Taan FOREST

# *FSC Management Plan*

*From the Land and Spirit of the Haida*

DRAFT FOR CONSULTATION

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Date (dd/mm/yy)

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# Introduction

Taan Forest Limited Partnership (Taan) is a forest management company owned by the Haida Nation that is committed to striving to create a successful forest economy on Haida Gwaii based on the management principles of the Strategic Land Use Agreement with the goal of maximizing the benefits from the forest resource for the Haida Nation and balance the interests of all communities. Specifically, manage for long term sustainability, increase the number of local logging and manufacturing jobs on Haida Gwaii, extract the best value possible from the areas harvested, and manage the business prudently and effectively.

## Purpose

The FSC Management Plan has been designed to ensure forest management activities are consistent with corporate commitments of Taan to health and safety, environmental protection and sustainable forest management under the requirements of the Forest Stewardship Council® (FSC®). Applicable FSC Standards, as amended from time to time, include (for current versions visit www.fsc.org):

- FSC Canada-Regional Standard for British Columbia
- FSC-STD-50-001 Requirements for Use of Trademarks for Certificate Holders

The FSC Management Plan is an important supporting document to existing Corporate Management Systems (CMS), Forest Stewardship Plans (FSP) and other existing agreements (refer to Table 4 for a list of existing documents and plans applicable to the Management Unit).

The FSC Management Plan does not include requirements that are previously documented within the other supplemental plans and agreements. Where other supplemental documents are utilized to achieve specific criteria related to FSC Management Plan requirements, the management plan will include a specific reference to the document.

The FSC Matrix (Appendix 1) also includes documentation of the various sources of information, procedures, evidence and responsibilities to demonstrate conformance with the FSC Forest Management.

## Scope

The FSC Management Plan applies to all Taan forest tenures (the Management Unit).

The FSC Management Plan applies to all forest management activities conducted on behalf of Taan by employees, contractors, sub-contractors and TSL holders, within the Management Unit. The FSC Management Plan will typically only be referenced by Management and Planning personnel. Crews conducting field activities will refer to the relevant Standard Operating Procedures and the approved Plan/ Map for the work area (these key documents that guide site level activities will incorporate the specific FSC requirements that are applicable for each site).

## *Review & Revision*

Assistance in the development of the monitoring component and some of the management strategies within this management plan was provided by Laurie Kremsater, M.Sc., RPF, RP.Bio.

The management plan will be periodically reviewed and revised as required (minimum once every five years) to facilitate adaptive management that incorporates the results of monitoring and assessments, any new information that becomes available (e.g., technical, scientific, social, economic, etc.) and the incorporation of comments and suggestions made through the Public Consultation Process (including the Haida Nation), as deemed applicable by Management.

Major revisions to the management plan or specific supporting assessments are incorporated into the Public Consultation process (as applicable).

For inquiries or concerns relating to the FSC Management Plan or supporting documents, please contact the Taan CMS Administrator (info@taanforest.com).

### Summary of Revisions

This edition of the FSC Management Plan includes the following changes from the previous version(s); changes have also been identified in purple font to assist with review:

| Revision Date | Description of Change |
|---|---|
| May 2018 | Updated the tenure description section to remove 0.84ha from the Management Unit, and allocate to BC Hydro for the Sandspit sub-station. New Management Unit map to reflect the removal. Minor updates of tenure areas, to reflect updated mapping and corrections to mapping over time. |
| | Updated the allowable thresholds for disturbance within the intact forest areas (High Conservation Value Forests) to include Motion 65 requirements, for maximum of 20% disturbance of the portion of the intact forest located within the MU. To date, Taan has not conducted any activity within the intact forest polygon identified. |

# Management Commitment

Taan is committed to adhering to the FSC-BC Regional Standard (including the FSC Principles and Criteria) over the long-term across the Management Unit. This management plan has been signed off to acknowledge the commitment.

Taan also maintain separate corporate policies (e.g., health, safety and environment) that document the corporate commitments to ensuring the health and safety of forest workers while ensuring forest management activities are consistent with legal requirements and sustainable forest management principles. Corporate policies are posted on the website.

Taan recognizes and respects the customary and legal rights of the Haida Nation over their lands, territories and resources and acknowledge that on-going communication and consultation with the Haida Nation is an integral component of our business to ensure continued support of the Haida Land Use Vision (refer to the Public Consultation section for further details).

# Forest Stewardship Council

For information on the Forest Stewardship Council, certification standards and standards regarding the use of trademarks, refer to: http://www.fsccanada.org/default.htm.

## Conflicts Between Legal Requirements & FSC

There are no conflicts known to exist between the applicable legal requirements and the FSC Principles and Criterion at this time.

## FSC Assessments

Consistent with FSC-BC Regional Standard requirements, the following assessments have been prepared in support of this management plan: Environmental Risk & Range of Natural Variation (RONV); Riparian; and High Conservation Value.

# Haida Nation

Haida Gwaii ("islands of the people") is the ancestral home of the Haida First Nation. The Haida have an asserted traditional territory of the entire archipelago of Haida Gwaii Islands and surrounding waters (no overlapping or shared territory with other nations).

In 1993, the Haida Nation began treaty negotiations with the governments of Canada and British Columbia. In 2002, the Haida filed a statement of claim with the Supreme Court of BC asserting their rights and title to the Islands and surrounding waters.[1] The Haida Nation is currently at Stage 4 in the treaty negotiation process.

In September 2007, the Council of the Haida Nation (CHN) signed a landmark Strategic Land Use Agreement (SLUA) with the government of BC marking a commitment to establish a significant number of additional protected areas on Haida Gwaii (resulting in approximately half of the islands being protected) in addition to ensuring sustainable forest management and economic well-being of the local communities through the development and implementation of a Land Use Order based on the principles of ecosystem based management (EBM). The Land Use Order, intended to implement the SLUA, was brought into force December 2010.

[1] Haida Gwaii – Queen Charlotte Islands Land Use Plan Socio-Economic Base Case Final Draft, Gary Holman Consulting Economist with assistance of Steve Nicol Lion's Gate Consulting Inc. March 2004

Recently an incremental step in the process of the reconciliation of the Haida and Crown titles has been made with the introduction of the Haida Gwaii Reconciliation Act which gives effect to the Kunst'aa guu - Kunst'aayah Reconciliation Protocol between the Haida Nation and British Columbia (December 11, 2009). Integral to the Haida Gwaii Reconciliation Act is shared decision-making between the province of British Columbia and the Council of Haida Nation regarding land and natural resource management on Haida Gwaii, under the Haida Gwaii Management Council (HGMC). The Act also provides for the commitment of the parties to further refine and develop the processes for operational level decision-making on Haida Gwaii.

Some of the joint decision making completed by the HGMC include, but are not limited to, the following:

- Implementation and amendments to the Haida Gwaii Strategic Land Use Agreement (2007);
- Establishment, implementation and amendment of the Land Use Objectives Order;
- Determination and approval of the Annual Allowable Cut (AAC) for Haida Gwaii;
- Approval of management plans for protected areas; and
- Developing policies and standards for the identification and conservation of heritage sites and other strategic level management matters that the Parties delegate to the HGMC.

Haida people make up half of the 5000 people living on the islands. Haida reside throughout the islands but are concentrated in two main centers, Old Masset at the north end of Graham Island and Skidegate at the south end. Besides these two communities there are many more Haida scattered throughout the world. Vancouver (770 km south of Haida Gwaii) has a large population as does Prince Rupert (100 km east across Hecate Strait)[2].

# Management Unit Description

Haida Gwaii is an isolated group of over 200 islands totaling 1,018,000 hectares (large and small islands) located roughly 100 kilometers west of the northern coast of British Columbia.

The geography of the Islands is very similar to that of coastal British Columbia, with mountainous terrain and deep inlets, temperate rain forests, sub-alpine tundra and salmon spawning streams. However, the ecology of the Islands is quite unique; there are at least 39 species and sub-species of plants and animals unique to the Islands.[3]

The islands are divided into three physiographic units - the rugged, steep terrain of the Queen Charlotte Ranges dominates the west coast of Graham Island, the Skidegate Plateau located in the center of the island and the relatively flat and poorly drained Queen Charlotte Lowlands dominate the east side of the island.

Harvesting has been taking place on Haida Gwaii since the 1920's, under the administration of the Haida Gwaii Forest District Office, Ministry of Forests, Lands and Natural Resource Operations.

[2] Haida Gwaii – Queen Charlotte Islands Land Use Plan Socio-Economic Base Case Final Draft, Gary Holman Consulting Economist with assistance of Steve Nicol Lion's Gate Consulting Inc. March 2004

[3] Haida Gwaii – Queen Charlotte Islands Land Use Plan Socio-Economic Base Case Final Draft, Gary Holman Consulting Economist with assistance of Steve Nicol Lion's Gate Consulting Inc. March 2004

## *Tenure Description*

BC Timber Sales has been issued an annual volume allocation within the Taan Forest Haida Tenure (FLTC A87661) and is considered an overlapping tenure on the management unit (consistent with the FSC Standard).

The Management Unit (MU) includes the following tenures but excludes any federal lands, private lands, parks and municipalities:

**Table 1: Forest Tenures within the Management Unit**

| Licensee | Tenure | Total Area (ha)[4] | THLB[3] (ha) | Allowable Annual Cut (AAC)[2] m³ | Long Term Harvest Level (LTHL)[1] m³ |
|---|---|---|---|---|---|
| Taan Forest | TFL 60 | 134,507 | 55,720 | 340,000 (cedar 133,000) | 342,462 |
| | Haida Tenure | 58,606 | 29,760 | 120,000 | 135,605 |
| BCTS | Haida Tenure apportionment | - | - | 14,210 | |
| | Total | 193,113 | 85,480 | 474,210 | 478,067 |

[1] Long Term Harvest Level as indicated in the Haida Gwaii Management Council TSR Analysis Package (January 2012), before non-recoverable losses are removed.

[2] The new Haida Gwaii AAC was announced in April 2012 which significantly reduced the AAC to a total of 929,000m³ for all of Haida Gwaii. The AAC for TFL 60 and the entire TSA was announced September 20, 2012 and includes an expectation of average maximum cedar (red cedar and yellow cedar) harvest level. The current Haida Tenure is a forestry licence to cut tenure, which technically does not have an AAC, as it is a non-replaceable licence. It is an interim licence while in transition to the new long term, area based First Nations Woodland Tenure. The volume under the current Haida Tenure is 120,000.

[3] THLB reduced as part of the new HGMC timber supply review and consideration of the Land Use Order constraints. Haida Tenure reduced from 30, 250ha to 30,003ha (247ha), TFL 60 reduced from 76,225 to 55,574.

[4] Total Area of TFL 60 revised slightly in November 2012 to reflect adjustments and corrections to tenure boundaries (i.e., merging and correction of several differing versions of tenure boundaries) from 136,400ha to 135,757ha; FLTC corrected from 71,000ha total area to 58,620ha to reflect a correction of a previous calculation error. Total new certified area 345,077ha (-13,023ha from 358,100ha).

TFL 60 is located on Graham Island (the northernmost of the two major islands) with smaller portions located on Louise Island and Moresby Island. The TFL has undergone numerous ownership changes in the last 50 years. The original TFL 39 was acquired by the Powell River Company in 1961. In the early 1960s the Powell River Company merged with MacMillan and Bloedel Ltd. to form MacMillan Bloedel and Powell River Ltd., simplified to MacMillan Bloedel Ltd. in 1966. On November 1st, 1999 MacMillan Bloedel became part of Weyerhaeuser. The coastal operations were known as the Weyerhaeuser B.C. Coastal Group (BCCG) which later became Cascadia Forest Products (2005). Western Forest Products Inc. acquired Cascadia Forest Products in 2006. Taan Forest completed the purchase of TFL 60 (formerly TFL 39 Block 6) and associated assets from Western Forest Products Inc. (WFP) on June 29, 2012.

The Haida Gwaii/ Queen Charlotte TSA lies entirely within the Haida Gwaii Islands. The timber supply area is primarily located on the east and west sides of Graham Island, with a smaller portion on northwest Moresby Island and covers approximately 465,000 hectares of which roughly 25% is considered to contribute to the Timber Harvesting Land Base. The Taan Forestry License to Cut (FLTC) A87661 is located within the Haida Gwaii TSA. Upon transfer of the Taan FLTC tenure to a First Nations Woodland Tenure (area based), the FLTC will be removed from the TSA. The TSA was significantly reduced when new protected areas were created as part of the Land Use Planning process and the Haida Gwaii Land Use Objectives Order.

Work continues in 2016 to merge the Taan tenures into one area based First Nations Woodland Tenure. When complete, the FSC Management Plan will be updated.

The Environmental Risk Assessment (Zimmfor 2016) contains a more detailed description of the Management Unit in terms of ecosystems and seral stages.

## *Exclusions from the MU*

There are no exclusions from the Management Unit, all of Taan Forest tenures are included in the certified area.

## *Excisions from the MU*

In 2013, a small area (1.05 hectares) has been removed/ excised from the management unit in FLTC A87661 for a Ministry of Transport gravel pit (#6403273).

In 2017, an additional 0.84ha was removed from the MU FLTC 187661 for the BC Hydro sub-station in Sandspit.

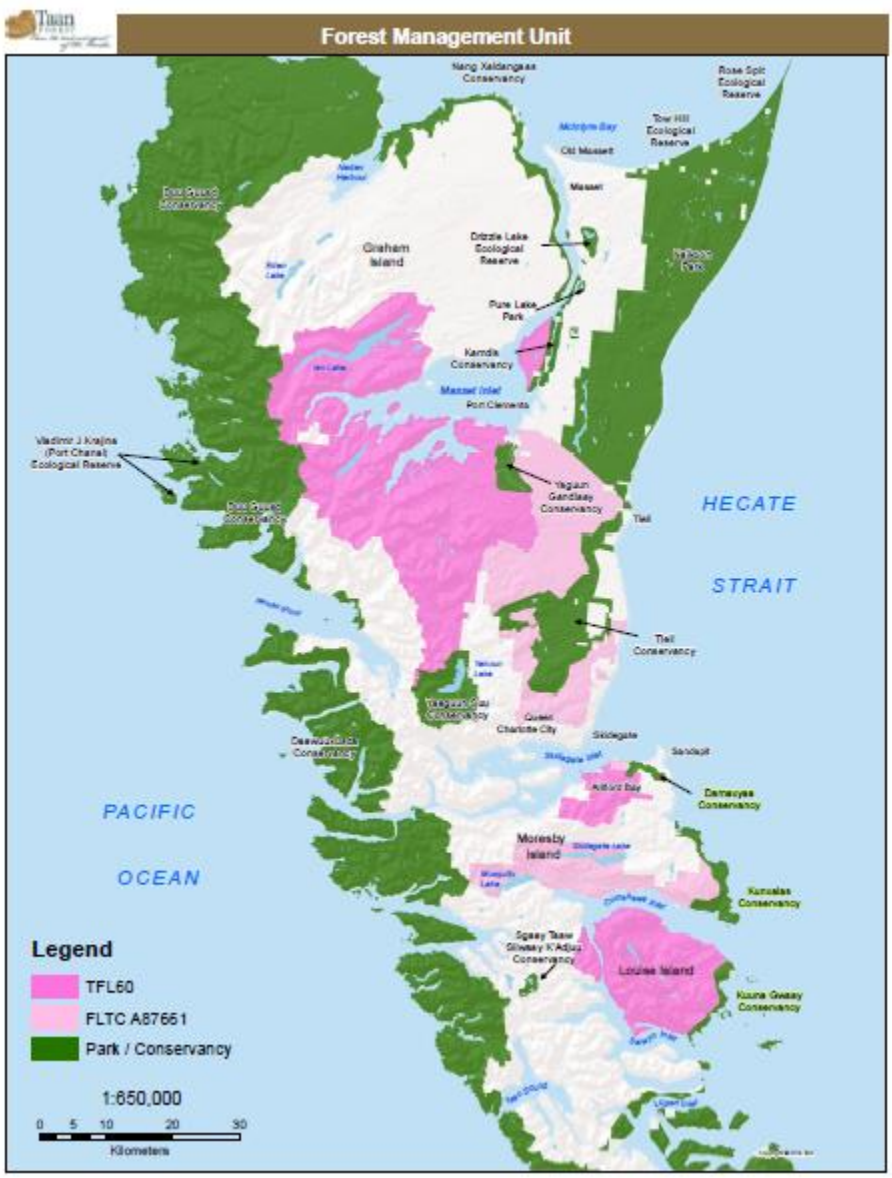


**Figure 1: Map of the Management Unit**

Additional maps describing various aspects of the Management Unit are included in related documents such as the Forest Stewardship Plan and the FSC Assessment Reports.

## *Harvest Systems*

There are three harvest systems typically utilized on the coast of BC:

- Ground based (typically 30-35% slopes)
- Cable (typically 60%+ slopes)
- Aerial (typically helicopter, very steep slopes, inaccessible areas)

The choice of system is based on a combination of factors, including, but not limited to: slope, terrain conditions, soil type (sensitivity to disturbance), log size and grade, yarding/ skidding distance and piece size, silviculture system (level of retention and number of entries planned) along with consideration other resources, accessibility and road costs, future management and the balance of production costs with economic limits.

For the purposes of cutting authority for crown land under the Forest Act in relation to Cutting Permits, harvest systems have been classified as conventional and non-conventional. The actual methods to be used for each opening are assessed and prescribed in the site level plans (e.g., Harvest Instructions, Site Plan).

## *Harvesting History*

Major commercial tree species and historical harvest profile of Haida Gwaii are western hemlock (30-40%), western red cedar (30-50%), yellow cedar/ cypress (5-10%), and Sitka spruce (20-30%)[4]. Harvest levels in the past have been significantly lower than the Annual Allowable Cut as a result of poor economic conditions and curtailed operations and implementation of the Land Use Order.

**Table 2: Harvesting History of the MU**

| Tenure | Year | AAC m³[5] | Actual Harvested[6] m³ | Indicated LTHL[7] m³ |
|---|---|---|---|---|
| Haida Tenure | 2010 | 120,000 | 26,000 | - |
| TFL 60 | 2010 | 1, 082, 616 | 26,000 (Taan) | 1,040,000 |
| | 2009 | 1, 150, 000[8] | 56, 465 | |
| | 2008 | 789,616 | 477, 665 | |
| | 2007 | 789,616 | 404, 769 | |
| | 2006 | 1,039,616 | 519, 269 | |
| | 2005 | 1,039,616 | 394, 202 | |

For a summary of more recent harvesting in the MU, refer to Appendix 3 – Annual Monitoring Report.

[4] Taan Wood Marketing Plan (April 8, 2010)
[5] Ministry of Forests and Range, Forest Analysis & Inventory Branch, Current AAC: http://www.for.gov.bc.ca/hts/aac.htm. Current AAC calculations include the Designated Areas that have been deferred from any harvesting. Historical AAC reported are sourced from Western Forest Products Inc. Summary of Block 6 Changes in AAC Contributions and include removal of the Designated Areas. In addition, several changes occurred over the time frame reported, often times mid-year. Numbers reported above for a given year were taken from the AAC reported for the majority of the year.
[6] Western Forest Products Inc. Summary of AAC Allocation & Volume Harvested (May 2009) & TSA Information from MoF Harvest Billing System.
[7] Haida Gwaii/ Queen Charlotte Islands LUP Timber Supply Analysis-Analysis of Base Cases, Cortex Consulting (November 2004)
[8] MFLNRO Rationale for AAC Determination for TFL 39 (Weyerhaeuser) TSR2 (November 2001)

## *Protected Areas*

There are several protected areas (or designated under Part 13 of the Forest Act) located within or adjacent to the MU.

The protected areas were amended in the spring of 2012 to add in several foreshore areas and marine areas to the existing parks and conservancies and the information has been updated below consistent with the amendment.

**Table 3: Protected Areas within or Adjacent to the DFA[1]**

| Park/ Reserve | Summary of Management Objectives | Land Area (ha) | Marine Area (ha) | Total Area (ha) |
|---|---|---|---|---|
| Daawuuxusda Conservancy/ Heritage Site | Protection of Haida heritage sites (e.g., villages and seasonal camps); Maintenance of biological diversity, natural environmental values and recreation opportunities. | 70,295.8 | 45,987.4 | 116,283.2 |
| Damaxyaa Conservancy/ Heritage Site | Protection of cultural values (CMTs and Archaeological Sites) Recreation – Louise Dover Trail. Spatial connectivity to other protected areas. Includes a marine protected area. | 822.5 | 7.4 | 829.9 |
| Duu Guusd Conservancy/ Heritage Site | Maintenance of biodiversity through representation of all three terrestrial eco-sections of Haida Gwaii and contains cultural/ archaeological sites, identified bird nests and nesting habitat for species at risk, some significant geological formations and 18 estuaries (herring spawning, kelp and eel grass). | 143,592.0 | 84,198.3 | 227,790.3 |
| Kamdis Conservancy/ Heritage Site | Protection of an internationally significant intertidal estuarine wetland complex that provides habitat for waterfowl, shorebirds and salmonids and protection of cultural/ archeological sites. Important area for cultural, social and economic purposes for the Haida. Has a marine protected area component. | 1,894.5 | 828.1 | 2,722.6 |
| Kunxalas Conservancy/ Heritage Site | Protection of cultural values, villages and heritage sites, recreation trails and camp sites, unique ecosystem complexes, seabird colonies, species at risk nesting/ breeding areas and a marine protected area. ). | 3,343.5 | 12,367.9 | 15,711.4 |
| K'uuna Gwaay Conservancy/ Heritage Site | Protection of cultural values (food collection areas, villages and seasonal camps), important monitoring area for the Research Group On Introduced Species (RGIS) and the Laskeek Bay Conservation Society for seabirds, shorebirds, marine mammals, cavity nesters and plant inventories. Rare and unique ecosystems. ) | 1,749.5 | 13,510.3 | 15,259.8 |
| Naikoon Park | Protection of recreation values (campgrounds, ATV use, hiking) and wildlife (migratory bird route). | 69,012.0 | 0.0 | 69,012.0 |
| Nang Xaldangaas Conservancy/ Heritage Site | Protection of cultural values, villages and heritage sites, important foraging and nesting habitat for species at risk and critical habitat for waterfowl, rare plants, protection of biodiversity and natural environmental values. Marine protected area component. | 6,891.6 | 9,803.9 | 16,695.5 |
| Pure Lake Park | Important recreation area for swimming, canoeing and picnicking. | 141.8 | 0.0 | 141.8 |
| Sgaay Taaw Siiwaay K'adjuu Conservancy/ Heritage Site | Maintain the ongoing social and ceremonial use of cultural features, focusing on protecting harvesting and hunting areas and their associated cultural and biological values. Important medicinal plants, rare and endangered plants.) | 596.6 | 0.0 | 596.6 |
| Tlall Conservancy/ Heritage Site | Protection of cultural values (e.g., food gathering), villages, heritage sites and seasonal camps, habitat for variety of birds (including species at risk), rocky mountain elk. | 16,206.3 | 25.0 | 16,231.3 |

| Park/ Reserve | Summary of Management Objectives | Land Area (ha) | Marine Area (ha) | Total Area (ha) |
|---|---|---|---|---|
| Yaaguun Gandlaay Conservancy/ Heritage Site | Protection of cultural values (e.g., social, spiritual), important food fish gathering area, villages, heritage sites, CMTs and archeological sites and seasonal camps, rare plants. Contains component of marine protected area. | 2,450.6 | 237.6 | 2,688.2 |
| Yaaguun Suu Conservancy/ Heritage Site | Protection of cultural values (e.g., social, spiritual), important food fish gathering area, forage and nesting habitat for species at risk, recreation trails, research area for medicinal plants. Recreation trails link to other important areas. | 7,970.2 | 0.0 | 7,970.2 |
| Drizzle Lake Ecological Reserve | Ecosystem representation and protection (allowing research and educational activities). Protection of undisturbed lake and bog ecosystems (research on stickleback populations and their predators). | 813.6 | 0.0 | 813.6 |
| Rose Spit Ecological Reserve | Ecosystem representation and protection (allowing research and educational activities). Protection of sandy coastal marine environment & associated flora and fauna. | 201.5 | 0.0 | 201.5 |
| Tow Hill Ecological Reserve | Ecosystem representation and protection (allowing research and educational activities). Protection of sand beach, dune ecosystems and inland moor bogs. | 518.9 | 0.0 | 518.9 |
| Vladimir j. Krajina (Port Chanal) Ecological Reserve | Ecosystem representation and protection (allowing research and educational activities). Protection of representative ecosystems, rare genetic resources and outstanding biological phenomena in remote coastal setting. | 8,085.4 | 1,091.5 | 9,176.9 |
| Gwaii Haanas National Park | National Park and Haida Heritage Site that is managed jointly by the Government of Canada and the Haida Nation through establishment of a Management Agreement, Management Plan and Management Board. Largest protected area on Haida Gwaii (representing 15% of the Islands). Protection of cultural values, villages, recreation area for kayaking, important breeding area for about 750,000 seabirds and migratory stop for birds and grey whales. | 149,291.4 | 344,995.2 | 494,286.6 |
| Lepas Bay Ecological Reserve | Lepas Bay Ecological Reserve was established for the preservation of nesting seabirds, mainly petrels, and their habitat. Consumptive activities like hunting, freshwater fishing, camping, livestock grazing, removal of materials, plants or animals are prohibited by regulation in ecological reserves. Landing on the unnamed island in Lepas Bay Ecological Reserve is restricted to protect sensitive wildlife and habitat. Permission to land is required. The approved Lepas Bay Ecological Reserve | 1.5 | 0.0 | 1.5 |
| | Total | 483,879.3 | 346,086.7 | 996,931.8 |

[1] Hectares represent the forested portions of the protected areas only; non-forested areas have not been included.

The Protected Areas were created and are managed for a variety of different objectives. BC Parks maintains a website dedicated to the management and conservation of all of the BC Parks, Heritage Sites and Conservancies including an information page on each site that includes the management objectives, unique features of each protected area as well as Management Plans: http://www.env.gov.bc.ca/bcparks/explore/.


**Figure 2: Map of Haida Gwaii Protected Areas**

## *Stakeholders & Other Tenures*

The communities associated with the Management Unit are Sandspit, Queen Charlotte City, Port Clements/ Tlell, Masset and Skidegate.

Within the management unit, there are several legal and customary tenure and use rights holders, including the Haida Nation (Government body), mineral tenures, water tenures, trapping rights, stakeholders, interest groups and communities that overlap or are adjacent to the management unit (associated maps are available upon request, where applicable).

The Taan CMS Administrator is responsible to maintain a "Stakeholder Contact List" and ensure consistency with the legal tenure rights contacts obtained from the Crown Registry and Geographic Base Branch at: http://geobc.gov.bc.ca/. Information is maintained in Geographic Information Systems (GIS).

In general terms, the management activities of other legal non-forest tenure holders in the Management Unit do not typically undermine the achievement of the management plan objectives. In the event that Taan Management determines an issue is present on the Management Unit, Taan will take appropriate steps to ensure that any damages resulting from those activities are mitigated.

# *Sustainable Harvest Rates*

## *Timber Supply Review and Allowable Annual Cut*

Under the Reconciliation Protocol (and associated legislation the Haida Gwaii Reconciliation Act and Haida Stewardship Law), the Haida Gwaii Management Council (HGMC) was established, and one of the mandates of the council is to establish the AAC for all of Haida Gwaii.

The Timber Supply Review was completed in 2011 for all of Haida Gwaii, incorporating the new Land Use Order requirements. The new AAC determination by the Haida Gwaii Management Council (HGMC) was announced April 4, 2012 at 929,000$m^{3.}$ Harvest levels have been significantly reduced (48%) under the new AAC (which accounts for the Land Use Order).

The AAC determinations were released September 20, 2012 by the Chief Forester for TFL 60, TFL 58 and for the TSA. The AAC for the TSA was announced August 2013 and included the Taan Haida Tenure (FLTC A87661) and the volume allocation to BC Timber Sales within the Haida Tenure (refer to Table 1 above).

The AAC determination included an expectation for limits to cedar (red and yellow cedar) harvesting to address an anticipated downfall period for cedar in the future. At this time, these limits are voluntary and they will be monitored by the Ministry and the HGMC and consideration of establishing the expectations as a legally binding may be considered in future if deemed required. There is potential to increase the cedar expectation limits, provided strategies are developed and rationale is available.

A new Timber Supply Review has been initiated. A subsequent AAC determination and allocation will also be completed.

As a result of the Land Use Order and the ecosystem based management objectives, there are no anticipated significant reductions to the timber supply and AAC as a result of the implementation of the FSC requirements.

Background Information

Requirements relating to Timber Supply Review and establishing Allowable Annual Cut for crown land are specified within the Forest Act (section 8). For Haida Gwaii, specifications are also outlined within the Reconciliation Protocol and the Terms of Reference.

The current and historical Timber Supply Reviews and AAC determinations relating to the Management Unit can be viewed at: http://www.for.gov.bc.ca/hts/analysis.htm.

For more information on the Timber Supply Review (TSR) and determination of the AAC refer to the Haida Gwaii Management Council website and/ or the Ministry of Forests, Lands and Natural Resource Operations, Forest Analysis and Inventory Branch website.

### *Sustainable Harvest Rates*

Taan is responsible to ensure that the actual rate of harvest in any given year is no more than 25% above the projected long-term harvest rate (the 25% limit does not include utilization of undercut volume that is accumulated after the date of certification).

Taan is responsible to coordinate annual analysis of the present and projected harvest rates over the next decade and averages over subsequent decades to demonstrate that harvest levels do not exceed the projected long-term harvest rate. The analysis also demonstrates that averages of actual timber harvesting in decades subsequent to FSC Certification do not exceed the projected long term harvest rates. This analysis was completed as part of the Haida Gwaii Management Council Timber Supply Review in 2011/2012.

An indicator has also been developed within the Appendix 3 Monitoring Report to track and report on sustainable harvest rates in relation to the long term harvest rate.

## *Public Consultation Process*

### *Existing Consultation Processes*

Solutions Table

Under the Haida Gwaii Reconciliation Agreement between the Government of BC and the Haida Nation, provisions are included to establish the Solutions Table to oversee technical and operational aspects of forest management. A summary of the process is as follows:

- All applications received by the province are referred to Front Counter Haida Gwaii.
- Applications are given to a small sub-table to determine whether they are 'fast-tracked' or whether they will be reviewed by the whole table. A specific list of applications suitable for fast-tracking has been compiled and only those applications on the list that contain no controversial components may be fast-tracked.
- If an application is fast-tracked it is passed directly to the decision makers of both the province and the Haida for approval or rejection, both decision makers must concur on the outcome. The goal is that fast-tracked application will be signed within 14 days of submission.
- Applications that are not fast-tracked are sent to the Solutions Table. The Solutions Table consists of two Haida and two provincial representatives. They have full access to a broader set of experts who they are able to bring in to advice as needed. The Solutions Table reviews applications and makes a recommendation to decision makers. The application and recommendation is then passed to both the Haida and the Provincial decision maker for a decision. Both decision makers must concur on the decision.

The Solutions Table reports to the Haida Gwaii Management Council (a collaboration of Haida and BC government to apply joint decisions making on Haida Gwaii, including for example establishing legal objectives for forest management and determining the Allowable Annual Cut for Haida Gwaii).

### Forest Stewardship Plan

In addition to the Solutions Table, the Forest Stewardship Plan (FSP) process includes a legislated review and comment period for members of the public, stakeholders and the Haida, in addition to site specific referrals/ consultation of proposed forest management activities with the Haida (information sharing) and the "Intergovernmental process" under the Land Use Order.

A summary of the Information Sharing requirements in the FSP are as follows:

- Land Use Order Intergovernmental Process, specific to the relevant Results and Strategies in the Forest Stewardship Plan, as required.
- Annual information sharing process (including overview of planned forest management activities/ locations)
- Cutblock and road referral process (maps) of proposed developments areas for a 30 day period.

Periodic referrals of specific cutblocks and roads may also take place to review reconnaissance locations, "pro-forma" calculations and potential issues/ concern.

Taan is also responsible to maintain records of consultation related to our specific forest management activities (e.g., FSP, Cutting Permit/ Road Permit, etc.).

Where feasible, the FSC Management Plan and High Conservation Value Forest Assessment (HCVF) Assessment will be included in discussions or presentations relating to consultation/ referral of the Forest Stewardship Plan.

## *FSC Consultation*

In addition to the public consultation process under the FSP, the FSC Standard requires public consultation related to the FSC Management Plan, the Assessment of High Conservation Value Forests as well as the planning and annual results of the Monitoring Plan.

One of the objectives of the FSC Management Plan Public Consultation Process is to seek to obtain *free and informed consent* from the Haida Nation and the *local rights holders* to any portion of the management plan that affects their rights and resources as well as to provide on-going public participation that accommodates the needs and preferences of *directly affected persons*.

For the purposes of this section, the following terms are defined by FSC:

- **Local rights holders** – A person who resides within or adjacent to the management unit and holds legal or customary tenure or use rights in the management unit.
- **Free and informed consent** – free and informed consent is considered given by local rights holder(s) where: a) local rights holders have participated in a public participation process under Criterion 4.4 that accommodates their needs/preferences with regard to scope and design (as demonstrated by lack of disputes regarding the process from local rights holders); and, b) having been informed of the opportunity to do so, no local rights holder has given written notice to the manager that they dispute that proposed management will protect their rights or resources.

- **Directly affected persons** - Groups or people (both women and men) who consider themselves directly affected by the proposed and current operations; reside in communities within or adjacent to the management unit; or have legal or customary rights in the management unit.

The CMS Administrator is responsible for coordinating the FSC Consultation program.

The FSC Management Plan, HCVF Assessment and annual monitoring results (excluding any proprietary information) are posted on the Taan website along with contact information regarding comments or concerns. Updates are posted as they occur.

Consultation of the FSC Management Plan, HCVF Assessment and monitoring results with the public/ stakeholders will occur on an-on-going basis at the following minimum key stages:

- Initial consultation of the FSC Management Plan and HCVF Assessment will include written notification to stakeholders (per the Stakeholder Contacts) and a link to the Taan website. Hard copies will also be made available at the Taan office in Haida Gwaii. Comments may be received at any time following the initial consultation; however, to ensure feedback is incorporated into the first version of the plan, the review and comment period will be set at 2 weeks.
- Additional meetings may be held with key parties to review and discuss the key documents, at the discretion of Taan (records maintained on file).
- Updates to the FSC Management Plan, HCVF Assessment or annual monitoring summary will be posted to the internet as they occur. At a minimum, the monitoring results are posted annually. Significant updates or changes may also include notification to stakeholders and/ or be reviewed at meetings with key parties, as deemed required by Taan.
- Additional forums may be considered (e.g., workshops, open houses, focus meetings), where deemed required by Taan.
- Comments and input that is received during the Public Consultation Process (from members of the public, local businesses, stakeholders, directly affected persons, and the Haida Nation) are reviewed and considered by Taan Management and where applicable, interests and concerns are forwarded to the Taan CMS Administrator for consideration.
- Records of all input/ comments received in addition to any responses or changes to the FSC Management Plan to address the input is documented and maintained on file by Taan.
- Taan provides access to the Dispute Resolution Process (Appendix 4) on the website.

## Dispute/ Grievance Resolution Process

If during consultation, local rights holders or directly affected persons dispute that current or proposed management protects their rights and resources or interests, Taan implements the Dispute/ Grievance Resolution Process (Appendix 4).

The Dispute Resolution Process has been moved from the Management Plan into a separate appendix to facilitate easier communication and posting to the Taan website.

## Free and Informed Consent

Free and informed consent (refer to the definition above) is achieved through a combination of the existing consultation processes (i.e., the Land Use Order consultation and public involvement processes, the Solutions Table and the review and "recommendations for approval" of the Forest Stewardship Plan and site level plans for each development area (cutblock and roads), as well as through the FSC Consultation process (outlined above), that includes consultation of the FSC Management Plan, monitoring plans and annual reports, and the High Conservation Value Forest Assessment).

Free and Informed consent is demonstrated by evidence of implementation of the Consultation requirements (outlined above) and no resulting evidence of un-resolved disputes or grievances by a local rights holder (definition provided above) or the Haida Nation.

Conversely, the Haida Nation or any local rights holder may withdraw consent for the FSC Management Plan (or related Monitoring Plan, annual report and HCVF Assessment) by notifying Taan, in writing, to outline their concerns. In the event that consent is withdrawn, Taan is responsible to work cooperatively with the other party to strive for amicable resolution of the issues and re-instatement of consent.

The primary objective is that upon receipt of a dispute or grievance, that the parties will successfully resolve the issues through the Dispute Resolution Process (Appendix 4), thereby avoiding a situation of withdrawn consent.

# Forest Management Objectives & Strategies

## Links to Existing Strategies & Objectives

The following existing management plans, agreements and objectives that are currently in place and provide direct and indirect support to the FSC Management Plan:

**Table 4: Existing Management Plans, Documents & Agreements**

| Document | Source | Summary |
|---|---|---|
| Haida Gwaii Strategic Land Use Agreement | Integrated Land Management Bureau – Haida Gwaii Strategic Land Use Agreement Implementation | Agreement between the BC government and the Haida Nation outlining a collaborative approach to Land Use Planning for Haida Gwaii, confirms land use zones and EBM parameters. |
| Haida Gwaii Land Use Objectives Order | | Establishes objectives for implementation of Ecosystem Based Management on Haida Gwaii |
| Haida Gwaii Management Council TSR 2011/2012 Timber Supply Reviews, Data Packages & MFLNRO Determinations (TFL 60 and QC TSA) | Haida Gwaii Management Council TSR 2011/2012 Ministry of Forests, Forest Analysis and Inventory Branch | Provides historical information for the tenure areas, background information supporting the Chief Forester to determine the Allowable Annual Cut (e.g., ecosystems, timber inventory, constraints to harvesting, timber supply analysis, etc.). The AAC will be apportioned to each tenure holder and BCTS. |
| TFL 60 & First Nation Woodland License Management Plan-Taan | Taan Corporate Files (FNWL MP Under development) | Management Plans are required under the Forest Act to support Timber Supply Review and will be developed as required. |
| TFL 39 Management Plan #8 (Weyerhaeuser BC Coastal Group) | Taan Corporate Files | Establishes management objectives and strategies utilizing timber supply analysis information and existing inventories and assessments. Previously a legal requirement to complete a Management Plan under the Forest Act for Tree Farm Licenses. |
| License Agreements – TFL, FL | Taan Corporate Files | Sets out the legal requirements and commitments related to the tenure, defines rights and obligations. |
| Joint Haida Gwaii Forest Stewardship Plan | Taan website | Joint FSP under development with Taan, BCTS, Husby and Teal Jones – approval in process. |
| Corporate Management Systems | Taan Corporate Files | Corporate Policies, MS Manual (training, applicable legal requirements and international protocols/ agreements, standard operating procedures, petroleum and hazardous materials, etc.) |
| Site Level Plans & Assessments | Taan Corporate Files | Harvest & Road Instructions/ Maps, Site Plans, Silviculture Treatment Regimes & associated assessments (e.g., cultural, riparian, windthrow, etc.) |
| Inventories & Assessments | Taan Corporate Files/ GIS | High level assessments (e.g., watersheds) and GIS inventories (terrain stability, riparian, ecosystem, etc.) |

### Haida Gwaii Land Use Objectives Order

The Haida Gwaii Land Use Objectives Order is higher level plan that significantly changes the forest management strategies on Haida Gwaii and therefore warrants further discussion.

Haida Gwaii was one of three areas included in the Coast Sustainability Protocol Agreement signed in April 2001 by First Nations, government, the forest industry, communities and environmental organizations. The protocol agreement included a commitment to implementing ecosystem-based management, intended to ensure the co-existence of healthy communities and healthy ecosystems on the coast. The Haida Gwaii/Queen Charlotte Islands planning process included review of independent, science-based information developed by a coast information team with respect to defining Ecosystem Based Management.

In September 2003, a community based strategic land use planning process was initiated and led by the Council of the Haida Nation and the Province of British Columbia. The process was based on framework developed under protocol agreements signed in April 2001 that outlined the commitment to cooperatively develop a strategic land use plan based on an ecosystem based management framework designed to protect areas of critical significance and to establish forest management objectives for cultural, aquatic, biodiversity and wildlife values.

The Strategic Land Use Agreement (SLUA) was signed by the Haida Nation and the government of BC in December 2007, further cementing the commitment to collaborative land use planning processes.

The Strategic Land Use Agreement planning process lasted several years between 2003 and 2007 and included collaboration with government, Haida Nation, industry, ENGO's, tourism and recreation, etc. The draft Land Use Objectives Order was released spring 2010 and underwent an extensive public review and comment period that included stakeholder meetings and open houses.

The Land Use Objectives Order was brought into force December 2010 and establishes legal objectives for forest based values to support implementation of ecosystem based management. The objectives protect important Haida cultural values, support ecosystem integrity and provide environmental benefits by maintaining the diversity and abundance of organisms on Haida Gwaii. Human well-being will be maintained through policies and initiatives designed to achieve socioeconomic benefits, including carbon values, and timber harvest levels that will support a viable forest industry[9].

The Order establishes legal objectives for forest based values to support implementation of EBM and sets objectives for:

- Cultural features [traditional heritage features, traditional forest features, cedar & yew & CMT/monumental Cedar retention] (identification, certification of surveyors, reserve zones)
- Aquatic Habitats [Type I & II fish habitat, active fluvial units, upland streams, sensitive watersheds] (protection & reserve zones)
- Biodiversity [forested swamps, site series representation/old forest, red/blue listed spp.] (retention targets & strategies)
- Wildlife [black bear dens, MaMu nest habitat, QC Goshawk habitat, Blue Heron nest habitat, Northern Saw-whet Owl nest habitat] (% protection, reserve & buffer zones etc.)

## *Social & Economic*

A base case study on economic and social aspects of forest management on Haida Gwaii was completed during the Land Use Planning Process (G. Homlan and S. Nicol. 2004). The report provides baseline data on populations, trends, employment, etc. and summarizes the key concerns identified by local communities and the Haida Nation:

- Lack of benefits from crown lands and resources;
- Lack of health, recreation and other social services;
- Sustainability of harvest levels and impacts to non-timber forest products;
- Impediments to economic development; and
- Need for greater cooperation to achieve common goals.

[9] Haida Gwaii Land Use Objectives Order-Draft for Public Review, Preamble.

With the recently developed Taan Forest (owned by the Haida Nation) and the acquisition of forest tenures on Haida Gwaii to be managed by Taan Forest, a significant portion of the benefits from crown lands and resources on Haida Gwaii are now being provided to the Haida Nation and to local residents employed at Taan operations.

Several governmental changes have occurred in the relationship between the province of BC and the Haida Nation under various agreements and legislation and improved cooperation has been established (e.g., joint decision making, Solutions Table referral process of forest operational plans/ permits, etc.).

Additional strategies in relation to economic and social objectives under the FSC Management Plan are described below.

## Training & Skills Development

Taan Managers/ Supervisors and contract principles/ Supervisors must complete the CMS/ FSC Awareness Level 2 Training once every three years.

The CMS/ FSC Awareness Level 1 training package must also be reviewed on an annual basis by all crew members. Specific personnel required to complete the two levels of training are documented in Corporate Management System (CMS) Training Matrix.

These two training courses combined with the applicable existing training requirements under the Taan CMS ensures that personnel have the training and qualification to implement the requirements of FSC Certification.

Additional training related to the Land Use Order requirement for Cultural Use Identification Surveys on every development area are described within the Forest Stewardship Plan Supporting Information (the surveys include identification of cultural features such as Culturally Modified Trees and Monumental Cedar, Traditional Heritage Features and Traditional Forest Features as described under the Land Use Order; Traditional Forest Features including numerous culturally important plants).

## Optimal Use

Taan is committed to ensuring optimal utilization and value of the forest resource while ensuring minimal waste and avoiding high grading the forest resource. This includes encouraging local manufacturing and employment opportunities on Haida Gwaii. However, local manufacturing on Haida Gwaii has several challenges that impact the ability to compete with other mills/ facilities on the mainland and in the interior of BC, such as:

- No local market for low-grade logs, chips and other by-products
- High transportation costs
- High power/ electricity costs (significantly higher than the mainland and interior)

To help improve optimal utilization and value of the forest resource, Taan has recently initiated a salvage program for damaged and downed timber, as well as minor forest products such as cants, shakes and shingles, etc.

These challenges and potential solutions have been recently discussed in the Forest Strategy public consultation project initiated by the Haida Gwaii Management Council.

## Local Employment, Goods & Services

Taan is committed to encouraging local employment and the use of local goods and services.

General Management strategies include local advertising on Haida Gwaii for all new hires, requests for proposals, and contract tendering processes (i.e., local newspaper or other media). All other criteria being equal, preference is given to local workers and contractors.

## Environmental & Social Costs

FSC requires identification of environmental and social costs related to forest management, activities within the Management Unit, as well as development of management strategies to off-set or reduce the identified costs. Costs can be expressed as absolute costs (i.e., the loss of the value of an asset) or opportunity cost (i.e., the value of the next best alternative that is foregone in order to achieve the objectives).

Very little information is available in terms of absolute costs related to forest management impacts to ecosystem services and impacts to environmental and social values. Opportunity cost is much easier to identify and describe, and will be used within this FSC Management Plan to assess environmental and costs.

Overall, environmental and social costs and benefits related to forest management activities on Haida Gwaii were identified and considered in detail during the Land Use Planning Process that resulted in the development of the Land Use Order. The Order increases the level of protection of the forest resource and the corresponding forest values/ ecosystem services to an unprecedented level in BC.

Environmental and social costs or impacts have been partially identified within the Taan CMS risk assessments (e.g., alteration of habitat, creation of waste, safety hazards/ costs, etc.). For the costs/ impacts that are identified within the Risk Assessment as significant in relation to forest management activities, operational controls (Standard Operating Procedures) are developed within the structure of the CMS, to ensure impacts are minimized.

Some of the environmental and social costs and the associated risk have also been assessed as part of the Environmental Risk Assessment (Zimmfor 2016). Specific indicators were presented within the assessment to represent key values and the risk of forest management activities was assessed. The majority of indicators were assessed as low risk due to the Land Use Order requirements. Indicators that were assessed as significant risk with current forest management regimes are carried forward and addressed within this Management Plan (e.g., ungulate browse, beaver damage). To some degree, environmental and social costs are also evaluated in the HCVF Assessment (Zimmfor 2016) in relation to risks associated with current management regimes and any significant risks are addressed within this Management Plan as well.

A summary of the identified environmental and social costs identified in the various source documents (described above) is presented below:

**Table 5: Environmental & Social Costs**

| Category | "Cost" | Measures to Reduce or Offset the cost |
|---|---|---|
| Environmental Costs | leaks & spills (petroleum products & hazardous materials | Management System Operating Procedures (e.g., SOPs) contain best practices for handling, storage and transportation of petroleum and hazardous materials, regular maintenance of equipment and machinery, spill response and clean up. |
| | fire, landslides, debris torrents and Avalanches | Management System Operating Procedures (e.g., SOPs) contain best practices for prevention of environmental incidents, including provisions for terrain stability/ avalanche considerations when developing site level plans as well as operating procedures relating to weather related shut-down conditions (rainfall, fire weather, avalanche), emergency response and equipment requirements. |
| | creation of wastes | Management System Operating Procedures (e.g., SOPs) contain best practices for general waste management in relation to shop/ maintenance areas.<br>In addition, FSC public consultation has identified seedling protective cones as an area of special concern in regards to waste management. Inventory of existing cones is currently being completed and plans for regular removal programs are being implemented across the MU.<br>Of special note are wastes generated from the use of seedling protectors on the MU, refer to the management strategies within this Management Plan for detailed description and measures to mitigate. |
| | water quality, riparian condition, erosion/ siltation, alteration of drainage patterns, sedimentation and maintenance of old road systems | Management System Operating Procedures (e.g., SOPs.) contain best practices for management/ prevention of erosion, siltation, sedimentation, alteration of drainage patterns, as well as an inspection/ maintenance program for old road network systems and bridge structures.<br>This FSC Management Plan also includes special provisions for mitigation of impacts to riparian conditions. The Land Use Order also contains objectives and requirements for Watershed Condition (e.g., Sensitive Watersheds, Upland Streams). |
| | soil compaction, disturbance | Management System Operating Procedures (e.g., SOPs) contain best practices for conservation of soil resources, relating to permanent access limits as well as soil disturbance limits within the cutblocks. |
| | alteration of biodiversity, stand structure and habitat | Management System Operating Procedures (e.g., SOPs) contain best practices for stand level retention requirements including documentation of the stand structure descriptions to provide for annual monitoring of the types of stands being retained at the stand level. |
| | smoke emissions (pile burning) | Management System Operating Procedures (e.g., SOPs) contain best practices for appropriate weather indices and venting indices (consistent with MoE guidelines) that must be achieved prior to ignition. |
| Social Costs | noise disturbance | Where Taan receives communications/ complaints relate to noise disturbance, they will work with the party to address and mitigate the concerns, consistent with the FSC Consultation requirements. |
| | smoke emissions (pile burning) | Where Taan receives communications/ complaints relate to smoke emissions as a result of pile burning, they will work with the party to address and mitigate the concerns, consistent with the FSC Consultation requirements. |
| | forest access (recreation, hunting, fishing, non-timber forest products) | Public access is maintained on the Management Unit, except for in specific, limited cases where access must be temporarily prevented for safety or environmental reasons (e.g., access gates to prevent public from damaging equipment when operating close to town that are removed following completion of harvesting, restricted access to community watershed areas, etc.). |
| | loss of forests (particularly old growth) | The provisions under the LUO that are implemented under the new Forest Stewardship Plan include many landscape and stand level reserve/ retention requirements (e.g., forest reserves, ecosystem representation targets, fish habitat, sensitive watersheds, etc.) that reduce impacts of loss of forest across the landscape. In addition, Haida Gwaii maintains an unprecedented portion of landscape within protected areas/ parks (over 50% of the islands). |

| Category | "Cost" | Measures to Reduce or Offset the cost |
|---|---|---|
| | worker safety | Management System Operating Procedures (e.g., SOPs) contain best practices for ensuring worker safety, consistent with legal requirements. Taan is also SAFE certified and requires all contractors woroking on the Management Unit to be SAFE certified. |
| | local employment, access to wood fiber | Per the FSC Management Plan (as well as corporate objectives for Taan Forest), we are committed to promoting local employment wherever possible and where capacity/ experience of local workers meets the needs of the organisation. |

Some social aspects of forest management can be assessed as a cost or a benefit, dependent on the success level of the aspect. For example, employment can be viewed as a cost or a benefit, depending on the evaluation criteria and the results (e.g., when assessing whether employment is focused on the local communities, results of low levels of local employment can contribute to a "cost" of forest management whereas if local employment is at acceptable or target levels, then it can be a benefit that off-sets other related environmental and social costs of forest management). Worker safety can be a social cost if accident frequencies are high, but can be a social benefit if while providing employment if accident rates are low as a result of the successful implementation of safety management systems.

Social costs have the potential to be offset by the social benefits of forest management such as employment and revenue, capital investment, revenue for the provincial government as a result of taxes and stumpage and other fees related to tenure management as well as expenditures in the local economy such as retail, grocers, restaurants, etc.

Therefore, in order to assess whether particular aspects of forest management are resulting in a cost versus a benefit to the local community and/ or forest workers, indicators, benchmarks and targets have been established to assess levels of environmental and social costs over time.

Indicators and benchmarks for environmental and social costs/ benefits are included in the Monitoring Annual Report (Appendix 3). In the event that additional environmental and social costs are identified as a result the FSC public consultation process, they will be added to the objectives and indicators, as appropriate.

## Recreation

The management objectives in relation to recreation values are to conserve the key features and values that are identified through legal requirements, local knowledge, FSC Assessments, or through the FSC consultation process.

Measures to address/ manage designated Recreation sites and trails are included within the Forest Stewardship Plan (FSP). In addition, strategies to protect trails and canoe runs are included within the FSP under the category of Traditional Heritage Features under the Land Use Order.

Additional established recreation sites and trails are also located within the Protected Areas (outside of the Management Unit).

Additional recreation areas identified to be of particular importance (within the Riparian Assessment and from the consultation process), and not managed through the Forest Stewardship Plan are as follows:

- Masset Inlet (Hiking and viewing [scenic lagoons, bays and estuaries], boating, fishing, bird hunting (Oct – Jan), beachcombing, boat touring and backcountry touring (e.g., on logging roads and clearcuts)
- Papa Johns Campsite, Yakoun River (popular campsite during the small island deer hunting and steelhead season)
- Mosquito Lake (rare plants, recreation trails, karsts, viewscapes, etc.)

The Mosquito Lake area is important to the Mount Moresby Adventure Camp (MMAC) for many values, including but not limited to, hiking trails, camping sites, rare plants, karsts and limestone, old growth forests, viewscapes, etc. MMAC has requested that Taan consult with them on future harvesting plans in the area to ensure that their interests are managed appropriately.

For the sites listed above, and where additional recreation sites or trails are identified through site level planning or consultation, Taan will address on a case by case basis and ensure management strategies/ site level plans consider the specific recreation values and address concerns.

## *Timber & Non-Timber Forest Products*

### Timber

Taan's primary timber objectives include striving to maximize the value of the forest resource and targeting the diversity of customers both locally and globally to increase the benefits to Haida Gwaii.

Taan products currently include logs, poles (through a joint venture Skidegate Enterprises) and custom cut lumber.

### Non-Timber Forest Products

Taan is committed to working with local stakeholders and interested parties regarding communication and access to the Management Unit for non-timber forest products.

An analysis of the socio-economic base case was completed by an economist as part of the Haida Gwaii Land Use Plan (March 2004). The following is an excerpt from the report:

*There are a number of botanical or non-timber forest products such as wild mushrooms, berries and other wild foods, plants used in wildcraft and medicinal plants that are harvested on the Islands. Some of these non-timber forest products have a long history of use by the Haida. Mushrooms are the most significant botanical from a commercial perspective, and currently they provide an important income supplement to the Haida and other Islands residents. In an average year (production can easily vary by 40%), it is estimated that up to 300 pickers (one - third locals) can earn several thousand dollars per year, harvesting 250,000 pounds of mushrooms (90% chanterelles) on the Islands.*

*Mushroom picking centres on the Islands include the Skidegate Lake area in the northern half of Moresby Island, Masset Inlet and the Yakoun River Valley.*

*Currently, commercial harvesting of other plants, such as floral greenery and medicinal, occurs at only a very small scale.*

The high cost of transportation from Haida Gwaii presents challenges for large scale market development of all non-timber forest products (other than local markets/ use). The Haida Nation have also expressed concerns with increased commercialization of non-timber forest products and the harvesting of culturally important trees and plants (Pierce Lefebvre Consulting. 2006. Socio-Economic Assessment of the Haida Gwaii Land Use Viewpoints).

### *Mushrooms*

Mushrooms have been identified as particularly significant to Haida Gwaii, warranting special consideration.

The BC Journal of Ecosystem Management (Published by FORREX Forum for Research and Extension) published a report titled 'Ecological descriptions of Pacific golden chanterelle (*Cantharellus formosus*) habitat and estimates of its extent in Haida Gwaii' (Kranabetter, J.M., H. Williams, and J. Morin. 2009) that identifies the ecosystems in Haida Gwaii where these mushrooms are prevalent.

As part of the study, various public consultation sessions were held with local communities.

The following is a summary of the report abstract that describes the key ecosystem and stand type associated with mushroom habitat:

*Ecologically based information on golden chanterelle (Cantharellus formosus) habitat is needed to guide decision making by forest managers. We described soils, plant communities, and stand characteristics of productive mushroom sites and used these features in a mapping exercise to estimate the extent of C. formosus habitat over a portion of the Haida Gwaii islands. Chanterelle sites were located at low elevations (approximately 100 m) on well-drained soils with silt loam to sandy loam textures and thin forest floors.*

*Plant communities were sparse and characterized by low herb and shrub cover with extensive carpets of feathermosses. The stands were productive second-growth western hemlock and Sitka spruce, ranging in age from 35 to 50 years, and the sites were strongly mounded from extensive blowdown events or logging disturbances. The site and soil properties were consistent with the zonal (01) site series (western hemlock –Sitka spruce – lanky moss) of the submontane variant of the wet hypermaritime Coastal Western Hemlock (cwhwh1) subzone.*

The report also identifies key Mushroom Management Areas (52, 125 ha) in Haida Gwaii (as sourced from the Land Use Order Background Report):

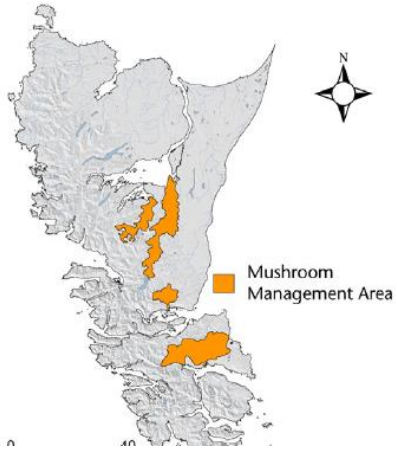


**Figure 3: Mushroom Management Areas**

The majority of the Mushroom Management Areas are located in the Management Unit (exception is a small potion in the southern patch).

A review of the Mushroom Management Areas overlaid with the Land Use Order Constraints Map provided in the HCVF Assessment (Zimmfor 2016) shows that the portions located to the north along the Yakoun River and a major river to the east are located within protected areas and Land Use Order cedar stewardship areas (very limited harvesting is permitted). The center potion adjacent to Skidegate Inlet is located within several different constrained areas such as cedar stewardship areas, forest reserves, Northern Goshawk reserves, Marbled Murrelet reserves and Riparian reserves.

The largest portion of Mushroom Management Area to the south that is located between Skidegate Lake and Cumshewa Inlet contains some smaller patches of forest reserves, Northern Goshawk reserves and riparian reserves. In addition to the established reserve areas under the Land Use Order there are numerous other requirements for stand level retention that will contribute to the overall conservation of key mushroom habitat areas (e.g., traditional heritage and forest features, monumental cedar, Culturally modified trees, bear dens, red and blue listed ecosystems, etc.).

In addition to the Mushroom Management Areas, the study also included habitat suitability mapping that focused on the specific habitat attributes associated with chanterelles (based on the ecosystem and stand type descriptions above (CWH wh1 01 ecosystem, low elevation sites (typically 100m or less), comprised of second growth hemlock and spruce stands (typically 35-50 years old)).

The study took place in the vicinity of Skidegate and Mosquito Lake and identified these specific ecosystem/ stand types using aerial photo and ground truthing. A snapshot of the resulting habitat suitability map is provided below:

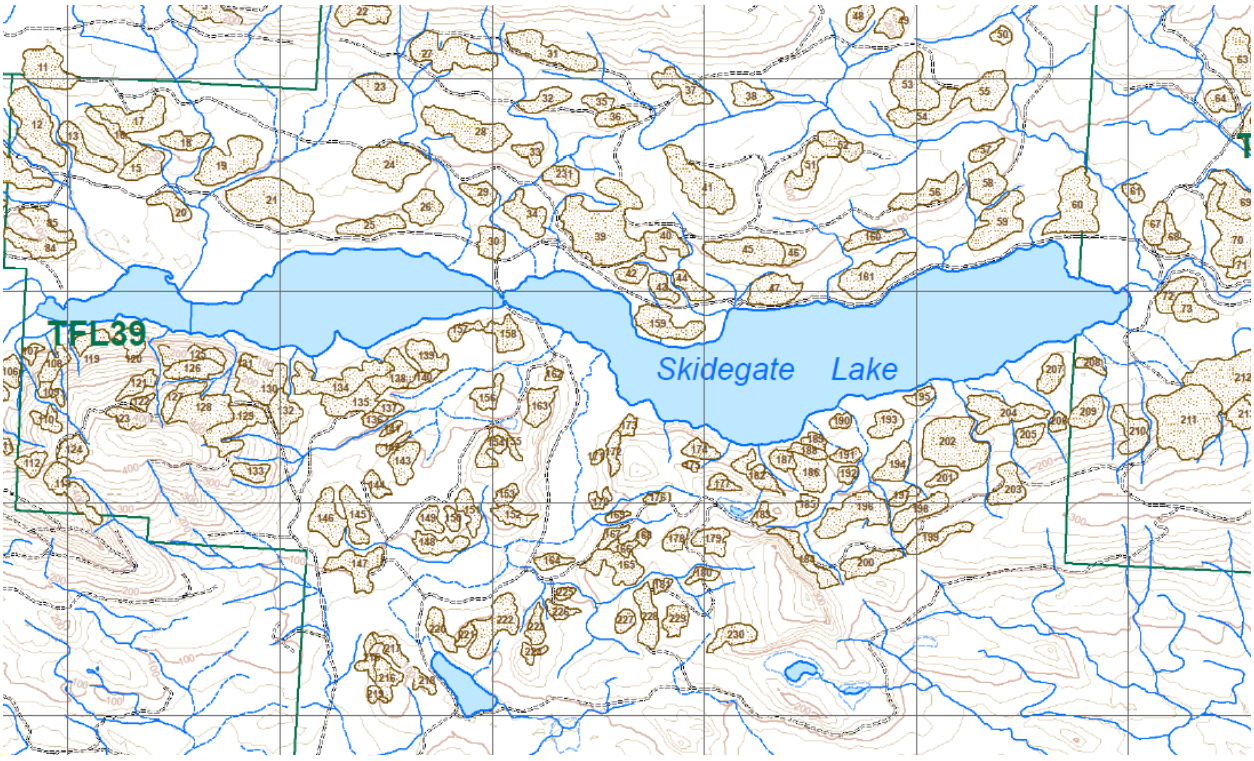


**Figure 4: Excerpt from the Chanterelle Habitat Suitability Map**

The FORREX report notes that logging second growth stands during the prime mushroom producing years (35-50 years) could create an immediate conflict between timber and mushroom resources, although the maintenance of some immature stand age classes through time would be in the best interest of mushroom pickers. The report concludes that the preliminary assessment around Skidegate Lake indicated relatively large areas of commercial mushroom harvest currently available, which should provide for some flexibility in co-managing the land-base for timber and mushroom resources.

Taan planning processes include considerations for key mushroom habitat areas during layout and development. In addition, the FSC Monitoring Report (non-timber forest products indicator) also includes annual review of changes to seral stages within the identified key mushroom habitat areas.

### *Cedar Bark*

Cedar bark (western red cedar and yellow cedar) is of particular importance to the Haida Nation for weaving and basketry, fulfilling both an artistic/ ceremonial as well as functional role (e.g., masks, jewelry, clothing, blankets, hats, baskets).

Taan is committed to responding to requests to access to cedar bark in our tenures and facilitating bark stripping in areas that are planned for harvesting so that the bark can be removed just prior to harvesting.

### *Western Yew*

Access to Yew wood has been identified by representatives of the Haida Nation as especially important for ensuring continued education and use for the youth (e.g., making bows). In response, Taan is now ensuring that yew wood is yarded to roadsides for easier access.

## *Landscape Level Connectivity*

Connectivity is a term describing the linkages of habitats, species and processes throughout an area that allows the flow of energy, nutrients, organisms, and genes at many scales. Because connectivity includes so many things, measuring connectivity is a complicated endeavour. If we could answer “connected for what” then connectivity becomes more tractable, but when management for all of biodiversity is the goal, then the best approach is to maintain connections at a variety of scales, from landscape to stands. For coastal forests we are most often concerned about connections for old forest species because forestry impacts that habitat more than others. Part of ensuring connectivity is ensuring enough interior habitat for those species sensitive to edges.

The Haida Gwaii Land Use Planning process evaluated and broadly considered landscape level connectivity (to a limited extent) during the establishment of protected areas, forest reserves, cedar stewardship areas, wildlife reserves and Marbled Murrelet habitat requirements.

Landscape level connectivity is also maintained through the implementation management strategies for additional objectives such as riparian, cultural, wildlife, biodiversity, etc. under the *Forest and Range Practices Act* and the Land Use Order. Refer to the Forest Stewardship Plan for further details, including the specific management results and strategies.

Further work is needed to assess the current condition of landscape level connectivity as well as monitor it over time. As a result, an indicator has been included in the Monitoring Report (Appendix 3) to evaluate and report on progress of monitoring for landscape connectivity at a coarse filter level.

Landscape/ strategic planning level management strategies have been added in the Monitoring Report (as part of the adaptive management process) to consider connectivity elements during the action plans to address "deficits" for LUO Ecosystem Representation Targets (refer to the Monitoring report for details) and establish voluntary Eco-representation management areas to ensure targets for old forest representation are achieved as required (over the long term). In addition, some specific LU strategies have been established to include targets for stand level retention, forest influence, etc., that all contribute to connectivity. Refer to the Landscape Level Connectivity indicator for further details on the specific strategies and targets.

In addition, The Forest and Range Evaluation Program is also working on development of an indicator and monitoring plan to evaluate landscape level biodiversity effectiveness at a broad scale, and preliminary discussions with FREP representatives indicate that the indicator may include an element of evaluation of landscape level connectivity. The indicator work in the Monitoring Report will continue to follow FREP progress and explore opportunities to align our monitoring work.

## *Environmental Risk/ Ecological Integrity*

The Environmental Risk Assessment (Zimmfor 2016) assesses the risk levels of selected values and indicators (coarse filter and fine filter) in relation to forest management activities and the Range of Natural Variation (RONV). The majority of the values and indicators were determined to not be at significant risk as a result of forest management activities, largely as a result of the recent Land Use Order (based on the principles of Ecosystem Based Management). Refer to the Assessment for further details.

Two indicators were identified as unspecified in terms of a "not significant" result: ungulate browse and beaver dam impacts to natural drainage patterns. These are discussed below (refer to specific management objectives and strategies).

### Range of Natural Variation (RONV)

The Environmental Risk Assessment (Zimmfor 2016) includes a summary of the management strategies under the existing legal requirements (Land Use Order and FRPA) that support maintenance of stand structures that do not pose a significant risk of being incompatible with the estimated Range of Natural Variation (RONV). The Risk Assessment also includes rationale/ analysis that demonstrates that the current management regime, under the new Ecosystem Based Management concepts of the Land Use Order supplemented by FRPA, do not compromise ecosystem integrity in the broader context.

Analysis and monitoring has been completed to ensure that forest management maintains or restores a distribution of seral stages, patch sizes and interior habitat that are compatible with the range of natural variability over time (as full implementation of the new Land Use Order is achieved). Several indicators have been developed under the monitoring plan to assess potential changes to seral stage distribution, patch sizes and interior habitat over time as a result of forest management.

Climate change is also likely to have an impact on future projections, but more work is required in order to assess how to incorporate into monitoring.

## *High Conservation Value Forests (HCVF)*

The High Conservation Value Forest Assessment (Zimmfor 2016) contains a description of the HCVF identified in the Management Unit and the associated conservation attributes. Associated maps and data are also provided. The report describes the current management strategies applied under the Land Use Order and the Forest Stewardship Plan and evaluates the associated risks to the identified HCVFs as a result of forest management activities.

There are some categories of HCVF that have been determined to require additional management strategies over and above the Land Use Order requirements that have been included in the FSC Management Plan:

- Category 1 – species at risk, endemic species, critical habitat for seasonal concentrations of species or regionally significant species/ high priority species
- Category 2 – large landscape level forests
- Category 3 – rare ecosystems

The HCVF assessment contains several recommendations for monitoring considerations as well as related follow up action plans required to address gaps in available information required to provide spatial inventory information to more accurately describe the HCVF areas in the Management Unit (e.g., several categories are described as HCVF for the entire Management Unit such as species at risk, ecosystems at risk, etc.).

Some HCVF information is currently maintained in the GIS layer information and some categories will require further development and follow up in order to more accurately define spatial layers and add to the GIS for Planning considerations. Refer to the Monitoring section and associated follow up action plans for further information.

### Category 1: Wildlife

Refer to the Wildlife - Species at Risk section of the Management objectives for specific management strategies related to the identified HCVFs.

### Category 2: Large Landscape Level Forests

The HCVF Assessment identifies three areas of regionally important landscape level forests (>50,000 ha) on Haida Gwaii:

**Table 6: Large Landscape Level (LLL) Forests of Haida Gwaii**

| LLL Forest Patches on the Haida Gwaii | | LLL Forest within Protected Areas & Conservancies | | LLL Forest within the MU (ha) | | Allowable Disturbance (Motion 65) | | LLL Forest within other tenures | |
|---|---|---|---|---|---|---|---|---|---|
| ID | (ha) | (ha) | % | (ha) | % | (ha) | % | (ha) | % |
| 1 | 114,440 | 112,367 | 99 | 1,054 | 1 | 210.8 | 20 | - | 0 |
| 2 | 62,381 | 1,988 | 3 | 0 | 0 | - | - | 64,369 | 97 |
| 3 | 71,083 | 53,638 | 75 | 0 | 0 | - | - | 17,445 | 25 |

The level of the intact forest areas contained within protected areas demonstrates that harvesting activity within Polygon 1 has little potential to impact the levels of intactness (only 1% of the intact forest is located within the MU).


**Figure 5: Regionally Significant Intact Forests >50,000**

### *Intact Forest Polygon 1*

The largest polygon of intact forest is located on the western side of Graham Island and is largely contained within the boundaries of the Duu Guusd protected area (98%). Note that there are extremely small segments of intact forest located within the boundaries of TFL 60, along the edges of the intact polygon (1%). It is not clear at this time whether the remaining 1% is allocated to a tenure, or is unallocated, but this will be looked at more closely during the next HCVF assessment update.

### *Intact Forest Polygon 2*

This polygon of intact forest is located in the north section of Graham Island, just above Masset Inlet. A fairly significant portion of the intact forest polygon 2 lies within the working forest (Intact Forest 2 has 3 % located in protected areas and 96% of the area located within the Timber Supply Area, but outside the Management Unit).

### *Intact Forest Polygon 3*

This polygon of intact forest is located in the north section of Graham Island, just above and east of Masset Inlet and adjacent to Naikoon Park. A fairly significant portion of the intact forest is located in protected areas (75%) and the remaining 25% is located in the working forest of the Timber Supply Area, but outside the Management Unit.

### *Management Strategy*

Since very little information is available for specific species populations and specific habitat requirements, the most successful approach to ensuring maintenance of habitat needs and ensuring there is a high likelihood of long term persistence of native species is to implement coarse filter approach and manage for overall habitat persistence within the range of natural variability (based on the premise that species are adapted to the landscapes that result from the natural disturbance regimes for the region).

McIntyre and Hobbs (1999) “A Framework for Conceptualizing Human Effects on Landscapes and its Relevance to Management and Research Models” defined the following thresholds for forest conditions relative to the amount of forest remaining in its natural state/ condition:

- Intact ≥90%
- Variegated ≥60%;
- Fragmented ≤60%; and
- Relict ≤10%.

Moreover, according to McIntyre and Hobbs, if a forest landscape has ≤10% disturbance, it can be determined to be considered intact.

Similarly EBM considers 70% to be low risk and Price et al. (2009) suggested areas with less than 30% impact have natural levels of populations. Huggard (2007) found even small amounts of harvesting alter bird abundances but communities remain similar to communities of intact forests until about 20% harvesting.

In addition to disturbance thresholds, we considered development of management strategies to focus on patch size configuration, landscape connectivity, silviculture systems, etc.

Botin and Hebert (2002) “Landscape Ecology and Forest Management: Developing an Effective Partnership” state that “*forest planning to conserve biodiversity should focus on maintaining habitat amount: there is little need to take configuration (patch size; corridors) into account unless habitats of interest drop below 20-30% of the landscape*”.

Moreover, based on the intact condition thresholds (≤ 10% disturbance) noted above, it was determined that implementing management strategies for patch sizes, connectivity, silviculture systems, etc. is not required at this time, but may be considered in the future, based on the results of monitoring.

Recently, FSC International Implemented Motion 65 regarding intact forest landscapes, and determined that in the absence of a specific indicator noted in the standards, that a default threshold for disturbance permitted within an intact forest area is 20% of the area within the MU (or 80% protection of the portions of the intact forest within the MU).

The amount of intact forest located within the MU is 1,054ha (1% of the total intact forest polygon). The core area identified for protection from forest management activity under Motion 65 is 80% of the portion within the MU, or 843.2ha. 20% of the portion of the intact forest within the MU is then available for harvest, or 210.8ha. To date, Taan has not completed any harvesting within the intact forest polygon in the MU.

Category 3: Rare Ecosystems

Refer to the Unique Ecosystems section of the management objectives for specific management strategies to the identified HCVFs.

## *Riparian Management*

A Riparian Assessment (Zimmfor 2016) was completed. The assessment identifies key riparian functions, values, issues and concerns in relation to forest management activities. In general, riparian functions and values are managed through the Forest Stewardship Plan which contains the results and strategies for riparian management consistent with the Land Use Order and other legal requirements under FRPA.

The Riparian Assessment identified some features and values that require development of management strategies supplemental to the FSP requirements. In order to address this requirement, the following management strategies must be implemented, and are included within the Standard Operating Procedures:

- Retain non-commercial trees and understory vegetation along streams, lakes and wetlands for protection of riparian functions, to the greatest extent possible. Ensure 7m machine free zones are prescribed in site level plans (except for crossings).
- Ensure that the FSC Riparian Budget requirements (riparian reserve zones) outlined within the FSC Standard are met.

### *Adaptive Management Strategies*

Taan has implemented a commitment that riparian management prescriptions for upland streams should strive to implement fall and yard away prescriptions wherever possible and limit fall and yard across to situations only where there is no other practicable option. Examples include for specific streams and situations where it is feasible to be more specific and utilize “fall and yard away” or “fall to span and lift away, yard across only where deflection is adequate to ensure the stream bank is not impacted”. This is partially in response to FREP monitoring results for impacts to smaller streams.

## Silviculture Systems

The primary silviculture system implemented by Taan is the clearcut with reserve system (even aged system). The patch cut with reserve system may also be used in some cases (patches are typically less than 1ha in size). Some development areas meet the requirements of a retention system as a result of the LUO implementation.

Taan may also explore future potential for implementation of some un-even aged silviculture systems (single stem or small group selection systems).

## Cutblock Retention

In addition to the legislated stand level retention requirements outlined within the FSP, the following retention is required under FSC. Between FRPA and the LUO, stand level retention levels should far exceed the FSC requirements. However, the Site Plan will need to consider and document how the FSC retention requirements are met:

- Within each cutblock area (>200 m wide or 100 ha in aggregate), the retention of dominant and co-dominant green trees and snags as patches and/or single trees, must meet or exceed the following minimum levels (stems/ha), of which a minimum of 25% are snags where present:

**Table 7: Minimum Cutblock Retention Levels**

| Natural Disturbance Type | Minimum Retention (stems/ ha) | SNAG component |
|---|---|---|
| NDT 1, 3 | 8 | 25% where present |
| NDT 2 | 10 | 25% where present |

Taan Corporate Management System procedures include specific requirements relating to implementation of harvest planning and required retention levels. In most cases, retention will be established in groups rather than single stem as a result of windthrow risk.

For larger cutblocks, Taan should consider addition of retention patches that are located internal to the block and/ or connected to the edge to increase forest influence.

### *Adaptive Management Strategies*

#### *Forest Influence*

Taan is monitoring level of forest influence on a cutblock by cutblock basis as part of the Site Plan assessments which will allow for another avenue to monitor impacts of forest management on stand level biodiversity and determine benchmarks of current status.

Taan has not developed any specific management strategies or targets at this time, as the first step is to assess the current benchmarks of levels of forest influence that are being achieved under the management of the Land Use Order.

#### *Skidegate Landscape Unit*

As part of the adaptive management process for landscape biodiversity overall “health”, the Skidegate LU was identified as a high rating for vulnerability. As a result, Taan will ensure that a minimum average of 20% stand level retention is achieved in the Skidegate LU. This will be measured on an annual basis for all cutblocks harvested in the year as part of the Annual Monitoring Report and is also a consideration in the Site Plan (FSC Considerations section).

## *Coarse Woody Debris*

Taan must adhere to legislated requirements regarding both minimum levels of Coarse Woody Debris (Forest and Range Practices Act, Forest Planning & Practices Regulation) to provide for conservation of biodiversity, in addition to compliance with maximum levels of waste and residue under the Forest Act to ensure efficient utilization of the forest resource (the allowable thresholds generally differ between old growth and second growth harvesting and species harvested, e.g., old growth cedar and cypress blocks typically have more slash than second growth hemlock and spruce cutblocks).

The Provincial Logging Residue and Waste Measurement Procedure Manual (MFLNRO) contain the various standards and benchmarks for 'avoidable' and 'unavoidable' waste.

Supplemental to the legal requirements for waste and residue, FSC also requires strategies to ensure maximum utilization as well as provide for levels of large coarse woody debris consistent with natural levels for conservation of biodiversity (current and future levels).

Waste and Residue surveys are completed for harvested areas, as required under legislation and the associated Manual. Licensees must pay penalties to the MFLNRO for any waste levels in excess of the maximum requirements. In general terms, the benchmarks for the coast, beyond which penalties are issued is: $10m^3$/ha for second growth timber; and $35m^3$/ha for old growth timber.

Taan must ensure that management is effective in minimizing waste levels for avoidable waste in harvested areas according to the internal targets established within the FSC Monitoring Report for the waste and residue indicator (rationale for determining the targets is provided within the Report).

Specific waste management strategies for the retention of coarse woody debris are listed in the Operations SOP and include maintaining dispersed slash levels within the cutblocks and ensuring that bucking specification are followed.

#### *Adaptive Management Strategies*

Taan has recently hired a quality control person to actively monitor utilization to allow for timely adjustments to operations as needed to ensure maximum utilization within current market conditions.

### Minimum Levels

The Chief Forester of BC has published a guidance document on coarse woody debris (May 2010). In the document, it states "CWD management is particularly important because of its impact on productivity; forest productivity in terms of soil-function and tree growth, and ecosystem productivity in terms of habitat. Studies from Europe, with many generations of intensive logging, show that species of flora and fauna dependent on dead wood are at risk when CWD levels fall below 30% of what occurs in the natural forest. CWD is one of the major inputs of organic matter to forest soils, critical for soil function, structure and productivity".

FRPA contains general legal objectives for minimum levels of coarse woody debris on the coast (exceptions are permitted for broadcast burn prescriptions or specifications within other agreements/ legal requirements): Minimum of 4 logs/ha, being minimum 5m length and 30cm diameter at one end.

This level is very low for coastal forests and most biologists feel inadequate to support natural functions in these forests (Kremsater pers. comm.). A better approach is to assess natural levels of down wood and fall within the typical ranges after harvest and throughout the rotation. Typically levels after harvest are large, but amounts through a rotation or two may become more limiting. Amounts of down wood throughout the rotation are governed by numbers of snags and live trees retained that can provide down wood as the original down wood decays. Hence, retention levels are important.

The Forest and Range Evaluation Program is monitoring coarse woody debris levels and specifically large volume CWD. The category of large woody debris (≥20cm diameter and ≥10m length) is the primary concern for maintenance of biodiversity values. Results of the monitoring are included in Appendix 3 Monitoring Report under Stand Level Biodiversity. Targets have also been established based on the benchmark data recorded by FREP.

The management strategy for ensuring minimum levels of large CWD is continually under review as part of the adaptive management cycle under the monitoring plans. In August 2016, Taan is also exploring the feasibility of a pilot project to place LWD within second growth cutblocks from a variety of sources (i.e., roadside piles, old culvert logs during replacement and old boomsticks) during piling activities (while machinery is already on site).

## *Permanent Access Structures*

Permanent access structure thresholds are established under legislation (Forest and Range Practices Act) and are addressed within the Site Plan.

In order to improve on overall landscape unit health for considerations of connectivity and forest interior, etc., in the Skidegate and Masset Landscape Units, group members will strive to minimize the amount of new road construction wherever possible (often this occurs due to economic considerations by default) and use existing roads and/ or temporary roads/ trails. This will be monitored and reported within the annual Monitoring Report (Stand Level Biodiversity Effectiveness indicator).

## *Soil & Water Quality*

The Taan Corporate Management System (CMS) and contract specifications include provisions to require site level assessments related to terrain stability and snow avalanches as well as to ensure that operational activities are consistent with the recommendations of any completed assessments to reduce the risk of landslide or snow avalanche initiation or prevent erosion/ sedimentation.

Per the FSC Standard, operations will not occur on areas rated as a high likelihood of landslide initiation or areas with very high potential for snow avalanche initiation.

Per the Planning SOP (procedures), all proposed development areas with risk of windthrow are assessed by qualified personnel and treatment is prescribed where required.

The CMS also includes provisions for soil and water management objectives consistent with legal requirements and the Forest Stewardship Plan, regular monitoring requirements through internal inspection processes, wet weather/ rainfall shutdown and start-up conditions.

## *Wildlife*

Species at Risk

In general, wildlife species are managed through a Coarse Filter approach under the Land Use Order and FRPA through Wildlife Habitat Areas, Protected Areas, LUO forest reserves, Type 1 and Type 2 fish habitat reserves, cedar stewardship areas, marbled murrelet habitat retention, ecosystem representation targets, red and blue listed ecosystem protection, etc.

A number of Wildlife Habitat Areas (WHAs) and general wildlife measures have been established on Haida Gwaii (currently 22) for various species: http://www.env.gov.bc.ca/cgi-bin/apps/faw/wharesult.cgi?search=forest_region&forest=Queen+Charlotte&submit=Search.

The Forest Stewardship Plan commits Plan Holders to ensure operational plans and practices adhere to the legally established WHAs and associated general wildlife measures.

In addition to the WHAs, the Forest Stewardship Plan contains species specific (Fine Filter) management strategies for the following species that have been identified through the Land Use Order as being of particular importance and at risk as a result of forest management activities:

- Marbled Murrelet
- Northern Goshawk
- Northern Saw-whet Owl
- Great Blue Heron
- Black Bear

The Forest Stewardship Plan also contains ecosystem specific (Fine Filter) management strategies for the Forested Swamps and red and blue-listed ecological communities, which were identified through the Land Use Order as being of particular importance and at risk as a result of forest management.

Species at risk are identified and mapped (known occurrences) within the High Conservation Value Forest Assessment (Zimmfor 2016) to the extent that current and available information permitted. Analysis was completed to review all of the species at risk classifications (e.g., red listed, regionally important, etc.). The various species listed under the risk classifications were then grouped into one single table. For all of the species listed, their dependence on old forests and threats from forest harvesting were also indicated (refer to HCVF Assessment Table 16 for the full list).

The resulting short list of species at risk found to be dependent on old forest is summarized in the HCVF Assessment Table 5 (15 species in total). Five of the old forest dependant species have been included in the Land Use Order and the Forest Stewardship Plan and are listed above (marbled murrelet, northern goshawk, northern saw-whet owl, great blue heron and black bear). The remaining 10 old forest dependant species that are not directly named and managed under the LUO and FSP are:

- Barrow's Goldeneye (Bird)
- Brown Creeper (Bird)
- Steller's Jay (Bird)
- Hairy Woodpecker (Bird)
- Ancient Murrelet (Bird)
- Keen's Myotis (Mammal)
- Western cowbane (Vascular Plant)
- Sphagnum subobesum (Moss)
- Haida Gwaii Slug (Mollusc)

All species at risk known to occur on the Management Unit have been allocated to Species Accounting Groups within the Monitoring Report (Species at Risk indicator), including detailed discussions on each grouping in regards to existing protection in place and related management strategies. In general, the species noted above are managed through coarse filter strategies that include protection and retention of old forests through established Protected Areas and through the Land Use Order (e.g., forest reserves, riparian area reserves, cedar stewardship areas, ecosystem representation targets, protection of red and blue listed ecosystems, etc.). There are no species specific additional fine filter management strategies proposed at this time.

These key old forest dependant species will also be managed on a case by case basis as they are identified in the Management Unit. Additional management strategies and recommendations for wildlife and species at risk are documented within the CMS Standard Operating Procedures.

Planning personnel complete training on species at risk under the Corporate Management System (CMS).

## Migratory Birds

Under the Migratory Birds Act and Regulations, “no person shall disturb, destroy, or possess a nest or egg of a migratory bird”.

The HCVF Assessment (Zimmfor 2016) Table 3 identifies the critically endangered, endangered and vulnerable bird species that are listed for Canada (16). Of the 16, three are determined to occur in the Haida Gwaii. Two of the species, Buller’s Shearwater and Pink Footed Shearwater are found to exist on Haida Gwaii only to the extent that they feed off shore (no breeding activities). The third species, Marbled Murrelet lives and breeds on Haida Gwaii.

The Land Use Order, and the Forest Stewardship plan contain the objectives and management strategies in place to protect and conserve Marbled Murrelet nesting habitat as well as nests.

Although no important Bird Areas (IBAs) were found within the MU, three IBAs were found to be adjacent the MU (IBA #147 (Lawn Point), 145 (Skidegate Inlet) and 144 (Cumshewa Inlet north to Sheldens Bay). Where forest management activities are planned in the vicinity of the IBAs, planners consider the habitat values associated with the IBAs and document their consideration within the Site Plan.

## Browse Protection

Ungulate browse in Haida Gwaii is extensive and poses challenges to reforestation as well as in later seral stages in relation to understory vegetation.

Browse control on reforested areas is required on Haida Gwaii (and in other regions in BC) in order to achieve the reforestation objectives and legally required stocking standards and obligations to achieve free growing stands. The Forest Stewardship Plan and Supporting Information package contains the approved stocking standards for reforestation in accordance with legal requirements, including provisions for browse control/ guards for cedar and cypress regeneration.

Browse guards require periodic maintenance to ensure they remain upright and main stem of the seedling remains located inside the guard. Guards are typically removed from the seedlings when the tree height reaches the same level as the top of the guard and is likely to survive any future browse. Removed guards are typically re-used on new plantations. In the event that they are damaged or no longer useable, they are properly disposed of at licensed/ permitted facilities.

In terms of management strategies to reduce risk associated with ungulate browse in later seral stages, it is recommended that Taan explores options for cooperation with any government or local initiatives underway regarding population control of ungulates on Haida Gwaii or alternative management strategies to control browse in later seral stages (none in progress to date).

Beaver

The Canadian Beaver is an introduced species to Haida Gwaii that has no known predators. Beavers can have a significant negative impact to forest operations by causing blocked culverts and ditches, leading to higher costs related to increased road maintenance activities required to ensure the culverts and ditches are functioning and fish passage is not impeded. Impacts to drainage can also damage regenerated cutblocks as a result of flooding.

Where beaver dams are identified in the Management Unit as causing impacts and changes to natural drainage patterns, appropriate management strategies will be implemented to attempt to mitigate the impact/ damage (e.g., utilization of culvert guards designed to restrict/ prevent blockages, trapping under an approved permit/ license, alder management, etc.).

## *Cultural Resources*

Management strategies relating to Cultural Heritage Resources, Haida Traditional Heritage Features and Haida Traditional Forest Features are outlined within the Forest Stewardship Plan.

The importance of cedar bark to the Haida Nation is also discussed under Non-Timber Forest Products.

## *Unique Ecosystems*

In general, unique ecosystems and other site-specific unique features (e.g., karsts/ caves/ limestone areas, nests, mineral licks, sites of importance to First Nations, trappers values, etc.), are identified and managed through the Forest Stewardship Planning process and are regularly monitored through the existing management systems (inspections and audits).

Site specific values are tracked in the GIS and receive appropriate management prescriptions in site level plans. Non-forested ecosystems are typically targeted for retention patches or excluded from the harvesting areas as they typically prove to be challenging and expensive to attempt to reforest (all harvested areas require establishment of free growing stands that meet the density and minimum height requirements per the approved stocking standards in the Forest Stewardship Plan).

The HCVF Assessment (Zimmfor 2016) identifies the red listed ecosystems and associated Biogeoclimatic Zone associations that are known to occur on Haida Gwaii. The Land Use Order includes objectives and ecosystem representation targets for all of the listed ecosystems. The Forest Stewardship Plan contains the associated management strategies.

The HCVF Assessment also identifies three locally important ecosystem types:

- Sitka Spruce Riparian Forests
- Sitka Spruce-Sea Spray/ Fog Forests
- Limestone Areas

### Sitka Spruce Riparian Forests

The Sitka Spruce Riparian Forests are protected under the Land Use Order, through reserve and management zone requirements for Type 1 and Type 2 streams as well as the ecological representation targets. No further management strategies are required.

### Sitka Spruce-Sea Spray/ Fog Forests

*Sitka spruce-sea spray/fog forests develop on old stabilized sand dunes and are dominated by Sitka spruce. Some of the stands are pure spruce. These forests are most extensive on the uplands of northeastern Graham Island. However, there are patches of this forest type at the head of bays and inlets such as Taalungslung (Lepas Bay) and Peril Bay on Graham Island (both in the Duu Guusd Haida Protected Area), Flamingo and Louscoone inlets on Moresby Island, and Howe and Luxana bays on Kunghit Island. Another characteristic sea-spray and fog-influenced Sitka spruce forest, with well-developed shrub (especially Gaultheria shallon) and herb (especially Calamagrostis nutkaensis) layers is found in strips along exposed outer islands and headlands and wind-blasted hillslopes, in particular on the west side of the archipelago* ('*Background Report*' (pg. 35)).

As identified within the 'Background Report' these forests are largely found within protected areas and outside of the MU (e.g., Naikoon Park, Duu Guusd Conservancy, outer islands and west side of the archipelago). These forests are also associated with Type 1 and Type 2 streams, and protected under the Land Use Order, through the reserve and management zone requirements, as well as the ecological representation targets. In general, no further management strategies are required.

Operational planning must consider the Sitka spruce-sea spray/ fog forests during field activities and ensure that plans consider and conserve this unique ecosystem.

### Limestone Areas

*Limestone bedrock at low elevations close to the coast, e.g., Limestone and South Low Islands, supports rare plant species. Limestone Island, for example, supports two species found nowhere else on the Islands (Geranium richardsonii, and Anemone multifida). Similarly, limestone bedrock at high elevations supports hotspots of plant species diversity and rarity* ('*Background Report*' (pg. 35)).

Limestone areas may also be associated with karst features, these are managed under existing legal requirements (FRPA and LUO) and the FSP.

Operational planning must consider limestone areas during field activities and ensure that plans consider and conserve this unique ecosystem.

## *Unique/ Special Sites*

The Land Use Planning process and Land Use Order include provisions for the key unique/ special features that have been identified by local communities and the Haida Nation (e.g., traditional heritage features and traditional forest features (which encompass many different features), cedar, wildlife habitat for key species, rare ecosystems, etc.).

## *Reforestation*

### Regeneration

Forests will be regenerated using natural regeneration or planting utilizing seed or stock from local provenances, consistent with legal requirements under the Forest and Range Practices Act and the Chief Foresters Standards for Seed Use (and approved under the Forest Stewardship Plan, Stocking Standards).

Where planting is completed, measures are in place to ensure that tree seedling nurseries minimize the use of chemical pesticides, and do not use any of the Highly Hazardous Chemicals identified by FSC (refer to Restrictions on the Management Unit, Chemical Use for more information).

Species selection will be completed to ensure maintenance of tree species diversity and use of ecologically suitable species, per the regeneration objectives and ecosystem types (e.g., stocking standards) as defined in the Site Plan and/ or Silviculture Treatment Regime (or equivalent).

Where applicable, seed trees and advanced regeneration will be utilized to enhance regeneration objectives of maintenance of species and genetic diversity, through the prescriptions developed under the Site Plan, Silviculture Treatment Regime and corresponding operational plans.

Silviculture monitoring activities may include a combination of reconnaissance surveys and established plots to monitor successful regeneration and free growing status, consistent with legal requirements.

Site preparation activities will typically not be required. In the event that the Forester determines site preparation is desired to achieve regeneration objectives, treatment prescriptions will be developed that includes measures to address soil disturbance concerns.

### Fertilizers

In the event that fertilizers or other soil amendments (e.g., pulp sludge, manure) are used, Taan ensures preference is given to non-chemical alternatives that are of equivalent effectiveness, and the manager verifies that the chemical composition of the fertilizers or soil amendments (including inert ingredients) are not in contravention of FSC requirements.

Per the Planning & Silviculture SOPs, when fertilizers or soil amendments are used, measures are employed to avoid contamination of surface and ground waters, protect non-timber forest values and maintain long-term soil health (e.g., maintenance of soil organic matter, pH balance).

## *Restrictions on the MU*

### Conversion

In the event that Taan considers conversion of forest lands to non-forest uses (not including roads, landings and other infrastructure directly related to forest management, power transmission lines or highways), a conversion evaluation will be completed per FSC requirements using a qualified specialist. Any areas of new conversion must meet the requirements of FSC (e.g., do not exceed 5% of the THLB, do not occur in HCVF, etc.).

The Taan President (with assistance from the CMS Administrator) is responsible to ensure that any objectives or measures identified in the results of the evaluation are incorporated into the Management Plan and other relevant documents, and are implemented in the operations.

### Chemical Use

Chemical brushing and weeding is not conducted by forest management companies on Haida Gwaii (at the request of the Haida Nation).

Taan will communicate with tree seedling nurseries to ensure that chemical pesticide use on purchased tree seedlings is minimized, while ensuring optimal health and survival of the seedlings. Typical pesticides used by tree seedling nurseries in BC do not include any of the highly hazardous chemical identified by FSC.

### Exotic Species

In general, exotic species are not introduced into the Management Unit.

In the rare event that this is considered (e.g., climate change research or adaptation), Taan must ensure that exotic plant or animal species are only introduced to the Management Unit after a scientific evaluation that determines that they are not invasive and will bring environmental benefits without entailing significant adverse ecological impacts.

### Genetically Modified Organisms

Genetically modified organisms shall not be utilized in the Management Unit, consistent with provincial legislation and the Chief Forester's Standards for Seed Use and FSC requirements.

### Biological Control Agents

Exotic biological control agents are not utilized on the Management Unit.

In the rare event that biological control agents are considered, Taan must ensure they are used only as part of a pest management strategy for the control of exotic species of plants, pathogens, insects or other animals when other nonchemical pest control methods are, or can reasonably be expected to be, ineffective. Such use is contingent on peer-reviewed scientific evidence that the agents in question are non-invasive and are safe for indigenous species.

Where biological control agents are used, there is compliance with relevant provincial laws, national laws and internationally accepted scientific protocols, including the provincial *Plant Protection Act and the federal Pest Control Products Act, Plant Protection Act and Canadian Environmental Protection Act*.

## Plantations

FSC defines plantations[10] as "forest areas lacking most of the principal characteristics and key elements of native ecosystems, which result from the human activities of planting, sowing or intensive silvicultural treatments."

Natural forests[11] are defined (by FSC) as Forest areas wherein most of the principal characteristics and key elements of native ecosystems, such as complexity, structure, and diversity are present, as defined by FSC-approved national and regional standards of forest management.

Natural[12] is defined (by FSC) as "Forest conditions, biological diversity, and ecosystem functions, both on a site specific and landscape scale, as they could have been expected to occur prior to European settlement**.** Natural forests include most or all of their expected plant and animal species, forest structure, and ecosystem processes, given their location, site characteristics, and disturbance and/or succession history".

Plantation management regimes[13] are further characterized by:

- "A set of stand characteristics that are present and observable on site, as a result of past and/ or current practices,
- A long term management regime to maintain or intensify those stand characteristics, and
- Intent to manage for economic tree growth objectives to the exclusion of others".

Based on the definitions and discussions provided in the FSC BC-Regional Standard and the Guidance document (described above), it can be concluded that although Taan regenerates the forests utilizing a combination of natural regeneration and artificial regeneration (i.e., planted tree seedlings), Taan does not maintain any plantations or operate under a plantation management regime as we are utilizing an integrated forest management approach based on the principles of ecosystem based management that manages the forests for a variety of values (including but not limited to, timber, wildlife, biodiversity, soil productivity, water quality and quantity, fish, etc.).

[10] FSC-BC Regional Standard
[11] FSC Pacific Coast Regional Standard
[12] FSC Pacific Coast Regional Standard
[13] FSC BC Regional Standard (Definitions) & Guidance (October 2005)

# Monitoring

The FSC Standard requires regular monitoring activities, the frequency and intensity of which should be determined by the scale and intensity of forest operations as well as the relative complexity and fragility of the affected environment.

The scope of monitoring can range from day to day operations (e.g., implementation monitoring under existing management systems), effectiveness monitoring that assesses whether the implementation of the management strategies are effective in producing the desired results, to research projects that focus on specific aspects of forest management and impacts to key focal species or ecosystems. As such, a wide range of costs can be associated with monitoring.

An effective monitoring plan must therefore balance the need to collect meaningful results in order to effectively assess impacts of forest management on the wildlife and ecosystems, while at the same time balancing level of effort and associated costs with the assessed risk. Adaptive management is also a key component to a successful monitoring plan.

Taan has the overall responsibility for implementing and maintaining the Monitoring Plan, and is coordinated by the CMS Administrator. However, other staff play a key role in assisting in development, implementation and annual reporting (and provide resources as required).

The FSC monitoring program is comprised of a combination of the following initiatives:

- Existing monitoring processes such as the Forest and Range Evaluation Program (refer to table below for complete list) that supports implementation and effectiveness monitoring components;
- Land Use Order Effectiveness monitoring through the Haida Gwaii Management Council (currently under development);
- FSC Monitoring included in this Management Plan that includes a component of implementation monitoring and effectiveness monitoring and periodic review and re-assessment for Environmental Risk, High Conservation Value Forests and Riparian as required by FSC (typically completed every five years); and
- An adaptive management plan as it specifically relates to HCVF and Riparian Management, per the FSC Standard requirements.

## *Links to Existing Monitoring*

**Table 8: Existing Monitoring**

| Document | Source | Summary |
|---|---|---|
| **Implementation & Effectiveness Monitoring** | | |
| Haida Gwaii Land Use Objectives Order | MFLNRO Haida Gwaii Strategic Land Use Agreement Implementation website | Monitoring Program is under development by the Haida Nation and the provincial government of BC. A monitoring technician has been hired and work will begin in the spring of 2012 to develop a program (with initial efforts supporting the FREP program). The first program was announced April 2012 (email to licensees) involving a review of the LUO requirements for 'S4' streams, including implementation and effectiveness monitoring. Subsequent monitoring has included implementation and effectivenss of the LUO for protection of yew trees. |
| MFLNRO – Forest and Range Evaluation Program (FREP) | Government of BC - FREP Website | Collaboration between several BC Ministries (MFLNRO, MFML, MOE). FREP objectives are to: assess the effectiveness of forest and range legislation in achieving stewardship objectives; determine whether forest and range practices are achieving government's objectives, with a focus on biological function and social values (visual quality and cultural heritage); identify forest and range resource value status and trends, and identify opportunities for continued improvement of British Columbia's forest and range practices, policies and legislation.<br>The FREP program consists of components: indicator and protocol development, field data collection, results, enhancing knowledge and information sharing, legislation and policy change and continual improvement.<br>Monitoring includes stand level biodiversity, riparian protection, cultural values, soils, timber, forage and associated plant communities, recreation and resource features. FREP has established sampling protocols that include annual sampling requirements, of which a portion is allocated to Haida Gwaii Forest District.<br>The FREP program produces regular publications summarizing the results of the program and is working on development of an information database. |
| **Implementation Monitoring** | | |
| Forest Act & Timber Marking Regulation | MFLNRO Legislation & Regulations | Timber marking and scaling requirements per legal requirements (weigh scale and stick scale), inlcuding government 'check scales' on sampled load. Data submitted to MoF and maintained in the Harvest Billing System. |
| Haida Gwaii Forest Stewardship Plan (Taan, BCTS, Husby & Teal) | www.taanforest.com | Equivalent clearcut areas in relation to Sensitive Watersheds and Upland Streams, regeneration and free growing obligations including cedar regeneration commitments, wildlife nests and dens, invasive plants measures, etc. (refer to the FSP & Supporting Information for details).<br>MOF RESULTS database (compliance with Silviculture Obligations).<br>Where proposed harvesting is nearing LUO Sensitive Watershed or Upland Stream thresholds, watershed level assessments will be required. |
| MFLNRO - Growth & Yield | MFLNRO Research Branch – Growth & Yield Program | Monitoring and measurement program is administered by the MoF. |

| Document | Source | Summary |
|---|---|---|
| Taan Forest TFL 60 Growth & Yield Plots | GIS | Taan has obtained the G&Y data from WFP and have identified active plots. A re-measurement plan has not yet been developed.. |
| Taan CMS | Taan Corporate Files | Internal & External Inspections, Investigations & Audits to monitor conformance with system requirements and procedures which evaluate implementation of certification standards, the FSC Forest Management Plan and compliance with legal requirements. Action plan tracking. |
| Conservation Data Center (CDC) | http://www.env.gov.bc.ca/cdc/ | The British Columbia Conservation Data Centre (CDC) systematically collects and disseminates information on plants, animals and ecosystems (ecological communities) at risk in British Columbia.<br>This information is compiled and maintained in a computerized database which provides a centralized and scientific source of information on the status, locations and level of protection of these organisms and ecosystems.<br>The CDC database includes BC Listed, Global Listed and COSEWIC listings. |
| BC Nature - Important Bird Areas | http://www.bcnature.ca/pages/stewardship_projects/IBA.html | BC Nature is working towards long term conservation of BC's Important Bird Areas. IBA Canada also maintains a fully interactive map of the identified IBAs. IBAs are addressed in the HCVF Assessment. |
| Ministry of Environment – Ecological Reports Catalogue website | http://www.env.gov.bc.ca/ecocat/ | MOE database (searchable) that contains reports and database records, map files, etc. for various FIA funded projects. There are 63 reports listed for Queen Charlotte Islands and 31 listed for Haida Gwaii search results (some overlap). |

## The Forest and Range Evaluation Program (FREP)

The BC Government Forest and Range Evaluation Program (FREP) is briefly described above in Table 8. The program includes implementation and effectiveness monitoring and measurement activities for each forest district in the province. As such, there is some valuable monitoring occurring on Haida Gwaii under the FREP program that can contribute significantly to the FSC monitoring requirements (particularly in relation to effectiveness monitoring).

Currently, the program includes monitoring of soil conservation effectiveness, stand level biodiversity effectiveness, riparian and stream channels effectiveness, water quality effectiveness and karst resource features to evaluate effectives of the current legal requirements/ management regimes.

Recent FREP reports that have been completed and strongly support the effectiveness monitoring requirements under FSC through provision of results, indicators and benchmarks, currently include:

- Soil Conservation Effectiveness (FREP Report #31)
- Stand Level Biodiversity Effectiveness (FREP Report #30)
- Riparian Protection Effectiveness (FREP Report #27)
- Water Quality Effectiveness (FREP Extension Note #22)
- Landscape Level Biodiversity Effectiveness (Pilot Project in progress)

Indicators have been selected for inclusion in the Monitoring Plan and Annual Reporting process to further monitor and report on the results of the effectiveness monitoring, utilizing data specific to the Management Unit (as provided by FREP representatives). The indicators and results are discussed in more detail within the Monitoring Annual Report for each related indicator.

**Table 9: FREP Program Indicators**

| Category | Objective | Indicators | Sample Size per Forest District |
|---|---|---|---|
| Stand Level Biodiversity (Effectiveness) | Assess whether stand level retention is effective at maintaining species diversity | - Tree species and size (height and diameter)<br>- Wildlife tree class 1 and 2 (live trees) and 3+ (standing dead trees)<br>- Invasive plants<br>- Amount and type of coarse woody debris (size, species and decay class)<br>- Amount of windthrow<br>- Harvesting constraints and ecological attributes used to anchor retention | 15 cutblocks |
| Water Quality (Effectiveness) | Quantify the impact on forest management on water quality (total fine sediment contribution $m^3$ to a stream in a given year | - Fine sediment<br>- Connectivity to water course<br>- Depth of erosion | 10 drainages |
| Stand Level – Soils (Effectiveness) | To determine whether Forest and Range Practices Act (FRPA) standards and practices governed by regulation are achieving the desired result of protecting soils. | - Lost productivity due to access construction<br>- Landslides, erosion and drainage diversion<br>- Dispersed soil disturbance in the NAR<br>- Green tree retention<br>- Dead wood | 5 cutblocks |
| Fish/ Riparian and Stream Channel Monitoring (Effectiveness) | Determine if fish values are being protected and if the channel and riparian functions are working at an acceptable level | - Channel bed disturbance<br>- Channel bank disturbance<br>- LWD processes (jams)<br>- Channel morphology<br>- Aquatic connectivity<br>- Fish cover diversity<br>- Moss abundance and condition<br>- Fine sediments<br>- Aquatic invertebrate diversity<br>- Windthrow frequency<br>- Riparian soil disturbance<br>- LWD supply<br>- Shade and micro-climate<br>- Disturbance-increaser plants<br>- Vegetation vigor, form and structure | 15 streams |
| Karst Resource Features (Effectiveness) | Determine whether forest practices are adequately protecting and maintaining the structure, function and ecological integrity of the surface and sub-surface elements of karst systems | - Removal of native forest cover<br>- Reduction of shade<br>- Soil disturbance<br>- Post-harvest windthrow<br>- Debris pile up from slash or roads<br>- Burning | 5 sample sites |

| Category | Objective | Indicators | Sample Size per Forest District |
|---|---|---|---|
| Visual Quality (Effectiveness) | Evaluate the effectiveness of FRPA at maintaining visual quality objectives – are forest practices meeting the objectives and are the existing policies and guidelines resulting in the desired objectives | - No specific indicators have been developed, this component of evaluation includes field/ office review of the achieved VQC in relation to the VQO | Complete |
| Recreation | To collect baseline information on the current state of Forest Service recreation sites in British Columbia. | - In site roads<br>- Erosion<br>- Waste Management<br>- Safety<br>- Environmental Quality (forest health, invasive plants) | 120 recreation sites (across BC) |
| Landscape Level Biodiversity (Effectiveness) | To evaluate whether ecosystems are represented across the landscape in time and space | - Pilot Project in progress | |
| Cultural Heritage Resources | Understanding and evaluating the processes of information-sharing regarding cultural heritage resources as well as the actual outcomes or impacts of forest practices on cultural heritage resources on the ground | - Pilot Project in progress | |
| Landscape Level –Soils (Effectiveness) | To determine whether Forest and Range Practices Act (FRPA) standards and practices governed by regulation are achieving the desired result of protecting soils. | Under development | |
| Wildlife (Effectiveness) | Evaluate the effectiveness of FRPA at maintaining wildlife habitat and species across their natural ranges and over time | Under development | |
| Fish (Watershed) | A watershed based fish values monitoring protocol for watersheds with high fish values. | Under development | |

FREP representatives have expressed an interest in working with Taan in regards to sharing information and developing the program further to aid in meeting FSC certification requirements. Taan has been cooperating with the MFLRNO FREP representatives to provide support and/ or cooperation to assist the FREP Program (e.g., field personnel to assist).

## Research Projects

An indicator has been developed within the Monitoring Report to summarize and report on support for applicable research projects.

Land Use Order Monitoring

Under the Land Use Objectives Order pre-amble, it states that 'the implementation of ecosystem-based management will be monitored and, if monitoring indicates that the objectives for ecosystem integrity, Haida cultural values or socio-economic considerations included in the SLUA are not being met, the Order may be reviewed and replaced by new land use objectives established by the Haida Gwaii Management Council'. In addition, there are some specific objectives under the Order that permit deviation from the specified objective where the licensee develops, implements and monitors an approved Adaptive Management Plan (e.g., working within saw-whet owl zones). Therefore, under the LUO there is opportunity to develop Adaptive Management Plans that can complement those developed under the FSC Monitoring Plan.

The Council of the Haida Nation (CHN) continues to work with the provincial government to develop the monitoring plans in relation to the Land Use Order. The CHN has also hired a monitoring technician to initially assist in the FREP program on Haida Gwaii with plans to work towards a broader LUO effectiveness monitoring program.

The first project, announced in April 2012, involved a review of the implementation and effectiveness of the LUO requirements for the old S4 stream class while considering impacts to the timber harvesting land-base from implementation. The Integrated Stewardship Monitoring Program has been developed to complete the review and monitoring program. The second project included a review of the implementation and effectives of the LUO requirements for the protection of western yew trees in development areas.

Taan will continue seek on-going communication and cooperation during the development of this integrated program and ensure the FSC Management Plan and monitoring plan is updated as required to report on the progress.

## *FSC Monitoring Plan*

FSC requires development of monitoring plans, indicators and benchmarks for a variety of criteria in the standard. Annual reporting is also required.

The FSC Monitoring Plan is comprised of the plan outlined below as well as the annual Monitoring Report which provides valuable information and is an integral component of the monitoring plan. Existing monitoring plans (e.g., FREP, LUO Monitoring) that are described above also play an integral role, and where applicable, have been incorporated into the FSC indicator set that is located within the annual Monitoring Report.

The FSC Monitoring Plan includes the development of indicators, benchmarks and performance targets for key areas required by FSC, considers the results of the Environmental Risk Assessment, Riparian Assessment and HCVF Assessment (low risk for the majority of selected indicators based on management under the Land Use Order) as well as existing monitoring (e.g., FREP program) in consideration of the scope and complexity of the monitoring program and focuses efforts on addressing any gaps between existing monitoring programs and FSC requirements.

Consultation of both the Monitoring Plan and Annual Report is completed through implementation of the FSC Consultation process outlined earlier in the FSC Management Plan.

## Elements to be Monitored

FSC requires monitoring of the following elements:

- Yield of all forest products harvested;
- Growth rates, regeneration and condition of the forest;
- Composition and observed changes in flora and fauna;
- Environmental and social impacts of harvesting and other operations;
- Costs, productivity and efficiency of forest management; and
- Status of HCVFs and attributes, including effectiveness of management strategies

Indicators, benchmarks (current status at the time of initiating FSC Certification and results of the first annual monitoring report) and targets (performance targets that are established through the Monitoring Report in order to monitor performance over time) have been established for the identified elements to be monitored (above) and are recorded within the Appendix 3 - Annual Monitoring Report.

### *HCVF Monitoring*

In addition to the general purposes of monitoring of the categories identified by FSC and described above, HCVF are noted to be of particular importance and as such, monitoring plans must also include measures to identify and assess changes to HCVF as well as evaluate the changes or potential changes under current management strategies in order to "adapt" the management strategies as needed to ensure positive outcomes or results to the HCVF. Many other aspects of monitoring can be captured within the HCVF monitoring such as growth rates, regeneration and condition of the forest and composition in changes to flora and fauna.

HCVF monitoring will include the following implementation and effectiveness elements:

**Table 10: HCVF Monitoring**

| Category | | Monitoring Plan |
|---|---|---|
| 1 | Significant Concentrations of Biodiversity Values | Annual Report Indicators: Stand Level Biodiversity, Landscape Level Biodiversity (Overview of seral stage, forest interior, roads, etc., Connectivity, Ecosystem Representation and Large Landscape Level Forests), Invasive Species, Species at Risk, Sensitive Species Habitat and Windthrow Management Effectiveness |
| 2 | Large Landscape Level Forests | Annual Report Indicators: Landscape Level Biodiversity (Connectivity, Ecosystem Representation and Large Level Landscape Forests) |
| 3 | Rare Ecosystems | Land Use Order Ecosystem Representation Targets & monitoring under the Forest Stewardship Plan (FSP) – initial analysis and monitoring/ updates to reflect planning development areas<br>Annual Report Indicators: Landscape Level Biodiversity (Ecosystem Representation) |
| 4 | Services of Nature | Annual Report Indicators: Watershed Disturbance, Watershed Quality Effectiveness, Riparian Budget Analysis - Watershed Level and Riparian Budget Tracker - Stand Level (including sample block plan review 'investigation') |
| 5 | Fundamental Needs of Local Communities | N/A – no HCFV identified for this category |
| 6 | Traditional Cultural Identity | Annual Report Indicators: Land Use Order/ FSP Reporting – Cultural Objectives |

Several indicators have been developed under the HCVF category of assessing Landscape Level Biodiversity and effectiveness of management strategies over time:

- Landscape Level Biodiversity Overview (The status of basic indicators such as seral stage, forest interior, and roads in the main land classes (THLB, NCLB, and Protected Areas), gives a broad indication of the vulnerability or risk level of a particular Landscape Unit).
- Landscape Connectivity (linkages of habitats, species and processes throughout an area that allows the flow of energy, nutrients, organisms, and genes at many scales).
- Ecosystem Representation (One of the key principals of conservation ecology is to keep all the pieces (Aldo Leopold)). Representation of each ecosystem in an unmanaged state provides areas where natural processes can proceed, gives us areas to use as benchmarks to assess how managed areas compare, and provides habitat for the variety of plants and animals across the management area. Ecosystem representation is measured by several categories to provide a full picture over the landscape: by site series, productivity class and elevation class).
- Large Landscape Level Forests (based on the FSC requirements to identify large landscape level intact forests within the Management Unit as part of the HCVF Assessment and then establish management strategies consistent with the precautionary approach to ensure maintenance of the values).
- Windthrow Management Effectiveness (indicator to assess the effectiveness of the windthrow management strategies applied as they relate to maintain the integrity of reserve and management zones that have been established to protect various key features and habitat.

As the monitoring plan progresses for HCVF and analysis is completed, the monitoring plans for HCVF will be re-visited and revised where required to fine tune direction and focus and incorporate the results from the initial round of monitoring.

## Adaptive Management

Adaptive Management (AM) is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs (Forests for Tomorrow Extension Note #1 Introduction to Adaptive Management[14]).

In general, AM can be described under two potential categories, as described in the Forest for Tomorrow Extension Note #1 Introduction to Adaptive Management:

- Passive AM - is an approach whereby, faced with uncertainty, managers implement the alternative they think is 'best' (with respect to meeting management objectives), and then monitor to see if they were right, making adjustments if desired objectives are not met.
- Active AM - is an experimental approach whereby, when faced with uncertainty, managers implement more than one alternative as concurrent experiments to see which will best meet management objectives. It is characterized by "actively probing" the system in order to distinguish between competing hypotheses (where the different hypotheses suggest different "optimal" actions). The key is that there are alternatives that can be more confidently compared.

Active AM is the preferred approach to use when there is a high level of uncertainty about the effectiveness of the management actions to meet the management goals and objectives and when learning quickly is more important.

[14] Forest For Tomorrow – Extension Note #1: Introduction to Adaptive Management (April 2008): http://forestsfortomorrow.com/fft/sites/default/files/Forests-for-Tomorrow-%20ExtNote1_Apr-29-2008.pdf

Passive AM is a less costly choice that may be most practical when there is little uncertainty about the management action, or when the institutional structure prevents management experimentation".

The adaptive management process under the FSC Monitoring Plan is largely based on the passive approach outlined above; whereby Taan monitors implementation and outcomes of the management strategies under the legal framework of the new Land Use Order and the *Forest and Range Practices Act*. The key to establishing the passive adaptive management scenario is to establish indicators so that baselines or benchmarks can be determined in order to facilitate evaluate changes over time as a result of the implementation of the management objectives and adapt management as needed where results differ significantly from the anticipated outcomes of the management strategies. Performance targets must also be established in order to facilitate success in relation to the benchmarks over time. Performance targets can be based on legal requirements, FSC certification requirements or corporate objectives (refer to Appendix 3 for the indicators, benchmarks and targets and associated rationale for selection). The annual Monitoring Report outlines a summary of the management strategies for each indicator for easier reference during consultation. While some of those strategies report typical business operations to achieve indicators, some outline how practices should change in light of specific results of monitoring. Those latter strategies form the adaptive management backbone of monitoring efforts.

However, Taan understands that an effective Adaptive Management Plan should include elements of both passive and active approaches. Active AM is the preferred option when there is a high level of uncertainty about the outcomes of management strategies. With the implementation of the new Land Use Order underway, there is little 'experimentation' occurring in terms of proposing AMs under the LUO. As well, experimentation at the landscape scale (where most of the issues surrounding forest management occur) is fraught with complications that preclude simple designs, interpretation or learning from results. Passive AM, as outlined in the management strategies of the annual monitoring report is more effective at the landscape scale.

A review was completed of various existing/ completed monitoring, research and Adaptive Management Plans and it was determined that the following areas contain the most significant knowledge gaps and should be the focus of AM. These have since been developed and addressed, refer to the current version of the Monitoring Report for results:

- Species at Risk – development of a species accounting system to group species with similar habitat requirements and focus management strategies on those groups that are most at risk and are likely to be sensitive to forest harvesting as well as focus monitoring efforts on coarse filter attributes that captures the needs of key species and highlight those species best suited to fine filter monitoring in the event that coarse filter monitoring indicates that specific thresholds for attributes may not be achieved.
- Landscape Level Biodiversity – analysis and forecasting of landscape level connectivity, ecosystem representation and large landscape level forests (HCVF) (including forecasting of seral stage representation, patch size and interior forest conditions) and windthrow management effectiveness These indicators provide for monitoring of coarse filter surrogates for general forest 'health' and representation of natural levels of old forest to provide for assessment of impacts of forest management activities both now and in the future to facilitate adaptive management in the event that analysis indicates forest management is not resulting in established thresholds being achieved.

### *Land Use Order Adaptive Management*

It is important to note that the provincial government and the Haida Nation are also working on establishing a monitoring program that includes an adaptive management component. Group members will continue to assess the development of that program and incorporate the results into our monitoring plans and AM plan.

The Land Use Objectives Order also includes some provisions for deviations from the specified objectives for select categories, provided that licensees design and implement an Adaptive Management Plan that is reviewed with the Solutions Table. Where AM is developed by Taan under the LUO and Forest Stewardship Plan, they will form part of the Monitoring and AM Plan for FSC purposes. For example, Taan has initiated in some preliminary discussions with a biologist regarding potential work to develop some adaptive management plans for working within Northern Goshawk and Saw-whet Owl Management Areas.

## Performance Reporting

### *Annual Reporting – Indicators & Benchmarks*

The indicators, benchmarks and targets have been compiled into the Monitoring Report (FSC MP Appendix 3) and are updated annually as part of the reporting requirements to incorporate results of implementation and effectiveness monitoring (e.g., inspections, investigations, audits, and FSC monitoring adaptive management process).

Taan (typically the CMS Administrator) ensures the required data is collected and maintained and an annual monitoring report is prepared and made publicly available through the Taan website and through the FSC Consultation process. Support to provide the evidence is provided by key representatives of each group member, as required.

The annual report is reviewed as part of the Taan CMS Management Review process.

Feedback received from the FSC Consultation process is considered during all subsequent revisions and updates. A summary of changes made to the FSC Management Plan and annual Monitoring Report are included within the introduction of each report and is updated with each release.

Monitoring records and data are retained on file by Taan. Refer to the annual Monitoring Report (Appendix 3) or specific references to applicable database/ storage for each indicator.

### *5-Year Reporting – FSC Assessments*

At a minimum of once every five years, a full review and update will be completed for the Riparian, HCVF and Environmental Risk Assessments. Resulting changes will be incorporated into the FSC Management Plan to ensure monitoring of the related indicators and benchmarks and form part of the adaptive management cycle.

Additional reviews/ updates may be completed in the interim in the event that there are any significant changes to existing management practices and/ or legal requirements or to the Management Unit.

## Management Review Process/ Feedback Loop

Periodic review and update of the Environmental Risk Assessment, Riparian Assessment, HCVF Assessment and the FSC Management Plan are crucial to ensuring continual improvement and adaptive management in response to the results of monitoring. In general, the FSC assessments and the FSC Management Plan will be fully reviewed at a minimum of once every five years through the Taan CMS Management Review Process.

It is anticipated that the Monitoring Plan will change over time as a result of adaptive management, advances in science and technology, changes to legislation and or FSC BC Regional Standard and as a result of public consultation of the FSC Management Plan and results of monitoring.

Adaptive management is facilitated through the Taan Corporate Management System, including annual review of results of monitoring, audit results, inspection results and review of the CMS and Management Plan in relation to the results.

### Potential Future Monitoring

The recent Haida Gwaii Timber Supply Review indicated some potential areas where monitoring could be improved over time to provide better results for incorporation into the Timber Supply Review process:

- Monitoring of regenerated stands for comparison of actual and potential yields from TIPSY and G&Y models (potential for use of LIDAR technology);
- Review PSP for Hw and Ss to see if contribute to G&Y estimates for future TSRs; and
- Review of current status for the 40 G&Y plots established for cedar in 2008.

Taan will explore options for cooperation and support for these, and other, monitoring ideas as they develop.

A Vegetation Resource Inventory (VRI) has also recently been completed resulting in updated forest cover inventory. A new TSR is in progress.

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