

Sunshine Coast Landscape Unit Planning

Chapman Landscape Unit Plan



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Chapman Landscape Unit Plan

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Legal Objectives for the Chapman Landscape Unit

Pursuant to Section 4 of the *Forest Practices Code of British Columbia Act*, the following are Landscape Unit objectives for the Chapman Landscape Unit.

Objective 1

Maintain or recruit old growth forest attributes, in old growth management areas, that are established as shown on the attached map dated December 3, 2001. No timber harvesting, including salvage and 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.

Maintenance, deactivation, removal of danger trees, or brushing and clearing on existing roads within the right-of-way for safety purposes are exempt from this objective.

The Statutory Decision Maker (SDM) may permit removal or falling of trees or road construction within an OGMA for reasons such as but not limited to the following:

- To prevent the spread of insect infestations or diseases that pose a significant threat to forested areas outside of OGMAs. This will be done in a manner that retains as many old growth forest attributes as possible.
- Construction of roads and yarding corridors, if the SDM determines that no other practicable option exists.
- Partial-cut timber harvesting within immature (<100 years old) portions of OGMAs, where it can be demonstrated that harvesting will accelerate development of old growth forest attributes and improve the stand for biodiversity purposes, without compromising other resource values.

Harvest entries for the acceleration of old growth attributes are to be limited to recruitment OGMAs in Lower Biodiversity Emphasis Option Landscape Units.

First Nations traditional use of forest resources, treaty negotiations or settlements will not be limited by this objective.

Objective 2

Maintain stand level structural diversity by retaining wildlife tree patches. Cutblocks for which harvesting has been completed by each licensee will maintain adequate amounts of wildlife tree patches to ensure that over any 5 year period, commencing on the date the objectives are established, and across the Biogeoclimatic Ecosystem Classification (BEC) subzone the target percentage as noted in Table A is achieved. In addition:

- No timber harvesting, including salvage or single tree selection, is to occur within established Wildlife Tree Patches.
- Wildlife Tree Patches must include, if present, live or dead veteran trees (excluding danger trees), or remnant old growth patches.
- Wildlife Tree Patches must include larger trees for the stand and any existing moderate to high value wildlife trees (excluding danger trees).

Table A: Wildlife Tree Retention by Biogeoclimatic Ecosystem Classification Subzone

BEC Subzone	Total WTR %
CWHxm	7
CWHdm	10
CWHvm	12
MHmm	6

WTR = Wildlife Tree Retention

BEC = Biogeoclimatic Ecosystem Classification

CWHxm: Coastal Western Hemlock biogeoclimatic zone, very dry maritime subzone.

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

CWHvm: Coastal Western Hemlock biogeoclimatic zone, very moist maritime subzone.

MHmm: Mountain Hemlock biogeoclimatic zone, moist maritime subzone.

Sunshine Coast Landscape Unit Planning

Chapman Landscape Unit Plan

1.0 Introduction

The Chapman Landscape Unit (LU) lies within the Georgia Depression and Coast and Mountains Ecoprovinces, including the Georgia Lowland and Southern Pacific Ranges Ecoregions. Lower elevation, productive and gentle-terrain sites have, to a large degree, been disturbed by past harvesting, land clearing, fire and other disturbances. The low levels of old seral forest representation within the Chapman's low elevation biogeoclimatic zones reflects this disturbance history.

The Chapman LU's proximity to Sunshine Coast communities has a major effect on the relative values of the LU's resources and their corresponding management strategies. The LU contains a wide range of significant natural resource values and features, as well as a diversity of social and cultural influences. As a result, management of these values involves many complex issues.

The productivity and accessibility of the forests increases many of the timber resource values. Compared to other LUs in the Sunshine Coast Forest District (SCFD) the Chapman has a very high proportion of sites accessible for forest operations and many sites are only a short drive from local communities. Many of these sites are low-elevation, operable throughout the year, and a high proportion have high site indexes, providing good opportunities for intensive silviculture investments. Such sites are, therefore, very important for creating local employment opportunities in all aspects of forestry. Similarly, the accessibility of the Chapman forests increases recreational opportunities for local communities. A high degree of access has the potential to negatively affect some wildlife species and biodiversity in general through human presence, hunting/gathering and the introduction of foreign species.

The Chapman LU ranked twenty-first out of the twenty-four LUs in the Sunshine Coast LU biodiversity ranking process, (see Appendix II, page 17 for ranking, Appendices I and IV for detailed attribute scoring procedure). As mentioned in Appendix IV, the Chapman LU is habitat to Marbled Murrelet and tailed frog which have been recognized as requiring specific forest habitat. It must be noted that LU planning is not intended to specifically provide for these or any single species, but rather, to provide general old forest habitat as a surrogate for providing specific habitat for all old-seral –dependant species. OGMA's are selected within habitat for these species whenever the OGMA selection process (described below) allows such choices to be made, and when the forest identified as specific habitat for one species is suitable as OGMA. Forest identified as suitable Marbled Murrelet habitat was included in OGMA whenever consistent with current policy, however, forest identified as suitable Marbled Murrelet habitat was not extensively included outside of existing Protected Areas. No areas of OGMA were delineated specifically for the management of tailed frog because its management is provided for by stand-level provisions.

A large amount of private land exists within the LU, both as urban/residential land and as industrial and commercial holdings. Residents value the forest adjacent to their lands for recreation, aesthetics, harvesting of botanical forest products, community setting, and for local employment. Owners of private land, both individuals and companies, harvest timber and operate tourism businesses. Much of the private land within the Chapman LU has been significantly altered from its original ecological state; in some cases this influences the ecology of adjacent Crown lands. The Chapman LU contains many forms of ownership and tenure including: private land (residential, industrial, commercial, Managed Forest), Crown forest, Indian reserve, municipality, Provincial forest, woodlot, forest licence, timber license, Small Business Forest Enterprise Program area, park, heritage forest, community watershed, Recreation Reserve UREPs 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. OGMA include both existing old growth stands and recruitment stands which will be retained to develop old growth characteristics over time. Road construction through OGMA is not to occur unless no other practicable options exist, in which case, designation of replacement OGMA may be required.

The distribution of OGMA and other old seral representation areas will have to be reviewed periodically. Many stands within park and other non-contributing areas (not contributing to the Sunshine Coast Timber Supply Area’s AAC) will mature over time and develop old seral characteristics. These areas may then replace some OGMA that are within the timber harvesting landbase (THLB).

Wildfires and other natural disturbance may occur within OGMA 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 OGMA may need to be replaced.

2.0 Landscape Unit Objectives

The Chapman LU received a Biodiversity Emphasis Option (BEO) of “Lower” 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 Classification (BEC) subzones are also listed. The target figures listed in Table 1 are from Appendices 2 and 3 of the Forest Practices Code Landscape Unit Planning Guide (LUPG).

Note: LU Objectives apply only to Provincial forest lands. Park and Crown forest lands outside of Provincial forest contribute old seral representation but OGMA designation and LU Objectives do not apply to these areas.

TABLE 1: Required Levels for Old Seral Representation and Wildlife Tree Patches.

BEC Unit and NDT ¹	LUPG Old Seral Representation Recommendation ²		OGMA Objective Provincial Forest ³		Protected Area or Non-Provincial Forest Contribution ⁴		WTP Objective ⁵
	%	ha	%	ha	%	ha	% of cutblock area, ha
CWHxm1, 2	9	77.4	4.5	38.4	4.5	39.0	8
CWHdm, 2	9	765.2	6.6	562.9	2.4	202.3	10
CWHvm1, 1	13	99.9	13	99.9	0	0	12
CWHvm2, 1	13	963.0	4.5	331.0	8.5	632.0	12
MHmm1, 1	19	970.2	2.1	107.1	16.9	863.1	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, 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 OGMA.

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

CWHxm1: Coastal Western Hemlock biogeoclimatic zone, very dry maritime subzone, windward variant.

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 OGMA throughout the Chapman LU. Refer to the Chapman Landscape Unit map for their location, to Appendix V for OGMA statistics and

stand attributes, and to Table 2, below, for a breakdown of OGMA non-contributing (NC), constrained THLB and unconstrained THLB components.

TABLE 2 :Non - Contributing, Constrained THLB and Unconstrained THLB Components of Chapman LU OGMA:

BEC Unit	Total Old Seral Representation ¹	Non - Contributing ² Area in OGMA		Constrained THLB ³ in OGMA		Unconstrained THLB in OGMA	
	ha	ha	%	ha	%	ha	%
CWHxm1	77.4	77.4	100	0	0	0	0
CWHdm	765.2	554.3	72.4	138.7	18.1	72.2	9.4
CWHvm1	99.9	99.9	100	0	0	0	0
CWHvm2	963.0	934.5	97.0	28.4	2.9	0	0
MHm1	970.2	970.2	100	0	0	0	0
%TOTALS	2875.7	2636.3	91.7	167.1	5.8	72.2	2.5

1 Total Old Seral Representation from Table 1, above.

2 Non - Contributing Area in OGMA = forest land that does not contribute to the AAC.

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.

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 existed 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. While the objectives are legally binding, management goals and strategies are not. Goals and strategies describe direction to be followed to further benefit biodiversity management.

The biodiversity ranking process identified the significant biodiversity values within each LU relative to others within the SCFD that are to be managed through LU planning. The Chapman LU ranked low in this process. Refer to Appendix IV for detailed description of Chapman LU values considered in the LU planning process.

The “Lower” BEO allows a “drawdown” of old growth to 1/3 of the representation target with an objective of managing for the full target over a period of three rotations (240 years), unless an analysis has shown that the 1/3 level can be delineated without further impact to the THLB. This drawdown is the only difference between a “Lower” BEO and an “Intermediate”. In the case of the Chapman LU, the full representation targets were met within non-contributing stands in all biogeoclimatic variants, equalling the representation of an Intermediate BEO.

During OGMA delineation, after all old growth had been included, non-contributing stands in the lower elevation subzones which contain veterans, old growth structures or the oldest available stands were chosen. The exception to this general LU planning procedure is when old seral representation levels are below the 1/3 drawdown level, such as in the CWHxm1 and CWHdm. In these variants the 1/3 level was met using all available old growth and the next oldest stands available. In all cases, detailed air photo review confirmed forest cover attributes and suitability of a given stand for OGMA inclusion. Numerous stands were checked aerially or on the ground to verify the presence of desirable characteristics.

OGMAs are not all permanent, although many will be. As current young stands in non-contributing forest progress in age to become suitable as old growth representation, they may be designated as OGMA to replace 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.

3.2 Conservation Data Centre Sensitive Ecosystem Inventory Information

Sensitive Ecosystem Inventory (SEI) information was obtained from the Conservation Data Centre (CDC) to assist in OGMA selection. The CDC SEI survey covered the CWHxm1 and CWHdm BEC units only. The survey was intended to identify old growth Red-listed site series forest stands for conservation strategy purposes. The SEI also identified site series for non-old growth stands which allowed recruitment OGMAs to be selected that will mature into Red-listed old growth ecosystems. The SEI work was done using complete air-photo interpretation, with extensive aerial and ground checking. The field work was completed in the summer of 2000.

The SEI Red-listed site series stands that have been included in OGMAs are identified within Appendix V in the comments column for each forest cover polygon.

3.2.1 CWHxm1 Biodiversity Management Goals

1. Increase old seral representation within the CWHxm1 (currently approximately 3.0%) through designation of OGMAs and representation from non-Provincial forest. The Provincial forest OGMA objective is 4.5%, or 38.4 ha. An additional 4.5% or 39.0 ha providing suitable biodiversity representation and old seral recruitment area has been identified within non-Provincial forest land and park, which does not require OGMA designation. (Refer to Map).
2. Maintain a wide range of ecosystem types and species composition (habitat types) within the CWHxm1.
3. Include areas of multiple resource values (i.e. recreation, specific wildlife habitat needs) within OGMAs where compatible with biodiversity management.
4. Enhance stand level structural diversity throughout the CWHxm1.
5. Minimize timber supply impacts of establishing OGMAs, notably on second growth harvesting and on future silviculture opportunities, in local, easily accessed, highly productive areas where compatible with biodiversity management.

3.2.2 CWHxm1 Biodiversity Management Strategies

- A. Delineate OGMAs to include existing old growth stands and mature stands that contain developing OG characteristics and veterans. (Goal 1)
- B. Delineate OGMAs to contain a wide a range of sites. (Goals 2, 3, 4)
- C. Retain veterans and dominants as veteran recruits within harvesting areas (Fd as well as CW, Ss, Hw) as a focus of stand level biodiversity management. (Goals 2, 4)
- D. Include unique features and constrained areas within OGMAs where compatible with biodiversity management. (Goals 2,3,4)

3.3.1 CWHdm Biodiversity Management Goals

1. Increase old seral representation within the CWHdm (currently approximately 3.7%) through designation of OGMA's and representation from non-Provincial forest. The Provincial forest OGMA objective is 6.6%, or 562.9 ha. An additional 2.4% or 202.3 ha providing suitable biodiversity representation and old seral recruitment area has been identified within non-Provincial forest land and park, which does not require OGMA designation. (Refer to Map).
2. Include areas that are constrained due to the presence of multiple resource values (recreation, specific wildlife habitat needs) within OGMA's where compatible with biodiversity management.
3. Enhance stand level structural diversity throughout the CWHdm.
4. Minimize the timber supply impacts of establishing OGMA's, notably on second growth harvesting and on silviculture opportunities, in local, easily accessed, highly productive sites where compatible with biodiversity management.

3.3.2 CWHdm Biodiversity Management Strategies

- A. Include existing age class 9 stands, age class 8 and younger stands and stands with a significant veteran component (oldest stands available) within OGMA's. (Goals 1, 3)
- B. Include unique features and constrained areas within OGMA's where compatible with biodiversity management. (Goals 2, 4)
- C. Include old seral stands identified as suitable MAMU nesting habitat within OGMA's. (Goals 1, 2)
- D. Retain veterans and dominants as veteran recruits within harvesting areas, (Fd as well as CW, Ss, Hw, Ba, Cy) as a main goal of stand level biodiversity management. (Goals 2, 3)

3.4.1 CWHvm1 Biodiversity Management Goals

1. Increase old seral representation within the CWHvm1 (currently approximately 8.9%) through designation of OGMA's in Provincial forest. The Provincial forest OGMA objective is 13.0%, or 99.9 ha. (Refer to Map).
2. Retain natural ecosystem patterns and mosaics characteristic of the CWHvm1: Maximize interior forest condition within OGMA's. Maintain a wide range of ecosystem types and species composition (habitat types) within the CWHvm1.
3. Reduce impacts on timber supply while maintaining OGMA habitat, and biodiversity values
4. Enhance stand level structural diversity throughout the CWHvm1.

3.4.2 CWHvm1 Biodiversity Management Strategies

- A. Delineate OGMA's to include existing age class 9 stands. Designate OGMA's in the oldest available NC stands to achieve the full 13% target immediately. (Goals 1, 2, 3, 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 4)

3.5.1 CWHvm2 Biodiversity Management Goals

1. Maintain old seral representation within the CWHvm2 at 13% (currently approximately 26.1%) through designation of OGMA and representation from non-Provincial forest. The Provincial forest OGMA objective is 4.5%, or 331.0 ha. An additional 8.5% or 632.0 ha providing suitable biodiversity representation has been identified within park which does not require OGMA designation. (Refer to Map).
2. Include areas that are constrained due to the presence of multiple resource values (recreation, specific wildlife habitat needs) within OGMA where compatible with biodiversity management.
3. Enhance stand level structural diversity throughout the CWHvm2.
4. Minimize the timber supply impacts of establishing OGMA, notably on second growth harvesting and on silviculture opportunities, in local, easily accessed, productive sites where compatible with biodiversity management.

3.5.2 CWHvm2 Biodiversity Management Strategies

- A. Delineate OGMA to include existing age class 9 stands. Designate OGMA in the oldest available NC stands to achieve the full 13% target immediately. (Goals 1, 2, 3, 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)

3.6.1 MHmm1 Biodiversity Management Goals

Maintain old seral representation within the MHmm1 to 19% (currently approximately 71.4%) through representation within Provincial Park area.. The Provincial forest OGMA objective is 2.1%, or 107.1 ha. An additional 16.9% or 863.1 ha providing suitable biodiversity representation has been identified within park which does not require OGMA designation (Refer to Map).

4.0 Mitigation of Timber Supply Impacts

The Chapman LU plan has been developed to maximize the effectiveness of the FPC's biodiversity management provisions while minimizing impacts on the TSA timber supply. Within the Chapman LU there are chart areas for numerous volume-based tenures, and it has not been possible to distribute LU planning impacts evenly among them all, nor is it the objective to do so. Instead, LU planning in the SCFD aims to minimize impacts to timber supply as a whole across the entire TSA area. Chart area rationalization may be required following the completion of the SCFD's LU planning, which may be a more effective means of distributing LU impacts.

Due to the limited amount of suitable CWHdm old growth available for biodiversity protection, International Forest Products Ltd. agreed to drop two approved cutblocks from their Forest Development Plan (Blocks # 504, 505). These stands, totalling 18.5 hectares in area, will provide important old growth representation in the Champan LU plan.

Specific measures adopted to minimize impacts of Chapman LU planning to the timber supply include the following:

Non-contributing forest, protected areas, UREPs, ESAs, community interface areas, VQO area, lower productivity sites, and areas of difficult access were included within OGMA's where possible and where compatible with biodiversity objectives.

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 OGMA's and OGMA boundaries were delineated to simplify management of adjacent stands.

Many non-contributing areas are not included as OGMA at this time, mostly due to their young age class and absence of old growth characteristics. Significant portions of the OGMA's for the CWHxm1 are within Park and riparian reserve zones and are unavailable for timber harvesting. 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 OGMA's will be required.

Appendix I, Biodiversity Ranking Process: Ranking Criteria and Rationale

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 Biodiversity Guidebook, 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.

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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 Landscape Unit Planning

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
				30899	9.7%
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
				150072	47.2%
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
				137206	43.1%
			Total THLB	318177	100%

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

98/09/09

Appendix III

Chapman Landscape Unit Seral Stage Summary

BEC Unit	Seral Stage	Forest Area (ha)	NC Forest (ha)	NC %	Constrained THLB (ha)	Constrained THLB %	Unconstrained THLB (ha)	Unconstrained THLB %	LUPG Target %	LUPG Target (ha)	1/3 LUPG Target (ha)
CWH xm 1	Early	145.5	28.1	3.3%	0.0	0.0	117.4	13.6%		0.0	
CWH xm 1	Early Mature	278.6	132.1	15.3%	0.0	0.0	146.4	17.0%		0.0	
CWH xm 1	Mature	411.6	232.6	27.0%	0.0	0.0	178.9	20.8%		0.0	
CWH xm 1	Old	25.7	1.8	0.2%	0.0	0.0	23.8	2.8%	9	77.5	25.8
CWHxm1 TOTALS:		861.3	394.7		0.0		466.5				
CWH dm	Early	1338.0	252.3	3.0%	0.9	0.01%	1084.9	12.8%		0.0	
CWH dm	Early Mature	3251.0	817.2	9.6%	23.3	0.27%	2410.4	28.3%		0.0	
CWH dm	Mature	3601.9	782.7	9.2%	2.2	0.03%	2817.0	33.1%		0.0	
CWH dm	Old	311.4	91.4	1.1%	0	0	220.0	2.6%	9	765.2	255.1
CWHdm TOTALS:		8502.2	1943.6		26.4		6532.3				
CWH vm 1	Early	210.3	27.7	3.6%	0	0	182.6	23.8%		0.0	
CWH vm 1	Early Mature	386.0	127.2	16.6%	0	0	258.8	33.7%		0.0	
CWH vm 1	Mature	103.4	42.6	5.5%	0	0	60.8	7.9%		0.0	
CWH vm 1	Old	68.4	14.7	1.9%	0	0	53.6	7.0%	13	99.8	33.3
CWHvm1 TOTALS:		768.1	212.3		0	0	555.8				
CWH vm 2	Early	2683.9	392.6	5.3%	14.9	0.2%	2276.5	30.7%		0.0	
CWH vm 2	Early Mature	2082.9	319.3	4.3%	2.6	0.0%	1761.1	23.8%		0.0	
CWH vm 2	Mature	706.5	365.7	4.9%	0	0.0%	340.8	4.6%		0.0	
CWH vm 2	Old	1934.3	1116.2	15.1%	0.1	0.0%	817.9	11.0%	13	963.0	321.0
CWHvm2 TOTALS:		7407.6	2193.7		17.6		5196.3				
MH mm 1	Early	1259.4	263.2	5.2%	0	0	996.2	19.5%		0.0	
MH mm 1	Early Mature	87.6	56.2	1.1%	0	0	31.4	0.6%		0.0	
MH mm 1	Mature	112.9	66.3	1.3%	0	0	46.6	0.9%		0.0	
MH mm 1	Old	3645.9	2552.9	50.0%	0	0	1093.0	21.4%	19	970.1	323.4
MHmm1 TOTALS:		5105.8	2938.6		0		2167.2				
LU Totals: #####		7682.9			44.0		14918.0			2875.7	958.6

Appendix IV: Significant Ecological Features in the Chapman LU

This Appendix includes specific information regarding the Chapman Landscape Unit’s (LU) 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.

The Chapman LU BEC units, corresponding natural disturbance types (NDT) and OG representation based on 1999 VFR inventory summary data:

BEC	NDT	TOTAL OG	
		%	ha
CWHxm1	2	3.0	25.7
CWHdm	2	3.7	311.4
CWHvm1	1	8.9	68.4
CWHvm2	1	26.1	1934.3
MHmm1	1	71.4	3645.9

NOTE: Figures have not accounted for some approved harvesting, so some figures may change

Table 2

The Chapman LU 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:

BEC Unit and NDT ¹	LUPG Old Seral Representation Recommendation ²		OGMA Objective Provincial Forest ³		Protected Area or Non-Provincial Forest Contribution ⁴		WTP Objective ⁵
	%	ha	%	ha	%	ha	% of cutblock area, ha
CWHxm1, 2	9	77.4	4.5	38.4	4.5	39.0	8
CWHdm, 2	9	765.2	6.6	562.9	2.4	202.3	10
CWHvm1, 1	13	99.9	13	99.9	0	0	12
CWHvm2, 1	13	963.0	4.5	331.0	8.5	632.0	12
MHmm1, 1	19	970.2	2.1	107.1	16.9	863.1	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, 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.

CWHxm1: Coastal Western Hemlock biogeoclimatic zone, very dry maritime subzone, windward variant.

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.

Current old seral (age class 9) representation levels are below target for the Lower BEO 1/3 drawdown levels in the CWHxm1 and CWHdm BEC units. (When planned development is considered in the CWHdm) Old seral representation in the higher elevation BEC units (CWHvm1, CWHvm2 and MHmm1) are above target levels.

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 ≤ 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 OGMAs 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 ≤ 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 BGB and Guide to LU Planning.

b) Recruitment Potential to Manage for Old Growth.

OGMA and old seral representation stands are predominantly age classes 8 and 9 and other stands containing a significant veteran component. Younger stand have been selected for specific stand attributes. Together, these stands will be managed to meet the old growth management targets for the LU.

c) Ecosystem Complexity.

The Chapman LU contains 5 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 Chapman 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, Tailed Frog,

e) Sensitivity to Forest Development.

55.7% of the Chapman LU is within Natural Disturbance Type 1 (Ecosystems with rare stand initiating events). This area is the higher elevation portions of the LU. The remainder of the LU is within NDT2 (Ecosystems with infrequent stand initiating events), thus the LU is considered to have a medium sensitivity to forest development overall.

f) Connectivity.

The Chapman LU has a heavy harvesting and natural disturbance history throughout, and particularly in lower elevation BEC units. Advanced second growth and maturing fire-originated stands are the predominant forest cover in the lower portions of the LU. Higher areas are a mosaic of largely old growth and post-harvesting regeneration. Connectivity opportunities from foreshore to higher elevations exists only to the West and North of Mt Richardson, due to the contiguous developed private land adjacent to the shore which extends upland.

Consistent with LU Planning Guide direction, connectivity is not a primary objective of the Chapman 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.

In a District-wide context, the Chapman LU has a low level of large complex ecosystems, however some are notable. The upper Chapman plateau does contain an extensive network of forest/swamp matrix. Large bluff/forest complexes in the Mt. Richardson and Gray Creek areas have been assessed for ungulate winter range habitat values and included in OGMAs where appropriate. The south-aspect, gullied, mixed forest complex from Langdale Creek across to the Chaster Creek tributaries have significant biodiversity value.

h) Inoperable Land Habitat and Biodiversity Representation.

The Chapman LU's old seral and old growth management representation includes a significant portion of non-contributing and constrained lands, including the following:

ESAs

Protected Areas : Mt Richardson Park, Mt. Elphinstone parks, Roberts Creek Park,
Sechelt Inlets Marine Parks, the Sechelt Heritage Forest, Tetrahedron Park

UREPs

Recreation reserve

Steep and unstable terrain, gullies

Riparian reserve areas

Forested land of low productivity (low SI₅₀)

Appendix VI:

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 ministries of forests and environment, lands and parks 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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Appendix VII

Chapman Landscape Unit Glossary

Age Class

Forest types are classified by their average age in to categories as follows:

<u>Age Class</u>	<u>Age of Forest</u>
1	1 - 20
2	21 - 40
3	41 - 60
4	61 - 80
5	81 - 100
6	101 - 120
7	121 - 140
8	141-250
9	250 +

Allowable Annual Cut (AAC)

The allowable rate of timber harvest from within a specified area, specified in M3/year

Aquatic Ecosystems

Ecosystems centred around lakes, swamps, ponds, creeks or rivers, and the bordering vegetation that is influenced by proximity to the water.

Biodiversity

Biological Diversity. The diversity of organisms, species, genetic variants, their relative abundance, interrelationships and processes.

Biodiversity Guidebook

The Forest Practices Code guidebook which gives direction for establishing biodiversity management provisions at the stand and landscape levels. It is not legislation itself, however, when the biodiversity guidebook direction is implemented as provisions within Landscape Unit plans, cutting permits and other plans required by FPC legislation and regulations, they become legally binding.

Biogeoclimatic Ecological Classification (BEC)

British Columbia's system of ecosystem classification based on biological, geological and climatic characteristics.

Biodiversity Emphasis Option (BEO)

Options of varying levels of biodiversity provisions assigned to landscape units within a Forest District. There are three BEOs; lower intermediate and higher, which assign lower to higher levels of old growth representation levels. Approximately 45 % of the forest district's productive forest landbase is to be assigned to the lower and intermediate BEOs, while approximately 10% is to be assigned to the higher BEO.

Biogeoclimatic Zones and Biogeoclimatic Subzones

Zones of similar biological geological and climatic features classified under British Columbia's Biogeoclimatic Ecosystem Classification System. The Chapman Landscape Unit Plan area includes the following biogeoclimatic zones and subzones:

Coastal Western Hemlock zone (CWH)

This zone occurs from low to middle elevations along the entire B.C. coast. It is characterized by the prevalence of western hemlock as a climax (old growth) species, that regenerates under its own canopy (with some exceptions).

The following subzones occur within the Chapman Landscape Unit Plan area:

CWHxm1	Very Dry Maritime, Eastern variant
CWHdm	Dry Maritime
CWHvm1	Very Wet Maritime, submontane variant
CWHvm2	Very Wet Maritime, montane variant

Mountain Hemlock (MH) zone

This zone occupies the subalpine elevations of the coastal B.C. mountains, and is characterized by the prevalence of mountain hemlock as a climax (old growth) species that regenerates under its own canopy.

The following subzones occur within the Chapman landscape Unit Plan area:

MHmm1	Moist Maritime, windward variant
MHmmp1	Moist Maritime, windward, parkland variant

Chapman Landscape Unit

A landscape unit within the Sunshine Coast Forest District that includes all of the watersheds that drain to the shoreline from Witherby Point in Howe Sound to Sechelt, to the North shore of Mt. Richardson.

Clearcuts with Reserves

The clearcut silvicultural system that removes the majority of trees in a harvesting area, but includes reserves of trees within or adjacent to it. Reserves may be single tree reserves or patches, and their required size is a predetermined proportion of the cutblock size, defined within the Biodiversity Guidebook.

Climax Forest

Forest that has progressed through all stages of successional development and has reached a state where species composition and stand structure become relatively stable, regenerating under their own canopy.

Coarse Woody Debris (CWD)

Large pieces of wood,(generally greater than 10cm in diameter) such as logs, root masses, and stumps in varying stages of decay that provide habitat for plants, animals, insects and other species and provide organic material input into soil development.

Commercial Thinning

Partial harvesting of a stand that has not yet reached its rotation age to remove smaller trees that would die from overcrowding. Commercial thinning differs from juvenile spacing or thinning because the stems are removed later in the rotation and the stems removed are of merchantable size.

Community Watershed

A watershed that has been designated as a Community Watershed as defined in the Forest Practices Code. To be designated as a community watershed, a watershed must either be licensed for use by a water purveyor, or a

large number of individual domestic licenses, and then application must be made to the Ministry of Sustainable Resource Management.

Conservation Data Centre

A department of the Ministry of Air Land and Water Protection that assembles data on biodiversity and evaluates the needs of certain species for conservation awareness and management provisions.

Culmination Age

The age of a forest stand at which its annual increment begins to decrease.

Deactivated

A road that has been treated to ensure that it will be stable during an extended period of closure and with no further maintenance. Deactivation involves replacing culverts with cross-ditching, digging water bars in the road surface, removal of some bridges, and closure of the road at the junction.

Ecoprovinces: Georgia Depression and Coast and Mountains

Ecoregions: Lower Mainland and Pacific Ranges

Ecosections :Georgia lowland and Southern pacific ranges

Broad biogeoclimatic classifications of coastal BC ecosystems.

Ecosystem-based Management

Forest resource management strategies that follow natural forest ecosystem processes and forms such as ecosystem patterns, physical structures, successional stages and disturbance types.

Even-Aged Management

A silvicultural system or strategy that is designed to regenerate and maintain an even-aged forest stand.

Forest Ecosystem Network (FEN)

A combination of forest lands that have been excluded from the timber harvesting landbase that provides ecosystem representation and connectivity within a large area.

Forest Fragmentation

Disruption of continuous forest canopy created by road, harvesting patterns and other forms of disturbance.

Grapple Yarder

A type of cable-logging system with which the logs are grasped and skidded by a set of tongs attached to the mainline.

Higher Level Plan

A resource management plan that creates zonation and dictates required management practices that development planning must be consistent with in order to be approved.

High-lead

A suspended cable-logging system that lifts the forward end of logs as they are skidded to reduce the amount of ground disturbance.

Hoehucking

Harvesting timber by using an excavator (backhoe) to forward the logs towards a pickup point.

Inoperable Areas

Forested land that cannot be harvested because of terrain conditions, or because the timber value is too low to be harvested economically.

Integrated Resource Management

Forest management that considers all of the natural resource and other values present in an area so that the resultant management plan includes provisions to maintain, or where possible enhance, all of the resource values.

Juvenile Spacing

Cutting of juvenile trees within overstocked regenerating managed forest stands to free chosen crop trees from competition.

Landscape Level Biodiversity

Biodiversity considered within a large forest area, which may be an entire watershed, island, Landscape Unit, or other such large defined area that contains many different forest and ecosystem types.

Landscape Units

Planning areas within the forest district that are delineated based on geographical and other natural features within which biodiversity and forest habitat is managed. In the Sunshine Coast Forest District, landscape units range in size from approximately 10,000 ha to over 180,000 ha gross area.

Mean Annual Increment (MAI)

A measure of the productive potential of a site to grow timber, measured in cubic metres of wood produced per hectare per year (m³/ha/yr).

Natural Disturbance Type

A naturally-caused disturbance to a forest stand that removes the majority of the mature trees, or all trees, in an area and subsequently initiates the regeneration of a new forest stand.

Non-Merchantable Wood

Wood that is either too small in size or of too low quality to be processed into commercial forest products.

Non-Permanent Road

A harvesting access road that will not be required after the harvesting has been completed, and will be rehabilitated.

Old Growth

Old forest, usually defined to be of age class 9, which is 250 years and older. Old Growth may refer to specific characteristics that trees or ecosystems acquire over time and may attain those characteristics before age class 9. The term Old Growth usually refers to old forest in a natural state.

Old Growth Management Area (OGMA)

Areas of forest reserved from harvesting and road construction to ensure specified levels of old seral forest are retained within a landscape unit. OGMA's consist of old growth forest whenever possible, but may contain younger forest when there is not enough old growth available, or in a lower BEO landscape unit when the 1/3 drawdown scenario is in effect. (refer to the Landscape Unit Planning Guide for an explanation of the 1/3 drawdown scenario)

Operational Polygon

An aggregation of cutblocks, wildlife tree patches, reserved veteran trees and old seral stage management areas that forms a larger area of a size consistent with the biogeoclimatic subzone's natural disturbance type. Cutblocks within an operational polygon must utilize silvicultural systems that are consistent with the natural disturbance type.

Partial Harvesting

A harvesting system that does not remove all of the trees within an area.

Protected Areas

Areas that have been declared as parks or ecological reserves.

Provincial Forest

Forest that has been declared to be Provincial forest by the Lieutenant Governor in Council. Provincial forest status prevents the disposition of the land under the *Land Act*.

Pruning

Removal of the lower branches of trees in a managed stand in order to have the tree produce wood that is free of knots and subsequently of high value. Pruning is done with shears or saws. Pruning is also carried out on white pine to reduce the risk of infection by white pine blister rust.

Rehabilitated (roads)

Rehabilitation of roads may include pullback of the side-casted material onto the road surface, resspreading of topsoil and organic material (slash) onto the road surface, removal of all drainage structures including bridges, culverts and ditches, and the reforestation of the road site.

Riparian Area

Area bordering a stream, river, lake or swamp, as defined in the Forest Practices Code.

Salvage

Harvesting of dead or dying trees, usually those that have died as a result of windthrow, insects or disease.

Seral Stage

A period in a forest's successional progress from bare ground towards a "climax" state where species composition and stand structure become relatively stable.

Shelterwood

A silvicultural system which retains a canopy of trees of the original stand following harvesting that assists in the regeneration of the stand by providing more favourable conditions.

Silvicultural Systems

A planned program of silvicultural treatments throughout the life of a stand, to achieve stand structural objectives based on resource management goals. A silvicultural system includes all harvesting, regeneration and stand-tending methods that will be applied throughout the management of the stand.

Site Preparation

Treatment of a site following harvesting to prepare for reforestation. Site preparation may be done prior to planting or natural regeneration.

Skidders

Rubber-tired or tracked machines that are used for harvesting timber by pulling logs along the ground.

Small Business Forest Enterprise Program (SBFEP)

A Ministry of Forests program which operates throughout the Province allowing small operators to competitively bid on timber sales.

Snag

A dead standing tree in any of various stages of decay, generally of at least three metres in height.

Spatial and Temporal Distribution

The distribution of forest features across the landscape over time. Usually referring to cutblocks or other disturbance or seral stages.

Stand Level Biodiversity

Biodiversity considered within a specific forest stand or relatively small forest area.

Structural Diversity

Variation in the structure of a forest stand, which may include varying stand densities, crown closures, tree heights, branching patterns, abundance of shrub, herbaceous and moss layers, species composition and the abundance of snags and coarse woody debris.

Stumpage

The fees collected by the Province from forest licensees in exchange for the right to utilize Crown timber.

Tenures

Different forms of license awarded to individuals or companies allowing them to harvest Crown timber and to practise forestry on Crown land.

Timber Harvesting Landbase (THLB)

The portion of the total land area of a management unit considered to contribute to, and be available for, long-term timber harvest.

Timber Supply Area (TSA)

A forest resource management unit established in accordance with *Section 6* of the *Forest Act*. It is an area of land within which an allowable annual cut is calculated and volume-based forest tenures are allocated to licensees.

Timber Supply Review (TSR)

A review of the forest resources of the Province carried out by the Ministry of Forests. The purpose of the Timber Supply Review is to examine the short and long-term effects of current forest practices on the availability of timber for harvesting throughout the Province.

UREP

A map notation used by British Columbia Assets and Lands and the Ministry of Forests which stands for "Use: Recreation Enjoyment of the Public". They are generally an indicator of specific recreation value on the delineated site but are not a reserve.

Uncharted

Crown land (forest land) that has not been allocated to a tenure

Veteran trees (vets)

Old trees that are remnants of the previous forest stand that have been left following a stand removal disturbance such as fire or logging.

Visual Quality Objectives (VQO)

A definition of the acceptable level of landscape alteration that may result from timber harvesting and other activities. It is usually defined in terms of the maximum amount of alteration permitted.

Watershed

All land upstream of a specified point on a watercourse or of a specified waterbody that drains to that point.

Wildlife Tree Patch (WTP)

A patch of trees designated either within a cutblock or adjacent to it that will be retained as representation of the stand for wildlife habitat.

WTR

Windfirm

Trees that are firmly-rooted and are relatively unlikely to be blown over by wind.

Windthrow

Trees that have been blown over by the wind.

Woodlot License

An area-based forest tenure that may include up to 400ha of Crown land (600 ha in the interior) and a private land contribution, that is assigned an annual allowable cut.

Appendix VIII

Chapman Landscape Unit Summary of Public Input

The Chapman Landscape Unit (LU) Plan was released on December 17, 2000 for a 60 day public review period as well as a concurrent 45 day agency review period, ending on January 31 and February 15 respectively. Following these review periods revisions were made to the draft plan based on the information received. The following individuals and organizations made submissions:

International Forest Products Ltd.
Sunshine Coast Regional District, Board of Directors
The MOF's Small Business Forest Enterprise Program
Weyerhaeuser Ltd. Stillwater Division
D. Jakobsen, P. Geo, Ministry of Energy and Mines
Sechelt Indian Band
Adrian Belshaw, Director, Area D, Sunshine Coast Regional District
Colin R. Campbell
Maria Hunter
Bill Lasuta
Elise Rudland
Debbie Olsen
Rick O'Niell

The submissions received from those listed above were considered and changes were made to make the final version of the Chapman LU plan. Original submissions are attached to the Chapman LU file at the Sechelt MSRM office. The following points and comments were made, together with a description of how they were taken into consideration, and resulting changes made:

(Please note that some wording has been changed from original submissions if several comments were made on the same topic, or if the comment was not clear or concise.)

All non-contributing forest should be shown on draft OGMA maps to show how OGMAs and the non-contributing forest both provide biodiversity management areas. Just showing OGMAs shows very little of the total area in the LU contributing to biodiversity management.

The LU map is part of the plan's legal objectives and cannot include any other resource value information. Non-contributing forest definitions are subject to change. To include other features could potentially infer some legal status that may be inappropriate. Maps showing other resource values, non-contributing forest and other features are available for viewing at the Sechelt MSRM office.

Interfor has had more accurate Biogeoclimatic mapping done for part of the Chapman LU area (Interfor's Jackson chart area) and this should be incorporated into the LU analysis.

This more accurate BEC mapping information was not made available in digital form, subsequently it could not be used for analysis in conjunction with the forest cover inventory data. cursory examination of the new mapping showed that the changes were not significant and likely would result in only very small changes to BEC unit old seral representation targets. If this information is available in digital form in the future it may be included for a revision.

Polygons 321, 325, and 330 (within the CWHxm1) could be left in the THLB and designate other CWHxm1 within Mt. Richardson Park as representation area.

The operable portions of polygons 321 and 325 have been removed from OGMA and the representation was replaced by area within Mt. Richardson Park as suggested. Other portions of those polygons are Chapman Creek riparian reserve and unstable slope adjacent to the creek. Polygon 330 was not delineated as OGMA.

Interfor's blocks 504, 505 and proposed block 204 conflict with OGMA delineation.

Conflicting area at block 204 has been removed from OGMA, and the block's WTP has been included as OGMA. Blocks 504 and 505 are within an under-represented BEC unit and are required for old seral representation, therefore, the OGMAs cannot move to avoid this conflict.

The Sunshine Coast Regional District Board is requesting, via a motion (A. Belshaw, J. Marion) which was passed at their February 8, 2001 meeting, that the Chapman LU planning process be re-opened as a "public, open process" as per a Forest Practices Board recommendation.

Landscape Unit planning is not a "process" that can be opened up for public participation. It is a technical undertaking consisting of analysis of forest inventory data, interpretation of airphotos, technical mapping requirements and a thorough understanding of all relevant resource values in order to balance the outcome.

The area currently proposed for harvesting by Interfor along Porpoise Bay road (block 350) should be included as OGMA, rather than the Sechelt Heritage Forest.

Block 350 is planned to harvest second-growth forest including stand-level provisions for biodiversity; wildlife tree patches, selective harvesting system, and a natural disturbance pattern. OGMA placed on the block 350 area would have significant impact on the timber resource. The Sechelt Heritage Forest has been supported by the community as a stand of great biodiversity and recreation value. It has already been removed from the timber harvesting landbase and contributes very productive site to biodiversity representation.

The plan is somewhat confusing to members of the general public. An informal public presentation or a more structured information session would be useful to better explain the plan's aspects and impacts.

Past experience with large information sessions has shown them to be less effective than one-on-one or small group interaction. Larger groups tend to intimidate some individuals, and not provide opportunity for all questions to be asked. Smaller ones enable people to ask all questions and do so in a more comfortable environment. MSRM staff are available for such sessions, requiring only that an appointment is made.

A more complete analysis of timber supply impacts should be included than what section 4.0 offers.

LU planning legislation and policy guidance has been developed to ensure that impacts associated with its implementation are within acceptable levels on a Provincial basis. At the Regional Level, planners must ensure that their work is done consistent with this guidance to keep impacts to as low a level as possible. It is not advantageous to analyse impacts for each LU individually, as each one will have different impacts and the analyses that guided the development of the FPC legislation was based on a Provincial application. Impacts will be assessed after LU planing has been completed.

The Chapman LU plan does not describe how LU planning fits in to the wider range of Biodiversity provisions of the FPC.

A LU planning “backgrounder” has been included as Appendix VI to provide more information on LU planning to address this concern.

A glossary is needed.

A glossary has been included as Appendix VII.

Acronyms must be spelled out entirely.

The text was revised to ensure all acronyms are spelled out entirely when first used and all acronyms added to the glossary in the appendix.

OGMAs should be called different names and mapped differently.

OGMAs cannot be mapped differently or called different things because they are legally identical: their management implications are identical; they are areas reserved from harvesting. In appendix V the attributes of each stand are listed, including each stand age. Age class distribution maps are also available for viewing at the MSRM office in Sechelt.

The CWHxm1 and CWHdm appear in different places in the table which is confusing.

This has been corrected.

The meaning of “industrial landholders” referred to in the Introduction is not clear.

The wording has been changed to make the meaning clear.

The reference to TFLs in the Introduction is incorrect – there are no TFL areas within the Chapman LU.

The reference to TFL has been removed.

The rare (red-listed) ecosystems identified by the Conservation Data Centre should be included in OGMA.

The Conservation Data Centre’s Sensitive Ecosystem Inventory information for the Chapman LU area was obtained in the spring of 2001 (following the advertisement of the draft plan) and has since been used to revise OGMA placement to include more of the identified site series.

The strategy of moving OGMA from the CWHdm to the CWHvm2 is not compatible with proper biodiversity management.

This strategy was accidentally copied from another LU plan’s text and has been removed

Low BEO leaves no provision for the management of other seral stage distribution besides old growth which may result in extensive fragmentation.

Provisions for the management of other seral stages besides old growth are not considered priority objectives of LU planning at this time. The emphasis now is to get landscape units in place with their old growth OGMAs in place and wildlife tree retention requirements to ensure that last options for old

seral conservation are not lost. Management of other seral stages may be developed following the completion of priority (old growth) landscape unit planning.

Many species at risk are present in the Chapman LU and need forest retained for their specific habitat.

Marbled Murrelet (*Brachyramphus marmoratus*) (MAMU) and Snow Dewberry (*Rubus nivalis*) (RUNI) are red-listed species present within the Chapman LU. Since the completion of the draft plan, additional OGMA area within the CWHvm2 and the MHmm has been added, and an OGMA specifically situated on the largest known patches of RUNI has also been added. Maps of all known locations of RUNI have been sent to the Conservation Data Centre, as well as site descriptions.

Besides LU planning provisions, only FSC-certified logging practices should be allowed in this LU.

The FPC does not require certification of licensees, however, many are pursuing certification on their own.

There should be area set aside for Mountain Goats.

There are no known Mountain Goats in the Chapman LU. Several flights have been made in recent winters to locate them in areas known historically to be Mountain Goat winter range, but no goats or tracks have been located. These areas are within Tetrahedron Provincial Park.

Change the Biodiversity Emphasis Option to Intermediate.

Because of the under-representation of old growth and abundance of non-contributing mature forest there is no difference between the two BEO options. The levels of old growth are already below the requirement for the low BEO, so the Intermediate BEO would not be able to set more old growth aside.

Add provisions for connectivity through Forest Ecosystem Networks

Forest Ecosystem networks would require much larger areas to be set aside from the timber harvesting landbase than LU planning allows for. Please refer to the other maps available showing non-contributing forest.

Add proposed WHAs for MAMU, Tailed Frog, Snow Dewberry and Tricholoma apium

WHAs are developed in a separate process from LU planning, by the Ministry of Air, Land and Water Protection, however, OGMAs are delineated within and adjacent to WHA areas when possible. Several WHAs for MAMU (red-listed) have been proposed for the Chapman LU. Tailed frog (blue-listed) WHAs have not been proposed. Snow Dewberry occurs within WTPs, OGMAs and across the operable area of Mt. Elphinstone, including several harvested areas. Conservation Data Centre biologists feel this is sufficient for its survival. *Tricholoma apium* is not listed as a threatened species and no specific management practices have been prescribed.

The Sunshine Coast Conservation Association made a lengthy submission regarding LU planning in general including a detailed critique of the Chapman LU plan summarized by the abstract that reads: *The Chapman Landscape Unit has been incorrectly assigned a low Biodiversity Emphasis option under the Regional Landscape Unit planning strategy.*

This comment, and the basis of the submission, is based on a number of inaccurate assumptions of how LU planning is undertaken and inaccurate interpretations of legislation and policy. As a result, much of

the content of the submission is either aimed at the LU planning process as a whole, or is not applicable to the Chapman LU.

Many areas of old growth and primary forest within Elphinstone forest at low elevations between Wilson Creek and Clough Creek were not identified and therefore not considered as OGMAs.

Members of the public identified many old growth areas within the Landscape Unit that are not listed in the inventory. Primary forest is not necessarily old growth, and is not necessarily the best area for OGMA.

With respect to the policy context of the landscape unit plan process, I am concerned that the mapping exercise by which OGMAs were identified did not directly address the main reason for identifying OGMAs in the first place.

The OGMAs were originally intended to be biological reserves but they are not being designed as such.

OGMAs provide for biodiversity not on a species-by-species habitat requirement basis, which would be an impossible task, but rather by setting aside old growth that should include habitat for all old growth dependant species. Old growth forest conservation is a surrogate for individual species management. (Please refer to the Biodiversity Guidebook, the Guide to Landscape Unit Planning and the Identified Wildlife Management Strategy) for a full description of this approach.