multitude of values and to avoid adverse impacts on water quality and aquatic habitat, including fish habitat.

Site level management of water features and associated riparian areas and fish habitat will be accomplished by classifying, assessing and prescribing appropriate measures to protect each individual feature. SQCF plans as a minimum to apply riparian retention as per FRPA. WTRAs may also be placed in riparian areas if additional retention is called for at a particular site.

8.5.2 Community Watersheds

A Community Watershed is defined under FRPA as all or part of the drainage area that is upslope of the lowest point from which water is diverted for human consumption by a licensed waterworks.

Almost all of the Stawamus Community Watershed (3889 ha) and a large portion of the Mashiter Community Watershed (1686 ha) are located in the SQCF (Appendix 1: Cultural Features, Water and Wildlife map). The Lower Mamquam (groundwater) is also indicated as a community water supply area in the Sea-to-Sky LRMP.

The Stawamus River and Mashiter Creek Integrated Watershed Management Plan (IWMP) was completed in 1998 and approved in principle in 2000 with a caveat that work continue on resolving the issue of public access and gating of the Stawamus/Indian Forest Service Road. The purpose of the IWMP was to detail a land and resource management strategy for the watersheds. The plan presents strategies to maintain and where feasible enhance water quality, quantity and timing of flows, while allowing carefully planned resource development (BC 1998). At the time the plan was written, the community of Squamish relied on surface water from the watersheds for domestic water needs. Consequently, much of the plan addresses potential issues related to surface water contamination. For example, the plan states that “Due to their status as community watersheds, public recreation is not encouraged in the Stawamus and Mashiter valleys”.

Watershed assessments of Stawamus River and Mashiter Creek were also completed in 2001, with the primary purpose of determining whether planned forest harvesting within the watersheds would affect their water quality and timing of flows.

The Official Community Plan for SLRD Electoral Area D (By-Law 1135-2013) designates the Mashiter Creek and Stawamus River watersheds as “Community Watershed Protection Areas”, in which the primary land management priority is to maintain water quality. Permitted uses include appropriately managed resource extraction, dispersed outdoor recreation, and auxiliary uses related to these activities. Intensive recreation is discouraged.

8.5.3 District of Squamish Water Supply System

The District of Squamish’s primary source of potable water is groundwater drawn from seven wells at the Powerhouse Springs well field, fed by the Ring Creek aquifer. The well field is located within the SQCF, along the eastern boundary just north of Mamquam River. The aquifer is comprised of glacial outwash and alluvial sediments that filled an ancestral paleochannel. These sediments are approximately 50m in vertical thickness and are made up of medium to coarse sand and gravels interrupted in places by silty horizons. The width of the aquifer is about 500 metres wide in the vicinity of the well field and may widen to 1500 metres up the valley (Piteau Associates 2014).

Water system improvements in the last decade have allowed the District to move away from its reliance on the surface water supplies from Stawamus River and Mashiter Creek, and to the groundwater system. Two surface water source intakes at Stawamus River and Mashiter Creek have been taken out of normal operation in recent years, but are able to provide emergency and backup water supply to the District of Squamish if needed (Opus DaytonKnight 2015). The Stawamus intake is located along the Community Forest boundary at the downstream end of the Stawamus River. The Mashiter intake is located west of the northern part of the Community Forest, along Mashiter Creek.

The Powerhouse Springs Well Protection Plan commissioned by the District of Squamish defines a Well Protection Area, identifies potential risks and contaminants, and suggests management strategies. The plan proposes the creation of a Groundwater Protection Zone, and its designation as a Community Watershed Protection Area. The Plan is recognized in the current OCP, which includes a policy to “Monitor land use activities and employ best management practices to protect surface and ground water supply zones in line with the Powerhouse Springs Well Protection Plan” (District of Squamish Official Community Plan Bylaw 2500, 2017 “Schedule A”, Policy 216b).

A portion of the District of Squamish municipal lands have since been zoned “Groundwater Protection (P-6), with the intent of long term protection of the community water system (District of Squamish Bylaw 2620, 2018). Forestry is a permitted use within the Groundwater Protection Zone, excluding log sort operations.

Risks and hazards to groundwater from timber harvesting are noted as hydraulic oil and fuel, with a low relative risk level. Recreational use is also assessed, with hazards noted as hydraulic oil, fuel and illegal dumping – also with a low risk level (Piteau Associates 2014).

8.5.4 Water Management in the SQCF

The SQCF will implement best practices for drinking water protection in the community watersheds/community water supply area and groundwater protection area. Forestry activities within the watersheds will meet or exceed FRPA requirements. Consistent with the existing IWMP, SQCF will operate in a manner that maintains water quality, quantity and timing of flow.

In case of forest fire, the use of chemical fire retardants in the community watersheds should be avoided.

SQCF offers to work with government agencies and others to update the Stawamus River and Mashiter Creek IWMP. New watershed assessments will be completed as needed.

8.6 Parks and Protected Areas

The boundaries for the SQCF were carefully delineated around any parks and protected areas, so there are no overlaps. Four Provincial Parks share borders with the SQCF – Alice Lake Park, Garibaldi Park, Stawamus Chief Park and Protected Area and Shannon Falls Park. Significant lengths of the Park/Community Forest boundaries consist of WHAs, OGMAs (in which harvesting is not permitted) or Deer Winter Range conditional harvest areas.

In any cases in which SQCF activities have the potential to impact a Park, SQCF will notify and work with BC Parks to determine appropriate management actions to avoid, minimize or mitigate potential

impacts, including consideration of windthrow hazard, terrain stability, water quality, risk of invasive species introduction, and wildlife corridor connectivity. SQCF managers will offer to carry out site visits with BC Parks to any proposed harvest areas near protected areas.

Consistent with the recommendations in the Sea-to-Sky Coordinated Access Management Plan (BC 2009), SQCF will take care that forestry activities do not facilitate motorized access to Garibaldi Park. SQCF will discuss and coordinate with BC Parks on a case by case basis as to whether they want any forestry roads with new potential access to the Park to remain or be deactivated.

8.7 Cultural Heritage and Archaeological Values and Resources

First Nation cultural heritage resources include trees, wild plant foods, botanical medicines and other forest resources, including wildlife, that are utilized by a First Nation for food, social, treaty or ceremonial purposes; and culturally modified trees and other historical and archaeological artifacts, sites and locations that are important to the cultural practices, knowledge, spirituality and heritage of a First Nation (BC MFLNRO 2013).

The SQCF area contains a variety of First Nations cultural heritage resources. Some of these are publicly identified and mapped (e.g. Squamish Nation Cultural Sites). Others may come to light in the course of site level communications and planning for the Community Forest

SQCF will operate in a manner consistent with protecting cultural heritage resources that are the focus of a First Nations traditional use that is of continuing importance to that people, are determined to be important, valuable and scarce, and that are likely to be adversely impacted by forestry activities.

SQCF will work with the Squamish Nation and other First Nations with interests in the Community Forest area during block referrals to identify and protect cultural heritage resources as much as possible during forest management activities.

Historic sites from diverse human activities from the last 150 years are another aspect of cultural heritage that will be considered in management of the SQCF.

8.7.1 Squamish Nation Siiyamín ta Skwxwú7mesh (Cultural Sites)

Two Cultural Places have been established within the SQCF to preserve cultural heritage and archaeological values identified by the Squamish Nation (Appendix 1: Cultural Features, Water and Wildlife map). Squamish Nation Siiyamín ta Skwxwú7mesh (cultural sites) are a type of Cultural Place established through the Ministerial Order – Land Use Objectives for the Sea-to-Sky Land and Resource Management Plan (BC MFLNRO 2013). These sites were identified in the government-to-government agreement on land use planning between the Squamish Nation and the Province. The two Cultural Sites within the SQCF are:

- Raffuse Creek Siiyamín ta Skwxwú7mesh (cultural site), which is completely within the SQCF (70.5 ha), and
- Stawamus Creek Siiyamín ta Skwxwú7mesh (cultural site), which lies partially within the SQCF (78 ha).

The legally defined objectives for the Cultural Sites are to:

- Protect the cultural heritage resources within them and to support First Nations' food, social, ceremonial and spiritual use of the forest.

- Maintain 100% of the forested area within the sites. No timber harvesting is permitted within them except as necessary to maintain forest health, address road maintenance activities or eliminate a safety hazard.

As per the LRMP, management intent for all Síiyamín ta Sk̓wxwú7mesh (Cultural sites) is to:

- Maintain natural and aesthetic conditions within them that are conducive to spiritual and cultural inspiration.
- Maintain resources that provide for the continuation of First Nations cultural activities and traditional renewable resource harvesting activities, including:
 - gathering traditional First Nations foods;
 - gathering plants used for medicinal and ceremonial purposes;
 - hunting, trapping, and fishing;
 - cutting selected trees for ceremonial or artistic purposes;
 - conducting, teaching or demonstrating ceremonies of traditional, spiritual or religious significance;
 - seeking cultural or spiritual inspiration; and
 - construction and use of shelters (such as camps and longhouses) essential to the pursuit of the above activities.
- Enable other compatible uses, as appropriate to the social, cultural and ceremonial values of the sites.

Objectives laid out in the LRMP and SN-BC Agreement for all Cultural Sites are to:

- Preserve and maintain resources that provide opportunities for social, ceremonial and cultural uses by First Nations.
- Protect and maintain the integrity of the First Nations cultural and heritage resources, including sacred sites, and
- Limit commercial backcountry recreational use.

SQCF will follow the management direction provided by the Order (BC MFLNRO 2013) and the LRMP to ensure protection of First Nations cultural heritage resources within Cultural Sites. In the case of harvesting areas adjacent to Cultural Sites, the harvesting plans will be developed with input from Squamish Nation, will consider windthrow and other risks, and will specify that no disturbance is permitted to areas outside of the falling boundary i.e. site plans will specify to fall away from the boundary, and strictly avoid any ground disturbance within the Cultural Sites.

8.7.2 Archaeological Values and Resources

An Archaeological Overview Assessment (AOA) was completed for the Sea to Sky District in 1997 as a source of information to be incorporated into forestry planning processes. Based on a predictive model, the AOA resulted in a series of maps which delineate areas of high, medium or low archaeological potential (Millenia Research 1997). Other information sources may include Traditional Use and Archaeology studies, if publicly available, and registered archaeological sites.

Archaeological site information will be sought and considered during site level planning and referrals with Squamish Nation and other First Nations with interests in the Community Forest area. The potential for and presence of archaeological and heritage values will be assessed at the site level, possibly through additional surveys, and considered during harvest planning activities.

8.7.3 Cedar

Western redcedar and yellow cedar are highly valued by First Nations for cultural uses. In order to maintain their presence on the landbase and facilitate access to these species the SQCF will:

- Plant or promote natural regeneration of western redcedar and Yellow cedar as a component of future stands, where ecologically suited,
- At the request of Squamish Nation or other First Nations, and where the requested wood is for cultural use, make western redcedar and/or yellow cedar wood available from planned operations, or
- Assist in identifying western redcedar or yellow cedar trees suitable for cultural use.

8.7.4 Historic Sites

Within the Community Forest there are sites, trails and features associated with diverse human activities from the settler/pioneer era - for example, remains of cabins, skid roads, railway grades, and historical forestry equipment. Some of these sites are connected with Squamish Nation members as well as members of the settler community. These features contribute to telling the story of the area, and some are incorporated into current uses. For example, many current recreation trails are located on old road and railway grades. The SQCF recognizes the cultural value of historic sites. Where identified, appropriate management for these features will be considered. Historic sites could form the basis of an interpretive program that links the modern day community of Squamish and the history of forestry in the area.

8.8 Botanical Resources and Non-Timber Forest Products

Botanical resources such as medicinal and food plants are culturally important to Squamish Nation and other First Nations. Wildcrafting and foraging (e.g. for mushrooms, berries, medicinal and decorative plants) are also becoming increasingly popular with the general public.

As noted in Section 5, botanicals and other non-timber forest products need to be considered in forest management so that they will continue to thrive and be present across the landbase, for their cultural and medicinal value, contribution to biodiversity and non-commercial use among the wider community.

A comprehensive inventory of botanical and non-timber forest products does not currently exist for the Community Forest area. The SQCF is willing to work with Squamish Nation members to compile a list of culturally important plants for management consideration, and to create an inventory system and specific management protocols.

During the first five years of operation, SQCF will explore community use and values around botanical forest products. Where specific sites or features are identified as valuable to the public or First Nations, SQCF will strive to maintain the botanical resources in forest management decisions. Possible measures to do so include retaining specific culturally valuable trees, protecting units of manageable size in WTRAs, altering block design, and maintaining or promoting valued plant communities during stand tending (e.g. not cutting them during brushing).

8.8.1 Cedar Bark

Cedar bark is highly valued by Squamish Nation community members and other First Nations and has a wide variety of cultural uses such as for making regalia and baskets. SQCF contains stands of western redcedar trees with the right characteristics for cedar bark stripping. The Community Forest recognizes

the cultural importance of cedar and cedar bark for Squamish Nation. Upon request, SQCF will work with Squamish Nation community members to locate cedar stands that are available/appropriate for bark stripping, with priority placed on areas that are planned to be logged in the near future. If cedar bark stripping has not occurred prior to timber falling, the SQCF will facilitate harvesting of bark from felled cedar trees either at the harvest site or at the log yard.

Where ecologically suitable, SQCF will plant a large component of western redcedar, to maintain and/or increase its presence and distribution across the Community Forest landbase.

8.9 Forest Health

8.9.1 Summary of Current Forest Health Issues

This section describes the most prominent known forest health issues and risks in the Community Forest area. Information was compared from the 2010 Forest Health Strategy for the Squamish Forest District (now called the Sea to Sky Natural Resource District), the 2019 Coast Area Forest Health Aerial Overview Survey, and field-based knowledge of local forest professionals.

The Forest Health Strategy provides a ranked list of priority forest health damage agents in DSQ including forest insects, pathogens, mammals and abiotic agents such as fire (Table 8).

More recently, the 2019 Coast Area Forest Health Aerial Overview Survey identified pests in the DSQ to include high incidence of Western balsam bark beetle, some Douglas-fir beetle and scattered points of drought and Balsam woolly adelgid (B.A. Blackwell and Associates 2019). Due to the ecological diversity across the survey area, there is variation in the extent to which the pest risks apply to the specific area of SQCF. Balsam bark beetle is not currently an issue in the SQCF as it primarily attacks subalpine fir – a tree species not prevalent in the SQCF. Local forest professionals observe that the incidence of forest pests in the Community Forest area is generally low and that forest health considerations of note in the SQCF include minor amounts of *Phellinus* and *Armillaria* root rot, and occasional outbreaks of Swiss needle cast in Douglas fir plantations. Hemlock dwarf mistletoe is endemic at low levels. White pine blister rust is present in the SQCF though white pine is not widely distributed. Elk browse sometimes damages young trees. Forest health conditions have the potential to change relatively quickly in the face of climate change.

Table 8. Ranking of Priority Pests in the Sea to Sky Natural Resource District

Very High	High	Medium
Mature Forests		
Laminated root rot (<i>Phellinus</i>)	Douglas-fir beetle	Swiss needle cast
Armillaria root rot (<i>Armillaria</i>)	Spruce beetle	Balsam woolly adelgid
Mountain pine beetle	Annosus root rot	Pine needle cast
Western spruce budworm	Hemlock dwarf mistletoe	Black stain root rot
White pine blister rust		Western balsam bark beetle
Fire		Western hemlock looper
		Gypsy Moth
Plantations		
<i>Phellinus</i>	Mammals (deer, elk)	Swiss needle cast
<i>Armillaria</i>	Western gall rust	Annosus root rot
White pine blister rust	Hemlock dwarf mistletoe	Dothiostroma needle blight
	Spruce weevil	Pine needle cast
	Balsam woolly adelgid	
	Douglas-fir needle cast	

Source: BC MOFR 2010

8.9.2 Fire

Management of wildfire risk in the SQCF is a high priority, especially considering its proximity to urban and residential areas. SQCF will work with municipal, regional and provincial governments, First Nations and local stakeholders to contribute to initiatives and programs designed to address wildfire risk, especially at the Community Forest/peri-urban interface.

Several wildfire protection plans overlap in the vicinity of the SQCF:

- District of Squamish Community Wildfire Protection Plan 2017 Update (B.A. Blackwell and Associates 2018),
- Squamish Nation Wildfire Protection Plan 2016 ,and
- Squamish-Lillooet Regional District Electoral Area D Community Wildfire Protection Plan 2016 Update (Pashkowski and Blackwell 2017).

In addition, the Sea to Sky Resource District Fire Management Plan 2015 Update provides a strategic framework to enhance decision making by Fire and Resource Managers at the District level (Blackwell and Bains 2015).

Each of the existing plans listed above covers a different portion of the Community Forest, with different jurisdictions. SQCF will cooperate with the District of Squamish, Squamish Nation, SLRD and others to seek funding for and implement wildfire protection plan recommendations and other fire risk mitigation measures where they interface with the Community Forest. One such example could be the implementation of fire fuel reduction treatments including commercial thinning in priority locations.

Within the first five years of operations, SQCF will develop a wildfire risk mitigation strategy specifically for the Community Forest.

Fire fuel management and wildfire risk will be incorporated into site level planning, activities and monitoring. Fire hazard assessments and abatement will be carried out consistent with the *Wildfire Act*. All operations will incorporate practices that decrease the risk of wildfire ignition and spread, for example through piling and disposal of excessive fine slash accumulations, and removing slash from roadsides to create a fuel break between the road and the block.

As noted in section 8.5.4, in case of forest fire, the use of chemical fire retardants in the Stawamus and Mashiter Community Watersheds should be avoided.

Fire risk reduction treatments may call for the creation and/or use of new stocking standards that address wildfire prevention objectives. Fuel management stocking standards will be considered and applied as appropriate.

8.9.3 Invasive Species

Invasive species are species that are not native to a region, and can have a negative impact ecologically, socially or economically. Invasive species tend to favour disturbance, grow rapidly and are hard to get rid of, while outcompeting native species. Numerous invasive species are present in the Squamish area. Climate change increases ecosystem risk and vulnerability to invasives, with a projected ecosystem change of increased spread of invasive plants following disturbance (BC MFLNRO 2016).

The Sea to Sky Invasive Species Council (SSISC) is a non-profit society that works in cooperation with organizations, governments and industry as part of a province wide effort to minimize the negative impacts caused by invasive species (SSISC nd). The SSISC plays a large role in detection, reporting and eradication as well as public education. They have developed a list of priority invasive species with management categories by region. The most current list maintained by SSISC can be accessed through their website www.ssisc.ca. A list of priority invasive plants (i.e. those considered most persistent and most difficult to manage) is also included in the 2010 Forest Health Strategy for the Squamish Forest District (BC MOFR 2010), however the list is not static as new invasive species can present themselves at any time.

SQCF will take measures to prevent the introduction or spread of invasive plants if such introduction or spread is likely to be the result of forest practices carried out by the Community Forest. Measures include minimizing new roads, soil disturbance and exposure of mineral soil, washing equipment and tracks of machines coming from other areas prior to use in SQCF and before moving to new areas (to remove seeds and plants), promptly establishing competitive vegetation (e.g. through grass seeding) in areas determined to be at high risk of invasive species establishment, and monitoring for, recording and reporting weed occurrences during site level surveys (e.g. during silviculture surveys).

The high level of recreational use in SQCF increases the chance of invasive species being unintentionally introduced or spread in the course of recreational activities. SQCF will work with relevant agencies and recreation groups to promote education about how to minimize this risk.

8.9.4 Pesticides and Herbicides

Consistent with direction from Squamish Nation, SQCF intends to avoid all use of pesticides and herbicides unless no other practicable alternative is available for specific situations.

8.9.5 Management of Forest Health

SQCF will actively manage for the maintenance of forest health and resilience. This requires monitoring at both the landscape and site level to identify outbreaks and incidences of forest pests and invasive species and to plan forest harvesting operations so that potential increases in damage, pests, and weeds do not occur. It is important to note that many forest health issues are a result of uncontrollable factors such as weather and climate patterns.

Specific strategies and processes will be put in place by SQCF to address, manage and reduce the potential for forest insect and disease outbreaks, animal damage and windthrow. Processes will include identifying, monitoring and recording pest incidence observations during silviculture surveys and pre-harvest fieldwork. Provincial and district health inventory reports will be reviewed to track and monitor landscape level trends and outbreaks. Some known forest health issues, for example hemlock dwarf mistletoe, can be addressed through strategies applied at the stand level.

8.10 Climate Change

There is strong scientific evidence that climate change will significantly affect British Columbia's ecosystems (BC MFLNRO 2016). The local area around SQCF has recently experienced more unpredictable and extreme weather patterns. Climate projections indicate that more winter precipitation will likely fall as rain rather than snow, resulting in lower snowpacks, earlier and more rapid snowmelt, and longer fire seasons. Winter precipitation is expected to increase and summer precipitation to decrease in southern and coastal BC. More extreme weather events are expected, such as heavy precipitation, windstorms and heat waves (BC MFLNRO 2016). Implications of climate change for forest management in SQCF include the potential of increased wildfire risk, increases or changes to insect pests and disease, increased vulnerability to invasive species, and challenges to seedling establishment for reforestation. SQCF recognizes the need to consider and address climate change in the course of management decisions and will do so through a combination of mitigation and adaptation approaches.

SQCF will seek to identify and practice active management approaches that contribute to climate change mitigation, drawing upon recent research on the role of forestry and wood products in this regard. Certain aspects of SQCF management have the potential to mitigate climate change by increasing the rate of removal of carbon dioxide from the atmosphere (carbon uptake) and/or by maintaining carbon where it is already stored (e.g. carbon stocks/sinks in trees and soil). Some climate change mitigation activities are already encompassed in the management approaches described throughout this plan – for example the practices of prompt reforestation, keeping growing sites occupied, silviculture and stand tending activities that increase the rate of biomass accumulation, and the practice of leaving some areas unharvested. The choice of mitigation strategies is complex and involves many factors which need to be considered together. Over the first five years of holding the CFA licence, SQCF will work with community partners to investigate a range of possible climate change mitigation strategies, and determine which ones make the most sense for SQCF in terms of feasibility and balance with all forest values.

Most adaptation strategies are existing elements of good resource management that require broader application. Considering the reality of climate change it is more important than ever to implement best practices for ecosystem management, to focus on maintaining ecological resilience and to operate with increased consideration of uncertainty. Possible strategies to reduce climate change induced risks to forest ecosystems include promoting resilience by maintaining or increasing diversity at all scales,

maintaining landscape connectivity and assisting migration, controlling invasive plants and excessive disturbance, and limiting cumulative effects of multiple land use activities (BC MFLNRO 2016). SQCF will actively monitor climate change factors and address them through adaptive management. As new information emerges regarding forest management practices in a changing climate, it will be considered and best practices implemented by SQCF to ensure the long-term viability of the forest to provide the range of values and opportunities described in this plan. New stocking standards based on climate change predictions and field observations may be adopted.

8.11 Terrain

While some areas of the SQCF are gently sloping, much of the terrain is steep, rugged and mountainous. A topography map (see Appendix 1) illustrates the relative steepness throughout the Community Forest area and serves as a tool to assist managers in identifying slope constraints and operability restrictions.

8.12 Roads and Access Structures

Due to prior logging history, most of the SQCF landbase is already well roaded (Appendix 1: Overview and Access map). Some portions of existing roads are currently deactivated or overgrown, such as the old roads to higher elevation portions of Mashiter watershed and the Stawamus headwaters. Forest Service Roads (FSRs) within the SQCF include the Stawamus - Indian FSR and Shannon Branch, Mamquam FSR, Ring Creek South FSR, Ring Creek North FSR and Mashiter Creek FSR. Roads in the SQCF are used by a variety of industrial, recreational, commercial and public users.

Access to Mashiter Creek watershed is currently restricted by two locked gates, one at Alice Lake Park and the other at the Brandvold Creek bridge (5.3 km on Ring Creek FSR).

The SQCF management approach for roads is to maintain an access network that facilitates forest management activities while minimizing the amount of area impacted by roads and minimizing site disturbance. In the course of access management planning, SQCF will consider the needs of non-forestry users such as recreation groups. Roads developed for timber harvesting will be designed and located to as much as possible avoid sensitive ecosystem features, high productivity areas for culturally important botanical resources or other important forest resource values. Roads will be designed and managed in such a way as to minimize impacts on wildlife, maintain hydrology patterns, and avoid erosion and incursion of invasive species.

The SQCF will adopt a policy of “no net gain” of permanent road area. The long history of harvesting in the area now held in the SQCF has created an extensive road network which effectively accesses all operable areas within the SQCF. It is expected that some new in-block and short spur access roads will be required to be constructed during harvest operations. For any length of new road, following harvest, rehabilitation measures will be applied to return the road to a productive forested state. In the case of new permanent roads needing to be maintained for future access, an equivalent area of unnecessary existing road returned to a productive state.

All designs, construction, use, maintenance and repairs to roads and associated structures in the SQCF will be consistent with BC resource road engineering standards and guidelines and applicable regulations under FRPA.

Management of the SQCF will take in to account the recommendations in the Sea-to-Sky Coordinated Access Management Plan (BC 2009).

8.13 Recreation

Outdoor recreation is a central part of the Squamish lifestyle and culture, and a key draw for tourists visiting the area. Recreation-based and supporting service businesses provide significant economic contributions to the region. Recreation activities take place around specific features (e.g. trails and climbing areas) and across the broader landscape. Recreation includes both non-commercial (public) and commercial activities. The main recreational activities in the Community Forest area include mountain biking, hiking, trail running and walking, dirt biking and trials biking, rock climbing, mountaineering, nature viewing, swimming, camping, backcountry skiing and snowboarding, and snowshoeing. Mountain biking is probably the biggest recreational activity within the Community Forest, in terms of number of participants, frequency of use and contribution to the local economy. Trails and other recreation features are widespread across the SQCF (Appendix 1: Recreation Features map).

8.13.1 Trails

There is an extensive trail network within the SQCF that is greatly valued by the community and is a catalyst for attracting visitors to the region. Squamish is known internationally as a world class mountain biking destination. The sport of mountain biking is becoming increasingly popular, and use levels are expected to continue growing. Hiking and trail running contribute significantly to trail use and are likewise increasing in popularity. Numerous races and events representing a range of trail users occur throughout the year that rely on the trail network. The Sea to Sky Gondola has also created trails throughout Shannon Basin which are an important aspect of the experience for gondola visitors and locals alike.

The trail locations and names depicted on the Recreation Features map (Appendix 1) are sourced from the BC government data warehouse for established trails (i.e. those with Section 56 or 57 designations under the *Forest and Range Practices Act*) and from Trailforks for non-established trails. In some cases, actual trail locations and names may differ from those shown, as some are not accurately mapped, have multiple names and/or some information is inconsistent between data sources. Additional trails may exist that do not yet show up in the databases.

SORCA is undertaking a trails inventory and mapping project, which will help to give a more complete and clear picture of trails in the SQCF landbase and adjacent areas. SQCF is committed to partnering with trails groups to support trail inventory work, so that the results are as useful as possible for land management planning.

It is significant to note that the Squamish trail network has been primarily developed and maintained by grass roots community organizations and dedicated individuals over the past twenty years. During that time the trail network has continued to expand in step with the ongoing growth of the community of Squamish, and it is the trail amenities and other recreational opportunities that have helped to drive this growth. The trail network exists, and has been developed, on a landbase that has always been considered as “working forest”, where timber harvesting has continued to take place as the network expanded. The evolution of the trail network has also seen an evolution in how trails are developed, approved and maintained. From small groups of individuals developing simple trails with hand tools, hard work and no permissions, to big budget machine built trails by specialized trail building companies. Community biking and other recreation user groups have been established and boast large memberships which have been key to facilitating the expansion of the network through funding of trail projects, working with government agencies and private landowners to gain approval and permissions

for trail development and through establishing dialogue with local forest management and harvesting companies to facilitate shared use of the landbase.

8.13.2 Sky Pilot Wildland Zone

A large portion (1236 ha) of the Sky Pilot Wildland Zone is within the Community Forest. Wildlands are land use zones created through the Sea-to-Sky LRMP and established via Ministerial Order. Individual Wildlands have been assigned one of four emphases - Cultural, Recreation, Tourism and Wildlife - to reflect the resource value of primary consideration and with which the Zone's management must be consistent. The Sky Pilot Wildland Zone contains popular climbing and mountaineering areas and is designated as Recreation emphasis.

As per the implementation direction in the LRMP, commercial timber harvesting is not allowed in Wildland Zones (BC MAL 2008). During the course of forest management activities, SQCF will avoid causing disturbance to the Wildland and will seek to avoid negative effects on recreation values associated with the Wildland.

8.13.3 Other Recreation Features

The Squamish landscape holds many excellent rock climbing and mountaineering locations, which are highly valued by the local community and visitors alike. While many of the main climbing crags are outside the Community Forest, some lie within or are accessed through it. Specific areas of interest include Mount Habrich and Sky Pilot. The local climbing community has expressed strong interest in maintaining access to and the quality of climbing areas. SQCF has committed to work with the Squamish Access Society to identify valued climbing areas and access routes, and to consider them during forest management.

Petgill Lake was also identified as a valued recreation feature by the public during open houses for the SQCF, for swimming. The headwaters area of Stawamus River holds several lakes and an area with great recreation potential, however is currently very difficult to access due to a bridge being out.

The Shannon Basin as a whole is recognized as a popular year-round recreation destination for locals and tourists that is growing in popularity, along with interests in expanding commercial recreation offerings in the area (Fraser Basin Council nd).

8.13.4 Recreation Sites and Reserves

Two provincially designated recreation sites are found within the Community Forest – Debecks Hill Recreation Site (proposed) and the Mamquam Parking Recreation Site. One recreation reserve is located in Raffuse Creek. Recreation reserves are areas identified as having potential for the creation of forest recreation sites. They have no specified objectives or strategies. The Raffuse Creek Recreation Reserve is located within the Raffuse Creek Siiyamín ta Skwúwú7mesh (cultural site), for which management direction is legally specified (section 8.7.1). It also lies within an OGMA.

8.13.5 Recreation Management

SQCF recognizes the importance of recreation to the local community. SQCF will strive to maintain and enhance recreation opportunities and access within the Community Forest. Forest operations will be conducted in such a way as to minimize and mitigate impacts to recreation features and activities. The Community Forest will monitor recreation use levels and take a leadership role in addressing any emerging issues of overuse, irresponsible use or impacts to ecology, wildlife and adjacent residents.

SQCF will remain in regular communication with and actively collaborate with user groups and government agencies around recreation management and planning.

See section 6.3.2.1 for more details on the process for information sharing and engagement with community stakeholders regarding recreation and trails management.

8.14 Visual Quality

Scenic quality is strongly valued by the local public, Squamish Nation and area visitors and is a management priority for SQCF. Much of the Community Forest is highly visible from many places across Squamish, Highway 99 and popular recreational areas.

Provincial legislation and policies guide the management of the visual landscape within known Scenic Areas. Scenic Areas are visually sensitive areas or scenic landscapes identified through the provincial Visual Landscape Inventory (VLI). SQCF lies within the Sea to Sky Scenic Area and Shannon Creek Scenic Area. The VLI identifies areas that may be visually impacted by forest management activities and stratifies the landscape into distinct “visual polygons” with Visual Quality Objectives (VQOs). The Sea to Sky VLI was completed around 1995, with a re-inventory currently in draft form for the Sea to Sky Natural Resource District. The VQOs for the Shannon watershed were revised in 2016 in recognition of the Sea to Sky Gondola.

VQOs for the SQCF are labelled on the Visual Inventory map in Appendix 1. Most VQOs in the SQCF are defined as Partial Retention, with some Retention VQO polygons in the Shannon Creek area (as per the 2016 update), and some Modification polygons in Mashiter and Raffuse/Stawamus.

Maintaining the visual quality of viewsapes is an important objective for management of the SQCF. SQCF aims to minimize the visual impact of forest harvesting operations, especially when viewed from significant public viewpoints, residential areas or when traveling along major transportation corridors within the plan area. Forest operations will be consistent with established Visual Quality Objectives.

SQCF will take note of the management considerations put forth through the Visual Quality – Current Condition Report of the Howe Sound Cumulative Effects Project (BC MFLNRORD 2018f) and future aspects of the process, and participate in implementing suggestions where relevant and feasible.

For the most part the VLI and VQOs are out of date in relation to how the local landscape is accessed, valued and viewed. SQCF may revisit visuals in the context of how they fit with the multitude of resources being managed in the community forest. SQCF offers to participate in a process to update the VQOs.

8.15 Other Tenures

A variety of Crown land tenures and licences exist within and overlap the SQCF license area, as detailed in the following sub-sections. SQCF will maintain a database of relevant contacts to be consulted in the case of being potentially affected by proposed forestry activities. Consultation protocols are described in section 6.3.2 (Public Engagement and Consultation Process).

8.15.1 Commercial Recreation Tenures

At the time of writing there are numerous commercial recreation tenures overlapping the SQCF area, and numerous tenure applications in process. Interest holders for existing tenures include Squamish Mountain Bike Festival Society, Black Tusk Helicopter, Sea to Sky Gondola, Sea to Sky Adventure Company, Dialed In Cycling, Whistler Alpine Guides Bureau, and several individuals. Activities undertaken or proposed to be undertaken through these tenures include guided mountaineering and rock climbing, mountain biking, hiking, heli skiing, trail riding and other guided outdoor recreation. The Community Forest recognizes the importance of commercial recreation businesses to the local economy and lifestyle, and will work with tenure holders to minimize impacts and seek opportunities for mutual benefit.

8.15.2 Guide Outfitters

There are no guide outfitter tenures overlapping the SQCF.

8.15.3 Mineral Tenures

There are fourteen mineral claims that are partially or wholly within the SQCF.

8.15.4 Rangeland

There are no rangeland tenures within the Community Forest.

8.15.5 Traps

Four traps exist wholly or partially within the SQCF area – TR0207T002, TR0207T001, TR0208T011 and TR0205T018.

8.15.6 Utility Right of Ways

Numerous statutory right of ways are located across the SQCF. These include the natural gas pipeline along Stawamus River, above ground electric power lines for BC Hydro, and penstocks and transmission lines associated with independent waterpower projects

8.15.7 Water Licences

Numerous water licences are located within the SQCF. These licenses allow the holder(s) to extract a specified amount of water from surface or ground water sources. Purposes of the water use include domestic water supply, power production, commercial, and community waterworks. Licensees include the District of Squamish, Garibaldi Springs Water Company, Sea to Sky Gondola, Canadian Hydro Developers, Ledcor Power and various private individuals. The location of water license points of diversion within the SQCF are illustrated on the Cultural Features, Water and Wildlife map in Appendix 1.

8.15.8 Other Crown Tenures

A variety of other tenures apply to small areas across the SQCF for uses such as communications infrastructure, waterpower and utility, transportation, quarrying, environment, conservation and recreation, and for First Nations interests.

8.15.9 Adjacent Land Holders

The SQCF shares borders with Squamish Nation private lands, other private lands including residential areas such as the Ring Creek community, four provincial parks (Alice Lake, Garibaldi, Stawamus Chief

and Shannon Falls), several woodlot parcels (W0028 and W1930), Crown land and the District of Squamish. A portion of the Community Forest lies within the District of Squamish municipal boundary.

9 Proposed Allowable Annual Cut and Rationale

9.1 Proposed Allowable Annual Cut

The proposed Allowable Annual Cut (AAC) for the Squamish Community Forest is 20,000 m³/year.

9.2 Allowable Annual Cut Rationale

9.2.1 Overview

An estimate of the AAC for the SQCF was first determined by approximating the area of Timber Harvesting Land Base (THLB) and multiplying that area by the Sea to Sky District average Mean Annual Increment (MAI) of 5.13m³/ha/yr (as determined by dividing the AAC by the THLB at the time, for the Soo TSA), to obtain an approximate annual timber yield. The annual yield serves as a proxy for the AAC. As described in section 7.5, the Sea to Sky District average MAI of 5.13m³/ha/yr is likely a conservative estimate to use for the SQCF. Considering a comparison of Analysis Units and site index classes between the Soo TSA THLB and the SQCF THLB (section 7.5), the MAI for the SQCF landbase is likely higher due to having a larger proportion of higher productivity areas. As such, in the AAC proposal of 20,000m³, the Licensee is estimating that the MAI is somewhat higher than the District average.

The THLB for SQCF was estimated through a two-step process. In the first step (section 9.2.2), a THLB confirmation was provided by MFLNRORD which accounted for the spatially-defined net downs as applied in Timber Supply Review 3 (TSR 3) for the Soo TSA, with an additional net down to account for the Shannon watershed Visual Quality Objectives (VQOs), which were updated in 2016. The MFLNRORD THLB included both contributing and partially-contributing forest areas.

In the second step (section 9.2.3), SQCF applied further THLB net downs to address additional factors expected to impact the THLB and AAC. These include non-spatial deductions for Wildlife Tree Retention Areas (WTRAs) and recreation, and area-based deductions calculated for existing roads, riparian buffers and the transmission line for the Skookum project.

As much as possible, the determination was based on or consistent with the assumptions in TSR 3. Some factors addressed in TSR 3, such as those modelled with yield /volume flow information, could not be addressed without doing a full scale Timber Supply Analysis. These are described in section 9.2.5. Where feasible, area-based net down estimates were applied.

In Section 9.2.6, anticipated land use planning processes, updates and potential land use changes are identified which may influence the SQCF THLB and AAC, along with their estimated direction of pressure on the AAC in the future (i.e. upwards, downwards, neutral).

As agreed in discussion with District Manager for the Sea to Sky Natural Resource District, SQCF will conduct a full Timber Supply Analysis within the first five years of the licence term, at which time it is expected that more complete, updated and detailed information will be available.

9.2.2 Step One – FLNRORD THLB Confirmation

A summary of the factors addressed in the MFLNRORD THLB confirmation is provided below in Table 9. The factors listed are spatially-defined areas removed from the total SQCF land base which will not be part of the THLB. The removals are consistent with TSR 3 (except for the Shannon Basin visuals) and reflect factors including operability, presence of non-timber uses and legally designated no-harvest

areas due to wildlife, cultural, environmental or social values. Out of the total SQCF area of 11,303 ha, this first step resulted in an estimated THLB of 4163 ha.

In some cases, multiple net down factors overlap on the landbase. For example, portions of the Marbled Murrelet Wildlife Habitat Areas overlap with Old Growth Management Areas. For the purpose of calculating the net downs to the THLB, such areas are only removed once. The order in which net downs were applied was consistent with TSR 3. Where these factors/values are described in Sections 7 and 8 of this Management Plan, the full areal extent of each feature is provided, regardless of overlap.

Table 9. Summary of Net Down Factors in the MFLNRORD THLB Confirmation

Squamish Community Forest K5Y	Area (Ha)	Description
Total Area	11,303	Total Land base of SQCF
(MINUS – Exclusions and Net Downs)		
Non-BC managed	26	Transmission lines, pipeline right-of-ways
Non-forested	2969	Rock, Ice, etc.
LRMP Wildland	26	Sky Pilot Wildland
LRMP Cultural Sites	104	First Nations Cultural Sites
Old Growth Management Area	982	Established OGMA
Inoperable	1241	Inoperable areas/inaccessible locations
Ungulate Winter Range [Goat]	11	Mountain Goat Winter Range
Ungulate Winter Range [Deer - Retention]	89	Retention Deer Winter Range
Environmentally Sensitive Areas [ESA1]	522	Steep slopes, sensitive soils, etc.
Non-Commercial Species	83	Deciduous species with no commercial value
Unmerchantable	438	Low value / poor quality timber stands
Marbled Murrelet Wildlife Habitat Area	41	Wildlife Habitat Area - Marbled Murrelet
Visual Quality Objectives - Shannon	608	The THLB in Shannon Basin was reduced by 608 ha (80%) to reflect the revised Shannon watershed VQOs established in 2016
TOTAL NO HARVEST AREA	7140	Sum of no Harvest Areas
THLB Estimate from MFLNRORD	4163	TOTAL AREA <i>minus</i> TOTAL NO HARVEST AREA

9.2.3 Step Two – Additional Factors Addressed by SQCF

Table 10 summarizes the additional net down factors that SQCF applied to the THLB determined in the first step. The additional factors are the transmission line right-of-way for the Skookum run-of-river hydro project, existing roads, riparian buffers, recreation and Wildlife Tree Retention Areas (WTRAs).

The Skookum transmission line was a direct area deduction of 29 ha.

To obtain the deduction for roads (108 ha), the total length of existing status roads in the SQCF was calculated and buffered by 10m (5m from each side of road centerline).

For riparian features, all S1, S2 and S3 classified waterways across the SQCF, based on government mapping data, were buffered by the required Riparian Reserve Zone widths. The resulting total area (180 ha) was removed from the THLB obtained in step one.

For recreation, a 1% non-spatial net down (42 ha) was applied to the THLB from step one to reflect an estimate of the area which would not be available for harvest due to set asides for recreation feature buffers, for example around trails. The choice of 1% as a number reflects the approach taken in TSR 3, which applied a 1% reduction to the expected yield to account for recreation.

For WTRAs, a percentage-based area net down was applied to estimate the THLB area reduction needed to account for WTRA objectives. The percentage of the SQCF landbase required to be held as WTRA is established by Landscape Unit Orders for the East Howe Landscape Unit (LU), the Mamquam LU and FPPR Section 66. WTRA requirements in the East Howe LU range from 5%-10% depending on ecosystem type. In the Mamquam LU, FPPR Section 66 applies and requires that a minimum 7% of the total area of harvested blocks for the previous 12 month period be designated as WTRA. Based on these requirements, a 5% non-spatial reduction (208 ha) was applied to the THLB from step one to account for WTRA removals across the SQCF. The choice of 5% is based on an understanding that while the equivalent of a minimum of 7% of the harvested land base will be established as WTRA, it is estimated that a portion of the required WTRA will be in areas already removed from the THLB for other reasons (e.g. for OGMAs, riparian and recreation feature buffers, wildlands, cultural sites, visually sensitive and inoperable areas).

The SQCF approach for WTRAs differs from that of TSR 3, which applied a 3.2% decrease of volume yield to account for reductions in the AAC for WTRAs. The use of an area rather than a yield deduction was more feasible to apply in this simplified initial AAC determination for the SQCF, and the use of 5% rather than 3.2% is more representative of the specific SQCF landbase.

Several other factors were considered and, for this initial analysis, determined not to need specific netdowns. These factors are the application of retention silviculture systems with individual tree retention (discussed in sections 7.12.1 and 8.2.4), considerations for Northern Goshawk (section 8.3.1) and consideration of historic sites (section 8.7.4).

In terms of silviculture systems, TSR 3 modeled clearcut with reserves and even aged management. SQCF intends to apply primarily retention silviculture systems with retention levels ranging from 5 to 20 sph. Retention system refers to the spatial distribution of the retention trees, not the level of retention. The use of 5-20 sph of retention is not expected to have a measurable effect on the amount of harvested volume available or on the growth rates of trees in reforested areas. No deductions from the THLB are considered necessary to address the envisioned retention distribution and levels.

Northern Goshawk was not identified as a species of concern during the TSR 3 process and no area or volume reductions were applied during that process. The THLB determination for SQCF did not remove any area to account for this species. Aspatial net downs applied for WTRA are considered to be sufficient to account for any future management requirements if a Northern Goshawk presence is identified.

With regards to historic sites, the impact to THLB/AAC from consideration of historic sites is expected to be negligible. If retention is called for to address historic sites, this could be incorporated through creative block design and the use of retention budget.

Table 10. Additional THLB Net Down Factors Applied by SQCF

Squamish Community Forest K5Y	Area (Ha)	Description
THLB Estimate from MFLNRORD	4163	As per Table 9
(MINUS – additional deductions)		
Non-BC managed	29	Skookum project transmission line right-of-way
Roads	108	Existing length of status roads with 10m buffer
Riparian	180	Riparian Reserve Zone buffers applied to S1, S2, S3 features across the SQCF based on government mapping data
Recreation	42	1% aspatial net down applied to MFLNRORD THLB estimate
Wildlife Tree Retention Areas	208	5% aspatial net down applied to MFLNRORD THLB estimate
TOTAL NO HARVEST AREA	567	Sum of No Harvest Areas
SQCF THLB	3596	THLB Estimate from MFLNRORD <i>minus</i> additional area deductions applied by SQCF

Note: The roads and riparian buffer net downs were calculated by MFLNRORD.

The removal of area from the total SQCF land base for the factors listed in Tables 9 and 10 gives a baseline THLB for the SQCF of 3596ha.

9.2.4 AAC Proposal

Multiplying the approximated THLB of 3596 ha by the Sea to Sky District average MAI of 5.13m³/ha/year results in an annual yield of 18,447 m³/year. However, since the SQCF landbase likely contains more high productivity areas relative to the overall District (as illustrated in section 7.5), the MAI for SQCF is likely higher than the District average. Based on a THLB of 3596 ha, the SQCF MAI would need to be at least 5.56 to produce an annual yield of 20,000 m³. An MAI of 5.56 is likely within the bounds of a reasonable productivity estimate for SQCF and may still be an underestimate. As such, SQCF is proposing an initial AAC of 20,000 m³/year. More detailed estimates of site productivity will be gathered as part of a timber supply review to be conducted within five years.

9.2.5 Factors not included in the THLB determination and estimate of their AAC impact

For a variety of reasons, some factors included in TSR 3 were not directly addressed in the THLB/AAC determination for SQCF. These factors are further described below along with their estimated impacts on the SQCF AAC. The factors include those modeled in TSR 3 as yield and volume flow constraints i.e. rotation deer winter range, visual quality objectives, and community watersheds, for which the modelling was too complex to replicate without carrying out a full scale Timber Supply Analysis. For some of the factors (e.g. community watersheds) updated and/or new planning information is called for that will support such an analysis.

Rotation Deer Winter Range (UWR-RO) areas are subject to harvest flow constraints to maintain a minimum of 20% of the total rotation range polygon as functional winter range, while allowing 20% of the remaining area to be harvested every 20 years. The areal extent of UWR-RO polygons within the SQCF (~206 ha), represent approximately 6% of the THLB (~3600 ha). Given their relatively small area in

relation to the THLB it is likely that harvesting constraints in UWR-RO do not have a major impact on the rate of harvest or timber flow available from the SQCF on any given year.

Visual Quality Objectives (VQOs) are assigned to portions of the SQCF land base that have been deemed as visually sensitive and which may be visually impacted by forest management activities. TSR 3 modeled visual constraints by restricting the timing and level of harvest within visual polygons to a specific percentage of the polygon (as determined by the assigned VQO) over a green up period of 15 years. In TSR 3 a clear-cut silviculture system was modeled to determine the maximum area of allowable harvest/maximum percent alteration for each visual polygon within each green-up harvest period. Within the SQCF, the planned use of small openings and retention systems (5-20 sph retention) is expected to decrease the visual impact of individual harvested areas. Use of small blocks and retention silviculture systems is anticipated to increase the amount of area within each visual polygon which could be harvested within each green up period, in comparison with the TSR 3 clear-cut maximum area removal approach. It is anticipated that the use of small patch cuts with retention will allow harvest levels to remain consistent with the assigned VQOs.

The above described balance only need apply to the SQCF lands other than Shannon Basin, as a THLB removal of 608 ha was applied in step one of this analysis to account for the revised Shannon watershed VQOs. Shannon Basin covers about 23% of the entire SQCF landbase. As such, no additional area net downs for VQOs are considered to be required.

Community Watersheds Almost all of the Stawamus Community Watershed and a large portion of the Mashiter Community Watershed are located in the SQCF. The watersheds span approximately 49% of the total SQCF landbase. Management of the community watersheds is guided by an Integrated Watershed Management Plan which needs to be updated as the values identified and land use direction provided are not consistent with current values and uses of the watershed areas. Due to the lack of current planning direction, considerable uncertainty exists as to how to address the community watersheds in the AAC determination. SQCF offers to contribute to updating the watershed management plan in partnership with others as appropriate.

In the interim, 180 ha were removed from the SQCF THLB to account for riparian reserve buffers associated with S1, S2 and S3 features across the SQCF (Table 10). A portion of these removals are from the community watersheds. No net downs were applied specifically for harvest constraints based on community watershed management.

Future Roads and Landings Due to the policy of “no net gain” of permanent road area across the SQCF, no removals for future road areas were applied in the SQCF THLB/AAC determination. The long history of harvesting has created an extensive road network which effectively accesses all operable areas within the SQCF. While it is expected that some new in-block and short spur access roads will need to be constructed during harvest operations, for any length of new road, following harvest, rehabilitation measures will be applied to return the road to a productive forested state. New roads constructed as permanent will be required to have an equivalent area of existing road returned to a productive state.

In TSR 3, future roads and landings were modeled as a 2.3% volume net down to account for the area estimated to become occupied by permanent roads over time. The application of this factor was deemed not relevant for the SQCF.

Forest Health Factors Forest health factors were not directly accounted for in the THLB/AAC at this stage as the way to model them was too complex to replicate in this initial simplified AAC determination. Forest health factors will likely result in a small reduction in AAC.

9.2.6 Future Land Use Processes and Changes and their THLB/AAC Implications

Several anticipated planning processes, information pieces and a variety of potential land use changes are recognized that may impact the timber supply for SQCF in the future. These are described below.

The SQCF has committed to two significant public/community planning processes within the first five years of the licence term - a master trails planning process and a Ring Creek Residents planning process. Both of these processes have the potential to imply land management different from TSR 3 assumptions.

The Stawamus River and Mashiter Creek Integrated Watershed Management Plan (1998) is more than 20 years old and needs to be updated. As these two watersheds occupy a significant portion of the SQCF, it is expected that revised watershed plans will better inform the future timber supply analysis.

The SQCF intends to review and/or revise the site productivity information for the SQCF to obtain an estimate specific to the SQCF landbase. It is possible that the productivity of the SQCF is higher than that indicated by the average MAI for the Sea to Sky District.

The Visual Landscape Inventory and Visual Quality Objectives (VQOs) for the SQCF landbase outside of Shannon basin are out of date. SQCF may revisit VQOs in the context of how they fit with the multitude of resources being managed in the community forest. SQCF offers to participate in updating the VQOs. Much of SQCF is located in close proximity to urban and residential areas and may be subject to future wildfire/fuel abatement treatments. The licensee has received preliminary direction that such treatment areas would be unavailable for a period of twenty years from the treatment date. The scale/areal extent of planned treatments to be implemented is unknown at this time, so there is uncertainty around the impact to AAC. Given the amount of interface forest, there is potential for some impact to the AAC but this will be better known as treatment plans are clarified in future years.

There are several projects proposed within the SQCF in the near future which have the potential to reduce the THLB. These projects include, but are not limited to:

- The Fortis natural gas pipeline project
- The establishment of the Debecks Hill recreation site
- The construction/establishment of additional recreation and tourism infrastructure

The SQCF has considered all of the potentially significant management factors identified in this MP and without trying to pre-determine the outcome of the various planning processes, estimates the following impacts to THLB and/or AAC from these processes once they are complete.

- Master Trails Planning process: moderate downward pressure on THLB and AAC
- Ring Creek Residents Planning process: slight downward influence on THLB and AAC
- Update of the Stawamus River and Mashiter Creek Integrated Watershed Management Plan: neutral impact on THLB and AAC
- Site productivity assessment based on the SQCF landbase: moderate upward influence on AAC
- VQO revisions/updates: neutral
- Fire risk abatement treatments: unknown

- Land reductions/removals for other uses: slight reduction in THLB and AAC
- Construction and establishment of recreation and tourism infrastructure: moderate downward pressure on THLB and slight downward pressure on AAC

It is important to note that any one of the above factors could have a significant effect on the outcome of the SQCF timber supply analysis and it is critical to the long-term sustainability and success of the SQCF that all of the factors be considered in balance with each other so as not to overly impact other goals and objectives for the Community Forest.

Community expectations for the management of the Community Forest may result in some significantly different assumptions being used for the SQCF as compared to TSR 3. As such, SQCF plans to gather information based on actual planning and operations conducted during the first few years of the licence and to use that information to inform a timber supply analysis within five years.

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11 Appendices

Appendix 1: Maps

- Overview and Access
- Ring Creek Residents Planning Unit
- Forest Cover and Biogeoclimatic Zones
- Cultural Features, Water and Wildlife
- Topography
- Recreation Features
- Visual Inventory

Appendix 2: THLB Confirmation and Timber Inventory from MFLNRORD

Appendix 3: Summary of Goals for Years 1-5

Measures to Consult

- Establish and fine tune the overall communications and engagement processes with Squamish Nation, other First Nations, community groups and other stakeholders
- Establish a Community Advisory Group made up of representatives of diverse community interests. Work with the Board of Directors and Community Advisory Group to refine operational guidelines.
- Enter into a trails master planning process with all interested groups, with the aim to develop a trails management strategy, including inventory, operational guidelines and phased harvest plans in the context of trails
- Enter a process with Ring Creek residents to guide management within the Ring Creek Residents' Planning Unit

Botanical Forest Products and Non-Timber Forest Products

- Explore community values around botanical forest products such as mushrooms, berries, and cultural botanicals.

Fire

- Develop a wildfire risk mitigation strategy specifically for the Community Forest

Climate Change

- Work with community partners to investigate a range of possible climate change mitigation strategies, and determine which ones make the most sense for SQCF in terms of feasibility and balance with all forest values.

Visual Quality

- SQCF offers to contribute to reviewing and updating the Visual Quality Objectives for the community forest landbase outside of Shannon basin.

Allowable Annual Cut

- Conduct a Timber Supply Analysis (a detailed inventory of timber and non-timber values) to confirm the long term sustainable harvest rate in light of community values and priorities