Background and Intent Document

for the

Haida Gwaii Land Use Objectives Order

2019

Haida Gwaii Management Council

CONTENTS

ACKNOWLEDGEMENT

This document was originally drafted in 2011 by the Joint Technical Team (JTT) under guidance by the Joint Management Team (JMT). These were teams with joint participation by the Council of the Haida Nation and the Province of BC whose mandate was to implement certain key elements of the Haida Gwaii Strategic Land Use Agreement. The teams benefited from the knowledge and expertise within governments, academia and the private sector as well as the foundational body of work from elders, scientists, community leaders and representatives, established throughout the decade long land use planning process on Haida Gwaii.

The Joint Management Team members were Bill Beldessi (CHN), Rudi Mayser (BC), Tom Bell (BC), Brian Clark (BC), Sonia Rice (CHN), Jevan Hanchard (BC), Tyler Bellis (CHN), Calvin Ross (BC), Ted Nash (BC) and Lindsay Jones (BC). The Joint Technical Team was chaired by Nick Reynolds (CHN) and has included John Sunde (BC), Sean Brennan (CHN), Alvin Cober (BC), Greg Wiggins (BC), Tyler Bellis (CHN), and Sean Muise (BC), with technical assistance from Keith Moore (Moore Resource Management).

The Haida Gwaii Management Council (HGMC) is now the decision-making body for the Haida Gwaii Land Use Objectives Order. Project based Technical working groups and joint technical teams are convened by the HGMC as needed. Updates to this document were made by the JTT responsible for assembling the 2017 HGLUOO major amendment.

1.0 About this Background and Intent Document

1.1 Introduction and Purpose

This document provides background and intent for the **Haida Gwaii Land Use Objectives Order** *(referred to hereafter as 'the Order' or as the 'HG LUOO').* The Order was legally established on December 17th, 2010. The Order was guided by the **Haida Gwaii Strategic Land Use Agreement** (SLUA) between the Council of the Haida Nation (CHN) and the Province of British Columbia (the Province) signed on December 12th, 2007. General principles of Ecosystem-Based Management (EBM) were outlined within the SLUA. The Order brings these principles of EBM into a legal framework . The Order provides an important tool for enabling EBM on Haida Gwaii by establishing legal objectives pursuant to section 93.4 of the *Land Act*, for the purpose of directing forest practices implemented under the *Forest and Range Practices Act (FRPA).*

The purpose of this document is to provide supplemental information regarding the intent of the legal objectives, and context for understanding and implementing the objectives. The overall goal is to facilitate a clear understanding of the Order, and represents the expectations and interpretations from the Haida Gwaii Management Council. In addition to offering guidance to forest practitioners and licencees, this document is meant to help bridge the public's understanding of the Order and facilitate the evaluation of forestry activities for the Solutions Table (a key consultative framework between the Council of the Haida Nation and Province of BC)

It is important to note that the information provided in this document should not be construed as a legal interpretation or legal advice for implementation. It is also not intended to provide prescriptive measures or to limit the accountability and flexibility of professionals and delegated decision makers who will be responsible for developing, approving and implementing forest practices pursuant to the Order. In addition, there are other procedural documents that interpret the HGLUOO for operational purposes that should be consulted in the implementation of the HGLUOO[1]. It is the responsibility of licensees and professionals to remain current in their training in the appropriate areas of practice to ensure proper implementation of the LUOO.

The original 2010 Order was developed jointly between the Council of the Haida Nation and the Province. The objectives were guided by the provisions set out in attachments A, B and C of the SLUA. Many of the provisions listed in attachment B, Part II of the SLUA indicated the need for the development and refinement of objectives during the Detailed Strategic Planning process, which occurred between June 2008 and December 2010. The rationale behind many of these refinements was summarized in a series of technical reports published by the Joint Technical Team (referenced below in section 1.2.2). Detailed Strategic Planning was conducted by a Joint Technical Team directed by a Joint Management Team. Both teams were made up of representatives from the Council of the Haida Nation and the natural resource Ministries[2] of the Province.

In 2011 the Haida Gwaii Management Council (HGMC) was established. With membership from the CHN and the Province, the HGMC has the statutory authority to create/amend/rescind land use objectives under the *Land Act* and set the allowable annual cut for the entire archipelago under the Forest Act.

[1] Namely the CHN's *Cultural Feature Identification Standards* and licencee's *Forest Stewardship Plans*.
[2] Ministry of Environment, Integrated Land Management Bureau, the Ministry of Forests and Range and, from October to December 2010, the Ministry of Natural Resource Operations.

Section 1 of this document describes the purpose of the original Order and some key agreements leading up to the Order, and outlines the overarching legal and policy context in which the Order exists. Section 2 describes key concepts and definitions that are commonly referred to throughout the document. The core of this document is found within Section 3. For each legal objective found within the Order, key definitions are followed by a statement of intent and implementation suggestions.

Future guidance may be developed and reflected in future versions of this document to address changes to the HGMC, forest management, land management or forest practices.

1.2 Background and Context for the Orders

1.2.1 Agreements between the Council of the Haida Nation and the Province of BC

The following summarizes milestone agreements that have contributed towards the establishment and implementation of the Haida Gwaii Land Use Objectives Order.

1. *Land Use Planning Protocol Agreement*, (2001). *General Protocol on Land Use Planning and Interim Measures.* http://www.haidanation.ca/wp-content/uploads/2017/01/Protocol_Land_Use_FN.pdf

2. *General Protocol Agreement on Land Use Planning and Interim Measures*, between coastal First Nations and the Province of British Columbia. (http://www.coastforestconservationinitiative.com/pdf/finalprotocol.pdf)

3. *The Haida Gwaii / Queen Charlotte Islands Strategic Land Use Plan – Planning Process Framework* (2003). This guided the 2003-2005 Community Planning Forum, made up of 29 stakeholders from the Haida Nation, local communities, the Province, non-government organizations and business organizations who have an interest in land and resource management on the Islands.

4. *Letter of Understanding* (2005). Government to Government negotiations included an agreement to work towards finalizing a Land Use Plan, establishing community forest tenure, protecting areas identified by the Haida Land Use Vision, embarking upon a Timber Supply Review, and commitments to further negotiate the halt of commercial black bear hunting. http://www.haidanation.ca/wp-content/uploads/2017/03/Letter_of_Understanding_between_CHNandBC.pdf

5. *Strategic Land Use Agreement (SLUA)*, (December 2007). Agreement signed by president of the Haida Nation Guujaaw and BC premier Gordon Campbell. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/haidagwaii-slua/haida_gwaii_slupa.pdf andhttp://www.haidanation.ca/wp-content/uploads/2017/03/Haida-Gwaii-Strategic-Land-Use-Agreement-2.pdf

6. *Kunst'aa Guu-Kunst'aayah Reconciliation Protocol*, (December 2009). Agreement signed by the CHN and Province that establishes a commitment to co-management and shared resources

between governments. The Reconciliation Protocol, and its subsequent implementation, provides the framework for the *Intergovernmental Process* that is referred to in the Order. This Reconciliation Protocol has led to the Provincial *Haida Gwaii Reconciliation Act* and the Haida Nation's *Stewardship Law*. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/haida_rp_fully_signed_and_dated_-_jan_22_2016.pdf (amending agreement and, http://www.haidanation.ca/wp-content/uploads/2017/03/Kunstaa-guu_Kunstaayah_Agreement.pdf (original agreement)

7. The *Haida Gwaii Reconciliation Act*. This Act brings the statutory authorities of the Haida Gwaii Management Council (HGMC) into effect under provincial law. The HGMC has the authority to establish objectives for the use and management of land and resources on Haida Gwaii for the purposes of the *Forest and Range Practices Act*, and acting in accordance with sections 93.5 and 93.6 of the *Land Act.*
   http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_10017_01

8. KaayGuu Ga ga Kyah ts'as—Gin'inaas'laas'waadluwaan gud tl'a gud giidaa (Stewardship Law). This law was enacted by the Council of the Haida Nation in 2010 to, among other things, create the Haida Gwaii Management Council and enable them to establish, implement and amend the Land Use Objectives for forest practices.

9. Cedar Stewardship Area Management Plans. These plans, adopted by the Council of the Haida Nation's House of Assembly in October 2016, document the history of these areas and the authority by which they are protected, as well as outline priorities for inventory, restoration as well as provides guidance for cultural and commercial access to cedar.

   http://www.haidanation.ca/wp-content/uploads/2018/02/Cedar-Man-Plan.FINAL-downsized.pdf

10. Cultural Feature Identification Standards Manual. This policy document outlines the standards for people certified by the Council of the Haida Nation to carry out field assessments as per section 4 of this Order. Refer to www.haidanation.ca for the latest version of this manual.

1.2.2 Key Background Documents and Reference Material

There are several documents that were developed during the Haida Gwaii Land Use Planning process (2001-2010) that provided a foundation for the development of an EBM framework for Haida Gwaii. A few key documents are briefly described below:

- The Coast Information Team (CIT) Ecosystem-Based Management Planning Team Handbook (March 2004) reflects the recommendations of a working group of the CIT for implementing EBM across multiple scales, consistent with the CIT definition for EBM. The CIT EBM Handbook can be found at https://www.for.gov.bc.ca/tasb/slrp/citbc/ebmplan.html

- The CIT Scientific Basis of Ecosystem-Based Management (March 2004) provides the rationale and scientific background to the EBM Handbook. The CIT Scientific Basis of EBM can be found at: https://www.for.gov.bc.ca/tasb/slrp/citbc/ebmscie.html

- The CIT Hydroriparian Planning Guide (January 2004) provides a description of

hydroriparian concepts and methods, for the purpose of facilitating the design of forest management plans likely to maintain hydroriparian functions at a watershed scale. The CIT Hydroriparian Planning Guide can be found at: https://www.for.gov.bc.ca/tasb/slrp/citbc/ebmhydr.html

- CIT Peer Review Documents provide peer reviews of all of the above CIT documents https://www.for.gov.bc.ca/tasb/slrp/citbc/abopeer.html

- The Haida Land Use Vision, 2004. Presented at the Community Planning Forum, this document set up the principled vision of the Haida Nation for sustaining culture and environment on Haida Gwaii. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/haidagwaii-slua/haida_land_use_vision.pdf

- The Land Use Plan Recommendations Report, 2006. A summary of viewpoints from the Community Planning Forum that summarize the principles of Ecosystem-based Management on Haida Gwaii. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/haidagwaii-slua/lup_recommendations_report_addenda.pdf

- Environmental Conditions Report, 2004. A baseline of environmental conditions on Haida Gwaii presented at the Community Planning Forum. The report looked at the historical distribution and extent of ecosystems (riparian, upland, wildlife), the pressures from land uses for each and their relation to culture and economy. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/haidagwaii-slua/lup_environmental_conditions_report.pdf

- Community Viability Strategy, 2006-07. A CHN, Provincial and community driven process to evaluate economic trends and strategically plan towards economic sustainability.

- Economic Development Understanding, 2007. An agreement between the CHN and the Island communities that outlines shared goals for economic development in light of Land Use Planning. http://www.mieds.ca/images/uploads/Ec%20Dvpt%20Understanding.pdf

- Land Use Planning documents, 2003-2006. Archived materials including background reports and economic analysis can be viewed at https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/land-use/land-use-plans-objectives/west-coast-region/haidagwaii-slua

- Joint Technical Team reports developed during Detailed Strategic Planning include:

    - Timber Opportunity Decision Support
    - Designing a Forest Reserve Network
    - Defining Type 1 and Type 2 Fish Habitat
    - Modeling for Hydrologically Effective Green-up
    - Sensitive Watershed Identification
    - A Rationale for Using a Rate of Harvest as a Measurable Target for Maintaining the Natural Ecological Function of Upland Streams
    - Delineating Rare and Common Ecosystems

- Human well-being was identified as a goal of Ecosystem Based Management, and some dialogue and evaluation occurred under the Haida Gwaii Management Council's mandate through the 2015 Forest Strategy workshops (see http://www.haidagwaiimanagementcouncil.ca/index.php/reports-and-publications/)

1.3 Ecosystem-Based Management

Planning for Ecosystem-based management (EBM) on Haida Gwaii began in earnest in 2001 with the Land Use Planning Protocol Agreement and planning process framework between the CHN and the Province of BC. This agreement, and subsequent agreements and processes such as the Community Planning Forum (2003-04) were all keystones towards the establishment of a Strategic Land Use Agreement- the staging grounds for the implementation of EBM on Haida Gwaii. These processes were influenced by a community-based desire to move toward economic and environmental sustainability founded on traditional and local knowledge, sound science and local values. Other processes, such as in Clayoquot Sound and the North Coast and Central Coast, and concepts developed through institutions like the Clayoquot Sound Scientific Panel and the Coast Information Team also contributed to the development of EBM on Haida Gwaii.

Ecosystem-Based Management on Haida Gwaii is defined in the 2007 Strategic Land Use Agreement (SLUA). EBM means *"an adaptive, systematic approach to managing human activities, that seeks to ensure the co-existence of healthy, fully functioning ecosystems and human communities."*

While the SLUA set the stage for the Haida and the Province to collaboratively work under this agreed definition of EBM, the tool for the legal implementation of EBM are the *Haida Gwaii Land Use Objectives Order*. Through this legal instrument, the terms and objectives of EBM set by SLUA have been established to legally direct the activities of forestry license holders on Haida Gwaii. Therefore, the HG LUOO only affects those aspects of EBM that relate to forest management, with stated objectives for the protection of important Haida cultural values, support of ecosystem integrity and the provision of environmental benefits by maintaining the diversity and abundance of organisms on Haida Gwaii. In this sense the HG LUOO is a partial, albeit important, fulfillment of EBM on Haida Gwaii.

1.4 Legislative Context for the Haida Gwaii Land Use Objectives Order

1.4.1 Requirements for establishing legal objectives under the Land Use Objectives Regulation

In order to establish legal objectives under the *Land Use Objectives Regulation,* the Minister responsible for the *Land Act* (and since 2011, the HGMC)must be satisfied that the land use objectives will provide for management and use of forest or range resources in a manner that has not otherwise been provided for under the *Land Use Objectives Regulation* or another enactment. In addition, the land use objectives must provide for an appropriate balance of social, economic and environmental benefits.

Accordingly, one of the steps undertaken in the decision process to establish the Haida Gwaii Land Use Objectives Order was a systematic review of existing legal direction provided under various enactments (e.g. the *Forest and Range Practices Act*, *Forest Planning and Practices Regulation* and *Government Actions Regulation*, the *Land Use Objectives Regulation, Heritage Conservation Act* and *Wildlife Act*) to identify whether the proposed objectives are duplicative of legal direction provided elsewhere. The final legal objectives established in the Order should therefore be considered complementary and supplemental to legal direction provided by other enactments, unless otherwise specified.

1.4.2 Relationship to the *Forest and Range Practices Act* (*FRPA)*

The *Forest and Range Practices Act* relies on the establishment of objectives to provide the overarching direction for forest management in BC. There are three types of objectives that may be established or enabled under FRPA:

1. Land Use Objectives established under section 93.4 of the *Land Act* (such as the Haida Gwaii Order) or grandfathered under S. 181 of FRPA for objectives that were previously established under sections 3-5 of the *Forest Practices Code;*
2. Objectives set by government pursuant to section 149(1) of FRPA (*Forest Planning and Practices Regulation* section 5-10), and;
3. Objectives enabled by regulation pursuant to section 149(1) of FRPA and sections 2 to 4 of the *Government Actions Regulation.*

Forest licensees are required to identify strategies and/or desired results in a Forest Stewardship Plan that will be consistent with all of the objectives that are in effect for any given area.

In the event of a conflict between any of the above types of objectives, section 149(2) of FRPA provides that land use objectives established under the *Land Act* prevail over objectives prescribed under section 149(1) of FRPA. In the case of the Haida Gwaii Order, only one conflict has been noted. The Order notes in section 1(2):

In accordance with section 5 of the Land Use Objectives Regulation (B.C. Reg. 357/2005), subsection 9 (2) of this Order is disclosed as being in conflict with the objective made in section 10 of the Forest Planning and Practices Regulation (B.C. Reg. 14/2004) under the Forest and Range Practices Act, for the area shown on the map attached Schedule 1, since this Order applies to all culturally modified trees modified prior to 1920, within the area shown in Schedule 1.

Section 10 of the FPPR establishes objectives for cultural heritage resources that are of continuing importance to the Haida Nation, and that are not regulated under the *Heritage Conservation Act.* The Haida Gwaii Order also provides objectives for cultural heritage resources that are not regulated under the *Heritage Conservation Act* in greater detail specific to the Haida Nation. Because a conflict has been specified between these two sets of objectives, objectives 3 to 9 in the Order are deemed to supersede those identified in section 10 of the FPPR.

To date, no other conflicts have been specified within the Order.

1.4.3 Relationship with the Non-spatial old growth order

The Provincial Non-Spatial Old Growth Order (NSOGO) legally establishes old growth objectives for landscape units across the Province that do not otherwise have old growth objectives formally established. The Non-Spatial Old Growth Order states that the NSOGO is replaced once the Minister establishes new objectives for old forest. Sections 16 and 23 within the HG LUOO establish new objectives for old forest, and therefore the HG LUOO replaces the Non-Spatial Old Growth Order on Haida Gwaii.

1.4.4 Relationship to the Government Actions Regulation (GAR, under FRPA) Order to Identify Karst Resource Features on Haida Gwaii

In September 2006, the district manager for the Haida Gwaii District signed a Government Actions Regulation (GAR) order that identified surface or subsurface elements of a karst system as a resource feature. These include karst caves, significant surface karst features, and very high or highly vulnerable karst terrain. The GAR offers special management for identified resource features that are not provided for in other legislation, under section 70 (1) of the Forest Planning and Practices Regulation. Special management may include conditions for development in the area of the feature, and may include full protection from primary forest activities. While the GAR for karst on Haida Gwaii does not provide specific management direction, the HG LUOO provides explicit measures for its protection, and provincial best management practices have been published since 2003[3].

In Schedule 2 of the Order, karst is identified as a Class 2 Haida Traditional Heritage Feature and is provided protection under Section 5(4). Karst features may be associated with high potential habitation sites of a temporary or permanent nature for shelter or other significant social or ceremonial activity and therefore require precautionary management measures. These sites also often contain important archaeological and paleontological remains that are part of the cultural and natural heritage of Haida Gwaii.

1.4.5 Relationship to the Heritage Conservation Act of British Columbia

The *Heritage Conservation Act* provides for the protection of archaeological resources, including sites containing evidence of use or habitation pre-dating 1846, burial sites and aboriginal rock art. The *Heritage Conservation Act* prohibits the destruction, excavation or alteration of archaeological sites without a permit.

Section 6 of the *Heritage Conservation Act* specifically states that if there is a conflict between the *Heritage Conservation Act* and another enactment the *Heritage Conservation Act* prevails over the conflicting legislation, as noted below:

> *"If, with respect to any matter affecting the conservation* of a *heritage site or heritage object referred to in section* 13 (2)*, there is* a *conflict between this Act and any other Act, this Act prevails."*

Part 2 (Sections 3 through 9) of the HG LUOO provides direction for the management of Haida heritage features and sites that are intended to supplement direction provided by the *Heritage Conservation Act.* The Order includes management directions that are specific to Haida features and sites that are described in Schedule 2 of the Order. In addition, the Order provides management objectives for Culturally Modified Trees dated after 1846. The HG LUOO specifies that CMT's dated prior to1920 receive special management.

Any application for the alteration of a CMT dated prior to 1920 requires an intergovernmental process as described in section 9 (4) of the HG LUOO. In addition, any application for the alteration of a CMT dated prior to 1846 requires a permit under section 12 of the *Heritage Conservation Act*.

[3] Karst management handbook for British Columbia. For. B.C. Min. For., Victoria, B.C. http://www.for.gov.bc.ca/hfp/fordev/karst/karstbmp.pdf

1.4.6 Relationship with Forest Planning and Practices Regulation (*FPPR under FRPA)* Section 7 *Objectives set by government for wildlife,* and the Woodlot License Planning and Practices Regulation (*under FRPA)*

A notice under section 7 (2) of the Forest Planning and Practices Regulation was established for the Haida Gwaii Natural Resource District (previously the Queen Charlotte Islands Forest District) in 2004. It required forest tenure holders to specify a result or strategy in relation to the amount and distribution of attributes of wildlife habitat required for the survival of Marbled Murrelet.

On January 5th, 2011, the 2004 section 7(2) notice was repealed by the *Notice-Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Haida Gwaii Forest District - Amendment.* This amendment was a result of section 19 of the HG LUOO that provides new objectives for Marbled Murrelet nesting habitat.

1.4.7 Relationship with the Haida Gwaii Reconciliation Act

The *Haida Gwaii Reconciliation Act* was passed on June 3rd, 2010. It implements commitments set out in the Kunst'aa Guu – Kunst'aayah Reconciliation Protocol between the Haida Nation and the Province, signed December 11, 2009. A decision-making framework set out in Schedule B of the Protocol provides for the establishment of the Haida Gwaii Management Council, made up of two appointees by each of the Haida Nation and the Province under their respective authorities, as well as a jointly appointed chair. The Management Council, which is established by the Haida Gwaii Reconciliation Act, is responsible for making strategic land and natural resource decisions on Haida Gwaii[4], including the implementation and amendment of the Haida Gwaii Land Use Objectives Order. Future amendments to the Order will be adjudicated by the Management Council.

1.4.8 Relationship to the Haida Stewardship Law

The KaayGuu Ga ga Kyah ts'as – Gin 'inaas 'laas 'waadluwaan gud tl'a gud giidaa, or Haida Stewardship Law was enacted on October 20th, 2010 at the Council of the Haida Nation's annual House of Assembly. The Stewardship Law, under the authority of the Council of the Haida Nation, affirms the creation of the Haida Gwaii Management Council through the Kunst'aa Guu – Kunst'aayah Reconciliation Protocol. This grants the Haida Gwaii Management Council authority to perform the mandates agreed to under the Reconciliation Protocol. In this sense, the Haida Gwaii Management Council has dual authority (from CHN and Province) to implement and amend the Strategic Land Use Agreement and establish, implement and amend Land Use Objectives for forest practices.

1.4.9 Transition

As per section 5 (1) (b) and section 13 (1) (b) of the *Forest and Range Practices Act* (FRPA), forest stewardship plans and woodlot license plans within the administrative boundaries of the

[4] Not including fee simple lands and Gwaii Haanas National Park Reserve and Haida Heritage Site.

Haida Gwaii District must incorporate results and/or strategies that are consistent with objectives set out in the HG LUOO.

The specified transition period for submission of these results and/or strategies as per s. 24 (2) of the HG LUOO and s. 8 (2) (b) of FRPA is six months from the date of establishment of the latest amendment. Refer to the Order on the Haida Gwaii Management Council website (http://www.haidagwaiimanagementcouncil.ca/site/wp-content/uploads/2017/11/HGLUOO-Consolidated-Order-2017-Final-Signed.pdf).

1.5 Adaptive Management and Monitoring

The introduction to the Order states "*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, this Order may be reviewed and replaced by new land use objectives established by the Haida Gwaii Management Council"*

Adaptive management, in its broadest interpretation, will be initiated by the Haida Nation and the Province through the Haida Gwaii Management Council, and may lead to the development of future management strategies and practices. These in turn may be reflected in future amendments to the Order. Adaptive management plans submitted by Forest Stewardship Plan (FSP) holders will inform the development of those strategies and practices

The HG LUOO sets the parameters for adaptive management in an objective context for licensees, and requires adaptive management plans to be prepared when deviations to the default requirements are proposed. In this sense, the HG LUOO defines an **adaptive management plan** as "*a monitoring or research initiative that is developed and implemented during the operational planning, timber harvesting, silviculture treatment, or road construction, including maintenance and deactivation phases, to examine the outcomes of management strategies and practices that vary from default requirements, the results of which will inform the development of future management strategies and practices."*

For the purposes of adaptive management, the CHN and Province may establish EBM monitoring protocols. A jointly developed system for monitoring feeds into the adaptive management process, the results informing future LUOO amendments.

1.5.1 LUOO AMENDMENTS

As amendments to the Order are proposed and established, the Parties will update this background and intent document.

Procedures for either major or minor amendments to the LUOO by the HGMC are detailed in Appendix 1 of this document.

Processes for the amendments of spatial Schedules to the HGLUOO are maintained as Procedural Policies by the HGMC administration. Section 8.2 of this document describes the process for on-going updates and amendments to Forest Reserves.

2.0 Collaborative Processes

The 2007 Haida Gwaii Strategic Land Use Agreement includes a table of 'Management Objectives' that became legal land use objectives under the 2010 HG LUOO. SLUA management objectives included default 'targets' which were a stated objective or a stated minimum retention requirement or maximum disturbance requirement. For some objectives a 'risk-managed' target was also provided to permit variances to the default target, subject to certain conditions. Default targets and risk-managed targets are reflected in the land use objectives, although this terminology is not applied in the HG LUOO. For each objective in the HG LUOO, default targets are stated first and any risk-managed targets, if applicable, follow with a list of specific conditions that must be satisfied to allow the variance.

2.1 INTERGOVERNMENTAL PROCESS

The Haida Gwaii Land Use Objectives Order (HG LUOO) allows licencees to deviate from some requirements in some situations provided that "an intergovernmental process is completed". The intergovernmental process (IGP) is how proposals by forest managers to deviate from the "default" requirements of the HG LUOO are reviewed for merit and consistency prior to a formal application for a road or cut block permit. . Parameters for risk based and default management strategies are stated in the Strategic Land Use Agreement and are reflected in objectives in the HG LUOO.

Requests to deviate from the default requirements may include proposed alternatives for managing a value identified in the HG LUOO. The alternatives are typically necessary to accommodate operational considerations or to identify practices that may differ from the default requirements and still meet the goal of the objective while also meeting the conditions specified in the objective (see section 3.6 below for more detail on risk-managed applications).

In the case of an IGP request, the collaborative process includes a technical team) and the Solutions Table. The Solutions Table has been established by the Kunst'aa guu - Kunst'aayah Reconciliation Protocol as part of the decision-making framework. It is the forum for developing information for the operational level shared decision-making process.

Proponent requests to deviate from the default requirements are forwarded to Front Counter Haida Gwaii where they are sent to the technical team and copied to the Solutions Table. The request should specify the section under which variance is being applied for, with a map and rationale for the variance. The technical team reviews the request to ensure that the resource value that is being risk managed is protected or sustained, adaptive management principles are applied and that the purpose for taking the risk managed approach warrants consideration. Additional information sharing, field review and consultation between the licensees, the technical team and the Solutions Table may be required. Once the IGP is completed the Solutions Table providing a response back to the proponent in the form of a Solutions Table Briefing Note. The response back to the proponent is used by the proponent to inform future, relevant application submissions.

2.2 INFORMATION SHARING PROVISIONS

Spatial reporting requirements

Spatial reporting requirements are found throughout the HG LUOO. Spatial reporting is a key ingredient to the success of both effectiveness monitoring and implementation monitoring of EBM on Haida Gwaii. Licensees are required to document and submit digital spatial data at the end of each calendar year to both the Council of the Haida Nation and the Province of British Columbia. The intent of the digital spatial data submission (as opposed to hardcopy data submission) is to ensure that information can be effectively

integrated into spatial inventories. Digital spatial data submissions have also been a common reporting and appraisal practice in British Columbia for several years.

Digital spatial data submissions are made to the Haida Gwaii District Manager (representing the Province) and the Chair of the Heritage and Natural Resource Committee (representing the CHN).

Table 1, Land Use Objective Section References to Reporting Requirements, follows on next page.

TABLE 1. LAND USE OBJECTIVE SECTION REFERENCES TO REPORTING REQUIREMENTS.

Land Use Objectives	HG LUOO Reference	Land Use Objectives	HG LUOO Reference
Development Areas	2.6	Forested Swamps	15.6
Haida Traditional Heritage Feature	5.8	Ecological Representation	16.3
Haida Traditional Forest Feature	6.9	Red/Blue Listed Communities	17.5
Cedar Retention	7.4	Black Bear Dens	18.6
Western Yew Retention	8.4	Northern Goshawk Nests	20(2)(a)
CMT's and Monumental Cedar	9.11	Great Blue Heron Nests	21.3
Type I Fish Habitat	10.7	Northern Saw-whet Owl Nesting Habitat	22.4
Type II Fish Habitat	11.8	Forest Reserves	23.4
Active Fluvial Units	12.5		

Consultations for monumental cedar harvesting

Section 9 (5) of the HG LUOO outlines the conditions by which monumental cedar less than 120 cm diameter at breast height (dbh) may be harvested. The conditions require a confirmation through the intergovernmental process that the monumental cedar is not required for a cultural cedar use; or will be made available to the Haida Nation (or other specific measures identified) if required for road access or to address a safety concern. Communications and information sharing regarding these circumstances will be made through the Cultural Wood Access Program which is jointly administered by the CHN and the Province. A Standard Operating Procedure has been developed to facilitate streamlining this process (http://www.haidanation.ca/?page_id=48). See section 3.3 of this document for more information.

3.0 General Terms and Concepts

A variety of terms and concepts are found throughout the HG LUOO. These are compiled in this section. While the HG LUOO sets out specific requirements for managing values, the means to meet the requirements will be varied and incumbent upon a licensee to develop strategies. Concepts identified in this section, and throughout this document, are not meant to restrict or limit strategies for fulfilling the HG LUOO requirements.

3.1 Reserve zones and management zones

- The protection of features is provided by a reserve zone, a management zone, or a combination of the two. Reserve zones are no-harvest zones. Management zones are zones where a specified degree of alteration is permitted. Throughout the HG LUOO there are provisions that allow for variances in the reserve zone and management zone boundaries in defined situations. These are discussed in sections of this document titled “Opportunities for flexibility around default requirements”

- When a management zone is described or mapped, the portion of the management zone that is required to be maintained is determined by the requirements for the feature, site and stand

characteristics and or other considerations. The primary intent within a management zone is for the feature itself to be protected.

- The application of an average width for reserve zones and management zones allows for operational flexibility, but its primary purpose is to maintain the integrity of the feature. This can support management for different variables, for example wind direction, fetch, soils, stand characteristics and other variables that may affect the integrity of the feature. . While there is flexibility to reduce the zone in some portions of the perimeter, it is intended to be balanced by a similar expansion in other portions. This flexibility is also encouraged to support the inclusion of other site-specific values.

- Where the 0.5 tree length flexibility in width is used to design a reserve zone or management zone, the area of the reserve or management zone must equal the area that would be reserved using the stated average width of the reserve or management zone within the development unit. This means that at any point around the feature, the width can be varied by up to 0.5 tree lengths, provided that the integrity of the feature is maintained, and the area reserved within the development area meets the requirements.

- Some features extend well beyond the boundaries of a proposed cutblock. To optimize the protection of hydroriparian functions, it is anticipated that reserve and management zones are designed to protect the entire feature. The reductions that are allowed to management zones are different between specified objectives. How those reductions are attained is not specified by the order. In other words, activities such as tree crown modification or removal of safety hazards or harvesting merchantable volume may be considered acceptable in management zones so long as they maintain the reserve zone integrity and are within the limits specified by the Order.

- When the Order allows a reduction to the amount of mature forest or old forest in a management zone, this reduction can be measured in different ways. The following outlines four potential ways to determine the allowable reduction.

    a. an area calculation: a percent reduction of the mature or old forest in a management zone can be represented by area (hectares). For example, using a 40 metre tree length, the area of a 1 tree length management zone would be approximately 1 hectare. If this management zone was entirely old or mature forest, a 10% reduction in area would require 0.9 hectares of mature or old forest to be maintained within the management zone. This calculation would likely be most efficient using a Geographic Information System (GIS) application.

    b. Basal area: this is the area of the circle formed by the cross-section of a tree taken 1.3 metres above the ground (the diameter at breast height). One variable area plot sample per hectare of retention provides sufficient data to determine basal area.

    c. Volume: the measure of wood in a tree or stand, measured in cubic units. This can likely be determined by one variable area plot sample per hectare of retention. For example, in a 1 hectare management zone, a stand with an average 400 m^3 per hectare allows for an equivalent of 40 m^3 of available harvest.

    d. Stems per hectare: a measure of stand density, it is often divided into diameter classes or measured based on a minimum diameter class. For example, in a 1 hectare management zone, a stand with an average 150 stems per hectare would allow for an equivalent 15

stems per hectare of available harvest. This can be determined by one variable area plot sample per hectare of retention.

3.2 Tree-Length

- The required width of reserve zones and management zones adjacent to features is expressed in tree-lengths rather than specified widths. This is to account for the different heights of trees that occur in different situations. On sites with taller trees, reserve and management zones will be wider.

- The tree-length required on a given site is based on the height of the tallest trees adjacent to the feature. The width of the zone required to meet the tree-length requirements can be determined in two different ways. It can be determined by measuring the tallest trees adjacent to the feature or can be determined from Schedule 5 of the Order based on the predetermined tree heights for the predominant site series adjacent to the feature. In young and mature stands, the required tree heights equivalent to a tree length are specified in Column A of Schedule 5; for old stands the predetermined heights are specified in Column B.

- For the purpose of applying tree lengths in the field, adjacency means directly beside or immediately proximate to a feature. For objectives that are represented as point features, such as monumental cedar or black bear dens, tree lengths may be derived directly from the tallest tree surrounding the feature (which may be the feature itself) or derived from the ecosystem (and subsequent reference to Schedule 5) that the feature is within. For linear features, such as fish habitat, tree lengths should be derived from the tallest tree(s) next to the feature or predominant ecosystem next to the feature (as opposed to the predominant ecosystem for the whole development area). For example, for stream related features (Type I or II fish habitat, active fluvial units), tree length would be derived from the predominant ecosystem or tallest trees measured immediately proximate to the edge of the active floodplain.

3.3 Stand level retention

- Where there are requirements for stand level retention, the intention is that this should be achieved in aggregated retention. For example, retention adjacent to other reserve zones or management zones may prove more resilient then dispersed retention.

- Stand level retention has no specified boundaries or predetermined buffers around a given feature. Retention is meant to maintain the integrity of a particular feature by matching the requirement of the feature to the surrounding environment.

3.4 Overlap with other EBM values

- Management requirements may satisfy one or more overlapping objectives. Where objectives overlap, provisions put in place for the most constraining objective may satisfy other overlapping objectives.

3.5 Recruitment

- Recruitment of mature forest and old forest is intended to contribute towards either specific habitat requirements (*e.g.* old growth forests for medicinal plants or in-stream biological legacies) or simply for general restoration of old forest attributes. Recruitment can occur through natural processes which involve letting the forest age by allowing for natural growth and succession, or by management interventions which involve silvicultural activities such as pruning or thinning, in order to advance the seral conditions of the stand. The HG LUOO does not direct how to achieve recruitment, and management intervention is not required.

3.6 Reporting Requirements

- Digital spatial data is defined in the HG LUOO. Reporting requirements are intended to help the CHN and the Province monitor both the effectiveness of the objectives, monitor the implementation of the objectives, and serve as a central inventory of values across the operating land base of Haida Gwaii. Licencees are expected to follow any submission standards that are developed by the Council of the Haida Nation and Province, Submissions to the Council of the Haida Nation should be to the Chair of the Heritage and Natural Resource Committee or their delegate, while submissions to the Province should be to the Haida Gwaii District Manager or their delegate.

3.7 Default and risk managed targets

The Strategic Land Use Agreement's Attachment B acknowledged that flexibility may be required in implementing EBM Objectives in situations where:

a) The landscapes to which the proposed EBM Objectives apply have already been altered to a significant extent; and
b) There is an emerging or previously unforeseen imbalance between environmental, cultural and socio-economic conditions.

Accordingly, the SLUA set out "default targets" and "risk-managed targets" in an attempt to cultivate a balance between environmental, cultural and socio-economic conditions. **Default target** provisions were precautionary in nature, anticipated to protect or induce low risk to the integrity of a given value and, where applied, require no additional conditional approvals through the CHN or the Province. **Risk-managed target** provisions were expected to have a potentially greater impact on cultural values or ecological functions in exchange for economic gains in areas where cultural or ecological values are not as significant or where they offer the exploration of alternative management practices and outcomes. Risk management can be applied at multiple scales (from the landscape, watershed or stand level), each scale having inherent risks that should be understood in the context of the range of dynamic change in natural systems over historic time periods. Accordingly, the SLUA outlined certain requirements for risk-managed applications[5]:

a) The resource value that is being risk managed must be protected or sustained;
b) Adaptive Management principles will be applied;
c) The purpose for taking the risk managed approach warrants consideration.

[5] Strategic Land Use Agreement. Attachment B, Part I, section 1.4.

Requirements are established under each of the Objectives to meet the "default" management regime. Other provisions allow deviation from these "default" requirements in certain defined situations or to address needs for some operational flexibility. Information and explanations regarding these "risk management" provisions in the HG LUOO can be found under the sections heading '*Opportunities for flexibility around default requirements'.*

3.8 Development Areas.

A development area is an area associated with an individual cutblock or road and includes all the areas where timber harvesting is planned or carried out as well as reserved and retained areas (both within and adjacent to harvest openings) and areas managed for the purpose of meeting the objectives set in the Order. Features being managed pursuant to the Order must be inside the development area. In some cases features may be identified outside of the development area, even though they aren't directly applicable to LUO objectives. This may occur when the feature is located away from the development area and is not being actively managed for LUOO purposes but is useful to record for information purposes.

Development areas are the smallest units (under bioregional, landscape, watershed and sub-basin units) to measure conservation targets for sections 5 through 12 and section 17 of the Order. A development area is a singular and distinct unit within which areas or features reserved from harvesting to meet land use objectives for one development area cannot be overlapped to meet objectives for another development area unless the objective for that any feature reserved from harvest no longer applies.(i.e. regeneration of class 2 HTFF).

3.9 Application of the term 'Practicable'

The context in which the term 'practicable' is used within the Order occurs in two ways. One use of 'practicable' applies to those circumstances in which a risk-managed variance is used. This occurs most frequently when reducing a reserve zone or management zone, or removing a feature for road access, where no practicable alternative exists. Under conditional provisions that, for example, prove impracticability, a licencee may use an alternative strategy such as reducing a reserve zone width. In other words, if certain criteria are met, it enables the limited variance of some conservation measure. This use of the term 'where no practicable alternative exists' is referred to in the following sections of the Order:

Section	Objective	Context for application
5 (3.b)	Haida Traditional Heritage Features	Reducing a Class 1 reserve zone for road access, other infrastructure, or to address a safety concern.
5(6.b)		Reducing a Class 2 reserve zone for road access, other infrastructure, or to address a safety concern.
6(6.b)	Haida Traditional Forest Features	Alter or remove a Class 1 forest feature for road access, other infrastructure, or to address a safety concern.
6(9.b)		Alter or remove a Class 2 forest feature for road access, other infrastructure.
8(2)	Western yew retention	Alter or remove a western yew patch for road or bridge construction
9(4.b)	Culturally Modified Trees and Monumental Cedar	Alter or remove CMTs, monumental cedar or cultural cedar stands for road access, other infrastructure, or to address a safety concern.
9(7.b)		Reducing a CMT, monumental or cultural cedar stand reserve zone for road access, other infrastructure, or to address a safety concern.

10(5.b) 10(6.a)	Type I Fish Habitat	Reducing a Type I fish habitat reserve for road and bridge construction, or to address a safety concern
11 (7.a)	Type II Fish Habitat	Reducing a Type II fish habitat reserve or management zone for road and bridge construction, or to address a safety concern
18(5.a)	Black Bear Dens	Reducing a Black Bear den's management zone, for road and bridge construction
20(4.b)	Northern Goshawk habitat	Reducing a Northern Goshawk reserve for road access or to address a safety concern.
23(2.c)	Forest Reserves	Reduce an area of Forest Reserve for road and bridge construction

This use of 'practicable' reflects the intent to not have the networks of reserves isolate otherwise economically accessible timber. In most cases, there is oversight by the Council of the Haida Nation and the Province where proposals are vetted through an intergovernmental process. In addition, other conditions specific to each objective are often in place to safeguard the features and ensure that these occur in relatively rare, risk-managed circumstances. The need to reduce reserve or management zones is infrequent, and typically requires professional rationales and field reviews as part of the intergovernmental process.

The second use of the term 'practicable' is to promote and encourage the *increase* of a conservation measure. In other words, if practicable, the protection or conservation of a particular feature is required. This form of the term 'where practicable' is referred to in the following sections of the Order:

Section	Objective	Context for application
8(3)	Western yew retention	Include individual western yew trees in stand level retention
16(2)	Ecological representation	Include with old forest retention areas habitat for local species at risk and regionally important wildlife species
18(4)	Black bear dens	Maintain suitable western/yellow-cedar for long term Black Bear den recruitment
18(7)		Include trees, snags, stumps and logs that are greater than 80cm in diameter in stand level retention for the recruitment of future denning habitat.
22(3)	Northern Saw-whet Owl nesting habitat	Maintain core nesting areas within stand level retention distributed across the landscape with a maximum inter-patch spacing distance of 1,400 m.

The term practicable is not defined within the Order. It is interpreted as "capable of being put into practice or of being done or accomplished", or is "capable of being carried out in action"[6]. Economic opportunity costs alone are not meant to constitute impracticability; they are not a primary reason for reducing or avoiding a measure to conserve or protect a feature.

For the proposal to alter or remove a feature (such as a Haida Traditional Forest Feature, Monumental cedar, or individual western yew tree), consideration should favour the literal definition of "capable of being carried out in action", whereby a decision is informed by operational variables (e.g. physical constraining factors, safety etc.).

[6] FRPA General Bulletin number 3, June 9 2005. Use of the Term "Practicable" Under the Forest and Range Practices Act (FRPA) and Regulations.

4.0 PART 2 - CULTURAL OBJECTIVES

GENERAL DESCRIPTION OF HG LUOO PART 2:

Part 2 of the HG LUOO provides protection measures to maintain a variety of Haida values. There are six broad types of cultural features that are described in the HG LUOO. These do not represent a full or absolute list of features integral to the Haida culture but include those values whose integrity may be compromised by industrial forest practices. The line between Haida culture, past and present, is inextricably linked with the land. Ecosystem-based management is intended to reconcile past land use conflicts with the spirit and intent of protecting Haida cultural values, the land and waterways of Haida Gwaii. Specific explanations are included for the objectives for Haida traditional heritage features, Haida traditional forest features, cedar retention, culturally modified trees (CMTs), monumental cedar, and western yew trees. Schedule 2 lists Haida Traditional Heritage Features and Haida Traditional Forest Features and Cedar Stewardship Areas are shown in Schedule 3.

GENERAL CONCEPTS AND CONTEXT FOR PART 2

4.1 DEFINITIONS FOR CULTURAL OBJECTIVES

The following definitions that relate to the Cultural Objectives section are found in the Haida Gwaii Land Use Objectives Order.

"cedar stewardship area" means an area shown as a cedar stewardship area in Schedule 3;

"cultural feature" means any Haida traditional forest feature, Haida traditional heritage feature, culturally modified tree or monumental cedar;

"**cultural cedar stands"** means three or more culturally modified trees, monumental cedar, or a combination thereof, where each tree is within 50 meters of another tree;

"culturally modified tree" means, for the purposes of this Order, a tree that was modified prior to 1920 by Haida people as part of their cultural use;

"development area" means a specific location defined by boundaries shown on a site plan where timber harvesting is planned or carried out, and includes any stand level retention, management zones, reserve zones, mapped reserves or other areas where timber harvesting is restricted or managed pursuant to this Order or the *Forest and Range Practices Act* and the regulations made thereunder;

"digital spatial data" means information in the form of a Geographic Information System feature class format, shapefile format, or coverage;

"Haida traditional forest feature" means a Haida traditional forest feature listed in Schedule 2;

"Haida traditional heritage feature" means a Haida traditional heritage feature listed in Schedule 2;

"intergovernmental process" means a collaborative process at the technical and operational level pursuant to the Kunst'aa guu – Kunst'aayah Reconciliation Protocol dated December 11, 2009, or means another collaborative process agreed upon by the Haida Nation and the Province of British Columbia;

"mature forest" means a forest older than 80 years in a Coastal Western Hemlock zone and older than 120 years in a Mountain Hemlock zone, or means a forest classed as structural stage 6;

monumental cedar" means a visibly sound western redcedar or yellow-cedar tree that is greater than 100 centimeters in diameter at breast height and has a log length of 7 metres or longer above the flare with at least one face that is suitable for cultural use;

"old forest" means a forest older than 250 years or structural stage 7;

"reserve zone" means an area referred to in this Order where timber harvesting may not occur, unless harvest limits are otherwise specified in this Order;

"*stand level retention*" means small intact patches of trees and understory vegetation that are located in a development area to assist in meeting the land use objectives in this Order;

"tree length" means a horizontal distance equal to:

(a) in old forest stands, the tree height as indicated in column B of Schedule 5 for the predominant site series adjacent to the feature or the measured height of the tallest old trees adjacent to the feature; or

(b) in young or mature stands, the tree height as indicated in column A of Schedule 5 for the predominant site series adjacent to the feature, or the measured height of the tallest mature trees adjacent to the feature;

"western yew patch" means five or more western yew trees where each yew tree is within 5 meters of another yew tree;

4.2 SPECIFIC GUIDANCE FOR CULTURAL OBJECTIVES

SECTION 3: OBJECTIVES FOR CEDAR STEWARDSHIP AREAS

Objectives

*"(1) Maintain **cedar stewardship areas** to provide a supply of cedar for present and future cultural use.*

*(2) Despite subsection (1), up to 10% of the total area of **cedar stewardship areas** may be harvested for commercial purposes, of which up to 250 hectares may be harvested in a 10 year period, provided that:*

> *(a) an **intergovernmental process** is completed;*
>
> *(b) cultural values within the specific **cedar stewardship area** proposed for harvesting are identified in accordance with section 4; and*
>
> *(c) the distribution of harvest is proportional to the occurrence of **cedar stewardship areas** within a given **landscape unit**. "*

Background

By the 1990's there were a number of factors that led to the need for a precautionary approach to cedar management for Haida cultural use. There was increasing concern about the lack of naturally regenerating cedar, doubt that the second growth inventory would contribute to monumental cedar supplies, recognition of the limited occurrence of cedar within old forest, and a growing culture rooted in traditional art and practice. This led to the need to identify areas that could be managed for the long-term supply of cultural cedar.

Cedar Stewardship Areas (CSA) were first introduced as Haida Protected Areas as well as Cultural Cedar and Cedar Archaeology areas in the Haida Land Use Vision at the community planning forum in 2004. The original areas were identified through traditional knowledge and forest inventory data. Through government-to-government negotiations in 2005, Part 13 designations (temporary protection under the *Forest Act)* were placed on these areas with the intention to refine them through government-to-government negotiations. The Strategic Land Use Agreement identified these areas in Attachment C as Monumental, Archaeological and Cultural Cedar Forest Resource Value Areas. During Detailed Strategic Planning, a portion of the areas were refined through field inventories, which resulted in additional deletions and additions to the CSA, presented in Schedule 3 of the HG LUOO. Cedar Stewardship Areas cover approximately 25,350 hectares.

While not all of the CSA have had ground-based inventories, the Council of the Haida Nation will continue to undertake inventories to determine if the areas meet the purpose of their designation. A CSA management plan was released by the CHN in 2016 which includes descriptions of the plan area, their purpose, history, known inventory values as well as management directions. Five broad management goals include:

1. Maintain CSAs as protected areas for Haida Cultural use;
2. Continue to inventory cultural and archaeological cedar in these areas to ensure they represent the best sites for long term cedar use;
3. Mitigate long-term impacts for access to cedar;
4. Ensure commercial access is conducted in a measured and respectful way;
5. Restore CSAs so they are representing the natural capacity of the land.

Section 3.2 of the CSA Management Plans provide policy direction for commercial salvage opportunities and timber harvest opportunities, thereby providing guidance for planners and decision makers regarding development in these areas.

http://www.haidanation.ca/wp-content/uploads/2018/02/Cedar-Man-Plan.FINAL-downsized.pdf

Intent

The intent of this objective is to conserve suitable areas of cedar to maintain an ongoing supply of cultural cedar to the Haida. Cultural values within CSA's include, but are not limited to: monumental cedar, culturally modified trees and other archaeological sites, barkstrip cedar areas, recruitment of juvenile cedar, medicinal cedar uses, spiritual uses and research.

The objective allows for limited commercial harvesting within CSA's. It is intended that any commercial activities occur in areas of the CSA that do not have significant cultural cedar values. The limited commercial harvest opportunities within CSAs are proportionately allocated among landscape units.

Implementation

Up to 10% of the total area of CSAs is available for commercial purposes over time, although only 250 hectares may be harvested in a 10 year period. This 250 hectare opportunity is meant to be distributed proportionally to the occurrence of CSA's within a given landscape unit. Table 1 identifies the approximate allowance for commercial harvesting on a 10 year basis across landscape units. The intent of this section is that "commercial purposes" include timber harvesting for any commercial purpose.

Table 1: 10 year commercial harvest allowance within Landscape Units.

Landscape Unit	Hectares	Landscape Unit	Hectares
Eden Lake	32	Naikoon	3
Honna	14	Otun	5
Ian	59	Rennell	3
Jalun	2	Sewell	1
Louise Island	2	Skidegate Lake	13
Lower Yakoun	69	Tlell	9
Masset Inlet	33	Yakoun Lake	9

These controlled rates are put in place to ensure that the integrity of the Haida's most culturally sensitive cedar areas are closely managed and monitored. Once the allowance has been reached within a 10 year period there will be no more commercial harvesting of CSA's inside that landscape unit until the commencement of the next 10 year period. The first 10 year period began on January 1st, 2011, coinciding with the implementation of the HG LUOO; the second 10 year period will begin on January 1st 2021. Hectare balances cannot be carried over to the next 10 year period.

One of the conditions for commercial entry to CSA's is that a cultural feature identification survey must be completed in accordance with section 4 of the HG LUOO prior to any road building or timber harvesting. The cultural features identification surveys must meet the standards established in the CHN *Cultural Features Identification Standards Manual*[7]. Other cultural features that are not specifically identified in the HG LUOO, such as cedar recruitment and bark-strip areas, are also being managed for in the CSA's. These areas are coveted sites that require a higher level of survey intensity and as such, the surveys within CSA's where commercial harvesting is proposed must be completed by a person accredited by the Council of the Haida Nation.

[7] Council of the Haida Nation, 2011. Cultural Features Identification Standards Manual. Cultural Features Identification Program, Old Massett, BC.

The CHN has information about cultural features throughout the CSA's that is available to licensees for planning purposes.

SECTION 4: OBJECTIVES FOR CULTURAL FEATURE IDENTIFICATION

Objectives

*"(1) Identify **cultural features** referred to in sections 5, 6 and 9 by conducting a field assessment prior to undertaking road construction or timber harvesting. The field assessment is to be completed by a person who has been certified by the Council of the Haida Nation."*

Background

Cultural feature identification surveys began during the 1980's through local district initiatives. These surveys initially focused upon the identification and management of culturally modified trees. Later, in the 1990's, the CHN Forest Guardian program developed surveys called *Haida Land Value Surveys,* in order to identify and manage an expanded range of cultural values, such as medicinal plants, cedar and wildlife.

In conjunction with the establishment of the HG LUOO, the CHN has developed a set of standards for cultural feature identification and a system to certify surveyors so that these surveys can be conducted for licensees by qualified persons. Survey standards, training and examinations are components of this system along with an auditing program to provide quality assurance. This system is described in the *Cultural Features Identification Standards Manual.*

Intent

The HG LUOO requires that each development area must be surveyed for cultural features by a person certified by the CHN prior to road building or timber harvesting. Standards have been derived from survey techniques developed over a number of years by the CHN for cultural value surveys with a variety of forest licensees on Haida Gwaii (some have been adapted from Provincial standards for cruising and vegetation resource inventory).

In a number of objectives, the values are required to be documented and submitted to the Council of the Haida Nation and the province of BC at the end of each calendar year for the purposes of tracking and monitoring.

Implementation

Certification of qualified cultural features surveyors is awarded by the Council of the Haida Nation based on competency and knowledge of the standard, as proven through testing.

Training courses that cover the identification of cultural plants, monumental cedar, heritage features, culturally modified trees and survey standards and methodology will be offered through the Council of the Haida Nation on a demand basis (approximately 10-12 participants required). Some pre-requisite training is required to challenge certification examinations.

Cultural Feature Identification Surveys carried out by certified surveyors are subject to audits to ensure standards are being met.

A listing of surveyors who are certified by the CHN is available through the CHN's Natural Resource Department.

SECTION 5: OBJECTIVES FOR HAIDA TRADITIONAL HERITAGE FEATURES

Objectives

"(1) Protect all Class 1 ***Haida traditional heritage features.***

(2) Adjacent to ***Class 1 Haida traditional heritage features****, maintain a* ***reserve zone*** *with a minimum width equal to 500 meters, measured from the edge of the Class 1* ***Haida traditional heritage feature****, in order to protect that feature.*

(3) Despite subsection (2), the area of the ***reserve zone*** *may be reduced, provided that*

(a) an ***intergovernmental process*** *is completed; and*

(b) the reduction is required for road access, other infrastructure, or to address a safety concern, and no practicable alternative exists.

(4) Protect all Class 2 ***Haida traditional heritage features****.*

(5) Adjacent to Class 2 ***Haida traditional heritage features****, maintain a* ***reserve zone*** *with an average width equal to 100 meters, measured from the edge of the Class 2* ***Haida traditional heritage feature,*** *in order to protect that feature.*

(6) Despite subsections (4) and (5), a Class 2 ***Haida traditional heritage feature*** *or adjacent* ***reserve zone*** *may be altered, removed or reduced, provided that:*

(a) an ***intergovernmental process*** *is completed; and*

(b) the alteration, removal or reduction is required for road access, other infrastructure, or to address a safety concern, and no practicable alternative exists.

(7) The width of the ***reserve zone*** *for any one* ***Haida traditional heritage feature*** *may be decreased by up to 0.5 tree length from the outer edge of the* ***reserve zone*** *to address site specific values, provided there is no net loss of* ***reserve zone*** *area within the* ***development area****.*

(8) ***Haida traditional heritage features*** *and* ***reserve zones*** *identified or retained in accordance with subsections (1) to (7) must be documented and submitted as* ***digital spatial data*** *at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

(9) Where some or all of the forest within the ***reserve zones*** *required for Class 1 and Class 2* ***Haida traditional heritage features*** *has been previously altered or harvested, provide for the recruitment of* ***mature forest*** *and* ***old forest*** *in that reserve zone through natural processes and voluntary management intervention.* "

Background

Haida traditional heritage features are central to Haida cultural identity and spirituality. These features include archaeological and historical artifacts and sites and locations that are important to the cultural practices, knowledge and heritage of the Haida. They provide links to the past and the future of the Haida people. Prior to the HG LUOO these features were managed in accordance to Section 10 of the FPPR (under FRPA) and the *Heritage Conservation Act* of BC. Part II, section 1.1 of attachment B in the Haida Gwaii SLUA identifies Haida traditional heritage features as values for special management. Specific features were identified by the Council of the Haida Nation as heritage features of continuing importance that may be compromised by commercial forest harvesting.

Intent

The intent of this objective is to protect heritage features from impacts associated with primary forestry activities and disturbances that might occur as a result of those activities.

For the purposes of the HG LUOO, these features are divided into Class 1 and Class 2 heritage features. Class 1 heritage features are found less frequently on the forestry operating land base than Class 2 heritage features. They are identified in Schedule 2.

Class 1 heritage features such as villages or inland camps are often indistinctly defined, but are spatially larger, and in general have greater cultural, archaeological and spiritual significance than Class 2 heritage features. Class 2 features, such as middens or petroglyphs, tend to be discrete features with recognizable boundaries. The primary difference in the management of the two classes is in the width of their respective reserve zones.

Implementation

A minimum 500 metre wide reserve zone is required adjacent to Class 1 heritage features to protect the integrity of those features from the effects of windthrow and other damage that could occur from road building or timber harvesting. Integrity in this case refers not only to physical integrity of the reserve zones, but the natural and spiritual integrity of the features as well.

A reserve zone with an average width of 100 metres is required adjacent to Class 2 heritage features and goes beyond protecting the feature itself to also protecting the setting of the feature in its natural environment and protecting its associated archaeological values.

Licensees will have access to information about cultural features through the CHN. Access to cultural features information is also available through certified cultural feature identification surveyors and the BC Heritage Branch's Remote Access to Archaeological Data (RAAD).

The following is a description of the Haida Traditional Heritage Features listed in Schedule 2.

CLASS 1 HAIDA TRADITIONAL HERITAGE FEATURES

Village/Seasonal village: nearly every headland and waterway that meets the ocean has these important heritage sites on Haida Gwaii.

Inland Camp/Camp: important sites used continuously for travel, hunting, fishing, and harvesting. These sites may be associated with lakeshores, rivers, rock shelters, and inland places of work.

Burial Site: may include a mortuary pole (a carved pole with a hollow at the top where a box containing human remains was placed), a tree burial (box or platform holding human remains that is placed in a tree), a rock shelter/cave, or an interment.

Identified Oral History site: any site identified through oral tradition and ethnography as a significant historical cultural site.

Identified Spiritual site: an area of spiritual significance to the Haida identified through current practice, oral tradition and ethnography.

CLASS 2 HAIDA TRADITIONAL HERITAGE FEATURES

Midden: One of the most common archaeological site types. These may be either subsurface or surface features that are typically, but not necessarily, located beside the ocean (i.e. paleo/raised beach and paleo shoreline habitation sites). Indicators include dark soil, marine shells, mammal bone, fire-cracked rock, charcoal and/or artifacts. Middens are commonly associated with village sites, both seasonal and permanent. The most common way to identify a midden is to visually inspect the soil under the roots of tree throws/blowdown, and exposures. Middens may include shell-free deposits which can be identified by a dark color of soil, a greasy/silty texture of soil and occasionally associated with fire cracked rock.

Bear Trap: a baited trap used to catch bears. A log was set to fall on the animal when the bait was taken, often weighted with large rocks to increase the force. Indicators include pile of large cobbles or boulders, possibly stumps of frame or post molds and also could include pitfall traps: a hole up to 3m deep used to capture bear. Sharpened sticks may have been placed in bottom, often placed alongside fallen tree so that when an animal jumped over a log it fell in the hole. While rope snares were also used, their identification in the field is difficult due to material decomposition. Ethnographic histories indicate that bear traps were commonly used on Haida Gwaii.

Fish Weir: a fishing device built in shallow estuaries, rivers, and streams consisting of a barrier of rocks or wooden stakes which allows water to pass through but stops the movement of fish. Indicators include short wooden stake knobs that often remain blackened where air reaches them. Fish weirs were located in rivers, streams or seeping freshwater at coastlines. They can occur several kilometres upstream from the mouth.

Cave: a physical feature utilized on a temporary or permanent basis for shelter or other significant social or ceremonial purposes. Karst caves are the most common cave lithology on Haida Gwaii and were highly suitable for temporary or permanent habitation. Karst features are associated with a soluble rock that occurs in carbonate bedrock (such as limestone) that supports distinct subterranean ecosystems that can be uniquely conducive to preserving material (ex. high pH substrates and protection from weathering). Caves were used for habitation as well as for burials, storage, etc. The living space of caves included the area in front of and outside the caves. Caves often contain very fragile material. Indicators include hearths, cultural material including lithics, fire cracked rock, or faunal remains. Perishable materials such as basketry, ropes, adzed wood chips etc. may be preserved in dry caves.

Petroglyph: Symbols or designs pecked, carved or incised on rock surfaces. Found on boulders or bedrock in the intertidal zone; also found on relatively smooth rock outcrops.

Lithic production site: These are commonly surface sites. A lithic is s stone by-product of tool manufacturing. Lithics include: flakes as waste products formed while manufacturing a tool, or; may have been sharpened for use as a tool or; may have been used as-is for cutting or scraping. Indicators

include stones or tools that have been culturally altered, flake shards, points of percussion and sharp, thin edges. A quarry is a source of lithic materials from which the rock must be dug or cut, usually for geological properties such as basalt or obsidian for stone tools, ochre sources for painting, or argillite for carving. Quarries are associated with rock outcrops, boulders or rocky floats left by glaciers. Indicators include lithic material, formed tools, and rounded rocks that may have been used as hammer stones.

Trail: Travel corridors often marked with blazes on trees (CMTs) or exposed and compacted soils. Trails will often follow natural features such as rivers, valleys or alpine ridges.

Lookout site: A prominent viewpoint used continuously over time for travel, hunting or defensive purposes. Lookout sites are often associated with a point of high relief such as a hill or ridge top.

Fort: Defensive structures usually located on islands with steep sides or high hills along shorelines; areas easily defendable. Used principally as defense locations, or used for everyday activities, such as drying fish and planting gardens, given they were commonly located in wind and sun exposed locations.

Cache: Most often a subsurface feature, described as a pit in which food, equipment, etc. was placed for safekeeping; often circular but also square or rectangular. Soil profiles differ from surrounding soils. Indicators may include burnt bark at the bottom. Caches are unlikely to have artifacts or ash, but are likely to be rich in other information such as pollen or seeds. This identification requires special expertise and it is important not to disturb unnecessarily.

Canoe run: A type of petroform where a strip of beach is cleared of stones so that the hulls of canoes are not damaged when hauled onto the beach. Indicators may include linear stone patterns on the beach. Canoe runs are usually in a sheltered or semi-sheltered location. Canoe runs can also be associated with canoe skids: a series of large sticks or planks laid parallel to the beach and held in place with stakes. These are seen as parallel lines of wooden stakes running between the high and low tide lines.

Shoreline habitation site: Includes raised beach sites, which may be located several kilometers inland at major drainages and are very vulnerable to forestry and road construction activities. The potential for raised beach sites at locations at and below 25m above sea level on Haida Gwaii is significant.

Rock shelter: A rock overhang large enough to be used for shelter, or ceremonial purposes such as burials. Rock shelters are commonly associated with visible waste materials from stone tool production, animal bones used as tools, hearth or other features (e.g. bentwood boxes, etc.).

Karst Feature: Made up of carbonate bedrock (limestone), these soluble rocks are associated with subterranean cave systems and unique ecosystems. Physical features that are associated with high potential habitation sites, utilized on a temporary or permanent basis for shelter or other significant social or ceremonial activity are ones intended to be protected under this objective of the Order. These sites also often contain important archaeological and paleontological remains that inform the cultural and natural heritage of Haida Gwaii. See section 1.4.4 above for more information regarding legislative measures for protecting Karst on Haida Gwaii.

Opportunities for risk-managed approaches

Opportunities to modify the requirements for Class 1 Haida traditional heritage features are provided in Section 5(3) by allowing for a reduction in the area of the reserve zone provided that it is required for road access, other infrastructure, or to address a safety concern and no practicable alternative exists. Any

request to reduce these areas is subject to the completion of an intergovernmental process. Note that reserve widths are specified as minimums for class 1 heritage features, as opposed to an average width.

Opportunities to modify the requirements of class 2 heritage features are the same as class 1, except that reserve zone widths are measured as an average width and there is an additional provision to alter or remove the feature. Alteration or removal is contingent upon no practicable alternatives existing and having the application approved through an intergovernmental process.

Additional flexibility is also provided by allowing the width of the reserve zone for any one heritage feature to be decreased by up to 0.5 tree lengths from the outer edge of the reserve zone to address site specific values, provided there is no net loss of reserve zone area within the development area. This can be done in order to account for operational considerations. Examples of operational considerations are road access, other infrastructure costs (ex. bridges, culverts, and landings), limitations for yarding, avoidance of sensitive soils, merchantability of stands adjacent to a reserve, or to capture incidental EBM values.

SECTION 6: OBJECTIVES FOR HAIDA TRADITIONAL FOREST FEATURES

Objectives

"(1) Protect the integrity of all Class 1 ***Haida traditional forest features.***

(2) Adjacent to a Class 1 ***Haida traditional forest feature****, maintain a* ***reserve zone*** *with an average width equal to 1.0* ***tree length,*** *measured from the* ***Haida traditional forest feature****, in order protect the integrity of that feature.*

(3) Adjacent to ***reserve zones*** *specified in subsection (2), maintain a* ***management zone*** *with an average width equal to 1.0 tree length, in order to protect the integrity of the* ***reserve zone****.*

(4) For the purposes of subsection (3), the width of the ***management zone*** *in any one location may be decreased by up to 0.5 tree length from the outer edge of the* ***management zone*** *to address site specific values, provided there is no net loss of* ***management zone*** *area specified in subsection (3) within the* ***development area****.*

(5) Despite subsections (2), (3) and (4), and for the purpose of managing Class 1 Haida Traditional Forest Features, the area of the ***reserve zone*** *and* ***management zone*** *may be modified, provided that:*

(a) an ***intergovernmental process*** *is completed;*

(b) it is necessary for road access, other infrastructure, to address a safety concern, or to protect the Class 1 Haida traditional forest feature from windfall; and

(c) an ***adaptive management plan*** *is developed and implemented.*

(5.1) Despite subsection (1), a Class 1 Haida traditional forest feature may be altered or removed, provided that:

(a) an ***intergovernmental process*** *is completed, and*

(b) the alteration or removal is required for road access or other infrastructure and there is no practicable alternative.

(6) Protect the integrity of a minimum of 50% of all Class 2 ***Haida traditional forest features*** *that occur within a* ***development area*** *with sufficient stand level retention.*

(7) Despite subsection (6), provide sufficient ***stand level retention*** *to maintain the integrity of the Class 2* ***Haida traditional forest features****.*

8) Despite subsection (7):

(a) maintain a minimum of 50% of Indian hellebore features in ***stand level retention****, or;*

(b) maintain a minimum of 50% of Indian hellebore features, and:

i. maintain directional falling away from the features;

ii. retain non-merchantable trees around the features; and

iii. maintain a machine-free zone around the feature.

(8.1) Despite subsections (6), (7) and (8), a Class 2 Haida traditional forest feature may be altered or removed, provided that:

(a) the alteration or removal is required for road access or other infrastructure and there is no practicable alternative; and

(b) an ***intergovernmental process*** *is completed.*

(9) ***Haida traditional forest features****,* ***reserve zones****,* ***management zones*** *and* ***stand level retention*** *required under subsections (1) to (8) must be documented and submitted as* ***digital spatial data*** *at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

(10) Where some or all of the forest within the ***stand level retention, reserve zones and management zones*** *required under subsections (2) to (8) has been previously altered or harvested, provide for the recruitment of* ***mature forest*** *and* ***old forest*** *through natural processes and voluntary management intervention."*

Background

The wide range of plants utilized by the Haida grow everywhere from deep forest to open muskeg, meadows and shoreline, but the old growth forest contains many important plants, including the most powerful medicines. Traditional forest features have been in decline for the past 50 years or more and Haida people are now having a difficult time finding plants such as devil's club and other Class 1 forest features. Haida traditional forest features were identified, but not defined, under the Strategic Land Use Agreement. Subsequent work through Detailed Strategic Planning revealed the need for separate management objectives based on different forest features. Traditional knowledge, including elders, community members, cultural plant enthusiasts and botanists contributed to the listing of traditional forest features in *Schedule 2*. It is anticipated that the *Schedule 2* list will change over time in relation to their distribution, abundance and changes from external pressures. The first set of changes to Schedule 2 occurred in the 2017 major amendment to the Order.

Class 1 traditional forest features are plant species that have been identified in Schedule 2 as being extremely important to the Haida and particularly rare because they are threatened by logging and/or

introduced species. This list includes the 2017 addition of six rare vascular plants8 that occur in forest habitat which are endemic or that represent a significant disjunct distribution on Haida Gwaii, where two or more groups of plants are related but widely geographically separated.

Class 2 traditional forest features are plant species that have been identified as being of importance to the Haida, but may be either less rare or less threatened by logging and/or introduced species.

Class 3 forest features, which were included in the original HG LUOO Schedule 2, were removed for the 2017 amendment.

Intent

The intent of this objective is to provide for the maintenance of traditional forest features that are of continuing importance to the Haida Nation. Efforts to this effect will be made through the requirement for management zones and reserve zones established adjacent to Class 1 features, through the protection of 50% of the Class 2 forest features within stand level retention, or through incidental protection within other EBM reserves. While it is recognized that introduced species, such as the Sitka black-tailed deer, have major impacts to traditional forest features, the HG LUOO is specifically intended to guide management of primary forest activities. Restoration measures or voluntary management intervention may be used to aid in the recruitment of mature forest and old forest habitat. However, the HG LUOO does not require a licensee to restore habitat for traditional forest features.

Most of the plants listed in Schedule 2 that grow in forested ecosystems grow in canopy gaps that generally only develop in mature or old forests. It is intended that reserve zones, management zones and stand level retention be made up of mature and old forest or recruited in the shortest possible time.

The flexibility provision under section 6(5) to modify the reserve and management zones for Class 1 forest features is conditional on needing to allow for road access, other infrastructure or safety. Another reason for modifying a reserve or management zone for Class 1 forest features is to protect the feature from windfall. This addresses those cases where a reserve or management zone is either naturally prone to windfall (a stand with existing patterns of blow down)or that may have a high risk of windthrow due to proposed logging adjacent to the buffered area (high hazard indicators including topographic, soil and stand characteristics that increase the likelihood of windthrow). The intent is to allow for the removal of trees adjacent to the feature to decrease the likelihood of harm to the feature from windthrow. In all cases, the modification of the reserve and management zone must ensure that the integrity of the Class 1 forest feature is protected (sec. 6 (1)).

The requirement to protect 50% of the occurrences of Class 2 forest features provides flexibility in optimizing overlaps with any other EBM features (e.g. cedar or riparian reserve and management zones). It is intended that areas retained be of sufficient size or be adjacent to block edges to encourage windfirm retention.

Indian Hellebore (Veretrum viride) is a common perennial species, especially in the wetter climatic variants on Haida Gwaii (upper elevations and west coast). Within the montane wet hypermaritime variants (CWHwh2) and very wet hypermaritime variants (CWHvh3) this species occurs in large patches, often times uniformly dispersed throughout the understory. The species is physiologically highly versatile in different light conditions: it is considered shade tolerant, able to thrive under a closed canopy, while

[8] *Anemone narcissiflora var. monantha, Calamagrostis sesquiflora, Geranium richardsonii, Hymenophyllum wrightii, Ligusticum caldera, Oxypolis occidentalis*

also inhabiting open meadows. Given that this species also grows in very moist sites (typically seepages), tree regeneration around a patch may be considerably limited (due to fewer growing sites), thereby lessening the chance of the plant becoming out-competed (for photosynthesis) during mid-successional stages of a stand (ex. dense pole-sapling stages).

Indian hellebore is also sensitive to changing light conditions, whereby those plants growing under closed canopy can be scalded or bleached (photoinhibition) when exposed to the sun. Conversely, those plants growing in relatively open canopy conditions are less sensitive to changes in light conditions. Soils are often saturated or poorly drained organics (humisol/mesisols) that can be easily disturbed. Given all of these considerations, section 6(8) provides two management alternatives for Indian hellebore to maintain the natural conditions and surrounding environment of the feature in order to protect its integrity.

Section 6(8.1) of the Order allows for the alteration or removal of a Class 2 forest feature if required for road access or other infrastructure and no practicable alternative exists (see section 3.9). It is anticipated that this provision will be implemented in rare circumstances where road access and subsequent harvest opportunities are precluded by engineering constraints (such as terrain, riparian etc.) and no other options can be carried out in action and only after completing an intergovernmental process.

Implementation

Depending on the time of year a cultural features identification survey is completed, plants can be identified in a variety of life stages. Winter identification is the most difficult and sometimes not possible. Fortunately many of the Class 1 and 2 Traditional Forest Features are woody perennials (Black hawthorn, Devil's club, Highbush cranberry, Pacific crab apple, Stink currant, Black swamp gooseberry and Trailing black currant) and may be recognizable throughout the year. Otherwise, operational forest planning (from initiation of site level planning through the final detailed engineering of cutblocks), typically occurs 6 months to 1 year prior to harvest. The optimal time period for surveys is between May 15th and September 31st.

Traditional forest features for the most part are:

- significantly rare, or;
- occur on the edge of or within non-forested ecosystems, or;
- grow in early successional forests or along forest edges, or;
- are associated with special coastal sites, or;
- grow in areas that are afforded protection through other Ecosystem-based Management measures.

For these reasons there are relatively few species that might be identified in closed canopied old growth forests planned for harvest, and fewer found in closed canopy second growth forests.

The objective for cultural feature identification (section 4(1)) requires that surveyors identifying forest features be certified by the CHN in Cultural Feature Identification.

The integrity of Class 1 forest features must be maintained. The feature itself must be protected from harvest disturbance and from subsequent post-harvest damage including windthrow and future road development. Stand level retention requirements for Class 2 forest features may differ depending upon the species in question. For instance, Indian hellebore may be more tolerant to canopy gaps and sunlight, but less tolerant to fluctuations in water tables resulting from hydrologic changes from road building. Western Yew and Pacific crabapple may be tolerant to an 'edge', but intolerant to being in the open.

Monitoring by the CHN, Province and industry will help inform best management practices for these features.

A Class 2 feature can be an individual plant, or a patch with varying densities and distributions of that plant. . The requirement to retain only 50% of a Class 2 feature reflects the difficulty of surveying for certain plant species, the impractical nature of collecting data on individual plants, and accounts for the general abundance of some species. These feature descriptions are documented in the CHN's *Cultural Features Identification Standards Manual*[9].

Silvicultural practices, such as crown modification or thinning, are not specifically restricted within stand level retention. Harvesting trees (particularly dominant trees) may be acceptable so long as the patch of trees and understory vegetation is considered to be intact, and the intent is to mitigate windthrow without jeopardizing the integrity of the feature.

Implementing section 6(5((b) and 6(5.1) of the Order requires the completion of an intergovernmental process. It is expected that modifying (ex. decreasing) the area of a reserve zone or management zone around a Class 1 forest feature or modifying the Class 1 feature itself, will be, in part, contingent upon the completion of a windthrow hazard assessment by a qualified professional to determine the level of risk to the feature[10]. In addition, this risk-managed provision may require a field review by the Council of the Haida Nation and Haida Gwaii Natural Resource District staff.

Section 6(8.1) of the Order, which allows for the alteration or removal of Forest Features, is anticipated to occur under relatively rare circumstances. In these cases, it is expected that the intergovernmental process will include an opportunity for representatives of the Council of the Haida Nation and Haida Gwaii Natural Resource District (and licencees) to conduct a field review to support decision making. It is also expected that, in accordance with the intergovernmental process, that the application to the Solutions Table will include a robust rationale for the proposed alteration or removal of the Forest Feature. Where applicable, this removal may include the provision of the plant (ex. Devil's club) to the Haida Nation.

Section 6(8) of the Order allows for more intensive management of Indian Hellebore, including directional falling away from a patch, the retention of non-merchantable trees and the maintenance of a machine-free zone for up to 50% of the features within a development area. All these conditions are meant to preserve a relatively undisturbed ground cover, light and soil conditions for the purpose of maintaining the integrity of the features. This strategy therefore may not be suitable in situations where the removal of over-story trees (co-dominants or dominants) in closed canopy stands is likely to significantly change light conditions and adversely affect the plants.

Opportunities for risk-managed approaches

The width of the management zone may be decreased by up to 0.5 tree length as long as there is no net loss of the management zone in the development area. The reduction must be approved through an intergovernmental process and must be specifically for road access, other infrastructure (such as a bridge) or to address a safety concern. Reduction is to the management zone only and the integrity of the feature and reserve zone must be maintained.

[9] Council of the Haida Nation, 2011. Cultural Features Identification Standards Manual. Cultural Features Identification Program, Old Massett, BC.

[10] A windthrow hazard assessment would not be required in the rare circumstance where a Class 1 feature is removed in its entirety.

SECTION 7: OBJECTIVES FOR WESTERN REDCEDAR AND YELLOW-CEDAR RETENTION

Objectives

*"(1) Within **development areas**, retain a minimum of 15% of the combined pre-harvest composition of western redcedar and yellow-cedar with a minimum area of 1 hectare, where:*

> *(a) the **development areas** are greater than 10 hectares and the combined western redcedar and yellow-cedar component of pre-harvest stand composition is greater than 30%; or,*
>
> *(b) the **development areas** are equal to or less than 10 hectares and the combined western redcedar and yellow-cedar component of the pre-harvest stand composition is greater than 60%.*

(2) For the purpose of subsection (1), retain areas that are greater than 1 hectare in size and contain a range of diameters of western redcedar and yellow-cedar representative of the pre-harvest stands.

(3) Where the pre-harvest western redcedar and yellow-cedar species composition is greater than 20% in the total harvested area, regenerate the area to establish a composition of western redcedar and yellow-cedar that are equivalent to the pre-harvest composition.

*(4) All areas retained in accordance with subsection (1) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia."*

Background

Cultural cedar is limited to mature and old growth forests and as such a precautionary approach is taken to ensure a long term cedar supply. Estimations of cultural cedar quantities, the uncertainty of regeneration, the general recognition of its limited resource, and a burgeoning Haida population rooted in traditional art and practice, has led to the objectives for western redcedar and yellow-cedar retention.

Intent

The intent of this objective is to ensure that sufficient red and yellow cedar is maintained for present and future cultural and ceremonial use. Maintaining a diverse range of ages and diameters promotes resiliency and supports the long term objective of a stable supply of cultural cedar for present and future barkstrip cedar areas; cedar recruitment; and lower grade cultural cedar. Also, the intent of having areas regenerate to the equivalent pre-harvest composition is to ensure that yellow cedar and redcedar regeneration reflects both their ecological potential and future economic opportunity.

Cedar retention requirements were designed to complement other cedar retention targets covered by Monumental cedar and CMTs. As a monumental or CMT is retained in a development area, its retention area contributes to, if not meets, the retention targets specified in section 7.

Section 7(1) establishes 30% or 60% stand composition thresholds in combination with development area size to determine whether or not 15% cedar retention is required. Areas retained must be a minimum of 1 hectare in size. Therefore, smaller development areas need a relatively higher composition of cedar before they are required to meet the minimum 15% retention area in minimum 1 hectare patches, and

conversely, larger development areas require a relatively lower composition of cedar to trigger the minimum15% / 1ha retention requirement.

The 2003 minimum cedar stocking standards developed by the Haida Gwaii Forest District offer good guidance regarding regeneration levels for cedar, based on primary or secondary species composition:

1. Cw or Yc is a primary species according to the 1994 Field Guide for Site Identification and Interpretation for the Vancouver Forest Region[11]

Preharvest Composition	MSSc[12] (sph)	TSSc[13] (sph)
20-29%	100	200
30-39%	150	300
40-49%	175	400
50-59%	200	500
60-69%	250	500
70-79%	300	600
80-89%	320	600
90-100%	375	600

2. Cw or Yc is <u>not</u> a primary species according to the 1994 Field Guide for Site Identification and Interpretation for the Vancouver Forest Region

Preharvest Composition	MSSc (sph)	TSSc (sph)
20-29%	0	0
30-39%	100	200
40-49%	125	300
50-59%	150	400
60-69%	250	500
70-79%	300	600
80-89%	320	600
90-100%	375	600

Implementation

The 1 hectare minimum area to be retained for cedar is to encourage aggregated retention. On Haida Gwaii, aggregated retention is more resistant to windthrow than dispersed retention[14]. Areas retained for the purposes of meeting this objective are generally most resilient to wind if they are designed to be along block perimeters rather than as in-block retention.

Other areas retained to meet EBM objectives may contribute to the targets for western redcedar and yellow cedar retention if they are representative of the pre-harvest cedar composition.

[11] Green, R.N, Klinka, K. 1994. A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region. Land Management Handbook 28. Research Program, Ministry of Forests. Victoria, B.C.
[12] MSSc is the minimum stocking standard for cedar and assumes a minimum stocking standard (MSS) of 400 stems per hectare.
[13] TSSc is the target stocking standard for cedar and assumes a target stocking standard (TSS) of 900 stems per hectare.
[14] Rollerson, T.P. W.J. Beese, C.M. Peters. Variable Retention Windthrow Monitoring Pilot Project 2001-2002. Weyerhaeuser BC Coastal Group. Nanaimo, B.C. 2002.

An ‘established’ composition of cedar in a development area is synonymous with ‘free growing’, which is when the trees are 1.2 metres in height.

Opportunities for risk-managed approaches

There are no risk-managed opportunities identified to vary from default objectives in section 7 of the HG LUOO. This does not preclude licensees from proposing a risk-managed approach that hasn’t been previously contemplated. An IGP would apply in these cases.

SECTION 8: OBJECTIVES FOR WESTERN YEW RETENTION

Objectives

*“(1) Within **development areas,** protect all **western yew patches** with **stand level retention**.*

*(2) Despite subsection (1), **western yew patches** may be altered or removed to accommodate operational requirements for road and bridge construction, where no practicable alternative exists.*

*(3) Where practicable, also include individual western yew trees in **stand level retention** that do not constitute a **western yew patch**.*

*(4) All areas retained or managed in accordance with subsections (1) to (3) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.”*

Background

Hlgiid, or Western yew (Taxus brevifolia) has a very high cultural value, whereby the Haida use the wood for tools, as well as food and medicine. It is the slowest growing species and the most shade tolerant conifer on the Pacific coast, and is the heaviest conifer in the U.S. Yew trees have the capacity for epicormic growth and vegetative layering and can support some of the highest mean surface area of epiphytic growth and epiphyte mat mass. It is a key indicator of old growth forests, supporting an array of epiphytes and arbuscular mycorrhizae communities. Yew trees have a propensity to grow in areas that overlap with other LUOO objectives, as a study in 2016 found that 66% of samples (*n=213*) overlapped with other EBM values[15] such as Monumental cedar, Haida Traditional Forest Features or riparian areas. Survival rates for yew trees in second growth forests are low. A review of Cultural Feature Identification statistics between 2012-2016 indicated that in 87 second growth blocks, only 2 blocks had yew trees.

The Haida Gwaii District has had a Standard Operating Procedure (SOP) for Crabapple and Yew since 2001[16]. The SOP outlines direction for retaining yew trees, to not use them for road puncheon, and to bring them to the landing/roadside for cultural use when cut. Other considerations include direction for silviculture (brushing) and barkstripping.

[15] See *Reynolds, N.A. 2016. Hlgiid-Western yew- Taxus brevifolia Effectiveness Monitoring Report. Ecosystem Based Management Technical Series-1. CHN Heritage and Natural Resource Department. Old Massett, Haida Gwaii.* for more information.
[16] *Standard Operating Procedures- Yew and Crabapple Management. District policy QCI-8. March 23,2001.*

Intent

The intent of this objective is to ensure that western yew is retained in sufficient amounts to support the present and future cultural and ceremonial use of yew. Section 8(1) requires the maintenance of western yew patches, while Section 8(3) is meant to ensure that single western yew stems are retained within stand level retention where practicable.

Notwithstanding the term practicable, the intent of the objective is to retain 100% of yew trees. In this case, as outlined is section 3.9 above, the literal interpretation of practicability is meant to apply: individual yew trees should be retained in stand level retention where this can be carried out in action. There is therefore a reliance on the ground to determine the feasibility of retention, and to document rationale against retention.

An effectiveness monitoring study in 2016 by the CHN and HG District that randomly sampled 213 trees found that 74% of yew trees were being maintained in stand level retention, approximately 6% being retained without stand level retention, and approximately 20% of trees dying (mostly as a result of being cut down). Many of the trees that were cut down could have been practicably retained. This has led the Solutions Table to direct licencees to provide more information to justify the cutting of yew trees when it is considered not practicable to retain them. The 2016 benchmark demonstrated that the implementation results were falling short of the 100% retention objective, but also highlighted the fact that measuring the effectiveness of this objective should not happen on an individual block basis, but rather in aggregate of many blocks over time.

For the purposes of the Order, the term 'patch' is objectively defined using concise metrics, as "*five or more western yew trees where each yew tree is within 5 meters of another yew tree*". There are many different ways of measuring distances between trees in forestry for stem mapping (from points of germination, from DBH, to pith, to outside bark etc.). Given that yew trees have a generally non-uniform allometry/morphology (ex. growing along the ground, growing with sweep etc.), the intent is to determine the distance between the trees using the method that captures the most trees within 5 meters of each other (see implementation section below).

Implementation

As stated above, the intent is to retain western yew trees in stand level retention, which is defined in the Order as small intact patches of trees and understory vegetation that are located in a development area to assist in meeting land use objectives. In those circumstances where it is not practicable to retain individual western yew trees in stand level retention, an alternative approachto minimize the impact to the tree is necessary.

Further to the interpretation of the application of the term 'practicable', the following outlines some example scenarios where retention of individual yew trees in stand level retention may be impracticable:

- Retention may lead to damage to yew trees, residual timber or soil erosion from endemic windthrow due to isolated and dispersed small patches of retention;
- Dispersed retention may push machinery into areas with sensitive soils, or create otherwise avoidable risk of sediment delivery to a stream or wetland;
- Decking logs from hoe chucks often require specific areas to avoid sensitive soils;
- Retention may cause major isolation of timber due to dispersed retention (operational constraints such as obstructing deflection lines, or control points for a skidder or hoe chucker etc.);

- Retention may increase safety hazards to operators on the ground

Western yew patches can be linear (arranged in a straight line) as long as each tree is within 5 meters of another yew tree (e.g. there are 5 or more yew trees, each of which is within 5 metres of at least one other yew tree).

For determining a 'patch', the intent is to use a method that captures the most trees within 5 meters of each other. In some cases this might mean measuring 5 metres from the Point of Germination (POG)(outside bark) to the DBH (outside bark), or DBH to DBH or POG to POG- depending on how the trees are arranged. In other words, use methods in the field to measure the distance that can be reproduced, but also result in the most trees being measured.

Layering, or epicormic/adventitious rooting is sometimes observed with Western yew trees. This is when a branch or stem sends new roots into the ground and establishes a semi-independent tree, as shown in Figure 2. In these cases, each new stem is considered a separate tree for the purposes of patch identification.

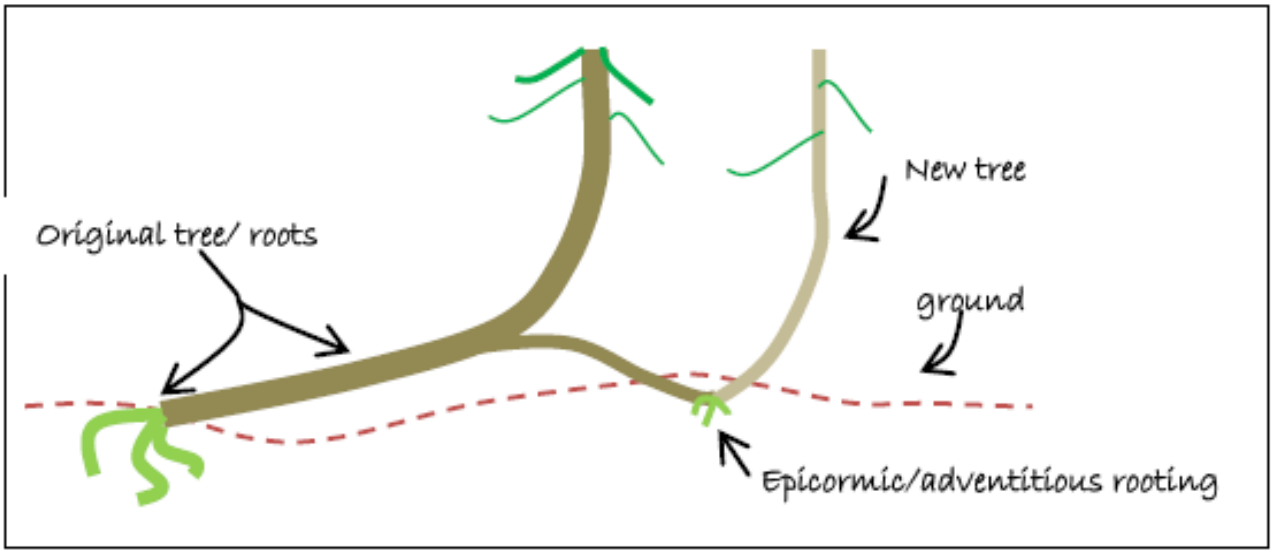


FIGURE 1. ADVENTITIOUS ROOTING OF WESTERN YEW.

Opportunities for risk-managed approaches

There are no opportunities to modify the requirements for section 8 of the HG LUOO.

SECTION 9: OBJECTIVES FOR MONUMENTAL AND CULTURALLY MODIFIED TREES

Objectives

*"(1) Protect all **cultural cedar stands** to support the Haida Nation's present and future cultural use.*

*(2) Protect all **culturally modified trees** to support the Haida Nation's present and future cultural use.*

*(3) Protect all **monumental cedar** greater than 120 centimeters diameter at breast height to support the Haida Nation's present and future cultural use.*

*(4) Despite subsections (1), (2) and (3), **cultural cedar stands, culturally modified trees** and **monumental cedar** may be altered or removed, provided that:*

> *(a) an **intergovernmental process** is completed;*
>
> *(b) the alteration or removal is required for road access, other infrastructure, or to address a safety concern, and no practicable alternative exists; and*
>
> *(c) any **culturally modified tree** or **monumental cedar** harvested will be provided to the Haida Nation.*

*(5) **Monumental cedar** not located within **cultural cedar stands** and not the size described under subsection (3), may be harvested provided that the greater of 10% or 1 **monumental cedar** is retained within the **development area**, and it is confirmed through the **intergovernmental process that**:*

> *(a) the **monumental cedar** is not required for a cultural cedar use; or*
>
> *(b) harvesting the **monumental cedar** is required for road access, other infrastructure, or to address a safety concern, and the monumental cedar will be made available to the Haida Nation or other specific measures will be identified.*

*(6) For the purposes of subsections (1) to (5), adjacent to **cultural cedar stands**, **culturally modified trees** and **monumental ceda**r that are protected or retained, maintain a **reserve zone** with a minimum width equal to 0.5 **tree length**.*

*(7) Despite subsection (6), the area of the **reserve zone** may be reduced, provided that:*

> *(a) an **intergovernmental process** is completed;*
>
> *(b) alteration or harvesting is required for road access, other infrastructure, or to address a safety concern, where no practicable alternative exists; and*
>
> *(c) the integrity of the **cultural cedar stand**, **culturally modified tree** or **monumental cedar** is maintained.*

*(8) Adjacent to **reserve zones** specified in subsection (6), maintain a **management zone** with an average width equal to 1.0 **tree length**, in order to protect the integrity of the **reserve zone**, measured from the outer boundary of the **reserve zone**.*

*(9) Within the **management zone** specified in subsection (8), maintain or recruit, in the shortest possible timeframe, at least 90% of the forest as **mature forest** and **old forest** through natural processes and voluntary management intervention.*

*(10) Despite subsections (8) and (9), the area of the **management zone** may be reduced, provided that:*

> *(a) an **intergovernmental process** is completed;*

(b) the reduction is necessary to address operational constraints or a safety concern, and

*(c) the integrity of the **reserve zone** is maintained.*

*(11) All areas retained or managed in accordance with subsections (1) to (10) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia."*

Background

Monumental cedars are cedar trees large enough to be used for traditional sized canoes, totem poles, and longhouse beams. The definition of monumental size is a result of both its functional use and rarity.

The definition of culturally modified trees includes both archaeological and historical culturally modified trees - i.e. culturally modified trees dated after 1846. The objective does not replace the requirements of the Heritage Conservation Act; however it extends beyond the scope of the Heritage Conservation Act to require consideration of culturally modified trees dated between 1846 and 1920. For the purposes of the HG LUOO, this locally relevant date was deemed necessary to define CMTs in the context of a heritage feature. By 1920, some of the most sacred elements of the Haida culture had been systematically outlawed, including the right to gather, give potlaches, speak the language or be governed by traditional hereditary leadership. Legal and institutional pressures on Haida traditional social fabric helps to distinguish pre-1920 as a time where traditional practice was common and less criminalized. The value of CMTs is not determined or provisional to a date for the Haida. However, 1920 offers a local context for defining a heritage feature for the purpose of forest planning and management.

The Haida Gwaii SLUA (Section 1.2 of part II in attachment B) outlines the objectives for the ongoing supply of current and future monumental cedar for Haida cultural use. A number of variables have led to the requirement for the protection of monumental cedar outside of protected areas and Cedar Stewardship Areas. Logging history on Haida Gwaii has focused upon the most productive and most easily accessible areas. These areas coincide with some of what were the most important traditional harvest sites of the Haida Nation for monumental cedar. The introduction of Sitka black-tailed deer has led to serious problems with regeneration in old natural stands and second growth. Additionally, due to logging history and historical silviculture practices, there is a huge discrepancy between the age classes of cedar, with relatively more old forest stands, relatively little young forest, and nearly nothing in between. Lastly, monumental cedar have traditionally been managed in a slow-growing state, typically taking several hundred years before becoming useable for cultural practices. The combination of these variables has led to monumental cedar being considered a limited resource. Likewise, Culturally Modified Trees (CMT) embody a cultural, spiritual and archaeological significance to the Haida people. It is interpreted that the LUOO supersedes but does not replace the 1996 Haida Gwaii Forest District Policy on CMT's[17] and the CHN's 2002 CHN Culturally Modified Tree Operational Guidelines.

Intent

The intent of this objective is to provide for the protection of CMT, monumental cedar, and cultural cedar stands on Haida Gwaii. Management zones should only be manipulated to protect the reserve zone

[17] March 21, 1996. Operational guidelines for CMT Management and Surveys for Haida Gwaii/Queen Charlotte Islands Forest District

around cultural cedar, and not for operational purposes. The expectation is that all monumental cedar trees harvested under LUOO provisions go into the Haida Gwaii Cultural Wood Access Program.

Implementation

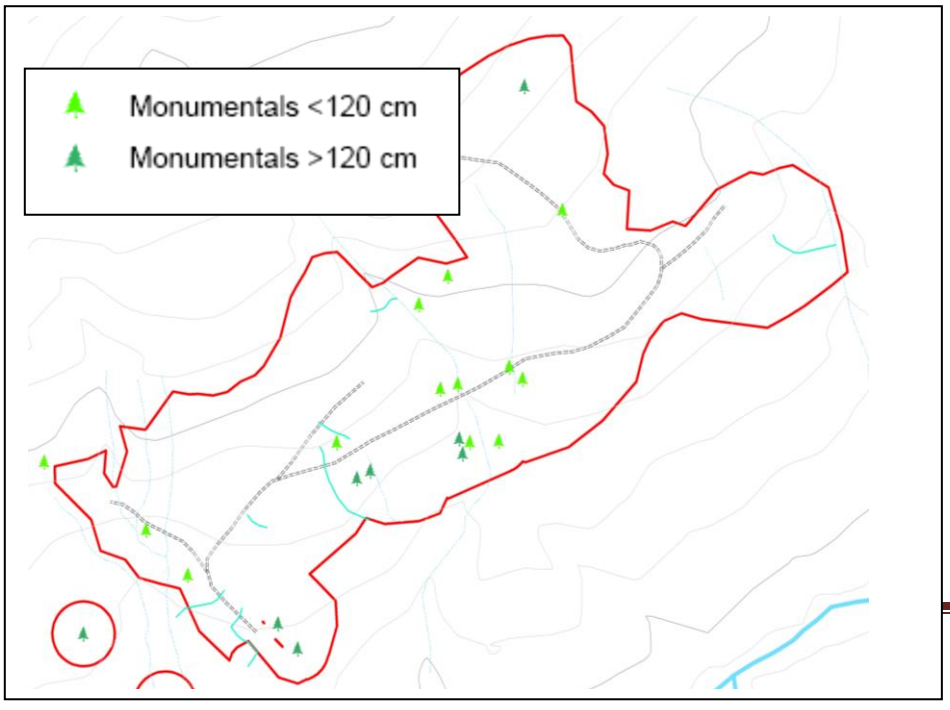
The objective requires persons identifying monumental cedar, CMTs or Cultural Cedar Stands to be certified by the CHN in Cultural Feature Identification. The Council of the Haida Nation can provide a list of surveyors certified for Cultural Feature Identification.

Having certified cultural feature identification surveys completed at the early planning stages of development is critical. Optimization of harvest layout is most effective where features and their management areas are identified as early as possible. A risk-managed application is most effectively done early in the planning stage to ensure the greatest amount of certainty can be achieved in planning.

Monumental cedar are defined in the HG LUOO as "a visibly sound western red-cedar or yellow cedar tree that is greater than 100 centimeters in diameter at breast height and has a log length of 7 meters or longer above the flare with a least one face that is suitable for cultural use". Sub-section 9(3) of the HG LUOO requires the protection of all monumental cedar with diameters greater than 120 cm. This reflects the relative rarity and importance of these features to the Haida culture. Section 9(5) allows some harvest of monumental trees outside of cultural cedar stands in the 100-120 cm diameter range contingent on an Intergovernmental Process being completed, and provided that 10% of the monumental cedar, with at least one, is retained within the development area and the following conditions outlined in section 9 (5) (a) and (b) are met:

> *"(a) the monumental cedar is not required for a cultural cedar use; or*
>
> *(b) harvesting the monumental cedar is required for road access, other infrastructure, or to address a safety concern, and the monumental cedar will be made available to the Haida Nation or other specific measures will be identified. "*

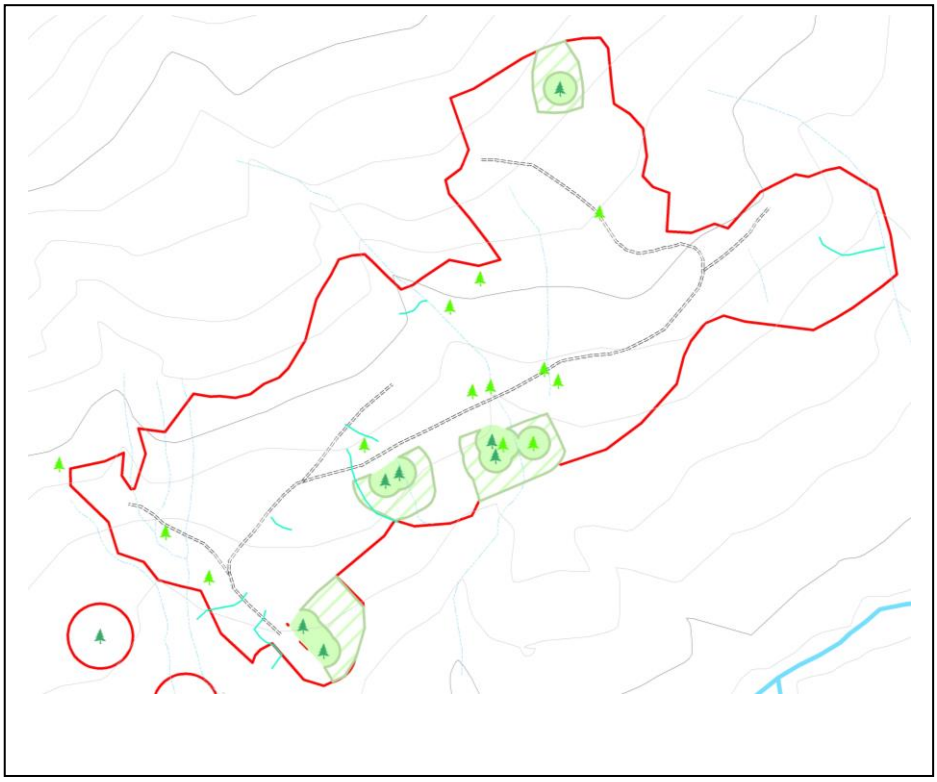
If a development area does not have a cultural cedar stand, or a monumental cedar greater than 120 cm dbh, then at least 10% of the trees (with at least 1 tree) between 100-120 cm dbh must be retained to meet this objective.



In this example, Monumental are identified throughout the development area through a Cultural Feature Identification survey.

As this development area has 1 cultural cedar stand and several monumentals greater than 120 cm dbh, the monumentals less than 120 cm dbh are available for harvesting upon the conditions outlined in section 9 (5)(a) and (b).

The reserve zones are a fixed width, and the management zones are flexible and designed to accommodate both an average width and a default reduction of 10% to the mature and old forest (here represented by an area in hectares).



Engagement with the Haida Nation to make monumental cedar available under 9(5)(b) of the LUOO, should occur through the Cultural Wood Access Program. This is a co-managed permitting process developed and administered through the Council of the Haida Nation and the Ministry of Forests, Lands and Natural Resource Operations. The Cultural Wood Access Program coordinator can be contacted at the Haida Gwaii District office. Currently, applications for cultural cedar are through the Cultural Wood Access Program which merges the CHN's 'Right to Access' permit and the Ministry's 'Free Use Permit'. Logging and any associated costs are the responsibility of the proponent who needs the cultural cedar. A Standard Operating Procedure is being developed by the CHN for the Cultural Wood Access Program in order to streamline this process for implementing section 5 (a) and (b) of the HG LUOO.

Reserve zones are required to be a minimum width of 0.5 tree lengths in order to protect the integrity of the feature. A management zone with an average width of 1 tree length is intended to protect the integrity of the reserve zone. Although the management zone does add further importance to the ecological, cultural, and spiritual importance of the feature, it is intended to be used primarily as a site-specific tool to protect the reserve zone.

Tree length can be determined by the height of the monumental or CMT if it is the tallest tree, or by the tallest old trees adjacent to the monumental cedar or CMTs, or by the tree height indicated in column B of Schedule 5.

Section 9 (8) provides operational flexibility for licensees to meet the requirements and address site-specific issues that may arise by specifying an average width rather than a fixed width for the management zone.

Additional flexibility is provided for in section 9 (9). As long as 90% of the management zone is retained as mature and old forest then 10% of the mature and old forest within a management zone may be harvested.

Management zones are not necessarily intended to be perfect circles around a feature. Average widths for management zones are intended to be applied to accommodate site conditions such as the stand structure, soil, drainage, aspect, slope or other variables that might contribute to the stability of the reserve zone and integrity of the feature. Operational considerations (for example, the accommodation of road locations, stream crossings, guyline tiebacks or corridors for full suspension yarding) are also an important element of the average widths.

Where more than one monumental or CMT feature occurs, overlaps between reserve zones and management zones are inevitable. In this case, overlaps will decrease the area of a management or reserve zone on a per feature basis. Where overlaps occur, the aggregation of management zones provides the basis by which average widths are applied or default reductions are applied.

The default allowable reduction of 10% of the mature or old forest in a management zone is contingent upon 90% of the mature and old forest remaining intact. In the event that a management zone straddles an adjacent immature harvest opening, then this 10% rule may not be applicable, however the recruitment requirement in section 9 (9) would apply.

Areas retained or managed for Monumental cedar, cultural cedar stands or CMTs must be documented and submitted as digital spatial data at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia. Ideally the spatial boundaries, which may either be aggregated or separate reserve and management zones, contain attribute data that reveals the type and number of features within them.

Opportunities for risk-managed approaches

Opportunities to modify the requirements of Section 9 are provided by allowing cultural cedar stands, culturally modified trees and monumental cedar to be altered or removed if three conditions are met:

- an intergovernmental process is completed[18];
- the alteration or removal is required for road access, other infrastructure, or to address a safety concern, and no practicable alternative exists; and
- any culturally modified tree or monumental cedar harvested will be provided to the Haida Nation.

In addition, flexibility is provided to reduce the area of a reserve zone of a monumental cedar, a CMT or a cultural cedar stand if:

- an intergovernmental process is completed;
- alteration or harvesting is required for road access, other infrastructure, or to address a safety concern, where no practicable alternative exists; and
- the integrity of the cultural cedar stand, culturally modified tree or monumental cedar is maintained.

[18] Note that an intergovernmental process will occur on a unit by unit basis

Flexibility is also provided for reducing the area of the management zone of a feature if:

- an intergovernmental process is completed;
- the reduction is necessary to address operational constraints or a safety concern, and
- the integrity of the reserve zone is maintained.

In the case of a risk managed reduction to a management zone, the operational constraint may include physical constraints (road location, deflection corridors, etc.) or economic considerations.

5.0 PART 3 - AQUATIC HABITATS

GENERAL DESCRIPTION OF HG LUOO PART 3:

Part 3 of the HG LUOO provides the protection measures necessary to maintain hydroriparian ecosystems on Haida Gwaii. Hydroriparian ecosystems consist of aquatic ecosystems plus those of the adjacent terrestrial environment that influence and are influenced by the aquatic system[19]. Hydroriparian ecosystems are highly productive areas. Healthy fish habitat depends on the maintenance of good water quality as it flows over the surface of the land. The objectives for aquatic habitats include provisions for fish habitat, active fluvial units, upland stream areas and sensitive watersheds.

5.1 DEFINITIONS FOR AQUATIC HABITATS

The following definitions apply to sections 10 to 14 in Part 3 of the HG LUOO:

"active fluvial unit" means an active floodplain, where water flows over land in a 1 in 100 year flood event, and includes low and medium benches and the zone of an active fan where active hydrogeomorphic processes are currently evident or would likely be initiated if harvesting and/or road building were to occur

"adaptive management plan" means a monitoring or research initiative that is developed and implemented during the operational planning, timber harvesting, silviculture treatment, or road construction, including maintenance and deactivation phases, to examine the outcomes of management strategies and practices that vary from default requirements, the results of which will inform the development of future management strategies and practices

"cutblock" means a specific area, with defined boundaries, in which timber is to be harvested or has been harvested

"development area" means a specific location associated with an individual cutblock or road and defined by boundaries shown on a site plan where timber harvesting is planned or carried out, and includes any stand level retention, management zones, reserve zones, mapped reserves or other areas where timber harvesting is restricted or managed pursuant to this Order or the *Forest and Range Practices Act* and the regulations made thereunder

"digital spatial data" means information in the form of a Geographic Information System feature class format, shapefile format, or coverage

"equivalent clearcut area" means an indicator which expresses, as a percentage of an entire watershed, the degree to which regenerating forest stands are hydrologically similar to clearcuts, relative to the hydrologic status of the original stands

"functional riparian forest" means mature forest and old forest adjacent to streams and other aquatic features that all contribute to the functioning of aquatic ecosystems through the filtration of

[19] Coast Information Team. 2004. The Hydroriparian Planning Guide. The Hyrdoriparian Planning Guide Work Team.

sediment from runoff, the stabilization of banks, the regulation of water temperatures, the provision of a continual source of large organic debris to the stream channel and through other means

"hydrologically recovered" means the point at which regenerated forest stands have hydrologic properties similar to the pre-harvest hydrologic properties of the stands, with hydrologic responses within the range of natural variability

"intergovernmental process" means a collaborative process at the technical and operational level pursuant to the Kunsta'aa guu – Kuunst'aaya Reconciliation Protocol dated December 11, 2009, or means another collaborative process agreed upon by the Haida Nation and the Province of British Columbia

"management zone" means an area that has restrictions specified in this Order on the alteration or removal of trees

"mature forest" means a forest older than 80 years in a Coastal Western Hemlock zone and older than 120 years in a Mountain Hemlock zone, or means a forest classed as structural stage 6

"old forest" means a forest older than 250 years or structural stage 7

"qualified professional" means a person who:

(a) is registered and in good standing in British Columbia with an appropriate professional organization constituted under a British Columbia statute, who is acting under that association's code of ethics and is subject to disciplinary action by that association; and

(b) is acting within his or her area of expertise and scope of practice;

"reserve zone" means an area referred to in this Order where timber harvesting may not occur, unless harvest limits are otherwise specified in this Order

"tree length" means a horizontal distance equal to:

(a) in old forest stands, the tree height as indicated in column B of Schedule 5 for the predominant site series adjacent to the feature or the measured height of the tallest old trees adjacent to the feature; or

(b) in young or mature stands, the tree height as indicated in column A of Schedule 5 for the predominant site series adjacent to the feature, or the measured height of the tallest mature trees adjacent to the feature;

"Type I fish habitat" means areas shown as Type I fish habitat on the map attached as Schedule 4 or any area that includes:

(a) a reach of a watercourse and its active floodplain with a continuous channel bed that is greater than 1.5 metres in width, is less than or equal to 5% in gradient and is known to be, or has the potential to be, inhabited by fish;

(b) a lake or wetland greater than 1.0 hectare connected by a perennial or seasonal stream to fish habitat described in (a); or

(c) an estuary or marine interface zone connected by a perennial or seasonal stream to fish habitat described in (a)

"Type II fish habitat" means areas shown as Type II fish habitat on the map attached as Schedule 4 or any area that includes:

(a) a reach of a watercourse and its active floodplain with a continuous channel bed that is not classified as Type I fish habitat and is known to be, or has the potential to be, inhabited by fish; or

(b) a lake or wetland greater than 1.0 hectare that is not classified as Type I fish habitat and is connected by a perennial or seasonal stream to fish habitat described in (a);

"upland stream" means a stream reach that is not Type I fish habitat or Type II fish habitat

"upland stream area" means those portions of a watershed sub-unit that are outside of reserve zones and management zones adjacent to Type I fish habitat and Type II fish habitat

"watershed sensitivity" means the probability of hydrologic change which is outside of the range of natural variation due to external influence and which has the likelihood of having a negative consequence to social, economic or environmental values

"watershed sub-unit" means an area shown on the map attached as Schedule 6

5.2 Specific Guidance for Aquatic Habitats Objectives

Section 10: Objectives for Type I fish habitat

Objectives

*(1) Protect all forest within **Type I fish habitat**.*

*(2) In the event of any inconsistency between the location of **Type I fish habitat** as shown on Schedule 4 and the actual location **of Type I fish habitat** identified in the field, the location of **Type I fish habitat** identified in the field shall apply.*

*(3) Adjacent to **Type I fish habitat**, maintain a **reserve zone** with a minimum width of 2.0 **tree lengths**, measured from the outer edge of the **Type I fish habitat**.*

*(4) Despite subsection (3), the width of the **reserve zone** in any one **development area** may be increased or decreased by up to 0.5 **tree length** measured from the outer edge of the **reserve zone** to address site specific values, provided there is no net loss of **reserve zone** area within the **development area**.*

(5) Despite subsections (3) and (4), within a development area, up to 5% of the total area of the reserve zone may be altered or removed, provided that:

*(a) the integrity of the **Type I fish habitat** is maintained; and*

(b) the alteration or removal is required for road and bridge construction, or to address a safety concern, and there is no practicable alternative.

(6) Despite subsections (3) and (4), and in addition to subsection (5), the area of the reserve zone in a development area may be further altered or removed, provided that:

(a) the alteration or removal is required for road and bridge construction, or to address a safety concern, and there is no practicable alternative;

(b) an assessment of risk to the fish stream from the forest development and disturbance is completed by a qualified professional;

*(c) the integrity of the **Type I fish habitat** is maintained;*

*(d) an **adaptive management plan** is developed and implemented; and*

*(e) an **intergovernmental process** is completed*

(7) Within a development area, up to 5% of the total area of the reserve zone may be altered or removed for purposes other than those referred to in subsection (5)(b), provided that an intergovernmental process is completed.

*(8) All areas retained, managed or varied in accordance with subsections (1) to (7) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

*(9) Where some or all of the forest within the **Type I fish habitat** and **reserve zones** required under subsection (1) and (3) has been previously altered or harvested, provide for the recruitment of **functional riparian forest** in the **Type I fish habitat** and **reserve zones** through natural processes and voluntary management intervention.*

Background

The 2007 Haida Gwaii SLUA specifies protection measures for two classes of fish streams based on whether the stream habitat is classified as "high value fish habitat" or "not classified as high value fish habitat". The SLUA also identified a third class of streams, "upland streams" that included streams defined as Class 4 to 6 that have a slope greater than 5%. During the Detailed Strategic Planning phase it was determined that these terms were not adequately supported by existing mapping and were not precise enough to use in detailed strategic level planning. Additionally, they were not sufficiently precise to allow consistent field identification and application of different protection measures at an operational stage of planning. Based on expert opinion[20], a different approach for classifying streams and fish habitat was developed during DSP. This approach was more practical and appropriate to Haida Gwaii streams while remaining consistent with the SLUA's intent that higher value habitats receive a higher level of protection.

[20] Recommendations from the 2009 Aquatic Habitat workshop, Queen Charlotte City. The forum included Derek Tripp, Lynn Lee, David Campbell, John Broadhead, Al Cowan, Leandre Vigneault, Michael Milne, David Clough, Bill Floyd, Keith Moore. Further advice came from Michael Church and Peter Tschaplinsky.

The work on Riparian Fish Forests completed by the Gowgaia Institute[21] provided a useful base map showing TRIM streams that were classified into different categories based on fish presence. The JTT also felt there was a need to specify some physical attributes of streams, lakes and wetlands that would distinguish the habitats classified as "high value fish habitat" from other fish-bearing habitats that were also valuable, but did not warrant the same level of protection. Thus the LUOO provides new terms and definitions for fish habitat that reflect the intent of the SLUA but that are more precise and more readily identifiable in the field.

The terms "high value" and "not classified as high value" established in the SLUA to describe fish habitat were renamed in the HG LUOO to avoid confusion about the importance of the values being addressed and the physical attributes of the water bodies that the protection measures and targets were to be applied to. "High value fish habitat" became "Type I Fish Habitat" and "habitat not classified as high value" became "Type II Fish Habitat". The new definitions reflect the importance of fish habitats for all species of fish and recognize the importance of stream gradient and width in defining and differentiating Type I and Type II fish habitat.

Type I fish habitat includes all stream reaches that are greater than 1.5 meters in width and less than or equal to 5% in gradient, and known to be inhabited by fish or to have the potential to be inhabited by fish. Type I habitat also includes lakes or wetlands greater than 1 hectare connected to Type I fish habitat, and estuaries of marine interface zones connected to Type I fish habitat.

Upland streams are also redefined in the HG LUOO. They include all streams that are not Type I and Type II fish habitat, independent of width or gradient.

A map indicating the locations of Type I and Type II fish habitats is included in Schedule 4 of the LUOO. This map is derived from the habitat classification system presented in the report "Riparian Fish Forest on Haida Gwaii" by the Gowgaia Institute in 2009. This map does not include all fish habitat on the islands and may mis-classify some habitats. Schedule 6 shows the location of all upland stream area watershed sub-units.

Intent

The intent of the objective for Type 1 fish habitat is to maintain the natural ecological function of spawning and rearing areas for all anadromous and non-anadromous fish species in streams where the stream gradient is less than or equal to 5% and the stream width is greater than 1.5 meters. This is achieved through the establishment of reserve zones adjacent to all Type I stream reaches to maintain or restore stream channel integrity and the natural fish habitat characteristics associated with functional riparian forest.

Functional riparian forest is mature forest and old forest adjacent to streams and other aquatic features that all contribute to the functioning of aquatic ecosystems. It is determined by both functional structure and an associated hydrologically recovered state. Functional riparian forest might include, for example, conifers of a suitable size and root structure, with suitable ground cover, to provide filtration, shade and bank stability as well as provide a source of large woody debris for in-stream structure.

[21] J. Broadhead. 2009. Riparian Fish Forest on Haida Gwaii: A Portrait of Freshwater Fish Distribution and Riparian Forests on Haida Gwaii (the Queen Charlotte Islands). Gowgaia Institute.

A minimum width of two tree lengths in a reserve zone is required to protect and maintain those characteristics, considering risks to those reserves from disturbance agents such as windthrow. No management zone is required adjacent to Type I stream reaches.

Where reserve zones contain areas that were previously harvested or naturally disturbed, the HG LUOO requires the recruitment of functional riparian forest to mature or old forest condition in those areas through natural processes or voluntary management intervention.

The 2017 amendment added additional a new flexibility provision to reduce the reserve zone areas beyond the default limits for access or safety reasons, subject to certain conditions.

Implementation

Schedule 4 is a small-scale map based on 1:20,000 TRIM data and omits many small streams that cannot be mapped at that scale. Also, the differentiation between Type I fish habitat and Type II fish habitat is based in part on modeled information that may not be precise when applied at operational scales. Field identification using the appropriate definition is necessary to determine if a stream reach is Type I or Type II fish habitat. In relation to the stream classification system identified in the *Forest Planning and Practices Regulation*, the stream portions of Type I fish habitat are analogous to low gradient (less than or equal to 5%) S1, S2 and S3 stream reaches.

Connectivity to lakes and wetlands is qualified as a perennial or seasonal stream. Here the definition of a 'stream' can be referenced under the *Forest Planning and Practices Regulation* definitions section.

The width of the reserve zone is 2 tree lengths. Tree length is determined by either the actual tree heights or by referring to schedule 5 in the HG LUOO. Reserve zones are determined by minimum widths of two tree lengths, with the provision for a 0.5 tree length alteration provided there is no net loss of reserve zone area within the development area.

Opportunities for risk-managed approaches

Some operational flexibility is provided by allowing the width of the reserve zone for Type I fish habitat to be decreased, or increased, by up to 0.5 tree lengths from the outer edge of the reserve zone to address site specific values, provided there is no net loss of reserve zone area within the development area. This can be done in order to account for operational considerations. Examples of operational considerations are road access, other infrastructure costs (*ex.* bridges, culverts, and landings), limitations for yarding, avoidance of sensitive soils, merchantability of stands adjacent to a reserve, or to capture incidental EBM values.

The HG LUOO requires that there be no alteration or harvesting in the reserve zone unless required to address a safety concern or required for road or bridge construction where no practicable alternative exists. In these cases up to 5% of the area of the reserve zone can be altered or harvested. As the 5% budget for alteration or removal of trees is based upon an area measurement, the boundaries of the development area may be increased in order to capture a greater proportion of Type I fish habitat to increase a budget for the alteration or removal of trees.

There is a provision to alter or remove more than 5% of the area of fish habitat under subsection 5(1) in limited situations to address safety or access constraints. This additional flexibility is subject to a number of conditions, including an assessment of risk to the fish stream from the forest development and disturbance by a qualified professional. In this instance, a qualified professional is considered to be a

biologist, professional forester or technician with expertise in fish forestry interactions and fish stream management. In addition to an assessment of risk, an adaptive management plan is to be developed and implemented. In this case indicators of stream integrity can be monitored, and forest management related outcomes can be qualified over time and mitigated through continual improvement. Common hazards to fish habitat include road-associated generation and transport of fine sediments; the level of RMA tree retention; windthrow; falling and yarding trees across a stream; and post-harvest machine disturbance in the RMA[22].

SECTION 11: OBJECTIVES FOR TYPE II FISH HABITAT

Objectives

*(1) Protect all forest within **Type II fish habitat**.*

*(2) In the event of any inconsistency between the location of **Type II fish habitat** as shown on Schedule 4 and the actual location of **Type II fish habitat** identified in the field, the latter shall apply.*

*(3) Adjacent to **Type II fish habitat**, maintain a **reserve zone** with a minimum width of 1.0 **tree length**, measured from the outer edge of the **Type II fish habitat**.*

(4) Within a development area, up to 5% of the total area of the reserve zone may be altered or removed, provided the integrity of the Type II fish habitat is maintained.

(5) Adjacent to reserve zones required under subsection (3), maintain a management zone with an average width of 0.5 tree length, to protect the integrity of the reserve zone.

(6) Within a development area, the area of the management zone required under subsection (5) may be reduced by up to 20%.

(7) Despite subsections (3), (4), (5) and (6), the combined area of the reserve zone and management zone may be reduced further, provided that:

(a) the alteration or removal is required for road and bridge construction, or to address a safety concern, and there is no practicable alternative;

(b) an assessment of risk to the fish stream from the forest development and disturbance is completed by a qualified professional;

*(c) the integrity of **Type II fish habitat** is maintained;*

*(d) an **adaptive management plan** is developed and implemented; and*

*(e) an **intergovernmental process** is completed.*

[22] Tschaplinski, P.J. 2011. State of Stream Channels, Fish Habitats, and Adjacent Riparian Areas: Resource Stewardship Monitoring to evaluate the Effectiveness of Riparian Management, 2005-2008. FREP Extension Note #17. Watershed Research Program. B.C. Ministry of Forestry, Mines and Lands.

*(8) Areas retained, managed or varied in accordance with subsections (1) to (7) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

*(9) Where some or all of the forest within the **Type II fish habitat** and **reserve zones** required under subsections (1) and (3) has been previously altered or harvested, provide for the recruitment of **functional riparian forest** in the **Type II fish habitat** and **reserve zones** through natural processes and voluntary management intervention.*

Background

See Background section under Type I fish habitat.

Type II fish habitat includes all stream reaches that are not Type I but that are known to be inhabited by fish or to have the potential to be inhabited by fish. Type II habitat also includes lakes or wetlands greater than 1 hectare that are connected to Type II fish habitat.

Intent

The intent of this objective is to maintain the natural ecological function of all other fish streams, lakes and wetlands not considered Type I fish habitat. This is achieved through the establishment of reserve zones and management zones adjacent to those areas to maintain or restore stream channel integrity and natural fish habitat characteristics associated with functional riparian forest. A reserve width of one tree length with a management zone of one-half tree length is required to protect and maintain those characteristics, considering risks to those reserve zones and management zones from disturbance agents such as windthrow.

Some operational flexibility is provided by allowing the width of reserve zones and management zones to be adjusted or the area within the reserve zones and management zones to be altered or removed on a site-specific basis. The 2017 amendment added additional a new flexibility provision to reduce the reserve zone and management zone areas beyond the default limits for access or safety reasons, subject to certain conditions.

Where reserve zones contain areas that were previously harvested or naturally disturbed, it is intended that those areas will be returned to mature or old forest condition in the shortest possible time.

Implementation

Schedule 4 is a small-scale map based on 1:20,000 TRIM data and omits many small streams that cannot be mapped at that scale. The differentiation between Type I fish habitat and Type II fish habitat is based in part on modeled information that may not be precise when applied at operational scales. Field identification using the fish habitat definitions is necessary to determine if a stream reach is Type I or Type II fish habitat. In relation to the stream classification system identified in the *Forest Planning and Practices Regulation*, the stream portions of Type II fish habitat are analogous to high gradient (greater than 5%) S1, S2 and S3 streams and any S4 stream (regardless of gradient).

Connectivity to lakes and wetlands is qualified as a perennial or seasonal stream. Here the definition of a ‘stream’ can be referenced in the *Forest Planning and Practices Regulation* definitions section.

Reserve zone boundaries are determined by a minimum width of 1 tree length.

Management zone boundaries are determined by an *average* width of 0.5 tree length. In this case the average is intended to be based upon the zone width within the development area boundary. Average widths for management zones are intended to be applied to accommodate site conditions such as stand structure, soil, drainage, aspect, slope or other variables that might contribute to the stability of the reserve zone and integrity of the feature. Operational considerations are also an important element of the average widths; for example, the accommodation of road locations, stream crossings, guyline tiebacks or corridors for full suspension yarding.

Opportunities for risk-managed approaches

The default management for Type II fish habitat allows for a 5% reduction to the area of the reserve zone. Unlike with Type 1 fish habitat, there are no preconditions for the 5% area reduction, other than ensuring that the integrity of the Type II fish habitat is maintained.

The width of reserve zones to be adjusted or the area within the reserve zones to be altered or removed may be determined on a site-specific basis.

In addition to the application of an average width for defining the boundary of a management zone, a flexibility provision allows up to 20% of the area of the management zone to be reduced. Note that there are no preconditions for the 20% area reduction, other than ensuring that the integrity of the reserve zone is not jeopardized by the reduction.

Risk management provisions allow additional reduction of management zones and reserve zones beyond 5% and 20%, respectively, for road access or safety reasons, contingent upon an assessment of risk to the fish stream from forest development and disturbance completed by a qualified professional, the completion of an intergovernmental process, the maintenance of Type II habitat integrity, and the development and implementation of an adaptive management plan. . Natural or accelerated recruitment of functional riparian forest is required in reserve zones and management zones where some or all of the forest within the Type II fish habitat and the surrounding reserve zone has been previously harvested or altered

Adaptive management plans do not only apply at an individual block level, but also as part of a larger initiative that accounts for monitoring or research of a collection of management strategies and practices that vary from the default requirements.

SECTION 12: OBJECTIVES FOR ACTIVE FLUVIAL UNITS

Objectives

*(1) Protect all forest within **active fluvial units**.*

*(2) Adjacent to the **active fluvial units**, maintain a **management zone** with a minimum width of 1.5 **tree lengths**, measured from the outer edge of the **active fluvial unit**, to maintain the integrity of the **active fluvial unit**.*

*(3) Within a**development area**, the total amount of **mature forest** and **old forest** in the **management zone** may be reduced by up to 10%.*

*(4) Despite subsection (3), within a **development area**, the total amount of **mature forest** and **old forest** in the **management zone** may be reduced by an additional 10%, provided that:*

*(a) sufficient **functional riparian forest** is retained to protect the integrity of the **active fluvial unit**; and*

*(b) an **adaptive management plan** is developed and implemented.*

*(5) Areas retained, managed or varied in accordance with subsections (1) to (4) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

*(6) Where some or all of the forest within the **active fluvial unit** and **management zone** required under subsections (1) and (2) has been previously altered or harvested, provide for the recruitment of **functional riparian forest** in the **active fluvial unit** and **management zone** through natural processes and voluntary management intervention."*

Background

Active fluvial units are active floodplains and alluvial fans where water flows over land in a 1 in 100 year flood event. They include low and medium benches and the zone of an active fan where active hydrogeomorphic processes are currently evident or would likely be initiated if harvesting and/or road building were to occur. They are dynamic coastal ecosystems in terms of process and disturbance regimes, creating a diversity of structure and habitats – both aquatic and terrestrial. These features are sensitive to harvesting as the riparian vegetation, especially large trees, are important for limiting erosion, stabilizing banks, and reducing sedimentation rates—in essence, for maintaining stream morphology. If riparian forest in these features is logged, significant channel widening and loss of channel complexity and associated habitat can occur within a few years with normal peak flows. Stream position may change within an active floodplain, triggered by disturbance or by an extreme flood event. For these reasons, management must assume that such streams have a potential to move anywhere within the active fan or wet floodplain. Over longer time periods, streams on active floodplains have the potential to move across the entire valley bottom.

In large streams on floodplains, channel instability resulting from the harvest of riparian forest can take many decades to recover. For similarly dynamic active alluvial fans logging can destabilize channels and remove barriers to the spread of sediments and debris, again taking decades to recover. Therefore, active fluvial units are a priority for protection as a hydroriparian ecosystem. The intent of this Objective is to protect the form and function of the active fluvial unit and not destabilize them through development or management activities.

The Order is intended to support and augment FRPA for the protection of active fluvial units[23].

Intent

The intent of this objective is to maintain the integrity and natural ecological function of active fluvial units. The objective requires a reserve zone to protect all the forest located on active fluvial units and 90% of the mature and old forest in an adjacent management zone with a width of 1.5 tree lengths.

Implementation

[23] Part 4, Division 3, section 54 of the Forest Planning and Practices Regulation (B.C. Reg.269/2010).

Active fluvial units, particularly alluvial streams, often overlap with other aquatic habitat features (e.g. fish habitat and rare ecological communities of low bench floodplains). In such cases, the most restrictive requirements for protection prevail, and these provisions might satisfy requirements for other aquatic habitat features.

In many cases it may be necessary to maintain the entire active fluvial unit as well as a reserve that will function to adequately protect it from destabilization. Alluvial fans (as an active fluvial unit) have specific requirements under FRPA to prevent destabilization.

Management of active fluvial units is distinguished from that of Type I or Type II fish habitat in that active fluvial units only have management zones with a width of 1.5 tree lengths from the outer edge of the active fluvial unit. There is an allowable reduction to the management zone of 10% of the total amount of mature and old forest in the management zone. This allowances intended to be measured within the development area boundary. The 'amount' of mature and old forest can be measured either by calculated area, basal area, volume or stems per hectare as detailed in section 3 of this document.

Useful references:

- Defining Active Fluvial Units" http://coastforestconservationinitiative.com/_EBM/documents/DefiningActiveFluvialUnits-April2006.pdf
- "Active Fluvial Units"

  http://coastforestconservationinitiative.com/_EBM/documents/ActiveFluvialUnitsfieldcardOctober2004-draft.pdf
- "Forest Management on Fans" http://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh57.pdf

Opportunities for risk-managed approaches

Opportunities for flexibility around default requirements. Additional flexibility is provided by allowing licensees to harvest or alter an additional 10% of the mature or old forest in the management zone, therefore allowing a total reduction to the management zone of up to 20%. As with the default management provision, the 'amount' of mature and old forest can be measured either by calculated area, basal area, volume or stems per hectare as detailed in section 3 of this document.

Two conditions must be met before additional modifications are applied. The first is a requirement to retain a sufficient amount of functional riparian forest to protect the integrity of the active fluvial. Functional riparian forest is "*mature forest and old forest adjacent to streams and other aquatic features that all contribute to the functioning of aquatic ecosystems through the filtration of sediment from runoff, the stabilization of banks, the regulation of water temperatures, the provision of a continual source of large organic debris to the stream channel and through other means".* The determination of what is a sufficient amount of functional riparian forest is intended to be made by a qualified professional such as a hydrologist or registered professional biologist.

The second condition is a requirement to develop and implement an adaptive management plan. Adaptive management plans do not only occur at an individual block level, but are part of a larger initiative that accounts for monitoring or research of a collection of management strategies and practices that vary from the default requirements.

SECTION 13: OBJECTIVES FOR UPLAND STREAM AREAS

Objectives

(1) *Within each **watershed sub-unit** shown on the map attached as Schedule 6, retain a minimum of 70% of the forest in the **upland stream areas** as **hydrologically recovered**.*

(2) *For upland streams that are direct tributaries to **Type I fish habitat** or **Type II fish habitat**, retain sufficient vegetation to maintain stream bank and channel stability.*

(3) *Adjacent to **upland stream areas** with incised channels and steep gradients, retain a sufficient amount of trees and understory vegetation to maintain riparian plant communities that are dependent on high humidity micro-climates.*

(4) *Despite subsection (1), less than 70% of the forest in the upland stream area may be retained as hydrologically recovered, provided that:*

- *(a)* *an **intergovernmental process** is completed;*
- *(b)* *an assessment of **watershed sensitivity** to forest development and disturbance is completed by a **qualified professional**;*
- *(c)* *an amount, type and distribution of forest cover that is sufficient to sustain natural hydrological and fluvial processes, based on the assessment in subsection (4)(b) is maintained; and,*
- *(d)* *an **adaptive management plan** is developed and implemented.*

Background

In addition to stream reaches defined as Type I and Type II fish habitat, the HG LUOO also recognizes many stream reaches that are not fish-bearing but are important in the protection of downstream fish habitat. Collectively these are referred to as "upland streams". Upland streams are small, relatively steep and usually non-alluvial streams (including S5 and S6 streams as defined under FRPA)[24] that are not Type I or Type II fish habitat. These streams occur frequently on Haida Gwaii and may be too small to identify at scales above the site level. The portion of the land base that upland streams occupy is referred to as upland stream area. Protection is approached by maintaining a minimum proportion of forest cover in the upland stream area rather than in individual reserves along upland stream reaches.

There are several important roles that upland streams play in the watershed in addition to the provision of water to lower order streams. They provide downed wood to the hydroriparian system episodically through debris torrents. This function is particularly important in watersheds dominated by second growth forests. Small streams also transport sediment to downstream reaches. Both of these functions have a characteristic rate and amount.

Upland streams also provide some specialized habitats, particularly where gradients are not excessive, or where several streams merge to maximize the effect of water on the upland ecosystems. Very steep streams (e.g. cascades through narrow channels) can also have unique microclimates and provide habitat for specialized species.

Management of these streams is of particular concern in watersheds with combinations of large areas of sensitive terrain, a significant history of previous harvesting or other disturbance, and important fish populations.

Intent

The intent of this objective is to maintain the natural ecological function of upland stream areas and provide for the maintenance of hydrological and ecological processes within watershed sub-units. The objective does not require the same kind of management for every individual upland stream, but instead requires that a minimum amount and distribution of functional riparian forest across the upland portion of the watershed sufficient to maintain functions and processes within their natural range be maintained.

Implementation

"Upland" slopes are managed rather than individual upland streams. The area to which upland stream area requirements applies is those forested portions of a watershed sub-unit outside of Type 1 and Type 2 fish habitat and their associated reserve and management zones. Streams in such areas are likely non-alluvial (i.e. in a confined channel without a floodplain, although some reaches may have alluvial portions and riffle-pool morphology), meeting the intent for this section.

The objective requires 70% of the forest in the upland stream area in each watershed sub-unit be maintained in a hydrologically recovered condition. The 70% area is calculated on the forested area in watershed sub-units, outside of type I and type II fish habitat.

Hydrologic recovery, or post-disturbance watershed response, is often associated with tree height[25]. Hydrologic recovery increases as tree heights increase (in direct relation to stand density and crown closure). Hydrologically effective green-up is a term used throughout the Coastal Watershed Assessment Procedure guidebook for determining equivalent clearcut area (the inverse of hydrologic recovery). Recent coastal hydrologic science[26] establishes new hydrologic recovery assumptions based upon stand heights for different coastal precipitation regimes. While hydrologic recovery can be modeled, it is intended that assessments be guided by qualified professionals.

Any in-block retention associated with cutblocks harvested under this Order and outside of Type I and Type II fish habitat buffers, contribute to the 70% upland forest area requirement.

As indicated, the forested stands that contribute to the 70% hydrologically recovered upland areas do not have to be associated with specific streams, with the exception of those upland streams that flow directly into Type I or Type II fish habitat. For those streams, sufficient vegetation must be retained on stream banks to maintain channel stability.

It is intended that watershed planning for upland streams first considers key hydrologically sensitive areas for landscape-level reserves. These include active fluvial units and areas with terrain stability concerns.

[25] Hudson, R. G.Horel. 2007. An operational method of assessing hydrologic recovery for Vancouver Island and south coastal BC. Forest Research Brach Technical Report 032. Nanaimo, BC.
[26] Ibid.

Key landscape level ecological sensitivities may also be considered (e.g. landscape level connectivity): Once these key areas have been accounted for at the landscape level, at the stand level the following priorities for reserves or retention may be considered[27]:

(a) Sensitive gullies with high potential for sediment transport (based on gully assessments);

(b) Steep small streams with unique microclimates[28];

(c) Seasonal/perennial semi-alluvia1[29] S5 streams;

(d) Seasonal/perennial semi-alluvial S6 streams;

(e) Seasonal/perennial non-alluvial S5 streams;

(f) Ephemeral S5 with other specific ecological values;

(g) Ephemeral S6 with other specific ecological values.

The term 'direct tributaries' (52(2)) is intended to be referenced from the *Forest Planning and Practices Regulation.*

Opportunities for risk-managed approaches

Flexibility provisions allow the harvest of additional area in the upland portion of the watershed subject to the conditions listed in subsection 4. Assessments of watershed sensitivities to forest development and disturbance must be completed by a qualified professional. In this case a hydrologist is expected to conduct these assessments.

SECTION 14: OBJECTIVES FOR SENSITIVE WATERSHEDS

Objectives

(1) Within the sensitive watersheds shown on the map attached as Schedule 7, the following rates of harvest apply:

(a) for watersheds equal to, or greater than, 500 hectares, up to 5% of the watershed area may be harvested in a 5-year period;

(b) for watersheds less than 500 hectares, up to 10% of the watershed area may be harvested in a 10-year period.

[27] Based on a June 2007 Watershed Assessment Procedure Presentation by Glynnis Horel.
[28] S4 streams may be found, but will not be common in upland areas as it is less likely to have fish streams over 5% slope. Steep small streams with unique microclimates are unique ecosystems that have been described in detail in Appendix 3 of the CFCI 2007 EBM Operational Guidance http://www.coastforestconservationinitiative.com/ebm_new/documents/2007EBMInterimOpGuidance2.0.pdf
[29] A stream with a channel that is confining and stable. While the stream cannot move laterally beyond its active channel, it will have a riffle-pool morphology and may have narrow lateral bars.

*(2) Despite subsection (1), no harvesting may occur in sensitive watersheds with an **equivalent clearcut area** that is equal to or greater than 20%.*

(3) Despite subsections (1) and (2), a rate of harvest or an equivalent clearcut area that exceeds the specified limits may be maintained, provided that:

*(a) an **intergovernmental process** is completed;*

*(b) an assessment of **watershed sensitivity** to past, current and proposed forest development and disturbance is completed by a **qualified professional**;*

(c) an amount, type and distribution of forest cover that is sufficient to sustain natural hydrological and fluvial processes, based on the assessment in subsection (3)(b) is maintained; and

*(d) an **adaptive management plan** is developed and implemented.*

Background

Sensitive watersheds are watersheds on Haida Gwaii that have been identified as the most sensitive to impacts from further forest development. The HG SLUA provided an initial list of 18 sensitive watersheds, using boundaries defined by the Land Use Planning *Process Technical Team*. A sensitive watershed analysis conducted during the Detailed Strategic Planning process confirmed those 18 watersheds and added several more that fell within the thresholds for hazard and consequence. This risk assessment of Haida Gwaii watersheds was conducted using a 'hazard and consequence' approach similar to that used by various provincial experts[30]. In this approach, risk was determined as a function of hazard and consequence. Hazard may be a factor of either natural site conditions or human development. Hazard indicators include lake/wetland absence, drainage ruggedness, equivalent clearcut area (ECA), slope gradient, watershed area logged, roads, and functional riparian forest area logged. Consequence indicators cover environmental and social values and include major fish streams, hydroriparian ecosystem length in watershed, the presence of a food fishery stream, a community watershed and public infrastructure. A total of 31 of the original *Process Technical Team* watersheds were identified as sensitive using a hazard/consequence matrix.. These 31 watersheds were divided into 76 units through mapping refinements undertaken during Detailed Strategic Planning. These are shown in Schedule 7 of the HG LUOO.

Intent

The intent of this objective is to maintain or restore water quality and quantity with the natural range of variability in identified sensitive watersheds. It ensures that forest development activities do not have a material adverse impact on hydroriparian processes and habitats in sensitive watersheds.

[30] Milne,M. Forsite Consulting Ltd., Grainger and Associates Consulting Ltd.. 2007. Key Forest Resources Risk-Based Watershed Screening Procedure for the Kamloops Timber Supply Area.
Wilford, D. R, Lalonde. 2004. A framework for effective watershed monitoring. Streamline Watershed Management Bulletin. Vol 8, Number 1, 5-10.
Warttig, W. D.Clough, M.Leslie. 2001. Restoration plan-Kennedy Flats. Interfor Forest Products. Prepared for Min.of Forests, Min. of Water land and air protection, Forest renewal BC.
BC Min. of Environment, Kamloops TSA licensees. Kamloops, BC.

Default rates of harvest apply to all sensitive watersheds where the ECA is less than 20%. Harvest rates vary depending on size of the sensitive watershed. No harvesting is permitted in sensitive watersheds with ECA equal to or greater than 20%.

Implementation

A specified rate of harvest is a precautionary management provision to help ensure water quantity and quality are maintained within the natural range of variation for a given watershed. Rates of cut are considered to be a relatively simple basis for operational planning and monitoring. The HG LUOO rates of cut were derived from the Clayoquot Sound Scientific panel recommendations (R3.1).

The calculation of equivalent clearcut area is based on the entire watershed unit (including non-forested area), because the entire drainage basin contributes to the hydrological response to water inputs[31].

It is intended that any hydrological assessments required by the HG LUOO use current science surrounding hydrological recovery in coastal BC. The best available guidance at this time is Forest Research Technical Report TR-032: An operational method of assessing hydrologic recovery for Vancouver Island and south coastal BC (Robert Hudson and Glynnis Horel) - http://www.for.gov.bc.ca/rco/research/hydroreports/tr032.pdf.

Opportunities for risk-managed approaches

The required default rates of harvest and ECA may be exceeded provided that an IGP is completed, a watershed assessment is completed and adhered to, and an adaptive management plan is developed and implemented. Assessments of watershed sensitivities to forest development and disturbance must be completed by a qualified professional. A hydrologist is likely best suited to conduct these assessments.

[31] Church, M, B. Eaton. 2001. Hydrological Effects of Forest Harvest in the Pacific Northwest. Technical Report #3. Department of Geography, The University of British Columbia, Vancouver, B.C.

6.0 PART 4 - BIODIVERSITY

General Description of HG LUOO Part 4

The intent of Part 4 of the Order is to maintain old forest representation as a coarse filter approach to maintaining biodiversity. Old forest (greater than 250 years old, or structural stage 7) is considered a key proxy for biodiversity. The Order specifies target retention levels for common ecosystems (listed as site series), rare ecosystems, including forested swamps, and those ecosystem communities that are red-listed and blue-listed by the BC Conservation Data Centre.

In 2014 a new biogeoclimatic ecosystem classification guide was published[32] for identifying ecosystems in the field on Haida Gwaii (Land Management Handbook 68). The guide classifies new variants and their boundaries as well as several new forested site series units, many unique to Haida Gwaii. Part 4 of the HG LUOO makes references to site series, including landscape unit targets listed in Schedule 10 and red and blue-listed ecological communities listed in Schedule 13. However the ecosystem descriptors (ecological representation targets, forested swamps, red/blue-listed ecosystems) are all based on the previous classification system[33] (Land Management Handbook 28), and the Schedule 10 targets are derived from older ecosystem mapping inventories. Currently the Council of the Haida Nation and Province of BC are working towards amending or re-inventorying ecosystem mapping (Terrestrial Ecosystem Mapping) throughout Haida Gwaii to the current classification system. In order to maintain consistent referencing throughout Part 4 and its Schedules, and for the purposes of implementing the HG LUOO, nomenclature and classifications from the previous LMH 28 are used throughout the Order and this document.

6.1 Definitions for Biodiversity

"bioregion" means all lands commonly referred to as Haida Gwaii;

"blue-listed ecological community" means any ecological community that is listed in Schedule 13 as blue-listed;

"common site series" means a Biogeoclimatic Ecosystem Classification system site series listed as common in Schedule 10;

"cutblock" means a specific area, with defined boundaries, in which timber is to be harvested or has been harvested;

"development area" means a specific location associated with an individual cutblock or road and defined by boundaries shown on a site plan where timber harvesting is planned or carried out, and includes any stand level retention, management zones, reserve zones, mapped reserves or other areas where timber harvesting is restricted or managed pursuant to this Order or the *Forest and Range Practices Act* and the regulations made thereunder;

[32] Banner, A., W.H. MacKenzie, J. Pojar, A. MacKinnon, S.C. Saunders, and H. Klassen. 20□4. A field guide to ecosystem classification and identification for Haida Gwaii. Prov. B.C., Victoria, B.C. Land Manag. Handb. 68. www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh68.htm

[33] Green, R.N. 1994. A field guide to site identification and interpretation for the Vancouver Forest Region. Brisith Columbia Ministry of Forests. Victoria, B.C. Land Manag Handb 28.

"digital spatial data" means information in the form of a Geographic Information System feature class format, shapefile format, or coverage;

"forested swamp" means a forested mineral wetland or a forested peatland that is represented by the Western redcedar – Sitka spruce / skunk cabbage ecological community;

"intergovernmental process" means a collaborative process at the technical and operational level pursuant to the Kunst'aa guu – Kunst'aayah Reconciliation Protocol dated December 11, 2009, or means another collaborative process agreed upon by the Haida Nation and the Province of British Columbia;

"management zone" means an area that has restrictions specified in this Order on the alteration or removal of trees;

"mapped reserves" means the areas shown on the maps attached as Schedule 8 and Schedule 12, where timber harvesting may not occur, unless harvest limits are otherwise specified in this Order;

"mature forest" means a forest older than 80 years in a Coastal Western Hemlock zone and older than 120 years in a Mountain Hemlock zone, or means a forest classed as structural stage 6;

"old forest" means a forest older than 250 years or structural stage 7;

"rare site series" means a Biogeoclimatic Ecosystem Classification system site series listed as rare in Schedule 10;

"red-listed ecological community" means any ecological community that is listed in Schedule 13 as red-listed;

"reserve zone" means an area referred to in this Order where timber harvesting may not occur, unless harvest limits are otherwise specified in this Order;

"tree length" means a horizontal distance equal to:

(a) in old forest stands, the tree height as indicated in column B of Schedule 5 for the predominant site series adjacent to the feature or the measured height of the tallest old trees adjacent to the feature; or

(b) in young or mature stands, the tree height as indicated in column A of Schedule 5 for the predominant site series adjacent to the feature, or the measured height of the tallest mature trees adjacent to the feature;

6.2 Specific Guidance for Biodiversity Objectives

Section 15: Objectives for forested swamps

Objectives

*(1) Protect all **forested swamps** greater than 0.25 hectares.*

*(2) Adjacent to **forested swamps** greater than 0.25 hectares, maintain a **management zone** with an average width equal to 1.5 **tree lengths** to protect the integrity of the **forested swamp**.*

*(3) Within the **management zone** required under subsection (2), maintain at least 70% of the forest as **mature forest** and **old forest.***

*(4) Despite subsections (2) and (3), the amount of **mature forest** and **old forest** retained in the **management zone** may be reduced to 60%, provided that:*

> *(a) the amount of **mature forest** and **old forest** to be retained is sufficient to maintain the integrity of the **forested swamp**; and*
>
> *(b) an **adaptive management plan** is developed and implemented.*

*(5) Where previous alteration or harvesting has reduced the amount of **mature forest** and **old forest** below the levels required under subsection (3) or (4), provide for the recruitment of **mature forest** and **old forest** in that **management zone** through natural processes and voluntary management intervention.*

*(6) Areas retained to meet the requirements in subsections (1) and (2), must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

Background

Forested swamps are relatively rare ecological communities occupying approximately 2.5% of the forested area of Haida Gwaii. They are represented by the Western redcedar-Sitka spruce/ skunk cabbage ecological community identified as the '12' site series in the Coastal Western Hemlock sub-montane wet hypermaritime (CWHwh1) biogeoclimatic zone, the '06' site series in the Coastal Western Hemlock montane wet hypermaritime (CWHwh2) biogeoclimatic zone, and the '13' site series in the Coastal Western Hemlock very wet hypermaritime (CWHvh2) biogeoclimatic zone[34].

These ecological communities are also described by the *Ws54* wetland swamp classification[35].

Forested swamps are found at lower elevations and are typically receiving sites along floodplains or toe slopes and wetland margins with subdued topography. Soils (often 'hydric' organic veneers of woody humic or mesic peat soils, or rego gleysols soils along fluvial units) and water table indicate wetland environments but microtopography (mounding) allows for upland tree species to be moderately productive on elevated microsites and allows development of closed canopy stands.

Intent

The intent is to maintain the integrity of forested swamps as they are critical spring feeding areas for bears. They are easily disturbed by hydrologic changes and are difficult to re-establish due to limitations of growing sites. As receiving sites, there can be pockets or microsites of Western redcedar-Sitka Spruce/skunk cabbage communities that are too small to effectively manage. For this reason the

[34] Green, R.N. K.Klinka. 1994. A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region. Ministry of Forests Research Program. Victoria, BC. Land Manage. Handb. No. 28.
[35] MacKenzie, W.H. and J.R. Moran. 2004. Wetlands of British Columbia: a guide to identification. Res. Br., B.C. Min. For., Victoria, B.C. Land Manage. Handb. No. 52.

requirements in Section 15 only apply to forested swamps that are larger than 0.25 hectares (approximately 50m by 50m square).

The whole forested swamp feature must be protected and a management zone with an average width of 1.5 tree lengths is required around the feature. This management zone is a reasonable measure for ensuring the integrity of the feature is protected considering these sites often have raised water tables and are susceptible to windthrow. The required 1.5 tree length width is an average buffer width around t swamp. The intent is to allow specific site and operational considerations to guide the final location of the management zone, thus allowing for a variable width s long as the average is met. A minimum of 70% of the management zone must be maintained as mature or old forest.

Maintaining or recruiting at least 70% of the forest as mature or old forest is intentionally not spatially specific, and a metric for measuring this target is also intentionally not defined (*ie.* it may be based on basal area, volume or hectares). The intent is to allow for specific site or operational considerations to guide the removal of the 30% of the mature or old forest. If there is already less than 70% mature or old forest in a management zone, no further removal can occur until sufficient recruitment to mature or old forest condition occurs.

The provision for recruitment addresses situations where a management zone extends into an area of immature forest. The intent is not to harvest the management zone and then recruit mature/old forest, but rather to acknowledge that sometimes a management zone will be made up of immature timber from historical harvests. Recruitment to an old forest condition in the zone will happen through natural growth and succession but voluntary active management/restoration is also allowed.

Implementation

To meet the requirement of protecting the integrity of forested swamps, the following may be considered:

- Forested swamps are a form of wetland and are sensitive to changes in the water table.Harvesting activities, especially road-building activities, may have significant negative impacts through water table alteration. Maintenance of the hydrology of the forested swamp is important for successful management of these areas.

- Even though they can be natural "sediment sinks", forested swamps can be sensitive to sedimentation if the added sediment alters the aquatic or riparian habitats. Harvesting operations, and especially road-building, need to address sediment management in order to effectively protect the swamps.

- The management zone should account for key elements such as interior forest habitat conditions (maintenance of canopy and light conditions) and windthrow management.

The objective allows up to 30% of the management zone area to be younger than mature seral. . The 30% threshold can be measured by volume removed through single selection/partial harvests or by area measurements. For monitoring purposes (either for adaptive management or compliance) it will be necessary for foresters to specify which metric was used to achieve this target.

Opportunities for risk-managed approaches

The amount of mature and old forest in a management zone may be reduced to 60% provided that it is sufficient to maintain the integrity of the feature and an adaptive management plan is developed and implemented. .

It is intended that adaptive management plans will apply not only at an individual block level, but as part of a broader initiative (e.g. watershed level) that accounts for monitoring or research of a collection of management strategies and practices that vary from the default requirements.

SECTION 16: OBJECTIVES FOR ECOLOGICAL REPRESENTATION

Objectives

*(1) For each **common site series** and each **rare site series** in a landscape unit, retain an amount of **old forest** equal to or greater than the landscape unit targets listed in Schedule 10.*

*(2) Where practicable, include within **old forest** retention areas retained to meet the requirements in subsection (1), habitat for local species at risk and regionally important wildlife species including, but not limited to:*

> *(a) Northern Goshawk nesting and foraging habitat;*
>
> *(b) Marbled Murrelet nesting habitat, Great Blue Heron nesting habitat, and **Northern Saw-whet Owl core nesting areas**; and*
>
> *(c) **Black Bear den**s and denning habitat.*

*(3) Areas retained to meet the requirements in subsection (1), must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

*(4) If there is insufficient **old forest** available to meet the targets in subsection (1), identify and retain, and recruit where necessary, through natural processes and voluntary management intervention, forest stands to meet representation requirements in the shortest possible timeframe.*

Background

A tenet of Ecosystem-based Management is the maintenance of biological richness and services provided by natural terrestrial and marine processes, including the structure, function and composition of natural terrestrial, hydroriparian, and coastal ecosystems at all scales through time[36]. Old seral distribution within each ecosystem type is the primary indicator to determineif the overall goal for ecosystem representation is being met. For Haida Gwaii, site series are the ecological units used for defining ecosystem type and measuring old seral representation. The bioregion (all of Haida Gwaii) is used to define the geographic scope of conservation targets.

[36] Coast Information Team. 2004. Ecosystem-Based Management Planning Handbook.

Site series represent plant assemblages or ecological communities that arise from unique combinations of site (topography, soil) and climatic conditions. The types of forested site series listed in Schedule 10 follow the classification conventions of the Provincial Biogeoclimatic Ecosystem Classification system (BEC- http://www.for.gov.bc.ca/hre/becweb/ . Generally, site series that represent more than 5% of the forested land base of Haida Gwaii (the entire bioregion) are considered common.

The Strategic Land Use Agreement (SLUA) set two minimum targets (30% or 70%) for the representation of old forest ecosystems. The 30% target applies to old forest retention in very common and common ecosystemsl The 70% target applies to old forest retention in modal, rare and very rare ecosystems. Each ecosystem (sites series) on Haida Gwaii is assigned to one of these two categories based on their occurrence within the bioregion– common (including common and very common); and rare (including modal, rare and very rare) types.

A default age of 250 years for old forest generally will capture the structural variables that are characteristic of climax successional forests (light conditions, species composition, volume densities, coarse woody debris, species assemblages etc.). However, each site series represents a unique combination of growing conditions based on climate and geography that provide habitat for unique plant assemblages. As such, each site series is subject to different variables that can produce old growth stand characteristics at different times. In order to capture this dynamic variability, structural stage is considered a proxy for old forest. Structural stages are assigned using standard field methods that link stand attributes to classes of forest succession. Structural stage 7[37] equates to old forest and includes stand attributes such as multi-storied stands comprised of shade-tolerant and regenerating tree species, snags and coarse woody debris in all stages of decomposition and patchy understories.

Structural stage 6 is commonly referred to as the understory re-initiation stage. This includes stand attributes such as well-developed understories that may have established a shade tolerant layer under the dominant tree species that has matured since the last disturbance.

Varying threshold ages between mid seral and mature seral forests in different biogeoclimatic zones are sourced from the Order Establishing Provincial Non-Spatial Old Growth Objectives. The reason for this age threshold difference is that generally, forests are more productive at lower elevations (longer growing seasons), and therefore are able to attain a mature seral forest structural composition earlier than those in less productivesites.

Intent

The overall intent of this objective is to maintain landscape level biodiversity. The objective originates from the Strategic Land Use Agreement objective to protect 70% of the rare and 30% of the common ecological communities over the bioregion (all of Haida Gwaii). The old forest targets listed in Schedule 10 were derived from a collation of ecosystem mapping products on Haida Gwaii.

These conservation targets account for the area contributions from all protected areas on Haida Gwaii. If a bioregional target is met in existing heritage sites, parks or conservancies, there is no subsequent need for further protection across the operational land base. If a bioregional target is not entirely met within

[37] B.C. Ministry of Forests and B.C. Ministry of Environment, Lands and Parks. 1998. Field Manual for Describing Terrestrial Ecosystems. Victoria, B.C. Land Management Handbook 25.

existing protected areas, then the difference in area to meet this target was proportionally distributed across the operational landscape units (as detailed in Schedule 10). For example, if 20% of a site series occurs within a given Landscape unit, then 20% of the conservation deficit will be sought from that landscape unit. This proportional distribution or allocation of deficits was used to help ensure an equitable constraint between licensees. This allocation was also used during co-location reserve planning (see section 8.0 Part 6 Forest Reserves below).As a result of co-location reserve planning, the majority of the site series targets are incidentally met through existing 'fixed' reserves as well as the Schedule 8, Forest Reserves, which was the product of the co-location planning process.

For example, the 04 site series in the MHwh (HmYc-Goldthread) is a rare site series that has 3,194 hectares on Haida Gwaii. The 70% target stipulates that 2,236 hectares should be reserved. As much as 1,672 hectares are accounted for with the landscape units that are entirely within protected area. Therefore, approximately 564 hectares[38] are required to be reserved within the operational landscape units (2,236 - 1,672 = 564 ha). However analysis shows that 1,955 hectares are already accounted for within protected areas and additional 'fixed' reserves, and another 346 hectares are accounted for within the schedule 8 Forest Reserves, making the total area reserved 2,301 hectares, or 72% of its occurrence on Haida Gwaii. Therefore, operational forest planning on a block by block basis does not need to account for reserving this site series, unless there is a proposal to move a forest reserve or harvest within an existing reserve (*for example* a. cedar stewardship area) containing this site series. Schedule 10 provides the baseline for tracking this and other site series.

The existing deficits to rare site series conservation targets include:

BEC	Site series number	Description	Bioregional deficits (hectares)[39]
CWHwh1	16	Ss - Sword fern	-85
CWHwh1	03	CwSs - Sword fern	-696
CWHwh1	02	CwSs - Salal	-2503
CWHwh1	11	PlYc - Sphagnum	-4508
CWHwh2	04	CwSs - Conocephalum	-461
CWHwh2	05	CwYc - Goldthread	-1456
CWHwh2	03	CwSs - Foamflower	-1556
CWHwh2	02	CwHw - Salal	-2156
MHwh	05	YcHm - Twistedstalk	-129
MHwh	02	HmYc - Mountain-heather	-542
MHwh	03	SsHm - Reedgrass	-794
MHwh	01	HmSs - Blueberry	-1484

[38] Note that if a Landscape unit contained less than 10 ha of this site series, then it was not considered necessary for contribution. Due to this restriction, the total amount required for reserve in Schedule 10 dropped from 564 ha to 556 ha.

[39] The bioregional deficit numbers are subject to confirmation and update.

Several different strategies are available to deal with these deficits in the conservation targets. For instance, deficits can be tracked and met through stand level retention at the operational scale, by retaining 30% (for common) or 70% (for rare) of the field identified occurrences. Several of the site series may not coincide with productive forest, and therefore may not be operationally encountered (for example. CWHwh1 11).

Changes to Schedule 10, through future amendments to the Order, will be considered on the basis of new ecosystem inventory information being available. In other words, when an ecosystem inventory assessment has been completed to a higher Provincial standard than the existing inventory, targets and ecosystem representation classes (delineating commonality or rarity) will be re-evaluated.

Implementation

For the purpose of section 16 (1), the majority of site series targets have been met through their occurrence in protected areas, other fixed reserves and forest reserves. For site series where the targets have been met (or are even in surplus), the licensee is required to track a landscape unit target only when proposing to a) move a Forest Reserve Polygon; b) harvest within a Cedar Stewardship Area, or c) apply for a reduction of a Type I or II fish habitat reserve zone or management zone through a variance. If the area of protection for a specific site series is at the lower limit of the conservation target for a given landscape unit, a proposal for removal/harvesting must include a plan for reserving an adequate area of that site series elsewhere to ensure no net area loss and no deficit in the bioregional conservation target.

While many of these targets are met within existing protected areas and reserves, some of these areas are not in an old forest condition. It is intended that younger sites will be recruited to mature and old forest condition through natural succession or voluntary management intervention.

The wildlife species listed in section 16(2) (Northern Goshawk, Marbled Murrelet, Great Blue Heron, Northern Saw-whet Owl and Black Bear) are focal species that are regionally important or provincially threatened. The Order includes objectives specific to each of these species and requires that habitat for these species be located in old forest retention areas where practicable. Inclusion of this habitat through designing forest retention is an important consideration. In this case, forest retention is specific to the design of new forest reserves, a condition to be met when any Schedule 8 forest reserves are amended. Here practicability is influenced by operational considerations, which include limits for road building, falling, yarding or economic constraints that impact the operability of the development area.

See definitions in the Land Use Objective order for Black Bear denning habitat and Northern Saw-whet Owl core nesting habitat. See Schedule 11 (or digital spatial data) for a map of Marbled Murrelet nesting habitat. For a description of Haida Gwaii Great Blue Heron nesting habitat, see:

Dyment, P. 2006. Great Blue Heron (*Ardea herodias fannini)* Foraging and Nesting Habitat Inventories on Graham Island, Haida Gwaii. Ministry of Environment, Queen Charlotte City, B.C.

Much literature exists for Northern Goshawk nesting and foraging habitat, however for regional context see:

Cooper.J. V.Stevens. 2000. A review of the ecology, management and conservation of the Northern Goshawk in British Columbia. Wildlife Bulleting no.B-101. Ministry of Environment, Lands and Parks. Victoria, B.C. or;

Doyle, F.2004. Managing for Goshawks in TFL39 on Haida Gwaii/Queen Charlotte Islands. Final report for Forest Investment Account and Weyerhaeuser Ltd, Nanaimo, B.C.

The majority of areas retained to meet the Schedule 10 targets are accounted for in fixed protection or forest reserves. Therefore, tracking the areas retained to meet the ecosystem representation targets, as required by subsection 16(3), will only be needed if a licensee has reduced/altered a forest reserve (under subsection 23(3)) or a significant reduction/alteration of a Type I or Type II fish habitat reserve zone or management zone (subsections 10(5) or 11(6)) or if the area is reported to have a conservation deficit and is being retained at the operational level. When there is an application to alter an existing reserve, then the licensee should identify the location of the site series (ecosystem) in question as well as the type and size of the site series. The intent is to ensure that there is equivalent old forest replacement of a site series in the event that an existing reserve is altered.

With regards to subsection 16 (4), some landscape units do not have enough old forest to meet the targets required in Schedule 10 due to past levels of harvesting. The intent of this subsection is to acknowledge this shortfall and the fact that recruitment to meet those targets will occur either through natural succession (leaving it alone) or through voluntary management intervention (ie. restoration to increase old growth stand attributes such as stand densities, light conditions, multi-layered canopies or coarse woody debris content).

Opportunities for risk-managed approaches

There are no provisions in the Order to modify requirements.

Schedule 10- Ecological Representation Targets by Landscape Unit (LU)

The following describes the column headings that appear in Schedule 10

BEC Variant : Biogeoclimatic Ecological Classification system variant. Variants are zonal plant sub associations that reflect the differences in regional climate and result in corresponding differences in vegetation, soil and ecosystem productivity.

Site Series: Site series refers to a site capable of producing the same late seral or climax plant communities within a biogeoclimatic subzone or variant.

Site Series Name: This name is also synonymous with the ecological community name.

Section 15/17 Exceptions: Section 15 (*Objectives for forested swamps)* and Section 17 (*Objectives for red and blue listed ecological communities)* both have priority conservation targets for the site series listed, and therefore the corresponding site series do not apply.

Bioregional target %: This is the percent old forest conservation target for the bioregion (all of Haida Gwaii) as identified within the Haida Gwaii Strategic Land Use Agreement.

Total Area-Bioregion: The area of occurrence, in hectares, of that site series on Haida Gwaii. Ecosystem mapping is commonly made up of complex polygons (with up to 3 deciles), and occurrence is calculated using all three deciles.

Rarity Class: The general representation category dividing common site series from rare site series, as mandated through the Strategic Land Use Agreement. See the Joint Technical Team technical report '*Delineating rare and common ecosystems'.*

Landscape Unit target areas: These numbers represent the total old forest area of a given site series in landscape units that require protection.

Implementation

Forest planners from a variety of tenure types generally need to report on how they will meet objectives set by government. In the case of ecological representation and Schedule 10, for 22 of the site series listed with targets, the target areas are already protected through existing protection, or protection or reserves under the Land Use Objectives Order.

Schedule 10 is simply the mechanism to track the minimum bioregional representation targets and is required when a) there is an application to move a forest reserve; or b) there is an application to harvest within a cedar stewardship area; or c) an application to alter a Northern Goshawk or Saw-whet owl nesting reserve; or d) there is an application for a significant alteration of Type I or Type II fish habitat reserves.

Annual tracking of ecosystem representation requires a spatial analysis of the 'fixed reserves' relative to the amount of area of each ecosystem type within those reserves. Reserve areas are areas that are not available for timber harvesting as a result of Provincial or CHN policies and include Protected Areas (Heritage sites/Conservancies/Parks), LUOO Forest Reserves, LUOO Cedar Stewardship Areas, Type 1 and Type 2 Fish Habitat, Wildlife Habitat Areas, Ecological Reserves, Archaeological sites, and other administrative tenures (including 'Crown Grants') that preclude timber harvesting.

Tracking currently occurs as a result of the licencees Forest Stewardship Strategies, with numbers made available to the CHN/Province.

Licencees operating in volume based tenure areas (without geographic exclusivity for timber rights) with shared Landscape Unit boundaries must collaborate with each other to ensure that targets are met.

Section 17: Objectives for red-listed and blue-listed ecological communities

Objectives

*(1) Protect each occurrence of a **red-listed and blue-listed ecological community** that is a minimum of 0.25 hectares in size.*

*(2) Despite subsection (1), up to 5% of the area of each type of **red-listed ecological community** occurring in a **development area** may be altered or harvested if required for road access or to address a safety concern.*

*(3) Despite subsection (1), up to 30% of the area of each **blue-listed ecological community** occurring in a **development area** may be altered or harvested if required for road access or to address a safety concern.*

*(4) Despite subsection (1), 30% of the area of each **blue-listed ecological community** occurring in a **development area** may be altered or harvested for purposes other than those described under subsection (3), provided that an **intergovernmental process** is completed.*

*(5) Areas retained to meet the requirements in subsections (1) to (4), must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

Background

The BC Conservation Data Centre (BC-CDC) compiles and maintains data on the status, location and level of protection on plants, animals and ecosystems, including ecological communities, in a manner that is consistent with national and international standards for tracking biodiversity.

Blue-listed ecological communities are considered threatened. Red-listed ecological communities are considered both rare and threatened. Their distributions are measured at the provincial scale and are nested within the Provincial biogeoclimatic ecological classification system.

Schedule 13 provides a list of red-listed and blue-listed ecological communities on Haida Gwaii. Only 2 of the 8 red-listed ecological communities are forested. Of the 16 blue-listed ecological communities, 11 are forested. Schedule 13 provides one exception to the Conservation Data Centre listing for blue-listed communities on Haida Gwaii: the omission of the Western hemlock – Sitka Spruce / lanky moss community (*CWH wh1 01/ CWH vh2 04/ CWH wh2 01* site series). While blue-listed provincially, there is very common late seral occurrence of this ecological community on Haida Gwaii, with significant representation within protected areas.

Intent

The intent of this objective is to protect and maintain the integrity and distribution of existing rare, threatened and endangered ecological communities. The requirements apply to ecological communities with a minimum area of 0.25 ha. For red-listed communities the objectives allow up to 5% of the area of each identified occurrence in a development area to be altered or harvested but only if required for road access or to address a safety concern. Currently, forested red listed ecosystems only include floodplain communities, and may be covered under Type I, Type II or active fluvial unit management provisions for protection.

For blue-listed communities, up to 30% of the area of each occurrence in a development area may be altered or harvested but only if required for road access or to address a safety concern.

The list of red- and blue-listed ecological communities may be periodically amended to reflect future changes in the listing of these communities by the BC-CDC.

Implementation

The allowable levels of alteration or harvesting of red and blue-listed ecosystems is measured as a 'budget' of its occurrence within a development area. The more area included within the development area allows for a greater proportion of the site that is allowed to be altered.

The forested red-listed communities occupy low and medium floodplain benches, and as such are generally narrow linear polygons. Note that micro sites of these communities are fairly common along riparian areas, however this objective only applies to contiguous occurrences that are a minimum of 0.25 ha (50 m^2).

Opportunities for risk-managed approaches

In addition to the flexibility to alter or harvest red-listed or blue-listed ecological communities if required for road construction or to address a safety concern, there is also provision for reduction of up to 30% of the area of blue-listed ecological communities for other reasons. These could include management for windthrow, restoration, or activities associated with commercial harvesting or road building. These reductions require completion of an intergovernmental process.

7.0 PART 5 – WILDLIFE

General Description of HG LUOO Part 5

The intent of Part 5 of the HG LUOO is to protect habitat (denning, nesting or other) for Black Bears, Marbled Murrelets, Northern Goshawks, Great Blue Herons, and Northern Saw-whet Owls.

7.1 DEFINITIONS FOR WILDLIFE

"adaptive management plan" means a monitoring or research initiative that is developed and implemented during the operational planning, timber harvesting, silviculture treatment, or road construction, including maintenance and deactivation phases, to examine the outcomes of management strategies and practices that vary from default requirements, the results of which will inform the development of future management strategies and practices;

"Black Bear den" means a cavity within a tree, a snag, a stump or a log, greater than 0.80 meters in diameter which shows evidence of use by Black Bears for winter hibernation;

"cutblock" means a specific area, with defined boundaries, in which timber is to be harvested or has been harvested;

"development area" means a specific location associated with an individual cutblock or road and defined by boundaries shown on a site plan where timber harvesting is planned or carried out, and includes any stand level retention, management zones, reserve zones, mapped reserves or other areas where timber harvesting is restricted or managed pursuant to this Order or the *Forest and Range Practices Act* and the regulations made thereunder;

"digital spatial data" means information in the form of a Geographic Information System feature class format, shapefile format, or coverage;

"Great Blue Heron nest" means any heron nest, unless monitoring confirms that the nest has not been used in the last three consecutive breeding seasons;

"intergovernmental process" means a collaborative process at the technical and operational level pursuant to the Kunst'aa guu – Kunst'aayah Reconciliation Protocol dated December 11, 2009, or means another collaborative process agreed upon by the Haida Nation and the Province of British Columbia;

"Marbled Murrelet nesting habitat" means areas shown as Class 1 and Class 2 Marbled Murrelet nesting habitat on the map attached as Schedule 11;

"Northern Saw-whet Owl core nesting area" means a patch of mature forest or old forest below 300 meters in elevation with a minimum area of 10 hectares that contains suitable nesting habitat for the Northern Saw-whet Owl;

"old forest" means a forest older than 250 years or structural stage 7;

"qualified professional" means a person who:

(a) is registered and in good standing in British Columbia with an appropriate professional organization constituted under a British Columbia statute, who is acting under that association's code of ethics and is subject to disciplinary action by that association; and

(b) is acting within his or her area of expertise and scope of practice;

"restricted activity zone" means an area where timber harvesting, silviculture treatments, road construction (including maintenance and deactivation) and auditory machine disturbance are restricted for specified periods during the calendar year;

"winter hibernation season" means the period between November 1st and May 15th when Black Bear dens may be in use for hibernation;

7.2 Specific Guidance for Wildlife Objectives

Section 18: Objectives for Black Bear Dens

Objectives

*(1) Protect all **Black Bear den**s within a **reserve zone**, measuring at least 20 meters in width, around the **Black Bear den**.*

(2) Despite subsection (1), alteration or removal of a Black Bear den or its reserve zone, or both, may occur, provided that:

*(a) an **intergovernmental process** is completed;*

(b) the alteration or removal is required for road access or to address a safety concern; and

(c) the alteration or removal does not occur during the winter hibernation season.

*(3) Adjacent to any **reserve zone** required in subsection (1), maintain a **management zone** with an average width equal to 1.0 tree length, measured from the outer edge of the reserve zone, to protect the integrity of the reserve zone.*

*(4) Where practicable, maintain suitable western redcedar and yellow-cedar in **management zones**, for long term **Black Bear den** recruitment.*

*(5) Within the **management zone** required under subsection (3), alteration or removal of trees may occur, outside of the winter hibernation season, to:*

(a) accommodate operational requirements for road and bridge construction, where no practicable alternative exists;

(b) accommodate road maintenance and deactivation, the removal of danger trees, and brushing and clearing within the right-of-way, for safety purposes, on any existing road under active tenure; or,

(c) mitigate the impact of windthrow.

(6) All existing and newly discovered Black Bear dens, and areas reserved or managed in accordance with subsection (1) to (5),must be documented and submitted to the Council of the Haida Nation and the Province of British Columbia at the end of each calendar year.

(7) Where practicable, include trees, snags, stumps and logs that are greater than 0.80 meters in diameter within ***stand level retention****, for the recruitment of future denning habitat.*

Background

Taan, or Black Bear (*Ursus americanus carlottae)* is a significant speciesin the culture of Haida people. Through oral histories, ethnography and archeology there is evidence tracing the Haida's respectful relationship with the Black Bear back many thousands of years. Indeed the bear is considered a relation to the Haida people. This reverence was translated into a policy statement within the CHN's *Haida Land Use Vision* in 2004 during the Community Planning Forum, outlining the need to protect a bear mother's rights to raise her young without being threatened. This goal was carried forward as an objective under Attachment B, Part II (sect. 1.7) of the Strategic Land Use Agreement and became a legal objective under the HG LUOO.

Intent

The intent of this objective is to ensure that bear den trees and structures are protected in reserve zones, and the forest around them is also sufficiently protected so that harvest or post-harvest disturbance does not affect denning. A required management zone with an average width of 1 tree length protects the integrity of the reserve zone.

Bear den structures can persist on the forested landscape for several decades or even centuries when they are found in western redcedar and yellow-cedar trees. Dens in second growth forests are typically old forest legacy structures such as stumps and logs which will be lost from those landscapes over time through decay and subsequent forestry activities. The loss of legacy structures may be accelerated by salvage activities for cedar forest products (such as shake and shingle salvage). Ror this reason section 18(4) requires that, where practicable, suitable structures be maintained for long term den recruitment.

Due to the longevity of Black Bear dens in forested landscapes, it is intended that catalogues of dens and their adjacent reserve zones and management zones will be kept to inform all aspects of future forestry activities.

The habitat recruitment objective is intended to encourage the retention of habitat structures in old forest so that these values can be co-located with other stand level objectives.

Implementation

Section 18 focuses on Black Bear dens that are used for hibernation and birthing and are typically located in a tree, snag, stump or log greater than 0.80 meters in diameter[40]. These differ from day beds, which are typically more common resting sites that may or may not be sheltered but are close to feeding grounds.

Trees with cavities suitable for recruitment as Black Bear dens are dead or live trees, stumps or logs, that are greater than 80cm diameter, that are completely dry in all seasons, and that have a secure entrance (not multiple entrances) greater than 30cm. Recruitment opportunities for new dens are important as a bear can have multiple dens in one area.

Co-location of Black Bear dens and denning habitat can often occur with cedar retention areas or monumental cedar reserve zones or management zones due to the correlation of bear dens with large diameter cedar.

Bear dens are often characterized by multiple scratch marks along the edge of the opening to the cavity. Careful attention is required while surveying, as the openings to den cavities can be many metres above the ground (known as aerial dens).

Opportunities for risk-managed approaches

Subsection 18(5) allows alteration or removal of trees in a management zone if required for road or bridge construction, maintenance, safety and windthrow management where no practicable alternative exists.. These modifications can only occur outside of the winter hibernation season.

SECTION 19: OBJECTIVES FOR MARBLED MURRELET NESTING HABITAT

Objectives

(1) Maintain an amount of Marbled Murrelet nesting habitat within each landscape unit equal to or greater than the target area listed in Schedule 9.

(2) Marbled Murrelet habitat referred to in subsection (1) must conform to areas shown in Schedule 11 or must be identified as Class 1 or 2 Marbled Murrelet nesting habitat by a qualified professional.

Background

The Marbled Murrelet (*Brachyramphus marmoratus)* is a small seabird endemic to the northwestern coast of North America. It is a BC-CDC blue-listed species and is listed as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). This marine bird has high fidelity to nest stands and nest trees located inland (39 kilometers on the BC coast[41]) within old growth forests, especially stands

[40] Davis, H. 1996. Characteristics and Selection of Winter Dens by Black Bears in Coastal British Columbia. (M.Sc. Thesis. Simon Fraser University, Burnaby, BC, 1996). 161 pp.
Ministry of Environment, Lands and Parks. 2001. *Black Bears in British Columbia: Ecology, Conservation and Management*. BC Ministry of Environment, Lands and Parks, Victoria, BC.

[41] Hull, C. L., G. W. Kaiser, C. Lougheed, L. Lougheed, S. Boyd, and F. Cooke. 2001. Intraspecific variation in commuting distance of Marbled Murrelets (*Brachyramphus marmoratus*): ecological and energetic consequences of nesting further inland. Auk 118:1036-1046.

of large Sitka spruce and western hemlock[42] where there is good overhead protection and large mossy branch platforms. The Strategic Land Use Agreement (Section 1.7 of Appendix B) included an objective to maintain 90% of Class 1 and 70% of Class 2 Marbled Murrelet nesting habitat at the landscape unit level. During the Detailed Strategic Planning process a review of the most recent scientific research found that Murrelets do not discriminate between Class 1 and 2 nesting habitat[43] when selecting nest sites. Based on this new information an adaptive approach to this objective led to the establishment of a target of 75% of the combined area of class 1 and 2 nesting habitat being conserved at the landscape unit level. As nesting habitat area is annually declining from forest harvesting, 2006 was set as the baseline year to set the area targets. Algorithmic based habitat suitability modeling was replaced with Air Photo Inventory information provided by the Ministry of Environment (2006)[44] that follows new standards for low-level aerial surveys. The new inventory was assessed[45] and deemed to be the best available information for supporting this objective in the HG LUOO.

Intent

The intent of Section 19 is to maintain a minimum area of Marbled Murrelet nesting habitat within each landscape unit on Haida Gwaii in order to help maintain a viable population for this threatened species. The minimum target amount of habitat is 75% of the combined Class 1 and 2 nesting habitat in each unit. That area is shown in Schedule 9. The intent during Detailed Strategic Planning was to reserve the target areas outright through a process of co-location with other EBM values. The co-location process first accounted for contributions from fixed protection[46] and then filled conservation deficits by delineating areas from the Air Photo Inventory for protection as Forest Reserves (Section 23, Schedule 8). In Landscape Units where the nesting targets were met by other incidental protection no additional reserves for Marbled Murrelet nesting habitat were established. The goal was to design the reserves to be a mix of large (greater than 200 hectares), medium (50 to 200 hectares), and small (greater than 10 to 50 hectare) patches[47]. The intent is that any nesting habitat removed from forest reserves must be replaced with habitat areas of equal quality and area elsewhere in the same landscape unit so that the amended reserves are of equal or greater size. Suitable forest reserve replacement areas will be identified by the licensee in

[42] Rodway, M. S., H. M. Regher, and J.-P. L. Savard. 1993. Activity patterns of marbled murrelets in old-growth forest in the Queen Charlotte Islands, British Columbia. Condor 95:831-848.

[43] Silvergieter, M.P. 2009. Multi-Scale Analyses of Nest Site Selection and Fledging Success by Marbled Murrelets (Brachyramphus marmoratus) in British Columbia. (M.Sc. Thesis. Simon Fraser University, Burnaby, BC, 2009). 162pp.

[44] Burger, A.E., (editor). 2004. Standard methods for identifying and ranking nesting habitat of Marbled Murrelets (Brachyramphus marmoratus) in British Columbia using airphoto interpretation and low-level aerial surveys. BC Ministry of Water, Land and Air Protection, Victoria, BC and BC Ministry of Forests, Nanaimo, BC.

[45] Waterhouse, F.L., A.E. Burger, A. Cober, A. Donaldson, and P.K. Ott. 2007. Assessing habitat quality of Marbled Murrelet nest sites on the Queen Charlotte Islands/Haida Gwaii, by algorithm, airphoto interpretation, and aerial survey methods. BC Ministry of Forests and Range, Coast Forest Region, Nanaimo, BC Forest Research Technical Report TR-035.

[46] Fixed protection included Heritage sites/Parks/Conservancies, Cedar Stewardship Areas, Wildlife Habitat Areas, Type 1 and 2 fish habitat buffers and Northern Goshawk/Saw Whet Owl nesting reserves.

[47] British Columbia. Identified Wildlife Management Strategy. Accounts and measures for managing identified wildlife: Coast Forest Region. – Version 2004 — Marbled Murrelet. 176 – 190.

advance of removal from forest reserves and submitted to the CHN and the Province. Schedule 8 will be amended periodically by the HGMC to reflect the new forest reserve boundaries.

Implementation

The Marbled Murrelet nesting habitat targets set out in Schedule 9 have been met either through occurrence within fixed reserves or captured through the forest reserve design process (represented by Schedule 8). Detailed Strategic Planning made efforts to meet these nesting targets in order to be spatially explicit for reserves and so that operational planning would not be additionally constrained on a block-by-block basis.

Table 2 outlines the amount of nesting habitat protected through fixed protection (including forest reserves) by landscape unit (note that landscape units entirely in protection have been excluded).

TABLE 2. AREA OF MARBLED MURRELET NESTING HABITAT PROTECTED IN RELATION TO SCHEDULE 9 TARGETS.

Landscape unit	Total Area	Target	Target Area	Area Reserved	Pct Reserved	Surplus (blue)/Deficit (red)[48]
Otun	2,922	75%	2,191	2,640	90%	448
Naikoon	2,039	75%	1,529	1,790	88%	261
Tlell	4,067	75%	3,050	3,454	85%	404
Yakoun Lake	2,688	75%	2,016	2,033	76%	17
Lower Yakoun	1,513	75%	1,134	1,141	75%	7
Skidegate Lake	2,917	75%	2,188	2,196	75%	8
Rennell	7,037	75%	5,278	5,290	75%	12
Sewell	4,651	75%	3,488	3,494	75%	6
Tasu	5,250	75%	3,938	3,940	75%	2
Masset Inlet	6,508	75%	4,881	4,883	75%	2
Ian	1,670	75%	1,253	1,253	75%	1
Eden Lake	10,244	75%	7,683	7,684	75%	1
Louise Island	6,224	75%	4,668	4,657	75%	-11
Honna	4,911	75%	3,683	3,671	75%	-12

Opportunities for risk-managed approaches

Provisions for altering or moving forest reserves are outlined in Section 23 of the HG LUOO. There are two ways of delineating replacement nesting habitat: either identify the equivalent area and quality from Schedule 11, or; have habitat field-identified by a qualified professional such as a registered professional

[48] Surplus/Deficit numbers are subject to confirmation and update.

biologist. Schedule 11 represents the Air Photo Inventory of class 1 and 2 Marbled Murrelet nesting habitat on Haida Gwaii for the first method.

When applications are made to harvest within a reserved area (*ie* Forest reserves, cedar stewardship areas, Type I or II fish habitat reserves, etc.) that also includes Marbled Murrelet nesting habitat (as per Schedule 11 inventory), the nesting habitat targets still apply and equivalent replacement Marbled Murrelet habitat will be required.

SECTION 20: OBJECTIVES FOR NORTHERN GOSHAWK HABITAT

Objectives

(1) Protect all Northern Goshawk reserves shown on the map attached as Schedule 12.

(2) When a Northern Goshawk nest is discovered that is not located in a reserve shown on Schedule 12:

> *(a) report the location to the Province of British Columbia and to the Council of the Haida Nation upon discovery;*
>
> *(b) maintain a **restricted activity zone** with a minimum radial width of 800 meters around the nest site to protect the nest area from disturbance during the Northern Goshawk breeding season; and*
>
> *(c) maintain a **reserve zone** around the nest site, that is a minimum of 200 hectares in area, and that maximizes the best available nesting and foraging habitat, to protect the integrity of the nest site.*

*(3) Where some or all of the forest within Northern Goshawk nesting area reserves has been previously altered or harvested, provide for the recruitment of **mature forest** and **old forest** in that reserve through natural processes and voluntary management intervention.*

(4) Despite subsections (1) and (2), a Northern Goshawk reserve shown on Schedule 12 and a Northern Goshawk reserve zone may be reduced, provided that:

> *(a) an **intergovernmental process** is completed;*
>
> *(b) the reduction is required for road access, where no practicable alternative exists, or to address a safety concern;*
>
> *(c) the reduction does not occur during the Northern Goshawk breeding season; and*
>
> *(d) there is no net loss to the Northern Goshawk reserve area.*

Background

The Northern Goshawk *laingi* subspecies is a raptor that primarily inhabits productive old growth forests in SE Alaska, Haida Gwaii, Vancouver Island and the BC coast. The subspecies is provincially red-listed (BC CDC) and identified as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and recently adopted as national bird of Haida Gwaii, through the 2017 Haida Nation's House of Assembly.

To date, 20 active nesting territories have been identified on Haida Gwaii. Nesting habitat has been in decline due to forest harvesting on Haida Gwaii. The Haida Land Use Vision (2004) cited Northern Goshawks as being a species in decline due to land use conflicts. The Strategic Land Use Agreement (Section 1.7 of Appendix B) stated an objective to protect Northern Goshawk nesting habitat and this was implemented in section 20 of the HG LUOO. Nesting reserves were designed during Detailed Strategic Planning with local knowledge by a registered professional biologist who is an expert in Northern Goshawk biology[49]. The objectives under section 20 are also consistent with the 2015 Science-based Guidelines for Managing Northern Goshawk Breeding Areas in Coastal BC[50], for the management of Northern Goshawk breeding areas.

Intent

The intent of section 20 is consistent with the Ministry of Environment's 2004 Identified Wildlife Management Strategy[51] and the 2008 Recovery Strategy[52] to maintain Northern Goshawk nesting habitat so that nesting areas and post-fledging areas remain intact The Order requires the protection of all Northern Goshawk reserves shown in Schedule 12 which represent the minimum 200 hectare area necessary for nesting habitat surrounding known nests.

Implementation

For newly discovered Northern Goshawk nest sites not shown in Schedule 12, the licensee is required to maintain a similar 200 hectare minimum reserve zone surrounding the nest. The intent of the 200 ha reserve zone requirement in 20(2)(c) is to maximize the best available nesting and foraging habitat around a core nest area (approximately 12 hectares) and post-fledgling area. As addressed in the 2008 recovery strategy, this typically includes mature and old forests, closed canopies (>50%) and relatively large diameter trees in a contiguous area immediately adjacent to the nest stand in order to minimize fragmentation and forest edge[53].

In addition, a restricted activity zone with a minimum radius of 800 meters must be maintained around the discovered nest site in order to protect breeding birds during the period of their highest sensitivity to disturbance. The restricted activities includes any timber harvesting, silviculture treatments (such as juvenile spacing or crown modification treatments), road construction and maintenance and other auditory machine disturbances (such as helicopters). The breeding season during which disturbance must be

[49] Frank Doyle, RPBio with Air Photo Interpreter Brian Smart

[50] McClaren, E.L., T. Mahon, F.I. Doyle, and W.L. Harrower. 2015. Science-Based Guidelines for Managing Northern Goshawk Breeding Areas in Coastal British Columbia. *Journal of Ecosystems and Management 15*(2):1–91. Published by the Journal of Ecosystems and Management: http://jem-online.org/index.php/jem/article/viewFile/576/506

[51] British Columbia. Identified Wildlife Management Strategy. Accounts and measures for managing identified wildlife: Coast Forest Region. – Version 2004 — "Queen Charlotte" Goshawk. 99 – 113.

[52] Northern Goshawk *Accipiter gentilis laingi* Recovery Team. 2008. Recovery strategy for the Northern Goshawk, *laingi* subspecies (*Accipiter gentilis laingi*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 56 pp.

[53] Doyle, F.I. and D. McLennan. 2003. Goshawk territory distribution, nest and foraging area requirements and a habitat assessment of predicted nest areas, both in TFL 39 and in the adjacent landscape, on the Queen Charlotte Islands/Haida Gwaii. Wildlife Dynamics Consulting, Telkwa, BC. Unpublished report.

minimized is February 15 to September 1. This provision is in effect until a permanent nesting reserve has been added to Schedule 12 through an amendment process.

The intent is that a registered professional biologist with local knowledge or expertise in this field assist in reserve design. Proposed reserve designs may be sent to the CHN and the Province of BC to inform a submission to the Haida Gwaii Management Council requesting an amendment to Schedule 12 of the HG LUOO to incorporate the new reserve.

Opportunities for risk-managed approaches

An alteration of a Schedule 12 Northern Goshawk reserve or a reserve zone around a new nest site may be allowed through an intergovernmental process in order to address a safety concern or for road access where no practicable alternative exists. No net reduction in the reserve area is permitted and all variance activities must occur outside of the breeding season.

SECTION 21: OBJECTIVES FOR GREAT BLUE HERON NESTING HABITAT

Objectives

*(1) Protect **Great Blue Heron nest** sites with a **reserve zone** with a minimum size of 45 hectares and with a minimum distance of 350 meters from any nest site to the edge of the reserve.*

*(2) Adjacent to any **reserve zone** required in subsection (1), maintain a **restricted activity zone** of a minimum of 150 meters measured from the outer edge of the reserve zone during the Great Blue Heron breeding season.*

*(3) Report the location of all new **Great Blue Heron nest** sites to the Province of British Columbia and to the Council of the Haida Nation when discovered.*

Background

The Great Blue Heron (*Ardea Herodias fannini)* is a subspecies that occurs on the Pacific coast from Washington to Alaska. It is the largest wading bird in North America. The species is on the provincial Blue-list (BC-CDC) and is listed as a species of *Special Concern* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The Great Blue Heron is becoming increasingly rare. It is highly susceptible to disturbance and is dependent on mature and old forest conditions for nesting[54]. To date, 26 Great Blue Heron nests and one nesting colony have been documented on Haida Gwaii with no link between nesting sites and foraging area. Local data suggests that Haida Gwaii herons nest further inland and at higher elevations than southern populations[55]. Nest site fidelity is potentially low, as breeding herons on Haida Gwaii are potentially transient especially in areas of high disturbance. The last comprehensive breeding survey for nests on Haida Gwaii occurred in 2006, during which time no nests were recorded as active. While there are 24 historic records of nests on Haida Gwaii, only 8 nest areas still had nest structures in 2006[56].

[54] Council of the Haida Nation. 2004. Haida Land Use Vision. Land Use Planning Community Forum.
[55] Dyment, P. 2006. Great Blue Heron (*Ardea herodias fannini*) Foraging and Nesting Habitat Inventories on Graham Island, Haida Gwaii, 2006, Ministry of Environment, Queen Charlotte, BC.
[56] Ibid.

Attachment A of the Strategic Land Use Agreement (*Land Use Zones and Attributes)* identified Great Blue Heron nesting sites as *Special Value Areas* to be reserved from logging. The areas reserved as *Special Value Areas* for herons were approximately 370 metres in diameter around each nest. Due to this inclusion in the SLUA, Detailed Strategic Planning provided an objective to protect active Great Blue Heron nests but no mapped schedule of heron nests was included.

Intent

The intent of the 45 hectare reserve zone around each nest site is to buffer active nesting habitat of the Great Blue Heron from industrial development. The minimum 350 meter distance from the nest to the edge of the reserve enables approximately 7 hectares to be designed to meet specific habitat requirements (mature and old forests).

The purpose of a minimum 150 metre restricted activity zone adjacent to the reserve zone is to minimize disturbance to this sensitive species during the breeding season. The breeding season is February 15th to August 31st[57]. The restricted activities include timber harvesting, silviculture treatments (such as juvenile spacing or crown modification treatments), road construction and maintenance and other auditory machine disturbances (such as helicopters).

Implementation

A Great Blue Heron nest is considered active unless monitoring demonstrates inactivity over 3 consecutive breeding seasons.

It is intended that monitoring activities occur under direction and guidance of a registered professional biologist. Potentially active nest area locations can be obtained from the Haida Gwaii District office or the CHN's Natural Resource Department.

Opportunities for risk-managed approaches

There are no Opportunities for flexibility around default requirementsflexibility provisions for heron objectives under section 21 of the HG LUOO.

SECTION 22: OBJECTIVES FOR NORTHERN SAW-WHET OWL NESTING HABITAT

Objectives

(1) Protect all Northern Saw-whet Owl reserves shown on the map attached as Schedule 12.

(2) When a Northern Saw-whet Owl nest is discovered that is not located in a reserve shown on Schedule 12, maintain a ***reserve zone*** *measuring at least 10 hectares, centred on the Northern Saw-whet Owl nest.*

(3) Where practicable, maintain ***Northern Saw-whet Owl core nesting areas*** *within stand level retention distributed across the landscape with a maximum inter-patch spacing distance of 1,400 meters.*

[57] British Columbia. Identified Wildlife Management Strategy. Accounts and measures for managing identified wildlife: Coast Forest Region. – Version 2004 — Great Blue Heron. 218 – 229.

(4) Report the location of any new Northern Saw-whet Owl nest to the Province of British Columbia and the Council of the Haida Nation when discovered.

Background

The Northern Saw-whet Owl (*Aegolius acadicus brooksi)* is the only breeding owl found on Haida Gwaii and is an endemic sub-species. The species is blue-listed by the BC CDC and listed as threatened (2006) by the Committee on the Status of Endangered Wildlife in Canada.

High quality breeding habitat requires structurally complex mature forest and old forest[5859]. The Saw-whet Owl is a secondary cavity nester primarily within Western Hemlock and Sitka Spruce. It depends on Hairy Woodpeckers (*Picoides villosus*) and Northern Flickers *(Colaptes auratus)* to excavate cavities which it then occupies. Estimates suggest the population to be less than 1000 individuals, with trends considered to be declining due to the loss of mature and old forest habitat.[60]

Thirteen habitat areas were identified for breeding and foraging in 2004 based on multiple observations[61]. The Haida Land Use Vision included these sites as important known nesting areas for the owl. These same areas were put forward for protection (under *Part 13* of the *Forest Act)* in Attachment A of the Strategic Land Use Agreement as *Special Value Areas.* Subsequently, during Detailed Strategic Planning, an objective was established to not only protect 12 of these sites (a thirteenth site is on private land and outside the jurisdiction of the Haida Gwaii Management Council), but also to protect newly discovered nest sites.

Suitable saw-whet owl nesting habitat is structurally complex forest that has a greater relative abundance of nesting snags. Suitable nesting cavities are more frequently observed in mature and old Sitka spruce and western hemlock leading stands. Western redcedar stands have the lowest relative availability of suitably sized cavities. Forests used by owls during the breeding season are typically composed of western hemlock, Sitka spruce, western red cedar and occasionally mountain hemlock, yellow cedar and shore (lodgepole) pine[62].

Nesting habitat is understood to include not only suitable nesting structures (cavities in wildlife trees), but also sufficient thermal and security habitat and nearby forage habitat. Patches of mature and old forest are thought to provide greater nesting opportunities than single wildlife trees, a greater potential feeding habitat compared to young forest (structural stage 4-5) and increased mobility compared to dense young forest.

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[58] Carmen Holschuh. 2004. Review and Report on the Current State of Knowledge about the Haida Gwaii Saw-whet Owl Aegolius acadicus brooksi. Prepared for Ministry of Water, Land and Air Protection, Queen Charlotte City, BC.

[59] Gill, M. and Cannings, R.J. 1997. Habitat selection of Northern Saw-whet Owls (*Aegolius acadicus brooksi*) on the Queen Charlotte Islands, British Columbia. Pp. 197-294 i*n* Duncan, J.R., D.H. Johnson and T.H. Nicholls. Biology and the Conservation of Owls of the Northern Hemisphere. USFS General Technical Report NC-190.

[60] Holt, R. 2005. Environmental Conditions Report for the Haida Gwaii/Queen Charlotte Islands Land Use Plan.
[61] Holschuh, C.I. 2004b. Monitoring habitat quality and condition of Queen Charlotte sawwhet owls (*Aegolius acadicus brooksi*) using vocal individuality. M.Sc. dissertation, University of Northern British Columbia, Prince George, British Columbia. 77 pp.
[62] Ibid.

Intent

The intent of the objective is two-fold: to protect core nesting and foraging habitat of known Saw-whet Owl nest sites, and to provide protection for newly discovered nest sites.. All of these objectives were established to help maintain a viable owl population on Haida Gwaii.

Implementation

The intent of a reserve zone centred on newly located nests is to maximize nesting and foraging habitat in a minimum 10 hectare reserve. A core nest area of 10-12 ha in size represents approximately 10% of a Saw-whet Owl territory[63].

The provision for landscape level maintenance and recruitment of Northern Saw-whet Owl core nesting areas within stand level retention is in response to contiguous areas of relatively young forest found throughout the heart of the Skidegate plateau. A Northern Saw-whet Owl core nesting area is defined as a patch of mature forest or old forest below 300 meters in elevation with a minimum area of 10 hectares that contains suitable nesting habitat for the Northern Saw-whet Owl. The maximum inter-patch spacing distance of 1,400 meters is intended to maintain interactions between birds (*i.e.* allow for territorial interactions between males, and for female mate selection). Allowing for optimum spacing between territorial males increases the chances of maintaining or restoring the natural behavioural dynamics of the population, and reduces the effects of fragmentation.

The inter-patch spacing distance of 1,400 meters is based upon mean spacing of detections in Gwaii Haanas[64], however the Northern Saw-whet Owl Recovery Team preliminary advice in advance of a full Recovery Strategy was to encourage the maintenance of old-growth for nest core areas at a spacing of approximately 700 meters. A timber supply model sensitivity analysis did look at 700 meter spacing and found it too constraining to meet other socio-economic objectives in the SLUA. It is anticipated that a portion of the Northern Saw-whet Owl core nesting areas may be met through the complimentary landscape level protection provisions of other EBM values.

The requirement to report newly detected Saw-whet Owl nests is to build a well maintained and current list of known owl occupied territories which will guide development in forest harvesting and species management.

Opportunities for risk-managed approaches

There are no opportunities for flexibility provisions for saw-whet owl objectives under section 22 of the HG LUOO.

[63] Northern Saw-whet Owl Recovery Team letter of advice to the DSP JTT on draft habitat objectives. June, 2009.

[64] Ibid.

8.0 PART 6 - FOREST RESERVES

General Description of HG LUOO Part 6

The intent of Part 6 of the HG LUOO is to establish landscape level reserves in order to help meet conservation targets outlined in Part 4 and Part 5 of the HG LUOO.

8.1 Definitions for Forest Reserves

"intergovernmental process" means a collaborative process at the technical and operational level pursuant to the Kunst'aa guu – Kunst'aayah Reconciliation Protocol dated December 11, 2009, or means another collaborative process agreed upon by the Haida Nation and the Province of British Columbia;

"digital spatial data" means information in the form of a Geographic Information System feature class format, shapefile format, or coverage

8.2 SPECIFIC GUIDANCE FOR FOREST RESERVES OBJECTIVE

SECTION 23: AREAS TO MEET LANDSCAPE LEVEL OBJECTIVES

Objectives

(1) Forest reserves shown on the map attached as Schedule 8 are reserved from harvest to assist in meeting objectives for ecological representation and objectives for Marbled Murrelet nesting habitat.

(2) Despite subsection (1), the area of an individual forest reserve may be reduced by up to 5%, provided that:

(a) specified results or strategies address all targets listed in Schedules 9 and 10 for the applicable landscape unit;

(b) the remaining reserve is no less than 5 hectares in area; and

(c) the reduction is necessary to:

- *i. accommodate the operational requirements for road and bridge construction, where no practicable alternative exists;*
- *ii. accommodate road maintenance and deactivation, the removal of danger trees, and brushing and clearing within the right-of-way, for safety purposes, on any existing road under active tenure; or,*
- *iii. mitigate the impact of windthrow.*

(3) Despite subsection (1), any portion of a forest reserve may be moved to another location within the same landscape unit if:

*(a) an **intergovernmental process** is completed;*

(b) specified results or strategies address all targets listed in Schedules 9 and 10 for the applicable landscape unit;

(c) the portion is no larger than 20 hectares;

(d) areas retained are greater than 200 meters in width;

(e) the relocation does not result in any forest reserve that is less than 5 hectares in area; and

(f) the relocation follows the recommendations of an assessment completed by a qualified professional.

*(4) Forest reserves and variances to forest reserves made in accordance with subsections (1) to (3) must be documented and submitted as **digital spatial data** at the end of each calendar year to the Council of the Haida Nation and the Province of British Columbia.*

Background

Forest reserves were developed to spatially reserve the area of Marbled Murrelet nesting habitat required in objective 19 (and Schedule 9) and most of the area of common and rare site series required in objective 15 (and Schedule 10) of the HG LUOO. Forest reserves were proportionally distributed across landscape units reflecting the relative distribution of site series and Marbled Murrelet habitat targets in each landscape unit.

Intent

Schedule 8 Forest Reserves contribute to the minimum reserve areas for Marbled Murrelet nesting habitat required in section 19(1) and Schedule 9 and the minimum reserve areas required for ecological representation of site series in section 16(1) and Schedule 10. The intent is that licensees do not have to actively seek out and reserve area for Marbled Murrelet nesting habitat and common and rare ecosystem site series at the block planning level; - rather, required target areas were proactively captured in forest reserves.

Forest reserves were designed using the principles of a co-location, a reserve optimization process. This exercise was completed during detailed strategic planning in 2009/10 to develop an objective and unbiased approach to locating forest reserves. The main principle behind co-location is that it is desirable to achieve a high concentration of conservation values within the smallest footprint to minimize constraints on the timber harvesting land base. As such, protected and reserved areas and non-THLB areas contribute a high proportion of the conservation target areas for Marbled Murrelet and rare ecosystems.

A second principle was to focus on Marbled Murrelet air-photo interpreted nesting habitat mapping to guide the boundaries of the forest reserves, as these are the highest resolution inventories for this purpose. A portion of the site series target areas is captured in the MAMU habitat polygons. Remaining area needed to satisfy most site series targets was located separately using ecosystem mapping. .

Third, to minimize the collective reserve area needed to meet targets, Reserve locations were optimized based on auxiliary factors[65] that were applied through a spatial algorithm. Protected areas such as heritage sites/conservancies, Gwaii Haanas, provincial parks and ecological reserves, and reserves established through the HG LUOO (such as Cedar Stewardship Areas or nesting reserves) were used first to calculate their contributions to the Marbled Murrelet nesting targets and the common and rare ecosystem targets. Where deficits were identified, the iterative co-location process was used to identify candidate forest reserves on the unprotected and unreserved land base.

Outside of protected areas, variables such as Timber Harvesting Land Base (THLB), visual quality objectives (VQO) and connectivity to other fixed reserves were considered. As an example, if two areas contributed equally to Marbled Murrelet habitat and rare ecosystem targets, but one had older forest, lower THLB and/or higher VQO retention targets, then co-location identified that area as the higher potential candidate for inclusion in the forest reserve network.

As these are landscape level reserves, the intent was to identify sizable non-fragmented areas with significant interior forest conditions while independently being able to withstand disturbance and continue to maintain biological integrity over the long-term. For this reason the minimum reserve size is 5 hectares, with a minimum width of 200 meters.

Implementation

The degree to which conservation targets is met, either for Marbled Murrelet habitat or rare or common ecosystems, varies between landscape units based upon the distribution and extent of protected areas and reserves for other EBM objectives.. Conservation targets specified for Marbled Murrelet nesting habitat have generally been met in each landscape unit. See table 2 in the Marbled Murrelet nesting habitat section of this document for an estimate by landscape unit of the amount of Murrelet habitat afforded protection.

Some conservation targets for rare or common ecosystems in some landscape units have either a *surplus* or a *deficit* depending upon the incidental occurrence of protected areas or reserves for other EBM objectives. Old forest representation in site series, by landscape unit, is tracked by licencees to ensure the old forest targets are met.

Default operational flexibility to reduce the size of a forest reserve is limited to a 5% of the area of a forest reserve. The reduction must be necessary for specific operational requirements like road and bridge construction, maintenance and safety. The remaining reserve must be no less than 5 hectares in size. This flexibility is provided as the intent is to not unreasonably or unintentionally limit access to the timber harvesting land base. If a reserve area is reduced it is also necessary to ensure that the reduction does not reduce the area of reserved Marbled Murrelet habitat or rare/common ecosystems to the extent that targets specified in Schedule 9 and 10 are not met. If a deficit occurs then a relocation or replacement of a forest reserve may be necessary, with a new reserve area that is equivalent in habitat or ecosystem type and reserve area to continue meeting the target area (see below).

Opportunities for risk-managed approaches

Risk-managed flexibility provisions in the objective allow a portion of a forest reserve to be moved to another location in the same landscape unit. The maximum allowable size of the portion of a forest

[65] Auxiliary optimization factors included THLB contributions, Northern Goshawk nesting and foraging suitability, terrain stability, registered archaeological sites or known CMT or Monumental cedar sites, Visual Quality Objectives, Karst potential inventories and forest age.

reserve to be relocated is limited to 20 hectares to avoid a significant re-design of the reserve network. The remaining reserve must be no less than 5 hectares in size. Relocation of reserve portions may be driven by operational requirements at a development area/stand level scale (rather than a watershed or landscape unit scale) and may also occur when new and better information is available to refine boundaries.

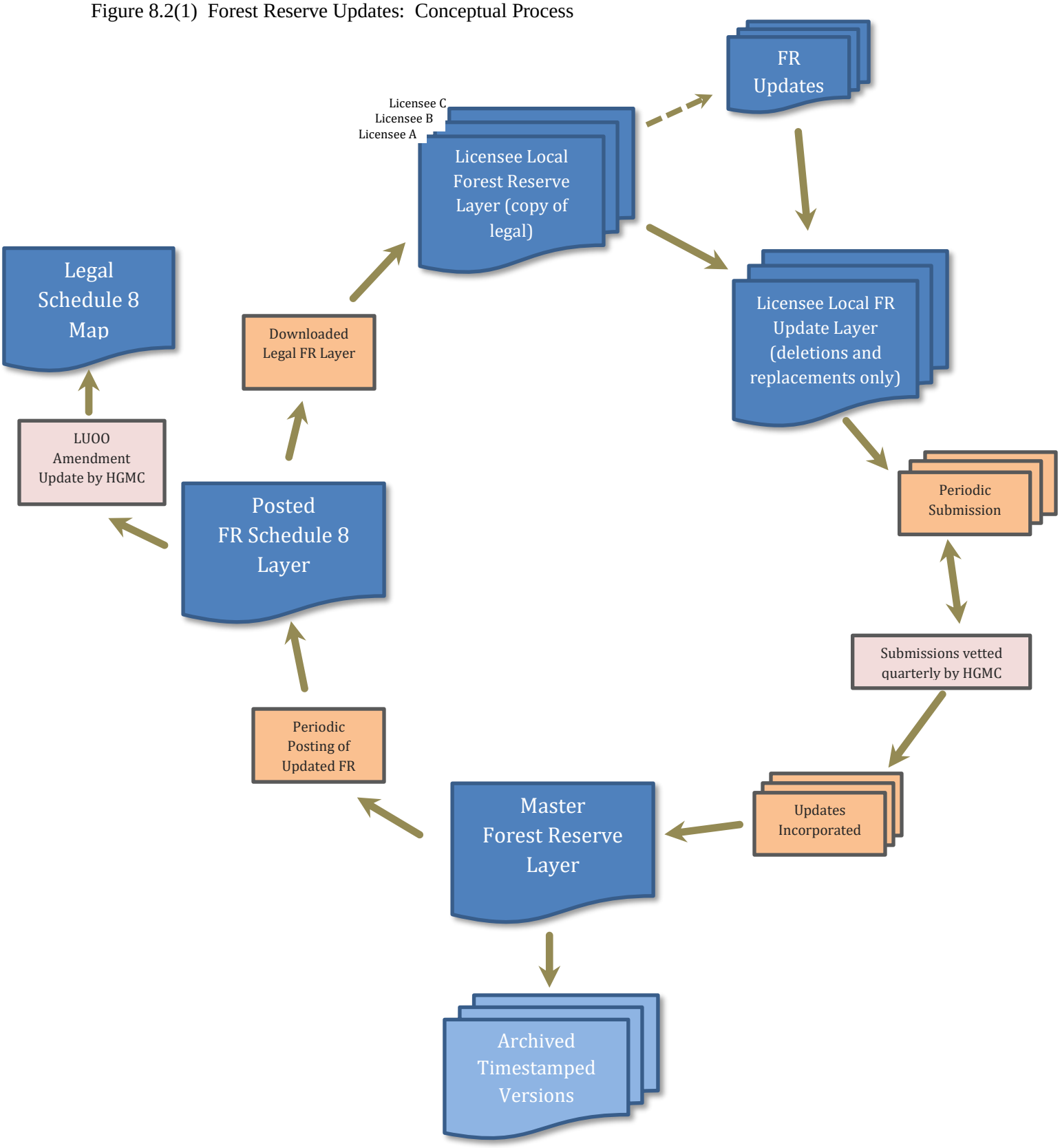
Schedule 11 provides a guide for locating Marbled Murrelet habitat in the event that a portion of a forest reserve is proposed to be relocated. Marbled Murrelet habitat can also be located in the field, based upon recommendations of qualified biologists.

Modifications and relocations of forest reserves are subject to an intergovernmental process.

It is intended that modifications to forest reserves for rare and common ecosystems be field-identified rather than relying upon available ecosystem mapping. Replacement areas should represent the same site series, productivity and seral class. In addition to like for like replacement for specific ecosystem types or Marbled Murrelet habitat, other co-located values may be considered in an evaluation completed during an Intergovernmental Process. These may be cultural features, wildlife features, or other unique features managed under this or other legislative frameworks.

Modification of forest reserves requires detailed mapping, tracking and documentation by the licensee proponent. A master forest reserve spatial layer is maintained to ensure that all parties have access to the current forest reserve data. When a modification of a forest reserve is proposed, it is the licensee's responsibility to determine the area of murrelet habitat and rare and common ecosystems reduced by the proposal and find and map equivalent replacement areas in the same landscape unit and demonstrating that all requirements of the relocation have been met. The licensee may then submit the modification proposal package to the Haida Gwaii Management Council (HGMC) and the Solutions Table (the intergovernmental process). Figure 8.2.1 illustrates a conceptual flow of forest reserve updates from licensees to the HGMC, and back to licensees. Note: Even though default forest reserve reductions less than 5% of the area do not require immediate submission to the HGMC, those reductions should be mapped and tracked and submitted to the HGMC periodically for maintenance of the master forest reserve layer.

Figure 8.2(1) Forest Reserve Updates: Conceptual Process



Principles of Forest Reserve update tracking:

- Master layer resides in one location
- Consistent data structure and table structure
    - Predefined and static
- Immediate submission of updates by licensees (deletions and replacements only)
- Immediate or frequent periodic update and posting of Schedule layer
    - Schedule map only updated during LUOO amendments
- Process can be applied to other LUOO layers
- Data structure of licensee working copies must the master layer structure
    - Licensees can add new fields but these may be dropped when updates are made to master layer