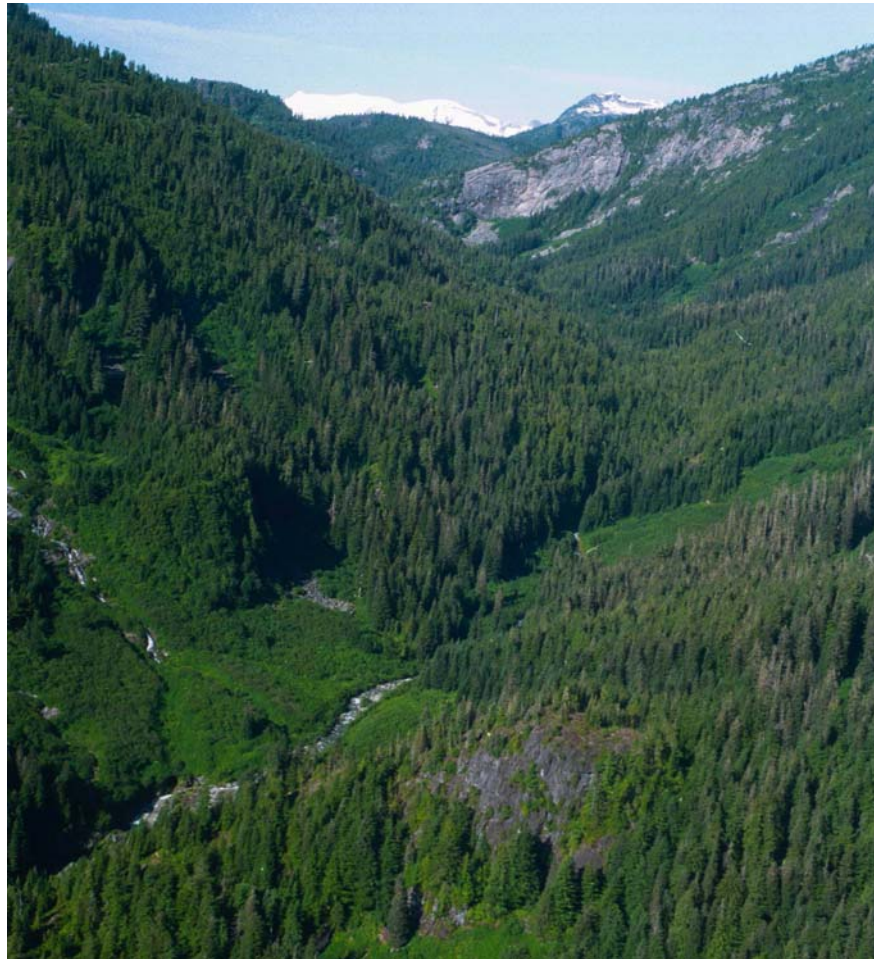


# Sustainable Resource Management Plan

## Biodiversity Chapter for Gates Landscape Unit



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## 1.0 Introduction

This report provides background information used during the preparation of the Sustainable Resource Management Plan and associated proposed legal objectives for the Gates Landscape Unit (LU). Specifically, this report will form the biodiversity conservation chapter of the plan. A description of the planning unit, discussion on significant resource values, and an Old Growth Management Area (OGMA) summary and rationale are provided.

Biological diversity or biodiversity is defined as: *‘the diversity of plants, animals and other living organisms in all their forms and levels of organisation, and includes the diversity of genes, species and ecosystems as well as the evolutionary and functional processes that link them’*<sup>1</sup>. British Columbia is the most biologically diverse province in Canada. In British Columbia, 115 species and subspecies of known vertebrates and 364 vascular plants are listed for legal designation as threatened or endangered<sup>2</sup>. The continuing loss of biological diversity will have a major impact on the health and functions of ecosystems and the quality of life in the province (Resources Inventory Committee, 1998).

Planning for OGMA and Wildlife Tree Patch (WTP) biodiversity values is recognized as a high priority for the province. LU planning is an important component of the *Forest Practices Code of BC Act (FPC)* which allows legal establishment of objectives to address landscape level biodiversity values. Implementation of this initiative is intended to help sustain certain biodiversity values. Managing for biodiversity through retention of old growth forests is not only important for wildlife, but can also provide important benefits to ecosystem management, protection of water quality and preservation of other natural resources. Although not all elements of biodiversity can be, or need to be, maintained on every hectare, a broad geographic distribution of old growth ecosystems is intended to help sustain the genetic and functional diversity of native species across their historic ranges.

The Squamish Forest District has completed draft LU boundaries and assigned draft Biodiversity Emphasis Options (BEO) in accordance with the direction provided by government. There are 20 LUs within the Squamish Forest District. Through a ranking process the Gates was rated as an Intermediate BEO, which requires that priority biodiversity provisions, including the delineation of Old Growth Management Areas and wildlife tree retention (WTR), be undertaken immediately. This work was completed by the Ministry of Sustainable Resource Management (MSRM), in cooperation with BC Timber Sales Program, their consultants and International Forest Products Ltd. Funding was provided by the Forest Investment Account and MSRM.

Input from First Nations was gathered during consultation (prior to going public) between MSRM and individual First Nations. Comment from the public and other agencies will

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<sup>1</sup> This definition comes from the Biodiversity Guidebook (1995)

<sup>2</sup> BC Species and Ecosystems Explorer. 2003. Victoria, British Columbia. Available at: <http://srmapps.gov.bc.ca/apps/eswp/>

be sought during the 60 day public review and comment period. Refer to the attached map for location of OGMAs.

Supporting documentation regarding government policy, planning processes and biodiversity concepts are provided in the 1995 *Biodiversity Guidebook*, the 1999 *Landscape Unit Planning Guide* (LUPG), the *Vancouver Forest Region Landscape Unit Planning Strategy (1999)*, as well as *Sustainable Resource Management Planning Framework: A Landscape-level Strategy for Resource Development*.

## **2.0 Gates Landscape Unit Description**

### **2.1 Biophysical Description**

The Gates LU is located north-east of Pemberton and Mt. Currie, near the town of D'Arcy. Forests are considered transitional between coastal and interior types, with some forest stands exhibiting dry characteristics. The LU is situated within the Leeward Pacific Ranges Ecoregion (Interior Transition Ranges Ecoregion). The main stream system (Gates River) is tributary to Anderson Lake, which enters the Fraser River via Seton River. Its climate can best be described by elevational gradients. At low elevations summers are warm and dry, while winters are cool and relatively moist with moderate snowfall. Mid elevations are characterized by moist, cool winters with relatively heavy snowfall and cool but relatively dry summers. High elevation climate is characterized by short, cool summers and long, cold winters with heavy snowfall.

The Gates LU covers a total of 35,162.0 hectares encompassing the entire Gates River watershed and three small watersheds (D'Arcy, Young and Pinney Creeks), all of which flow directly into Anderson Lake. Of the total area, 16,382.7 hectares (46.6%) are within the Crown forest land base (productive forest). Of this, 8,389.0 hectares (23.9% of the total LU area) are included in the Timber Harvesting Land Base (THLB). The remaining 18,776.3 hectares are non-forested or non-Crown (rock, alpine tundra, water, ice, and private land) and have been excluded from any OGMA contributions and calculations.

There are six biogeoclimatic (BEC) subzones within the Gates Landscape Unit, which fall within four natural disturbance types (NDTs)<sup>3</sup>. The Interior Douglas-fir wet warm subzone (IDFww) falls within NDT 4; the Coastal Western Hemlock dry subarctic southern variant (CWHds1), CWH moist subarctic southern variant (CWHms1), and Engelmann Spruce Subalpine fir moist warm subzone are within NDT 2, the Mountain Hemlock moist maritime leeward variant (MHmm2) is within NDT 1, and the Alpine Tundra (AT unp) is in NDT 5.

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<sup>3</sup> NDT4 includes ecosystems with frequent stand-maintaining fires. NDT2 encompasses those ecosystems with infrequent stand initiating events. NDT1 includes ecosystems with rare stand-initiating events. NDT5 is Alpine Tundra or other parkland ecosystems that are not considered forested. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

## 2.2 Summary of Land Status

Land status within the Gates LU is summarised in Table 1. The Crown forested land base summary is provided in Table 2.

**Table 1. Land Status of the Gates Landscape Unit.**

Code	Ownership class	Gates LU (ha)	% total area
40	Private and crown grants	1414.9	4.0
52	Indian Reserves	217.2	6.2
61	UREPs	24.3	<0.1 (0.07)
62	Crown contributing	32136.5	91.4
69	Crown Misc. Reserves	861.5	2.5
77	Crown and Private Woodlot Licenses	497.4	1.4
99	Crown Misc. Leases	10.2	<0.1 (0.003)
	<b>Total Area</b>	<b>35,162.0</b>	

**Table 2. Land status using Crown forest land base classifications.**

BEC Unit	Area (ha)	Crown Forested Land Base*			Excluded Land Base
		C	PC	NC	X
CWH ds1	4915.2	1926.7	958.8	1489.7	540.0
CWH ms1	2890.9	1452.9	279.2	922.6	236.2
ESSF mw	5117.6	296.7	66.2	2431.7	2323.0
IDF ww	5619.0	1603.4	658.0	717.1	2640.5
MH mm2	6022.9	989.2	154.2	2135.9	2743.6
AT p	10596.4	0.0	3.7	296.7	10296.0
<b>TOTAL</b>	<b>35162.0</b>	<b>6268.9</b>	<b>2120.1</b>	<b>7993.7</b>	<b>18779.3</b>

\* The Crown Forested Land Base is comprised of Contributing (C), Partial Contributing (PC), and Non-Contributing forests. Contributing and Partial Contributing forest make up the Timber Harvesting Land Base. Non-Contributing forest land does not contribute to the Allowable Annual Cut.

## 3.0 Key Resource Tenure Holders

The general premise applied during the planning process was to identify key resource(s) tenure holdings. This assessment included identification of tenures that are administered by agencies such as the Ministry of Forests (MOF), Ministry of Energy and Mines and Crown corporations such as Land and Water British Columbia. For tenure holders, other than those administered by MOF, the management intent generally is to avoid placement of OGMA's within existing tenures. As for tenures administered by MOF, the management intent is to avoid placement of OGMA's over cutblocks and roads that have received approval status, and to minimize OGMA placement in areas that were identified as future harvest opportunities by licensees.

### **3.1 Forest Tenure Holders**

Within the Gates plan area, volume based tenures exist and have been made available to licensees such as the BC Timber Sales Program (administered by MOF) and International Forest Products Ltd. A few small Woodlot Licenses also exist. The OGMAs selected do not impact any known approved category “A” cutblocks or roads as approved under an FDP. Furthermore, discussions with key licensees have taken place to ensure that the intent of this LU plan is conveyed and impacts on future planned development is minimized.

### **3.2 Mineral Tenure Holders**

There are 2 mineral tenures within the landscape unit, both located near the headwaters of Spetch Creek. The selection of OGMAs followed the intent of avoiding placement over existing tenure holders; there is no OGMAs overlap with either of these mineral tenures. It should also be noted that 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.

## **4.0 Significant Resource Values**

### **4.1 Fish, Wildlife and Biodiversity**

Wildlife resources of primary management concern in the Gates LU include: grizzly bear, mountain goat, mule deer, spotted owls, fish and some species at risk that are considered “Identified Wildlife”<sup>4</sup>. Many other species occur including forest birds, raptors, small mammals, amphibians and furbearers (e.g. wolverine) but their habitat requirements are generally managed within habitat provisions provided for primary species. For example, forested habitat for spotted owls in the Gates LU is maintained within a Special Resource Management Zone (SRMZ #18 - Birkenhead) which covers approximately 4,357.9 ha of gross forested area. Approximately 71.1% (3,096.4 ha) of the gross forested area is suitable owl habitat (>100 years old forest). This owl habitat would support other forest dependent species (e.g. northern goshawk).

The Gates LU is also an important area for mule deer and mountain goats. Forested winter range habitat for both species has been identified by Ministry of Environment, Lands and Parks (now called Ministry of Water, Land and Air Protection, MWLAP) based on inventory work completed during the 1990s. Some of the UWR overlaps with

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<sup>4</sup> Volume 1 of the *Identified Wildlife Management Strategy* includes a list of 36 wildlife species and 4 plant communities that are considered to be at risk. These species or plant communities require special management of critical habitat to maintain or restore populations or distributions. Critical habitat is protected within Wildlife Habitat Areas. See the *Identified Wildlife Management Strategy Volume 1 February 1999* for more information.

Spotted Owl SRMZ and some of each species' habitats have been captured in OGMA. The habitat maintained for ungulates would also benefit other species.

Grizzly bears in the Gates LU are part of the Squamish-Lillooet grizzly bear population unit. Grizzly bears are also an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHAs).

The Gates River and its major tributaries support resident and anadromous salmonid populations, with sockeye salmon being the primary anadromous stock. Bull trout (Identified Wildlife) are also present within Gates Lake, Gates River and some of its tributaries. Riparian reserve zones established (as per the FPC) adjacent to these fish streams will help maintain fish and wildlife habitat. Where riparian areas have been logged, habitat will be provided in the future as forests re-grow.

## 4.2 Timber Resources

Continued access to commercially valuable timber, including future second growth, is a significant concern for forest licensees operating within the Gates LU. First pass harvesting of accessible old growth timber is still underway.

Commercially valuable tree species in the Gates LU are best described by elevation. At lower elevations Douglas-fir is dominant, with lesser amounts of lodgepole pine, western hemlock, and western red cedar also present. Tree species within mid elevations forests include amabilis fir, Douglas-fir, western hemlock, and western red cedar. Subalpine fir, amabilis fir, and Engelmann Spruce are typical tree species within high elevation forests. Based on forest cover information, Table 3 shows the age composition of forests in the Gates LU.

**Table 3. Age distribution of forests within the Gates Landscape Unit.**

Age	% of Forested Landbase within Provincial Forest
0-60	10
61-140	35
141-250	43
251+	12

Approximately 9% of the forested sites are poor sites (site index  $\leq 10$ ), 62% are medium sites (site index  $>10$  to  $20$ ), and 28% are good sites (site index  $>20$ ).

Forest management activities occur throughout all phases of forest development. Operational work includes pre-harvest planning, harvesting and stand regeneration. Post harvest activities include planting, brushing, juvenile spacing, pruning and thinning. Prescribed burning has been implemented in recent years in order to assist in forest regeneration while also reducing fuel loading and, as a result, fire risk.

### **4.3 Recreation**

There are no protected areas or Forest Service Recreation sites in this landscape unit.

The Gates LU receives substantial recreational use for a variety of different activities, including: heli-skiing, heli-hiking, backcountry skiing, mountaineering, hiking, camping, hunting, rafting/boating, and fishing. Other activities include ATV, 4x4, and snowmobile use. Pine mushroom picking by First Nations and the public is an important activity during the fall. Wildlife viewing/sight seeing also occurs.

### **4.4 Water**

There are two community watersheds within the Gates Landscape Unit, D'Arcy and Spruce Creeks. D'Arcy Creek is located north-west of D'Arcy, supplying water to this small community located at the southern end of Anderson Lake. Spruce Creek, located immediately south of Haylmore Creek, provides water to the community of Devine.

### **4.5 Private Land**

The majority of private land within the Gates LU is located within the Gates River floodplain, between Anderson Lake and Gates Lake. In addition, there is some private land located within the Blackwater Creek drainage. Most of the private land has been cleared for development purposes. Private land holdings are being utilized for agriculture and residential development, with private residences concentrated within the small communities of D'Arcy and Devine and also within proximity to Gates Lake. Where ecologically appropriate, OGMA's adjoin private land.

### **4.6 Mineral Resources**

Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are valuable to the province, but are difficult to characterize due to their hidden nature. The Ministry of Energy and Mines has rated the metallic mineral potential within the majority of this LU as "very high". In addition, a "high" rating applies to southcentral portions of this LU and the metallic mineral potential in the southwestern corner of the LU has been rated "low to medium". The aggregate potential has been rated as "high" in several locations within the Gates River floodplain and within the Blackwater Creek drainage near Blackwater Lake. Remaining portions of the LU have generally been rated as "low", with scattered "medium" ratings present throughout. The geothermal potential within this LU has been rated as "medium". These rankings are based on a qualitative analysis which takes into account the value of known resources, past exploration and production as well as the number of known mineral occurrences and a subjective probability estimate of value by industry experts.

## **5.0 Existing Higher level Plans**



Higher Level Plan objectives are one provision under the FPC that enable specific forest resource management objectives to be made legally binding. Legal objectives established under the Landscape Unit plan will be higher level plan objectives. In part of the Gates LU, the Spotted Owl Management Plan has been approved and is also being considered for higher level plan status with legal objectives. It is important to note that operational plans must be consistent with higher level plan objectives.

## **6.0 First Nations**

The Gates LU is located within the traditional territory of the N'Quat'qua First Nation and the Lil'wat First Nation. During plan development a meeting was held with the N'Quat'qua to explain LU planning. In addition letters and background information were sent to the Lil'wat First Nations.

Between 1996 and 1997, an Archaeological Overview Assessment model was developed by Millenia Research on behalf of MOF to indicate where archaeological sites are most likely to be located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the potential location (i.e. high or moderate potential) of habitation sites, trails and Culturally Modified Trees (CMTs).

The maps from the model were reviewed to determine if potential archaeological sites or travel routes were captured in OGMA. In the Gates LU, at least 1 OGMA overlaps with forest stands that have high potential for habitation sites and CMTs near Blackwater Lake. In regards to potential trails, there a few valley bottom OGMA that overlap with possible trail/travel routes locations (e.g. Blackwater Creek and Haylmore Creek headwater reaches).

## **7.0 OGMA Methodology**

### **7.1 Existing Planning Processes**

Each LU contains varying amounts of mature forested habitat provided by existing processes from which to build on for ecosystem management. For example, the Gates LU overlaps with a spotted owl SRMZ (SRMZ #18 – Birkenhead). In addition, Wildlife Habitat Areas that may be established in future will also improve connectivity; and in the long term, re-establishment of riparian reserve zones to old forest will improve upon ecosystem integrity. The habitats provided by these various processes together with OGMA provide the fundamental components to achieve a functioning ecosystem.

An important part of the OGMA planning exercise was to ensure that these separate processes complemented each other. For example, OGMA were placed within or adjacent to ungulate winter range for mule deer and mountain goats to overlap constraints and to increase patch size. These larger patches then allow greater opportunity to improve connectivity between adjacent patches. The intent is to maintain a series of old forest habitat patches across probable movement corridors to allow wildlife dispersal and

gene flow. Species such as mule deer are particularly susceptible to mortality in winter. Connecting or aggregating OGMA's may help facilitate deer movement in addition to benefiting biodiversity. Using this approach with stand level biodiversity measures will increase the likelihood of sustaining ecosystems and viable wildlife populations well distributed across their natural range.

Forests in the Gates LU are considered transitional between coastal and interior types. This results in some forest stands (mostly on dry, southerly aspects) being considerably drier than true coastal forest and more susceptible to fire disturbance. In some cases, fire suppression over the past century has exacerbated fuel loading such that fuels in some areas are above normal, resulting in increased susceptibility to fire. The BC Timber Sales Program has recognized this problem and attempted to manage these fire dominated areas more closely to their historical fire regime. Considerable work has been done in the Gates River watershed, primarily by fire ecologist Robert Gray of R.W. Gray Consulting Ltd., to better understand where management intervention should proceed to reduce hazards on the highest risk sites. OGMA's will be situated within some high risk forest stands and MSRM has acknowledged that some management intervention should be permitted. Management within OGMA's will include partial cut timber harvesting, spacing, thinning, and/or prescribed burning. Strategies to direct operations are outlined and accompany the *Legal Objectives*. Treatments are referred to as ecosystem restoration and are intended to sustain biodiversity values.

## **7.2 Assessment and Review**

OGMA's were selected based on a review of stand attributes in an effort to maximize their value from a biodiversity standpoint while minimizing timber supply impact. Spatial distribution of OGMA's throughout the LU was also a selection criterion. In general, opportunities to recruit larger patches to provide for forest interior habitat conditions were favoured over smaller patches. In this search, an effort was extended to minimize the impact on timber supply by combining areas in the non-contributing (inoperable) with areas within the timber harvesting land base. In addition, a few smaller remnant patches containing age class 9 were delineated in conformance with the *Landscape Unit Planning Guidebook* (LUPG). A specific rationale for the selection of each OGMA is shown in Appendix 1.

In the Gates LU there was sufficient old forest (250+ years) in 3 of 5 BEC variant to meet OGMA targets (CWHms1, ESSFmw, and MHmm2). In the IDFww and, to a lesser extent in the CWHds1, there were extensive shortfalls in old forest to achieve the OGMA targets. As a result, in these 2 BEC variants there was a requirement to designate some younger aged mature stands (i.e. mostly age 141-250 years, with some age 101-140 years) as recruitment OGMA's. Although there was sufficient old forest in the other 3 BEC variants to meet the OGMA targets, some recruitment OGMA's were still established in the CWHms1, ESSFmw, and MHmm2. In these cases, younger forests were included with full consideration towards specific biodiversity objectives (e.g. interior forest, ungulate winter range) and/or the delineation of more logical OGMA boundaries. Where possible, mature stands that likely have old forest attributes (e.g.

snags, multi-layered canopy) and/or high resource values (e.g. spotted owl, ungulate winter range) were chosen as recruitment OGMAs.

### **7.3 Boundary Mapping**

OGMA boundaries used natural features wherever possible to ensure they could be located on the ground. OGMAs were also delineated to include complete forest stands (forest cover polygons) wherever possible to reduce operational uncertainty and increase ease of OGMA mapping. OGMAs were mapped using a 1:20,000 scale TRIM base, which forms the legal standard for measurement. Procedures for operating within OGMAs are discussed in the OGMA Amendment policy.

### **7.4 Amendment Policy**

An MSRMC Coast Region policy has been developed and approved to give direction to proponents (forest tenure holders) when applying for amendments to OGMA legal objectives. Amendment procedures cover such things as minor or major amendments for resource development (e.g. roads, bridges, boundary issues, rock quarries & gravel pits) or relocation of OGMAs. The policy also discusses acceptable management activities and review procedures, and forms an integral part of this LU plan.

### **7.5 Mitigation of Timber Supply Impacts**

During delineation of OGMAs for priority biodiversity provisions an attempt was made to mitigate the short and long-term impacts on timber supply. For example, OGMAs were delineated first in the non-contributing forest land base (approximately 60% of the OGMAs are within the NC land base). Since representation must be at the variant level, the non-contributing land base could not always satisfy old forest requirements. Where this occurred, portions of the THLB from most constrained to least constrained were assessed and included as OGMAs. Generally, more THLB was required in lower elevation variants due to a longer disturbance history and lesser amounts of non-contributing forest land. In some cases, areas within the THLB were determined to have lower timber values and/or greater constraints than alternative areas within the NC land base.

OGMAs were chosen in the oldest available age class first, however, old forest stands that were approved or proposed for harvesting on Forest Development Plans (FDP) were excluded from candidate OGMAs following direction outlined in the LUPG. Licensees also reviewed the maps and identified future harvesting opportunities so that timber supply impacts could be reduced wherever possible.

## **8.0 OGMA Analysis by Landscape Unit**

### **8.1 Gates Landscape Unit**

The Gates LU was ranked as an Intermediate biodiversity emphasis option through the biodiversity value ranking process completed earlier (see the *Vancouver Forest Region Landscape Unit Planning Strategy*, 1999). This Intermediate designation along with the BEC variant determines the percentage of the Crown forest land base that will be designated as OGMA. Table 4 outlines the total amount of OGMA required in each variant, the amounts established and overlap with different Crown forest categories (i.e. Non Contributing-NC; Timber Harvesting Land Base)<sup>5</sup>. The old growth target figures in Table 4 are derived from Appendix 2 in the *Landscape Unit Planning Guide*. See Appendix 1 for OGMA attributes and rationales; and the attached map for location of OGMAs.

**Table 4. Old growth management area requirements, Gates Landscape Unit.**

BEC Variant	Full OGMA Target	Established OGMAs	OGMAs in Non-Contributing (NC)		OGMAs in Partial Contributing (PC)		OGMAs in Contributing (C)	
			Ha	%	Ha	%	Ha	%
<b>CWHds1</b>	394.0	398.3	132.5	33	46.8	12	219.0	55
<b>CWHms1</b>	239.0	242.0	78.7	32	42.4	18	121.0	50
<b>ESSFmw</b>	252.0	256.1*	233.3	91	6.0	2	16.8	7
<b>IDFww</b>	387.0	387.1	198.1	51	169.0	44	20.1	5
<b>MHmm2</b>	623.0	625.1**	545.7	87	13.1	2	66.2	11
<b>Total</b>	1895.0	1908.6	1188.3	62	277.3	15	443.1	23

\* ESSFmw OGMAs include 3.2 ha that was originally mapped as ATp

\*\* MHmm2 OGMAs include 5.6 ha that was originally mapped as ATp

Note: Any differences in totals and % totals that do not equal 100% are due to rounding.

CWHds1: Coastal Western Hemlock, dry subarctic, southern variant. NDT 2

CWHms1: Coastal Western Hemlock, moist subarctic, southern variant. NDT 2

IDFww: Interior Douglas-fir, wet warm subzone. NDT 4.

ESSFmw: Engelmann Spruce Subalpine Fir, moist warm subzone. NDT 2.

MHmm2: Mountain Hemlock, moist maritime, leeward variant. NDT 1.

As noted in Table 4, approximately 38% of the total OGMA area overlaps with the THLB. This includes 15% overlap with the PC land base and 23% overlap with the C land base. The remainder, approximately 62%, overlaps with the NC land base.

## 9.0 Wildlife Tree Retention

<sup>5</sup> Non Contributing (NC) forest land does not contribute to the Allowable Annual Cut. The Timber Harvesting Land Base (THLB) is made up of Contributing (C) forests and a portion of the Partially Contributing (PC) forests. Partially Contributing forests are “constrained” due to one of several factors such as unstable soils or wildlife habitat, but are still partially available for harvest. Contributing forest is unconstrained and available for timber harvest.

Wildlife tree retention is managed at the stand level and maintains structural diversity within managed stands by retaining wildlife trees adjacent to or within cutblocks. The WTR percentage by BEC subzone is described in Table A of the Legal Objectives. Retention percents will meet the targets outlined in the LUPG for each BEC subzone.

The retention percentage does not have to be fully implemented on a cutblock-by-cutblock basis. Instead, the retention target may apply over a larger area (e.g. FDP or equivalent), so long as the retention target is met each 3 year period. The intent is to provide limited flexibility at the cutblock level provided that the legally required percentage is met across the subzone. Since wildlife tree retention is a stand level biodiversity provision, wildlife tree patches are also to be distributed across each subzone and the landscape unit.

## **10.0 Landscape Unit Objectives**

Landscape Unit objectives will be legally established within the framework of the FPC and as such will become Higher Level Plan objectives. Other operational plans must be consistent with these objectives.

OGMA and WTR objectives apply only to Provincial forest lands. While park and Crown forest lands outside of Provincial forest may contribute to old seral representation, LU Objectives do not apply to these areas.

## **11.0 Appendices**

Appendix 1 OGMA Summary and Rationale – Gates LU

Appendix 2 Acronyms

Appendix 3 Public Consultation Summary

**APPENDIX 1: OGMA SUMMARY AND RATIONALE – Gates LU**

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
1	CWH ds1	N	20.2	0.0	x-elevational linkage, lake riparian (Blackwater Lake), wetland riparian	no cutblock overlap	SRMZ, all SRMZ overlap is LTOH
1	CWH ds1	P	5.8	2.5	x-elevational linkage	no cutblock overlap	SRMZ (majority), all SRMZ overlap is FMZ
1	CWH ds1	C	13.8	13.8	x-elevational linkage	no cutblock overlap	SRMZ (all), all SRMZ overlap is FMZ
1	CWH ms1	P	1.2	0.5	x-elevational linkage	no cutblock overlap	SRMZ (all), all SRMZ overlap is FMZ
2	IDF ww	P	11.1	11.1	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (partial)
4	CWH ds1	N	16.8	0.0	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all), GWR (partial)
4	CWH ds1	P	6.6	2.0	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all), GWR (partial)
4	CWH ds1	C	70.8	70.8	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all)
4	CWH ms1	N	29.8	0.0	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all), GWR (majority)
4	CWH ms1	P	16.7	1.7	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all)
4	CWH ms1	C	6.3	6.3	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all), GWR (partial)
4	ESSF mw	N	9.6	0.0	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all), GWR (majority)
4	ESSF mw	P	6.0	0.6	large patch, forest interior, x-elevational linkage	no cutblock overlap	high wildlife values, DWR (all)
6	CWH ds1	C	1.0	1.0	na	no cutblock overlap	DWR (all), GWR (all)
6	CWH ms1	C	11.8	11.8	na	no cutblock overlap	DWR (all), GWR (partial)
7	CWH ds1	P	9.2	3.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (all)
7	IDF ww	P	4.5	4.5	na	no cutblock overlap	SRMZ (all), all SRMZ

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
							overlap is LTOH, DWR (all)
8	ESSF mw	C	0.6	0.6	na	no cutblock overlap	GWR (partial)
8	ESSF mw	N	32.6	0.0	na	no cutblock overlap	GWR (partial)
9	CWH ds1	N	2.1	0.0	large patch, forest interior, x-elevational linkage, stream riparian (Haylmore Creek)	no cutblock overlap	na
9	CWH ds1	P	4.0	1.6	large patch, forest interior, x-elevational linkage, stream riparian (Haylmore Creek), avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
9	CWH ds1	C	130.1	130.1	large patch, forest interior, x-elevational linkage, stream riparian (Haylmore Creek), avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
9	CWH ms1	N	9.5	0.0	large patch, forest interior, x-elevational linkage, avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
9	CWH ms1	P	24.1	9.6	large patch, forest interior, x-elevational linkage, stream riparian (Haylmore Creek)	no cutblock overlap	na
9	CWH ms1	C	86.1	86.1	large patch, forest interior, x-elevational linkage, stream riparian (Haylmore Creek), avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
9	MH mm2	N	13.5	0.0	large patch, forest interior, x-elevational linkage, avalanche chutes	no cutblock overlap	na
9	MH mm2	P	0.2	0.1	large patch, forest interior, x-elevational linkage, avalanche chutes	no cutblock overlap	na
9	MH mm2	C	2.0	2.0	large patch, forest interior, x-elevational linkage, avalanche chutes	no cutblock overlap	na
10	CWH ds1	N	19.3	0.0	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (partial), some grizzly bear habitat values in avalanche chutes
10	IDF ww	N	52.8	0.0	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR



OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
							(partial), some grizzly bear habitat values in avalanche chutes
10	IDF ww	P	14.5	14.5	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (partial), some grizzly bear habitat values in avalanche chutes
11	IDF ww	N	8.7	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (all)
11	IDF ww	P	4.9	0.5	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (partial)
12	CWH ds1	C	3.3	3.3	spatially important	no cutblock overlap	SRMZ (all), all SRMZ overlap is FMZ
12	IDF ww	N	18.9	0.0	spatially important, wetland riparian	no cutblock overlap	SRMZ (all), all SRMZ overlap is FMZ
12	IDF ww	C	20.1	20.1	spatially important, wetland riparian	no cutblock overlap	SRMZ (all), all SRMZ overlap is FMZ
13	CWH ds1	N	3.1	0.0	x-elevational linkage	no cutblock overlap	na
13	CWH ms1	N	19.4	0.0	x-elevational linkage	no cutblock overlap	na
13	ESSF mw	N	48.3	0.0	x-elevational linkage	no cutblock overlap	na
14	CWH ds1	N	3.6	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, GWR (all)
14	IDF ww	N	14.1	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, GWR (majority)
15	IDF ww	N	2.6	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, GWR (all)
16	IDF ww	N	15.0	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, GWR (partial)
17	IDF ww	N	3.5	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
							overlap is LTOH, GWR (majority)
19	MH mm2	N	29.9	0.0	avalanche chutes	no cutblock overlap	adjacent to GWR, some grizzly bear habitat values in avalanche chutes
20	CWH ms1	C	11.0	11.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
20	MH mm2	N	9.1	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
20	MH mm2	C	5.8	5.8	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
21	MH mm2	N	31.8	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
22	MH mm2	N	19.4	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
23	IDF ww	N	6.1	0.0	stream riparian (Eight Mile Creek)	no cutblock overlap	SRMZ (all) all SRMZ overlap is LTOH
23	IDF ww	P	92.0	92.0	stream riparian (Eight Mile Creek)	no cutblock overlap	SRMZ (all) all SRMZ overlap is LTOH
24	MH mm2	N	4.0	0.0	combines with OGMAs 19 and 20 to create a large patch, avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
25	MH mm2	N	10.0	0.0	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in OGMA and avalanche chutes
28	IDF ww	N	12.1	0.0	stream riparian (Gates River)	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH
30	MH mm2	N	28.3	0.0	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
31	MH mm2	N	6.9	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
31	MH mm2	C	2.0	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
32	CWH ms1	C	2.0	2.0	stream riparian (Spruce Creek),	no cutblock overlap	suspect high grizzly bear

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
					avalanche chutes		habitat values in avalanche chutes
32	MH mm2	N	32.4	0.0	stream riparian (Spruce Creek), avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
32	MH mm2	C	26.5	0.0	stream riparian (Spruce Creek), avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
33	MH mm2	N	11.4	0.0	portion mapped as ATP unp (0.9 ha), avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in OGMA and avalanche chutes
34	IDF ww	P	6.1	6.1	na	no cutblock overlap	na
35	MH mm2	N	17.9	0.0	portion mapped as ATP unp (2.7 ha), avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
35	MH mm2	C	0.5	0.5	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
36	CWH ms1	C	2.5	2.5	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
36	MH mm2	N	27.2	0.0	avalanche chutes	no cutblock overlap	GWR (partial), suspect high grizzly bear habitat values in avalanche chutes
36	MH mm2	C	6.6	6.6	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
38	CWH ms1	N	0.2	0.0	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
38	CWH ms1	P	0.5	0.1	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
38	CWH ms1	C	0.7	0.7	stream riparian (Haylmore Creek),	no cutblock overlap	suspect high grizzly bear

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
					avalanche chutes		habitat values in avalanche chutes
38	MH mm2	N	10.1	0.0	avalanche chutes	no cutblock overlap	GWR (all), suspect high grizzly bear habitat values in avalanche chutes
38	MH mm2	P	11.5	1.8	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
38	MH mm2	C	0.2	0.2	stream riparian (Haylmore Creek), avalanche chutes	no cutblock overlap	na
40	MH mm2	N	9.8	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
40	MH mm2	C	2.2	2.2	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
41	MH mm2	N	7.0	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
42	MH mm2	N	25.1	0.0	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
42	MH mm2	P	1.4	0.1	avalanche chutes	no cutblock overlap	some grizzly bear habitat values in avalanche chutes
44	MH mm2	N	23.8	0.0	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
45	MH mm2	N	174.2	0.0	large patch, forest interior, lake riparian (2 headwater lakes), stream riparian (Haylmore Creek), avalanche chutes	no cutblock overlap	suspect high wildlife values, including grizzly bear habitat values in avalanche chutes
45	MH mm2	C	13.4	13.4	large patch, forest interior, stream riparian (Haylmore Creek), avalanche chutes	no cutblock overlap	suspect high wildlife values, including grizzly bear habitat values in avalanche chutes
46	ESSF mw	N	85.8	0.0	portion mapped as ATP unp (0.7 ha), spatially important, stream riparian (Seven Mile Creek)	no cutblock overlap	na
46	ESSF mw	C	16.2	16.2	spatially important, stream riparian (Seven Mile Creek)	no cutblock overlap	na

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
49	MH mm2	N	12.0	0.0	spatially important, avalanche chute, adjacency with subalpine meadows	no cutblock overlap	na
52	CWH ms1	N	10.5	0.0	spatially important, stream riparian (Eight Mile Creek)	no cutblock overlap	na
52	ESSF mw	N	1.2	0.0	spatially important, stream riparian (Eight Mile Creek)	no cutblock overlap	na
53	CWH ds1	N	16.4	0.0	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, adjacent to GWR, some potential for grizzly bear habitat values in avalanche chutes
53	CWH ds1	P	6.1	6.1	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, minor overlap with GWR (<1 ha), some potential for grizzly bear habitat values in avalanche chutes
53	IDF ww	P	4.7	4.7	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, some potential for grizzly bear habitat values in avalanche chutes
53	ESSF mw	N	6.1	0.0	x-elevational linkage, avalanche chutes	no cutblock overlap	SRMZ (partial), all SRMZ overlap is LTOH, adjacent to GWR, some potential for grizzly bear habitat values in avalanche chutes
54	CWH ms1	N	0.1	0.0	na	no cutblock overlap	na
54	ESSF mw	N	29.4	0.0	na	no cutblock overlap	na
55	IDF ww	P	14.4	1.4	na	no cutblock overlap	DWR (partial)
56	CWH ds1	N	24.1	0.0	x-elevational linkage	no cutblock overlap	SRMZ (all), SRMZ overlap is LTOH, DWR (partial)
56	CWH ds1	P	9.9	3.6	x-elevational linkage	no cutblock overlap	SRMZ (all), SRMZ overlap is

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
							LTOH, DWR (partial)
56	IDF ww	N	39.2	0.0	x-elevational linkage	no cutblock overlap	SRMZ (all), SRMZ overlap is LTOH and FMZ, DWR (all)
57	ESSF mw	N	20.7	0.0	portion mapped as ATP unsp (2.5 ha), x-elevational linkage, avalanche chutes	Some overlap with Interfor cutblock 7-30 ("I" block – Interfor in agreement with OGMA)	suspect high grizzly bear habitat values in avalanche chutes
58	MH mm2	N	30.7	0.0	portion mapped as ATP unsp (0.8 ha), x-elevational linkage, avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
60	IDF ww	N	15.3	0.0	spatially important, stream riparian (Blackwater Creek)	no cutblock overlap	na
61	CWH ms1	C	0.6	0.1	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
61	MH mm2	N	7.3	0.0	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
61	MH mm2	C	6.9	6.9	avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
62	IDF ww	N	9.2	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, GWR (majority)
62	IDF ww	P	3.3	1.1	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, GWR (all)
63	MH mm2	N	1.3	0.0	combines with OGMA 44 and 58 to create a large patch, avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
64	MH mm2	N	2.8	0.0	combines with OGMA 58 to create a large patch, portion mapped as ATP unsp (1.2 ha), avalanche chutes	no cutblock overlap	suspect high grizzly bear habitat values in avalanche chutes
65	CWH ds1	P	5.1	2.6	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
							(majority)
65	IDF ww	P	13.5	10.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH, DWR (majority)
66	CWH ds1	N	8.6	0.0	na	no cutblock overlap	DWR (all)
67	CWH ds1	N	11.6	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH
67	CWH ms1	N	7.4	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH
68	CWH ds1	N	5.1	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH
68	CWH ms1	N	1.9	0.0	na	no cutblock overlap	SRMZ (all), all SRMZ overlap is LTOH

Summary of acronyms/abbreviations

DWR            deer winter range  
GWR            goat winter range  
FMZ            forest management zone (within spotted owl SRMZ)  
LTOH          long-term owl habitat area (within spotted owl SRMZ)  
SRMZ          special resource management zone (for spotted owls)  
x-elevational    cross-elevational

## **Appendix 2: Acronyms**

AAC	Allowable Annual Cut
BCTS	BC Timber Sales, administered by MOF
BEC	Biogeoclimatic Ecosystem Classification
BEO	Biodiversity Emphasis Option
C	Contributing
CMT	Culturally Modified Tree
CWS	Community Watershed
DDM	Delegated Decision Maker
FPC	Forest Practices Code of British Columbia Act
GBPU	Grizzly Bear Population Unit
IWMS	Identified Wildlife Management Strategy
LU	Landscape Unit
LUPG	Landscape Unit Planning Guide
MELP	Ministry of Environment, Lands and Parks, now called MWLAP
MEM	Ministry of Energy and Mines
MOF	Ministry of Forests
MSRM	Ministry of Sustainable Resource Management
MWLAP	Ministry of Water, Land and Air Protection
NC	Non-contributing
NDT	Natural Disturbance Type, see Biodiversity Guidebook
OGMA	Old Growth Management Area
PC	Partially Contributing
RRZ	Riparian Reserve Zone
THLB	Timber Harvesting Land Base
UWR	Ungulate Winter Range
WHA	Wildlife Habitat Area
WTP	Wildlife Tree Patch
WTR	Wildlife Tree Retention
LTOH	Long Term Owl Habitat



### **Appendix 3: Public Consultation Summary**

The Birkenhead and Gates LU's were advertised for public review and comment for 60 days from August 19 2004 to October 20 2004

Prior to the public consultation period, MSRM met with the local forest licensees and First Nations. Meetings were also held with B.C. Timber Sales and Ministry of Water, Land and Air Protection. Mineral tenure holders were also advised of OGMA placement. Comments received were addressed.

The only comments that were received were from the Squamish Forest District and B.C. Timber Sales

A summary of comments received pertaining to Landscape Unit Planning and how they were addressed is as follows:

**Recommend that the OGMA's may be placed wherever possible in the Long Term Owl Habitat (LTOH) rather than the Forest Management Area within the SRMZ's.**

We worked with the Squamish Forest District, B.C. Timber Sales and the Ministry of Water, Air and Land Protection to relocate the OGMA's so that there was more of an overlap with the constraints in the LTOH.

**Recommend that one OGMA should be redesigned so that pockets of timber are not isolated.**

The boundary of this OGMA was modified to allow for access.

**Recommend that additional OGMA be established in the IDF in Birkenhead Park.**

In order to minimize the timber supply impact we relocated approximately 60 hectares into the Birkenhead Park.

The above decisions were agreed to by MSRM, WLAP, MOF and B.C. Timber Sales