

Forests For Tomorrow

Multiple Accounts Decision Analysis Standards Document



Introduction

The Multiple Accounts Decision Analysis (MADA) framework is designed to provide FFT decision makers with a transparent and objective tool for directing reforestation silviculture funding to those sites that best enhance multiple economic, environmental and social values. This standards document is designed to ensure provincial consistency to the strategic principles of the MADA process while also allowing for integration of local knowledge and datasets as required to make results locally relevant.

Planners/analysts who are implementing the MADA process for a management unit (TSA or TFL) can reference the document *Integrating Timber and Non-Timber Values into FFT Silviculture Investment Decisions* (Forsite, 2008)¹. This document provides a default and detailed example of how the process is structured and a rationale behind the design. Deviations from this example are acceptable when needed to address local issues but documentation and rationales must be provided.

The Ministry of Forests and Range has the responsibility to provide guidance and support to the planners or analysts implementing the MADA. Due to the program delivery model, Recipients are best suited to implement the MADA, although it is not required. At a minimum, recipients should be closely involved in the process.

There are two parts to this standards document:

Part A provides standards for prioritizing FFT candidate stands for reforestation treatments based on incremental benefits to timber and non-timber values. This process is completed at the management unit / landscape level using GIS data and is intended to support the development of FFT survey plans.

Part B provides standards for when non timber values can be used to rationalize treatment of sites with low timber values (IRR is < 2%). This stand level decision is made after the collection of all required field data and is designed to ensure the province is receiving a reasonable return on investment from both a timber and non timber perspective.

A review of both parts of the MADA process will be facilitated by FFT annually. This continuous improvement process will be based on feedback from FFT staff and managers, recipient holders, and others to identify potential changes to the process.

PART A: Candidate Prioritization

The following describes the prioritization approach to be applied to a large number of candidate FFT investment areas within a single management unit (i.e. TSA or TFL). The goal is to identify the highest priority sites in the unit for investigation by survey crews. The highest priority sites are those where treatment will provide the largest timber and non timber values (win-win sites).

1.0 Scope

The MADA prioritization process described here is not designed to allocate funding between management units. It is meant to guide investment within a landscape unit. An appropriate scale of application of this process is the unit for which FFT funding is specified (TFL or TSA). Optimal results will be achieved when all potential candidate investment areas are included in the analysis

¹ Integrating Timber and Non-Timber Values into FFT Silviculture Investment Decisions (Forsite, Dec 2, 2008)
<http://www.forestsfortomorrow.ca/ModellingDecisionSupportTools/MultipleAccounts/MultipleAccounts.html>

as this allows the widest comparison between options. Evaluation of subsets of the candidates within a management unit can leave out potential choices.

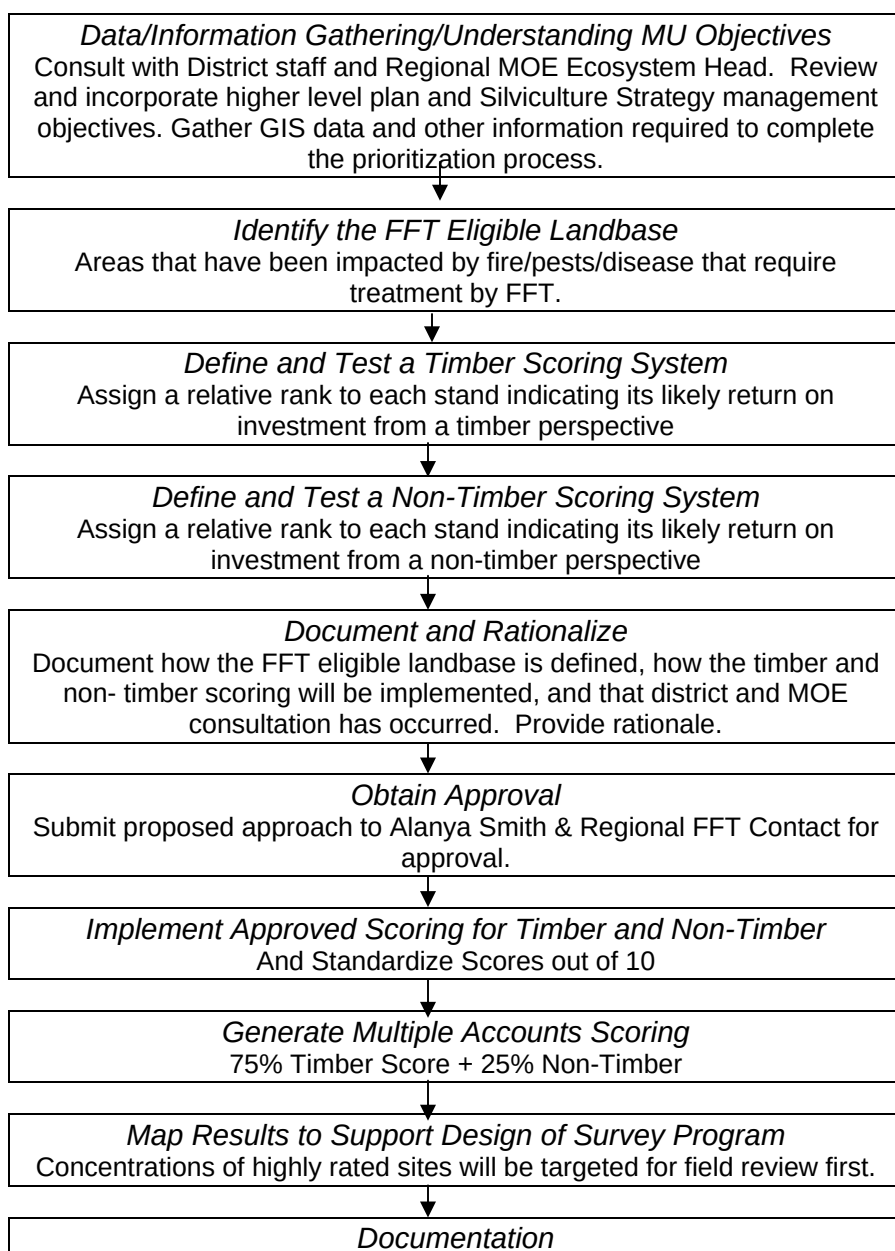
When all potential FFT candidates in a management unit can be assessed prior to making treatment decisions and if budgets are not limiting treatment, this prioritization process may not be necessary.

2.0 Timing

The intent of this process is to develop a survey program that can be implemented during the field season. Ideally the process will be completed to identify and prioritize a survey schedule prior to the summer field season and updated annually as necessary. Examples of factors that suggest an update is required would be new landbase disturbances, new or changing data, and changing program or government priorities/ objectives that would influence the priority scoring.

3.0 Landscape Level Prioritization Process Overview

A flowchart outlining the procedure to prioritize FFT candidate stands is provided below.



Finalize documentation of approach and results and submit to FPB

4.0 Data / Information Gathering

The first step in the process is to gather information and GIS datasets that will be necessary to identify FFT candidate stands and evaluate them for timber and non timber values. The types of information required are discussed under the next three sections. There is no standard to define what data to use, only that the planner/analyst should strive to obtain the most up to date information/data as possible. The planner/analyst **must** consult with the district MFR staff and the MOE Regional Ecosystems Section Head as well as review any higher level plans and Silviculture Strategies for guidance on key objectives of the management unit.

5.0 Identify the FFT Eligible Landbase

The FFT eligible landbase represents the area where FFT reforestation treatments are eligible and likely to be required. This area has the following characteristics:

1. Inside the Crown Forested Land Base (CFLB) and typically outside parks.
2. Stands have been impacted by fires/pests/disease and now require reforestation investments.
3. No other tenure holder has reforestation obligations. These can be sites that have never been harvested and/or sites that are not designated as Free-to-Grow.
4. First Nations have no objections to reforestation treatments².

FFT silviculture investments within the Timber Harvesting Land Base (THLB) are preferred, so a strong weighting is applied to ensure that most priority areas in the FFT eligible landbase are on the THLB. Treatments outside the THLB may take place with appropriate approvals, and usually will be small areas adjacent to larger treatable sites. The highest priority sites are those where treatment benefits both timber and non-timber values the most.

The eligible landbase can be separated into three broad strata: areas impacted by fires, immature areas impacted by forest pests/disease, and mature areas impacted by forest pests/disease. This latter group can be more difficult to address at this time because it is first necessary to ensure commercial interests (salvage, biofuels, etc) will not be exercised in the future and thus incur the silviculture obligations for the site at no cost to the crown. There may be a need to put filters on these mature stands to limit candidates to those that are certain enough to warrant survey effort in the upcoming field season, rather than excluding all mature stands from the population.

The Forest Analysis and Inventory Branch produced MPB impact data and maps for each Management Unit. Data and a suggested process to identify the FFT Footprint can be found here: <http://www.forestsfortomorrow.ca/ThematicMapping/ThematicMapping.html>

6.0 Define and Test a Timber Scoring System

The objective of the timber scoring system is to provide a relative ranking of all FFT eligible landbase from a financial (timber harvest) perspective. This scoring system is meant to identify the probability of sites having high IRR's³ when assessed in the field. High IRR's are correlated

² For efficiency this information would be obtained through existing FFT candidate site review periods. Information may be available spatially or be indicated on a map by a First Nation reviewer.

³ IRR = Internal Rate of Return. IRR is calculated based on the discounted net value of any incremental harvest volume that would be realized if treatment occurred. More information can be found here: <http://forestsfortomorrow.ca/InvestmentDecisionTools/InvestmentDecisionTools.html>

with productive growing sites that will produce significant incremental volume/value with low treatment costs.

Each FFT candidate area is to be evaluated against a set of criteria that provides a timber score. High scores should indicate a high probability of the site having a high IRR when assessed in the field. Low scores should indicate a low probability. All candidates must be assigned a score to allow a relative ranking of candidates from a timber perspective. This is NOT a binary selection process where certain stands are selected as survey candidates and the rest are ignored.

At a landscape level, detailed financial information is not available for each stand so surrogates in GIS datasets are used for predicting outcomes of financial assessments. The reference document titled *Integrating Timber and Non-Timber Values into FFT Silviculture Investment Decisions* (Forsite, April 8, 2008) provides a default set of attributes as the basis of a timber scoring system. The MADA Analyst should use this default as starting point for consistency. It is up to the MADA planner/ analyst, working with the recipient holders to determine what factors best correlate with high IRR's in their area of interest and about factors that are likely to affect future harvesting. **It is important to document and rationalize the factors used in defining the timber score, as well as those found in the list below that are not used.**

Data Elements for Timber Scoring:

- Timber Harvesting Land Base (THLB) – Timber score is zero outside this area. Typically provided by TSR process or Silviculture Type 2 Strategy. Can be approximated using multiple GIS layers and netting down the forested area for non crown ownership, parks and other reserves, inoperable areas, unstable terrain, low productivity sites, non merchantable stands, etc.
- Forest Cover (VEG) data
 - o Site Index – Sites with a higher SI have a better return on investment. Either SIBEC or Inventory SI's can be used when assigning point score. SIBEC SI's give better estimates over a landbase but tend to hide stand level differences with the average values being assigned. Inventory SI's provide the stand level differences but tend to underestimate productivity in general. Inventory SI's should not be used if repression is expected to be occurring on portions of the landbase.
 - o Previous silviculture investment – Sites that have received previous investment are likely good candidate sites for further investment. These can be obtained in VEG history tables or from RESULTS.
 - o Species – May contribute to predictions of natural or advanced regeneration being present.
- Disturbance Mechanism - May want to be able to assess mature MPB impacted stands differently than fires or immature MPB stands.
- Probability of Natural Regeneration – Sites with greater natural regeneration are less likely to be treated. Ecosystem mapping can be used as a predictor if there are any recognized correlations with natural regeneration.
- Proximity to Roads – Sites that require little or no investment for access will have a better return on investment
- Stand Level Economics – Expectations of net stand value (stand value minus cost of access and harvest) tend to have good correlations with IRR in the field. This data is only present in areas of the province where merchantability has been assessed at the stand level.

Once the factors to be used have been selected, scores should be assigned within each factor based on the likelihood of indicating a high IRR site. Continuous scoring ranges (i.e. -(17-Site Index)²) are desired but binning (L=1, M=5, H=10) is acceptable. Negative points can be assigned to indicate a strong negative correlation with high IRR's.

Scoring scales between factors should reflect the user's confidence in the dataset and the perceived strength of correlation with IRR values. For example, the natural regeneration

probability has a strong correlation with IRR calculations but the confidence in the data's ability to identify these sites accurately may be limited – leading to a lower weighting of points for this factor relative to others.

The range of the raw scores for timber is not important as they will be standardized out of 10 later.

Testing the Timber Scoring:

The proposed timber scoring system is to be applied to all FFT candidate stands and then mapped and evaluated for reasonableness. A good check is to ask the following questions:

1. Are the lowest scoring sites actually the least likely to have good IRR's when evaluated in the field?
2. Are there any high scoring sites that are not seen as good survey candidates?

Where necessary, refine the scoring system to better reflect desired outcomes.

7.0 Define and Test a Non-Timber Scoring System

The objective of the non-timber scoring system is to provide a relative ranking of FFT candidates that reflect anticipated benefits to non-timber values from reforestation activities.

Non-timber scores are assigned to the candidate areas using the same process as used for timber values. A key difference is that while some scores are still assigned based on stand level attributes, most are assigned based on the conditions of larger areas that the stand happens to fall within (i.e. watersheds, Ungulate Winter Range area, Landscape Units, etc). These landscape level issues are typically the most important for evaluating risk to non timber values and thus provide context to candidates that fall within them. The further landscape level conditions are away from normal or desired conditions, the higher the risk to the non timber values (and the higher the score assigned to it).

Both stand level values and landscape level values add points toward a total raw score for each candidate area. The scoring will ensure that the areas that will provide the most benefit to non timber values (from reforestation activities) will rise to the top.

As with assigning timber scores, the reference document titled *Integrating Timber and Non-Timber Values into FFT Silviculture Investment Decisions* (Forsite, April 8, 2008) provides a default set of attributes as the basis of a non-timber scoring system. The MADA Analyst should use this as starting point for consistency. It is up to the recipient holder to determine what factors are best used to predict benefits to non timber values. It is important to document and rationalize the factors used, as well as those found in the list below and not used. Local District, Range, Protection and the MOE Regional Ecosystem Head must be consulted in this process. Checking habitat plans/ Higher Level Plans/ Silviculture Strategies etc. and using existing data is important to avoid unnecessary duplication.

Data Elements for Non-Timber Scoring

- Watershed and ECA's – Reforestation of disturbed areas in designated community or domestic watersheds, or any other important watersheds, will benefit watershed health. The higher the Equivalent Clearcut Area (ECA) in the watershed, the larger the benefit. If it can be identified readily, treating stands that fall in the upper elevations (top 60%) of the watershed will provide more benefit than those at lower elevations. Where watershed ECA values are below 20%, short term benefits will be minimal. ECA's are calculated for the entire watershed area and use stand heights to indicate recovery levels (0-100% ECA), and non-productive descriptors in the inventory to indicate natural non-forest (0% ECA) and unnatural non forest (100% ECA). Each stands contribution (ha) to the ECA calculation is summed and then expressed as a percentage of the gross watershed area. More information can be found in Appendix 2 of <http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/wap/WAPGdbk-Web.pdf>
- Known Priority Areas – The First Nation must be contacted to help identify or confirm mapped areas where First Nations have expressed a desire for treatment or areas

where First Nations do not want treatment. These areas will be removed from the candidate population immediately. Special interests may be indicated from stakeholders in the area as well. For efficiency, engagement of these groups would ideally occur during existing FFT candidate review periods.

- Species at risk – Mapped WHA's or other mapping indicating the presence of species at risk (caribou discussed separately below). This non-timber value is unlikely to benefit from timber oriented reforestation treatments so it warrants a **negative score** to push investment away from the sensitive sites unless direction from MoE states otherwise.
- Fire Maintained Ecosystems – The management intent in these areas is typically to reduce stocking so this value is unlikely to benefit from timber oriented reforestation treatments. Thus it warrants a negative score to push investment away from these sites.
- Visually Sensitive areas – Reforestation activities can help to achieve visual green-up sooner than if no treatment occurs. Visual green-up improves the appearance of visually sensitive areas. Evaluating the amount of area within designated VQO polygons that is under 20 years of age gives a general indication of the current level of disturbance. Areas with extensive disturbance will benefit more than areas with little disturbance.
- Community Fire Interface Zones – When coordinated with site prep that manages fuels and fuel breaks, reforestation activities can help to reduce fire risk in interface areas. These zones can be identified by buffering population centers by 10km or contacting Protection Branch and obtaining their mapped Fuel Mgmt Zones.
- Recreation – Based on the assumption that people prefer to recreate in areas that are not disturbed, reforestation will improve recreation values. These areas can be identified by buffering mapped recreation sites and trails by 1 km.
- Riparian Habitat – Assessing how much riparian area within a given watershed has been impacted (logged or burned) indicates the priority for riparian restoration treatments. Evaluation what percent of the forested area immediately adjacent to significant streams (order >1) in each watershed can provide a measure of risk to watershed health and channel stability.
- Biodiversity – A coarse filter approach is used to assess risks to general biodiversity. The higher the risk, the higher the priority to treat candidates within the area of concern.
 - o % early seral by LU/BEC variant: The more early seral (disturbance) present, the higher the risk to general biodiversity. Early seral is defined as <40yrs old and it may be useful to assume that PI leading stands are all early seral (worst case MPB). Target maximum early seral %'s can be found in the Biodiversity Guidebook⁴ or example thresholds can be found in the MADA framework document (Forsite 2008).
 - o % old seral by LU/BEC variant: The larger the deviation from the desired amount of old seral, the higher the risk to general biodiversity. Target old seral amounts can be found in the provincial Old Growth Order⁵. Biodiversity Emphasis Options (BEO) are typically found in the Landscape Unit (LU) datasets. If spatial OGMA's exist, this issue could be evaluated by looking at what percent of the designated OGMA's are still mature or old when PI leading stands are all treated as young seral (MPB worst case).
 - o % of each LU/BEC variant that is productive forest and outside the THLB: The higher the % of a LU/BEC variant in the THLB, the higher the risk to general biodiversity (higher potential for change relative to historical conditions). Risk could be considered low if >50%, moderate if 25-50%, high if <25%, and very high is <10%.
- Terrestrial Wildlife Values

⁴ <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm>

⁵ http://ilmbwww.gov.bc.ca/slrp/lrmp/policiesguidelinesandassessments/oldgrowth/pdf/Old_Growth_Order_May18th_FINAL.pdf

- o Mule Deer Winter Range - Reforestation activities will help ensure thermal cover habitat exists in the long term. Desired amounts of thermal cover habitat are specified in higher level plans, GAR orders, or Section 7 notices. The larger the deviation from the desired amount of habitat, the higher the risk (and points) – although the benefits from treatment will only be realized in the long term.
- o Moose Winter Range - Areas impacted by MPB next to wetlands would benefit in the longer term from cover re-establishment if cover is lacking. Refer to desired cover requirements in strategic planning documents for the unit.
- o Caribou Habitat - Reforestation will help to provide cover habitat in the long term. Scoring may be higher than for other long term benefits because of Species at Risk status. Scoring should reflect the amount of habitat desired relative to what actually exists – the larger the deviation, the higher the risk.
- o High Value Grizzly Habitat - Establishing cover in these areas is seen as negative because berry production is key. Possibly some benefit if berry production is shade dependant.
- Aquatic Wildlife Values - Restoration of impacted riparian areas will improve habitat for aquatic wildlife in short term.

Considering the factors chosen to represent non-timber values, scoring should work to:

- Favour sites where the values are most directly linked to benefits from reforestation activities.
- Favour sites that will provide short term benefits over long term benefits. Long term benefits are inherently more risky as the new stand must grow and persist on the landbase for a long period of time before benefits are realized.
- Consider current conditions when assessing whether benefits will accrue. For example, reforestation in a community watershed that has little disturbance will provide little benefit to water values, while treating a highly impacted watershed is likely to result in short term benefits to water values. Current conditions could include projections of near term MPB if deemed appropriate.
- Avoid sites where there is a negative relationship between reforestation activities and non timber values. (i.e. High value grizzly foraging habitat – maximizing berry production is key so reforestation is considered detrimental) Always defer to the professional advice of the MOE representative on what sites to avoid.

For example, candidate stands in Community Watersheds with high ECA's should receive higher scores than candidate stands in UWR with little current disturbance because benefits are shorter term and more directly linked to the value of interest.

Refer to the MADA reference document for more detail/discussion on these issues.⁶

The range of the raw scores for non-timber is not important as they will be standardized out of 10 later (see section 10 below). For example, the highest possible raw timber score could be 105 while the highest possible non timber score could be 55. This difference is completely inconsequential as each will score 10 out of 10 once standardized and they then can be compared directly.

Testing the Non-Timber Scoring:

The proposed non-timber scoring system is to be applied to all FFT candidate stands and then mapped and evaluated for reasonableness. Review the results with local MOE and MFR District staff and where necessary, refine the scoring system to better reflect desired outcomes.

A good check to do is to ask the following questions:

⁶ Integrating Timber and Non-Timber Values into FFT Silviculture Investment Decisions (Forsite, Dec 2, 2008)
<http://www.forestsfortomorrow.ca/ModellingDecisionSupportTools/MultipleAccounts/MultipleAccounts.html>

1. Are the lowest scoring sites really the least likely to improve non timber values if treated?
2. Are the highest scoring sites most likely to improve non-timber values if treated?

8.0 Document and Rationalize

Once the scoring system has been defined, tested and refined, recipient agreement holders are required to document the process and rationalize their approach. Documentation should include the GIS data layers, and the timber and non timber scoring methodology with rationale. Rationalization is particularly important where there is a variation from the published MADA framework (Forsite 2008). Data elements in the framework that are not included in the application of the MADA, must be identified and a rationale included.

Documentation is important to provide an audit trail of how FFT resources are allocated within management units and will also allow for an annual 'continuous improvement' process to be implemented.

9.0 Submit for Approval

The documentation described above must be submitted to the FFT Regional Lead and/or the FFT MADA manager for approval.

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Forest Practices Branch
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This document will provide the framework for the final deliverables and should outline the priority scoring methodology. The FFT MADA manager will ensure that the approach also delivers on the Province's objectives for the MADA process.

10.0 Finalize Scoring

Once approved, the Timber and Non Timber scores are finalized and then standardized separately out of 10 to allow meaningful comparison between timber and non timber values.

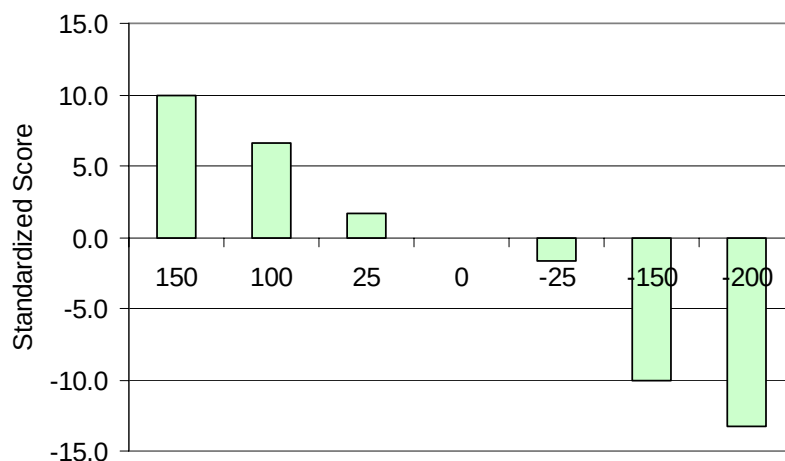
To standardize scores out of a maximum of 10:

1. Determine the maximum score (i.e. timber or non timber) from all candidates.
2. Divide each candidate's score by this maximum value.
3. If the candidate had a negative score, leave it negative. This can result in negative numbers in excess of 10 and this is intended. Large negative scores are meant to be strong deterrents to achieving high priority rankings. Standardizing everything between 0-10 (no negatives) is avoided in this situation because of the loss of differentiation in the positive values and the reduction in the impact of the negative values.

Example:

Candidate Scores

Raw	Standardized
150	10.0
100	6.7
25	1.7



0	0.0
-25	-1.7
-150	-10.0
-200	-13.3

11.0 Assigning a Multiple Accounts Score (MA)

A final Multiple Accounts Score is derived for each polygon using the standardized timber and non-timber scores as shown below.

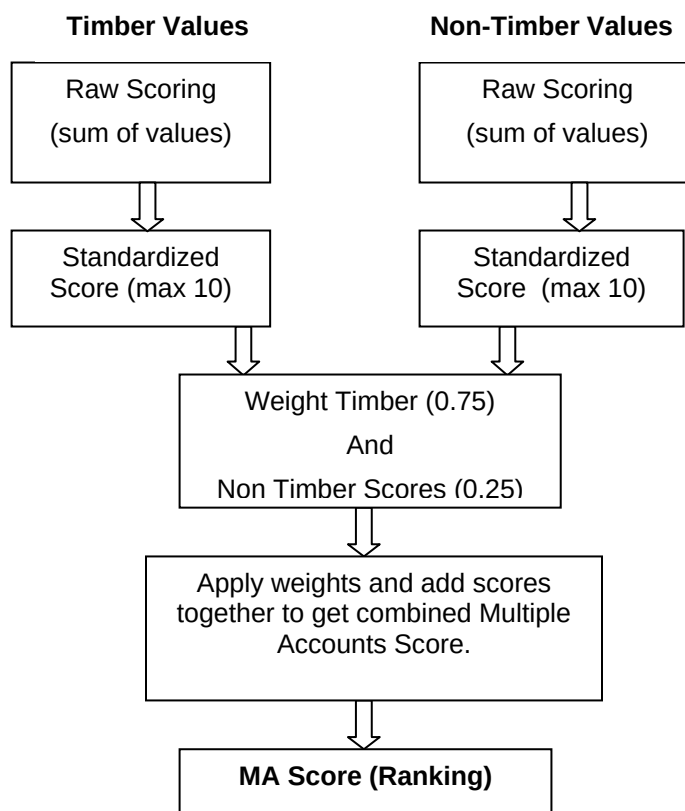


Figure 1. Multiple accounts scoring flowchart

All MADA analyses must use the following weighting of timber and non-timber scores:

FFT Program Multiple Accounts Weighting:

Timber = 0.75 (75%) and Non Timber = 0.25 (25%)

The choice of a 75/25 weighting reflects the FFT program objectives, and ensures that the highest priority sites for field investigation will be those with high timber and high non timber scores.

12.0 Map Results to Support Design of Survey Program

This final multiple accounts scoring will be used to prioritize field survey work. Maps should be created that illustrate the relative scoring of each FFT candidate area so that survey design can target concentrations of high priority areas. The intent is not to ignore adjacent lower priority candidates during survey design. Ideally, crews are sent to areas of high concentrations but also review logical extensions around these areas to maximize survey efficiencies. The maps are also important for communication with MOE, district MFR staff, First Nations and others.

Examples of these map products can be found at

<http://www.forestsfortomorrow.ca/ModellingDecisionSupportTools/MultipleAccounts/MultipleAccounts.html>

Maps produced through the MADA process must include, but are not limited to:

- Timber Scoring by quartiles
- Non-Timber Scoring by quartiles
- UWR Thermal Cover Risk
- Other map products as requested by MOE and First Nations and stakeholders
- Final Combined Scoring by quartiles (75/25)
- Watershed Risk (ECA)
- Landscape Biodiversity Risk (Early Seral)
- Other map products as required for FFT planning

13.0 Deliverables for Part A

Final Report

The documentation submitted for approval in section 9.0 is to be updated and finalized as a record of the assumptions used in the analysis and the rationale behind them. There should not be significant changes from the scoring that was approved. This final document should also describe the results obtained using graphs, maps, tables. Examples of section headings to be included in the final report may be:

- Subject area
- FFT Eligible area – include a complete list of factors and rationalization used to define the area
- Priority Scoring Methodology
 - Timber and Non-Timber Prioritization / Scoring
 - Rationalization for changes to Timber and Non-Timber Scoring
- Multiple Accounts Scoring
- Testing completed
- Results
- The Tactical Plan

GIS Data and Mapping

The final GIS resultant dataset and metadata is to be submitted to the FFT contract manager. All GIS products are to be consistent with MFR GIS standards.

- ArcInfo E00 or Geodatabase with topology built and clean with no gaps or overlaps
- BC Albers Projection
- No Dangles
- 2m Fuzzy Tolerance

Part B: Determination of FFT Treatment Eligibility

1.0 Description

The final decision to treat occurs when a candidate area has been field checked and detailed stand level data has been obtained. If an IRR is determined to be at least 2%, the area is automatically eligible for treatment by FFT, subject to the referral process. If the area has an IRR <2%, Table 1 can be used to justify a treatment decision based on the presence of specific non timber values. In general, sites with IRR<0% will be funded from separate funding envelopes aimed specifically at non timber values (FFT funds or other funds). Those cases should be brought to the FFT manager for consideration. Circumstances not in the table may still be eligible for funding upon review by an FFT manager. Prescriptions should reflect the values and conditions of the site and its surrounding landscape context.

Table 1 is only applicable for areas within the THLB⁷. Small areas of Non THLB (<5% of the total treatment area) are eligible for treatment when they are productive sites mixed in with, or adjacent to, THLB sites planned for treatment (e.g. riparian areas). More significant areas of non THLB will require FFT manager approval.

The table will be reviewed by FFT managers annually as part of the continuous improvement process.

2.0 Documentation

An Excel form has been created from Table 1 to capture the site information. If non timber values are used to rationalize treatment of a site, complete and keep a copy of the form on file for each site as documentation of the decision. Submit forms electronically to Alanya.C.Smith@gov.bc.ca

3.0 Application of the MADA Treatment Eligibility Table

1. Determine the appropriate column in Table 1 for the site in question based on its IRR.
2. Check all rows in the table for values that match the site's circumstances. Wherever a match is found, circle the "Yes", "No", or "-" found in the appropriate column and row.
3. If a "No" was circled, treatment should be avoided, even if other values exist, because there is a negative link between treatment and a non timber value.
4. If the absence of "No" values, any "Yes" value indicates that the site is eligible for treatment and no referral to an FFT manager is required.
5. "-" values indicate that a site is not eligible for treatment but it does not prevent other values from making it eligible.

⁷ The Timber Harvesting Land Base (THLB) is the area that is expected to support economic timber production now or in the future. An approximation of the THLB is mapped for planning purposes but it is best assessed in the field after understanding the cost of access/logging and the value of the crop of timber that is on (or will be on) the site.

Select IRR column and circle appropriate 'Yes', 'No', and '-' circumstances.

START:

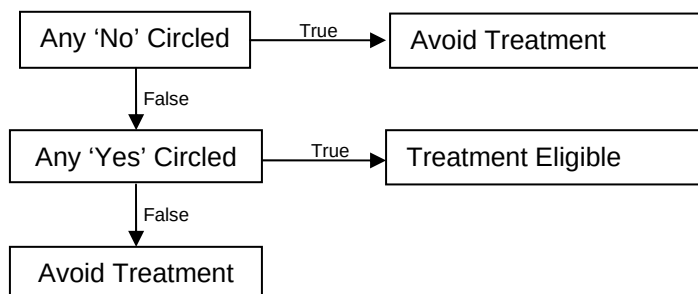


Table 1. FFT Treatment Decision Matrix for Areas with <2% IRR and Specific Non Timber Values

Non Timber Value	Treatment Decision*		
	THLB: IRR <0%	THLB: IRR 0-1%	THLB: IRR 1-2%
First Nations Concerns (spiritual, archaeological, etc)	No	No	No
Rare Ecosystems / WHAs ⁸	No	No	No
High Value Grizzly Bear Habitat (Mapped forage sites)	No	No	No
High Value Grizzly Bear Cover Habitat (e.g. Adjacent to avalanche tracks)	-	-	Yes
Fire Maintained Ecosystems [Open Range or Open Forest] ⁹	No	No	No
Reforestation of important impacted watersheds ¹⁰ (with a net hydrological benefit).	-	Yes	Yes
Reforestation of impacted riparian areas associated with high value fish streams or species at risk habitat (fish and tailed frog). Includes logical block areas surrounding riparian area.	-	Yes	Yes
In a Community Interface Area and treatment will contribute to a reduction in fire hazard (reforestation treatments only).	- ¹¹	Yes	Yes
First Nations Non Timber Priorities (identified geographic areas)	-	Yes	Yes
Recreation Values (impacted areas adjacent to rec sites and trails)	-	-	Yes
Impacted (>15%) Visually Sensitive Areas (Preservation, Retention, or Partial Retention VQO's)	-	-	Yes
OGMAs (supported by local MoE)	-	Yes	Yes
Spotted Owl Habitat	-	Yes	Yes
High Value Caribou habitat with large contiguous disturbances (supported by MoE).	-	Yes	Yes
Deer Winter Range area (wetter ecosystems – mod or deep snowpack where cover habitat is deficient)	-	Yes	Yes
Important Moose Habitat adjacent to wetlands with substantial	-	Yes	Yes

⁸ In a very few circumstances, an FFT treatment may enhance a WHA, eg, tailed frog. MOE should be specifically consulted if such circumstances exist in a particular unit. For work that could affect a species or ecosystem at risk, or an identified wildlife (IW) species see the Species and Ecosystems at Risk LBIP Standard : http://www.env.gov.bc.ca/wld/documents/fia_docs/sar_statement.pdf

⁹ Alternative funding sources should be sought, e.g. Ecosystem Restoration Program.

¹⁰ For example, fisheries sensitive watersheds, community or domestic watersheds with ECA's > 20%. Alternatively, local MOE staff could be asked to review circumstance and decide if they support treatments based on an accounting of the positive and negative impacts of completing work on the site.

¹¹ Alternative funding sources should be sought, e.g. fuel management funding.

amount of cover removed.			
SARA species not mentioned in this table if supported by MoE	-	Yes	Yes
Unstable terrain where reforestation activities will incrementally reduce risk of landslides. – consultation with engineer	Yes ¹²	Yes	Yes
A Type 2 analysis has shown treatment of a particular set of stands to be useful in mitigating timber supply impacts, eg, by reducing regen delay, or reducing constraints to harvesting.	-	Yes	Yes
Areas adjacent/ in close proximity to an approved FFT site where economy of scale can be achieved	Yes	Yes	Yes
Terrain with high potential for scouring or soil erosion that will have a significant impact on critical non timber values (identified by hydrologist, geoscientist or soil scientist) ¹³	-	Yes	Yes

4.0 Deliverables for Part B

Keep on file the documentation tables associated with a site.

¹² In cases that present a risk to human life or property.

¹³ Mainly applies to fire areas where prompt reforestation can reduce hydrophobicity and associated changes in runoff; likely reforestation is conducted along with other restoration treatments.