Burns Lake Community Forest

Mountain Pine Beetle Mitigation Plan

Decision Request

March 2018

1 Background and Context for Submission

The Burns Lake Community Forest (BLCF) board of directors initiated the Mountain Pine Beetle Mitigation Plan (MPBMP) project in late 2015. Through the MPBMP the board intends to achieve:

- A timely transition from a reactive dead pine salvage program, which could end at any time, to proactive management of the community forest based on an area-based management ethos;
- Sustaining the flow of benefits from the community forest to the communities and stakeholders in and around the community forest;
- Through the application of innovation, leading-edge area-based management techniques, improved resource information and Forest Stewardship Council (FSC) certification to:
    - Maximize dead pine timber salvage in the short-term;
    - Improve the timber supply forecast beyond the short-term;
    - Diversify products from the community forest and diversify product markets;
    - Achieve the above while maintaining or improving non-timber resource outcomes for:
        - Landscape connectivity management;
        - Old growth management;
        - Riparian ecosystem management;
        - Wildlife habitat management generally and for select species, e.g. moose;
        - Scenic areas management
    - Advance the role of First Nations in forest management and the interests of all parties in reconciliation through the protocols required by FSC certification.

At the inception of the MPBMP project, the BLCF anticipated that the innovations that would emerge from the project would most easily be implemented through a pilot project regulation given force through Part 10 of the *Forest and Range Practices Act (*FRPA). To that end and pending results from the project, during December 2015 and January-March 2016, the BLCF sought support in principle from the ministry for such a pilot project regulation through meetings/briefings with the district manager, regional executive director, assistant deputy minister North Area, the Minister of Forests, Lands and Natural Resource Operations, and the Minister of Indigenous Relations and Reconciliation. In all briefings support was expressed for the goals of the MPBMP project based on the shared interests of the ministry and the BLCF inherent in the project. As a result of those discussions, in a meeting on March 2, 2016, the Minister of Forests Lands and Natural Resource Operations expressed support in principle for a Part 10 pilot project regulation but requested that the ministry and BLCF first exhaust the inherent flexibility and innovation possible under the FRPA to implement the MPBMP.

This document sets out a number of matters that require resolution for the BLCF to progress toward successful implementation of the BLCF MPBMP and submission of Management Plan (MP) #4, summarized as follows:

1. **Approving an Alternative LCM for the BLCF.** An important part of the timber supply mitigation aspect of the MPBMP is a redesign of the landscape connectivity matrix (LCM). In recognition of this, on February 3, 2017, the regional executive director communicated to the BLCF that the most recent legal order for the LCM would be amended at any time that the BLCF could present an alternative LCM proposal that is acceptable to him. The alternative LCM designed by the BLCF has a significant, positive impact on the timber supply analysis. Among other things, the management plan update must be consistent with the LCM legal order in place at the time of the management plan submission. This means that, before the timber supply analysis, AAC proposal and updated management plan may be submitted, a decision is required of the regional executive director that the LCM legal order is amended to the extent proposed by the BLCF alternative LCM.

2. **Aligning BLCF management with LRMP intent.** MPBMP analysis completed by the BLCF has identified a serious concern that the cumulative effect of a number of factors is creating an unintended biodiversity emphasis outcome that exceeds that contemplated by the low biodiversity emphasis option (BEO) assigned by the LRMP to 5 of the 6 landscape units pertinent to the

BLCF by the Lakes LRMP. Addressing this concern, which the BLCF analysis indicates will grow in the future, is necessary to mitigate future timber supply.

3. **Management of Scenic Areas on the BLCF.** Scenic areas comprise a large part of the BLCF. Much of the remaining dead pine and living forest on the BLCF exists in scenic areas. Scenic areas are dynamic due to a number of biotic factors, and societal expectations for the management of scenic change over time. The Lakes LRMP anticipated these dynamics and sets the stage to apply new knowledge and higher resolution inventories to the management of scenic areas. The ministry itself checked societal expectations for scenic areas management in 2013/14 and found public support for improved approaches to scenic areas management, particularly in the interests of increasing community protection from wildfires.

4. **Replacing the Current Management Plan and AAC Determination.** The ministry and the BLCF have discussed at length the challenges that the current AAC decision poses to managing the community forest in accordance with the approved management plan, forest stewardship plan and licence agreement. In his letter of June 5, 2017, the regional executive director suggested it may be wise to pursue a new AAC determination through an updated management plan. The BLCF has held that view for some time and has been working to that end. The BLCF intends that a number of aspects of the MPBMP will be given effect through the updated management plan, as described later in this document. It will be important for the BLCF to be aware of ministry perspectives on such inclusions in the management plan before it is finalized and submitted.

5. **Working together in area-based management.** As discussed later in this document, there are a host of institutional expectations that the ministry and tenure holders will bring innovation, necessary change and current resource management knowledge, data and science to bear on resource management. As the holder of a large, area-based tenure with all of the associated rights and obligations, the BLCF understands these expectations and is eager to meet them. As the reactive salvage era of the MPB epidemic is ending, the MPBMP will be a large step forward to meet these expectations by bringing leading-edge area-based management approaches to bear on the BLCF. While the BLCF role in this has been to bring leadership, extensive planning and in excess of $1 million to the issue, the ministry has a role that only it can play in meeting these expectations. Central to this issue is that the ministry and the BLCF must work together to recognize the special rights and obligations of the BLCF as a holder of a large, area-based tenure.

2 Institutional Expectations for Innovation in Resource Management

Institutional expectations for innovation and change in managing timber and non-timber resources have been expressed through the FRPA framework, in the Lakes LRMP, legal orders pursuant to the Sustainable Resource Management Plans (SRMP's), at the management unit level in the community forest license agreement and in ministry policy for setting timber objectives. The planned outcomes from the BLCF MPBMP described above are fully consistent with these institutional expectations.

2.1 FRPA Expectations

The FRPA framework is intentionally designed to enable innovation and change in approaches to achieve the intended results for timber and non-timber resource management. The ministry training materials for the framework states: "FRPA sets a framework for forest and range planning and practices. Under FRPA, Industry has an increased level of accountability for results and outcomes of their practices. In addition, FRPA opens the door for industry to undertake more innovative practices."

2.2 LRMP Expectations

The Lakes LRMP expresses its intentions to create a specific balance in the management of timber and non-timber resources. It also anticipates, and sets the stage for, the emergence of new information, new

knowledge, and future change that would arise as uncertainty was reduced, particularly uncertainty arising from the eventual impacts of the MPB epidemic, which could not be fully understood in the year 2000 when the LRMP became Cabinet policy. Of major importance to the BLCF are LRMP expectations for change and innovation related to timber resources, ecosystem health and visual resources. Aspects of the LRMP that speak directly to the issues of balance between timber and non-timber resources, expectations of change and for innovation are summarized in the table below.

Table 1

Timber Resources:	
General Management Direction: Provide a secure forest land base in order to maintain a stable, sustainable timber supply. In the short-term, timber supply stability will be tested through development of 20 year "look-ahead" planning. In addition, opportunities to optimize timber supply will be explored within the framework of a detailed timber management strategy.	
Timber Objective 1: Maintain a sustainable, secure, long-term timber supply. Timber Objective 3: Consistent with the objectives and strategies within this Plan, optimize the sustainable supply of timber for harvesting. Timber Objective 5: Manage the timber resources in accordance with integrated resource management principles and practices.	Strategy 2.2: Major licensees and the SBFEP will develop spatially explicit long-term harvesting plans (20-year minimum) to confirm available short-term timber supply. Strategy 2.3: If required, based on the outcome of 2.2 above, a strategy will be developed for implementation to mitigate any shortfall in annual timber harvest levels that may occur over the next 20 years. An array of strategies will be considered that respect all values. Strategy 3.1: The inventory of timber resources will be improved, consistent with evolving Ministry of Forests inventory standards. This information will be used as a basis for managing timber resources. Strategy 3.2: A timber management strategy will be developed to document opportunities for enhancing long term quality and quantity of the timber resource consistent with the zoning and objectives set out in this Plan. The timber management strategy will be delivered through a combination of administrative structures, and will focus on: • Silviculture systems and activities • Rehabilitation measures • Research into harvesting techniques, growth and yield, estate modelling, non-recoverable losses, etc. • Improved timber utilization • Forest inventories.
Visual Resources:	
General Management Direction: Identified Visual and Significant Visual Resource Areas will have their site specific VQO's reviewed and either approved in other higher-level plans or established by the District Manager in accordance with the FPC. VQO's may change over time due to new inventory information and changing public values.	
Visual Resource Objective 40: To provide sufficient clarity and directive detail concerning Visual Landscape Management to support landscape unit and operational	Strategy 40.4: Knowledge of visual landscape management areas will increase, over time, through development of higher resolution interpretive and field-based inventories. These more detailed inventories will then become the basis for determining visual management areas and objectives at the local level. Visual

level resource planning and management decision-making.	landscape management direction, however, will remain consistent with the LRMP. Strategy 41.2: Design of harvesting areas within Visual and Significant Visual Areas will be consistent with the MOF Visual Landscape Design Manual. In order to minimize the visual impact of development activities, block design should reflect the natural topography of the area, take existing development into account, and meet aesthetic goals for the area. Strategy 41.3: Forest management activities within Visual and Significant Visual areas (e.g. harvesting, salvage, fire and beetle control) will be consistent with the objective of maintaining the integrity of visual resources. It is recognized, however, that salvage harvesting following catastrophic events (e.g., fire, blowdown, infestation) may compromise visual quality from time to time.
Ecosystem Health:	
General Management Direction: Biodiversity will be managed consistent with LRMP direction and existing legislation and regulation including the Forest Practices Code (FPC). Seral stage (i.e., old, mature and young forest) requirements for landscape units will be consistent with the Biodiversity Emphasis Options indicated in Appendix 9 and the FPC Biodiversity Guidebook, and Biodiversity and landscape connectivity objectives (Objectives 42 & 43) are not intended to create timber supply impacts greater than those suggested by the FPC Biodiversity Guidebook.	
Ecosystem Health Objective 42: Maintain healthy, functioning ecosystems that are essential to the diversity, abundance, distributions and life cycles of fish, wildlife, vegetation and water resources. Ecosystem Health Objective 43: Maintain biodiversity at the ecosystem, species, and genetic levels through the application of ecosystem management principles.	Strategy 43.8: Generally, the old growth management strategy will take advantage of existing old forest within special resource management areas, habitat linkages, riparian and lakeshore reserves, and forest harvesting landbase exclusions. Where sufficient old forest is not available, OGMAs may be recruited from other age-class and/or resource management categories. Strategy 43.10: Incorporate new knowledge concerning landscape level biodiversity management, appropriate to the ecology of the planning area, in managing for long-term biodiversity objectives. Strategy 44.2: Landscape connectivity corridors will incorporate, wherever possible, areas which are identified for conservation management, are constrained for purposes of forest management, or have limited commercial timber value. These may include protected and special resource management areas, habitat linkages, old growth management areas, lakeshore and riparian reserves, rare ecosystem types, habitat of red/blue listed species, and forested/non-forested areas which have been excluded from the harvesting land base. Strategy 44.9: Knowledge of landscape connectivity requirements will increase, over time, through development of higher resolution interpretive and field-based inventories. These more detailed inventories will then guide Forest Ecosystem Network design. Management objectives concerning landscape connectivity, however, will remain consistent with LRMP direction.

Special Management Zone and Sub-zones:	
LRMP 4.4: The Special Resource Management Zone (SRMZ) emphasizes conservation-oriented land uses over development-oriented land uses. This land use designation incorporates areas with high concentrations of regionally significant and sensitive resource values, such as biodiversity, critical fish and wildlife habitat, rare or endangered species, and locally important ecosystem and recreation features. In this zone, the resource management priority is to conserve the integrity of the numerous special and sensitive values that are known to exist in those areas. Due to the unique nature and differing management requirements of the identified conservation values, the SRMZ has been divided into four sub-zones (Table 1). The specific locations of those resource values are identified in Figures 7 through 10 (maps). SRMZ sub-zones From Table 1: SRMZ 1: Backcountry Lakes (not present on the BLCF) SRMZ 2: Recreation Emphasis SRMZ 3: Caribou Migration Corridor (not present on the BLCF) SRMZ 4: Ungulate winter habitat	
SRMZ Objective 1: To provide specific resource management guidelines for key wildlife and recreation values in order to supply sufficient clarity and directive detail to support operational level resource management decision-making. SRMZ Objective 2: To conserve one or more wildlife habitat or recreation values by ensuring that the factors that create that value are maintained or enhanced. (e.g., maintaining visual quality in an area of recreation value or enhancing browse in ungulate habitat). SRMZ Objective 3: To provide opportunities for low impact and low intensity resource development standards in keeping with a "light-hand-on-the-land" resource management approach.	Strategy 1.2: Resource value maps (figures 7-10) are based on resource inventory and will be used in tandem with the guidelines to show the recommended spatial extent of guideline application. Strategy 1.3: Where resource management guidelines overlap on the ground, the most constraining guideline should be implemented for that area in order to better sustain all resource values. Strategy 2.1: Resource management emphasis will be placed on maintaining/enhancing habitat and recreational resource values for which the resource management zone was established. Strategy 2.2: Opportunities for experimentation with alternative management practices and standards will be investigated as new knowledge becomes available. Strategy 3.1: Conduct extractive and agricultural resource development within the special resource management zone which conforms with the special resource management objectives and strategies outlined both above and in the sub-zones below.
Recreation SRMZ Objective 2: To maintain public recreational values and opportunities for a range of natural environment recreational experiences, as well as protect key recreational features.	Recreation SRMZ Strategy 2.1: **1** Management emphasis will be placed on maintaining recreation resource values and protecting key natural recreational features for which recreation areas were established. Recreation SRMZ Strategy 2.6: Recreation areas are to be managed as visual areas. Visual quality concerns will be addressed in a manner consistent with management direction in Section 3.3,

	and the Visual Landscape Management Strategy found in Appendix 5.
Cultural Heritage Resources:	
LRMP 3.3: Cultural heritage resources in the Lakes District planning area reflect past and present uses by both aboriginal and non-aboriginal peoples. The Lakes LRMP adopts the general management direction of conserving select cultural heritage resources. Tools such as archeological assessment and traditional use studies will be used to assess cultural resources and address concerns in subsequent planning processes. Consultation with aboriginal peoples will continue to ensure that resource development does not infringe upon aboriginal rights.	
Conserve select cultural heritage resources.	Strategy 29.7: Maintenance of confidentiality on the nature and location of sites will apply to Lakes Forest District protocols with aboriginal organizations (which cover aboriginal sites, usage and study areas). Some sites may require sensitive area management designation to both protect and avoid misuse of certain features.
Ensure aboriginal rights are not unjustifiably infringed upon by resource development activities of the Crown or its licensees.	Strategy 30.1: Consultation with aboriginal peoples, as per government policy and protocols, will be undertaken for resource management activities which directly affect traditional territories.

From the LRMP provisions highlighted in the table above a number of intentions can be summarized as follows.

1. The effect of LRMP BEO assignments for the BLCF is that more than 90% of the community forest is designated as 'low BEO'. The FPC Biodiversity Guidebook explains what a low BEO means for the management of timber and non-timber resources as follows:

   "The lower biodiversity emphasis option may be appropriate for areas where other social and economic demands, such as timber supply, are the primary management objectives. This option will provide habitat for a wide range of native species, but the pattern of natural biodiversity will be significantly altered, and the risk of some native species being unable to survive in the area will be relatively high." and

   "If a lower biodiversity emphasis (BEO) is chosen, linkages (connectivity) should not result in the areas of old seral stage exceeding objectives."

   While a low BEO applies to more than 90% of the BLCF area, the LRMP assigned a low BEO to only 42.6% of the entire timber harvesting land base in the LRMP area.[1] This is a clear expression of the economic and social value emphasis that the LRMP expects will be practiced on the BLCF.

2. Not described in the table above are the LRMP provisions that establish Intensive Timber Management Areas (ITMA) as a sub-zone of the General Resource Management Zone. A significant part of the BLCF is sub-zoned ITMA. The establishment of the ITMA in the low BEO landscape units that predominantly cover the BLCF further reinforces the LRMP expectation that timber production is to be given a high emphasis in lower level management planning. The LRMP states that the ITMA is *"a key component in the maintenance and enhancement of forest development opportunities in the planning area."*

[1] Lakes LRMP Appendix 9

LRMP strategy 1.1 is to *"Identify Intensive Timber Development Areas through landscape unit and other local level planning processes, within the General Resource Management zone, in accordance with LRMP management direction, the FPC regulatory framework, and planning priorities as identified by MOF."* Although the Lakes North SRMP landscape unit plan, which covers most of the BLCF, was developed and approved after the full extent of the MPB epidemic was known in the LRMP planning area, the SRMP is silent about the identification of intensive timber development areas within the LRMP-established ITMA.

3. The LRMP repeatedly reinforces its expectation that, to the extent possible, biodiversity and landscape connectivity objectives will rely on forests that are either otherwise set aside for conservation purposes or do not contribute to the timber harvesting land base.

4. LRMP expectations for timber management include sustainable supply, mitigation of losses, optimization and enhancement of supply and quality, and detailed timber management planning, all in a context of respecting non-timber resources. Taken in context with the low BEO mentioned above, the LRMP clearly expects that the timber resource on the BLCF will be actively managed for a certain supply and will not simply be available as a residual outcome of the management of non-timber resources.

5. For timber, visual resources and ecosystem health (and some other things), the LRMP anticipated that inventories, knowledge and science would change and improve, and that circumstances would change as a result of alterations in the forest or changing societal expectations. An example of this that has already occurred is the 2014 decision of the ministry that there is public support to change the management of visual resources if necessary to improve community wildfire safety. The LRMP specifically expects that these things will be brought to bear on implementation of the LRMP.

The BLCF MPBMP is consistent with the expectations of the LRMP discussed above. Timber management strategy is an integral part of the MPBMP. Timber supply mitigation is a core purpose of the mitigation plan. The plan incorporates the most recent resource inventories available and further ground-truthing has been completed for certain inventory information. In addition, the BLCF has acquired LiDAR inventory for the community forest. The MPBMP includes the development of silviculture regimes for current reforestation and older established plantations and ways to improve utilization of dead pine timber. The LiDAR inventory already acquired will greatly assist visual landscape design planning of timber harvesting in scenic areas, and the MPBMP proposes to introduce partial cutting to the community forest, which will enhance ability to manage scenic areas and wildlife habitats, better enable community protection from wildfire and support ecosystem restoration.

2.3 SRMP and Legal Order Expectations

Unlike the LRMP, which is Cabinet policy for land use, SRMP's are plans created and approved by the public service to assist as guidance for implementation of the LRMP, and they are required to be consistent with the LRMP. At the discretion of a delegated decision maker in the public service, some aspects of an SRMP may be given legal force under authority of the *Land Act,* FRPA, or *Government Actions Regulation* (GAR).

In a number of specific instances, the LRMP expects new knowledge to influence LRMP implementation, a number of examples of which are included in the preceding table. For example, the LRMP states that biodiversity and connectivity will be managed in accordance with the FPC Biodiversity Guidebook, meaning among other things that seral stage targets for landscape units would be those in the Guidebook. However, Strategy 43.10 of the LRMP is to *"Incorporate new knowledge concerning landscape level biodiversity management, appropriate to the ecology of the planning area, in managing for long-term biodiversity objectives."* In keeping with this strategy, the staff that created the Lakes North SRMP decided to deviate from the Biodiversity Guidebook as follows:

"The old forest establishment targets in Appendix 2 specify the proportion of the old seral target that must be met in spatial OGMAs. These establishment targets were identified by the expert panel involved in the original Lakes South SRMP process. The members of the expert panel modified the targets found in the Biodiversity Guidebook (BG) (emphasis added)*. This step was taken in an effort to ensure that the targets could be met both spatially and aspatially across the land base, and also to recognize the contribution to biodiversity from wildlife tree retention associated with cutblocks and/or riparian zones."*

In similar fashion, the Lakes South SRMP includes the provision that the *"Old Seral Target is consistent with the Biodiversity Guidebook, and Old Forest Establishment Target is a percentage of the Old Seral Target specific to OGMA establishment. This distinction allows for old forest in riparian zones and WTP, greater than 2 hectares, to potentially contribute to the total old seral target."*

Low BEOs require at least 50% of the old target to be delineated spatially and Intermediate BEOs require 75%.

2.4 Expectations for Timber Management Goals, Objectives & Targets

The ministry in 2017 published a policy to work toward timber goals, objectives and targets at the management unit level. In the foreword to the policy the Chief Forester states:

> *"To make provincial goals and objectives a reality, local timber management targets and strategies are required at the management unit level (e.g., timber supply area). It is key that local-level planning (e.g., integrated silviculture strategies), supported by risk and scenario-based analysis, be done to support the selection of targets and the integration of management strategies for both timber and non-timber resource values. Local-level planning also provides the venue for continuous monitoring of the achievement of local targets, which facilitates adaptive management and the refinement of effective and efficient targets and/or strategies."*

The policy describes the need for timber targets as follows:

> *"Timber management objectives are needed to guide how economic interests are balanced with environmental and social opportunities both in the present and the future. They are also fundamental to the establishment of policies and practices needed to help ensure the health and competitiveness of the forest sector and to foster an industry that is sufficient to support the local, regional and provincial economies at levels desired by society, while ensuring broader provincial economic, social and environmental objectives are met."*

The policy provides provincial scale timber targets in terms of timber volume flow over time, timber quality, species composition, stand productivity/growing stock and inherent site capacity, and advocates for the development of local timber targets at the management unit level using the same considerations. The community forest agreement license area is a 'management unit' separate from the Lakes TSA, and the BLCF MPBMP represents a good start to the process of setting a timber target for the community forest. The combination of analyses completed, innovation in both timber management and non-timber resource management, and the entrenchment of the area-based ethos desired by the BLCF board of directors all contribute to the establishment of future timber targets.

2.5 Chief Forester's Post-Natural Disturbance Retention Guidance

In January 2018, the Chief Forester provided guidance on post-natural disturbance planning.[2] This document provides "guidance for forest professionals who will plan and implement retention strategies in areas that have experienced extensive natural disturbances".

[2] Post-Natural Disturbance Forest Retention Guidance – 2017 Wildfires. – January 19, 2018.

"*Retention planning refers to the required planning for landscape connectivity, interior forest and intact ecosystem attributes that will be retained for habitat, hydrological function, mid-term timber supply and to support recovery at the stand and landscape scales*."

The Lakes LRMP, completed in the year 2000, is the most important strategic-level planning pertinent to the BLCF. In 2000, the ministry observed[3] an estimated 1 million cubic metres of pine killed in the Lakes TSA. For this reason, the LRMP table was well aware of the future risk of large-scale disturbance from the epidemic, and it incorporated in the LRMP a number of anticipatory provisions to guide response to those risks, some of them previously described. The Lakes North SRMP, developed near the peak of the epidemic in the Lakes TSA, implemented a number of provisions related to retention planning that obviously pre-date, but were intended to be consistent with, the Chief Forester's recent retention guidance mentioned above.

The BLCF MPBMP, under development since 2015, is a detailed program to further mitigate the impact of the MPB epidemic, and the associated salvage program, to help restore impacted ecosystems. This program applies balance of environmental, economic and social values. The draft program addresses many of the issues brought forth by the Chief Forester and reminds us that the MPB will likely not be the only natural disturbance to impact the BLCF.

2.6 Expectations in the BLCF Community Forest Agreement

The BLCF community forest agreement establishes legal rights and obligations on the agreement holder that are distinctly different from volume-based tenure holders in the Lakes timber supply area. The most significant rights in the agreement are the exclusive right to harvest timber and the right to manage Crown land in the community forest in accordance with the approved management plan. When the management plan is approved, it becomes an obligation of the agreement holder to manage the community forest in accordance with the management plan. This right and obligation is of fundamental importance in that it provides the mechanism to introduce change, innovation, new knowledge and information to the management of the community forest in the following ways:

1. The ministry has established 8 objectives for the community forest program, one of which is to foster innovation. The management plan is required to describe the BLCF-specific management objectives that will fulfil the requirement to meet the objectives of the province. In this way, the management plan is a primary way to introduce change and innovation to the management of the community forest;
2. For timber supply areas and tree farm licenses, the Chief Forester sets the AAC in consideration of the matters she must consider as required in section 8 (8) of the *Forest Act.* Section 8 (8) of the *Forest Act* does not apply to community forest agreements. The AAC on a community forest is determined by the minister or his delegate in accordance with section 8 (7) of the *Forest Act* "*in accordance with the community forest agreement"*.

   The community forest agreement makes the AAC determination a function of the management plan. Among other things, the management plan is required to:
   a. Contain the economic, social and broad resource management goals proposed;
   b. Provide all the inventories and information about the management of the community forest upon which to base an AAC;
   c. Provide the necessary analyses of timber supply in consideration of the factors that influence timber supply;
   d. Contain a rationale for an AAC for the community forest;
   e. Propose an AAC for the community forest.

In this way, the *Forest Act* and the community forest agreement create a 'cause and effect' relationship between the management rights and obligations embodied in the management plan and the AAC for the

[3] BC MPB Projection v.13 observed kill.

community forest. The innovative elements of the BLCF MPBMP that may be incorporated in a future management plan will influence this cause and effect relationship.

3 BLCF Mountain Pine Beetle Mitigation Plan Results

The BLCF wishes to present here key results of the BLCF MPBMP. Our purpose is twofold, firstly to provide necessary information to support decisions requested of the ministry as described later, and to provide other information about the MPBMP as relevant context that help the ministry see how the requested decisions fit with the BLCF MPBMP and management of the community forest broadly.

3.1 An Alternative Landscape Connectivity Matrix for the Community Forest

Background:

The LCM requirements of the LRMP and the Lakes North and South SRMP's are very impactful on the BLCF. At present, 20% of the BLCF is covered by the LCM, a higher proportion than in either of the SRMP areas and any landscape unit that overlaps the BLCF (see table below).

Table 2

Planning Unit	LRMP-Assigned BEO	Forested Area (ha)	% in Corridors
Lakes North SRMP	-	404,553	18%
Lakes South SRMP	-	373,390	10%
Babine West LU	Low	59,164	17%
Bulkley LU	Intermediate	60,635	15%
Burns Lake East LU	Low	76,519	18%
Burns Lake West LU	Low	47,467	10%
Francois Lake East LU	Low	62,302	7%
Taltapin LU	Low	68,297	17%
Community Forest	**>90% Low**	**84,873**	**20%**

The Lakes LRMP provides direction to designers of the LCM as follows:

"Strategy 44.2: Landscape connectivity corridors will incorporate, wherever possible, areas which are identified for conservation management, are constrained for purposes of forest management, or have limited commercial timber value. These may include protected and special resource management areas, habitat linkages, old growth management areas, lakeshore and riparian reserves, rare ecosystem types, habitat of red/blue listed species, and forested/non-forested areas which have been excluded from the harvesting land base."

Objectives in Corridors:

"Strategy 44.5: Consistent with landscape unit objectives, timber management activities in landscape connectivity corridors will maintain 70% of forest structure and function. Management prescriptions may require a mixture of small scale even and uneven aged silvicultural systems, including openings which very in shape and size."

The Lakes South SRMP and the Lakes North SRMP have differing objectives for connectivity. The updated LCM legal order (2017) for Lakes North SRMP includes pine dominated stands (which were excluded from the 2009 LCM legal order), lowers the age requirements compared to the 2009 order and dropped deciduous forest. See the table below for details.

Table 3

Forest Type	Lakes South LCM	Lakes North LCM (2009)	Lakes North LCM (2017)	BLCF Alternative LCM
SBS coniferous forest	70% ≥ 70 years old	Non-pine 100% ≥ 140 years old	70% ≥ 100 years old	70% ≥ 80 years old
ESSF coniferous forest	70% ≥ 100 years old	Non pine100% ≥ 140 years old	70% ≥ 120 years old	70% ≥ 120 years old
Deciduous leading forest	70% ≥ 40 years old	Retain 100%	No requirement	Retain 100%
Stands with mature/old characteristics	Height > 15m and Crown Closure >25%			
Managed stands with single tree selection or group selection	Meets mature age criteria (seral stage objective)			
Red- and Blue-listed Ecological communities		Retain 100%	Retain 100%	Retain 100%
Hydro-Riparian Ecosystems		Retain 100%	Retain 100%	Retain 100%

In studying the current LCM, the BLCF found that approximately 40% of the gross LCM area of 16,563 hectares within the BLCF is not comprised of the focal hydro-riparian or rare ecosystems that the LRMP directed for inclusion in the LCM. The mentioned approximately 40% of the LCM is instead comprised mainly of mesic stands, including dead pine, which have been added to the LCM to act as "matrix' stands. To address this issue the BLCF developed an alternative LCM as described below.

Methodology:

The following methodology was used to design the alternative LCM:

1. The most current information available was assembled to support planning including Predictive Ecosystem Mapping (PEM), VRI, land base classification and timber values;
2. Ecological values were selected consistent with the focus of the LRMP and SRMP's including, hydro-riparian habitats (including wetlands), rare ecosystems, deciduous forests, and modelling species habitat;
3. The BLCF modelled 12 biodiversity value indicators, including goshawk habitat, as shown in the table below.

Table 4

Wildlife Species to Identify High Conservation Value Forest	BC Listing, SARA	Species Significance	Riparian?
Fisher	Blue-listed		Yes
Moose		Ungulate Winter Range	Yes
Olive-sided Flycatcher	Blue-listed, SARA 1-T		Yes
Wood Duck		Regionally Significant	Yes
American Marten		Regionally Significant	
Brown Creeper		Regionally Significant	
Grizzly/Black Bear	Blue-listed	Regionally Significant	Yes
Mule Deer		Ungulate Winter Range	
Little Brown Myotis	SARA 1-E		Yes
Northern Goshawk	Blue-listed	Regionally Significant	
Pileated Woodpecker		Regionally Significant	
Rare Ecosystems	Blue and Red-listed		Yes

   a. To 'score' each inclusion in the LCM, values were assigned to each forest polygon based on the number of the above value indicators contained within each. Polygons with multiple values were considered to have higher conservation value than polygons with fewer, single or no values.
   b. In order to compare the current LCM to the BLCF proposed revision, the 'biodiversity score' from a above was calculated for both using the cumulative sum of values within the forest polygons contained within each coverage.
4. Selected areas were buffered to include other selected areas nearby, buffered areas greater than 100 ha in size were selected for potential inclusion
5. Selected patches that overlapped existing management zones (VQO, Reserves), or had a lower timber value were included in the alternative LCM.

Results:

The BLCF alternative LCM:

- Is slightly larger in total area (8%) than the current LCM;
- Has a slightly improved average biodiversity score;
- Covers 20% of the land base, the highest in any planning unit in the LRMP area;
- Contains significantly more hydro-riparian and rare ecosystems;
- Has greater overlap or 'co-location' with VQO's and UWR, which is consistent with the LRMP;
- Contains more deciduous forest, which has high value for biodiversity;
- Includes some black spruce stands as they are associated with hydro-riparian wetlands;
- Contains less THLB, which is consistent with LRMP direction.

The positive impact of the alternative LCM on the timber supply forecast is large. Compared to a base case that includes the effects on the forecast of FSC certification and the introduction of partial cutting, the alternative LCM provides a short-term (year 1 to 20) increase of 6% and a mid-term (year 21 to 90) increase of nearly 15%. See the table below for a numerical description of the LCM results and Appendix One for a map.

Note: The land area affected by riparian constraints is currently being rationalized where such data appears relative to the LCM, the low BEO and related to FSC certification impacts in this document, such as in the tables that follow.

Table 5

Criteria	Current LCM	Alternative LCM
Gross Area (ha)	15,563	16,781
Crown forest land base	13,547	15,004
THLB (ha)	9,015	6,271
Age >100 years (ha)	7,974	8,525
Overlap with VQO (ha)	7,250	11,030
Overlap with UWR (ha)	11,138	12,914
Overlap with OGMA (ha)	2,401	2,188
Average Resource Value (score)	6.6	6.9
Hydro Riparian (ha)	1,814	2,788
Rare Ecosystems (ha)	1,327	1,713
Deciduous Forest (ha)	3,105	5,523
Black Spruce (ha)	90	155
Partial Cut Opportunities (ha)	825	475
EBS: Vegetative cover (ha)	5,179	6,314
EBS: Hydro-riparian (ha)	3,552	3,190
EBS: Rare Ecosystems (ha)	83	136

The table below illustrates the effect on timber harvest opportunities in the LCM of a >100-year stand age criterion, using year 2016 stand ages, and then using a >80-year stand ages (or 'aging' the stands 20 years to 2036.)

Table 6

LCM	Area > 100 Years	% > 100 Years	Harvest Opportunity
Lakes North Current (2016)	6,526	52%	0
Lakes North Future (2036)	8,841	71%	324
Lakes South Current (2016)	600	52%	0
Lakes South Future (2036)	798	70%	0
BLCF Alternative Current (2016)	7,811	51%	0
BLCF Alternative (2036)	11,943	78%	1,156

For further detail about the LCM results we have attached or provided a map and shapefile for the ministry's use.

Issues and Rationale for Approval of the BLCF Alternative LCM:

In discussions between ministry staff and the BLCF about the alternative LCM, two issues have been raised. Those issues and the rationale to approve the alternative LCM are outlined here.

1. Ministry staff point out that the BLCF alternative LCM is somewhat less continuous or more fragmented than the current LCM. The main factor contributing to this difference is the buffer within the current LCM that includes a large amount of (primarily dead) pine stands on mesic sites previously mentioned. These inclusions appear to have been done to increase contiguity but as a by-product also increase 'matrix' connectivity between the types of ecosystems the LRMP intended the LCM to be comprised of, as previously described.

   In the course of designing the alternative LCM the BLCF has consulted Craig DeLong, an expert and researcher in natural disturbance patterns and ranges of natural disturbance well-known to the ministry, for advice about meeting landscape connectivity objectives. DeLong reports that

continuous linear corridors of older forest would occur very rarely under natural disturbance regimes, particularly in the SBS BEC variants. Instead, a mosaic of small and large patches of mature forest would be the expected result of natural disturbance. The revised LCM more closely matches the natural regime and can therefore be expected to provide adequate connectivity. In addition, existing OGMAs, VQOs and the incremental riparian habitat protection that will result from management of the BLCF under its FSC certification will also serve to increase linear connectivity on the BLCF land base. The alternative LCM is particularly appropriate when considered in the context of the low BEO assigned to the vast majority of the community forest by the LRMP.

2. Ministry staffs have discussed with the BLCF inclusion of deciduous stands or non-productive forest types in the alternative LCM. In the BLCF consultations with Craig DeLong, he provided advice about the value of deciduous stands for meeting biodiversity objectives. DeLong reports that deciduous stands are recognized as having high biodiversity value. For these reasons, deciduous stands were assigned a high resource value score using the 12-indicator modelling methodology described above. The inclusion of deciduous stands or non-productive forest types to the LCM in this manner is consistent with the LRMP, which calls for the inclusion, wherever possible, of stands with "*limited commercial timber value"* and "*forested/non-forested areas which have been excluded from the harvesting land base".*

3.2 Managing Toward a Low BEO on the BLCF

A BEO assigned to a landscape unit by the LRMP is intended to result from active management of timber harvesting to manage seral stage targets in terms of young, mature and old forest present in the landscape unit. However, the pursuit of certain non-timber objectives has a direct impact on seral stage distribution outcomes as a 'by product' of pursuing those objectives. For instance, the extent of, and limitations on timber harvesting in, a LCM, riparian zones or ungulate winter range may force higher percentages of mature and old timber as a result of those limitations. Similarly, VQO's that are highly restrictive of timber harvesting inevitably cause forest stands to age in the interests of limiting non-visually effective green up with a consequence for seral stage distribution in the landscape unit.

Examination of the current environmental objectives zones on the BLCF within the SBS BEC variants shows that a very high proportion of the area (~50%) is subject to one or more objectives to maintain old and mature forest (see table below).

Table 7.

		SBS (82,103 ha)			ESSF (10,202 ha)		
Environmental Objectives Zones	Objective for Old, Mature Undisturbed (%)	Mgt. Zone Hectares	Additive Hectares*	Cumulative Hectares	Mgt. Zone Hectares	Additive Hectares	Cumulative Hectares
Riparian	100	1,409	1,409	1,409	81	81	81
WTP	100	1,669	1,669	3,078	46	46	127
OGMA	100	4,436	4,436	7,514	86	86	213
VQO (R or PR)	>93	31,782	21,032	28,546	1,922	1,704	1,917
LCM	70	16,564	4,352	32,898	2	1	1,918
Deer	50	2,113	252	33,150	0	0	1,918
Moose	30	31,304	7,962	**41,112**	102	59	**1,977**
LRMP/SRMP Target - Low BEO Mature/Old (hectares)				**9,887**			**1,428**
Unconstrained Land Base (hectares)				40,991			8,225

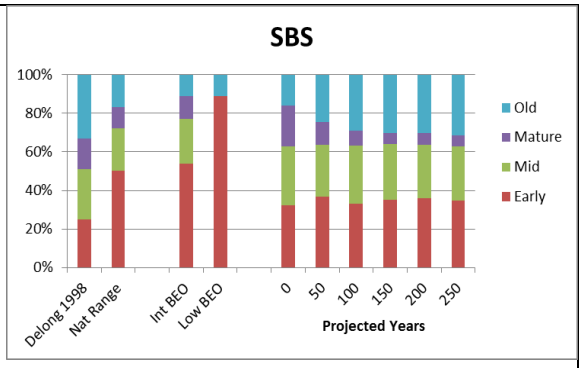
*Additive area is not included in the special management zone area above it.

Note: Grizzly habitat is included in other special management zones.

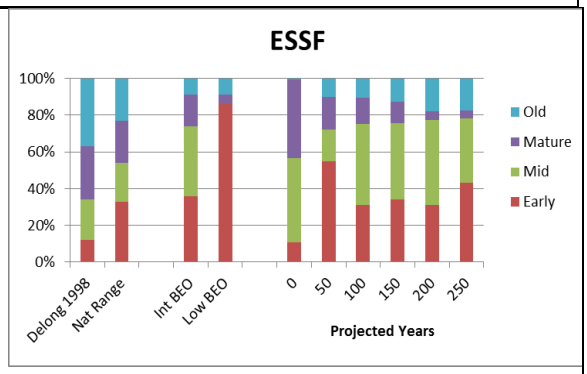
Using the Patchworks timber supply outputs, which incorporates all the BEO objectives and projected harvesting and models them over a 250-year planning horizon, we were able to model the future impacts of the current assumptions. With the current management constraints the BLCF operates under, especially in the SBS, the resulting BEO is significantly above the Low BEO as required by the Lakes LRMP and the associated SRMP's. As shown in the figures to the right of the tables, the long-term forecast shows a significant future change in the forest structure with increasing old and mature.

Table 8.

	Early	Mid	Mature	Old
SBS (NDT3)	**<40**	**40-100**	**100-140**	**>140**
Low BEO	n/a			>11%
Intermediate BEO	<54%		>12%	>11%
High BEO	<40%		>18%	>16%
BLCF - Current	32%	30%	21%	16%
BLCF in 50 Years	37%	27%	12%	25%
BLCF in 100 Years	33%	30%	7%	29%



	Early	Mid	Mature	Old
ESSF (NDT2)	**<40**	**40-120**	**120-250**	**>250**
Low BEO	n/a		>5%	>9%
Intermediate BEO	<36%		>19%	>9%
High BEO	<27%		>29%	>13%
BLCF - Current	11%	46%	43%	1%
BLCF in 50 yrs	55%	17%	18%	10%
BLCF in 100 yrs	31%	44%	14%	11%



A degree of elaboration is warranted here regarding the extent of moose ungulate winter range, which has an impact of the ability of land managers to achieve the low BEO that applies to the vast majority of the BLCF. The Lakes LRMP established moose winter range as a sub-zone within the Sensitive Resource Management Zone. The sub-zone was defined and mapped according to the locations of M1 moose winter range (severe winter range).

The LRMP requires that a re-designation of an LRMP management zone or sub-zone, resulting in change of more than 500 hectares or 5% (whichever is the lesser amount) of the zone/sub-zone area, constitutes a 'significant amendment'. Significant amendment proposals are to be reviewed by the Lakes District Monitoring Committee, require public consultation, and the social, economic and environmental implications of proposed amendments will also be evaluated.[4] After the introduction of FRPA, the ministry issued a notice pursuant section 7 (2) of the Forest Planning and Practices Regulation which expanded the area of moose winter range. The impact of the notice on the BLCF and on the LRMP planning area is shown in the table below:

[4] Lakes LRMP Section 6.7 'Plan Amendment'

Table 9

	BLCF Gross Land Base Included	BLCF THLB Included	LRMP Gross Land Base Included
Area in LRMP-Established Moose UWR Sub-zone (Moose 1)	12,014	3,264	265,284
Area in LRMP-Established Moose UWR Sub-zone + Sec. 7 FPPR	31,406	20,337	359,192
% Change Between LRMP and Sec. 7 FPPR UWR	261%	623%	135%

Although change to the Moose UWR LRMP sub-zone described above is in the nature of a significant amendment to the LRMP, and although the Section 7 notice would have undergone some review and comment, it is not apparent to what degree economic implications of the notice were analyzed and reported, or that the Lakes District Monitoring Committee was involved prior to the notice being issued. The BLCF is of the understanding that the Lakes LRMP has never been amended.

In the case of the BLCF, the Section 7 notice affects 20,337 hectares of THLB of which 8,021 hectares is not otherwise constrained from timber harvesting. As 30% of moose UWR must support timber >101 years old (well past commercial or culmination age for stands), the UWR reduces timber supply to a degree, and makes it more difficult to manage to the Low BEO assigned to most of the BLCF.

Conclusions:

1. It is clear that managing to achieve the current old/mature objectives inherent in the environmental objectives zones described earlier will result in a much higher proportion of old forest than was envisioned and recommended by the Lakes LRMP, particularly in the SBS variants;

2. The current spatial OGMAs exceed the old establishment target for OGMAs on the BLCF so there is, in effect, no further requirement for spatial OGMAs on the BLCF. The current amount of spatial OGMAs on the community forest is 6,271 hectares and the spatial target is 5,171 ha. The spatial OGMAs also exceed the total old target for some LU/BEC combinations. For example, in the Burns Lake West LU/SBSmc2 the OGMA target is 1,250 ha while the current spatial OGMA existing is 1,529 ha.

3. If spatial OGMAs were reduced or eliminated on the BLCF, the old requirements could be met primarily within other special management zones;

4. The BLCF land base is currently being used to meet the old objectives for TSA lands that surround the BLCF. The community forest contains a disproportionate amount of the spatial OGMAs in some Landscape Units. For example, 97% of the OGMAs for Burns Lake East/SBSdk are in the community forest, and 100% of the Burns Lake West/SBSmc2 and ESSF are in the community forest;

5. VQO areas also result in significant harvest constraints which increase the proportion of old forest. Recent analysis has shown that some significant areas which are not part of viewscapes, are classified for retention. Those areas could be withdrawn.

Wildlife Habitat Planning:

Incorporating wildlife habitat values was a key component used to redefine the BLCF alternative LCM described earlier. All identified rare and endangered species (4) and species of regional concern (6) were included in the analysis. Special management for moose and marten has been requested by First Nation BLCF board members. There is also a provincial initiative to improve moose habitat management. This management will be reflected in special stand level practices within high value habitats for moose and marten, which have been better defined using ecosystem mapping.

4 FSC Certification

4.1 Background

Certification of the BLCF has important impacts that are relevant context for the other matters and decision requests included in this submission. Certification is a requirement of the community forest agreement and is an important aspect of achieving sustainable forest management. The BLCF achieved Forest Stewardship Council (FSC) certification on December 31, 2017. The selection of FSC certification was based on a business case which found that certification has a financial cost by reducing the mid-term harvest by 4.9%. However, it was felt that this cost was out-weighed by the many other benefits FSC would bring to the community forest.

Certification requires a regional biodiversity conservation analysis. The FSC "region" includes a large assessment area (137,010 km^2) similar to a BC ecoprovince. The analysis ensures that a representative portion (12 to 24 %) of each biogeoclimatic variant within the management unit is protected based on the level of protection in the surrounding area.

4.2 Riparian Ecosystem Protection Under FSC

FSC requires additional riparian protection as compared to FRPA, and an analysis of the additional requirement, including requirements relative to FRPA, was completed.[5] In summary, full implementation of FSC riparian requirements, without taking advantage of the flexibility in the standard to overlap other constrained areas such as wildlife tree retention, OGMAs, etc., results in a maximum THLB reduction of 4,239 hectares (as summarized in the following table). This equates to 6.4 % of the Base Case current THLB area (66,450 hectares).

Table 10

Riparian Category	Base Case			FSC	
	Gross Area (ha)	Effective Net Area (ha)		Gross Area (ha)	Effective Net Area (ha)
Lakes	126	93		278	71
Wetlands	407	1,048		839	311
Streams	1,364	349		6,980	3,856
Totals	**1,897**	**1,489**		**8,098**	**4,239**

This dramatic increase in riparian ecosystem protection makes a large, incremental contribution to landscape connectivity and mature + old growth retention objectives of the LRMP and SRMP over and above the contribution of the LCM.

4.3 FSC – Maintenance of High Conservation Value Forests

FSC certification requires the completion of an assessment to "*determine whether some or all of the forest area under their management is a High Conservation Value Forest*". The assessment[6] showed that almost all HCV 1[7] and 3[8] areas were identified through the FRPA regulations and only a small area additional area was required. The HCV6[9] Assessment identified potential HCV traditional culture sites and values based upon local knowledge.

[5] Forsite. 2017. Burns Lake Community forest FSC Riparian Analysis

[6] High Conservation Value Forest Assessment, Burns Lake Community Forest Base Case: Community Forest Agreement K1A. 2017 March 31.

[7] These are forest areas containing globally, nationally or regionally significant concentrations of biodiversity values.

[8] These are forests areas that are in or contain rare, threatened or endangered ecosystems.

[9] These are forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

The precautionary principle will apply until consultation and involvement processes are defined, and First Nations communities have been involved in the identification and delineation of their cultural values. In the meantime, to address FSC and LRMP requirements, an interim plan has been developed that constrains 1,345 hectares of the land base (aspatially) and 2 large WTPs (spatially), totaling 1,500 hectares as First Nations Cultural Management areas.

4.4 FSC – Range of Natural Variability (RONV)

In the context of the FSC certification, RONV is primarily intended to be used as a method of establishing a reference, benchmark or base case against which to measure change and assess risks of future proposed management options. The BLCF has completed a Range of Natural Variability Assessment, which relied heavily on DeLong's publications. The analysis focused on the current seral stage distribution and the long-term forecast. This information was used to examine the biodiversity emphasis option issue described earlier in this submission. This ensures that the future seral stage distribution, given a projected rate of harvest, would remain close to what could occur under natural disturbance regimes. The projected harvest is also required to be an even flow, which stabilizes the rate of change on the land base.

Table 11.

Natural Disturbance Unit	Moist Interior – Mountain (ESSF)		Moist Interior – Plateau (SBS)
Criteria	>250 years		>140 years
Range	23-37%		17-33%
70% of Mean	21		17.5
BLCF Current	1		16
BLCF in 100 years	11		29
BLCF in 200 years	18		30
FSC	24		22

4.5 FSC Auditing

FSC certification requires that an independent third-party certification body conduct a full evaluation to determine if forest management meets FSC standards. The evaluation process is an in-depth review of the forest management systems and their results on the ground. When the evaluation is complete the assessment team reports to the forest manager regarding any areas where management does not meet the applicable requirements, known as 'non-conformities'. The Certifier can then issue a certificate, on condition that non-conformities will be corrected or, the Certifier will not issue a certificate until the non-conformities have been solved. All certificates are valid for five years and are audited on an annual basis.

5 Scenic Areas

5.1 Background

During the lifetime of the BLCF tenure there has been very limited harvesting operations within R and PR VQO scenic areas. This is due in part to the timing and scale of the MPB infestation, salvage operations focused on the larger, less controversial areas first and later the 2016 the AAC Determination restricted harvesting in the VQO areas.

Through the MPBMP, the BLCF is working to define an economically sustainable harvest for the BLCF and operations within visually sensitive areas are an important component of this plan.

The key to operational planning in visually sensitive areas is to find a balance between environmental values that may be co-located there, societal expectations to maintain aesthetic values and economic

values that are intended to flow from such areas through timber harvesting. Finding a balance requires considering the following:

- Guidance from the LRMP for scenic areas through the "general management direction" which states ""*Identified Visual and Significant Visual Resource Areas will have their site specific VQO's reviewed and either approved in other higher level plans or established by the District Manager in accordance with the FPC*" and "*VQO's may change over time due to new inventory information and changing public values*". The LRMP Visual Resource Objective 40 and its three strategies are written to "*provide sufficient clarity and directive detail concerning Visual Landscape Management to support landscape unit and operational level resource planning and management decision-making*".
- Establishment of the low BEO within the BLCF. As mentioned earlier, the LRMP assigned a low BEO to more than 90% of the community forest. The FPC Biodiversity Guidebook explains what a low BEO "*may be appropriate for areas where other social and economic demands, such as timber supply, are the primary management objectives".*
- Consideration of public support for changes to forest management. In 2014, the ministry made a publicly announced decision that it had extensively consulted the public and had come to the conclusion that there was public support for changed approaches to the management of scenic areas in the interests of reducing wildfire risks to communities.

Clearly the visual resources within BLCF are dynamic. Doing nothing is not an option. In the absence of active management, biotic and abiotic forces (including existing dead pine, wind and wildfire) could have a very negative impact upon the visually sensitive areas and potentially on the local communities. Forests change and innovative forest management approaches can provide for not only a flow of timber, but a flow of non-timber ecosystem services, such as visual resources, wildlife and biodiversity values.

Visual quality objectives in many of the BLCF scenic areas are either Retention (34%) or Partial Retention (59%). Under the Forest Planning and Practices Regulation, categories of visually altered forest landscape are defined as follows:

Retention: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint, is

i. difficult to see,
ii. small in scale, and
iii. natural in appearance;

Partial Retention: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint, is

i. easy to see,
ii. small to medium in scale, and
iii. natural and not rectilinear or geometric in shape;

In both cases, Retention and Partial Retention; definitions rely on scale with an emphasis on natural appearance. Site conditions have created an opportunity for BLCF to mimic naturally occurring processes while applying proven visual landscape design principles, strategies and tactics.

Based upon LRMP Strategy 40.4: which addresses the development of higher resolution interpretive and field-based inventories, the BLCF undertook an analysis of largely R and PR VQO polygons to determine harvesting opportunities that can meet the "balance".

5.2 Methodology

The following methodology was used to define opportunities within BLCF visually sensitive areas:

1. Determine the suitability of alternative silviculture systems to meet VQO objectives.
2. Quantify the volume of dead and green timber within existing VQO areas and the importance of the visually sensitive areas to the timber supply through exploratory analysis.
3. Quantify the "visibility" of areas within existing VQOs, looking to quantify non-visible areas using improved inventories and planning tools. LiDAR data was a key tool in this analysis and allows the BLCF to precisely map visible and non-visible areas.

5.3 Results

Meetings were held with Ministry research and silviculture staff, as well as, local practitioners to discuss the current silviculture program, alternative silviculture systems to salvage dead stands, and the feasibility of the silviculture systems to support visual objectives. The consensus was that partial cutting, which is a non-descript term, provides numerous opportunities. The main issue is finding stands with a suitable amount of understory and harvesting systems that can protect the understory. To develop these opportunities the BLCF has considered a number of sources of expertise:

- Meetings and follow up discussions with Dave Coates as well as numerous publications by Dave Coates (and various co-writers) provided key information on post MPB attack structure and response, secondary structure and challenges with mapping these stands was key to understanding the complexity of post-MPB forest management.[10]
- Ken Hodge's Decision Matrix [11] provides an assessment process that outlines five key area including gathering information, pre-harvest factors, harvesting and post-harvesting considerations and a post-harvest assessment. These are the key factors in determining suitable stand conditions.
- The Ministry Report, Visual Impacts of Partial Cutting[12] provides guidance on using site and stand variables to predict VQO for partial cuts.
- The Ministry's Visual Landscape Design Manual is the standard for block design in visually sensitive areas and has a section on Alternative Harvesting Systems.

The new VRI (released in December 2016) was summarized for the VQO areas and the areas were found to contain 39% of the remaining mature timber and 41% of the remaining dead pine on the BLCF. Depending upon the modeling assumptions, BLCF exploratory analyses showed that volume from the VQO areas could represent approximately a 14% increase in timber in the short and mid-term over the TSR-like basecase; a critical potential source of volume in the early mid-term.

The BLCF LiDAR data was used to undertake a preliminary visual landscape analysis to precisely map visible and non-visible areas for existing VQOs from a number of highways and resource road sections. A 5m x 5m raster database was created and points from the road sections were then ranked based upon the number of locations from which the individual VQO areas were visible.

The goal of this trial was to test the suitability of the methodology to determine the areas that might be harvested and still meet VQO objectives. The results (Appendix Two) of using the LiDAR data and visual landscape analysis tools demonstrated that:

[10] Coates, K.D., Delong, C., Burton, P.J., Sachs, D.I. Abundances of Secondary Structure in Lodgepole Pine Stands Affected by Mountain Pine Beetle. BC Ministry of Forests and Range, Report to Chief Forester. 2006

[11] Hodges, K. Decision Matrix for Management of Mountain Pine Beetle Stands for Protection of understory to assist in the Mitigation in the Mid Term Timber Supply falldown. 2015

[12] Visual Impacts of Partial Cutting – Summary Report, BC Ministry of Forests August 1997

- These new methodologies had significantly higher level of resolution than demonstrated in the old Visual Landscape Inventory (VLI).
- "Bare earth and "full feature" presentations of the LiDAR data captured key landscape components of vegetation screening and terrain profiles differently and together provide the basis of a new generation of inventory and planning tools.
- The increased resolution identified:
    - Significant areas within existing PR and R polygons that are not visible; some resulting from actual ground conditions and others from vegetation screening.
    - There is the opportunity to incorporate other existing constraints (OGMAs, LCM, riparian) on the landbase into the overall visual landscape design.
    - Some visible areas outside existing VQOs.

If we combine the silviculture system suitability and LiDAR based analysis information, we can create a planning matrix table (see below) that can become the basis for determining harvesting and silviculture operations within visually sensitive areas, without the need to change the scenic area boundaries or the VQO's themselves.

The findings from these analyses suggest that a balance of environmental, social and economic values can be found by using visual landscape analysis to determine access into low or non-visible areas and selecting silvicultural and harvesting system appropriate to the objectives and stand conditions.

The following table suggests a matrix of how different silviculture and harvesting systems might be combined within different VQO objectives and visibility classes.

Table 12

		Lidar Based Analysis - Visibility Quantiles Summary		
VQO		Quantile 1&2	Quantile 3	Quantile 4
		Increasing visibility =====➔		
Retention	Silviculture & harvesting system	Patch cuts, small clear cuts with reserves.	Patch cuts and partial cutting.	Low removal partial cuts with long return periods. Potentially some deferrals.
		Quantile 1, 2 &3		Quantile 4
Partial Retention	Silvicultural & harvesting system	Patch cuts, small clear cuts with reserves.		Partial cuts.

5.4 Scenic Area Summary

The BLCF realizes there are numerous perspectives on the management of the visual areas, both in the short term MPB salvage and the long-term management of the scenic areas. Visual resource management is a key part of the BLCF social license to manage the forests and travel corridors throughout the community forest.

As a result, the BLCF wants to clarify its commitment to managing scenic areas.

> *The BLCF is committed to visual resource management and to ensuring the scenic areas are managed in a respectful manner with due concern for all resource values.*

BLCF will achieve this commitment by:

- Meeting expectations outlined in the LRMP.

- Ensuring visual resource management is managed in a respectful manner with due concern for all resource values.
- Introducing new silvicultural and harvesting technology including partial cutting and patch cutting or small clearcuts as appropriate, both in the short-term salvage of dead pine from mixed stands, as well in the post-salvage era, for harvesting visual areas and areas requiring special management.
- Establishing a public communication program. The ministry completed an extensive public consultation in 2013 and announced in 2014 the potential to partially address visual sensitive concerns by harvesting visually sensitive landscapes in a way that decreases wildfire risk in areas close to communities, an idea which was supported by the public. The BLCF is prepared to undertake a public communication program to outline our planned operations in visually sensitive areas.
- Investing in visual resource management by:
    - Leveraging expertise of qualified registered professionals with expertise in visual design landscape planning and analytical tools that can utilize visibility modeling using the LiDAR data.
    - Using the community forest LiDAR, which has a much higher resolution for analysis of scenic areas than previously inventories, for landscape planning. This higher resolution will enable the BLCF to identify portions of current scenic areas that, in fact, are not visible from viewpoints used for scenic areas management.
    - Using the results of the LiDAR analysis to select alternative silviculture systems for use in VQO areas. This will provide a key tool in ensuring a balanced environmental, social and economic solution to VQO management.

6 Planned MPB Mitigation Plan Inclusions in MP #4

As the ministry is aware, the BLCF is preparing MP #4 to replace the current management plan and the associated AAC determination. In his letter of June 5, 2017, the regional executive director advised the BLCF that "…*as you consider and develop new management approaches for a number of forest values, please be aware that the potential implementation of these approaches will require a thoughtful review by government."* The BLCF wishes here to summarize a number of planned inclusions from the BLCF MPBMP in the upcoming MP #4. The purpose for providing this summary is twofold:

- To provide additional context to the ministry within which to consider the other matters described in this submission;
- To seek initial ministry support in principle for or hear of any concerns the ministry may have about, the BLCF continuing the process of incorporating the subject matter described below in MP #4.

In addition to incorporating the effect of the decisions that emerge from the ministry in response to this submission, the BLCF envisions that MP #4 will address the following management issues:

6.1 Applying an Area-based Ethos on the BLCF

As the BLCF transitions out of the long, reactive salvage program that has driven management actions since the inception of the community forest, MP #4 will describe the ways that a leading-edge area-based management ethos will be brought to bear on future resource management. The main aspects are expected to be based on:

- A dedication to long-term, science based (western and First Nations science) management plans;
- A focus on achievement of the LRMP goals that apply to the BLCF;

- Establishing the BLCF as a leader in community forest management;
- The continuation of investment in forest management;
- Conserving and protecting the THLB;
- Ensuring that ministry administrative polices are feasible for area-based tenure.

6.2 Growing Relationships

Through MP #4 the BLCF plans to continue to grow its relationships with others in a number of ways, including:

- Strengthened engagement with the public, communities, and licensed and non-licensed users with an interest in the community forest;
- Deepening the sophistication of its relationship with First Nations through:
    - The roles for First Nations directors on the board of directors;
    - The draft First Nations Engagement Agreement currently being negotiated;
    - Addressing the free, prior and informed consent aspects of FSC certification;
    - The incorporation of cultural management areas;
    - Working to incorporate First Nations stewardship elements into the management plan and operations;
    - Voluntarily preparing a five-year development plan to assist understanding of proposed operations.

6.3 Innovation in the Achievement of Forest Management Goals

MP #4 will describe innovative approaches to achieve LRMP and other forest management goals including:

- LRMP objectives:
    - Committing to visual landscape planning principles;
        - Broadening the tools used to achieve visual quality objectives including new inventory technology, small clearcuts, patch cuts, partial cutting and communication;
    - Exploring opportunities to establish "young natural forests" in recognition of the fact that dead pine shelf life will likely end before all dead pine stands can be addressed. Options for these stands include:
        - Some rehabilitation with Forests For Tomorrow or other available funding;
        - Setting aside some stands as Wild Young Forests[13];
        - Where appropriate, some such stands may act in lieu of other wildlife tree retention.
    - Developing and implementing a deciduous strategy, which is based on no-net-loss of deciduous cover and maintenance of deciduous types. (LRMP Strategy 43.9);
        - SRMP's also call for planning for "coniferous and deciduous tree species diversity in terms of a non-legal objective;
        - Many First Nations stewardship and wildlife and biodiversity concerns can be addressed through a deciduous species strategy;
        - Deciduous species are important for moose, many other wildlife species and should play a key role in the landscape connectivity matrix.
- Undertaking wildfire fuel reduction in priority areas identified by the ministry fire center and defining areas for FireSmart harvesting in rural interface zones;
- Improving community forest operations planning, which will include:

[13] WYF were identified as "non-legal objectives" in the SRMP.

        - Completing the 5-year operational plan, with is key to managing FSC free, prior and informed consent and working with communities and improving marketing of timber from forest operations;
        - Maintaining the focus on short-term salvage of dead pine stands;
        - Developing a visual resource harvesting plan;
        - Introduction of partial cutting harvest systems;
        - Planning for the end-of shelf-life and the transition to green timber harvesting.
- Developing longer-term timber harvesting plans, a timber management strategy within the LRMP using the Patchworks timber supply model. The model provides:
        - Details of 10 year and 20-year timber availability;
        - Data to track key indicators such as for biodiversity emphasis option achievement, managing range of natural variation, timber species, volumes, etc.
- Using the FSC and the Forest and Range Evaluation Program (FREP) monitoring data to ensure continuous improvement.

6.4 Achieving Strategic Environmental Management Goals

MP #4 will speak to ways and means that the BLCF will achieve strategic environmental goals in the course of managing the timber resource on the community forest, an important focus of the LRMP. The plan will address:

- Creating an environmental footprint that is as economically efficient as is practical through measures such as co-location of values;
- Implementation of ecosystem restoration measures by defining post-MPB environmental needs and key species, protecting riparian ecosystems and adapting operational practices as required to achieve outcomes;
- Using an approach that is based on, and incorporates, evolving ecological science including:
    - Use of technology to improve knowledge and opportunities;
    - Integrating environmental concerns into forest management solutions;
    - Over time, learning and incorporating traditional ecological knowledge;
    - Proactively explore new management alternatives, for example, related to the range of natural variation.

6.5 Evolution of Timber Harvesting and Silvicultural Practices

LRMP strategy 43.6 calls for *"employing stand management practices to provide for structural and species diversity in managed forest areas."* MP #4 will discuss, among other things:

- The role of partial cutting as a tool for ecosystem restoration and managing the level of residual stems onsite;
- First Nations stewardship principles related to the amount and type of post-harvest stand structure onsite;
- The deployment of partial cutting methods as a means of:
    - Achieving short-term salvage of dead pine stands;
    - Adding to the ecosystem restoration toolkit;
    - Managing post-MPB salvage harvests in special management areas such as visual areas (along with patch cuts and small clear-cuts), the LCM and stands suitable for understory protection;
    - Conserving the mid-term timber supply.

7 Decisions, Support in Principle and Other Next Steps

As mentioned earlier, to move forward with implementation of the BLCF MPBMP and subsequent submission of MP #4 certain decisions or actions are required consistent with the role of the regional executive director and district manager as statutory decision makers, and the role of the BLCF to propose the plans and strategies consistent with the rights and obligations of an area-based tenure holder. These decisions or actions are important to ensure that the balance in management of timber and non-timber resources intended by the LRMP as described earlier is actually realized on the ground.

Decision #1: The Alternative LCM Proposed for the BLCF

As discussed in February 2017, and based on the research, analysis, field work, planning and rationale described earlier in this submission, the BLCF requests that the regional executive director determine that the alternative LCM satisfies the expectations of the LRMP and SRMP's, and his own expectations, for an LCM on the BLCF portion of the LRMP planning area. Based on such an approval, we ask that the regional executive director set in motion an amendment to the legal order for the LCM. Such an amendment will enable the BLCF to complete the timber supply analysis that recognizes the timber supply benefits of the alternative LCM, and to finalize a submission of MP#4 that is consistent with the amended legal order, a submission which the BLCF and the regional executive director agree should occur as soon as possible.

Decision #2: Managing the Low Biodiversity Emphasis Option

This submission has described the extent to which a range of government objectives for non-timber resource values management, working in combination, have changed the balance between biodiversity emphasis and timber supply on the BLCF beyond the expectations of the LRMP and associated SRMPs. To address this issue, the BLCF requests a decision of the regional executive director with 3 parts:

1. Firstly, a recognition that action must be taken to enable management of the large, area-based tenure that the BLCF represents to better align with the intent of the approved land use plan;

2. Secondly, the provision of direction to appropriate staff to engage with the BLCF to identify and prepare the specific actions that will create the improved alignment mentioned above. The BLCF anticipates that the specific actions will be related to, for instance:
    a. Achievement of old growth management objectives in spatial and aspatial terms;
    b. Management of the Range of Natural Variation on the BLCF;
    c. Fully accounting for the potential of areas, such as those with visual quality objectives or riparian management objectives, to contribute to the achievement of other non-timber objectives such as those for old growth, landscape connectivity, wildlife habitat or other non-timber objectives;
    d. Ensuring that seral stage distribution outcomes and timber supply outcomes are consistent with the intent of the land use plan.

3. Thirdly, to the extent necessary to ensure that the objectives of government affect the BLCF proportionally to other licensees and to give effect to the actions developed under 2 above, the BLCF requests that the regional executive director and district manager use their discretion under FRPA section 9 to work with the BLCF to "*establish targets, in specified proportions between or among the holders of forest stewardship plans, for sharing the responsibility to obtain results consistent with objectives set by government".* This action is essential to enable appropriate, long-term management of the community forest as a distinct area-based management unit.

Decision #3: Scenic Areas Management

1. In 2014, the ministry made a publicly announced decision that it had extensively consulted the public and had come to the conclusion that there was public support for changed approaches to the management of scenic areas in the interests of reducing wildfire risks to communities. That decision is consistent with LRMP Strategy 41.3, which states that "*Forest management activities*

within Visual and Significant Visual areas (e.g. harvesting, salvage, fire and beetle control) will be consistent with the objective of maintaining the integrity of visual resources. It is recognized, however, that salvage harvesting following catastrophic events (e.g., fire, blowdown, infestation) may compromise visual quality from time to time."

With the long-anticipated acceleration in the blow down of dead timber now unfolding, the BLCF requests that the ministry take action to implement the 2014 decision to change approaches to scenic areas management.

2. LRMP Strategy 40.4 provides direction regarding future change to scenic areas management, saying *"Knowledge of visual landscape management areas will increase, over time, through development of higher resolution interpretive and field-based inventories. These more detailed inventories will then become the basis for determining visual management areas and objectives at the local level. Visual landscape management direction, however, will remain consistent with the LRMP*".

   This submission has described how a high-resolution LiDAR inventory has identified how significant timber volumes, especially when combined with innovative silviculture systems, can be harvested while meeting VQO's and without changing the scenic area boundaries or the VQO's themselves. This new information can be a key factor in achieving a balance between environmental, social and economic values for the BLCF.

   To address this opportunity, the BLCF requests:

   - The regional executive director determines that LiDAR data be considered an approved "higher level interpretative" inventory as per the LRMP Strategy 40.4.
   - The district manager approves the use of the LiDAR-based methodology described earlier in this submission for defining non-visible areas which when combined with visual design and the use of alternative silviculture systems will become the basis for harvesting within VQO areas.

Decision #4: Ministry Perspectives on New Directions for MP#4

This submission has outlined at a high level the nature of new management directions planned for MP #4 that have emerged in the course of preparing the BLCF MPBMP. Before and after the June 5th letter of the regional executive director previously mentioned, the BLCF has met, exchanged views and shared information with ministry staff. The BLCF would appreciate receiving as soon as possible support in principle for the management plan development directions outlined as well as any ministry thoughts or concerns about incorporating the described aspects of the MPBMP in MP #4.

Appendix One – LCM Proposed Changes

Appendix Two – Visibility Analysis