

# Sunshine Coast Landscape Unit Planning

## Skwawka Landscape Unit Plan

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# Skwawka Landscape Unit Plan

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# Legal Objectives for the Skwawka Landscape Unit

Pursuant to section 4 of the Forest Practices Code of B.C. Act, the following are landscape unit objectives for the Skwawka Landscape Unit:

## Objective 1

Maintain or recruit old growth ecosystem values, in old growth management areas, that are established as shown on the attached map, dated February 5, 2002. No timber harvesting, including salvage or single tree harvesting, is to occur within old growth management areas. Road construction is not to occur within old growth management areas unless no other practicable options exist, in which case replacement old growth management areas may be required.

## Objective 2

Maintain structural diversity within managed stands by retaining wildlife tree patches within the boundaries of each cut-block to meet targets for each BEC subzone in the landscape unit as indicated in the table below:

It is acceptable on a single cutblock to be +/- 2% of WTR limits, for biological reasons, provided that the average level of retention is achieved on all blocks proposed within the applicable subzone of the current forest development plan.

### **Wildlife Tree Retention by Biogeoclimatic Ecosystem Classification Subzone**

<b>BEC Subzone</b>	<b>Total WTR %</b>
<b>CWHdm</b>	<b>15</b>
<b>CWHvm1</b>	<b>11</b>
<b>CWHvm2</b>	<b>11</b>
<b>MHmm</b>	<b>6</b>

**WTR** = Wildlife Tree Retention

**BEC** = Biogeoclimatic Ecosystem Classification

**CWHdm:** Coastal Western Hemlock biogeoclimatic zone, dry maritime subzone.

**CWHvm1** Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone, submontane variant.

**CWHvm2:** Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone, montane variant.

**MHmm:** Mountain Hemlock biogeoclimatic zone, moist maritime subzone.

# Sunshine Coast Forest District Landscape Unit Planning

## Skwawka Landscape Unit Plan

### 1.0 Introduction

The Skwawka Landscape Unit (LU) lies within the Coast and Mountains Ecoprovince, specifically the Southern Pacific Ranges Ecosection. Lower elevation, productive and easily-accessed sites have almost entirely been disturbed by past harvesting and fire. The low levels of old seral forest representation within the Skwawka's low elevation biogeoclimatic (BEC) zones reflects this disturbance history. The Skwawka LU contains several forms of ownership and tenure including: Indian reserve, Provincial forest, forest licence, timber licence and timber salvage areas.

The Old Growth Management Areas (OGMA) shown on the attached map are to be excluded from timber harvesting activities, including salvage. OGMAs include both existing old growth stands and recruitment stands which will be retained to develop old growth characteristics over time. Road construction through OGMAs is not to occur unless no other practicable options exist, in which case designation of replacement OGMAs may be required.

The establishment of an OGMA will not have an impact on the status of existing mineral and gas permits or tenures. Exploration and development activities are permitted in OGMAs. The preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA; however, if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be moved.

Wildfires and other natural disturbance may occur within OGMAs with varying effects on their biodiversity attributes. Each instance of natural disturbance will have to be considered separately. In many cases old seral forest may be valuable for biodiversity following a fire with its high density of large snags. Some specific old seral habitat features may be lost due to natural disturbances, and OGMAs may need to be replaced.

OGMA selection follows a strict procedure. OGMA is to be selected from NC stands first, then if the OGMA target is not met, constrained THLB and then unconstrained THLB is to be used. Candidate stands were first selected from a map that identified age class 9 stands that were not contributing to the AAC, as per the Timber Supply Review. The mapping indicated more age class 9 NC stands than OGMA requirements in some BEC units, so a selection process was undertaken. All stands were checked using aerial photographs, some also field checked, to confirm their old growth status and the presence of appropriate and best habitat attributes. In general, denser, taller stands and larger, more productive polygons within known wildlife habitat areas in the NC were selected whenever possible, to ensure that OGMAs represent the type of forest within the THLB. In the CWHdm and the CWHvm1, after all old growth identified as NC had been included, other stands were selected for OGMA and OGMA recruitment. Other stands were chosen for a number of attributes; stands containing a significant component of veterans or other old growth structures, oldest available stands, mature stands in ecosystem complexes or important wildlife habitat areas, stands with uncommon species composition (Such as Ss-leading). Such stands were first selected from NC lands. CWHvm2 and MHmm1 OGMA selection did not require the same degree of searching for appropriate stands because of the large amount of age class 9 within the NC. The same general selection process was followed, and the OGMA requirements were fully met within NC age class 9.

OGMAs are not all permanent, although most will be. As current young stands in NC forest progress in age to become suitable as old growth representation, they may be designated as OGMA to replace current OGMA within the THLB. As wildlife tree patches and other inoperable areas that have appropriate characteristics are identified in the future, they may be substituted for current OGMAs. OGMA boundaries are often based only on forest cover maps and air photos, and their boundaries may be changed as a result of ground-based typing and boundary delineation.

## 2.0 Landscape Unit Objectives

### 2.1 Old Seral Representation and Wildlife Tree Patch Retention Levels

The Skwawka LU received a Biodiversity Emphasis Option (BEO) of “Higher” through the biodiversity value ranking and the BEO assignment processes (see Appendices I, II & IV). Table 1, below, lists the percentages of the LU’s productive forest area per natural disturbance type (NDT) designated for old seral representation as OGMA. The percentages of cutblock area required as Wildlife Tree Patches (WTP) for each of the LU’s biogeoclimatic subzones are also listed. The target figures listed in Table 1 are from Appendices 2 and 3 of the Landscape Unit Planning Guide (LUPG). LU planning objectives apply only to Provincial forest lands. Park and Crown forest lands outside of Provincial forest contribute to old seral representation but LU Objectives do not apply to these areas. All of the Skwawka old seral representation, however, is within Provincial forest land.

**TABLE 1: Required Levels for Old Seral Representation**

BEC Unit and NDT <sup>1</sup>	LUPG Old Seral Representation Recommendation <sup>2</sup>		OGMA Objective Provincial Forest <sup>3</sup>		WTP Objective <sup>4</sup>
	%	ha	%	ha	% of cutblock area, ha
CWHdm, 2	13	76.2	13	76.2	15
CWHvm1, 1	19	875.8	19	875.8	11
CWHvm2, 1	19	622.8	19	622.8	11
MHmm1, 1	28	524.8	28	524.8	6

1) NDT = Natural Disturbance Type. Refer to LUPG, Appendix 2.

2) % of total productive forest area within BEC unit, as per LUPG.

3) % of total productive forest area within BEC unit, as per LUPG.

4) WTP Objectives as per the LUPG, Appendix 3. Table A3.1 applies upon the designation of the Landscape Unit and its objectives.

**CWHdm:** Coastal Western Hemlock biogeoclimatic zone, dry maritime subzone.

**CWHvm1:** Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone, submontane variant.

**CWHvm2:** Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone, montane variant.

**MHmm1:** Mountain Hemlock biogeoclimatic zone, moist maritime subzone, variant 1; windward.

OGMA Objectives listed in Table 1 have been met through the delineation of OGMAs throughout the Skwawka LU. Refer to the Skwawka Landscape Unit map for their location, to Appendix V for OGMA statistics and attributes, and to Table 2, below, for a breakdown of OGMA NC, constrained-THLB and unconstrained-THLB components.



**TABLE 2**

Non - Contributing, Constrained THLB and Unconstrained THLB Components of Skwawka LU OGMA:

BEC Unit	Total Old Seral Representation <sup>1</sup>	Non - Contributing <sup>2</sup> Area in OGMA		Constrained THLB <sup>3</sup> in OGMA		Unconstrained THLB <sup>4</sup> in OGMA	
	ha	ha	%	ha	%	ha	%
<b>CWHdm</b>	76.2	34.1	44.8%	26.6	34.9%	15.5	20.3%
<b>CWHvm1</b>	875.8	676.5	77.2%	129.4	14.8%	69.9	8.0%
<b>CWHvm2</b>	622.8	613.7	98.5%	9.2	1.5%	0.0	0.0%
<b>MHmm1</b>	524.8	524.8	100.0%	0.0	0.0%	0.0	0.0%
<b>TOTALS</b>	<b>2099.6</b>	<b>1855.1</b>	<b>88.4%</b>	<b>165.1</b>	<b>7.8</b>	<b>79.5</b>	<b>3.8</b>

1 Total Old Seral Representation from Table 1, above.

2 Non - Contributing Area in OGMA = forest land that does not contribute to the AAC, as per the SCFD TSR-2.

3 Constrained THLB in OGMA = Timber Harvesting Land Base that cannot fully contribute to the AAC due to site sensitivity or the need to manage for other resource values as per the SCFD TSR-2.

4 Unconstrained THLB in OGMA - Timber Harvesting Land Base that fully contributes to the AAC as per the SCFD TSR-2.

## 3.0 Biodiversity Management Goals and Strategies

### 3.1 General Management Goals

Biodiversity management goals and strategies describe, in specific terms, the outcomes that the LU Objectives are to achieve. They also describe the rationale for the selection of OGMA, when options exist, and some of the ecological features that OGMA are to include. They also describe some of the compromises made to balance the management of all values present in the LU. They describe direction that may be followed to further benefit biodiversity management. While Objectives are legally binding, management goals and strategies are not.

The biodiversity ranking process identified the significant biodiversity values within each LU relative to others within the Sunshine Coast Forest District (SCFD) that are to be managed through LU planning. The Skwawka LU ranked high in this process. Refer to Appendix IV for detailed description of Skwawka LU values considered in the LU planning process.

#### 3.2.1 CWHdm Biodiversity Management Goals

1. Increase old seral representation within the CWHdm (currently approximately 5.1%, or 30.0 ha ) through designation of OGMA within Provincial forest. The Provincial forest OGMA objective is 13%, or 76.2 ha. (Refer to Map).
2. Include areas that are constrained due to physical conditions or due to the presence of multiple resource values (specific wildlife habitat needs) within OGMA where compatible with biodiversity management.
3. Retain elements of stand level structural diversity throughout the CWHdm.
4. Minimize the timber supply impacts of establishing OGMA on second growth harvesting opportunities in easily-accessed, highly productive sites where this is compatible with biodiversity management.

### **3.2.2 CWHdm Biodiversity Management Strategies**

- A. Include all existing age class 9 stands and oldest stands available with suitable biodiversity attributes within OGMA. (Goals 1,2, 3)
- B. Include unique features and constrained areas within OGMA where compatible with biodiversity management. (Goals 2, 3)
- C. Increase WTP cap of THLB contribution to ensure that all harvested areas within the highly-operable CWHdm include WTPs. (Goal 3).
- D. Retain veterans and dominants as veteran recruits within harvesting areas, (Fd, CW and Ss) as a main goal of stand level biodiversity management. (Goal 3)

### **3.3.1 CWHvm1 Biodiversity Management Goals**

- 1. Maintain old seral representation within the CWHvm1 (currently approximately 28.8%) through designation of OGMA in Provincial forest. The Provincial forest OGMA objective is 19.0%, or 875.8 ha. (Refer to Map).
- 2. Include areas that are constrained due to physical conditions or due to the presence of multiple resource values (specific wildlife habitat needs) within OGMA where compatible with biodiversity management.
- 3. Retain natural ecosystem patterns and mosaics characteristic of the CWHvm1: Maximize interior forest condition within OGMA. Maintain a wide range of ecosystem types and species composition (habitat types) within the CWHvm1.
- 4. Reduce impacts on timber supply while maintaining OGMA habitat, and biodiversity values
- 5. Retain some elements of stand level structural diversity throughout the CWHvm1.

### **3.3.2 CWHvm1 Biodiversity Management Strategies**

- A. Include existing age class 9 stands and oldest stands available with suitable biodiversity attributes within OGMA. (Goals 1, 3, 4, 5)
- B. Delineate large OGMA areas where possible (Goals 2, 3)
- C. Increase WTP cap of THLB contribution to ensure that all harvested areas within the highly-operable CWHvm1 include WTPs. (Goal 5).
- D. Retain wildlife trees and dominants as veteran recruits within harvesting areas, (of all species present) as a main goal of stand level biodiversity management. (Goal 5)

### **3.4.1 CWHvm2 Biodiversity Management Goals**

1. Maintain old seral representation within the CWHvm2 at the objective level of 19%, or 622.8 ha (currently approximately 67.9%, or 2224.4 ha) through designation of OGMA within Provincial forest. (Refer to Map).
2. Include areas that are constrained due to the presence of multiple resource values (specific wildlife habitat needs) within OGMA where compatible with biodiversity management.
3. Enhance stand level structural diversity throughout the CWHvm2.
4. Reduce impacts on timber supply while maintaining OGMA habitat, and biodiversity values

### **3.4.2 CWHvm2 Biodiversity Management Strategies**

- A. Include existing NC age class 9 stands with suitable biodiversity attributes within OGMA. (Goals 1,2, 4)
- B. Delineate large OGMA areas where possible (Goal 2)
- C. Retain wildlife trees and dominants as veteran recruits within harvesting areas, (of all species present) as a main goal of stand level biodiversity management. (Goal 3)

### **3.5.1 MHmm1 Biodiversity Management Goals**

1. Maintain old seral representation within the MHmm1 to 28%, or 524.8 ha (currently approximately 81.2%, or 1521.7 ha) through delineation of OGMA within Provincial forest. (Refer to Map).
2. Include areas that are constrained due to the presence of multiple resource values (specific wildlife habitat needs) within OGMA where compatible with biodiversity management.
3. Enhance stand level structural diversity throughout the MHmm1.
4. Reduce impacts on timber supply while maintaining OGMA habitat, and biodiversity values

### **3.5.2 MHmm1 Biodiversity Management Strategies**

- A. Include existing NC age class 9 stands with suitable biodiversity attributes within OGMA. (Goals 1,2, 4)
- B. Delineate large OGMA areas where possible (Goal 2)
- C. Retain wildlife trees and dominants as veteran recruits within harvesting areas, (of all species present) as a main goal of stand level biodiversity management. (Goal 3)

## **4.0 Mitigation of Timber Supply Impacts**

The Skwawka LU plan has been developed to maximize the effectiveness of the FPC's biodiversity management provisions while minimizing impacts on the Sunshine Coast TSA timber supplies. Impacts have been unavoidable because old growth levels are low in the CWHdm and CWHvm1. Specific measures adopted to minimize impacts of Skwawka LU planning to the timber supply include the following:

ESAs, partially stocked NP polygons, younger stands and areas of difficult access were included within OGMA where possible and where compatible with biodiversity objectives, goals and strategies.



During the LU planning process, careful consideration was made to ensure that timber access was not cut off by OGMA delineation. Access corridors were left out of OGMAs and OGMA boundaries were delineated to simplify adjacent management.

Many NC areas are not included as OGMA at this time, mostly due to their young age class and absence of old growth characteristics. As stands in these areas mature they may become suitable as OGMA replacing those within the THLB. Riparian management initiatives, such as creating old growth features, may speed up the progress of some stands towards becoming OGMA. Periodic assessment and revision of OGMAs will be required.

Traversed block boundary information for Category A (approved) planned cutblocks was forwarded to the planners to ensure all remaining old growth on the perimeter of the blocks could be counted towards adjacent OGMAs.

## **Appendix I, Biodiversity Ranking Process: Ranking Criteria Rationale and Criteria**

### **BEO Ranking Criteria Rationale**

98/05/13

#### **Application of the Landscape Unit Ranking Criteria**

The three categories of Biodiversity Emphasis Option (BEO) ranking criteria that have been developed for the Sunshine Coast Forest District are to be scored and considered in a separate manner. The first set of criteria, the ecological values, are to be scored first, determining an initial BEO ranking for the District's landscape units (LU). In ranking the LUs, the LU with the highest ecological values score is ranked number one, the next highest, number two. The timber values are scored next, with their resultant scores being used as tie-breakers for LUs that have generated similar scores through the ecological values criteria. Timber values scores rank in an opposite manner: out of two or more LUs that have similar ecological value scores, the LU with the lowest timber value score will be ranked highest. Thirdly, the other values criteria are scored, and they are used as tie-breakers for LUs that have scored similarly in both ecological and timber values. Higher other values scores rank the LU higher.

The criteria are being applied in a separate, priority manner placing ecological values as the first priority because the entire BEO ranking process is designed to determine which LUs have biodiversity values that most require the additional biodiversity provisions of Higher and Intermediate BEOs. This is consistent with the FPC "Higher Level Plans: Policy and Procedures" October 31, 1996 (HLPPP) Section 5.10.2 Assignment of Biodiversity Emphasis Options - Chief Forester Direction - Policy, subsection 5, page LU15.

The FPC HLPPP offers two separate directions regarding protected areas and their affects on a LU's BEO ranking and assignment. In Section 5.10.2, page LU14 it states that first, higher BEOs should be assigned to LUs where ecosystems are poorly represented within existing protected areas, and then, further on it states that higher BEOs should be assigned for LUs adjacent to protected areas. The Sunshine Coast Landscape Unit Planning Team has followed the first direction because the Sunshine Coast Forest District received somewhat less protected area forest ecosystem representation than some other Districts making ecosystem representation a higher priority, and the location of some of the protected areas do not offer easily achievable opportunities for connectivity.

#### **1) Ecological Values**

Ecological Values criteria assess which of the District's Landscape Units require higher levels of biodiversity provisions.

##### **a) LU NDT 2 OG Representation Opportunity (Current state)**

Landscape Units should rank higher if they have greater amounts of old growth forest because they have more potential to meet the seral stage requirements of the Landscape Unit Planning Guide, and have a greater number of biodiversity management options available. This criteria assesses the present amount of old growth, not recruitable areas. Old growth representation is assessed by the remaining percentages of old growth within the NDT2 areas of the LUs. NDT1 representation does not need to be considered because of logging history; if NDT1 is depleted, NDT2 will be more so. NDT1 is considered where NDT2 makes up less than 10% of the LU's THLB. Percentages used to assign scores for this criteria are based on the percentages required for old seral stage representation for each BEO in NDT2.

##### **b) Recruitment Potential to Manage for Old Growth**

LUs that are underrepresented in old growth may have age class 8 stands that may be recruited to provide old growth management areas of suitable habitat to meet the old seral stage biodiversity management requirements. If so, they are better suited to meeting the biodiversity requirements of a higher-level BEO and should be given a higher ranking. The percentages used to assign scores for this criteria, as in A above, are based on the percentages required for old seral stage representation for each BEO in NDT2.

### **c) Ecosystem Complexity**

the greater the number of BEC units within a Landscape Unit, the greater the potential is that the LU provides habitat for a wider range of species compared to a LU with less BEC units. It is also more likely that a LU with numerous BEC units will be habitat for species that require a wider range of habitat. LUs with potential to be habitat for a larger number of species earn a higher ranking for biodiversity values.

### **d) Specific Wildlife Habitat Requirements**

LUs that contain species that require specific habitat, ecosystems or ecosystem complexes are likely to require higher levels of habitat provision. LUs with species present that have been identified as being regionally significant, threatened or endangered may need to have habitat provided for them out of the operable landbase at higher than minimal levels, so these LUs will receive higher biodiversity rankings. Higher or Intermediate BEOs provide a greater range of habitat management options.

### **e) Sensitivity to Forest Development**

Conversion of natural forest stands to even-aged management regimes reduces the range of habitats available to support an area's natural diversity of species. This reduction in habitat is greater in NDT 1 which is naturally uneven-aged, than in NDT 2 which is naturally even-aged. The greater the proportion of NDT 1 within a LU, the more the LU requires a higher BEO to provide habitat management options.

### **f) Connectivity**

In addition to the presence of Old Growth, its spatial distribution is very important when assessing the biodiversity management options that remain within a LU. Higher BEO ranking scores will be given under this criteria to those LUs that have old seral stage forest in large contiguous stands, or in areas where harvesting has not disrupted natural connectivity due to natural patchy non-contiguous patterns.

### **g) Complex Ecosystems**

LUs that contain large floodplains, estuaries, wetlands and herbaceous slidetrack/forest complexes are inherently habitat to a wider range of species than those LUs that do not. LUs that contain significant habitat features, in a District-wide context, will receive higher BEO ranking scores from this criteria to increase their eligibility to receive a BEO that will provide opportunities for maintenance of appropriate representation and linkages.

### **h) Inoperable Land Habitat and Biodiversity Representation**

This criteria assesses the need for increasing the LU's priority and emphasis for biodiversity management by determining how much of a LU's biodiversity objectives can be met by default through habitat located in protected and constrained areas.

## **2) Timber Values Criteria**

Timber values criteria assess the relative timber values of the District's Landscape Units and consider short and long term contributions of the LU to the TSA in terms of value and volume. In the event of a tie of ecological criteria scores at the division between BEO assignment, Timber Values Criteria will be assessed to establish the BEO ranking. In order to minimize the impact on the timber supply in the long term, the LU with the lower timber value score will be given the higher BEO ranking.

#### **a) Potential Timber Productivity**

This criteria compares the products of LU average site index multiplied by THLB area. This represents the potential of the LU to produce timber. This criteria is intended to minimize impacts on the long-term timber supply.

#### **b) Timber Maturity**

This criteria gives higher ranking to LUs that have greater amount of mature timber available for harvest. This criteria is intended to minimize the impacts on timber supply in the short term.

#### **c) Timber Value**

This criteria assigns scores based on the relative value of timber harvested from the various LUs. Information associated with timber value appraisal would be considered. This criteria is intended to make LUs where timber values are high more likely to have a lower BEO ranking. Higher scores increase the BEO ranking of the Landscape Unit.

### **3) Other Resource Values**

Resource Values besides ecological and timber values are considered with these criteria. The need for higher or lower BEO ranking is assessed based on the effects of other resource uses on biodiversity, and the impacts of provisions for other resource use on timber supply.

#### **a) Visual Sensitivity**

This criteria assigns higher scores for a LU if it is more visually sensitive to overlap the impacts of constraining VQOs with higher BEO assignments in order to minimize any reductions to the TSA's AAC.

#### **b) Recreation/Tourism Significance and Capability**

This criteria assigns higher scores for a LU if it has higher recreation values, for present and future use, in order to overlap the impacts of recreational and biodiversity provisions to minimize reductions to the TSA's AAC.

#### **c) Mining, Hydro and Urbanization**

Mining, Hydro (damming, pipelines, generation sites, and rights of way) and urbanization have potential to interfere with biodiversity management options and objectives. This criteria will assign lower scores where this potential exists.

#### **d) Cultural Heritage Significance**

This criteria assigns higher scores to LUs with higher cultural heritage significance. Based on consultation with affected First Nations and availability of traditional use and archaeology information.

## Appendix I Continued:

### Sunshine Coast Forest District

#### Landscape Unit Ranking Criteria for Biodiversity Emphasis Option Assignment

Landscape Unit Ranking criteria is based on three separate sets of criteria. **Ecological Values Criteria** are first used to establish an initial ranking. **Timber Values Criteria** are then applied to LUs with similar Ecological Values scores. LUs with similar scores following the Timber Values ranking will be further assessed through the **Other Resource Values Criteria**. This ranking process is consistent with the direction within the FPC Higher Level Plans: Policy and Procedure, Chapter 5, section 5.10.

#### 1) Ecological Values Criteria (higher scores = higher BEO ranking)

##### a) LU NDT 2 OG Representation Opportunity (Current state)

Percentage of the LU's NDT 2 productive forest in old seral stage.  
(NDT1 to be considered if NDT2 <10% of THLB)

>13%	H	8 points
>9-13%	M/H	6 points
>3-9%	M	4 points
>1-3%	L/M	2 points
0-1%	L	0 points

##### b) Recruitment Potential to Manage for Old Growth in NDT2

Options to manage for old growth using age class 8 and 9 combined.

>13%	H	4 points
>9-13%	M/H	3 points
>3-9%	M	2 points
1-3%	L/M	1 point
0-1%	L	0 points

##### c) Biogeoclimatic Complexity

For the number of Biogeoclimatic subzone variants within the LU:

7-8	H	5 points
6	M/H	4 points
5	M	3 points
4	L/M	2 points
3	L	1 point
1-2	VL	0 points

##### d) Specific Wildlife Habitat Requirements

This criteria is based on the presence of species that have been recognized as requiring specific forest habitat, (including regionally significant species, threatened and endangered species (according to Provincial tracking lists).

H	8 points
M/H	6 points
M	4 points
L/M	2 points

L 0 points

**e) Sensitivity to Forestry Development**

Based on the % of the productive forest land in the Landscape Unit within Natural Disturbance Type 1 :

81 - 100	H	4 points
61 - 80	M/H	3 points
41 - 60	M	2 points
21 - 40	L/M	1 point
0 - 20	L	0 points

**f) Connectivity**

Based on the relative abundance of options that remain to manage for natural connectivity and to meet connectivity objectives considering the current state of the LU.

H	4 points
M/H	3 points
M	2 points
L/M	1 point
L	0 points

**g) Ecosystem Complexes**

Based on the presence of significant, large floodplains, wetlands, estuaries, and herbaceous slidetrack/forest complexes.

H	8 points
M/H	6 points
M	4 points
L/M	2 points
L	0 points

**h) Inoperable Land Habitat and Biodiversity Representation**

Based on the amount of old seral stage representation and forest habitat (that is suitable to the biodiversity and wildlife needs of the LU) that is present within the LU, but does not contribute to timber harvesting landbase. (PAS areas, inoperable terrain, riparian reserves and otherwise constrained areas) Representation within all or any of the BEC units to be considered as well as interior forest condition availability.

H	0 points
M/H	1 points
M	2 points
L/M	3 points
L	4 points

**2) Timber Values Criteria** (higher values = lower BEO ranking)

**a) Potential Timber Productivity**

Relative productivity of LUs will be assessed in terms of the LU's average site index. (SI50) multiplied by the LU's THLB.



**b) Timber maturity and Mature Timber Availability**

Based on the percentage of the LU's operable land base stocked with mature timber, and the amount of it available for harvest considering constraints imposed by VQOs, ESAs and Community Watersheds. Mature is greater than 120 years.

Total all of the mature and 50% of the timber in age classes 40 - 120 years:

>50%	H	5 points
41 - 50%	M/H	4 points
31 - 40%	M	3 points
21 - 30%	L/M	2 points
11 - 20%	L	1 point
0 - 10%	VL	0 points

**c) Timber Value**

Based on the estimated appraisal value of the LU's average stand within the LU's operable landbase, relative to all other LUs in the District.

H	5 points
M/H	4 points
M	3 points
L/M	2 points
L	1 point
VL	0 points

**3) Other Resource Values** (higher values = higher BEO ranking)

**a) Visual Sensitivity**

based on the percentage of the operable forest landbase within the LU with a VQO of P, R, PR from the landscape inventories.

>51%	H	5 points
41 - 50%	M/H	4 points
31 - 40%	M	3 points
21 - 30%	L/M	2 points
11 - 20%	L	1 point
0 - 10%	VL	0 points

**b) Recreation/Tourism Significance and Capability**

Based on the LU's potential to provide for recreational use and potential of area to be of interest and attraction to tourists, now and in the future, relative to all other LUs in the District.

H	5 points
M/H	4 points
M	3 points
L/M	2 points
L	1 point
VL	0 points

**c) Mining, Hydro and Urbanization**

This criteria considers the potential for mining, hydroelectric projects, right of ways and urbanization, in its present and future states, to interfere with the ecological integrity or biodiversity values of the LU, relative to all other landscape units. "H" represents greatest effects on the LU's biodiversity.

H	0 points
M/H	1 point
M	2 points
L/M	3 points
L	4 points
VL	5 points

**d) Cultural Heritage Significance**

This criteria assigns higher scores to LUs with higher cultural heritage significance. Based on consultation with affected First Nations and availability of traditional use and archaeology information.

H	5 points
M/H	4 points
M	3 points
L/M	2 points
L	1 point

## Appendix II, BEO Assignment

### Sunshine Coast Forest District

#### Landscape Unit Ranking and Biodiversity Emphasis Option Assignment.

LU Name	LU Number	Biodiversity Score	Rank	THLB Area (ha)	BEO Assigned
Toba	207	42	1	12813	H
Skwawka	213	37	2	3726	H
Homathko	201	36	3	8453	H
Southgate	203	35	4	3446	H
Deserted W/S*	219*	N/A	N/A	2462	H
				<b>30899</b>	<b>9.7%</b>
Brem	206	35	5	4883	I
Jervis (including Deserted River)	219	33	6	17246	I
Bute West	202	32	7	4508	I
Bute East	205	32	8	6504	I
Powell Daniels	211	31	9	2903	I
Brittain	218	27	10	8785	I
Bishop	204	26	11	1488	I
Salmon	224	26	12	19869	I
Homfray	209	24	13	8642	I
Quatam	208	23	14	8752	I
Narrows	223	23	15	10979	I
Howe	226	21	16	10939	I
Cortes	214	18	17	21517	I
Bunster	215	18	18	23057	I
				<b>150072</b>	<b>47.2%</b>
Lois	217	17	19	53544	L
Powell Lake	212	16	20	14229	L
Chapman	225	14	21	15917	L
Texada	219	13	22	13837	L
Sechelt	221	12	23	26082	L
Haslam	216	8	24	13597	L
				<b>137206</b>	<b>43.1%</b>
			Total THL B	<b>318177</b>	<b>100%</b>

\* Deserted River Watershed, part of the Jervis LU, assigned "Higher" to utilize more of the 10% allotment for the SCFD.

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98/09/09

## Appendix III

### Skwawka Landscape Unit Seral Stage Summary

BEC Unit	Seral Stage	Forest Area (ha)	NC Forest		Unconstrained THLB		LUPG Target	
			ha	%	ha	%	%	ha
<b>CWHdm</b>	Early	120.6	12.1	2.1	108.5	19.2		
	Early Mature	324.4	86.1	15.3	238.2	42.2		
	Mature	112.7	21.0	3.7	90.9	16.1		
	Old	6.5	3.0	0.5	3.3	0.6	13	73.3
<b>Totals:</b>		564.1	122.3		440.8			
<b>CWHvm1</b>	Early	2119.9	357.5	7.6	1759.4	37.5		
	Early Mature	754.9	463.1	9.9	288.1	6.1		
	Mature	800.3	431.1	9.2	364.6	7.8		
	Old	1018.7	568	12.1	441.5	9.4	19	891.8
<b>Totals:</b>		4693.8	1819.8		2853.5			
<b>CWHvm2</b>	Early	381.8	98.1	2.9	279.0	8.3		
	Early Mature	96.6	92.6	2.7	3.5	0.1		
	Mature	1124.8	1019.1	30.2	99.0	2.9		
	Old	1776.3	1490.7	44.1	251.8	7.5	19	642.1
<b>Totals:</b>		3379.5	2700.5		633.3			
<b>MHmm1</b>	Early	19.1	3.6	0.2	15.5	0.8		
	Early Mature	94.8	94.6	5.0	0.2	0.0		
	Mature	792.1	790.0	41.8	2.0	0.1		
	Old	986.3	959.5	50.7	22.2	1.2	28	529.8
<b>Totals:</b>		1892.3	1847.7		39.9			
<b>Skwawka Totals:</b>		10529.7	6490.3		3967.5			2137.0

## Appendix IV: Significant Ecological Features in the Skwawka LU

This Appendix includes specific information regarding the Skwawka LU’s biodiversity values that were considered in the biodiversity ranking and BEO assignment processes, and during the evaluation of stands for inclusion as OGMAs. Headings **a)** through **h)** correspond to the LU BEO ranking criteria. (Refer to “BEO Ranking Criteria Rationale 98/09/13”, and “Criteria for Biodiversity Emphasis Option Assignment Process 98/09/09”, Appendices I and II)

### a) LU NDT2 Old Seral Representation

#### BEC Units and Seral Stage Distribution

Table 1, below, lists the Skwawka LU’s BEC units, corresponding natural disturbance types (NDT) and OG representation based on 1999 VFR inventory summary data. Areas harvested since the 1999 inventory and areas approved for development have not been removed from these figures.

**Table 1.**

BEC	NDT	TOTAL OG	
		%	ha
CWHdm	2	5.1	30.0
CWHvm1	1	28.8	1325.6
CWHvm2	1	67.9	2224.4
MHmm1	1	81.2	1521.7

Table 2, below lists the Skwawka LU’s BEC units, NDT, LUPG representation recommendations, LU OGMA representation objectives, and non- Provincial forest LU old seral representation. Based on 1999 VFR inventory summary data and detailed polygon analysis including reductions for recent and proposed harvesting, as per 1995 - 2000 TSA FDP submissions:

**Table 2**

BEC Unit and NDT <sup>1</sup>	LUPG Old Seral Representation Recommendation <sup>2</sup>		OGMA Objective Provincial Forest <sup>3</sup>		Protected Area or Non-Provincial Forest Contribution <sup>4</sup>		WTP Objective <sup>5</sup>
	%	ha	%	ha	%	ha	% of cutblock area, ha
CWHdm, <b>2</b>	13	76.2	13	76.2	0	0.0	15
CWHvm1, <b>1</b>	19	875.8	19	875.8	0	0.0	11
CWHvm2, <b>1</b>	19	622.8	19	622.8	0	0.0	11
MHmm1, <b>1</b>	28	524.8	28	524.8	0	0.0	3

1) NDT = Natural Disturbance Type. Refer to LUPG, Appendix 2.

2) % of total productive forest area within BEC unit, as per LUPG.

3) % of total productive forest area within BEC unit, as per LUPG, minus contributions from old seral representation within protected areas and Crown forest outside of Provincial forest.

4) Protected areas contribute to old seral representation but are not designated as OGMAs.

5) WTP Objectives as per the LUPG, Appendix 3. Table A3.1 applies upon the designation of the Landscape Unit and its objectives.

**CWHdm:** Coastal Western Hemlock biogeoclimatic zone, dry maritime subzone.

**CWHvm1:** Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone, submontane variant.

**CWHvm2:** Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone, montane variant.

**MHmm1:** Mountain Hemlock biogeoclimatic zone, moist maritime subzone, variant 1; windward.

The current old seral (age class 9) representation level is below the target for the Higher BEO level in the CWHdm BEC unit. Old seral representation in the other BEC units (CWHvm1, CWHvm2 and MHmm1) are

above target levels, although as noted above, some recent and approved planned harvesting has not been taken into account.

Some old growth patches less than 2ha, that are remnants left after harvesting, are not considered to contribute to old growth representation at the landscape-level for the following reasons:

Areas  $\leq 2$  Ha from logging origin often have a high degree of fragmentation and edge effect, subsequently, most are no longer representative of original ecosystem. As a result many are no longer capable of being habitat to the full range of species that originally occupied the site. Although they do provide valuable contributions to biodiversity, it is at the stand level, not the landscape level. The intention of OGMA is to fulfil the landscape level habitat requirements for the LU's natural levels of biodiversity through the "coarse filter" approach; encompassing as many species' habitats as possible. Small remnant patches, of diminished habitat capability, cannot fill this role and their biodiversity contribution must be limited to that of stand-level.

Natural stands  $\leq 2$  Ha may be completely typical of natural stand structure, and may continue to function in its natural state. Natural edges are less intrusive than artificial edges (harvesting). Small natural patches may provide important habitat attributes at edges of natural openings such as swamps, rock outcrops, etc. Their OG contribution, however, could be diminished or eliminated in some cases if larger adjacent OG forest is removed. For example, a number of small patches of old timber within a slide track complex may provide temporary cover for a number of species that forage in the slide track but require larger adjacent areas of OG in close proximity for thermal and visual cover, escape and denning habitat and snow interception. They may no longer contribute as natural habitat for a specific species if they become significantly isolated from the other required habitat type.

It is difficult to map and track the contributions of patches smaller than 2ha. Some small patches may be reduced in size by windfall following harvesting and it is unlikely that this reduction could be accounted for.

Note: This approach is consistent with principles outlined in the Landscape Unit Planning Guide.

#### **b) Recruitment Potential to Manage for Old Growth.**

OGMA and old seral representation stands are predominantly age class 9, some age class 8 and other stands containing a significant veteran component. Some other younger stand have been selected as OGMA "recruitment area" for specific stand attributes. Together these stands will be managed to meet the old growth management targets for the LU.

#### **c) Ecosystem Complexity.**

The Skwawka LU contains 4 BEC variants, indicating a moderate level of ecosystem complexity. This ecosystem complexity was accounted for through OGMA delineation at the level of Biogeoclimatic variant rather than by subzone.

#### **d) Specific Wildlife Habitat Requirements.**

The Skwawka LU is habitat to the following species of wildlife that have been recognized as requiring specific forest habitat, (including regionally significant species, threatened and endangered species, according to Provincial tracking lists): Marbled Murrelet, Mountain Goat, Grizzly Bear



The Skwawka LU hosts a significant population of Mountain Goats which are distributed throughout most subdrainages. MOELP-identified Mountain Goat Winter Range locations were considered in OGMA selection, as these areas are constrained.

Grizzly bears are present in low numbers in the LU and the MOELP has designated the Skwawka River drainage as a grizzly bear recovery area. A low elevation pass exists at the head of the Skwawka River through to the Toba River watershed, which MOELP biologists consider to be a “core” population for grizzlies from which they are likely to emigrate to surrounding drainages. The significant wetland/forest complexes in Skwawka provide suitable grizzly bear habitat and the extensive riparian/backwater channel/wetland network supports significant salmon runs for feeding.

Much of the OG forest in the Skwawka LU may be suitable for Marbled Murrelet (MAMU) nesting. MOELP-identified areas of Suitable MAMU nesting habitat were selected for OGMA when possible.

**e) Sensitivity to Forest Development.**

94.3% of the Skwawka LU is within Natural Disturbance Type 1 (Ecosystems with rare stand initiating events).. The remainder of the LU is within the CWHdm, which is NDT2 (Ecosystems with infrequent stand initiating events), therefore, the LU is considered to have a high sensitivity to forest development overall.

This criteria was utilized in the assignment of BEOs but not in the delineation of OGMA.

**f) Connectivity.**

The Skwawka LU has a large degree of harvesting disturbance history throughout the lower elevations, and significant areas of natural disturbance throughout. Second growth stands are the predominant forest cover in the lower portions of the LU, with some stands of advanced, maturing second growth of fire and early harvesting origin. Higher elevation areas are largely old growth with some post-harvesting regeneration. Connectivity opportunities from lower to higher elevations exist only in a few areas due to the contiguous lower elevation harvesting history

Consistent with LU Planning Guide direction, connectivity is not a primary objective of the Skwawka LU plan, however, the opportunity to maintain connectivity ( i.e. degree of remaining management options) is an important criteria for BEO assignment as it is an indicator of the degree of harvesting and road density, urban development and other disturbance in a given LU.

**g) Complex Ecosystems.**

The Ecosystem Complexes present in the Skwawka LU are the most significant of all the Jervis Inlet drainages, and in a District-wide context, the Skwawka LU has a medium high to high level of complex ecosystems. The Skwawka River is a 4<sup>th</sup> order system, and has extensive wetland complexes adjacent to it and interconnected with it. Despite the harvesting history in the drainage, the river and adjoining aquatic ecosystems remain in excellent condition. The Skwawka estuary is large and in good condition. Many slidetrack/forest complexes occur from alpine levels to valley bottom. Many natural mixed conifer/deciduous stands are present at low elevations.

OGMA have been located near such features whenever possible because these ecosystem complexes are rich in biodiversity and adjacent old growth forest adds valuable wildlife habitat. Much of the ecosystem complex area is heavily constrained by high water table, riparian management areas, sensitive slopes and access, so their inclusion into OGMA minimizes impact on timber supply.

#### **h) Inoperable Land Habitat and Biodiversity Representation.**

Due to harvesting history the majority of CWHdm representation is within areas that are not operable or have remained unharvested due to difficult access or other constraints. This is also true, but to a slightly lesser degree, for the CWHvm1 and CWHvm2. Most of the CWHvm1 OGMA is in the higher elevation areas of the variant, and in the farthest ends of the drainages, while options are limited for low elevation OGMA. Low elevation OGMA is important for biodiversity because of its proximity to ocean, shoreline and the LU's ecosystem complexes as listed in g) above.

CWH vm2 and MHmm1 will be adequately represented by inoperable and constrained areas.

Riparian areas provide a substantial contribution to the LU's OGMA. The riparian OGMA is located within stands that are not operable, already left as riparian reserves from past harvesting or in operable, suitable stands adjacent to S2, S3 and S4 streams.

There are no PAS OGMA contributions within the Skwawka LU.

The Skwawka LU contains no protected areas. All old growth management areas consist of Provincial Forest Land. Constrained and other lands available for old seral representation include:

- ESAs

- Steep and unstable terrain, gullies

- Riparian reserve areas

- Forested land of low productivity (low  $SI_{50}$ )

- Portions of some NP polygons that contain some suitable forest cover.

## **Appendix V:**

# PROVINCE OF BRITISH COLUMBIA

## **Landscape Unit Planning Backgrounder**

The Forest Practices Code commits to conserve British Columbia's unique diversity of plants, animals and other living organisms. The Code's landscape unit planning guide, released in March 1999, is a significant component of the strategy to reach that goal.

Landscape unit planning is designed to complement the biodiversity conservation achieved through the protected areas strategy and other measures included in the Code, such as streamside protection requirements. The establishment of a landscape unit and objectives is the legal mechanism to make key biodiversity conservation requirements binding on operational plans under the Code.

Landscape units range in size from 50,000 to 100,000 hectares and will be established province-wide on Crown forestland. Unit boundaries will be based primarily on natural features such as watersheds.

Local officials in the Ministry of Forests, Ministry of Sustainable Resource Management and the Ministry of Water, Air and Land Protection are responsible for implementing landscape unit planning. The priorities are protecting areas of old growth forest within each landscape unit and protecting trees used as habitat by birds and other wildlife.

Forest districts are required by legislation to provide proposed boundaries and the objectives to be used in landscape unit planning for public, industry and stakeholder review and comment.

Landscape unit planning guidelines are designed to conserve B.C.'s unique biodiversity while keeping impacts on timber supply within provincially approved limits. For example, old growth conservation must be located, where appropriate, in forest areas that are already unavailable for timber harvesting due to existing environmental or economic limits. Every effort has been taken to mitigate impacts to timber supply.

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