Sustainable Resource Management Plan

Biodiversity Chapter for

Big Silver 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 Big Silver 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 them¹'. British Columbia is the most biologically diverse province in Canada. In British Columbia, 115 species or subspecies of known vertebrates and 364 vascular plants are listed for legal designation as threatened or endangered². 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 Chilliwack Forest District has completed draft LU boundaries and assigned draft Biodiversity Emphasis Options (BEO) in accordance with the direction provided by government. There are 24 LUs within the Chilliwack Forest District. Through a ranking process, the Big Silver LU 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 the International Forest Products Ltd, the BC Timber Sales Program, Doman-Western Lumber Products, Sts'ailes Natural Resources Inc and Northwest Hardwoods. Funding was provided by the Forest Investment Account and MSRM.

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

¹ FPC Biodiversity Guidebook definition. September 1995.

² BC species and Ecosystems Explorer. 2003.

agencies will be sought during the 60 day public review and comment period. Refer to the attached map for location of OGMAs and old growth representation from protected areas.

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 Big Silver Landscape Unit Description

2.1 Biophysical Description

The Big Silver LU is located on the east side of Harrison Lake and encompasses the entire Big Silver watershed and a few other smaller streams that flow directly into the north-east portion of Harrison Lake. The Big Silver is a moderate sized drainage that enters Harrison Lake about half way up the east side of the lake. The LU is located north of the community of Harrison Hot Springs. The Landscape Unit covers a total area of 72273 ha and includes the Big Silver and Stokke Creek watersheds.

Of the total area, 30852 ha (43%) are within the Crown forested land base, and 18819 ha of Crown forest are within the Timber Harvesting Land Base (THLB). The remaining 41420 ha (57%) are non-forested or non-Crown (rock, alpine tundra, water, private land etc.) and have been excluded from any OGMA contributions and calculations.

The Big Silver LU is situated entirely within the Pacific Ranges Ecoregion, represented by the Eastern Pacific Ranges ecosection. Climatic conditions in the LU vary most prominently by elevation. The valley bottom areas and along Harrison Lake are characterized by warm, dry summers and moist, cool winters with moderate snowfall. Mid elevation climate is characterized by cool, relatively dry summers and moist cool winters with relatively heavy snowfall. At higher elevations, summers are short, cool and moist while winter is long, moist and cold; total snowfall is high and persistent.

There are four Biogeoclimatic (BEC) subzones or variants within the Big Silver Landscape Unit, which fall within three natural disturbance types (NDTs)³. The Coastal Western Hemlock southern dry submaritime (CWH ds1) variant and the CWH southern moist submaritime variant (CWHms1) lie within NDT2. The Mountain Hemlock leeward moist maritime (MH mm2) variant is located in NDT1. The landscape unit also has substantial high elevation non-forested areas in NDT5 (Alpine Tundra).

In the lower elevation variants, within NDT2, the Big Silver LU has sustained substantial levels of disturbance. Forested stands on lower elevation productive sites (typically on

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NDT1 encompasses those ecosystems with rare stand-initiating events. NDT2 includes ecosystems with infrequent 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).

slopes with low to moderate gradient) have been disturbed by past timber harvesting or other natural disturbance. The relatively low levels of old seral forest remaining within these BEC variants reflects this disturbance history.

2.2 Summary of Land Status

Land status within the Big Silver LU is summarised in Table 1. The Crown forest land base summary is provided in Table 2.

Table 1. The range and distribution of land ownership status for the Big Silver Landscape Unit.

Code	Ownership class	Area (ha)	Percent of total area
40	Private and Crown grants	0	0.0
52	Indian reserve	0	0.0
61	Crown UREP	135	0.2
62	Crown contributing	72108	99.8
63	Parks & Ecological Reserves	0	0.0
69	Recreation sites and reserves	13	< 0.1
	Unclassified	17	< 0.1
	Total Area	72273	100.0

Table 2. Distribution of land area in the Big Silver Landscape Unit on the basis of Biogeoclimatic and Crown Forested Land Base classifications.

BEC Variant	Total Area (ha)	Crown Fores	Crown Forested Land Base ¹				
v ai iaiit	(na)	C (ha)	PC (ha)	NC (ha)	Land Base ² X (ha)		
CWHdm	1240	0	0	0	1240		
CWHds1	19338	7463	2851	3285	5739		
CWHms1	20387	6691	1025	5418	7253		
ESSFmw	31	0	0	4	27		
MHmm2	14580	930	110	2849	10691		
ATp	16682	14	0	196	16472		
TOTAL	72273	15115	3986	11751	41421		

The Crown Forested Land Base is comprised of Contributing (C), Partial Contributing (PC), and Non-Contributing (NC) areas of forested land. C and PC forest make up the Timber Harvesting Land Base (THLB) whereas the NC areas of forested lands do not contribute to the Allowable Annual Cut. The NC includes areas of Provincial Crown Forest considered inoperable due to one or more constraints (e.g., steep terrain, low productivity, which are netted down 100% during TSR analysis) and protected areas (e.g., Class A Provincial Parks and Ecological Reserves).

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

The Excluded land base is comprised of areas of lands that are non-forest (e.g., rock, lakes, streams, non-productive brush, glacier) and areas of land that cannot be presumed to be maintained as forested ecosystems (e.g., private land or in the control of non-resource management agencies [e.g., The Federal Department of National Defense]).

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 OGMAs within existing tenures. As for tenures administered by MOF, the management intent is to avoid placement of OGMAs 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 Big Silver plan area, several licensees operate within volume based forest license tenures. The various licensees are: BC Timber Sales Program (administered by MOF), International Forest Products Ltd., Doman Western Forest Products Ltd., and Northwest Hardwoods. The majority of the OGMAs were selected to avoid known approved category "A" cutblocks or roads as approved under the current Forest Development Plans. Two category A cutblocks in the lower elevation CWHds1 variant were affected by OGMA placement and the licensee has agreed to withdraw the areas from the FDP so that they will not conflict with an OGMA designation.

Forest licensees were involved in the development of the Big Silver LU plan. The plan was developed through Forest Investment Account (FIA) funding with the initial work undertaken by International Forest Products. Further plan development was done in cooperation between MSRM and licensees operating within the LU. Efforts were made to ensure the impacts on future planned development are minimized.

3.2 Mineral Tenure Holders

There are numerous mineral tenures located in Hornet and Clear Creek drainages with some located in Stokke and Big Silver Creeks. Where possible, the selection of OGMAs tried to avoid placement over existing tenure holders. However, due to the wide spread tenure locations within Hornet and Clear Creek, overlap was unavoidable. There also is overlap with two tenures in Stokke Creek.

The establishment of OGMAs will not have an impact on the status of existing aggregate, geothermal, oil and gas, and mineral 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 Big Silver LU include: spotted owl, black-tailed deer, mountain goat, grizzly bear, fish and some species at risk that are

considered "Identified Wildlife". Many other species occur including forest birds, raptors, small mammals, amphibians and furbearers but their habitat requirements are generally managed within habitat provisions provided for primary species or through access management provisions (e.g. grizzly bear). For example, habitat for spotted owls in the Big Silver LU is maintained within two Special Resource Management Zones (SRMZ), which cover 12900 ha of gross forested area. Approximately 57% (7370 ha) of the gross forested area is currently suitable owl habitat (>100 years old forest), with a requirement to recruit another 1270 ha to reach 67% suitable. This owl habitat would support other forest dependent species.

The Big Silver LU is also an important area for black-tailed deer and mountain goats. Forested winter range habitat for both these species has been identified by MWLAP. All or a portion of the winter habitat areas are being considered for legal establishment as Ungulate Winter Range (UWR) under the FPC according to management plans developed by MWLAP (Jex, 2002; Freeman, 2001 & 2002). Some of the UWR overlaps with Spotted Owl SRMZ and some of each species' habitats have been captured in OGMA. The habitat maintained for ungulates would also benefit other forest dependent species.

Further, the lower reaches of the Big Silver River and its major tributaries support anadromous and/or resident salmonid populations (a barrier prevents further distribution). 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 it re-grows.

Grizzly bears in the Big Silver LU are part of the threatened Stein-Nahatlatch grizzly bear population unit for which a Recovery Plan has yet to be developed. In general, the Recovery Plan once completed will include objectives and strategies to protect and/or enhance grizzly bear habitat values. Grizzly bears are also an Identified Wildlife species. Provisions exist within the Identified Wildlife Management Strategy to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA). Designation of WHAs may occur as necessary or as part of the Recovery Plan to protect additional grizzly bear habitat in the Big Silver LU.

Other species of Identified Wildlife (e.g. northern goshawk, tailed frog) that may be discovered later may receive habitat protection with WHAs as well. In turn, these WHAs will help provide habitat for species not actively managed for. The Conservation Data Center has no records for sensitive species in this LU.

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.

4.2 Timber Resources

The presence of a substantial timber harvesting land base establishes the importance of timber resource values. Continued access to commercially valuable timber, including future second growth, is a significant concern. First pass harvesting of accessible old growth timber is nearing completion.

Commercially valuable tree species in the Big Silver LU by elevation are: Douglas-fir and western hemlock with lesser amounts of western red cedar and balsam. Mid elevation sites are dominated by balsam, western hemlock, Douglas-fir and western red cedar. High elevation forests are dominated by balsam (amabilis and subalpine) and mountain hemlock. Based on forest cover information, Table 3 shows the age composition of forests in the Big Silver LU.

Table 3. Age distribution of forests within the Big Silver Landscape Unit.

Age	% of Forested Land base within Provincial Forest
0-60	42%
61-140	17%
141-250	3%
251+	37%

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.

4.3 Private Land

There is no private land in the Big Silver LU although there are two small parcels of land under long term use by forest licensees. There are no Indian Reserves located in the Big Silver Landscape Unit.

4.4 Water

There are no community watersheds within the Big Silver Landscape Unit.

4.5 Recreation

The Big Silver LU receives low to moderate public recreation use mostly due to its location. Spring summer and fall activities include: hiking, 4 wheel drive and ATV use, sightseeing, hunting, wildlife viewing, fishing and day trips to the Hot Springs at Clear Creek. Berry and mushroom picking may occur to a limited extent. The main forest road provides summer access through to the Nahatlatch valley and acts as a loop road. Winter recreational activity is normally restricted by seasonal road deactivation and snow accumulation, although snowmobiling on forest roads or alpine areas could occur.

The mainstem Big Silver River, below a barrier at about 16 km, provides recreational angling for anadromous or resident trout, char or salmon.

There are no Forest Service Recreation Sites in the Big Silver LU, and no plans for future development.

4.6 Sub-surface Resource Values

Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are commodities valuable to the provincial economy. They are, however, difficult to characterise due to their hidden nature. Currently, comprehensive information is available for mineral potential in this area; aggregate potential for this LU has not been rated and no information regarding energy deposits was available to the planning team.

The Ministry of Energy and Mines has rated the metallic mineral potential of this area as moderate to high and the industrial mineral potential as moderate. Mineral Potential classifies the land base based upon the probability of discovering metallic or industrial mineral ore deposits in that area. Resource assessment tracts are based on areas of similar geology when assessed at the 1:250 000 scale. Mineral Potential classification was carried out on each tract with strong input from mineral industry experts and the use of other valuable databases such as MINFILE, exploration assessment reports, regional geochemical survey data, geophysical data, descriptive mineral deposit profiles and deposit models. Techniques used to derive Mineral Potential rankings followed those outlined in the United States Geological Survey Mineral Assessment Methodology⁵, with some modifications. Assessments of estimated undiscovered metallic resources were based on gross in place value (GIPV) and processed through the USGS Mark3B Mineral Resource Assessment Monte Carlo simulator⁶. Undiscovered industrial mineral assessments were based on Relative Deposit Value Score (RDVS). RDVS considers commodity unit value, potential markets, deposit grade and tonnage, transportation costs, infrastructure and extraction costs.

5.0 Existing Higher level Plans

Higher Level Plan objectives are one provision under the FPC that enables 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 Big Silver 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.

Singer, D.A., 1993, Basic concepts in three-part quantitative assessments of undiscovered mineral resources: Nonrenewable Resources, v. 2, n. 2, p. 69-81.

⁶ Root, D.H., Scott, W.A. Jr. and Schruben, P (1998): Mark3B Resource Assessment Program for Macintosh; US Geological Survey, USGS Open File Report 98-356.

6.0 First Nations

The Big Silver LU is located within the asserted traditional territory of the Chehalis Band as well as the Sto:lo, In-Shuck-ch and Nlaka'pamux First Nations.

Between 1997 and 1999, an Archaeological Overview Assessment model was developed by MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the location of habitation sites and high elevation campsites in the sub-alpine. Travel routes were also identified.

The maps produced from the model were reviewed to determine the amount of overlap between potential archaeological sites, travel routes and OGMAs. In the Big Silver LU, there is moderate overlap between OGMAs and old forest stands that exhibit a moderate to high potential for habitation sites, these sites are located on lower slope or valley bottom areas near lakeshores or streams. The maps did not indicate any potential travel routes within the Landscape Unit.

7.0 OGMA Methodology

7.1 Existing Planning Processes

Each LU contains varying amounts of mature/old forested habitat provided by existing processes (e.g. some LUs have spotted owl Special Resource Management Zones, some have protected areas) from which to build on for ecosystem management. The FPC ungulate winter range process, once completed, will also help provide a foundation for ecosystem management. 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 habitat provided by these various processes together with OGMAs 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, OGMAs, where practical, were placed to create larger habitat patches in the vicinity of known spotted owl activity centres. In other cases, OGMAs were placed within or adjacent to ungulate winter range 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 deer are particularly susceptible to mortality in winter, connecting or aggregating OGMAs may help facilitate deer movement in addition to benefiting biodiversity. Using this approach with stand level biodiversity measures (e.g. Wildlife Tree Patches) will increase the likelihood of sustaining ecosystems and viable wildlife populations well distributed across their natural range.

7.2 Assessment and Review

OGMAs 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 OGMAs throughout the LU was also a selection criterion. A specific rationale for the selection of each OGMA is shown in Appendix 1. In general, opportunities to recruit larger patches to provide for forest interior habitat conditions (to the recommended target) were favoured over smaller patches, although this was difficult in this LU. When maximizing patch size, efforts were made to minimize the impact on timber supply by adding into OGMAs areas of non-contributing land base adjacent to areas of timber harvesting land base. In addition, a significant number of smaller patches containing old forest were delineated in conformance with the *Landscape Unit Planning Guidebook* (LUPG).

In the Big Silver Landscape Unit there was sufficient old forest (250+ years) in the MHmm2 BEC variants to meet the OGMA target. In the CWHms1 and CWHds1 variants, it was necessary to designate mature stands or younger to meet the targets (i.e. mostly age 141-250 years, with some 101-140 year old stands) as recruitment OGMAs. Where possible, mature stands that had old forest attributes (e.g. snags, multi-layered canopy) or high resource values (e.g. spotted owl, deer winter range) were chosen as recruitment OGMAs.

7.3 **Boundary Mapping**

OGMA boundaries used natural or recognizable features, such as creeks or roads, 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 1:20000 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 MSRM 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. 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 timber harvesting land base from most constrained to least constrained were assessed and included as OGMAs. Generally, more THLB was required in lower elevation variants (e.g. CWH ds1) due to a longer disturbance history and lesser amounts of non-contributing forest land.

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 *Landscape Unit Planning Guide*. Licensees also reviewed the maps and identified future harvesting opportunities so that timber supply impacts could be reduced wherever possible.

8.0 Landscape Unit OGMA Analysis for the Big Silver LU

The Big Silver 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 and actually established in each variant and from which Crown forest category (i.e. Non Contributing-NC; Timber Harvesting Land Base)⁷. 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 a rationale; and the attached map for location of OGMAs.

Table 4. Old growth management area (OGMA) requirements for the Big Silver Landscape Unit.

BEC Variant	Full OGMA	Established OGMAs	Delineated OGMAs							
	Target (ha)	(ha)	Non-Contributing (NC)			Part. Co (PC)	ontrib.	Contributing (C)		
			Protected Non-PA							
			Areas							
			%	ha	%	ha	%	ha	%	ha
CWHds1	1224.0	1228.1	0.0	0.0	49.3	605.8	37.1	455.1	13.6	167.2
CWHms1	1182.0	1186.3	0.0	0.0	86.5	1026.0	8.6	102.6	4.9	57.7
MHmm2	739.0	742.6	0.0	0.0	94.7	703.6	0.5	3.9	4.7	35.1
Total	3145.0	3156.9	0.0	0.0	74.0	2335.4	17.8	561.6	8.2	260.0

NDT1: MHmm2

NDT 2: CWH ds1, CWHms1

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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.

9.0 Wildlife Tree Retention

Wildlife tree retention is managed at the stand level and maintains structural diversity within managed stands by retaining wildlife trees immediately adjacent to or within cutblocks. The WTR percentage by BEC subzone is described in Table A of the *Legal Objectives*. Retention percentages 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-bycutblock 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 2 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 Plan 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 Landscape Unit 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 – Big Silver LU

Appendix 2 – Acronyms

Appendix 3 – Public Consultation Summary

APPENDIX 1: OGMA SUMMARY AND RATIONALE – Big Silver LU

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA	COMMENTS	rDr	WILDLIFE
π	VARIANI	CLASS	AKEA	AKEA		cutblock along west bndy, agreed by	
1	MH mm 2	C	4.4	4.4	spatially important (spat Impt)	licensee	mostly MGWR
1	MH mm 2	N	21.2	0.0	spat impt	cutblock along west bndy	mostly MGWR
3	MH mm 2	N	4.7	0.0	shows on map as ATp but is forested		MGWR
3	MH mm 2	N	18.4	0.0	steep south aspect		MGWR
6	CWH ms 1	N	82.1	0.0	large patch, forest interior, spat impt	cutblock along south bndy	
6	MH mm 2	N	21.6	0.0	large patch, forest interior, spat impt	cutblock along south bndy	
10	CWH ms 1	N	45.1	0.0	large patch, spat impt, valley bottom	licensee agreement	valuable bear habitat, avalanche chutes adjacent
10	MH mm 2	N	39.8	0.0	large patch, spat impt, valley bottom	licensee agreement	valuable bear habitat, avalanche chutes adjacent
11	CWH ms 1	С	0.4	0.4	large patch, spat impt, some forest interior	cutblock to south	MGWR at west end
11	CWH ms 1	N	73.4	0.0	large patch, spat impt, some forest interior	cutblock to south	MGWR at west end
12	CWH ms 1	N	2.8	0.0	large patch, some forest interior, spat impt	cutblocks adjacent to west bndy	MGWR
12	CWH ms 1	С	12.5	12.5	large patch, some forest interior, spat impt	agreed to by licensee	MGWR
12	MH mm 2	N	50.5	0.0	large patch, some forest interior, spat impt	cutblocks adjacent to west bndy	MGWR
12	MH mm 2	C	5.0	5.0	lrg patch, some forest interior, spat impt	agreed to by licensee	MGWR
18	CWH ds 1	N	30.0	0.0	large patch, some forest interior	cutblock at SE end	
18	CWH ms 1	N	52.8	0.0	large patch, some forest interior	cutblock at SE end	
21	MH mm 2	C	4.0	4.0	link to OGMA in Rogers LU for larger patch, spat impt	agreed to by licensee	S half is Spotted Owl (SPOW) SRMZ
21	CWH ms 1	N	9.9	0.0	combines with Rogers OGMA for larger patch, spat impt		S half is SPOW SRMZ
21	CWH ms 1	P	0.1	0.1	combines with Rogers OGMA for larger patch, spat impt		S half is SPOW SRMZ
21	MH mm 2	N	23.9	0.0	combines with Rogers OGMA for larger patch, spat impt		S half is SPOW SRMZ
23	CWH ms 1	N	18.6	0.0	larger patch		DWR in S half, mostly SPOW SRMZ
23	CWH ms 1	P	32.1	32.1	larger patch	licensee agreement	DWR in S half, mostly SPOW SRMZ
23	MH mm 2	N	13.6	0.0	larger patch		DWR in S half, mostly SPOW SRMZ
26	CWH ds 1	C	17.0	17.0	lrg patch, forest interior	cutblock to SE, licensee agreement	MGWR at S end

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA			
26	CWH ds 1	N	45.3	0.0	lrg patch, forest interior	cutblock along SE bndy	MGWR at S end
26	CWH ms 1	N	14.7	0.0	lrg patch, forest interior	cutblock along SE bndy	MGWR at S end
29	CWH ms 1	N	11.6	0.0	comb with 30 for lrgr complex, spat impt		
29	MH mm 2	N	5.8	0.0	comb with 30 for lrgr complex, spat impt		
30	CWH ms 1	N	5.1	0.0	comb with 29 for lrgr complex, spat impt	existing cutblock at E bndy	
31	MH mm 2	N	2.8	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
32	CWH ms 1	N	9.7	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
32	MH mm 2	N	1.3	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
33	CWH ms 1	N	8.7	0.0	33, 34 comb for lrgr complex		
33	MH mm 2	N	5.8	0.0	33, 34 comb for lrgr complex		
34	MH mm 2	N	1.9	0.0	shows as ATp but is forested, lake riparian, 33, 34 comb for lrgr complex		
34	CWH ms 1	N	0.6	0.0	shows as ATp but is forested, lake riparian, 33, 34 comb for lrgr complex		
34	MH mm 2	С	0.1	0.1	shows as ATp but is forested, lake riparian, 33, 34 comb for lrgr complex		
34	MH mm 2	N	19.7	0.0	shows as ATp but is forested, lake riparian, 33, 34 comb for lrgr complex		
35	CWH ms 1	N	39.3	0.0	lrgr patch		S 2/3rds is DWR, SPOW SRMZ
35	MH mm 2	N	2.0	0.0	lrgr patch		S 2/3rds is DWR, SPOW SRMZ
36	CWH ds 1	N	2.9	0.0			small part DWR at E end, SPOW SRMZ
36	CWH ms 1	N	10.4	0.0			small part DWR at E end, SPOW SRMZ
37	CWH ds 1	N	15.9	0.0			SPOW SRMZ
39	CWH ms 1	N	24.9	0.0	spat impt		MGWR
39	CWH ms 1	С	4.4	4.4		agreed to by licensee	MGWR
40	CWH ds 1	N	16.1	0.0		cutblock at SE bndy	
40	CWH ms 1	N	12.8	0.0		cutblock at SE bndy	
41	CWH ms 1	N	16.5	0.0	headwaters riparian		N half is MGWR
42	CWH ds 1	N	17.1	0.0	riparian, steep slopes	cutblock to W	mostly DWR and MGWR, SPOW SRMZ mostly DWR and MGWR, SPOW
42	CWH ds 1	P	22.1	22.1	riparian, steep slopes	cutblock to W, licensee recommended	SRMZ
42	CWH ms 1	N	3.4	0.0	riparian, steep slopes	cutblock to W	mostly DWR & MGWR, SPOW SRMZ

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA			
42	CWH ms 1	P	0.1	0.1	riparian steep slopes	cutblock to W	mostly DWR and MGWR, SPOW SRMZ
45	CWH ms 1	N	50.6	0.0	lrg patch, forest interior, spat impt		mostly SPOW SRMZ
45	MH mm 2	N	37.1	0.0	lrg patch, forest interior, spat impt		mostly SPOW SRMZ
48	CWH ds 1	C	19.4	19.4	lrg patch, some forest interior, spat impt, riparian to upland link	cutblocks along E bndy, agreed to by licensee	mostly DWR, partly MGWR, SPOW SRMZ
48	CWH ds 1	N	52.6	0.0	lrg patch, some forest interior, spat impt, riparian to upland link	cutblocks along E bndy	mostly DWR, partly MGWR, SPOW SRMZ
48	CWH ds 1	P	22.3	7.5	lrg patch, some forest interior, spat impt, riparian to upland link	cutblocks along E bndy	mostly DWR, partly MGWR, SPOW SRMZ
48	CWH ms 1	N	31.2	0.0	lrg patch, some forest interior, spat impt, riparian to upland link	cutblocks along E bndy	mostly DWR, partly MGWR, SPOW SRMZ
48	CWH ms 1	P	5.7	5.7	lrg patch, some forest interior, spat impt, riparian to upland link	cutblocks along E bndy	mostly DWR, partly MGWR, SPOW SRMZ
48	MH mm 2	N	3.9	0.0	lrg patch, some forest interior, spat impt, riparian to upland link	cutblocks along E bndy	mostly DWR, partly MGWR, SPOW SRMZ
49	CWH ms 1	N	12.7	0.0	comb with 48 for lrgr complex		S half is DWR, all MGWR, almost all SPOW SRMZ
49	CWH ms 1	P	1.4	1.4	comb with 48 for lrgr complex		S half is DWR, all MGWR, almost all SPOW SRMZ
49	MH mm 2	N	10.8	0.0	comb with 48 for lrgr complex		S half is DWR, all MGWR, almost all SPOW SRMZ
51	CWH ds 1	N	14.2	0.0			
51	CWH ms 1	N	23.0	0.0			
53	CWH ds 1	С	5.8	5.8	riparian, Hotsprings	recommended by licensee	
53	CWH ds 1	N	7.5	0.0	riparian, Hotsprings	recommended by licensee	
53	CWH ms 1	С	4.8	4.8	riparian, Hotsprings	C added as recommended by licensee	
53	CWH ms 1	N	1.7	0.0	riparian, Hotsprings	recommended by licensee	
54	MH mm 2	N	22.3	0.0			
56	CWH ds 1	С	0.2	0.2	riparian		SPOW SRMZ
56	CWH ds 1	N	29.3	0.0	riparian		SPOW SRMZ
57	CWH ds 1	C	0.3	0.3	req'd to meet old, no other options	A approved block dropped as agreed by licensee	SPOW SRMZ, DWR
57	CWH ds 1	N	25.7	0.0	req'd to meet old, no other options	A approved block dropped as agreed by licensee	SPOW SRMZ, DWR
57	CWH ds 1	P	0.1	0.1	req'd to meet old, no other options	A approved block dropped as agreed by licensee	SPOW SRMZ, DWR
61	CWH ms 1	N	9.8	0.0			SPOW SRMZ

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA			
61	MH mm 2	N	7.5	0.0			SPOW SRMZ
62	CWH ms 1	N	21.3	0.0	larger patch	cutblocks to S	MGWR
62	MH mm 2	N	31.4	0.0	larger patch	cutblocks to S	MGWR
63	CWH ms 1	C	0.1	0.1			MGWR
63	CWH ms 1	N	41.0	0.0			MGWR
63	MH mm 2	N	4.8	0.0			MGWR
65	CWH ms 1	N	19.8	0.0	larger patch		SPOW SRMZ
65	MH mm 2	N	41.9	0.0	larger patch		SPOW SRMZ
67	CWH ds 1	С	0.1	0.1	riparian, combine with 68 to improve value	Adjacent to cat A block	SPOW SRMZ
67	CWH ds 1	P	12.1	12.1	riparian, combine with 68 to improve value	Adjacent to cat A block	SPOW SRMZ
68	CWH ds 1	С	1.5	1.5	narrow riparian, comb with 68 to improve value		SPOW SRMZ
68	CWH ds 1	P	2.2	2.2	narrow riparian, comb with 68 to improve value		SPOW SRMZ
69	MH mm 2	N	2.2	0.0	shows as ATp but is forested, large patch, forest interior		SPOW SRMZ
69	CWH ms 1	N	24.6	0.0	large patch, forest interior, spat impt		SPOW SRMZ
69	CWH ms 1	P	6.0	6.0	large patch, forest interior, spat impt		SPOW SRMZ
69	MH mm 2	N	85.1	0.0	large patch, forest interior, spat impt		SPOW SRMZ
70	CWH ds 1	С	0.1	0.1	large patch, mostly fragmented, but some forest interior, riparian at south end		SPOW SRMZ, about 1/2 is DWR
70	CWH ds 1	N	153.5	0.0	large patch, mostly fragmented, but some forest interior, riparian at south end		SPOW SRMZ, about 1/2 is DWR
70	CWH ds 1	P	29.6	249.6	large patch, mostly fragmented, but some forest interior, riparian at south end	recommended by licensee	SPOW SRMZ, about 1/2 is DWR
70	CWH ms 1	N	0.6	0.0	large patch, mostly fragmented, but some forest interior, riparian at south end		SPOW SRMZ, about 1/2 is DWR
70	CWH ms 1	P	1.4	1.4	large patch, mostly fragmented, but some forest interior, riparian at south end		SPOW SRMZ, about 1/2 is DWR
71	CWH ms 1	N	52.5	0.0	large patch	cutblock at SW end	SPOW SRMZ
71	MH mm 2	N	45.6	0.0	large patch		SPOW SRMZ
71	MH mm 2	P	3.7	3.7	large patch		SPOW SRMZ
72	CWH ds 1	С	9.5	9.5	riparian gully in part	recommended by licensee	DWR, SPOW Replacement Habitat (RH)

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA			
72	CWH ds 1	N	5.1	0.0	riparian gully in part		DWR, SPOW RH
72	CWH ds 1	P	0.2	0.2	riparian gully in part		DWR, SPOW RH
72	CWH ms 1	N	8.8	0.0	riparian gully in part		DWR, SPOW RH
79	CWH ds 1	С	70.0	70.0	large patch, fragmented	recommended by licensee, harvest complete	mostly DWR, part SPOW SRMZ, part SPOW RH
79	CWH ds 1	N	27.3	0.0	large patch, fragmented		mostly DWR, part SPOW SRMZ, part SPOW RH
79	CWH ds 1	P	23.1	23.1	large patch, fragmented	recommended by licensee, harvest complete	mostly DWR, part SPOW SRMZ, part SPOW RH
79	CWH ms 1	N	35.6	0.0	large patch, fragmented		mostly DWR, part SPOW SRMZ, part SPOW RH
79	CWH ms 1	P	41.9	41.9	large patch, fragmented	recommended by license, harvest complete	mostly DWR, part SPOW SRMZ, part SPOW RH
79	MH mm 2	N	27.9	0.0	large patch, fragmented		mostly DWR, part SPOW SRMZ, part SPOW RH
82	CWH ms 1	N	11.6	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
82	CWH ms 1	P	2.7	2.7	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
82	MH mm 2	N	0.1	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
83	CWH ms 1	N	5.8	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
83	MH mm 2	N	1.7	0.0	31, 32, 82, 83 form lrgr complex		SPOW SRMZ
84	CWH ds 1	N	1.7	0.0	very little old remains in this DWR		SPOW SRMZ, DWR
84	CWH ms 1	N	3.7	0.0	very little old remains in this DWR		SPOW SRMZ, DWR
90	CWH ms 1	C	19.2	19.2	large patch, spat impt	licensee agreement	MGWR
90	CWH ms 1	N	0.7	0.0	large patch, spat impt		MGWR
90	MH mm 2	C	8.3	8.3	large patch, spat impt	licensee agreement	MGWR
90	MH mm 2	N	24.0	0.0	large patch, spat impt		MGWR
92	MH mm 2	N	18.1	0.0	steep south slope		MGWR
93	CWH ms 1	C	3.6	3.6	lrg patch some forest interior spat impt	agreed to by licensee	MGWR
93	CWH ms 1	N	4.3	0.0	lrg patch some forest interior spat impt		MGWR
93	MH mm 2	C	13.3	13.3	lrg patch some forest interior spat impt	agreed to by licensee	MGWR
93	MH mm 2	N	34.4	0.0	lrg patch some forest interior spat impt		MGWR
93	MH mm 2	P	0.2	0.0	lrg patch some forest interior spat impt		MGWR
94	CWH ds 1	С	6.6	6.6	lrg patch, upslope connectivity	cutblock along W bndy, licensee agreement	
94	CWH ds 1	N	18.8	0.0	lrg patch, upslope connectivity	cutblock along W bndy	
94	CWH ms 1	С	2.3	2.3	lrg patch, upslope connectivity	cutblock along W bndy, licensee agreement	

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA			
94	CWH ms 1	N	42.4	0.0	lrg patch, upslope connectivity	cutblock along W bndy	
94	MH mm 2	N	33.5	0.0	lrg patch, upslope connectivity	cutblock along W bndy	
95	CWH ds 1	С	4.5	4.5	riparian strip, no other options	licensee recommended	
95	CWH ms 1	С	9.4	9.4	riparian strip	licensee recommended	
06	CWIII 1	C	0.4	0.4			part SPOW SRMZ, part SPOW
96	CWH ms 1	С	0.4	0.4	lrg patch		Replacement habitat part SPOW SRMZ, part SPOW
96	CWH ms 1	N	71.8	0.0	lrg patch		Replacement habitat
96	CWH ms 1	P	0.2	0.2	lrg patch		part SPOW SRMZ, part SPOW Replacement habitat
97	CWH ds 1	N	46.2	0.0	req'd to meet old	A approved block dropped as agreed by licensee	SPOW SRMZ
97	CWH ds 1	P	0.1	0.0	req'd to meet old	A approved block dropped as agreed by licensee	SPOW SRMZ
97	CWH ms 1	N	0.5	0.0	req'd to meet old	A approved block dropped as agreed by licensee	SPOW SRMZ
101	CWH ms 1	N	34.3	0.0	comb with patch in Spuzzum LU, spat impt		
101	MH mm 2	N	0.2	0.0	comb with patch in Spuzzum LU, spat impt		
104	CWH ds 1	C	11.2	11.2	riparian gully to upland linkage, lrg patch	licensee agreement	part SPOW SRMZ, part SPOW Replacement habitat
104	CWH ds 1	N	7.4	0.0	rip. gully to upland linkage, lrg patch		part SPOW SRMZ, part SPOW Replacement habitat
104	CWH ds 1	P	3.9	3.9	rip gully to upland linkage, lrg patch	licensee agreement	part SPOW SRMZ, part SPOW Replacement habitat
104	CWH ms 1	N	55.7	0.0	rip gully to upland linkage, lrg patch		part SPOW SRMZ, part SPOW Replacement habitat
104	MH mm 2	N	36.7	0.0	rip gully to upland linkage, lrg patch		part SPOW SRMZ, part SPOW Replacement habitat
105	CWH ms 1	N	12.8	0.0	comb with 104 for lrg complex		SPOW SRMZ
105	MH mm 2	N	1.4	0.0	comb with 104 for lrg complex		SPOW SRMZ
106	CWH ds 1	N	4.1	0.0	riparian value, recruitment		SPOW SRMZ
106	CWH ds 1	P	9.6	9.6	riparian value, recruitment	licensee agreement	SPOW SRMZ
107	CWH ds 1	N	3.7	0.0	riparian value, recruitment		SPOW SRMZ
107	CWH ds 1	P	9.4	9.4	riparian value, recruitment	licensee agreement	SPOW SRMZ
108	CWH ds 1	N	14.0	0.0	riparian value, recruitment		SPOW SRMZ
109	CWH ds 1	N	2.0	0.0	riparian to upland link, large patch	cutblock along N bndy	SPOW SRMZ, DWR
109	CWH ds 1	P	68.2	33.2	riparian to upland link, large patch	licensee agreement, cutblock along N bndy	SPOW SRMZ, DWR

OGMA	BEC	CONTRIB	OGMA	THLB	COMMENTS	FDP	WILDLIFE
#	VARIANT	CLASS	AREA	AREA			
110	CWH ds 1	N	15.2	0.0	no other suitable in vicinity		SPOW SRMZ
111	CWH ds 1	C	11.4	11.4	comb with patch in Rogers LU, req'd for old	licensee agreement	SPOW Replacement habitat
112	CWH ds 1	N	4.7	0.0	riparian value, recruitment		SPOW SRMZ
112	CWH ds 1	P	0.1	0.1	riparian value, recruitment		SPOW SRMZ
113	CWH ds 1	N	7.3	0.0	larger patch	licensee recommended, block to S and NW	SPOW SRMZ, DWR, MGWR
113	CWH ds 1	P	23.9	23.9	larger patch	licensee recommended, block to S and NW	SPOW SRMZ, DWR, MGWR
113	CWH ms 1	N	2.4	0.0	larger patch	licensee recommended, block to S and NW	SPOW SRMZ, DWR, MGWR
113	CWH ms 1	P	11.2	11.2	larger patch	licensee recommended, block to S and NW	SPOW SRMZ, DWR, MGWR
114	CWH ds 1	C	5.3	5.3	riparian value, partial recruitment		SPOW SRMZ
114	CWH ds 1	N	4.2	4.2	riparian value, partial recruitment		SPOW SRMZ
114	CWH ds 1	P	8.3	8.3	riparian value, partial recruitment		SPOW SRMZ
115	CWH ds 1	C	4.4	4.4			
115	CWH ds 1	N	34.2	0.0			
115	CWH ms 1	C	0.8	0.8			
115	CWH ms 1	N	4.8	0.0			

Abbreviations: ATp = Alpine Tundra; comb = combines; req'd = required; lrg = large; lrgr = larger; rip = riparian; spat impt = spatial important;

X = excluded from the productive forest land base

MGWR = mountain goat winter range; DWR = deer winter range; SPOW SRMZ = special resource management zone for spotted owl

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

Appendix 3: Public Consultation Summary

The 60-day public review and comment period for the Big Silver Landscape Unit extended from 4 January through to 4 March 2005. Prior to the public consultation period, MSRM staff met with local forest licensees to address their concerns and craft a plan that minimised impacts to timber supply (Section 3.1). Ongoing discussions with the Ministries of Forests and Water, Land and Air Protection, regarding the development of the landscape unit objectives and placement of OGMAs for the Big Silver LU, took place throughout the course of plan development. MSRM staff advised mineral tenure holders of OGMA placement and landscape unit objectives (Section 3.2). An overview of the noteworthy aspects of MSRM's consultations and the specific comments received on the draft plan and LU objectives follows.

Consultations with First Nations

MSRM consulted with five First Nation organisations whose traditional territory contains all or part of the Big Silver Landscape Unit: the Stó:lô Nation, Nlaka'pamux Tribal Council, Chehalis First Nation, Douglas First Nation, and In-SHUCK-ch Council. A meeting introducing the aims and scope of landscape unit planning involving the In-SHUCK-ch Council was held in the Fall of 2004. MSRM staff follow-up on this meeting by providing the In-SHUCK-ch leadership with additional details regarding the scope and details of the process as well as the nature of the materials and correspondence they should expect in the course of consultations over LU planning and OGMA delineation. No comments were received from Stó:lô Nation, Nlaka'pamux Tribal Council, Douglas First Nation or In-SHUCK-ch Council during the review and comment period. MSRM met with Chehalis First Nation's Forest Planner in early May to discuss planning at the LU level and ways for Chehalis and MSRM to engage in resolving issues of common interest within the scope of LU Planning at this time.

Comments regarding maximising the overlap between OGMAs and other constrained areas in the THLB

As some time has elapsed between the development of the initial plan and its approval, some licensees are now considering development in areas where OGMA placement was once non-contentious. Also, UWR and WHA, have since become more defined in their location and extent. MSRM consulted with affected licensees during plan development to agree on OGMA size and placement. Staff used the best information available at the time regarding special management areas within the THLB (e.g., Spotted Owl Special Resource Management Zones, Ungulate Winter Range, and Wildlife Habitat Areas). MSRM has committed to an ongoing process of rationalising OGMA location with other THLB constraints.