



**Forest
Practices
Board**

Conserving Old Growth Forests in BC

*Implementation of old-growth retention objectives
under FRPA*

Special Investigation

FPB/SIR/36

June 2012

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Glossary of Terms

The terms defined here are for the purposes of this report and they may be defined in different ways and contexts in government policy and guidelines.¹

Crown forested land base (CFLB): The CFLB is the area of productive forested Crown land in a defined area. It does not include private land, non-forested areas like alpine, lakes, roads, or non-productive forest like brush. A proportion of old-growth targets can be located within the forested portion of parks, ecological reserves and other areas managed by the Crown.² Within the CFLB, the area or amount of old-growth can be identified or located in constrained or inaccessible areas³ within the unit area to which the order applies, up to the target stated for each biogeoclimatic variant.

Incursion: An activity, such as harvesting or road construction, that removes trees in an OGMA.

Legal OGMAs: OGMAs have been declared in an old-growth order. Forest licensees must incorporate the legal OGMAs into their FSP. Once an order establishing legal OGMAs has been made, licensees have a period of time, usually between six months and two years, to ensure that their FSPs have been updated in a manner that is deemed consistent with the objectives contained in the new order. Once an order has been made, it replaces the previous order that was in effect.

Management area: Describes an area in which an order establishing old-growth objectives applies. A 'management area' may refer to:

- 1) a land use plan area⁴ or,
- 2) one or more timber supply areas or tree farm licences⁵, or
- 3) landscape units.

Non-legal OGMAs: OGMAs have not been declared in an old-growth order. Therefore, forest licensees required to prepare a forest stewardship plan (FSP) may choose to incorporate the non-legal OGMAs in their FSP as a way of achieving the non-spatial order that is in effect in the management area where they operate.

Non-spatial: Defines the percentage old-growth attributes to be retained within a specified area. The attributes are identified using vegetation inventories, but patches of old-growth are not delineated and mapped.

¹ For other terms used in the report, the reader may wish to consult the "Glossary of Forestry Terms in British Columbia," available at: <http://www.for.gov.bc.ca/hfd/library/documents/glossary/>

² Source: Landscape Unit Planning Guide
(<http://archive.ilmb.gov.bc.ca/slrp/srmp/Background/docs/LUGuide.pdf>)

³ Referred to as the non timber harvesting land base (or non-contributing land base).

⁴ For a map of approved land use plan areas, refer to the page 6 of the Board's 2006 special report titled "Land Use Planning, Which Way from here?" available at:
http://www.fpb.gov.bc.ca/SR34_Provincial_Land_Use_Planning_Which_Way_From_Here.pdf

⁵ A map showing TSA and TFL boundaries is available at:
http://www.for.gov.bc.ca/ftp/hth/external/publish/web/timber-tenures/TFL-TSA-District-Map_1.pdf

Old-growth Management Area (OGMA): Defined areas that contain, or are managed to attain, specific structural old-growth attributes and that are delineated and mapped as fixed areas.

Old-growth order; old-growth objectives etc.: Under FRPA, desired outcomes of forest or range practices are referred to as 'objectives.' Objectives are established either by regulation (a Cabinet order) or by order of a government minister or ministers under FRPA or the *Land Act*.

Recruitment: Identifying stands, either spatially or non spatially, that do not currently meet the requisite old-growth characteristics but are intended to contribute to targets at some point in the future.

Spatial: Using forest inventories to locate and map areas containing, or managed to contain, old-growth attributes. Spatially identifying these areas leads to their designation as legal or non-legal OGMAs.

Board Commentary

This investigation examines how government has implemented old-growth retention as directed in land use plans and how forest licensees are implementing the requirements set by government.

The investigation found that progress has been made in planning and implementing old-growth retention: thousands of old-growth management areas (OGMAs) have been established, and, in areas where OGMAs do not exist, specified amounts of old-growth forest must always be available.

The Board saw good examples of the professional reliance and *Forest and Range Practices Act* (FRPA) delegation models working – some licensees identify non-legal old-growth management areas (OGMAs) in their forest stewardship plans, and conduct forest practices to protect those areas, even though they are not legally obligated to do so.

However, the investigation also highlighted some of the challenges licensees face in achieving old-growth retention on multi-tenured Crown forested land bases where some tenured users are required to maintain old-growth and others are not. The Board believes that old-growth retention requirements, as well as requirements for other values (e.g., wildlife habitat areas), should apply regardless of which industrial sector is developing the land.

With all the expense and effort government has put into identifying and conserving old-growth, there is now a real need to keep track of what has been set aside, and where. Government is responsible for ensuring that old-growth is being properly managed, and needs to know what it has and where it is.

This investigation did not examine whether targets set for old-growth retention in different areas of the province are ecologically appropriate. However, investigators did notice substantial variation in the levels of old-growth retention required in different areas, ranging from a low of 3 percent of the forested landscape in some low biodiversity emphasis option landscape units, to a high of 70 percent retention in some landscape units in the ecosystem-based management (EBM) areas of the mainland coast and Haida Gwaii. This variability results in very different levels of risk to biodiversity values and the Board suggests it highlights a compelling need for government to undertake comprehensive effectiveness monitoring to determine whether or not efforts to protect biodiversity in these areas are actually effective.

Recommendations

Under section 131(2) of the *Forest and Range Practices Act*, the Board makes the following recommendations to address key findings identified in the investigation:

1. Government should develop and maintain a process for tracking OGMA values and incursions that can be updated by licensees or government staff.
2. Government should provide appropriate oversight of non-spatial orders (where non-legal OGMAs have not been identified) to ensure that required attributes are available on the land base and, if they are not, that required recruitment stands have been identified.
3. Government should create a uniform and consistent way of identifying and recording values within OGMAs and of making the information available to all Crown land tenure holders and agencies that administer those tenures.
4. Government should review the conditions of orders to ensure that, if fully exercised, provisions for harvesting or road construction do not materially alter the effectiveness of OGMAs.
5. Government should ensure all Crown land tenure holders are required to protect or mitigate the impacts of their activities in OGMAs.
6. Government should develop and implement a strategy to assess the effectiveness of spatial and non-spatial old-growth retention.

The Board requests that government advise it of plans for, and progress made in, implementing these recommendations by December 1, 2012.

Executive Summary

This investigation was initiated in 2010 as a follow-up to the Board's 2008 special report titled "*Land Use Planning, Which Way from Here?*"⁶ In that report, the Board concluded that comprehensive land and water use planning, which started in the mid 1990s, has never been fully implemented in the province, and it identified several factors contributing to this. One factor of note was that much of the direction contained in the land use plans has not been translated into legal requirements and merely remains as policy or guidance.

The results presented in that special report prompted the Board to take a closer look at the extent to which government has implemented direction for old-growth retention laid out in the land use planning process, and how this has translated into forest practices on the ground. The Board chose to focus on old-growth retention because it is commonly included in land use plans as a means of protecting biodiversity and has been regarded by government as one of the most effective ways of conserving biodiversity at the landscape level. Old-growth forest is also very important to the public, whether for biological, spiritual, aesthetic or other social values.

In examining the state of old-growth retention, the investigation assessed: how legal objectives and associated policy direction are being implemented by licensees subject to the orders; whether government is monitoring implementation or effectiveness of the orders; and whether other Crown land permit or licence holders who are not subject to the orders are having an impact on old-growth retention.

The investigation found that, with the exception of the Kamloops land use plan area,⁷ orders requiring old-growth retention are in place for all forested Crown land and apply to all forest licensees who prepare and submit a forest stewardship plan (FSP) for approval. Currently, about 55 000 old-growth management areas (OGMAs), or approximately 3.9 million hectares, have been identified and non-spatial retention requirements apply where OGMAs have not been identified. However, approximately 70

Scope of the investigation

This investigation examines how government has implemented old-growth retention, as directed in land use plans, and how forest licensees are implementing the requirements set by government. The investigation does not examine whether: OGMAs effectively capture representative old growth attributes; the amount of old-growth to be retained is appropriate; or, one approach to old-growth retention is more effective than the other (i.e., spatial vs. non-spatial).

⁶ Available at <http://www.fpb.gov.bc.ca/>

⁷ The Kamloops higher level plan order requires licensees to consider old-growth but does not set specified areas or amounts to be retained. Licensees in the land use plan area have agreed to respect the non-legal OGMAs, previously delineated in the area, by incorporating them in their FSPs. As a result, those licensees now have a legal obligation to protect old-growth values in the OGMAs. A government order to legally establish the OGMAs is pending.

percent of the 55 000 OGMAs have no legal status, except where incorporated into a FSP, and the remaining 30 percent have been declared legal under the *Land Act*. Significant progress has been made on planning for old-growth retention, but planning continues in some areas to spatialize old-growth into OGMAs and other similar reserves.

The investigation found land use plans to be highly variable in terms of providing specific direction for old-growth retention—some plans include percentages of old forest to be retained and offer additional direction for delineating OGMAs, while other plans are limited to recommending that the *Biodiversity Guidebook*⁸ and/or *Landscape Unit Planning Guide*⁹ be followed. The investigation also found that orders setting requirements for old-growth retention are mostly consistent with the direction for old-growth retention contained in land use plans; for example, the implementation of old-growth retention in the Okanagan-Shuswap is consistent with the direction for old-growth retention as set out in that land use plan.

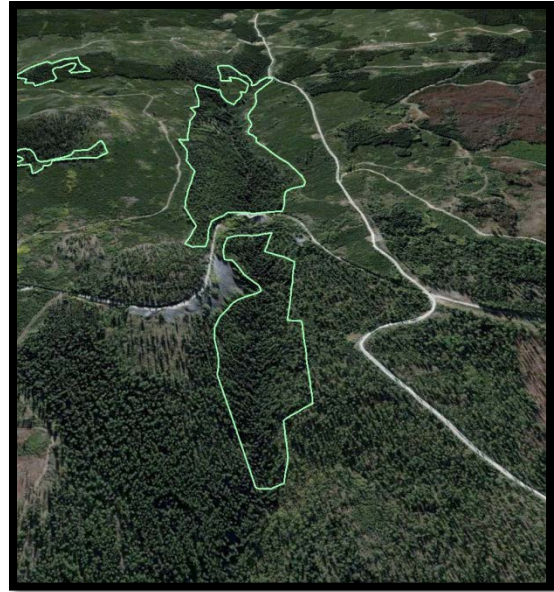


Figure 1: In some landscapes heavily disturbed by fire, mountain pine beetle (MPB) or forest harvesting, some of the remaining old-growth may be captured in OGMAs.

Most orders establishing legal OGMAs include a set of conditions that provide licensees with the ability to conduct limited harvesting and road construction without first having to seek an amendment to their FSP. While this may not be problematic with respect to OGMAs identified on the basis of age class, forest type and ecological unit, it can be a concern if OGMAs include additional values, such as wildlife habitat and culturally modified trees. The concern exists because government has not maintained records of OGMA values in a consistent and uniform way accessible to licensees conducting the activities. As a result, these values could be inadvertently impacted or compromised.

The investigation found that government's lack of a coordinated and uniform approach for tracking and monitoring old-growth retention is a significant problem. In many management areas, particularly those where non-legal OGMAs have been identified, government does not know the extent of OGMA incursions or if licensees have appropriately replaced harvested areas with other areas having equal or better old-growth attributes. In some management areas where old-growth retention is achieved non-spatially, government does not always provide ongoing oversight to ensure that OGMA requirements are being met. Also, 15 years after land use planning commenced, government has not yet started to assess if its objectives for old-growth retention are

⁸ Available at: <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm>

⁹ Available at: http://archive.ilmb.gov.bc.ca/slrp/srmp/Background/lup_landscape.html

effective—even though it has a program to do so (the Forest and Range Evaluation Program).

Another potentially significant problem relates to how government addresses retention in OGMAs for the non-forestry Crown land tenures that it grants. The investigation found that government’s approach is inconsistent; some tenure holders are required to address old-growth retention (i.e., avoid or mitigate impacts to OGMAs) while other tenure holders are not. The Board notes that while the *Environmental Protection and Management Regulation*¹⁰ under the *Oil and Gas Activities Act* provides for the responsible minister to legalize OGMAs, thereby ensuring their protection from the impacts of oil and gas activities, this has not yet happened.

While the investigation identified several key issues that challenge the implementation of old-growth retention, it also highlighted notable practices that support reliance on professionals and licensees. For instance, nearly all licensees operating in areas where the non-legal OGMAs have been identified have voluntarily incorporated those OGMAs into their FSPs, thereby giving OGMAs legal protection for the term of the FSP. Other examples include both government and forest industry professionals working collaboratively to ensure the orders are implemented as intended.

Since old-growth planning started back in 1995, both government and the forest industry have made significant investments in planning and retaining old-growth forest. However, the long-term benefits of these investments may be compromised unless action is taken to address issues like tracking, effectiveness monitoring and the cumulative effects of non-forestry Crown land tenure holders.

¹⁰ The regulation came into effect on October 4, 2010.

Background

In 2008, the Forest Practices Board (the Board) released a special report examining the status of land use planning across the province. The report, *Land Use Planning, Which Way from Here?*¹¹ concluded that the province has not fully implemented comprehensive land and water use planning, that started in the mid 1990s. While government completed strategic or regional land use plans for most areas of the province, it did not always complete more detailed planning (e.g., sustainable resource management plans or landscape unit plans) that would translate strategic level direction into legal requirements. As a result, much of the direction contained in land use plans continues to serve only as guidance or policy and not as legal requirements.

The results of that special report prompted the Board to take a closer look at the extent to which government has implemented the direction for biodiversity in land use plans and how this has translated into forest practices on the ground. The Board chose to focus on the retention of old-growth for several reasons:

- it is commonly included in land use plans as a means of protecting biodiversity;
- it has been regarded by government as one of the most effective ways of conserving biodiversity at the landscape level;¹²
- old-growth forests are very important to the public, whether for biological, spiritual, aesthetic or other intrinsic values.

The investigation considered land use plans as the benchmark for government's direction on old-growth retention because most plans have been developed with multi-stakeholder participation and are intended to communicate government policy or legal direction for the allocation and protection of Crown land resource values, including old-growth.

In examining the state of old-growth retention, the investigation assessed:

- how the direction for old-growth retention in land use plans has been implemented by government;
- how legal objectives (orders) and associated policy direction is being implemented by licensees that are subject to the requirements;
- whether government is monitoring effectiveness of the orders; and,
- whether other Crown land permit or licence holders, who are not subject to the orders, may be having an impact on old-growth retention.

¹¹ Available at <http://www.fpb.gov.bc.ca/>

¹² When landscape level biodiversity planning commenced under the Code, government gave direction through the Landscape Unit Planning Guide (1999) to commence planning for “priority biodiversity elements” – wildlife tree retention (WTR) and old-growth management areas (OGMAs) because these two elements were regarded as the most effective means of conserving biodiversity at the landscape level. Biodiversity planning for other elements (e.g., patch size, connectivity) were to follow.

What is old-growth and why is it important?

The ecology of old-growth is complex and highly variable between forest ecosystems and sites. Generally, old-growth forests are climax ecosystems often characterized by relatively tall, old trees and structural diversity including standing and fallen dead trees, providing a rich nutrient base for lichen, mosses and other shade tolerant plants.

Other than age class, there is no formal definition of old-growth in BC. This is primarily because the available forest cover inventories were not designed to collect and describe complex attribute information associated with old forests in a uniform and consistent way. Using age class from forest cover maps, forests on the west coast (and in some wet areas of eastern BC) are considered 'old' when they have reached an age greater than 250 years. In the dry interior forests, which are subject to regular stand-altering events such as wildfire and forest insect infestations, the age of 'old' forests is considerably less, being stands greater than 140 years old.

There is a large body of literature describing the value of old-growth forests,^{13&14} in particular the contribution of these stands to maintaining biodiversity by providing habitat for the many organisms that exist within the forests of BC. Over 400 species of vascular and non-vascular plants (e.g., epiphytic lichens) and animals (e.g., marbled murrelets) rely on old-growth forests for at least a part of their life cycle.¹⁵ In addition to their ecological importance, old-growth provides a vital cultural resource for First Nations.

FRPA and objectives for old-growth retention

Forest and range activities on Crown land are regulated by the *Forest and Range Practices Act* (FRPA). Under FRPA, desired outcomes of forest or range practices are referred to as 'objectives.' Objectives are established either by regulation (a Cabinet Order) or by order of a government minister or ministers under FRPA or the *Land Act*.

Orders established under the *Land Act*, or those made under the *Forest Practices Code of British Columbia Act* (the Code) and continued under the *Land Act*, are enforceable only through a forest stewardship plan (FSP). This is because licensees who are required to prepare and submit an FSP for government approval must include results or strategies that are consistent¹⁶ with objectives, such as those for old-growth, that are set by government. Licensees must also comply with the FSP and FRPA practice requirements.

¹³ Hilbert, J., and A. Wiensczyk. 2007. Old-growth definitions and management: A literature review. *BC Journal of Ecosystems and Management* 8(1):15–31.

http://www.forrex.org/publications/jem/ISS39/vol8_no1_art2.pdf

¹⁴ MacKinnon, A. 1998. Biodiversity and old-growth forests. In J. Voller and S. Harrison (eds.). *Conservation biology principles for forested landscapes*. UBC Press, Vancouver, British Columbia.

¹⁵ Ministry of Forests, Mines and Lands. 2010. *The State of British Columbia's Forests*, 3rd ed. Forest Practices and Investment Branch, Victoria, B.C. www.for.gov.bc.ca/hfp/sof/index.htm#2010_report

¹⁶ Section 25.1 of the *Forest Planning and Practices Regulation* (FPPR) prescribes the extent to which the results or strategies in an FSP must be consistent with the objectives.

Under s. 13(3) of FRPA, woodlot licence holders are exempt from government's objectives for old-growth retention. Depending on the old-growth order that applies to a given management area, some community forests may also be exempt from the objectives. For example, the provincial non-spatial order does not apply to community forests under 600 hectares in area. Other *Forest Act* tenure holders, including small scale salvage and forestry licence-to-cut holders are exempt from the orders but may be required to avoid OGMA as a matter of district policy.

Scope and Approach

This special investigation is provincial in scope. It includes an evaluation of a wide array of documents related to the retention of old-growth, including all final land use plans and legal orders as of August 1, 2011, and interviews with forest licensees and government staff.

Investigators obtained land use plans and documents supporting implementation of old-growth retention planning from government staff and forest licensees, or downloaded them from government's land use plan web portal.¹⁷ These documents included land and resource management plans (LRMPs), sustainable resource management plans (SRMPs), draft and legal orders, OGMA amendment policies and other implementation and guidance documents.

Land use plans, in particular LRMPs, are strategic in nature, but highly variable in terms of the specific direction they provide for old-growth retention. To ensure a consistent approach in evaluating implementation of plan direction for old-growth, and in keeping with the provincial scope of the project, the investigation focused on the direction that applied to the entire land use plan area, as opposed to a single watershed or resource management zone.

The investigation included over 60 interviews with forest licensees and staff from BC Timber Sales (BCTS); the former Integrated Land Management Bureau (ILMB); the forests ministry; the Ministry of Environment; the Environmental Assessment Office; and, the Oil and Gas Commission. Interviews with government

Since the investigation began, government's resource ministries have undergone significant reorganization and changes in functional priorities. The Integrated Land Management Bureau (ILMB), which had primary responsibility for coordinating land use planning, was dissolved and, together with the regional operations component of the Ministry of Environment and the entire Ministry of Forests and Range, was integrated into the new Ministry of Forests, Lands and Natural Resource Operations (MFLNRO). Many former ILMB staff are no longer involved with land use planning and have been reassigned to other ministry programs. However, planning staff remain in some regions where land use planning or implementation of legal objectives is currently underway or nearing completion.

¹⁷ <http://ilmbwww.gov.bc.ca>

staff and forest licensees spanned all eight regions of the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), as well their headquarters in Victoria. The interviews were intended to obtain information about the methods and process for old-growth retention planning, tracking of OGMA incursions, effectiveness monitoring, and implementation of the orders by licensees.

Investigation Findings

Current status of the area and amount of old-growth retained

All forest licensees in BC with an approved FSP are subject to old-growth retention requirements. Currently, about 55 000 OGMAs, totaling approximately 3.9 million hectares, have been identified (Figure 2).¹⁸ Approximately 70 percent have no legal status unless they are incorporated into a FSP, with the remaining 30 percent declared legal under the *Land Act*.¹⁹ Non-spatial retention requirements are in effect in management areas where OGMAs have not yet been identified (Figure 2). The required amount of old-growth in the orders must be located on the Crown forested land base (CFLB).

While almost all Crown forested land is currently subject to an order requiring old-growth retention, work to select and/or legalize OGMAs continues in a number of management areas. For example, in the Fort St. John Timber Supply Area (TSA), North and Central Coast EBM areas, and select landscape units in the Squamish and Chilliwack Districts, selection of old-growth reserves is currently underway. Also, in the Kamloops TSA, a land use order is pending government sign-off to legalize OGMAs that were selected in 2002.

Planning for old-growth retention

1. Direction in land use plans

As expected, the investigation found a range of direction in land use plans for the retention of old-growth. Most land use plans include a recommendation that direction contained in the *Biodiversity Guidebook* and/or the *Landscape Unit Planning Guide* be

¹⁸ The number of OGMAs is an estimate only. In some management areas, like the North and Central Coast ecosystem-based management (EBM) areas, old-growth areas (referred to as “forest reserves” or “strategic landscape reserve design reserves”) have not been finalized and are subject to change. *Note 1:* Data for legal and non-legal OGMAs obtained from the Geographic Data Discovery Service (<https://apps.gov.bc.ca/pub/geometadata/home.do>), accessed March 2012. Data for the EBM areas provided by the MFLNRO, Nanaimo, March 2012. *Note 2:* Although the management areas where non-spatial orders are in effect are known, the total area (hectares) of Crown forested land under a non-spatial order is not tracked.

¹⁹ Although only 30 percent of OGMAs have been declared legal, they make up about 50 percent of the total area (3.9 million hectares) identified in OGMAs. Source: MFLNRO, Crown Land Indicators and Statistics Report (2010). Available at: http://www.for.gov.bc.ca/land_tenures/documents/publications/Crown_Land_Indicators_&_Statistics_Report.pdf

implemented. Other land use plans are either silent about direction for old-growth retention or suggest that it be addressed through more detailed land use planning mechanisms such as sustainable resource management plans (SRMPs). With some exceptions, many of the earlier land use plans (pre-2002) include less direction for old-growth retention than more recent plans.

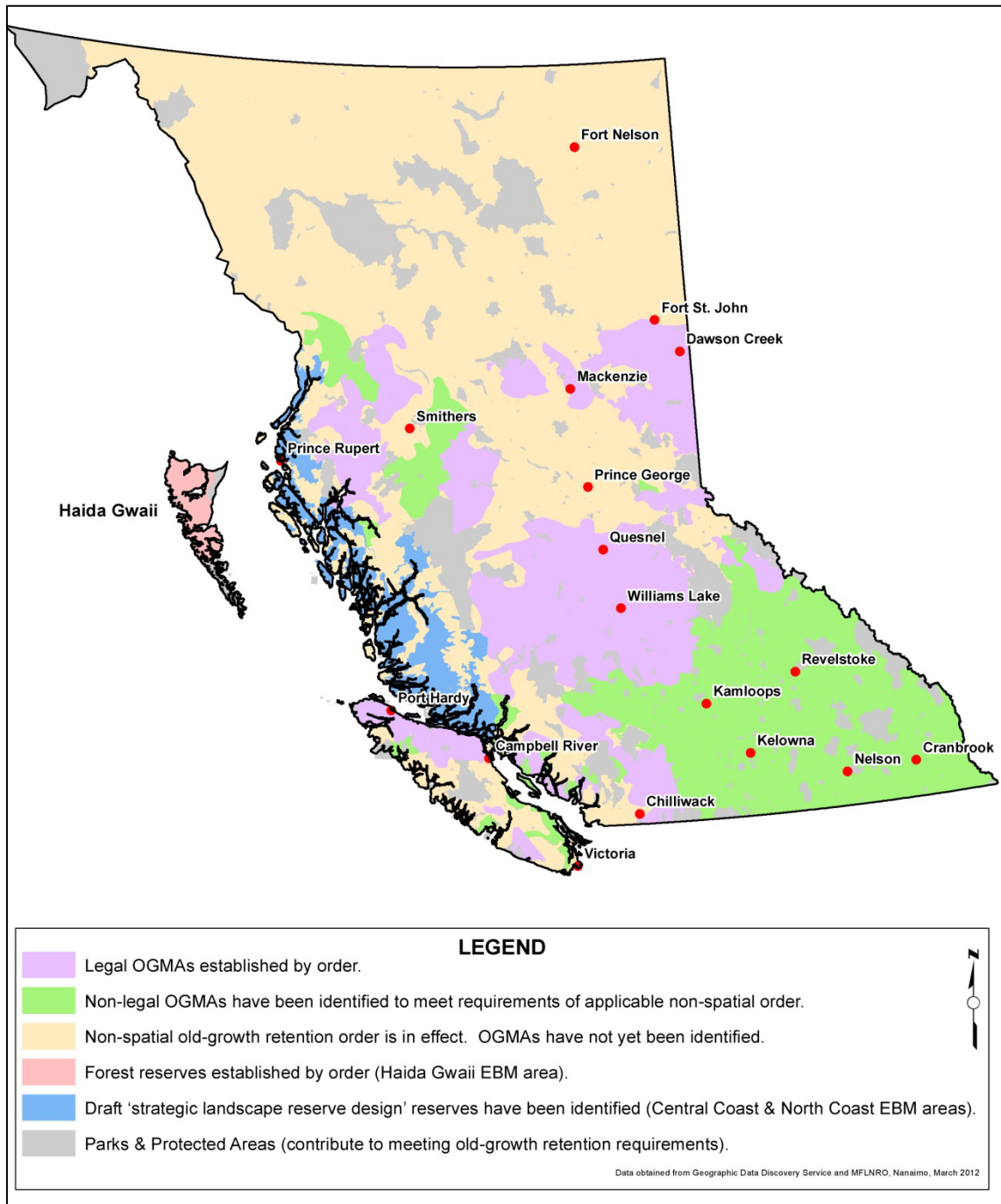


Figure 2: Provincial areas where various approaches to old-growth retention have been implemented.

The exceptions include the Lakes District LRMP in the northern interior and the Okanagan-Shuswap LRMP in the southern interior.

The Lakes District and Okanagan Shuswap LRMPs direct the establishment of OGMAs and the latter identifies a budget for old-growth retention by landscape unit. However, land use plans that direct the retention of old-growth by delineating OGMAs do not generally specify whether the OGMAs are to be legally established.

Land use plan	Direction in land use plan
Lakes District LRMP (2000)	Develop and implement an old-growth management strategy which establishes, throughout the district, OGMAs dominated by old tree cover and containing most of the structure, function, microclimatic conditions and biota associated with old forest, including interior forest conditions. Within OGMAs, maintain old-growth and interior forest conditions, and provide a representative cross-section of ecosystem types occurring in the district.
Prince George LRMP (1999)	Manage for biodiversity by maintaining a pattern of mature and old-growth forest at the landscape level.
Okanagan-Shuswap LRMP (2001)	OGMAs required to meet the timber harvesting land base subzone variant old-growth targets established for each landscape unit will be placed in a manner that is both biologically relevant (e.g., considers connectivity, age and spatial distribution, etc.), while at the same time giving placement priority to areas that meet the following criteria, listed in no particular order (i.e., the order will be determined by the particular circumstances/needs of each landscape unit): rare ecosystems (high priority in most circumstances); caribou reserves; marten/fisher requirements; riparian reserves (statutory only) and management area; Terrain Class 5; sensitive soils; Class A lakes (LMZs); wetlands; trail corridors; headwaters of streams (and other criteria).
Central Coast and North Coast LRMPs (2004)	Designate OGMAs representative of forested ecosystems. Maintain 70 percent of the natural old seral distribution in each ecosystem type.
Kamloops LRMP (1995)	Maintain old-growth attributes within landscape units.

Table 1: Examples of the range of direction in land use plans for the retention of old-growth (note – wording in this table may be paraphrased)

Land use plans on the mainland coast, Vancouver Island and Haida Gwaii, provide specific direction about old-growth retention. For example, the North Coast and Central Coast LRMPs (including the Ecosystem-Based Management Planning Handbook), set the amount and attributes for old-growth-retention to be incorporated into multiple-value reserves. Table 1 includes examples of the range of direction in land use plans for the retention of old-growth.



Figure 3: Old-growth forest is found across BC and occurs in a variety of ecosystems ranging from the large interior cedar hemlock to dry black spruce forests (shown here).

Land use plans are not the sole mechanism for directing old-growth retention on Crown forested land, but they are largely complimentary to government’s policy for implementing old-growth retention as contained in the Landscape Unit Planning Guide. For example, in the Sunshine Coast, Merritt and Fraser TSAs and parts of the Nass TSA, old-growth planning and retention has been under way for some time, even though land use plans may not have been initiated or completed.

2. Legal mechanisms to establish old-growth objectives and variation between orders

Under the Forest Practices Code (1995 to 2004), objectives for old-growth retention were established as higher level plan orders (referred to as Code-era orders). When the Code was replaced by FRPA in 2004, authority to continue Code-era orders and establish new orders was transferred to the *Land Act* (see Table 2).

Since 1995, about 50 orders establishing old-growth objectives have been approved by government – some orders establish objectives that apply to single landscape units, while others, like the provincial non-spatial order, apply to multiple landscape units. The manner in which legal objectives have been established over time has led to considerable variation in the content of orders within and between management areas. For example:

- In some management areas, old-growth is retained in OGMAs while in others, it is retained non-spatially.
- There are differences between Code-era orders and *Land Act* orders. Most spatial and non-spatial orders established under the Code and continued under the *Land Act* adopted targets from the *Biodiversity Guidebook* (1995)²⁰ and the *Landscape Unit*

²⁰ Available at: <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm>

Planning Guide (1999)²¹. Retention ranges from a low of 3 percent to a high of 28 percent in high biodiversity emphasis option landscape units. In contrast, the amount of old-growth required in orders established under the *Land Act* is generally higher than Code-era orders, ranging from approximately 3 percent in some low biodiversity emphasis option landscape units to as much as 70 percent in some coastal landscape units under EBM, and natural disturbance units in the Prince George TSA.

- In some administrative areas, like the South Island District, multiple orders for old-growth retention can be in effect in different management areas. Depending on the location in the district, the following order may apply: Vancouver Island land use plan order; Clayoquot Sound order; Renfrew aggregate order; and the provincial non-spatial order.

Both government staff and licensees gave the Board several reasons why variations may exist between management areas in terms of the approach used to retain and manage old-growth:

- Differences in regional preferences between the spatial and non-spatial approach: in most of the Prince George TSA, for example, government and forest licensees chose to manage old-growth non-spatially because they believe the approach provides more flexibility in a landscape heavily impacted by the mountain pine beetle (MPB). However, in three landscape units in the interior cedar hemlock wet belt, legal OGMA's have been designated to provide more certainty for old-growth dependent species. In contrast, in the Cariboo-Chilcotin land use plan area, which has also been heavily impacted by the pine beetle, government and most licensees chose to transition from non-legal to legal OGMA's. In addition to being less costly to administer, they believe the spatial approach provides more assurance of meeting the requirements than the non-spatial approach.

Government staff told the Board that they have few resources to continue with OGMA selection planning, even when it is proceeding under an approved business case. For the Central and North Coast EBM areas, they said the identification of multiple value reserves, which includes old-growth across all landscape units, is a substantial and costly challenge and can only be achieved by sharing the workload with forest licensees. Currently, licensees and government staff are each planning reserves in about 50 landscape units in an effort to complete planning in a timely manner.

²¹ Available at http://archive.ilmb.gov.bc.ca/slrp/srmp/Background/lup_landscape.html

Regulation	Type of order	Licensee options for implementing an order in the Forest Stewardship Plan (e.g. shows management areas where approach has been implemented)
Higher level plan order established under the Forest Practices Code and continued under the <i>Land Act</i> (S. 93.8)	Provincial non-spatial old-growth order. Applies to most landscape units in the province unless an order has effect in a specified area.	1. FSP includes result/strategy to implement order as is. <i>e.g., TFL 30.</i>
	Non-spatial old-growth order applied to specified area <i>e.g., Kootenay-Boundary HLP order.</i> <i>e.g., Prince George TSA order</i> <i>e.g., Revelstoke HLP order</i>	2. FSP includes result/strategy to implement order by adopting OGMAs identified by government and/or licensees. <i>e.g., Okanagan TSA.</i> <i>e.g., TFL 23.</i> 3. FSP includes result/strategy to implement order as is. Licensee delineates OGMAs as non-legal strategy to meet targets. No reference to OGMAs in FSP.
	Order establishing OGMAs applied to specified area <i>e.g., landscape units.</i>	1. FSP must include result/strategy consistent with order. <i>e.g., Big Silver Landscape Unit.</i>
Orders established under the <i>Land Act</i> (S 93.4)	Non-spatial old-growth order in specified area. <i>e.g., South Central Coast and Central and North Coast orders.</i>	1. FSP includes result/strategy to implement order as is. 2. FSP includes result/strategy to implement order by adopting OGMAs identified by government and/or licensees. 3. FSP includes result/strategy to implement order as is. Licensee delineates OGMAs as non-legal strategy to meet targets. No reference to OGMAs in FSP.
	Order establishing OGMAs applied to specified area <i>e.g., Multiple landscape units on Vancouver Island</i>	1. FSP must include result/strategy consistent with order. <i>e.g., Five landscape units in the Port Renfrew SRMP area</i>

Table 2: Examples of regulatory approaches used to implement old-growth retention.

- Limited staff resources in some management areas are preventing or delaying the delineation of OGMAs (for example, government’s 2006 “new direction” policy,²² which effectively stalled or delayed work to delineate OGMAs, unless approved under a business case).
- Uncertainties about impacts to timber supply.
- The adoption of more recent science-based information regarding the appropriate amount of old-growth that should be retained within the management areas. Examples include the North Coast, Central Coast and Haida Gwaii EBM areas and the Prince George TSA.

3. Pros and cons for legal designation of OGMAs

While many management areas adopted the spatial approach to old-growth retention, there are two differences in how the approach was implemented. Currently, only 30 percent of the roughly 55 000 OGMAs have been made legal (legal OGMAs) by an order. The remaining OGMAs have no legal effect (non-legal OGMAs) unless a licensee incorporates them into its FSP.

For most management areas that pursued legal OGMAs, the focus was ensuring that multiple values identified in the areas were protected. In the Kamloops TSA, government moved to legalize OGMAs, in part, over concerns that licensees were not always replacing areas harvested in non-legal OGMAs with equivalent or better old-growth.²³ In the Dawson Creek TSA, licensees encouraged government to spatially identify old-growth to avoid ongoing challenges with implementing the non-spatial approach in a landscape heavily influenced by oil and gas activities.



Figure 4: Non-legal OGMA adjacent to Frozen Lake, Flathead River Valley.

In areas like the Okanagan-Shuswap TSA, Merritt TSA and Kootenay-Boundary land use plan area, government has no immediate plans to legalize OGMAs. Licensees said they preferred non-legal OGMAs for two reasons: first, because they provide the assurance

²² Integrated Land Management Bureau, 2006. *A New Direction for Land Use Planning in BC*. http://archive.ilmb.gov.bc.ca/slrp/lrmp/policiesguidelinesandassessments/new_direction/new%20direction%20synopsis.pdf.

²³ Although government stated the concern about the replacement patches as one reason for moving ahead with legal OGMAs in the TSA, it has not undertaken monitoring to establish whether replacement patches have equal or better conservation values.

that licensees are complying with the non-spatial order without the need to undertake costly GIS analysis; and, second, because licensees may harvest in non-legal OGMA's without having to seek approvals, provided they continue to comply with the applicable non-spatial order. Government staff, on the other hand, said that while it is currently not a government priority, it was always the intention to legalize OGMA's and it is important to do so, as significant financial resources have been allocated to identify candidate areas.²⁴

4. OGMA selection

The approach used to select and delineate candidate OGMA's is also highly variable between management areas. Consistent with the *Landscape Unit Planning Guide*, most OGMA's were selected on the basis of three benchmark criteria, which were: percent area by age class; forest type; and ecological classification (biogeoclimatic variant), with priority placement in the non-contributing or constrained land base.²⁵ Generally, candidate OGMA selection did not include field verification of age class or other old-growth attributes.

In addition to the three benchmark criteria, OGMA's in some management areas, such as the South Nass, Kootenay Boundary, Central and North Coast and parts of the Chilliwack Forest District, were located in areas with multiple values such as important wildlife habitat, First Nations and other non-timber resources. Considerable financial and staff resources were committed to planning OGMA's and boundaries were often field verified, with an emphasis placed on ensuring that OGMA locations would not restrict access for timber harvesting in other parts of the watershed. Government staff said that detailed planning, though costly, has largely avoided the need for multiple OGMA amendments — something that has happened in some management areas.

5. Content of orders establishing OGMA objectives

Orders establishing legal OGMA's include a map showing the location of OGMA's (Figure 5)

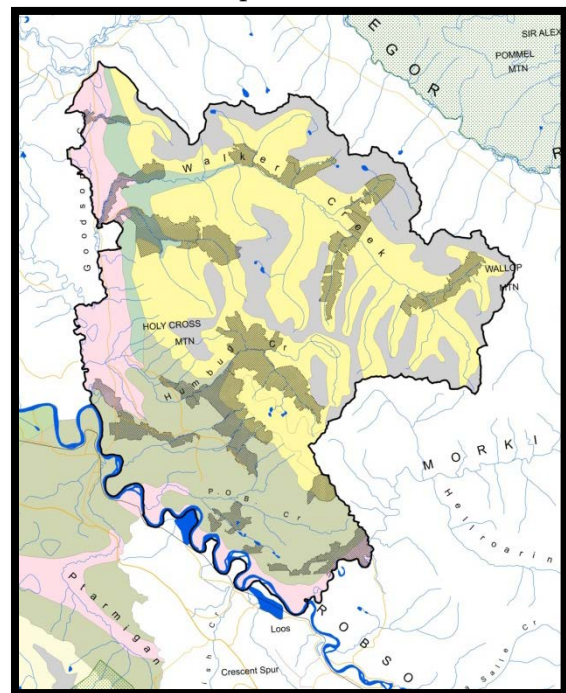


Figure 5. Typical map attached to an order establishing legal OGMA's (on this map, OGMA's are shown in dark gray).

²⁴ The Land Use Objectives Regulation: Policy and Procedures document (2008) sets out the policy that government must consider in the development of a business case to legalize OGMA's.

²⁵ Within the geographical boundaries of the Dawson Creek TSA, for example, 312 000 hectares of old forest has been set aside in 240 separate OGMA's. Of the 312 000 hectares, about 60 000 is identified in parks (non-contributing), 30 000 hectares (in contributing but constrained) in areas like ungulate winter ranges (UWRs), wildlife habitat areas (WHAs) and 21 000 in riparian areas.

and usually include conditions respecting harvesting and road construction. While the number and type of conditions varies between orders (refer to examples in Appendix 1 and 2), thresholds for harvesting or road construction are typically set at 10 hectares or 10 percent of the OGMA, whichever is less.²⁶ If a licensee intends to exceed this amount, they must first seek an amendment under the *Land Act* and/or their FSP.

The investigation found an array of conditions governing forest harvesting and road construction in orders. Conditions in some orders are prescriptive, including specific thresholds governing the amount of cumulative disturbance permitted within OGMAs (see example, Appendix 1). Most orders appear to be less prescriptive (see example, Appendix 2), placing a greater expectation on forest professionals to ensure that objectives within OGMAs are being met. For example, harvesting to address forest health concerns is generally permitted in OGMAs, but few orders include specific parameters or conditions about how forest health issues should be addressed on the broader landscape before the decision about the need and extent of salvage harvesting — based on the advice of forest professionals — is made. Only the Cariboo-Chilcotin land use order includes specific forest health conditions that restrict licensees from entering OGMAs to conduct salvage activities.

Most orders also include provisions for licensees to adjust OGMA boundaries to better align with intended geographic features such as roads, riparian features, terrain, timber types etc. With some exceptions, orders generally require licensees to locate replacement old-growth equivalent to the area that was removed by harvesting or road construction, but this is not always the case. Orders do not generally require equivalent replacement areas for temporary roads, provided those roads are deactivated within a specified period of time.

Some MFLNRO staff and licensees suggested there is confusion about how the thresholds for harvesting in OGMAs are calculated over time. The majority of orders do not specify whether or not the thresholds for incursions into an OGMA (e.g., 10 percent or 10 hectares) are cumulative or time-limited. Some licensees suggested that the thresholds are time-limited to the term



Figure 6. Mixed wood OGMA with white spruce and cottonwood.

²⁶ The proposed order for the Kamloops TSA includes lower thresholds for harvesting and road construction than any other current order. Government staff said that they are planning to reduce the allowable incursion to two hectares to address concerns that harvesting in the current non-legal OGMAs is not always sufficiently justified by licensees, and that the 10 hectare threshold applied in other management areas may compromise the integrity of the OGMAs.

of an FSP; in other words, up to 10 hectares of an OGMA could be modified under each new FSP term. Only the orders for 14 landscape units in the Chilliwack Forest District specified that thresholds for harvesting in OGMAs are cumulative (i.e., they are not limited to the term of the FSP). The lack of clarification regarding the period of time that the thresholds for OGMA modification apply may result in more harvesting in the OGMAs than originally anticipated by government.

Replacements to address OGMA incursions

Most orders require licensees to identify suitable OGMA replacement areas before road construction or harvesting in OGMAs is undertaken. Generally, candidate replacement areas must be of equal or greater area than the area to be disturbed and result in equal or greater retention of key old forest attributes. However, few of the orders or guidance documents provide specific direction regarding minimum patch size for replacement areas, nor do they clarify whether patches are to be located contiguous with existing OGMAs. This lack of direction could result in OGMAs becoming heavily fragmented across the landscape, particularly in landscape units that have been heavily harvested and where only scattered small remnants of old-growth remain.

In summary, the Board has identified several weaknesses in the content of orders which may potentially lead to a higher frequency of harvesting in OGMAs and a longer term reduction in OGMA area than originally intended. With some exceptions, orders generally lack sufficient detail to effectively restrict harvesting or road construction within the specified thresholds.

6. Content of orders establishing non-spatial old-growth objectives

There are six non-spatial old-growth orders:

- Provincial non-spatial order
- Kootenay-Boundary HLP order
- Revelstoke HLP order
- South Central Coast order (EMB area)
- Central and North Coast order (EBM area)
- Prince George TSA order.

The provincial, Kootenay-Boundary and Revelstoke orders share similar content requirements, including specified amounts of old-growth categorized by age-class, biogeoclimatic zone and biodiversity emphasis option. The Prince George TSA, Central and North Coast orders have additional requirements. The Prince George TSA order, for example, requires specified amounts of old-growth to have interior forest condition. EBM area orders specify values, like the presence of monumental cedars and regionally important wildlife species, as factors to consider when planning old forest retention areas.

All non-spatial orders include measures to address recruitment and replacement of old-growth attributes.

Recruitment and replacement planning to address deficits in old-growth retention requirements

Each of the six non-spatial orders include provisions for using a proportion of younger age stands to meet the old-growth targets, with some differences for the supporting rationale required to implement the provisions. For example, the Prince George TSA order limits the use of younger stands to 20 percent of the target, while the provincial order sets no limits on the amount of younger stands that can be used. However, in both cases, there must be a demonstration of equal or better conservation benefits.

In the Prince George TSA, recruitment planning is governed by a joint government/licensee working group. In their FSPs, licensees commit to protocols directing the content and review of the plans. Each year, complex and costly GIS analyses are undertaken to assess achievement of the targets. When old-growth within a natural disturbance unit is approaching the minimum required, notification is made to the working group about the pending need for a recruitment strategy.²⁷

In management areas where the non-spatial order is being met by non-legal OGMAs, planning is also required to identify suitable areas to replace stands lost to catastrophic, stand-altering events such as fire, insects and disease, thus ensuring licensees continue to meet the requirements of whichever order applies. The investigation found examples where government had worked with licensees to actively identify old-growth replacement areas lost as a result of fire, such as the 2003 Okanagan Mountain Park fire, which destroyed several large non-legal OGMAs. However, in general, there is uncertainty among government staff and licensees about the level of disturbance that would necessitate replacement of OGMAs. With the exception of the Prince George TSA, the investigation found inconsistencies in how recruitment and replacement planning is applied between different management areas. There is a lack of direction from government as to how and when recruitment planning should be completed and whether government has a role in reviewing or approving recruitment plans.

Reduction of old-growth retention requirements

In three non-spatial Code-era orders,²⁸ government made a concession to reduce impacts to timber supply by enabling the amount of old-growth in low biodiversity emphasis option landscape units to be reduced by up to two-thirds (referred to as a drawdown).²⁹

In terms of whether the drawdown was implemented, and the amount of drawdown that occurred, the investigation found variation between management areas where the non-spatial orders are in effect and management areas where they are not. For example,

²⁷ The Prince George TSA order includes provisions to prepare a recruitment strategy if the targets cannot be achieved “with consideration of the timely and economic harvesting of timber rights.” This would include harvesting identified representative old stands to address the MPB epidemic. The recruitment strategy must be approved by government before harvesting commences.

²⁸ Includes the provincial non-spatial old-growth order, the Revelstoke HLP order and Kootenay-Boundary HLP order.

²⁹ The Revelstoke HLP order only permits the reduction to occur within TFL’s 55 and 56.

the drawdown is being fully applied in the Kootenay-Boundary and Revelstoke land use plan areas (TFLs 55 and 56). However, where the provincial non-spatial order applies, some management areas adopted some or all of the drawdown provisions while other management areas did not. In some management areas, there was uncertainty about how or when the drawdown should be applied, which led staff to assume that the full drawdown was the default. The investigation found more than one version for the two-thirds drawdown contained in orders. To add to the confusion, the implementation policy of the provincial order includes conflicting statements as to whether or not the drawdown is 'required' or 'conditional.'

“As outlined in the Order, old forest retention *may be reduced* by up to 2/3 in landscape units with low biodiversity emphasis landscape units to the extent necessary to address timber supply impacts.”

“As indicated in the LUPG, the old forest retention percentages shown in Tables 1-4 of the order *will be reduced* to 1/3 in all landscape units with low biodiversity emphasis, except where a timber supply analysis carried out in association with the Timber Supply Review process has determined that conserving more than 1/3 will not cause timber supply impacts.”

The Kootenay-Boundary order, on the other hand, includes the drawdown amounts in the tables showing the targets, implying that the drawdown is the default. In the Revelstoke order it states “old seral requirements are reduced to one-third of the old seral requirements in low emphasis areas” implying that the drawdown is the default. Unlike the provincial order, the Kootenay-Boundary and Revelstoke orders do not qualify the drawdown “to the extent necessary to address impacts to timber supply.” All orders require the full targets to be met after the third rotation (approximately 240 years).

While the three orders enable the same maximum amount that can be drawn down (i.e., up to one-third of the full amount), there are differences between the orders on whether a recruitment strategy is required to identify how the full targets will be achieved over time.

In the Kootenay-Boundary land use plan area, participants of a 2006 interagency meeting concluded that, “it was not realistic to expect licensees to conduct this work [recruitment planning to address the drawdown] and that government agencies would address the issue in the next update to the order.” Subsequent to that meeting, government used a provision under section 12(7) of the *Forest Planning and Practices Regulation* (FPPR) to exempt licensees from the requirement to prepare a recruitment strategy. To date, government has not re-visited the issue.

Language in the three Code-era orders is inconsistent in terms of requiring a supporting rationale to implement the drawdown. All three orders are unclear as to whether a recruitment plan is required and, if so, who has responsibility for completing the plan. For some management areas where the provincial non-spatial order applies, there are supporting rationales for implementing the drawdown in timber supply review

documents; however, an assessment of the drawdown and its potential impact on timber supply is not being applied consistently among all management areas. The investigation also found no evidence that recruitment planning is being done in areas where a drawdown was implemented and a recruitment plan is required.³⁰ Further, some licensees and government staff questioned the relevance of planning where the targets must be met in 240 years.

In light of these findings, government may want to consider reviewing the concept of recruitment planning to address the drawdown, including whether a recruitment plan is relevant over a 240-year planning horizon and who should be responsible for preparing the plans.

Implementation of old-growth retention requirements

Direction from land use plans

The investigation examined how well government has implemented the direction for old-growth retention in land use plans and found that, generally, orders requiring the retention of old-growth meet or exceed the direction in corresponding land use plans. However, there are some exceptions. In the Okanagan-Shuswap land use plan, for example, the direction for old-growth retention is extensive but the corresponding land use order excludes old-growth retention. Although the provincial non-spatial order is in effect in the land use plan area, the direction for old-growth in the land use plan is still being implemented because licensees have elected to incorporate non-legal OGMAs, identified as part of the land use planning process, into their FSPs.

Another exception includes the Kamloops LRMP, which limits direction for old-growth retention to “maintain old-growth attributes within landscape units.” The corresponding land use order includes the same direction as an objective for ecosystem management. As a result, the land use plan area is the only management area in the province without specific areas or amounts of old-growth required to be retained within landscape units. Despite the lack of specific legal direction for old-growth in the management area, licensees have incorporated the non-legal OGMAs into their FSPs.

Forest stewardship plans

Under FRPA, licensees required to prepare and submit a FSP must write a result or strategy that is consistent with each of government’s objectives. This includes objectives contained in the FPPR, the *Government Actions Regulation* and any objectives continued under a Forest Practices Code higher level plan order or made under provisions of the *Land Act*. Under the results-based framework of FRPA, it is the results and strategies in an approved FSP that are subject to compliance and enforcement – not the order establishing the objectives.

³⁰ None of the FSPs examined in management areas where a drawdown was implemented include results or strategies committing to a recruitment plan.

The investigation included a review of the content of approximately 20 FSPs, roughly distributed across all forest regions, to assess if the orders that apply to the area covered by the FSPs were appropriately addressed. Overall, the content of FSPs either met or exceeded the requirements of the applicable order. Licensees exceeded the requirements of the order when the FSP was either more restrictive than the order, in terms of harvesting in a legal or non-legal OGMA, or when licensees included commitments in their FSPs to follow various guidance documents or implementation policies produced by government.

The investigation found two instances in the Dawson Creek TSA where the FSPs did not include results or strategies to address the order establishing OGMAs. Licensees were required to include the content of the order in their FSPs,³¹ by amendment, no later than May 29, 2010. Two licensees told the investigators that the required FSP amendments were not submitted because they were waiting for impending wildlife habitat area orders so that they could amend the FSP for both orders at the same time. However, these licensees assured the investigators that, nevertheless, they were fully adhering to the requirements of the order.

In management areas with non-legal OGMAs, most licensees have chosen to incorporate them into their FSPs even though they are not required to do so. Licensees said that they manage for non-legal OGMAs because it provides additional certainty that they are meeting the requirements of the order.

Despite provisions in FSPs to harvest or build roads in non-legal OGMAs, licensees said they tend to avoid OGMAs wherever possible and most incursions were minor (probably in the 0.5 to 1 hectare range).

The investigation found that FSPs generally include restrictions on harvesting and road construction similar to the thresholds found in orders establishing legal OGMAs. However, some notable variations were identified. In one FSP, for example, the licensee did not identify any limits to

harvesting or road construction in non-legal OGMAs, provided the requirements of the applicable non-spatial order were being met. In another FSP, the licensee committed to adhering to regional policy and guidance for OGMA management – government direction that is not legally binding unless included in an FSP.

It is the Board’s view that incorporating non-legal OGMAs into an FSP and making commitments to restrict the amount of harvesting or road construction in OGMAs are good practices that demonstrate professional reliance at work under FRPA. The Board takes this view because many OGMAs, though not legally established, were identified because they contain other values, like rare and endangered species. These values could be compromised by harvesting or road construction if licensees choose not to incorporate the OGMAs into their FSPs. The question remains, however, whether the

³¹ Refer to the content requirements of a Forest Stewardship Plan under Section 5(1)(b) of the *Forest and Range Practices Act* and Section 14(2) of the *Forest Planning and Practices Regulation*.

approach of managing non-legal OGMAs is sufficient to ensure the long-term integrity of the designated areas. For example, in a recent complaint investigation report³², the Board recommended that government provide legal protection for 4770 hectares of current non-legal OGMAs in the interior cedar hemlock biogeoclimatic zone near McBride, BC. The Board made this recommendation because the stands were globally rare, rare on the landscape, precisely mapped, contained both endangered and newly discovered species and were not adequately protected by the current approach being applied.

Forest certification

Most major forest licensees in BC are certified by the Canadian Standards Association, Sustainable Forestry Initiative or the Forest Stewardship Council. To varying degrees, the certification includes criteria and indicators for old-growth that must be achieved in order for licensees to maintain certification. The minimum criteria usually include achieving compliance with legal requirements for values like old-growth retention. Other criteria and indicators may include retention of specific old-growth attributes, connectivity, interior forest conditions or rare old-growth ecosystems that may exceed the requirements of the applicable old-growth order. The Board recognizes the important role of forest certification; however, it is ultimately government that must ensure the requirements for old-growth retention are being met across the whole land base.

Cooperation in shared landscape units/natural disturbance units

BC's forest tenure system is complex and this causes challenges for implementing and achieving the requirements of orders that apply to a landscape unit or natural disturbance unit.³³ Within most TSAs, where volume-based licences are issued over five-year renewable terms, licensees, by agreement, have established 'traditional' operating areas. However, in some areas, such as in the Central Cariboo, no such agreements exist. As a result, licensees are essentially competing for harvesting opportunities. Also, traditional operating areas within a TSA do not generally align with areas such as natural disturbance 'types' or 'units' in which the old-growth targets are based. This means that multiple licensees may be active in different management areas but in the same landscape or natural disturbance type/unit.

Additional challenges exist where non-replaceable forest licences or small-scale salvage permits have been issued. Although licensees holding a non-replaceable forest licence must prepare a FSP and are subject to old-growth orders, they may construct roads or harvest in established operating areas. Small-scale salvage permit holders are not legally

³² Refer to the FPB complaint investigation report "Biodiversity in the Interior Cedar Hemlock Forests near Dome Creek" available at:

http://www.fpb.gov.bc.ca/IRC137_Biodiversity_in_the_Interior_Cedar_Hemlock_Forests_Near_Dome_Creek.pdf

³³ Defined areas having similar disturbance processes, stand development, and temporal and spatial landscape disturbance patterns. NDUs have been identified in the Prince George, Ft. St. John and Ft. Nelson TSAs. For more information, refer to <http://web.unbc.ca/~wetbelt/docs/delong-forestry-chronicle-2007.pdf>

subject to old-growth orders and may be directed to salvage timber in any part of a TSA, unless the district manager requires permit holders to avoid legal and non-legal OGMAs.

Major licensees told the Board that regular communication between all forest licensees is key to effective implementation of old-growth orders, but sometimes communication is strained or does not occur, making compliance with the orders difficult to achieve. The risk of poor communication increases when landscape or natural disturbance types/units are at or near the old-growth targets.

In the Prince George TSA, the non-spatial old-growth order is implemented by licensees with oversight provided by a licensee working group, a government working group and a combined licensee/government working group. Each year, licensees retain a consultant to conduct an analysis in each natural disturbance unit to assess achievement of old-growth retention and other attribute targets in the order. The various working groups meet to discuss technical, operational and strategic issues, as well as progress towards achieving the order. The licensee/government working group has formalized agreements in place to guide the annual analysis.

A formalized communication structure to coordinate information-sharing can help to achieve the objectives of the orders where there is a complex array of forest and other types of tenures working on Crown forested land.

Rationale for OGMA incursions

The Board did not conduct field assessments of OGMA incursions as part of this investigation. However, government staff told the investigators that, while they do not have the resources to conduct field assessments of OGMAs, they are generally confident that licensees are harvesting or constructing roads in accordance with their FSPs and selecting replacement patches that are consistent with applicable orders and implementation policies.

The investigators viewed records of OGMA incursions maintained by licensees. The records suggest the incursions may be infrequent and are supported by detailed rationale, consistent with the conditions of the applicable order. Incursions tended to be small (e.g., less than 0.5 of a hectare) and were most often related to the adjustment of OGMA boundaries to better suit operational

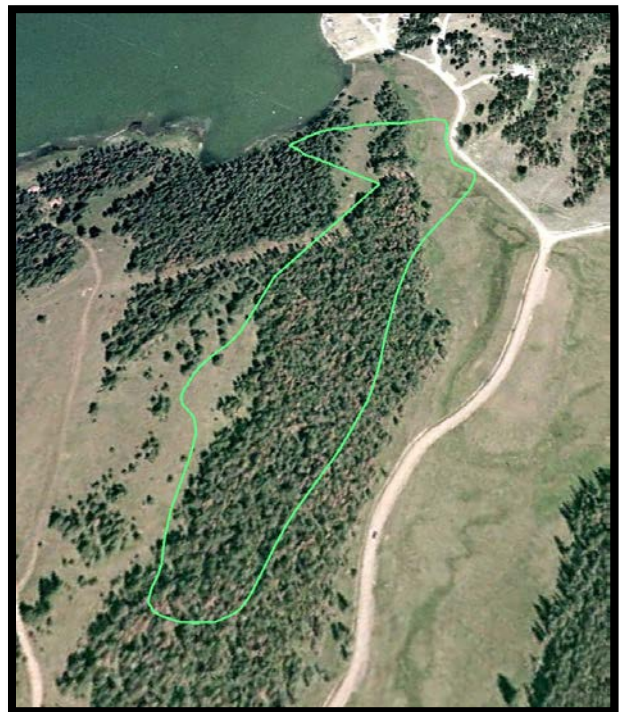


Figure 7: Some OGMAs delineated using only forest cover maps reveal the intended old-growth forest type was not always captured accurately.

conditions or to address OGMA mapping errors (Figure 7).³⁴

Accuracy of spatial datasets and forest inventory

Licensees and government said that an on-going challenge in implementing non-spatial old-growth orders is the accuracy of spatial datasets and adjustments to the Crown forested land base and timber harvesting land base. A significant factor in the accuracy of the spatial dataset is the timely updating of mapped forest inventory labels – a responsibility of government – resulting mostly from changes due to forest fires and the mountain pine beetle epidemic.

A more pervasive problem is the sometimes poor reliability of forest inventory labels (see Figure 7), particularly age class – a primary attribute required for implementing non-spatial old-growth orders. More current forest inventory mapping, called Vegetation Resource Inventory, is not always available in the areas where licensees operate. As a result, they rely on the older forest cover information (referred to as FC1) which is known in some parts of the province to be inaccurate. Licensees admit that the non-spatial analysis used to monitor achievement of the orders is only as reliable as the information inputs, but that a margin of error is always anticipated when using spatial datasets that are subject to adjustments.

Across the province, the location and extent of ecological units, called biogeoclimatic (BEC) zones, has been, and continues to be, refined, reflecting the most recent available information about ecosystems. The refinements have the potential to affect the implementation of old-growth retention because the amounts of old-growth retained within a landscape unit or natural disturbance unit is heavily reliant on the type and extent of the BEC zones.

Reliance on inaccurate or outdated forest inventory information increases the risk that the land base does not actually contain the required amount of old-growth attributes. The risk is further elevated when a non-spatial analysis concludes that the land base is nearing or is in deficit of the required attributes.

Keeping track of old-growth retention

In many management areas, OGMA delineation targeted specific values, but they were not recorded. In some areas, OGMA values were recorded but government staff have misplaced or lost the information. In other areas where the information exists, licensees said it is not generally made available to them. As a result, when modifying an OGMA within the thresholds identified in the FSP, licensees who do not have access to information about the areas could inadvertently damage or compromise one or more values identified in the OGMA.

³⁴ It was not the intention of this investigation to compile a sufficient number of records from licensees to draw conclusions about the nature and extent of OGMA incursions. Rather, much of this information was obtained during interviews with government staff and licensees.

If licensees make changes to legal OGMA boundaries or conduct activities within a legal OGMA (i.e., an OGMA incursion), they are required by order to submit the changes to government and most orders require the information to be submitted annually. Some licensees interviewed said they maintain records of all incursions into legal OGMAs and submit the information as required to government. But others said they are sometimes unsure about who in government to send the information to, because the agency listed on the order no longer exists or the primary contact is no longer in the position. Government staff believe there is general compliance with submission requirements of the orders, but they have not conducted audits to ensure that this is the case. The primary concern they identified was how information about incursions into non-legal OGMAs was being managed by both government and licensees.

In areas where non-legal OGMAs have been identified, a number of deficiencies about submission to government of OGMA changes were identified. Government staff

admitted that management of information related to non-legal OGMAs is a concern. For instance, in one management area, there are up to four different versions of the non-legal digital map layer. As a result, some licensees are making adjustments to one version of the layer while other licensees make submissions on a different layer.

Government staff in some management areas acknowledged they have not



Figure 8: Old-growth aspen within an OGMA.

been asking licensees to submit the information because they do not have the GIS time to process the information or are no longer involved with OGMA planning.

The investigation found that government's tracking of OGMA incursions and replacements is inconsistent provincially and highly variable between management areas. Where legal OGMAs are in effect, government staff in most management areas are tracking the information but caution that the data may not necessarily be complete. However, tracking of incursions and replacements in non-legal OGMAs remains a concern, given that almost 70 percent of OGMAs are non-legal. The absence of complete tracking information means that government is unsure about the current status of old-growth retained in OGMAs.

Effectiveness Monitoring

In BC, government and academic institutions have conducted research into attributes and condition of old-growth forests (e.g., site productivity, lichen, biodiversity values etc.). However, there has been no monitoring of the effectiveness of old-growth³⁵ retained across the land base.

In the provincial non-spatial order and Kootenay-Boundary higher level plan order, government makes commitments to assess the effectiveness of the orders. However, the

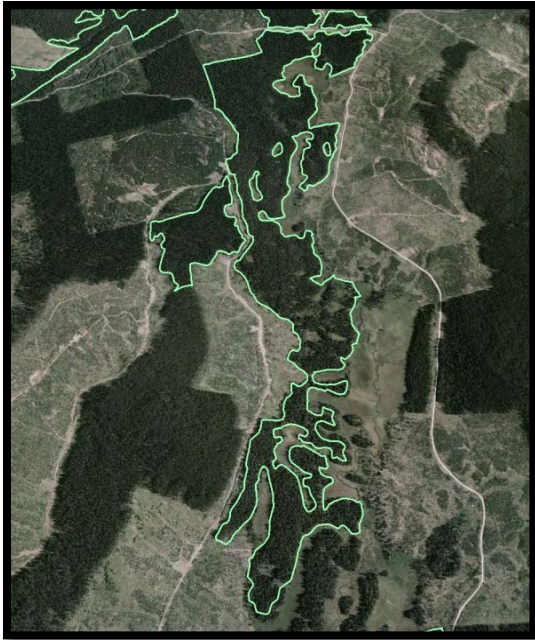


Figure 9: Old-growth effectiveness monitoring could provide a variety of information, such as the susceptibility of fragmented old-growth patches to windthrow and edge effects.

Board has been advised that no review of the orders has occurred and none is planned. Nor is effectiveness of old-growth retention being assessed by government's Forest and Range Evaluation Program (FREP).

The lack of monitoring is constraining in a number of ways. First, little information is available on the attributes and status of retained old-growth. Second, government has not monitored the condition of OGMAs and therefore does not know whether effects such as windthrow, forest harvesting, road construction or cattle grazing are compromising the integrity of OGMAs.

The lack of effectiveness monitoring hampers government's ability to understand if it is achieving the desired outcome of old-growth retention, namely

conserving biodiversity. Similar to other values currently being monitored by FREP, such as wildlife tree reserves, effectiveness monitoring provides the critical link for adapting to current or future conditions such as climate change.

³⁵ "Effectiveness evaluations are management tools used to assess whether specific policies and practices are actually meeting anticipated outcomes, that is are they effective?" Forest and Range Evaluation Program. <http://www.for.gov.bc.ca/hfp/frep/about/what.htm>.

Non-Forestry Tenures

The BC government administers a wide range of Crown land tenures for private, commercial and industrial purposes, including forestry, range, resort developments, mining, oil and gas, and waterpower. Tenures are administered by several agencies under various legal authorities (e.g. *Range Act*, *Forest Act*, *Mineral Tenures Act*, *Land Act*). The footprint of tenured activities on Crown forested land usually requires at least some removal of standing forests, which may include old-growth. These tenures can also affect the amount of old-growth required across the landscape unit because the old-growth targets are a percentage of the Crown forested land base.

Requirements for planning and protection of biodiversity values, including old-growth, are not consistent across Crown land tenure holders. As previously stated, only *Forest Act* tenures that are regulated under the *Forest and Range Practices Act*, and specifically those tenured licensees that are required to submit an FSP, are currently subject to legal objectives for old-growth retention.

The *Environmental Protection and Management Regulation*,³⁶ which is administered by the Ministry of Energy and Mines, enables the minister responsible for the *Land Act*³⁷ to establish OGMAs and licensees subject to the legislation must ensure that their activities do not cause “a material adverse effect on old forest representation within that area.” The

In areas where a non-spatial order is in effect and OGMAs have not been delineated, the Board recognizes that it would not be feasible for non-forestry developments to address old-growth retention.



Figure 10. Currently, oil and gas activities are not subject to orders restricting development within OGMAs.

legislation came into force in October 2010. However, to date, government has not established OGMAs under the regulation. As an interim measure, the Oil and Gas Commission (OGC), in its *Environmental Protection and Management Guide*, requires permit applicants to identify measures that will be taken to minimize impacts to OGMAs and, where appropriate, a mitigation strategy may need to be submitted to the OGC.

³⁶ A regulation under the *Oil and Gas Activities Act*.

³⁷ Currently, this is the Minister of Forests, Lands and Natural Resource Operations.

To be in compliance with the non-spatial orders, forestry licensees must ensure the targets for old-growth retention, calculated as a percentage of the Crown forested land base, are being met. This presents a challenge when licensees do not know if current Crown forested land base calculations accurately reflect the variety of Crown land tenures that have been granted within a landscape unit. There are often delays in removing the non-forest tenures from the Crown forested land base and, in some cases, the removal may not be completed at all.

Several government land use planners said that incursions into legal and non-legal OGMAs by various non-forestry Crown land tenure holders are likely to be minor provincially, but can be locally significant. Further, the tenures with larger footprints, including oil and gas development and electric utility corridors, may result in a greater number of OGMAs being impacted.

The Environmental Assessment Office (EAO) reviews larger scale projects that may potentially affect legal and non-legal OGMAs. As part of the review process, applications submitted by proponents must include all available natural resource information and designated areas, including OGMAs. As part of project mitigation, proponents are encouraged, but not necessarily required, to avoid or mitigate disturbances to these areas.

There is no consistent approach across government agencies that administer Crown land tenures with regard to whether or not proponents are required to identify, avoid or mitigate impacts to OGMAs. The EAO and the OGC do not always require applicants to address OGMA values and the agencies do not routinely track or monitor OGMA incursions. Of particular concern is that government agencies, forest licensees and project proponents do not generally have access to information about other values, such as culturally modified trees or sensitive ecosystems, that may have supported initial delineation of OGMAs. As a result, these values could be compromised during project development.

Non-forestry Crown land tenure holders are not subject to old-growth orders, although some agencies require applicants to address old-growth values. The recent increase in non-forestry tenures on the provincial forested land base means the cumulative footprint of these tenures could result in a reduction of old-growth forest in OGMAs over time.

Conclusions

In examining the state of old-growth retention, the investigation assessed:

- how the direction for old-growth retention in land use plans has been implemented by government;
- how legal objectives (orders) and associated policy direction are being implemented by licensees that are subject to the requirements;
- whether government is monitoring effectiveness of the orders; and,
- whether other Crown land permit or licence holders, who are not subject to the orders, may be having an impact on old-growth retention.

The Board found that orders requiring old-growth retention are in place provincially on almost all Crown forested land—including areas where land use plans have not been initiated or completed. Currently, about 55 000 OGMAs (approximately 3 million hectares) have been identified and non-spatial retention requirements apply where OGMAs have not been identified. Approximately two-thirds of the OGMAs are non-legal with the rest made legal by government order. While significant progress has been made on planning for old-growth retention, planning continues in some areas (e.g., “strategic landscape reserve design” reserves on the North and Central Coast EBM areas).

The investigation also found that orders setting old-growth retention requirements are generally consistent with, and mostly exceed, direction contained in land use plans. However, the land use plans themselves are highly variable—some plans include percentages of old forest to be retained and additional direction for delineating OGMAs, while other plans are limited to recommending that the *Biodiversity Guidebook* and/or *Landscape Unit Planning Guide* be followed.

Significant gaps in government’s oversight of old-growth, including tracking and monitoring were found in this investigation. For many management areas, particularly where non-legal OGMAs have been identified, government does not know the extent of OGMA incursions or if licensees have appropriately replaced harvested areas with other areas having equal or better old-growth attributes. In some management areas where old-growth retention is achieved non-spatially, government does not always ensure that the requirements are being met. Fifteen years after planning commenced, government has not yet started to assess if its objectives for old-growth retention are effective.

Finally, requirements for old-growth retention do not apply to all users of the Crown forest. The Board believes that to meet the underlying objectives of old-growth management, the requirements must apply to the land itself, not just certain users of the land, as is presently the situation.

Appendix 1

Conditions for harvesting and road construction in OGMAs, Higher Level Plan Order, Chilliwack Landscape Unit

1. Maintain or recruit old-growth forests in established OGMAs, as shown on the map dated 2 December 2004 subject to timber harvesting and road construction in accordance with section 2, 3 and 4 below.
2. (1) Where sufficient suitable replacement forest is available in the variants listed below, timber harvesting or road construction may be undertaken in OGMAs that are >10 ha in size for operational reasons up to a cumulative maximum of:
 - i) 10 ha in variant CWHdm, ii) 30 ha in variant CWHms1, iii) 10 ha in variant CWHvm2, and iv) 50 ha in variant MHmm2,provided that replacement OGMA of equivalent or better quality and quantity is identified in order of priority, 1) immediately adjacent to the existing OGMA, or 2) in the same variant and landscape unit as the existing OGMA.
(2) The criteria in 2 (1) is to apply to individual OGMAs within the categories below and must ensure that OGMA ecological attributes and spatial distribution are maintained or improved:
 - i) OGMAs >10 ha to <50 ha in size where the proposed activity affects the OGMA by <5 ha,
 - ii) OGMAs ≥50 ha to <100 ha in size where the proposed activity affects the OGMA by <10ha,
 - iii) OGMAs ≥100 ha in size where the proposed activity affects the OGMA by <10%.
 - iv) Construction of ≤500m of road or a bridge within an OGMA where there is no other practicable option. As an alternative to finding replacement area, the licensee may permanently deactivate and rehabilitate a temporary road or bridge site within four years after construction.
(3) Where OGMA boundary adjustments and replacement areas are required under section 2 (1) and (2) they must be documented, mapped and submitted to the satisfaction of the Delegated Decision Maker (DDM) at the end of each calendar year for his/her approval.
(4) The provisions in section 2 (1) and (2) do not apply to the following OGMAs #18, 37, 38, 57, 137, 147, 148, 152, and the mapped old forest portion of all OGMAs in the CWHdm.
3. Permissible Activities:
 - (1) Timber harvest may occur to prevent the spread of insect infestations or diseases that pose a significant threat to forested areas outside of OGMAs. Salvage within OGMAs will be done in a manner that retains as many old-growth forest attributes as possible.
 - (2) Construction of rock quarries and gravel pits under authority of forest tenure where the development will be located immediately adjacent to existing roads under tenure and will affect the OGMA by <0.5 ha.
 - (3) Intrusions, other than those specified, that affect an OGMA by less than 0.5 hectare in total.
 - (4) Where OGMA replacement forest is required as a result of activities under 3 (1) or (2), it must be of equivalent or better quality and quantity and be identified in order of priority, 1) immediately adjacent to the existing OGMA, or 2) in the same variant and landscape unit as the existing OGMA; such that OGMA ecological attributes and spatial distribution are maintained or improved. OGMA replacement areas must be documented, mapped and submitted to the satisfaction of the DDM at the end of each calendar year for his/her approval.
4. Permissible Activities for Safety Purposes:
 - (1) Maintenance, deactivation, removal of danger trees, or brushing and clearing on existing roads under active tenure within the right-of-way for safety purposes.
 - (2) Felling of guyline clearance, tailhold anchor trees, or danger trees (except high value wildlife trees) along cutblock boundaries or within the right of way on new road/bridge alignments to meet safety requirements.

Appendix 2

Conditions for harvesting and road construction in OGMA's, Higher Level Plan Order, Humbug Landscape Unit

1. Maintain old-growth management areas, which are established as shown on the attached map.
2. Cutting trees within OGMA's, is limited to circumstances where it is absolutely necessary for insect or disease infestation control. When intervention in OGMA's is required because of a forest health threat to adjacent areas, retain structural features of old-growth, as much as possible.
3. Permanent roads may be constructed and maintained in OGMA's where there are no other practicable options. Temporary roads may also be constructed in OGMA's where there are no other practicable options. Any temporary roads that are built in OGMA's must be deactivated, rehabilitated and planted as soon as possible.
4. Fire suppression is permitted within OGMA's for the purposes of maintaining the integrity of the OGMA's.



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