



Ministry of Forests  
and Range



**FORESTS FOR TOMORROW  
FORESTRY LICENCE TO CUT /  
OVERSTOREY REMOVAL  
STAND SELECTION CRITERIA  
STANDARD  
May 1, 2010**

These standards apply for activities funded under the Forest for Tomorrow (FFT) Program.

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**ARTICLE 1: DEFINITIONS**

**Definitions**

1.01 In this document the following words shall have the following meanings:

**“Forestry Licence To Cut” or “FLTC”** means a FLTC authorized under Section 47.6(2)(d) of the *Forest Act* and Section 4 of the Forestry Licence To Cut Regulation.

**“Interior Appraisal Manual” or “IAM”** means the most current version of the Interior Appraisal Manual, including amendments, approved by the Minister of Forests, pursuant to Section 105 of the *Forest Act*.

**“Mountain Pine Beetle (MPB) Impacted Stands”** means stands that are:

- a) Age class 2 or older;
- b) Lodgepole pine leading (overstorey) stands; and,
- c) Successfully attacked from MPB in layers 1 and 2.

**“Not satisfactorily restocked” or “NSR”** means productive forest land that has been denuded and has not been regenerated to the specific stocking standards for the site.

**“Overstorey”** means live or dead layer 1 and/or 2 trees (greater than or equal to 7.5 cm diameter at breast height), as described in the [Silviculture Survey Procedures Manual](#), that form

a full or partial canopy over any layer 3 and/or 4 trees. The overstorey is usually coniferous but may include broadleaf trees.

“Return on investment” or “ROI” means the Forests for Tomorrow financial analysis tool employed to balance the economic return of reforestation investments with future timber supply and other resource values and objectives.

## **ARTICLE 2: PURPOSE AND SUPPORTING POLICIES**

### **Purpose**

2.01 The purpose of the FLTC Stand Selection Criteria is to provide direction and standards for the selection of stands for overstorey removal and silviculture investment.

### **Supporting Policies and Program Focus**

2.02 Direction has been provided in the policies indicated below, but due to the diverse nature of the stands involved and various other factors such as economics and forest cover variability, more detailed standards included in this document are required. The applicable policies for the planning of these rehabilitation projects are provided in the following documents:

- [FFT Policy No.3](#) – Using a Forestry Licence to Cut (FLTC) Issued to the Holder of a Site Preparation Contract to Rehabilitate Marginal Timber Stands That Have Been Killed by Mountain Pine Beetle (MPB) or Wildfire.
- Section 6.2.1 (1)(a)(ii) of the Interior Appraisal Manual (IAM).
- Forests For Tomorrow Treatment Priority Policy.

2.03 The focus at this time is to rehabilitate the following areas that are not satisfactorily restocked (NSR):

1. immature or dense lodgepole pine (PI) stands, that have been seriously damaged by Mountain Pine Beetle (MPB), or
2. areas denuded by wildfire.

Rehabilitation involves carrying out overstorey removal and reforestation treatments to enhance future timber supplies. The intention is for Forests for Tomorrow (FFT) to target poor quality stands on productive sites that, due to free growing obligations, would be uneconomic for licensees to harvest.

## **ARTICLE 3: STAND SELECTION CRITERIA**

### **Process**

3.01 The ideal stands would be close enough to processing facilities that operators may be interested in purchasing the timber for chips, hog fuel, post and rails, or wood pellets. Initial discussions with Ministry of Forests and Range (MFR) district staff, major licensees, BC Timber Sales (BCTS), harvesting contractors with chipping and grinding equipment, and timber buyers may help in locating areas that have economic potential for this low quality timber to be utilized. Overstorey removal where the timber is utilized under a FLTC is preferable but not absolutely mandatory.

- 3.02 Preliminary stratification using thematic mapping and aerial photography is a critical phase in determining whether stands meet the stand selection criteria. Stands that obviously do not meet the criteria in section 6.2.1 (1) (a)(ii) of the IAM, have a significant sawlog component, or have a large component of green timber should not be laid out as a FLTC.
- 3.03 In the search for new overstorey removal/FLTC areas, stands that obviously will not meet the criteria in section 6.2.1 (1) (a)(ii) of the IAM are not to be included in the survey plan and should be screened out as early as possible during the survey process. If a decision to reject a stand as a potential FLTC area cannot be made at the preliminary stratification stage, a reconnaissance level survey should be performed. This process will avoid putting effort, resources and time into stands that will likely not meet the stand selection criteria. Effort should be focussed on those stands that most closely meet the selection criteria. Therefore, it is essential that the best available and appropriate mapping and photography is used and preliminary field screening is carried out by experienced forest professionals.

In addition to the direction from policies indicated in Article 2, the stand selection criteria have been expanded to take into account more factors as identified in Articles 4-7 following.

## **ARTICLE 4: BIOLOGICAL FACTORS IN MOUNTAIN PINE BEETLE AREAS**

### **Stands to be Excluded**

- 4.01 Dense, older immature, lodgepole pine stands with low levels of MPB attack should not be scheduled for overstorey removal where they occur in a large contiguous areas that have the potential to provide a mid-term harvest unit. In these dense lodgepole pine stands and in younger managed lodgepole pine stands, forest health agents that are not going to kill the tree in the short term should not be used to reject green lodgepole pine trees as well-spaced (WS) trees, if the trees have the following characteristics:
- greater than or equal to 30% live crown,
  - a DBH close to 12.5 cm,
  - a favourable height / diameter ratio, and
  - are dominant or co-dominant trees.
- 4.02 Professional judgement must be carefully exercised when assessing well-spaced trees in lodgepole pine stands with low levels of MPB attack because of mid-term timber supply concerns in many Timber Supply Areas (TSAs). Where green lodgepole pine trees have sufficiently good form, health and vigour (see [Stand Development Monitoring Damage Criteria for Even-Aged Coniferous Trees](#)) to provide merchantable trees in a reasonable period of time, they should not be rejected as well-spaced trees for minor forest health defects that are unlikely to kill the tree before it could be harvested.

### **Biological Factors to Consider**

- 4.03 The biological factors for selecting stands for overstorey removal are as follows:

- For age class 2 stands, at least 70 % of the stand volume based on a 7.5 centimetre minimum diameter at breast height is pine that has been damaged (i.e. killed or successfully attacked) by MPB\*.
- For age class 3 and older stands, at least 70 % of the volume based on a 12.5 centimetre minimum diameter at breast height is pine that has been damaged (i.e. killed or successfully attacked) by MPB\*.
- \* Incidental mortality of pine from other forest health factors can be included as MPB damage
- Surveys to identify overstorey removal areas must be postponed in stands that have many “green MPB attacked” lodgepole pine trees and significant numbers of healthy lodgepole pine trees greater than or equal to 12.5 centimetre diameter at breast height that are likely to be attacked by MPB in the near future. MPB mortality has not been fully expressed in these stands and the infestation has not stabilized. Surveys to confirm whether overstorey removal is an acceptable treatment must be postponed until MPB infestation has subsided in the area and MPB mortality can be confidently determined.
- The stands must be composed of approximately 90% lodgepole pine by volume.
- Strata that are proposed for overstorey removal must have been classified as not satisfactorily restocked (NSR) in accordance with the [FFT Ministry Survey Standard](#).
- Average stand age must not be greater than 60 years at the time of MPB mortality or there is an average of at least 2000 trees per hectare with a minimum diameter at breast height of 5 centimetres.
- Sites that presently do not have high timber values (i.e. minimal sawlog component), but have the potential, with silviculture investment, to produce a stand of sawlogs within an acceptable period of time.

## ARTICLE 5: ECONOMIC FACTORS

### Economic Factors to Consider

5.01 The following economic factors are to be considered in the evaluation of potential FLTC areas.

- No more than 20% of the net merchantable volume of a proposed FLTC area is to be Grades 1 and 2 sawlogs.
- Rehabilitation activities will generate a positive return on investment (ROI) of at least two percent (2%). Variation to levels between 0 and 2% will be utilized when benefits to timber supply or other resource values reflect a higher social priority. The decision to carry out an overstorey removal / FLTC for areas where the ROI is less than 2% rests with the Designated Ministry Representative.
- In the determination of the ROI, the forest professional conducting the work must stay within acceptable ranges and assumptions as per ROI calculation assumptions and TIPSY guidelines for treated and untreated stands for density, value ratio, expected free growing stems per hectare, site index, OAF's, regeneration delay and genetic worth.
- The average piece size for the FLTC area must be less than or equal to 0.2 m3 per tree. The FLTC area may contain a small percentage of larger pieces sizes, but the average must be less than or equal to 0.2 m3 per tree.
- The estimated net merchantable volume per hectare, based on normal cruising standards, must be less than 150 m3 per hectare.

- Wherever possible, larger FLTC units are to be created or a number of smaller units combined together for economic efficiency.

## **ARTICLE 6: OPERATIONAL FACTORS**

### **Operational Factors to Consider**

6.01 The following operational factors are to be considered in the evaluation of potential FLTC areas.

- It is important to find suitable stands that are compatible with other licensee operations, where overstorey removal harvesting will not be contentious.
- Potential areas should have good access or areas with no major access issues (for example, on a major road development) and be in close proximity to milling or processing facilities (economically feasible cycle times and possible road use by chip trucks).
- The overstorey removal can be safely implemented and does not result in or leave any safety issues on the unit for subsequent operations.
- Priority should be given to sites that can be harvested conventionally with tracked and wheeled equipment. The majority of the site should have a slope less than 30% with small sections (less than 0.25 ha) up to 50% if trails (temporary access structures) are established.
- The minimum stratum or treatment area is 5 hectares for overstorey removal.
- Stands with low levels of MPB mortality should not be laid out as overstorey removal / FLTC projects. Small inclusions of these green timber types (less than 5 ha) are permissible in a larger FLTC area where, over the FLTC area, an average of at least 70% of the merchantable volume is pine that has been damaged by MPB.
- For operational and economic efficiency, areas for overstorey removal should be as large as possible, preferably 40 hectares or larger (combined treatment units and adjacent blocks).
- The FLTC area must be well stratified so that the overall average of the FLTC area meets these stand selection criteria. Strata that do not meet the stand selection criteria should be excluded from the external boundaries of the FLTC area. If non-treatment strata or trees cannot be excluded from the FLTC area, they should be placed in reserves or wildlife tree patches. Areas that do not meet the stand selection criteria and are too small to stratify out may be included in the FLTC area as long as, on average, the total FLTC area meets the stand selection criteria.
- Other site factors such as terrain, archaeology, forest health, riparian, biodiversity and wildlife have been assessed and included in the stand selection decision.

## **ARTICLE 7: ADMINISTRATIVE FACTORS**

### **Administrative Factors to Consider**

7.01 The following administrative factors are to be considered in the evaluation of potential FLTC areas.

- To avoid costs associated with obtaining a comparable cruise the FLTC area should meet the criteria in section 6.2.1(1)(a)(ii) of the IAM.
- A good working relationship and cooperation with First Nations groups exists.
- Local community and Forest District support has been obtained.
- Licensees and BCTS have no interest in harvesting the proposed FLTC area.
- Overstorey removal does not conflict with other uses or land uses objectives.

- Before a FLTC is laid out, landscape level impacts and planning (i.e. excessive harvesting in a watershed) or other significant issues identified through the FRPA Checklist must be resolved with district staff. Site level treatment decisions should be considered within the context of the broader landscape level objectives such as Equivalent Clearcut Area (ECA), biodiversity and wildlife (such as Ungulate Winter Range).
- If there are social, ecological or economic values and interests to consider, Multiple Accounts Decision Analysis (MADA) should be utilized. This could include First Nations interests, watershed management, water quality, or fuel management in a community interface area.
- Recipients must obtain the approval of the Designated Forests for Tomorrow representative before the FLTC area is laid out. Regional FFT staff should ensure that MFR district staff who will be issuing the FLTC are in agreement with the overstorey removal/FLTC project area before the FLTC area is laid out. Headquarters FFT staff are available to assist in these decisions.

7.02 There will be stands that have already been surveyed and recommended for overstorey removal, that do not meet these FFT Stand Selection Criteria, but won't be harvested by major licensees, BCTS, or small wood licensees. These stands may have been rejected by licensees, small wood operators or by BCTS for Innovative Timber Sale Licences (ITSLs), possibly due to wood quality issues or distance to wood processing facilities. Therefore, wood quality, mid-term timber supply and economics become the final determinants of whether a stand is selected for FFT FLTC overstorey removal. If stands do not meet the selection criteria, but a review of wood quality data, timber supply, economics and referrals to other agencies results in no other options for overstorey removal and the ROI is greater than 2%, the stand may be considered for an FLTC if the regional FFT staff and the MFR district agree the overstorey removal/FLTC project should proceed. Where utilization of the timber under a FLTC is the desired outcome, a key factor in deciding to proceed will be obtaining agreement from the MFR district to use a comparable cruise to determine the FLTC stumpage rate.

7.03 If there is minimal overlap with other licensees products (e.g. sawlogs, pulpwood, small wood), an FLTC could also be warranted. Professional accountability is a critical component of the decision whether a stand is suitable for FFT FLTC overstorey removal. If a forest professional is unsure whether a stand fits the criteria, the regional FFT staff should be contacted and the forest district staff who will be issuing the FLTC should be consulted so that a decision can be made to either prepare the area for a FLTC or postpone FFT work.

## ARTICLE 8: FUTURE UPDATES

8.01 The [FFT Ministry Survey Standard](#) has been revised to better define the damage criteria that will be used to determine the acceptability of well-spaced trees in various stand layers. The "[Stand Development Monitoring Damage Criteria for Even-Aged \(Age Class 2 & 3\) Coniferous Trees](#)" have been emailed to regional FFT staff to test on future surveys and provide feedback to Headquarters staff.