Integrated Stewardship Strategy
Sunshine Coast Timber Supply Area

DRAFT Situation Analysis

V 1.2

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forest ecosystem solutions ltd.

Prepared for:

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BRITISH COLUMBIA | Ministry of Forests, Lands, Natural Resource Operations and Rural Development

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1 Introduction

The Resource Practices Branch (RPB) of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) is developing a new management unit planning framework; Integrated Stewardship Strategy (ISS). The ISS is a sustainable forest management planning framework with the objective to integrate all aspects of landscape-level and operational planning for each Timber Supply Area (TSA).

The ISS will integrate Type 4 Silviculture Strategies with timber supply review (TSR) to reduce duplication and redundancies where possible by sharing inventories, management zones, analysis units, Timber Harvesting Land Base (THLB) definitions and management assumptions. It is expected that the ISS process will improve the linkages to landscape level fire management, the Cumulative Effects Framework, the Forest and Range Evaluation Program's (FREP) multiple resource values assessments (MRVA) and other regional, management unit level or landscape level plans and strategies.

Provincial Timber Management Goals and Objectives (FLNRORD 2017) and the Chief Forester's Provincial Stewardship Optimization/Timber Harvesting Land Base (THLB) Stabilization Project (FLNR 2015) provide guidance to the ISS.

The ISS will consolidate all resource management related goals, objectives and strategies into one plan and then link these to a TSA wide tactical plan. The process includes a framework for monitoring and auditing, and continuous improvement.

The ISS aims to improve resource planning in British Columbia by addressing specific issues such as:

- Species at risk management and reserve allocation. Are the reserves placed where they provide the conditions most needed by species at risk?
- Ability to investigate options to co-locate reserves to provide required habitat benefits while preserving or increasing harvest opportunities;
- Current and predicted harvest levels – are the assumptions regarding the transition from old growth stands to second growth and managed stands accurate and, if not, what are the possible impacts on timber harvest and habitat values?
- What options are available to address habitat and timber supply using silviculture treatments?
- Effective use of public funds for new and existing funding initiatives;
- A feedback loop for adaptive management; ability to assess decision outcomes and modify behaviour based on new and better information; and,
- First Nations consultation; better understanding of the expected impacts of planned activities on First Nations' values.

1.1 Objectives

The project has the following objectives:

- Understanding and geospatial representation of existing and proposed legislation, regulations, and policy that conserve stewardship values;

- Seek information on ongoing monitoring and cumulative effect work, and collaborate to identify additional work needed;
- Collaborate with the intent to comprehend common landscape values;
- Develop decision support products for comprehensive and durable decisions based on scientific and traditional knowledge;
- Manage natural resources to continue providing the values that support traditional and modern-day use;
- Work to identify the underlying issues and work towards solutions;
- Integration of the scenario-based silviculture strategy process (Type 4) with the most recent Timber Supply Review (TSR), if feasible;
- Prioritization of activities and treatments necessary to help with achievement of timber supply and habitat needs;
- Create a tactical plan documenting the strategies, targets, activities and treatments to improve or benefit other resource values; the targets would be agreed upon by those on the planning team; and,
- Incorporate climate change as a consideration into the resource management planning process including the identification of any associated risks (e.g. wildfire).

1.1 Context

This document is the first of six documents that make up an IRMP. The documents are:

1. Situation Analysis – describes in general terms the current situation for the unit. The Situational Assessment forms the starting point for the initial planning group meeting to identify issues and opportunities.
2. Data Package – describes the information that is material to the analysis including data inputs and assumptions.
3. Modeling and Analysis report – provides modeling outputs and rationale for choosing a preferred (combined) scenario.
4. Integrated Stewardship Strategy (ISS) Tactical Plan – this document translates the combined scenario into an Integrated Stewardship Strategy (ISS) and a Tactical Plan. It includes an investment strategy and provides treatment options, associated targets, timeframes and expected benefits.

   The ISS is not limited to silviculture and related investments only. The ISS also contains a harvest strategy and a retention strategy. The intent of the harvest strategy is to provide harvest scheduling direction that would satisfy the objectives of the ISS, while the retention strategy may make recommendations towards efficient placement of retention areas.
5. Final Information Report for Statutory Decision Makers

   The Final Information Report will synthesize the information and analysis outcomes from all the previous project phases into one document. The intent of this document is to provide all the vital information regarding the analysis assumptions and analysis outcomes in a more consolidated form. It will recap issues identified throughout the project, reiterate targets and assumptions, and present relevant results.
6. Monitoring Plan

2. Sunshine Coast TSA

The Sunshine Coast TSA is a large TSA of approximately 1.56 million ha in size on the south coast of British Columbia. It is located circa 100 kilometers north of the City of Vancouver extending from Howe Sound in the south to the end of Bute Inlet in the north (Figure 1). In the latest timber supply review (TSR) in 2012, approximately 426 000 ha of the TSA area were classified as the Crown Forested Land Base (CFLB), while the area available for timber harvesting – the timber harvesting land base (THLB) – was determined to be approximately 222,894 ha.

The allowable annual cut (AAC) for the Sunshine Coast TSA was set at 1,197,949 m^3 per year in January of 2012 by the Chief Forester. The AAC includes a partition of 95,000 m^3 per year for red-alder leading stands, and a 3,000 m^3 per year partition for other deciduous-leading stands. After the 2012 AAC determination, the land base in the TSA changed: a small area from TFL 39 was added to the Sunshine Coast TSA and a Community Forest Agreement (CFA) area was removed from the TSA. The net impact of these adjustments was an increase in the AAC of 6,869 m^3 per year. This was formalized in August of 2013, when the AAC was set at 1,204,808 m^3 per year.

The TSA is biologically diverse with high biodiversity, conservation, tourism, timber and First Nations values. Fourteen First Nations claim traditional territories in the TSA, while five First Nations have reserve lands within its boundaries. Two First Nations are signatories to the Nanwakolas Strategic Engagement Agreement. On April 5, 2016, the Tla'amin Final Agreement came into effect.

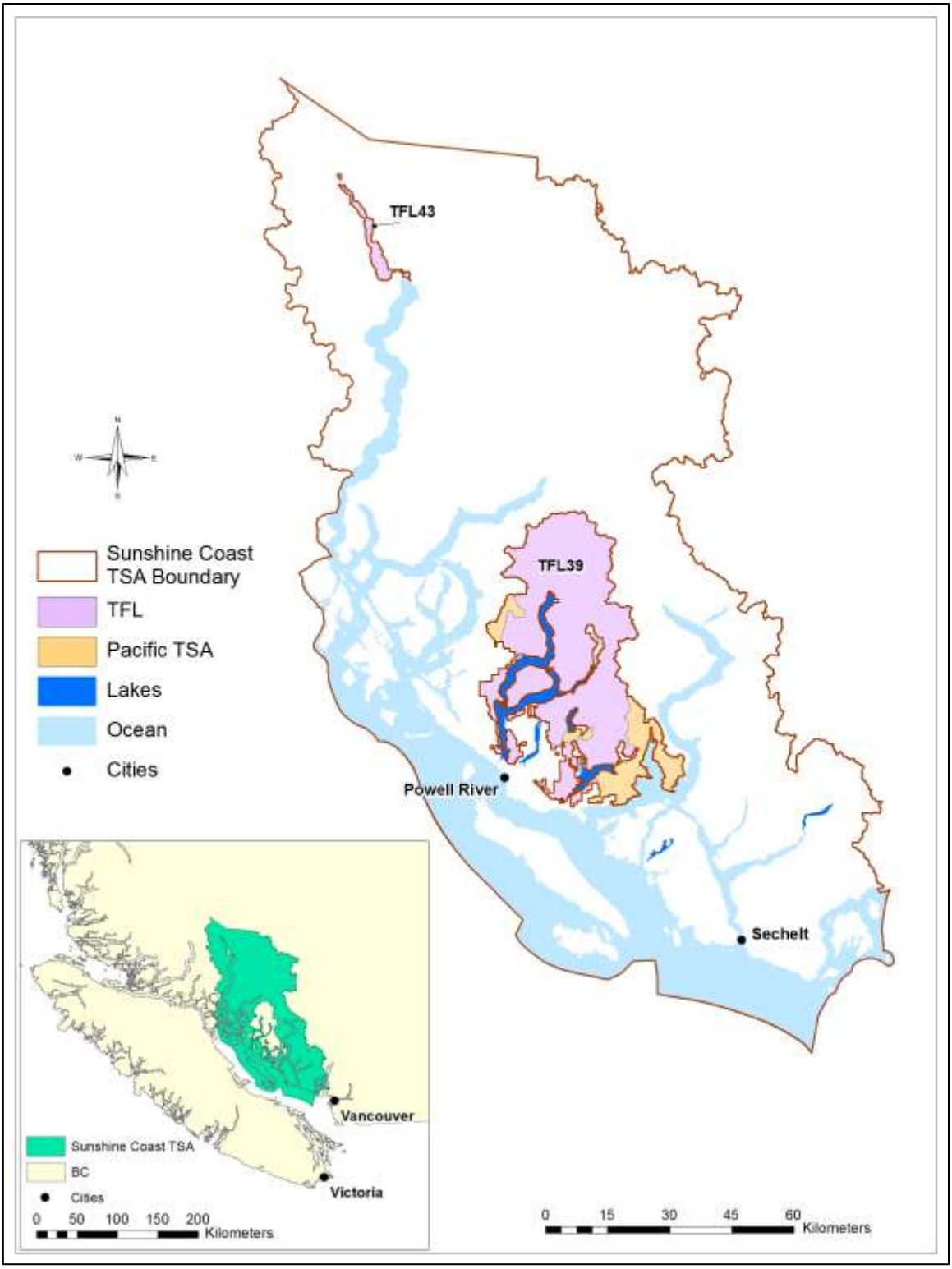

Figure 1: Sunshine Coast TSA

3 Summary of Current Plans and Strategies

3.1 Provincial Timber Management Goals and Objectives

The Provincial Timber Management Goals and Objectives (FLNRORD 2017) set high-level provincial timber management goals, objectives and targets and provide direction for planning across all management units (https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/silviculture/timbergoalsobjectives2017apr05_revised.pdf). The goals are set for timber volume flow over time, timber quality, tree species composition, stand productivity and growing stock, and inherent site capacity.

3.1.1 Timber volume flow over time

Goal: Promote resilient and diverse forest ecosystems that will provide a sustainable flow of economically valuable timber that generates public revenues and supports robust communities, resulting in healthy economies that provide an opportunity for a vigorous, efficient, and world competitive timber processing industry.

The objective is to ensure a reliable and consistent harvest of timber over time to support the economic and social objectives of the government. The management of timber volume flow will be integrated with the management of other key forest values, promoting resilient and diverse forest ecosystems. The ultimate goal is an internationally competitive timber processing industry, while the forests are managed in a sustainable manner based on the latest science and research.

The provincial targets for timber flow are currently expressed as the sum of all AACs from various management units. This will likely change as planning processes such as the Sunshine Coast ISS may set management unit targets which will potentially become provincial targets when summed up.

3.1.2 Timber quality

Goal: Maintain a diversity of timber related economic opportunities through time

The objective is to maintain options for the future by growing a range of timber products. This can be accomplished by maintaining the share of high-value tree species in all management units at pre-harvest levels and limiting the proportion of lower value species. New forests must be regenerated with high quality stock capable of producing high quality forest products.

Targets:

- The production of a minimum of 10% premium grades from B.C. forests;
- Locally, ensure that TSR assumptions regarding operability (size, species, location) are consistent with harvest performance.

3.1.3 Tree Species Composition

Goal: To maintain or enhance timber and non-timber values, forest health, and resilience, through the management of tree species composition.

Timber and non-timber values, forest health, and resilience can be maintained or enhanced through the management of tree species composition. Where ecologically feasible, regenerated forests are expected to consist of a mix of species at both the stand and landscape level to reduce

pest and disease risks and to maintain options in the long term. Furthermore, climate change and future risk must be considered in reforestation by promoting species compositions that reduce susceptibility to ecological and economic risk and by avoiding species which are currently disproportionately prevalent.

The planting stock should be grown from known seed sources and the seeds are expected to be from genetically diverse trees, climatically suitable to various planting sites.

The strategy outlines the following targets:

- A minimum of 80% of harvested areas should be planted with more than one species;
- The change in pre- and post-harvest tree species composition in the last five reporting periods is expected to be within +/- 2 percentage points.
- Within management units, local targets should incorporate assumptions and outcomes from the most recent TSR and associated forward-looking strategies such as this strategy.

3.1.4 Stand productivity and growing stock

Goal: Maintain or improve stand productivity.

Epidemics, such as the recent MPB infestation, require that strategies and options be developed for prompt management unit analysis and planning after significant and sudden changes to growing stock from natural disturbances and salvage harvesting. Reforestation and management should target full site occupancy of growing space with consideration for other values and risks. As with tree species selection, the proportion of high-risk species in management units should not be increased and, if the future risks are assessed as high for such species, their share should be gradually reduced. Stand level management decisions should not be made only on the basis of return-on-investment but should also consider risks and management unit objectives and targets. If seed for improved growth or pest tolerance is available, it should be used

Targets:

- Harvested areas will be reforested with tree species and stocking levels that exceed 75% of the target stocking 80% of the time;
- Regeneration delay should be less than 2 years after harvest;
- By 2020, 75% of all trees planted will be grown from selected seed with an average genetic gain of 20%.

3.1.5 Inherent site capacity

Goal: To maintain the inherent site capacity of B.C.'s forested ecosystems

It is expected that the permanent footprint of roads, trails, and landings will not exceed what is necessary for logical and efficient natural resource management, while road construction and maintenance should follow natural drainage patterns and flows without contributing to slope failures or chronic erosion over the long term.

Forest management activities must not result in significant soil compaction and/or erosion on areas that will be reforested. Rather, management activities should provide for maintenance or recovery of proper nutrient cycling and soil nutrition.

Targets:

- The province has incorporated explicit maximum percentage limits for site disturbance and construction of permanent access structures into the FPPR, s. 36. The target is to have the average site disturbance for the province at less than 5%.

3.2 Landscape Unit Plans

There are 25 landscape units (LU) within the Sunshine Coast TSA. Two of these are entirely within TFL 39, while 18 have approved landscape unit plans, all of which establish old growth management areas (OGMA). Some LU plans also establish stand level retention targets (WTR). WTR are managed as per the Forest and Range Practises Act (FRPA) and the Landscape Unit Planning Guide (MFR, 1999). Where LU plans exist, WTR targets may be specified (Table 1); for all other landscape units and BEC variants the WTR targets is 7%.

OGMAs have been approved in 18 of the 25 LUs. Non-legal OGMAs (draft or proposed) exist in 5 LUs.

Table 1: Landscape unit plans in the Sunshine Coast TSA

Landscape Unit	BEO	Plan Status	Objectives	Comment
Bishop	I	No plan		Non-spatial targets
Brem	I	Proposed OGMAs	OGMA	Observe OGMAs
Brittain	I	July 10, 2012	OGMA	
Bunster	I	Sept 21, 2000	OGMA/WTR	
Bute East	I	July 10, 2012	OGMA	
Bute West	I	July 10, 2012	OGMA	
Chapman	L	Nov 25, 2002	OGMA/WTR	
Cortes	I	July 10, 2012	OGMA	
Deserted	H	Proposed OGMAs	OGMA	Observe OGMAs
Haslam	L	Draft OGMAs	OGMA	Observe OGMAs
Homathko	H	Sept 27, 2001	OGMA/WTR	
Homfray	I	Dec 22, 2014	OGMA	
Howe	I	July 10, 2012	OGMA	
Jervis	I	Dec 22, 2014	OGMA	
Lois	L	Nov 25, 2002	OGMA/WTR	Overlaps with Pacific TSA and TFL 39
Narrows	I	Proposed OGMAs	OGMA	Observe OGMAs
Powell Daniels	I	Jan 16, 2002	OGMA/WTR	Non TSA – TFL 39
Powell Lake	L	Nov 25, 2002	OGMA/WTR	Non TSA – TFL 39
Quatam	I	Dec 22, 2014	OGMA	
Salmon Inlet	I	Dec 22, 2014	OGMA	
Sechelt	L	June 2004	OGMA	
Skwawka	H	March 20, 2002	OGMA/WTR	
Southgate	H	Dec 22, 2014	OGMA	
Texada	L	Draft OGMAs	OGMA	Observe OGMAs
Toba	H	No plan		Non-spatial targets

The District would like to review and possibly update the LU plans to ensure that they are working as intended, i.e.:

- Has any harvesting or road building occurred in OGMAs?
- Have the wildlife tree patches (stand level retention) achieved their objectives?
- Have the goals of the LU plans been accomplished?
- How close are we to achieving the old seral representation recommended in the Landscape Unit Planning Guidebook?
- What is the distribution of late seral between the non-contributing land base, constrained land base and unconstrained land base?

3.3 Sustainable Forest Management Plans

Independent organizations that measure forestry operations against standards for sustainable forest management complete forest management certification in Canada. The certification offers supplementary assurance that forest lands are managed legally, sustainably and in compliance with internationally acknowledged standards for sustainable forest management.

Certification is acquired for various reasons; consumers may consider certification in their purchasing decisions, while forestry companies can demonstrate responsible resource management through certification.

The operations by Interfor, A&A Trading LTD. and BCTS are certified by the Sustainable Forestry Initiative (SFI), an internationally-recognized sustainable forest management certification program.

Interfor's and A&A Trading Ltd.'s websites provide further information regarding their certification.

http://www.interfor.com/responsibility/environment#Environmental%20certifications

https://www.aatrading.com/sustainability.html#sustain_certification

BCTS has published a provincial plan for certification:

https://www.for.gov.bc.ca/ftp/HBT/external/!publish/Web/EMS2/BCTS-Provincial-SFM-Plan.pds

3.4 Strategic Land Use Plan for the shíshálh Nation

The shíshálh Nation Constative Area covers approximately 182,232 ha (43%) of the productive forest in the Sunshine Coast TSA (Figure 2). The shíshálh Nation Strategic Land Use Plan is a high-level strategic plan that expresses the land use interests of the shíshálh Nation. The plan establishes several land use zones for cultural heritage resources that exist in each zone. Furthermore, it provides general direction on how development should or should not occur within these zones.

While the shíshálh Nation Strategic Land Use Plan has not been established through legislation, its provisions are considered in the context of resource use applications within the asserted territory of the shíshálh Nation.

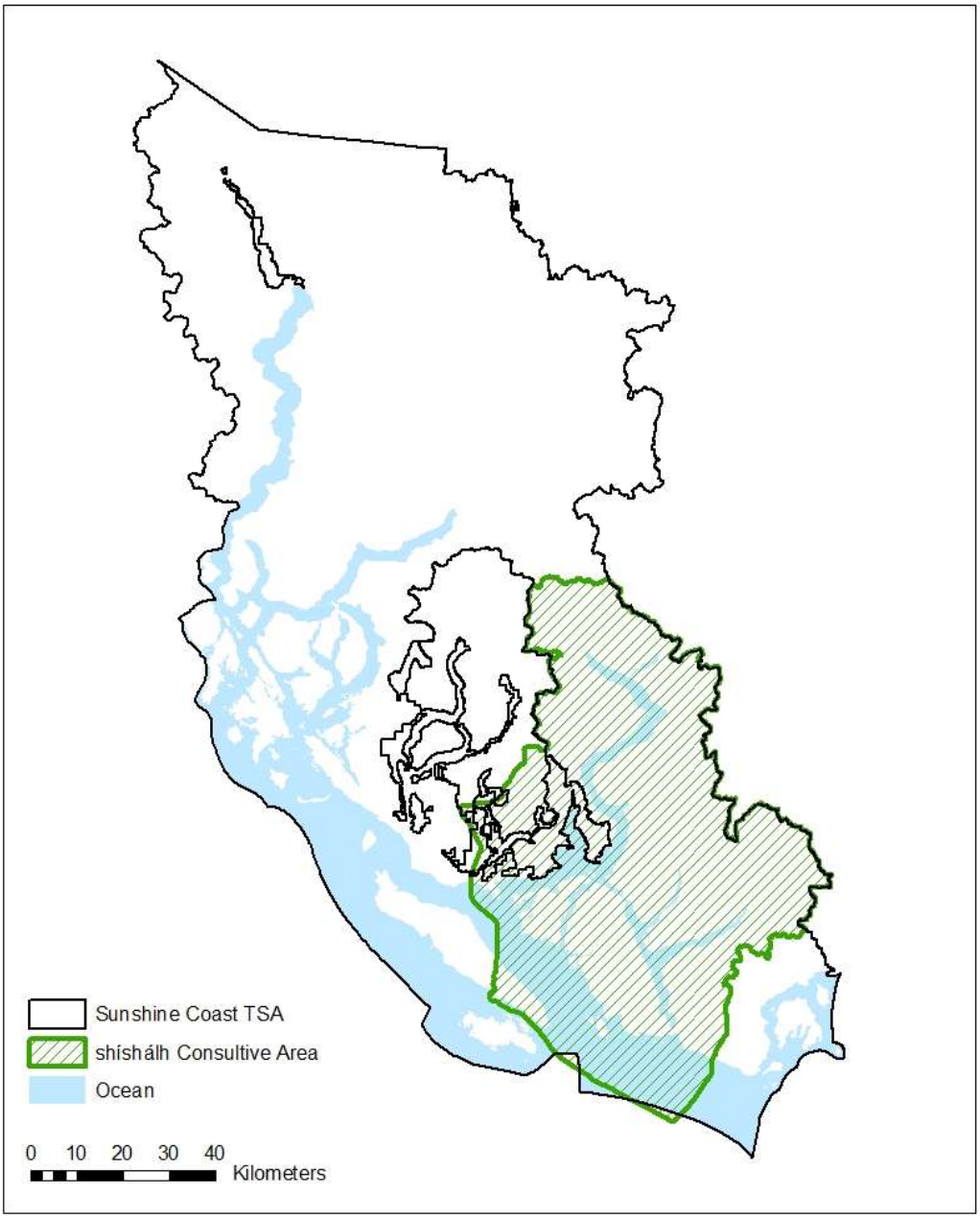

Figure 2: shíshálh Nation Consultative Area

3.5 Silviculture Strategies

3.5.1 Incremental Silviculture Strategy (Interim)

A Type 1 Incremental Silviculture Strategy was completed for the Sunshine Coast TSA in1998 (Ministry of Forests 1998). The objective of the strategy was to provide strategic guidance to the district staff for designing and implementing an incremental silviculture program.

The silviculture strategy set quantity and quality targets for the timber supply; it set to increase the (at the time) declining mid-term harvest forecast to the short-term harvest level. Another working target was to increase the long-term timber supply by about 25%.

The quality target was to manage regenerated stands to yield at least 10% premium logs by volume, with most of the remaining timber supply being of sawlog quality.

The above targets were to be achieved through:

- Earlier green up (reduced regeneration delay, fertilization at planting);
- Partial harvesting / commercial thinning in VQO zones;
- Repeat fertilization of managed stands;
- Increasing regenerated stand volumes by 15% mostly by tree improvement;
- Pruning and spacing.

3.5.2 Type 2 Incremental Silviculture Strategy

A Type 2 incremental silviculture strategy was completed for the Sunshine Coast TSA in 2001 and revised in March 2002. Four main management objectives for the TSA were identified in a workshop by the licensees and the Ministry of Forests staff:

- Increase timber diversity and quality;
- Increase timber volume;
- Make old growth attributes available sooner through silviculture;
- Make dense hemlock/fir/cedar stands productive for timber and habitat through silviculture.

The strategy proposed to achieve the above management objectives on an annual budget of up to $1.5 million, net of commercial thinning (CT) costs. The short-term funding was to be directed to spacing, fertilization and pruning; pruning treatments constituted over 60% of proposed funding.

The district staff and some licensees disagreed with some of the strategy components; in their view operational constraints within the Sunshine Coast TSA were not adequately included in the analysis due to the scope and budget limitations of the project. The strategy also emphasized investing on medium and poor fir sites for some regimes, which were not supported.

3.5.3 Fertilization Plan and Silviculture Opportunities Mapping

A fertilization plan was prepared for the TSA in 2007 by B.A. Blackwell and Associates. Furthermore, a silviculture opportunities mapping project was completed in 2011.

3.6 Incremental Silviculture

Table 2 shows the treated areas by incremental silviculture treatment for the Sunshine Coast TSA between 2005 and 2017. Fertilization has been the treatment of choice with 6,681 ha treated over 13 years.

Table 2: Incremental silviculture in the Sunshine Coast TSA

Year	Fertilization (ha)	Rehabilitation (ha)	Juvenile Spacing (ha)
2005	0	0	10
2006	0	0	28
2007	2,285	0	27
2008	2,320	0	18
2009	0	0	43
2010	0	0	12
2011	0	43	98
2012	0	18	61
2013	0	30	0
2014	0	34	0
2015	0	37	0
2016	1,685	13	0
2017	390	0	0
Total	**6,681**	**175**	**296**

3.7 Provincial Stewardship Optimization/THLB Stabilization

MPB infestation impacts, other resource industries, and the need to establish habitat for Species at Risk (SAR) are constraining the available land base for timber harvesting. In 2015 the Chief Forester initiated the Provincial Stewardship Optimization/THLB Stabilization project.

The intent of the project is to optimize stewardship while minimizing its impacts and stabilizing the Timber Harvesting Land-base (THLB). In practical terms, the project attempts to find more efficient ways throughout the province to meet all the SAR requirements and objectives for the 11 FRPA values. This can be done by investigating different combinations of locating the many constraints on timber harvesting. The primary objective of the project is to stabilize or increase the size of the THLB by optimizing the placement of spatial constraints, without changes in land use plans or legislation.

The Sunshine Coast ISS can be used as a tool to investigate opportunities for THLB stabilization.

For more information on the Provincial Stewardship Optimization/THLB Stabilization:

https://www.for.gov.bc.ca/rco/stewardship/crit/docs/CF%20Guidelines%20for%20Stewardship%20THLB%20Stabilization%20Projects.pdf

3.8 Fire Management

The ISS provides an opportunity to consider fire management in the overall context of managing the natural resources in the TSA.

There are no landscape fire management plans for the Sunshine Coast TSA; however other plans and initiatives exist. Union of BC Municipalities (UBCM) administers the Strategic Wildfire

Prevention Initiative (SWPI) which is managed through the Strategic Wildfire Prevention Working Group. This initiative supports communities to mitigate wildfire risk in the wildland urban interface through a variety of activities such as fuel treatments and creation of fuel breaks.

Forest Enhancement Society funds wildfire mitigation activities for areas beyond the urban interface. In addition, the South Coast Response Fire Management Plan (2018) guides fire response (suppression) in case of wildfire.

The ISS planning team will set priorities for reducing fire hazards and risk for the Sunshine Coast TSA. The focus is on reducing fire hazards and risk to protect life, properties and critical infrastructure, high environmental and cultural values, and resource values. This can be accomplished through planning of fire breaks, use of fire management stocking standards and providing recommendations for fuel management.

3.9 Forest Health Strategy

The Forest Health Overview provides background and strategic direction for the management of forest health in the West Coast and South Coast Regions (FLNRO, 2015). It identifies damaging agents that have the potential to harm the forest resource and suggests strategies to reduce short- and long-term forest health losses.

https://www.for.gov.bc.ca/ftp/hfp/external/!publish/Forest_Health/TSA_FH_Strategies/2015-Coast%20FH%20Strategy.pdf

Several health agents exist in the Sunshine Coast TSA; however, few are significant.

The Sunshine Coast Natural Resource District also has a forest health plan for 2018/2019.

3.9.1 Root Diseases

There are areas in the TSA with significant incidence of root diseases, primarily laminated root disease of Douglas-fir. Losses to root disease were accounted for in the last TSR through adjustment of the OAF2 to 12.5% for all existing managed Douglas-fir leading stands in the CDF and CWHxm1 & 2 subzones.

3.9.2 Other Forest Health Agents

Other forest health agents in the TSA are considered to occur at endemic levels. They are:

Western White Pine blister rust; according to the District forest health plan, an ongoing effort will be maintained by the DSC to continue Western White Pine research projects with the West Coast regional forest pathologist, Stefan Zeglen.

Gypsy Moth; according to the District forest health plan, in conjunction with the Federal Government program, the DSC placed additional traps on Texada Island where there is a gap in the Federal trapping program. There have been reports of trapped Gypsy Moths in several adjacent districts.

Douglas-fir Bark Beetle; according to the District forest health plan, efforts to monitor Douglas-fir Bark Beetle will continue and will include aerial and ground observations during regular field duties, and the use of funnel trap stations.

Western Hemlock Looper; according to the District forest health plan, efforts to monitor the Hemlock Looper continue within the Rainy River drainage with the use of the bait trap program.

3.10 Climate Change Species Portfolios

Climate change will result in differing future climatic conditions throughout the unit. The Ministry is in the process of creating a tool called the Climate Change Informed Species Selection Tool (CCISS) that integrates present biogeoclimatic information with projected future climates from 15 different global circulation models and two carbon concentration scenarios to create a suite of possible biogeoclimatic futures. The tool compares the species that are considered suitable from the present BEC with those of projected future BECs and creates output to identify opportunities to match species with future climate (out to 100 years). This output can then be used at the site level to identify candidate species.

Additionally, the tool can provide a landscape-level species portfolio that represents a risk-return assessment of planting different proportions of climate change adapted species. This analysis uses CCISS tool output from multiple locations to determine the present and future species options, combines this with growth potential (Site Index by Site Series for each species) and the differential response of species to climate to create a range of species portfolio options. The species portfolio uses the same mathematics and output applied to financial portfolio development and presents the user with options of asset (species) mixes that are “efficient” and balance the potential return with risk avoidance.

The output from the species portfolio commonly indicates that the portfolio with the highest return and highest risk are heavily weighted to a single species. However, such portfolios are at risk of single species losses, such as a bark beetle infestation. Other portfolio options may present greatly improved risk minimization with minimal loss in overall stand productivity potential. This approach says nothing about proportions occurring on the landscape of any current BGC or about future forest health risks, or how compatible different species combinations are at the site level. Rather, given a range of different plausible future climates and given the differential response of species to these climates (correlation of response), there are ratios of species that are best able to account for the uncertainty and provide the optimal performance over the land base given this uncertainty.

Within the Sunshine Coast this type of portfolio approach will be used to provide landscape level species guidance. Figure 3 provides an example of a climate change species portfolio for CWH dm 01 in the Fraser TSA.

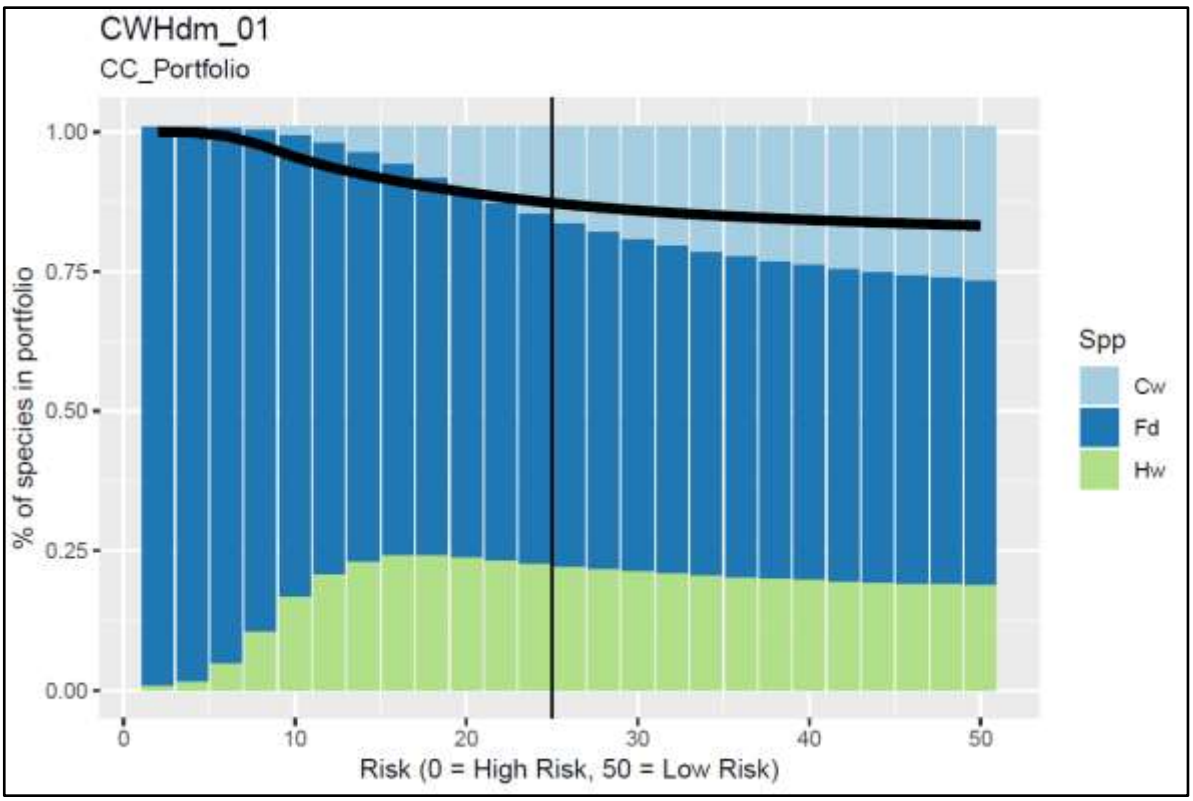

Figure 3: Climate change species portfolio for CWH dm 01 in the Fraser TSA

4 Timber Supply

4.1 Forest Inventory

The Sunshine Coast TSA forest inventory is a combination of old Forest Cover Inventory (FC1) converted to the Vegetation Resource Inventory (VRI) format (completed between 1991 and 1993), new recently completed VRI and old TFL 10 inventory covering the parcels of land that were transferred to the TSA from TFL 10.

The provincial VRI is hosted by the Forest Analysis and Inventory Branch (FAIB). The current version is projected to January 2017 with depletions updated to January 2017 as well. The inventory data for the portion of the TSA that was previously included in TFL 10 is not included in the currently available VRI coverage. This data was acquired for use in this project and translated to the VRI standard to by FAIB. In the latest TSR this area covered 5.4 % of the THLB. In his determination in 2012, the Chief Forester regarded the old TFL 10 inventory as outdated.

4.2 Historical and Current Annual Allowable Cut (AAC)

The allowable annual cut (AAC) for the Sunshine Coast TSA was set at 1,197,949 m^3 per year in January of 2012 by the Chief Forester. The AAC included a partition of 95,000 m^3 per year for red-alder leading stands, and a 3,000 m^3 per year partition for other deciduous-leading stands. After the 2012 AAC determination, the land base in the TSA changed: a small area from TFL 39 was added to the Sunshine Coast TSA and a Community Forest Agreement (CFA) area was removed from the TSA. The net impact of these adjustments was an increase in the AAC of 6,869 m^3 per year. This was formalized in August of 2013, when the AAC was set at 1,204,808 m^3 per year.

Table 3: Historical and current AAC

AAC (m^3)	1986	1989	1993	1996	2002	2007	2012	2013
	1,429,580	1,445,580	1,100,000	1,140,000	1,143,000	1,197,949	1,197,949	1,204,808
Conifer		1,429,580		1,045,000	1,045,000	1,099,000	1,099,000	1,106,808
Deciduous		16,000		95,000	98,000	98,000	98,000	98,000

4.3 Apportionment of the AAC and TSA Licensees

Table 4 shows the current apportionment of the AAC to various license types within the Sunshine Coast TSA, while Table 5 shows the licence commitments.

Table 4: Apportionment, Sunshine Coast TSA[1]

Tenure	Total (m^3)
Forest Licenses Replaceable	741,758
Forest Licenses Non-Replaceable	159,411
Non-Replaceable Forest License – First Nations	75,923
BCTS Timber Sale License	209,316
Community Forest Agreement	15,141
Woodlot License	6,400
Forest Service Reserve	12,000
Total	**1,219,949**

Table 5: Licence AAC commitments in the Sunshine Coast TSA[2]

Forest Licences Replaceable	**Licence**	**Licensee**	**Total m^3**	**Non AAC m^3**
	A19220	Interfor Corporation	181,031	
	A19224	Interfor Corporation	81,450	
	A19229	A & A Trading Ltd.	125,966	
	A77896	H.S. Christensen Logging Ltd.	2,936	
	A77899	Hagman & Son Logging Ltd.	10,000	
	A77900	Van Anda Logging Company Ltd.	7,675	
	A80590	A & A Trading Ltd.	26,700	
	A86928	Interfor Corporation	124,000	
	A86929	Interfor Corporation	182,000	
Total			**741,758**	
Non-Replaceable Forest Licence – First Nations	A80357	Tsain-Ko Forestry Development Corporation	32,540	
	A84120	Klahoose Forestry Limited Partnership	8,571	
	A90415	Homalco Forestry Limited Partnership	12,812	
	A96116	Tsain-Ko Forestry Development Corporation	60,001	
	A96117	Tsain-Ko Forestry Development Corporation	25,000	
	A96240	Tsain-Ko Forestry Development Corporation	9,999	
	A96245	Homalco Forestry Limited Partnership		19,359
	A96246	Homalco Forestry Limited Partnership		11,000
Total			**148,923**	**30,359**
Grand Total			**890,681**	**30,359**

[1] As of January 9, 2019

[2] As of January 9, 2019

4.4 Species Profile and Age Class Distribution

The THLB in the Sunshine Coast TSA is dominated by hemlock-balsam stands and Douglas-fir stands. Hemlock or Balsam is the leading species on approximately 42% of the THLB area. The share of Douglas-fir is 42% while Western redcedar or cypress is the dominant species on 7% of the land base (Figure 4).

A similar species ratio is reflected in the THLB inventory volume by leading species. Hemlock and Balsam leading stands constitute 40% of the standing timber inventory. The shares of Douglas-fir and Western redcedar leading stands are 46% and 8% correspondingly (Figure 5).

Due to the long logging history, younger age classes are well represented in the TSA (Figure 6). Much of the mature and old forest is in the non-harvestable land base (NHLB).

In the THLB, age classes 2 and 3 (21 to 60 years) dominate with HemBal and Douglas-fir stands as the prevalent stand types (Figure 7). However, most of the THLB volume is in stands older than 60 years (age classes 4 to 9), with stands older than 140 years (age classes 8 and 9) representing 29% of the total THLB growing stock (Figure 8). Approximately 15% of the age class 8 and 9 volume is in Cedar stands.

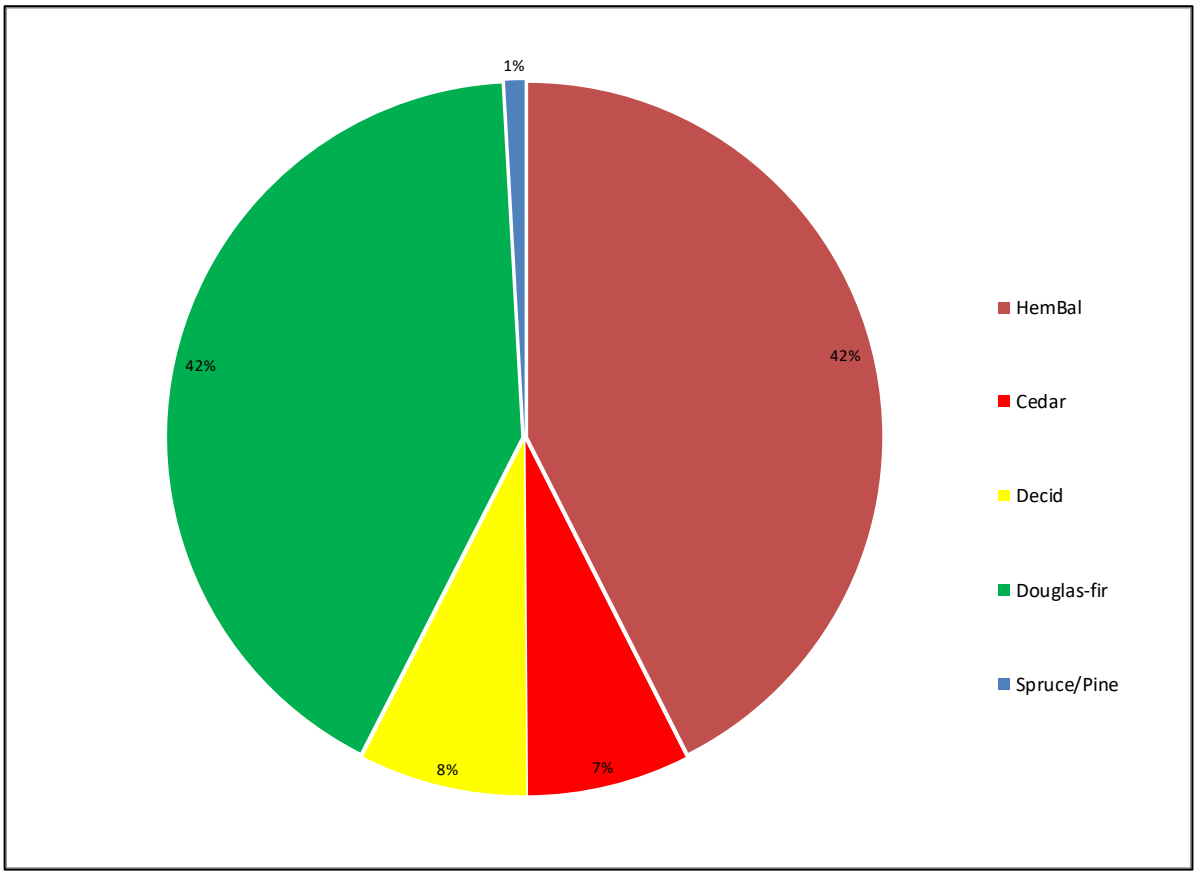

Figure 4: Leading species on the THLB, Sunshine Coast TSA

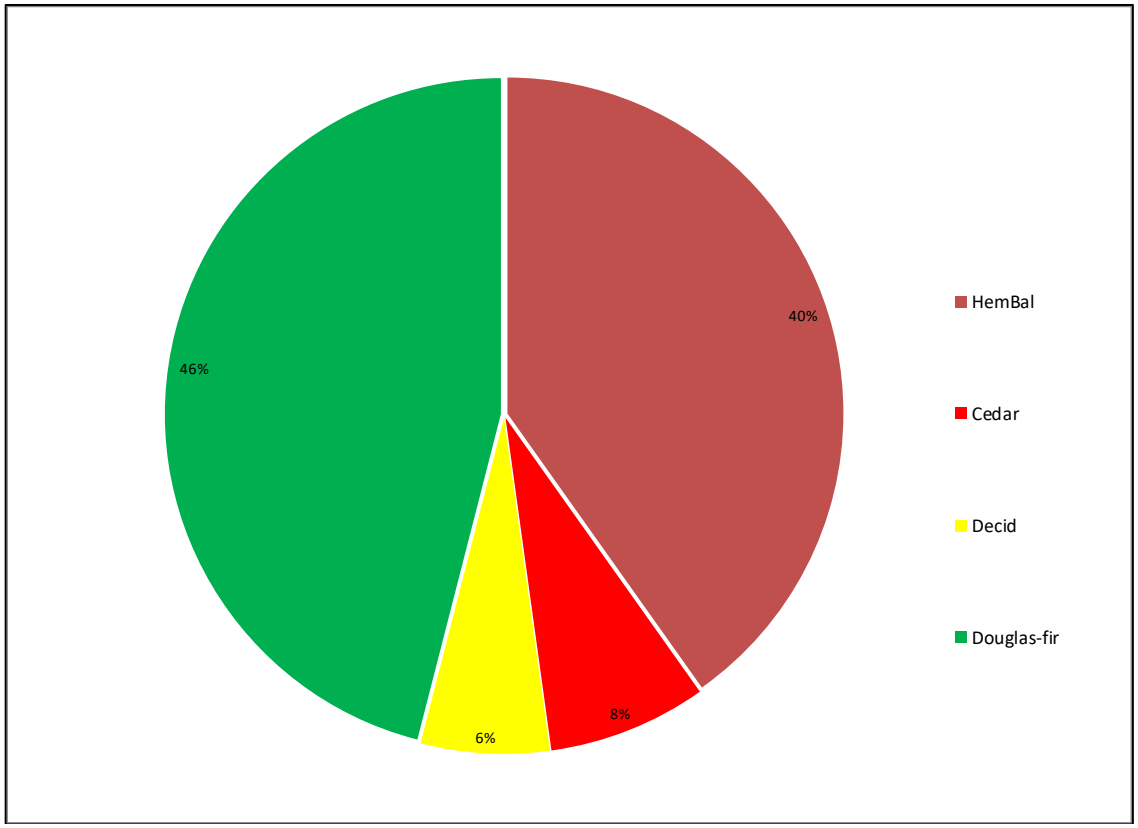

Figure 5: THLB growing stock in the Sunshine Coast TSA

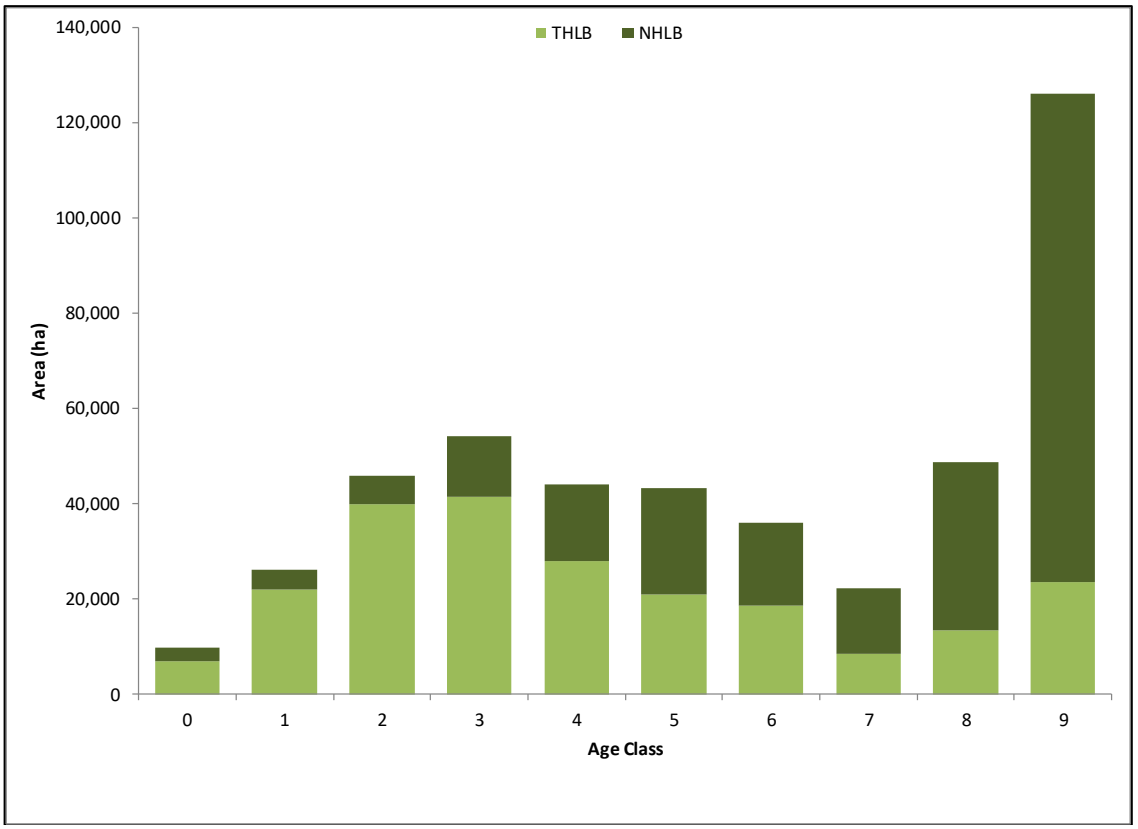

Figure 6: Age class distribution, Sunshine Coast TSA

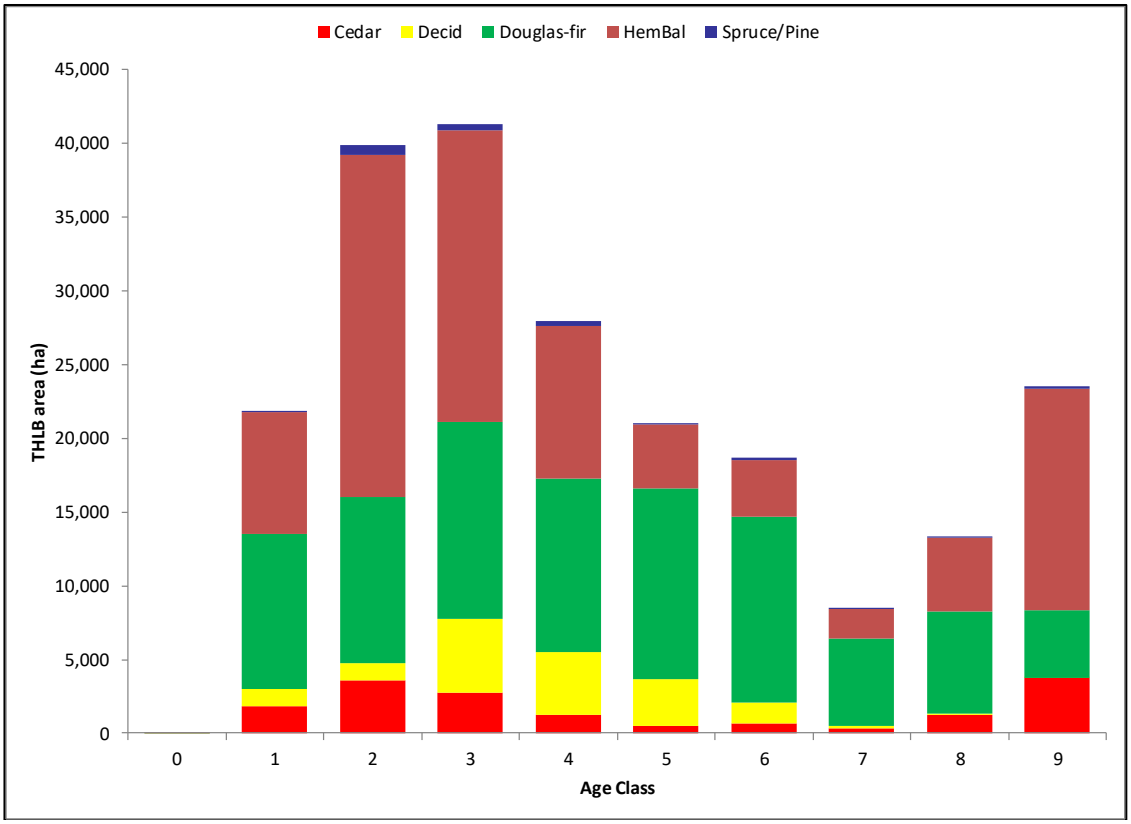

Figure 7: Age class distribution by leading species in the THLB, Sunshine Coast TSA

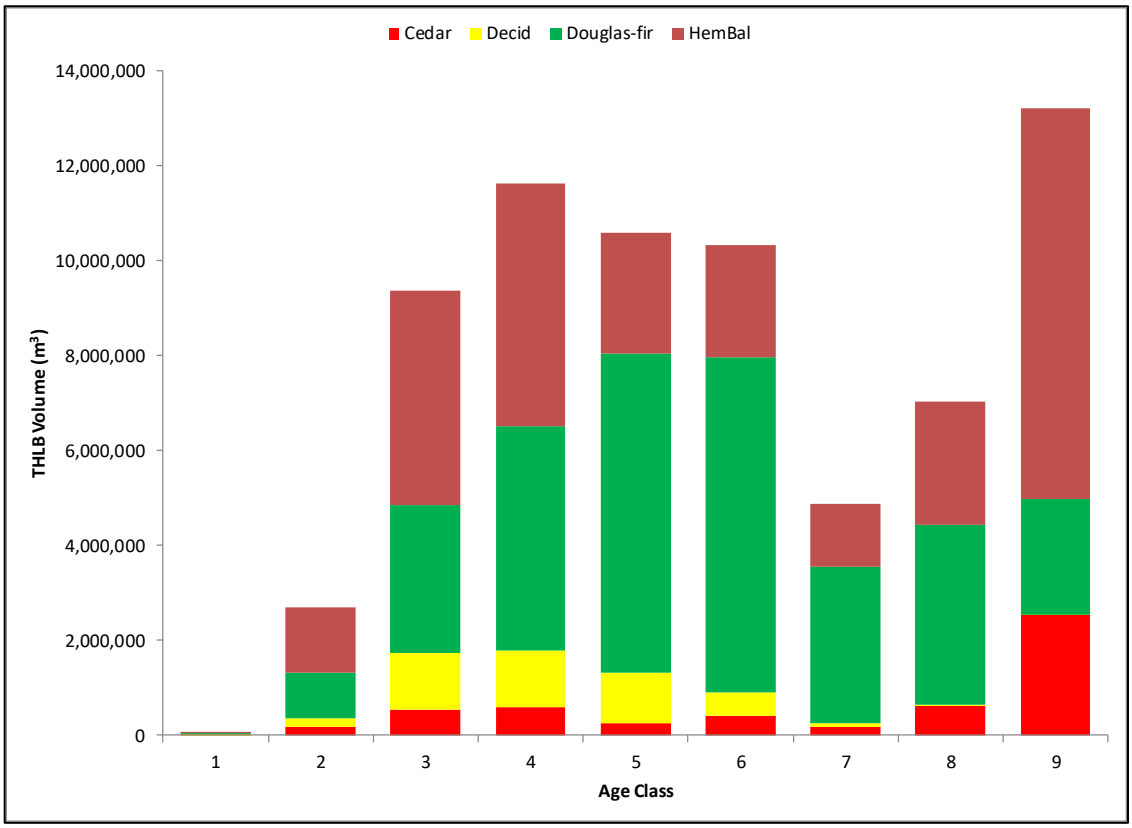

Figure 8: Growing stock by age class and leading species in the THLB; Sunshine Coast TSA

4.5 Current Timber Supply Situation

4.5.1 Base Case

Figure 9 illustrates the harvest forecast for the Sunshine Coast TSA from the latest timber supply review (TSR). In the forecast the initial harvest level of 1,363,470 m^3 per year is maintained for 100 years. The long-term harvest level of 1,404,000 m^3 per year is reached at year 150.

The timber supply forecast also assumed a deciduous harvest of 98,000 m^3 per year for 10 years, declining over 70 years to 42,000 m^3 per year.

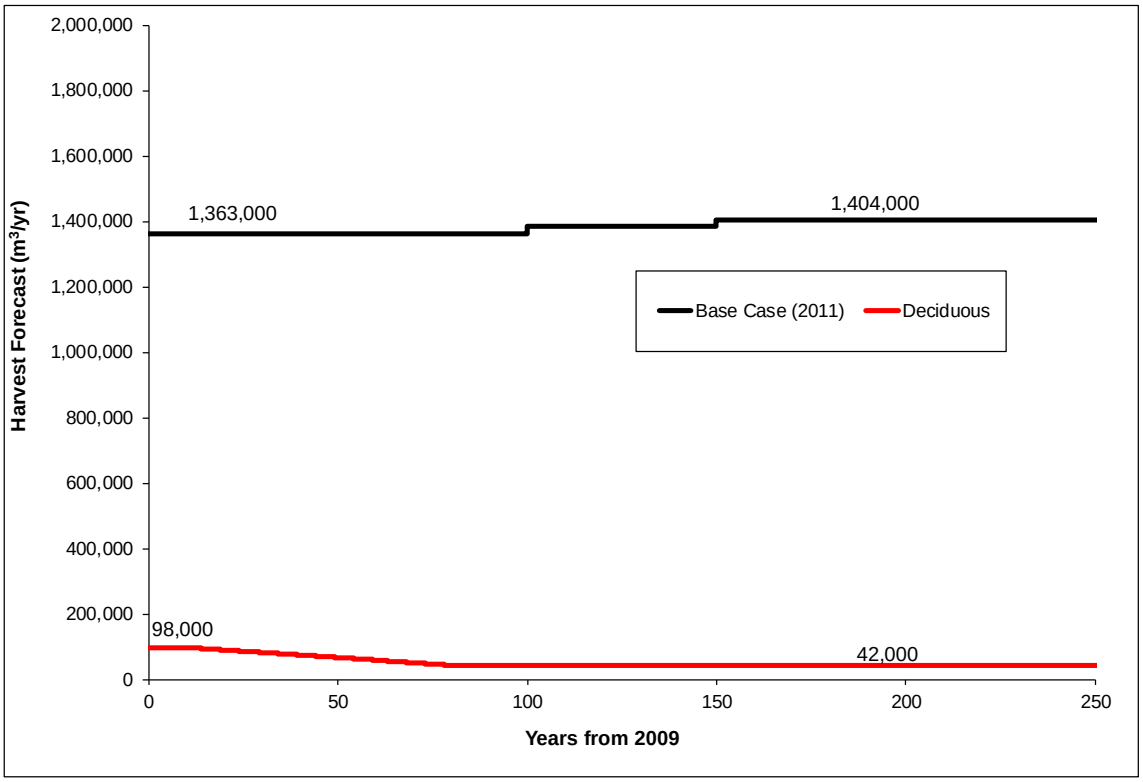

Figure 9: Base case timber supply forecast for the Sunshine Coast TSA; TSR 3 2011

4.5.2 Harvest Age and Harvest Volume

The TSR set the minimum harvest criteria based on a minimum volume per ha as per Table 6.

Table 6: Minimum harvest criteria, TSR 3

Leading Species	Volume/ha (m^3)
All except pine and red alder	300
Pine	250
Red Alder	250

In the analysis, the stands were harvested on average at the age of 148 years at 563 m^3 per ha in the first 5 decades. In remainder of the planning horizon, the stands were harvested on average at the age of 89 years at 511 m^3 per ha.

4.5.3 Transition from Natural Stands to Managed Stands

The latest TSR base case harvest forecast predicted that the harvesting of managed stands would begin in 25 years, i.e. around year 2035 as illustrated in Figure 10.

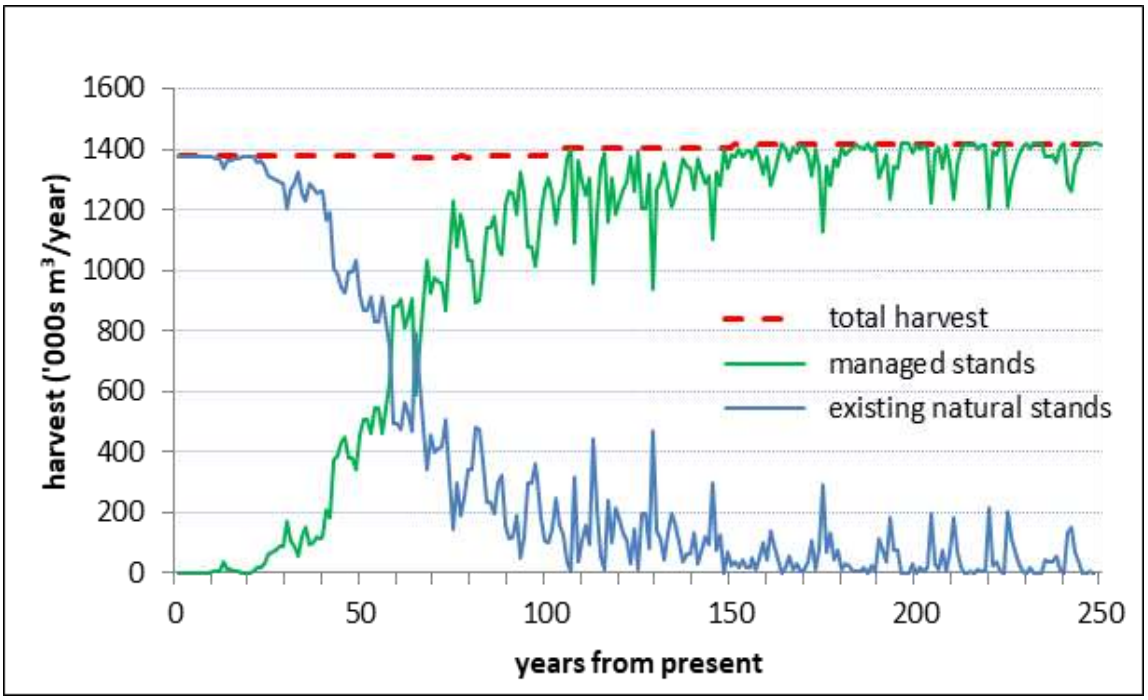

Figure 10: Transition from natural to managed stands in TSR, source FLNRORD

4.5.4 Regeneration Assumptions

Regeneration assumptions from the latest TSR are presented Table 7. The growth and yield of managed stands in TSR was modeled using TIPSY. TIPSY assumes that the species proportions presented in Table 7 will remain until the harvest of each stand, and/or that the spacing treatments indicated are incorporated in management as per Table 7.

Operational experience has shown that the above assumptions may not always be correct; mixed species stands with two or more planted species with different growth rates do not tend to maintain the assumed species proportions. Furthermore; natural ingress of species such as hemlock often take over planted shade tolerant species, such as cedar and cypress.

Table 7: Regeneration Assumptions; TSR, Source: Sunshine Coast TSA TSR Data Package 2011

Analysis Unit		Regeneration		Genetic gain	Regen delay	OAFs %		Species composition	Density	
No	Description	Method	%			1	2		Initial	Thin
1	Fir – good	Planted[1]	100	11.1	1.5	15	12[2]	$Fd_{90}Cw_{10}$	1 200	700
2	Fir – medium	Planted	100	11.1	1.5	15	12[2]	$Fd_{80}Cw_{20}$	1 200	700
3	Fir – poor	Planted	100	11.1	1.5	15	5	$Fd_{80}Cw_{20}$	1 200	N/A
4	Cedar – g/m	Planted	100	4.5	1.5	15	5	$Cw_{60}Fd_{40}$	1200	700
5	Cedar – poor	Planted	60	4.5	1.5	15	5	$Cw_{50}Fd_{50}$	1 200	700
		Natural	40	0.0		15	5	$Cw_{50}Hw_{50}$	1 200	700
6	H/B/S – good	Planted	50	1.0	1.5	15	5	$Ba_{50}Cy_{50}$	1 200	700
		Natural	50	0.0	1.5	15	5	$Hw_{60}Ba_{20}Cy_{20}$	1 200	N/A
7	H/B/S – medium	Planted	50	1.0	1.5	15	5	$Ba_{50}Cy_{50}$	1 200	N/A
		Natural	50	0.0	1.5	15	5	$Hw_{40}Ba_{30}Cy_{30}$	1 200	N/A
8	H/B/S – poor	Planted	50	1.0	1.5	15	5	$Ba_{50}Cy_{50}$	1 200	N/A
		Natural	50	0.0	1.5	15	5	$Hw_{35}Ba_{35}Cy_{30}$	1 200	N/A
9	Pine – g,m,p	Natural	100	0.0	1.5	15	5	Pl_{100}	1 200	700
10	Alder – g,m,p	Planted	100	0.0	1.5	15	5	$Dr_{90}Fd_{5}Cw_{5}$	1 600	900
11	Cot/Maple – g,m,p	Planted	100	0.0	1.5	15	5	$Dr_{50}Fd_{25}Cw_{25}$	1 200	N/A

4.5.5 AAC Determination

The AAC was not set at the Base Case level; the Chief Forester considered factors that represented downward and upward pressures on the timber supply. Furthermore, uncertainties in data and forecasts also impacted the final AAC determination.

The following issues were considered in the determination:

4.5.5.1 Downward Pressures

- Identified wildlife: the base case may have underestimated the impact;
- Ungulate winter range: the base case did not account for the THLB budget that had been established for the TSA and previous TFL 10 as black-tailed deer winter range;
- First Nations: the base case did not adequately consider potential impacts of the shíshálh Nation Strategic Land Use Plan.

4.5.5.2 Upward Pressures

- Volume estimates for existing stands: volumes estimated from ground sampling were higher on average than inventory volumes indicating that current growing stock may have been underestimated;
- Log grades: harvesting of dead potential volume was not considered in the TSR;
- Visual quality: studies suggested that the TSR may have underestimated timber supply relative to current practices.

4.5.5.3 Other factors

- Existing forest inventory: both the TSA inventory (1999) and the inventory of the previous TFL 10 are old. Furthermore, the TFL inventory is non-standard format with an unknown quality.
- Lack of strategic land use plan in the TSA;
- 14 First Nations with overlapping traditional territories;
- Community interface issues, such as community watersheds and scenic areas;
- Clean energy projects;
- Historic under - harvest of the AAC and no demand for a higher AAC.

4.5.5.4 Implementation

In his implementation notes the Chief Forester encouraged the FLNRORD staff and the licensees to do the following:

1. Forest Analysis and Inventory Branch (FAIB) should assess the requirements for updating the existing inventory for depletions and to ensure that this information is incorporated in future timber supply reviews; and assess options for completing the Vegetation Resource Inventory for the Sunshine Coast TSA.
2. Ministry staff are encouraged to finalize implementation of old growth management areas in landscape units, complete implementation of the Identified Wildlife Management Strategy for the Sunshine Coast TSA, and to develop and implement a black-tailed deer management plan that includes ungulate winter range designation.

4.6 Harvest Performance and Trends

Figure 11 illustrates the past harvest by species in the Sunshine Coast TSA. The harvest has not met the AAC between years 2007 and 2018; approximately 84% of the AAC was harvested during this time period (Table 8). Note that year 2018 data is incomplete.

The harvest of hemlock-balsam leading stands is close to their share of the inventory (Figure 12); between 2007 and 2018 approximately 42% of the harvest was HemBal. During the same time period, the harvest of Douglas-fir was generally less that its share in the inventory; around 30% of the harvest is Douglas-fir, while its share of the inventory is 46%.

The harvest of cedar and cypress exceeds their share of the inventory. Between 2007 and 2018, approximately 23% of the harvest was cedar or cypress; substantially higher than their share of the inventory of 8%, or their share of age class 8 and 9 volume (15%).

Figure 13 and Table 9 show the harvest by old growth vs. second growth for the Sunshine Coast TSA. The old growth in the Harvest Billing System (HBS) is defined as older than 140. The share of old growth of the total harvest is approximately 29% (Figure 14, Table 9). This is the same as the share of old growth (age class 8 and 9) of the growing stock in the TSA (29%).

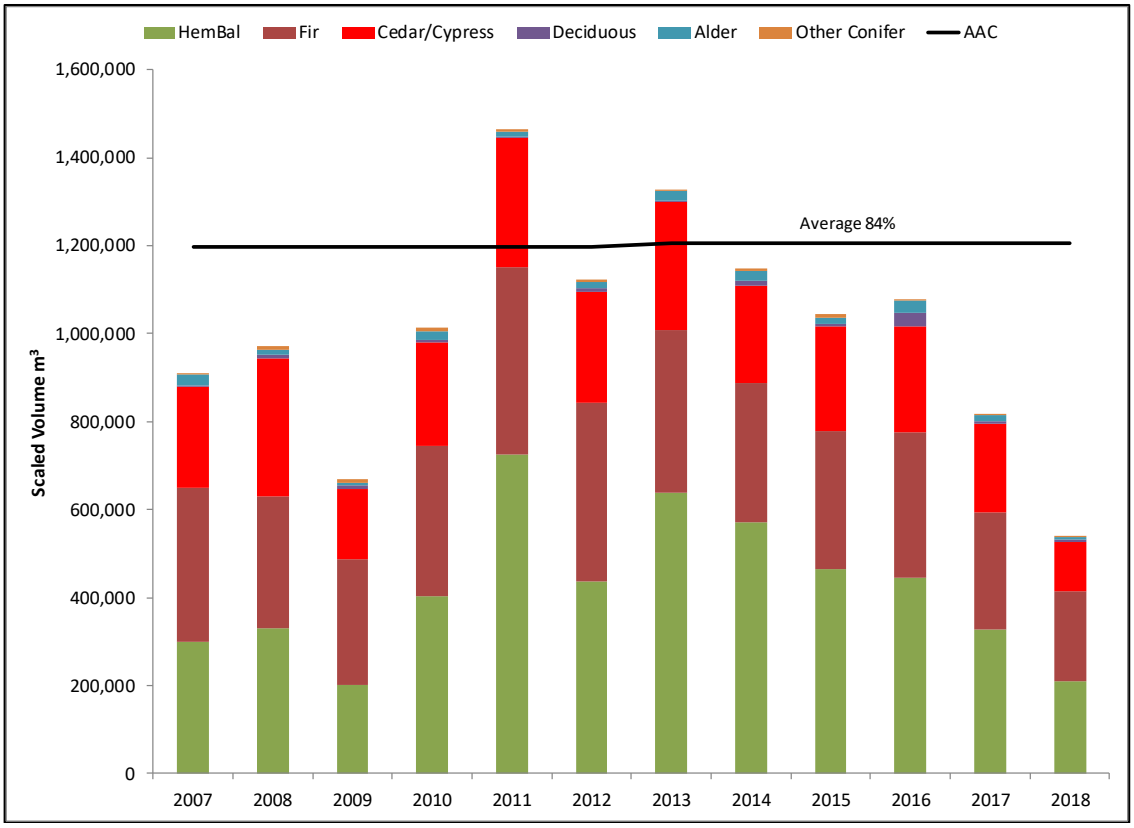

Figure 11: Harvest by species in the Sunshine Coast TSA

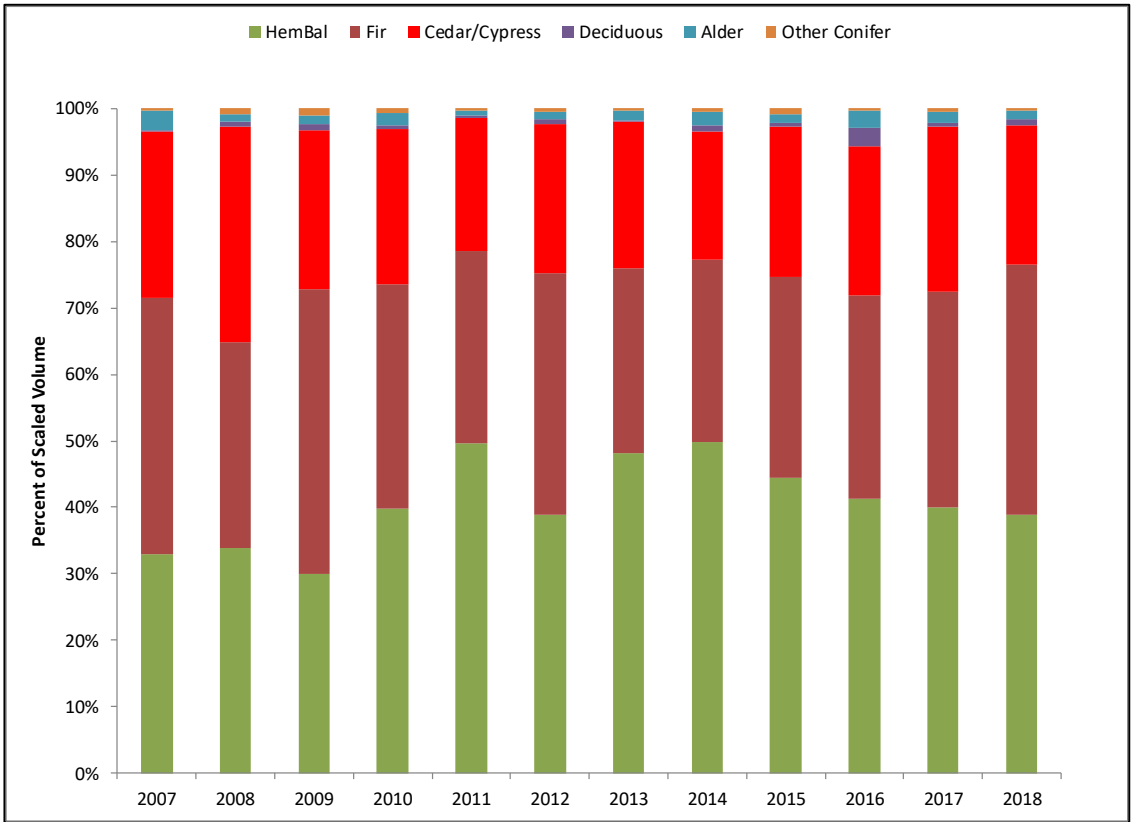

Figure 12: Harvest by species in the Sunshine Coast TSA, % of total

Table 8: Billed volume by species 2006 – 2015, Sunshine Coast TSA

Scale Year	Cedar	Fir	HemBal	Deciduous	Alder	Other Conifer	Total	% of AAC
2007	228,054	350,641	300,123	2,959	26,258	2,930	910,966	76%
2008	315,291	300,504	329,223	7,041	10,316	8,557	970,933	81%
2009	159,281	287,639	200,100	6,921	7,881	7,568	669,390	56%
2010	235,471	341,863	403,634	5,588	19,810	6,669	1,013,035	85%
2011	293,854	423,709	726,418	4,816	11,754	4,052	1,464,603	122%
2012	251,798	406,789	436,212	9,568	13,058	4,675	1,122,100	94%
2013	290,584	370,641	638,047	3,691	20,608	3,298	1,326,870	110%
2014	221,481	314,842	571,631	11,086	23,373	6,387	1,148,801	95%
2015	236,667	314,727	464,922	5,238	14,376	8,782	1,044,712	87%
2016	241,609	331,016	444,409	29,246	28,191	4,110	1,078,582	90%
2017	203,885	265,194	327,291	4,181	13,440	3,967	817,959	68%
2018	113,616	202,860	210,318	4,171	7,490	1,681	540,137	45%
Total	**2,791,591**	**3,910,428**	**5,052,329**	**94,506**	**196,555**	**62,677**	**12,108,087**	**84%**

Figure 13: Harvest by old growth-second growth in the Sunshine Coast TSA

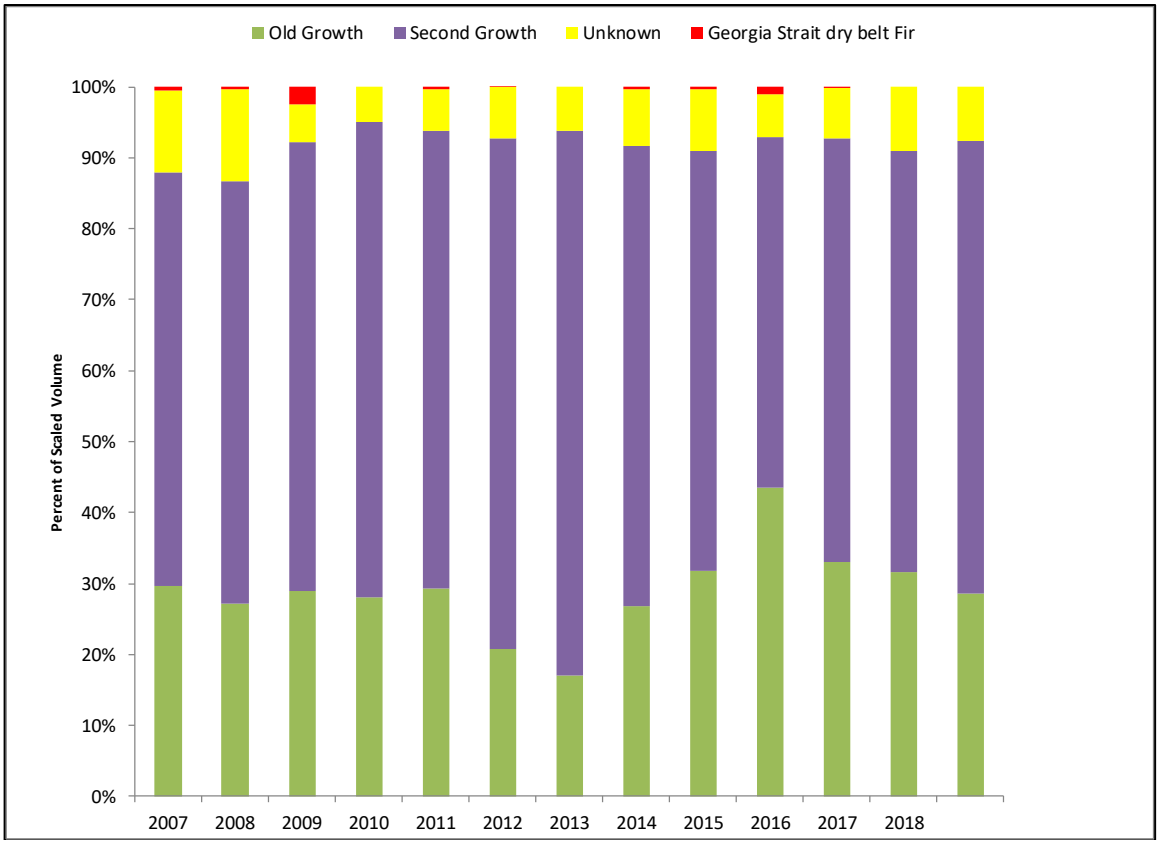

Figure 14: Harvest by old growth-second growth in the Sunshine Coast TSA, % share of total

Table 9: Harvest by old growth-second growth in the Sunshine Coast TSA

Scale Year	Old Growth	Second Growth	Georgia Strait dry belt Fir	Unknown
2007	30%	59%	1%	12%
2008	27%	60%	0%	13%
2009	30%	65%	2%	6%
2010	28%	67%	0%	5%
2011	29%	65%	0%	6%
2012	21%	72%	0%	7%
2013	17%	77%	0%	6%
2014	27%	65%	0%	8%
2015	32%	60%	0%	9%
2016	44%	50%	1%	6%
2017	33%	60%	0%	7%
2018	32%	59%	0%	9%
Total	**29%**	**64%**	**0%**	**7%**

4.6.1 Provincial Timber Management Goals, Objectives & Targets Monitoring

The Provincial Timber Management Goals, Objectives & Targets Monitoring report bases some of its information on the HBS; the HBS based results are consistent with those presented above. The report also offers information on the harvest area by age class. During the last 5 years approximately 22% of the harvest has occurred in stands between 41 and 60 years of age (Figure 15). As illustrated in Figure 15, the harvest of managed stands has occurred in the TSA for some time.

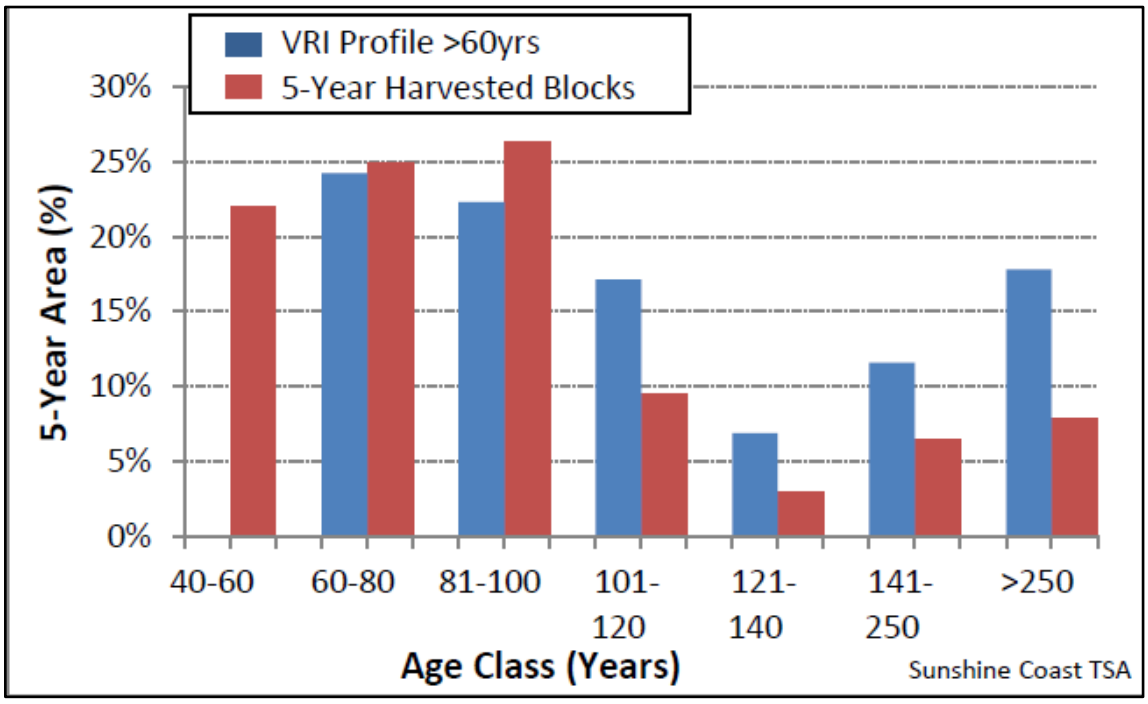

Figure 15: Harvest area vs. VRI profile; Source: FLNRORD 2018

Figure 16 shows the monitoring results for volume per ha classes. While the available data does not lend itself to calculate area weighted averages, it appears that the TSR estimate for the average harvest volume per ha (253 m^3 per ha) for the first 5 decades of the planning horizon is reasonable.

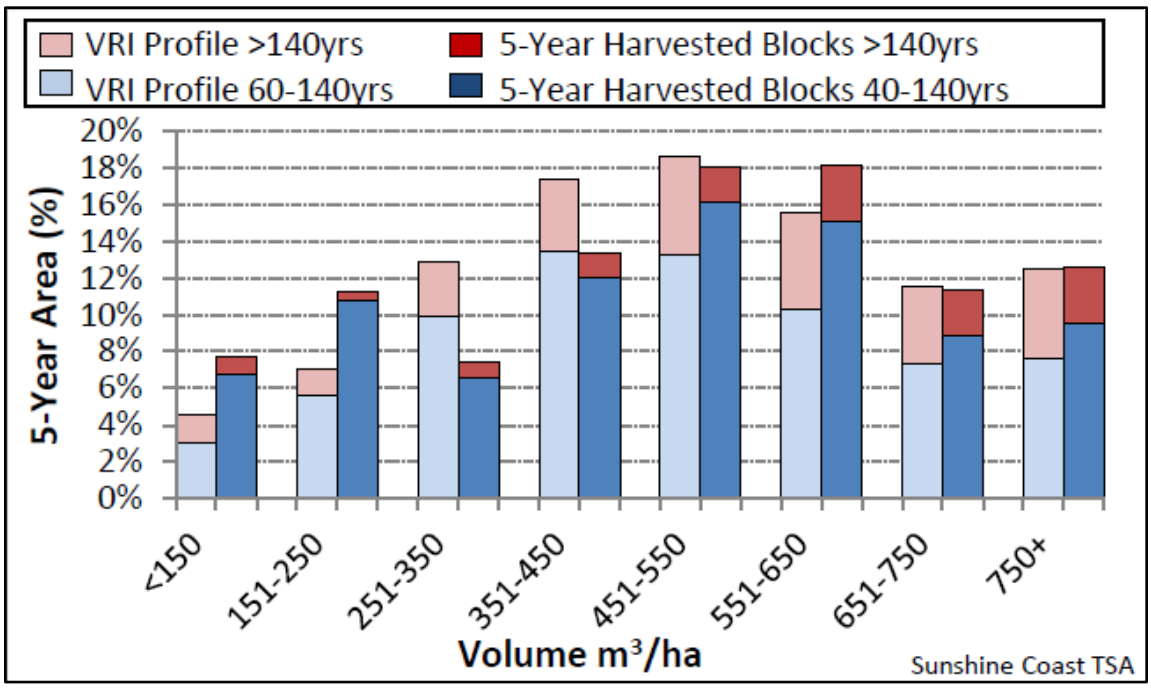

Figure 16: Harvest area by volume per ha vs. VRI profile; Source: FLNRORD 2018

4.7 Silviculture

4.7.1 Basic Silviculture

The success of basic silviculture is crucial to future timber supply. Basic silviculture is also the basis for future incremental treatments. The following questions have been discussed throughout British Columbia in the ISS workshops:

- Are the initial stocking densities sufficient to ensure the production of a reasonable volume of timber on a given site?
- Are the initial densities sufficient to provide the quality of timber for future markets?
- Are the initial densities sufficient to buffer against future abiotic and biotic damaging agents?
- Should there be more of a mix of species, where ecologically feasible, to buffer against future abiotic and biotic damaging agents? This question applies to both block and landscape levels.
- What is the potential impact of climate change on species choices; should some species be demoted or promoted?

4.7.2 Incremental Silviculture

This ISS will investigate options to increase and/or maintain timber supply using incremental silviculture. It will contain stakeholder determined targets and strategies for timber quantity and quality, and form an effective vehicle to plan the use of public funds for new and existing initiatives.

5 Timber Quality

The current provincial target for premium logs is 10% of the harvest for each TSA, and locally, ensure that TSR assumptions regarding operability (size, species, location) are consistent with harvest performance.

In the past, a premium log was frequently defined by such characteristics as: species, taper (lack of), tightness of grain, clear wood and size, and often diameter. Today many of the above-listed traits still signify quality; however, size tends to be less important. Also, different forestry companies may value different quality aspects in their operations.

Past analyses have demonstrated that the harvest volume of larger stems can be increased significantly by increasing the rotation ages, usually at the cost of total volume harvested, at least in the short and medium terms. Stem sizes can be increased through various incremental silviculture regimes as well.

This ISS will contain stakeholder determined definitions for timber quality. It may also recommend strategies to maintain or enhance the quality of current and future managed stands.

This project will also attempt to assess managed stand values resulting from different regeneration and treatment regimes. These will include estimations of future stand value using varying establishment densities and species compositions. The value estimations will use industrial log sorts and prices and milling studies, where available.

6 Habitat Supply

Wildlife habitat is established and managed through various policy and legislative instruments including the Identified Wildlife Management Strategy (IWMS), approval of ungulate winter ranges (UWR) and wildlife habitat areas (WHA), and management practices identified in plans establishing legal objectives.

6.1 Ungulate Winter Range

Four Government Action Regulations (GAR) have established ungulate winter ranges (UWR) for mountain goat in the Sunshine Coast TSA. General Wildlife Measures (GWM) prohibit or constrain harvesting in each UWR unit. There are 348 separate UWR units, the majority are no harvest (59,900 ha). The units that allow conditional harvest are within TFL39, however, there are 3 units from UWR 2-004 that partially overlap with the TSA (25 ha total). These 3 units are WA 01 (90% retention), KH 01 (80% retention), and LO 01 (75% retention).

6.2 Wildlife Habitat Areas (WHA)

There are 238 approved WHAs in the Sunshine Coast TSA covering a net area of 36,245 ha (after accounting for overlaps). In these areas timber harvesting is either limited or not allowed (Table 10). There are also 3 proposed WHAs for Marbled Murrelet, covering a total area of 24 ha.

Table 10: WHAs in the Sunshine Coast TSA

Species	# of WHAs	Gross area (ha)	Management activity
Grizzly Bear	179	26,979	No harvest or road construction
Marbled Murrelet	87	8,833	No harvest or road construction.
Stickleback	1	881	No harvest or road construction in core area; avoid road construction in management zone, harvest and silviculture activities must not cause any erosion or sediment delivery into water features
Marbled Murrelet (Proposed)	3	24	No harvest or road construction.
Total (Gross Area)	270	36,717	

7 Biodiversity

7.1 Landscape Level Biodiversity

Landscape level biodiversity is managed through OGMAs. OGMAs have been approved in 18 of the 25 landscape units (LU) in the TSA. Five landscape units have non-legal OGMAs (draft or proposed), which are currently observed in operations. Two landscape units have no OGMAs; in these units old growth in managed as per the Non-Spatial Old Growth Order.

7.2 Stand Level Biodiversity

Stand level biodiversity is managed through WTR as per FRPA and the Landscape Unit Planning Guide (MFR, 1999). Where LU plans exist, WTR targets may be specified; for all other landscape units and BEC variants the WTR target is 7%.

8 Climate Change Adaptation

Climate change is projected to impact both timber supply and environmental values and it must be accounted for in longer term plans and strategies. The speed and the scope of this predicted change is not known; however, it is expected that ecological niches of tree species will be altered. The occurrence of various diseases is also expected to rise as a result of the stress brought on by climate change

8.1 Forest Stewardship Action Plan for Climate Change Adaptation

Ministry of Forests, Lands and Natural Resource Operations has prepared a ***Forest Stewardship Action Plan for Climate Change Adaptation***.

https://www.for.gov.bc.ca/ftp/HFP/external/!publish/ClimateChange/Adaptation/MFLNR_CCAdaptation_Action_Plan_2012_final.pdf

The plan is consistent with the provincial timber management goals and objectives. It sets three broad goals:

- Foster Resilient Forests
- Maintain Future Options and Benefits
- Build Adaptive Capacity

8.1.1 Foster Resilient Forests

Forests should be well adapted to the full range of both current and future climatic conditions. This can be accomplished by anticipating and managing climate change and by maintaining and enhancing biodiversity.

8.1.2 Maintain Future Options and Benefits

Manage and protect all resources and values and manage risks:

1. Developing strategies at the TSA level to address climate change considerations, including tree species diversity objectives and forest health strategies.
2. Strengthen the content of district level forest health strategies by through revisions to stocking standards, recommendations on changes to current practices etc.
3. Apply best adaptation principles, goals, objectives and tools through the Land Based Investment Strategy and its Forests for Tomorrow program.
4. Investigate options and devise an approach to free growing that ensures all harvested stands are stocked with healthy crop trees at age twenty.
5. Build fire resilient landscapes: conduct landscape wildfire risk assessments, and implement treatments on priority areas

8.1.3 Build Adaptive Capacity

- Develop adaptation information, knowledge and tools so that forest managers have easy access to information and tools to adapt to a changing climate.
- Increase extension and collaboration among natural resource agencies, universities, forest managers and other research organizations working towards climate change adaptation to leverage limited funds and resources.
- Ensure guidance and coordination so that the Ministry's adaptation actions are appropriately guided and coordinated strategic ally both internally and externally.

8.2 Ministry of Forests Lands and Natural Resource Operations Climate Change Strategy 2015-2020

Ministry of Forests, Lands and Natural Resource Operations has completed a climate change strategy. It can be found here:

https://www.for.gov.bc.ca/het/climate/strategy/climate_change_strat_2015-20.pdf

9 First Nations and Cultural Heritage[3]

Fourteen First Nations have asserted traditional territory in the Sunshine Coast TSA (Table 11). The area of the TSA is large and it contains a diverse landscape, including major river systems, islands, rich marine bays, alpine tundra, and forests. Consequently, there is a great variation in the cultures that comprise the indigenous population of the TSA. The earliest confirmed European presence in the area occurred in the summer of 1792, when English and Spanish ships explored the Strait of Georgia. Many of the earliest written accounts of indigenous villages were documented on that voyage, as the Captains Vancouver, Valdez, and Galiano surveyed many of the mainland inlets in search of the fabled Northwest Passage. However; it wasn't until the mid-1800s that a permanent non-indigenous population began to reside in the upper Strait.

Table 11: Indigenous peoples whose territories include portions of the Sunshine Coast TSA

NAME	Reserve Land	Traditional Territory
The shíshálh First Nation	Yes	Yes
The Tla'amin First Nation	Yes	Yes
The Xwémalhkwu First Nation	Yes	Yes
The Klahoose First Nation	Yes	Yes
The Squamish First Nation	Yes	Yes
The We Wai Kai First Nation	No	Yes
The Wei Wai Kum First Nation	No	Yes
The Kwiakah First Nation	No	Yes
The Snaw'Naw'As First Nation	No	Yes
The Qualicum First Nation	No	Yes
The Líl'wat Nation	No	Yes
The Xeni Gwet'in First Nations Government	No	Yes
The Ulkatcho First Nation.	No	Yes

9.1 Agreements and Tenures

9.1.1 Forest Consultation and Revenue Sharing Agreements

Most First Nations in the Sunshine Coast TSA have, or have had, Forest Consultation and Revenue Sharing agreements (FCRSAs). These agreements help formalize how the Nation to Nation

[3] This section was prepared by Mark Sloan A/Stewardship Officer, Sunshine Coast Natural Resource District

engagement will take place for different decision types, and also recognize that licensee-led information sharing can be a beneficial form of engagement.

Of critical importance is the fact that FCRSAs provide First Nations communities with a portion of stumpage revenue based on a formula that accounts for the harvest rates in their territories. In this way First Nations communities receive direct economic benefits from forest operations that take place in their traditional territory.

9.1.2 Shíshàlh Foundation Agreement

In October 2018, BC and the shíshàlh Nation signed a type of reconciliation agreement known as the shíshàlh Foundation Agreement. A key part of the agreement includes the establishment of a landmark government-to-government working relationship that will create new decision-making structures between the Province and the híshálh government. Other key components include land transfers, economic and socio-cultural investments, establishment of a land-use planning process and joint aspirational long-term commitments.

9.1.3 Forest Tenure Opportunity Agreements

Many First Nations in the TSA have forest tenures which are direct - awarded through Forest Tenure Opportunity Agreements (FTOAs). In accordance with the Forest Act, First Nations may be awarded forest tenures without competition, as part of an interim measures agreement, treaty related measures agreement or economic measures agreement, which is met through the FTOA.

The FTOAs include language acknowledging that the direct award of the tenure supports the reconciliation of aboriginal rights and title and assists to help First Nations meet the goals and objectives of the Transformative Change Accord.

9.1.4 Strategic Engagement Agreements

Two First Nations within the TSA are signatories to the Nanwakolas Strategic Engagement Agreement. Strategic Engagement Agreements (SEAs) establish mutually agreed upon procedures for consultation and accommodation.

SEAs with First Nations are intended to encourage a positive and respectful government to government relationship and to strengthen B.C.'s investment climate. These agreements are used by government to support the New Relationship and Transformative Change Accord objectives.

For First Nations in the treaty process, SEAs can help to build the mechanisms to support decision making in a post-treaty environment.

SEAs provide an opportunity for First Nations not in the treaty process to take a more active role in the decision making process and develop a stronger government to government relationship with the province.

9.2 Treaties and Treaty Negotiations

On April 5, 2016, the Tla'amin Final Agreement came into effect. A fundamental goal of a modern treaty is to achieve certainty and facilitate strong and workable relationships between First Nations and other governments including federal, provincial and local governments.

Treaties bring certainty with respect to a First Nation's rights to use, own and manage lands and resources throughout its claimed traditional territory, as well as provide the treaty First Nation with

modern governance tools to develop sustainable, healthy and resilient communities. When ownership and use of lands and resources is clear, there is increased predictability for continued development and growth in the province.

10 Watersheds

10.1 Community Watersheds

Harvesting is allowed in community watersheds; however, operations must be planned in such a way that no harmful substance may enter the water. There are 27 officially designated community watersheds in the Sunshine Coast TSA.

11 Multiple Resource Value Assessment

The utilization of natural resources influences ecosystem conditions. The Multiple resource value assessments (MRVA) gauge how natural resources utilization impacts the state of public natural resource values. MRVAs show the results of stand- and landscape-level monitoring carried out under the Forest and Range Evaluation Program (FREP). The MVRA may be carried out for all 11 FRPA values.

The MRVA helps to:

- Measure whether the impacts of resource development result are consistent with sustainable resource management;
- Provide transparency and accountability for the management of public resources;
- Support the balance in decision making between environmental, social, and economic factors;
- Advise on the improvement of resource management practices, policies, and legislation.

Most MRVAs focus on stand/site-level and are carried out on harvested areas and/or resource roads. However, some recent MRVAs have introduced landscape level monitoring into the process. This is expected to increase in the future.

Monitoring results are summarized using four impact ratings:

1. very low
2. low
3. medium
4. high

Very low and low impact ratings are desirable; they reflect the government's goal of sustainable resource management as per the Forest and Range Practices Act. The medium impact rating is considered marginal, while and the high rating is generally deemed unsustainable. If adequate data exists to compare site impacts over time, resource value trends are presented.

11.1 MRVA, Sunshine Coast Timber Supply Area

The MRVA was completed for water quality, riparian, visual quality, timber and biodiversity. Monitoring was carried out between 2006 and 2012.

11.1.1 Water

Data for water quality was collected between 2008 and 2012. A total 230 road segments were assessed and 81% of them were found to have very low or low impact on fine sediment generation potential. The remaining segments were classified as medium (18%) and high (1%). The sampling showed no trends.

11.1.2 Riparian

Of the 65 streams monitored 63% showed very low or low harvest related impacts on the streams. Of the remaining samples 22% were classified as properly functioning (medium impact), while 15% of the streams were classified as not properly functioning (high impact). The medium and high impacts were caused by insufficient vegetation near streams, insufficient large woody debris, and extensive amounts of logging slash in streams.

The sampling showed no trends.

11.1.3 Visual Quality

Twenty cases were analyzed and 65% of them were rated as having very low or low harvest-related impacts; 15% had medium impacts, while still meeting the objectives. In 20% of the cases the objectives were not met.

11.1.4 Timber

A total of 14 polygons were sampled and the weighted average well-spaced density achieved 93% of target stocking standard. The sample size was too small for assessing trends.

11.1.5 Stand Level Biodiversity

A total of 72 cutblocks were sampled and 68% of them were rated as very low or low harvest-related impact, while 21% of the blocks were rated as having medium impact and 11% high impact. The impact was assessed based on total retention, retention quality, and coarse woody debris quantity and quality. The high impact blocks were generally of smaller size. The sampling showed an increasing trend of retention from an average of 13.6% during the Forest Practises Code (FPC) to 16.5% in the FRPA era.

12 Sunshine Coast Timber Supply Area Identified Management Issues

This section provides a list of resource management issues that stake holders in the Sunshine Coast TSA have identified. The initial list shown below is based on discussions with the Sunshine Coast Natural Resource District staff. The list will be expanded to account for all issues and opinions presented in the course of this project.

In our discussions with the Sunshine Coast Natural Resource District (District) staff, the following resource management issues were identified as being important for the District. The issues are not presented in the order of importance.

- Three to five-year District-wide operational plan showing planned harvest for the staff and the public to see would be desirable;
- The District would like to get the remaining landscape units plans completed and then begin the exercise of reviewing all the plans to ensure that they are working, update the plans where necessary and make them more consistent with each other where possible;
- Are the licensee operating areas proportional to the AAC for each of our major licensees (i.e. are the chart areas ok and balanced)?
- The local Powell River mill needs approximately 2,200 m^3 of chips and 2,800 m^3 of hog fuel each day. Should investigate if there are incentives to source chips and hog fuel locally. Also, are there incentives available to promote harvest of low sawlog value stands and use the timber as chips?
- Would like to speed up the issuance of First Nations licenses;
- Would like to investigate all section 7 notices and analyze whether adequate areas have been set aside for various species, MAMU is mentioned specifically;
- The information in the Forest Stewardship Plan (FSP) tracker for DSC needs attention. The use of the tracker is still not mandatory, and the information is not entered in a consistent manner;
- Aside from administrative details and cutting permit issuance, the District does not have a good understanding how Woodlots and Community Forest Licensees are doing. Would like to gain a better understanding;
- Invasive plants is a topic of increasing importance. If dealing with invasive plants becomes a priority, what are the options to resource this work?
- Formal wildlife trees and wildlife tree patches have been reserved from harvesting for some time now as part of operational planning. Are the types of trees and tree patches being reserved considered reasonable and is it possible yet to measure if they are achieving the objectives they were intended for?
- According to wildlife experts there has been a successful Elk transplant program in the DSC. The Elk are now well established. What are or have been the forest management and financial impacts of Elk in establishing a free growing stand?
- It is not uncommon for streams to be misclassified in operational plans. Typically, the stream classifications are upgraded. What is the impact of this upgrading on compliance and enforcement inspections, and on timber supply?
- Given the current climate change predictions, are there drought resistant historic tree species that should be researched in DSC, as there are significant issues with western redcedar following the past several dry summers? Is there management direction on dealing with the warming climate?

- Are there intensive silviculture opportunities that can be applied to the relatively even age-class distribution of the Sunshine Coast TSA that might help alleviate the forecasted coastal shortfall of timber supply?
- Is the current DSC forest inventory reliable?
- Are the impacts of intermediate cuts, partial cuts and retention systems accounted for in the forest inventory and are their impacts on the timber supply accounted for?
- Where a licensee conducts a high retention harvesting operation that removes small volumes of a high value species, what is the impact on the retained stand in terms of future economics of harvesting and ecosystem resilience?
- In the past the Chief Forester has requested monitoring of the harvest from deciduous stands. There is currently a soft deciduous partition for the Sunshine Coast TSA. Is this still needed?

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