

20-Year Forest Management Plan Guideline

Manitoba Agriculture and Resource
Development 2021

Foreword

Manitoba's Forest Practices Committee, led by the Forestry and Peatlands Branch, developed the 20-Year Forest Management Plan (FMP) guideline. Committee membership consists of representatives from various Manitoba government departments and branches, Manitoba's forest industry, as well as other stakeholders, including Ducks Unlimited Canada and University College of the North. Guidelines are reviewed every five years to ensure submitted FMPs are consistent with provincial policy, practices and standards for forest management. Additionally, guidelines are made available for public comments prior to completion.

Companies who hold or are seeking a Forest Management Licence (FML) are required by their Forest Management Licence Agreements to develop a 20-year FMP. FMPs must be reviewed and updated at 10-year intervals. Subject to the faithful performance of the conditions of the FML agreement, and submission of an acceptable FMP update, the FML agreement can be renewed for an additional 10 years (therefore extending the agreement to the full 20 years once again).

Twenty-Year FMPs are submitted by the proponent to the Forestry and Peatlands Branch. The FMP is reviewed by an internal Technical Advisory Committee (TAC) and the public. The approval of a 20-Year FMP is the responsibility of the Director, Forestry and Peatlands Branch, Manitoba Agriculture and Resource Development. These guidelines provide for a single approval process for FMPs that meets the requirements of The Environment Act and The Forest Act, in accordance with section 11(2) of The Environment Act. This guideline is written to help proponents obtain an approved FMP. The proponent has the discretion to assemble the FMP in a form they prefer, provided the required information is contained within the FMP.

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1.0 Forest Management Planning in Manitoba

Planning for the management and use of the forest resource is essential to ensure the sustainability of Manitoba's forests. The purpose of this guideline is to provide direction to the proponent to develop an FMP that is consistent with Manitoba's commitment to sustainable forest management. The forest management planning process will be robust, comprehensive, transparent, and accountable in support of a healthy environment, society and economy. This guideline document provides a framework for the development of a 20-year FMP.

1.1. FMP Principles

The planning process for forest management in Manitoba is based on the following principles:

Sustainable Forest Management

Sustainable Forest Management is management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural opportunities for the benefit of present and future generations.

Manitoba recognizes that the practice of sustainable forest management requires different skills and a broader knowledge base than sustained yield timber management. The ability to prepare and implement FMPs based on the concept of sustainable forest management will evolve over time as new data is available, research is carried out, new skills are acquired and knowledge about forest ecosystems is increased.

Managing Forest Ecosystems

A forest ecosystem is the community of fauna, flora and other organisms, dominated by trees, and the interactions with their environment. Forests will be managed for ecosystem integrity, long-term forest productivity and biological diversity, while providing an ecologically sustainable flow of natural resources and ecosystem services. FMPs will recognize relationships among the various ecosystem components and their functions and consider the impact of activities on the ecosystem.

Collaboration and Participation

The approach to forest management planning must be open and consultative. The planning process should include extensive and ongoing involvement of Indigenous communities, stakeholders and the public. In preparing plans, the proponent will collaborate with appropriate government agencies, other resource industries, Indigenous communities, stakeholders and the public at the earliest stages of the development proposal. The proponent will provide various engagement and information sharing opportunities during the development and implementation of the FMP.

The province also has a role in presenting government policy, legislation and objectives for sustainable management of Manitoba's forest lands and resources. The Manitoba government recognizes its legal duty to consult with Indigenous communities about any action or decision that might adversely affect the exercise of an Aboriginal or treaty right. This is consistent with the Supreme Court of Canada decisions that clarify the meaning of section 35 of The Constitution Act (1982).

Adaptive Management

Scientific knowledge will continue to expand, improving our understanding of how ecosystems work and how they are influenced by human activity. By remaining flexible and allowing for the incorporation of new knowledge and changing conditions, forest managers can use new approaches to sustainable forest management and improve the results over time.

Forest management planning is a dynamic process. Over its lifetime, an FMP will:

- incorporate knowledge obtained through research initiatives and operational trials
- incorporate feedback received from engagement with Indigenous communities, stakeholders and the public
- capture enhancements to forest management approaches, resulting from new national direction, provincial policy or legislative changes
- result in improved performance as changes are made, based on feedback from performance monitoring
- become more effectively linked with operational planning, ensuring operations are consistent with objectives in long term plans
- use the updated landbase (date stamped) that was employed in developing the Base Case to generate FMP tables and maps provided in the FMP.

The Director of Forestry and Peatlands Branch will advise the proponent of any subsequent course of action, in the event of large landbase alterations due to natural causes (e.g. fire, insect or disease outbreaks), or social, economic and administrative changes (e.g. Treaty Land Entitlements, FML boundary change).

Consideration of all Values

Management of forest values is the responsibility of the Crown. Ecological and social values must be considered by the forest industry when developing long-term plans. Forest management planning must also recognize current resource commitments as the basis for future planning and decision-making. Manitoba recognizes the need to manage forest resources for environmental, social and economic values. Some specific examples of values include:

- cultural sites
- wildlife trees
- biodiversity
- recreation
- non-timber forest products
- heritage resources
- water quality
- soil stability

Monitoring and Reporting

Monitoring is required to determine the progress being made towards achieving objectives in the FMP. Monitoring activities and results will be summarized in various reports such as operating plan reports,

the forest reports and certification reports. Reporting on results provides a way to measure progress and a measure of accountability on the effectiveness of attaining targets by planned strategies.

1.2. Overview of planning and reporting for Manitoba's Crown land forests

The FMP is a long-term strategic plan that guides two-year operational plans. There are separate guidelines for the Forest Management Operating Plans (FMOP) and parallel reporting requirements. FMOPs are completed for two-year periods starting with year one and the FMOP reports are submitted one year after the FMOP term. Additionally, reports are required for every five-year period of the FMP (Figure 1). At year 10, an assessment is completed to ensure the FMP is on track to achieve targets set out during the planning period.

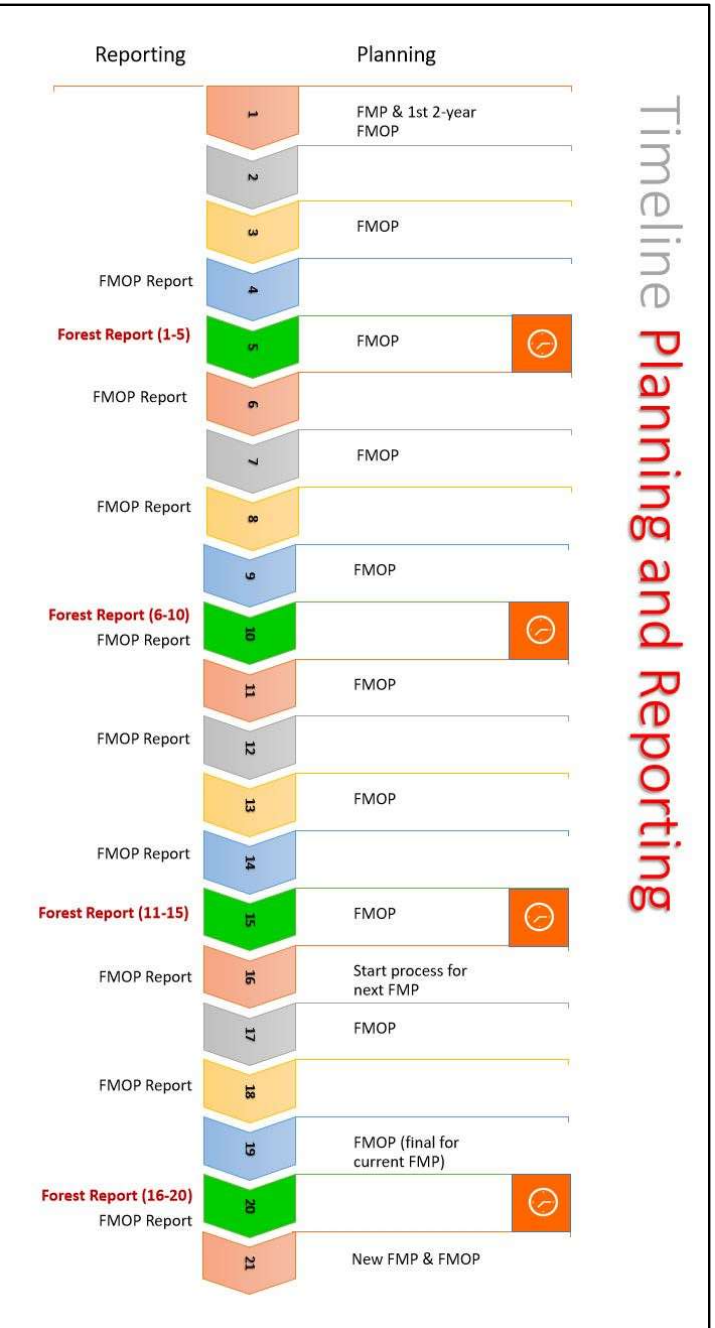


Figure 1 - Timeline of Manitoba's 20-year Forest Management Planning and reporting requirements.

1.3. FMP development and approval process

FMP development starts approximately five years prior to the current FMP period ending. The first step is to establish a planning team and submit the Terms of Reference for approval. Once that is complete, plan development begins. Engagement of Indigenous communities, stakeholders and the public is on going from the initiation of the FMP through to approval. Figure 2 highlights the broad steps, deliverables and key engagement opportunities including opportunities to have input on objectives and values as well as reviewing FMP components.

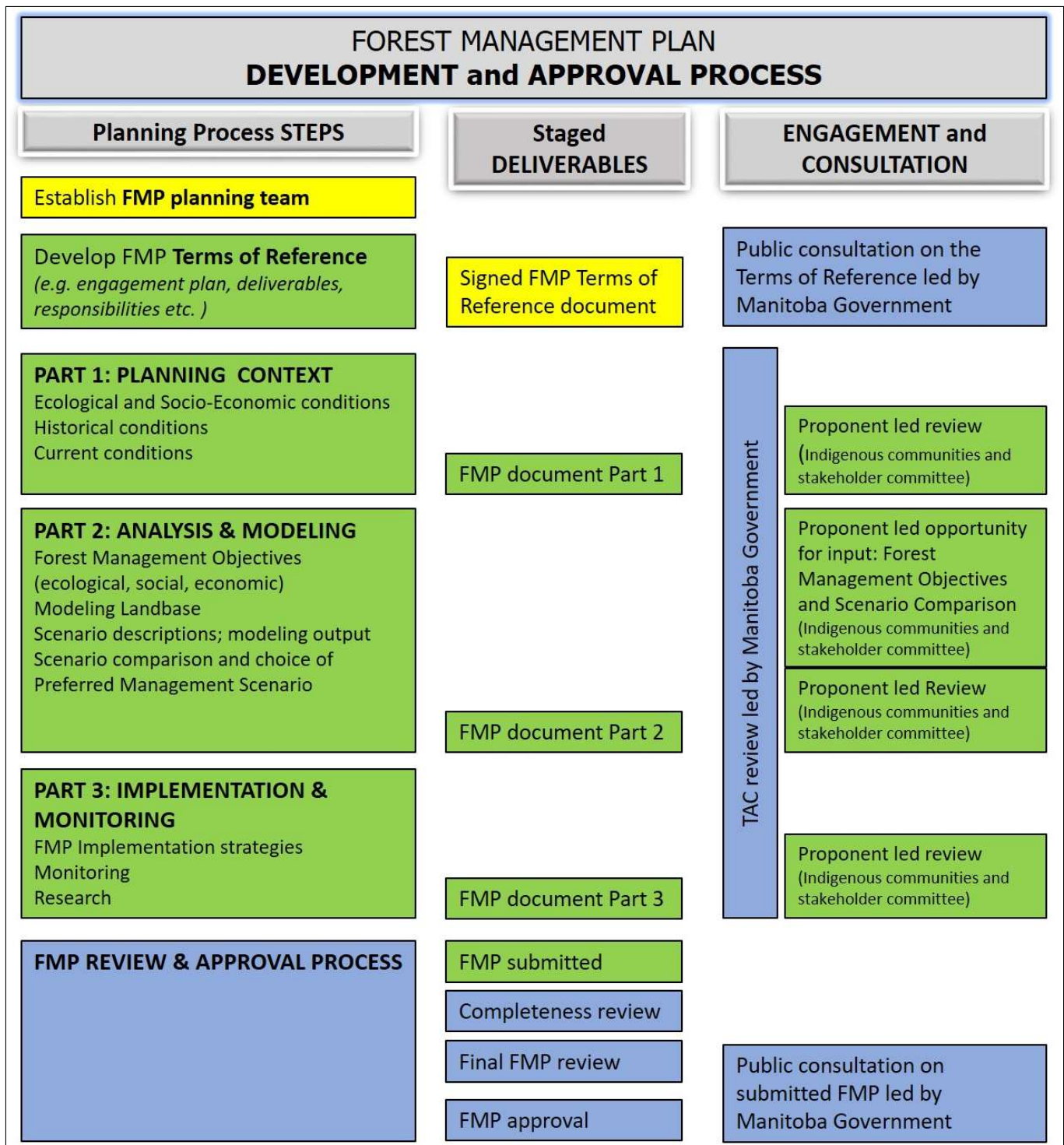


Figure 2 - Forest Management Plan development and approval process¹ (Blue is MB Government responsibility, green is proponent responsibility and yellow is joint responsibility)

¹ Crown – Indigenous consultation is a separate process led by the Forestry and Peatlands Branch and therefore not included in this figure.

2.0 Planning Process Steps

2.1. Establish an FMP Planning team

The FMP is prepared by a plan author who is supported by an interdisciplinary planning team. Members of the planning team usually consist of individuals with expertise in forest management, forest modeling and analysis, community consultation and engagement, wildlife and are familiar with the FMP's geographic area. The level of involvement of each planning team member varies depending on their area of expertise. Each planning team will include an FMP coordinator from the Forestry and Peatlands Branch.

FMP Author

- The proponent will appoint a planning team author, who will be the lead on overall development and submission of the FMP.
- The FMP author will be the primary contact with the Forestry and Peatlands Branch
- The FMP author will chair all planning team meetings.

Forestry and Peatlands Branch FMP Coordinator

- The FMP coordinator will act as point of contact between the Forestry and Peatlands Branch and the FMP author
- The FMP coordinator will be the recipient of all deliverable submissions and coordinate the staged review and approval of the FMP
- Speak with one voice concept – if a concern arises, the FMP coordinator will facilitate internal government meetings to have clear direction that is later communicated to the FMP Author

Planning Team

- The proponent and FMP coordinator will select representatives from their organization(s) to participate on the planning team.

3.0 Terms of Reference

The Terms of Reference outline the process to be used for developing FMPs. They will be used by both the proponent and Manitoba as a planning aid to guide the development process and include timelines. Approximately two years prior to FMP submission, a draft Terms of Reference document is to be circulated to the Technical Advisory Committee (TAC), Indigenous communities, stakeholders and the public for review and comment. Comments are then evaluated and the Terms of Reference finalized and signed by the proponent, Director of Forestry and Peatlands branch and Director of Environmental Approvals branch. The Terms of Reference may be modified when both the Province and the proponent agree modifications are required. The signed Terms of Reference should be included as an appendix within the FMP.

The Terms of Reference should include:

- a definition and description of the geographic area for which the FMP is being developed
- term of the FMP (typically 20 years)

- FMP author name and affiliation
- FMP coordinator name and affiliation
- names, position titles and organizations represented for all planning team members
- topics of potential impact on the Forest Management Plan
- dispute resolution process for disagreements between planning team members, including who participates at each stage of resolution
- designated FMP approver from Manitoba
- detailed timeline of FMP development and approval with key milestones identified
- scope of cumulative effects
- scope of wildlife habitat models for regionally important species
- key data sets and modeling approaches to be used, including:
 - strata to be used in the FMP strategic modeling
 - yield curves

Manitoba will provide:

- date of FMP submission to Forestry and Peatlands Branch
- details of the government review process
- proposed FMP approval date
- details of the public consultation (dates and actions required)
- Manitoba's Crown-Indigenous consultation process (timelines and communities), including proponent's role in providing information for consultation
- confirmation that the suite of regionally important species (plant and/or animal) proposed are acceptable
- current policies and guidelines to be considered with respect to climate change adaptation
- confirmation that the values selected for the cumulative effects are acceptable
- available information regarding other resource uses
- other relevant land base management plans
- natural disturbance data (fires or forest health)
- modeling land base, updated to a mutually-agreed-upon date
- wood supply information and/or analysis (base case)

The proponent will provide:

- an engagement plan
- the planning units they intend to use throughout the FMP
- the selected regionally important species to be considered in the FMP.
- a request for information regarding other resource uses and the date the information is required.

4.0 Engagement Strategy

Engaging the public, Indigenous communities and stakeholders is an essential element to the development of the FMP. The proponent will provide opportunity for meaningful participation in plan development through information sharing. This will assist the proponent in developing an FMP that reflects diverse information and values received from Indigenous communities, stakeholders and the public.

Formal engagement opportunities should be provided throughout the various stages in the planning process. This will be accomplished through the development of an Engagement Plan by the proponent. The engagement plan will demonstrate how the proponent intends to provide opportunities for Indigenous communities, stakeholders, and the public to share information and identify values to support the development of the FMP.

4.1. Engagement Plan

The Engagement Plan will be developed in the terms of reference. At a minimum, the Engagement Plan must include the following information:

- a list of Indigenous communities, stakeholders (advisory groups, associations, non-government organizations, etc.) and the public that the proponent intends to engage
- the location and the general timing of proposed meetings
- the level of engagement the proponent intends to undertake with each group to provide meaningful input to develop the FMP

Given the ongoing clarification the legal system provides regarding Crown consultation with Indigenous communities, Manitoba recommends the proponent meet with Forestry and Peatlands Branch staff to discuss how they intend to engage Indigenous communities in the FMP planning process.

4.2. Minimum Requirements for Engagement

To help facilitate an exchange of information with the public, Indigenous communities and stakeholders, the proponent will provide information on the following aspects of the FMP:

- information to assist in a general understanding of the FMP
- management objectives
- wood supply, modelling and scenarios
- summaries of resource information (e.g. forest inventory)
- proposed methods to identify and collect values in the forest
- proposed operating areas
- proposed road access development
- monitoring

Note that not all attributes of the FMP will be available at each stage of engagement because of the iterative nature of the plan development. For this reason, it is important that the proponent engage regularly throughout the FMP planning process and after FMP approval.

4.3. Plain Language Summary

Once the FMP is complete, the proponent must prepare a plain language summary of the FMP. The plain language summary will be used to communicate key concepts and FMP information to the public, Indigenous communities and other stakeholders in an easy-to-understand manner. The plain language summary will be used in both the engagement and Crown-Indigenous Consultation processes to provide a less technical and less detailed synopsis of the FMP.

4.4. Engagement Reporting

The 20-Year FMP must include a section that summarizes the proponent's engagement process with the public, Indigenous communities and other stakeholders. The summary must include the information listed below:

- a description of the engagement processes and activities with each group
- a list of the input received
- a description of how concerns raised have been addressed in the FMP
- a description of how the proponent will establish on-going engagement through FMOPs and other processes
- an appendix that includes:
 - details of when and how the engagement occurred
 - documentation of information and materials shared

5.0 Stakeholder Advisory Committee

A stakeholder advisory committee must be established, including representatives from across the FML area, to ensure views and concerns regarding other interest and values are heard throughout development and implementation of the FMP. The stakeholder advisory committee will also be consulted when the proponent is developing or revising the required standard operating guidelines.

6.0 Executive Summary

The proponent must prepare an executive summary of their FMP. This will provide an overview of the FMP in a clear and easy to understand manner. Executive summaries may be completed for the entire FMP or for each chapter.

The following sections outline the required components within the FMP. These guidelines are for required content, but the proponent has the discretion to develop FMP components as best suited for their FMP area. Each component could constitute a chapter, or simply be contained in other chapters throughout the FMP.

7.0 Forest Management Plan Requirements:

Part 1 - Planning Context

These sections will contain information that establishes the context within which the FMP has been developed.

7.1. Forest Management Licence Area Description

The proponent must provide information that describes the forest area, how it is administered, historic forest conditions, current forest conditions and other uses within the Forest Management Licence (FML) area. Documentation should include maps at an appropriate scale, tables, graphs, lists and descriptions as necessary.

7.2. Ecological Description

A physical description of the FML area is required. It should include a description on:

- climate
- soils
- surficial geology
- terrestrial and aquatic flora and fauna
- water resources
- wetlands
- physical infrastructure
- protected areas

Historical Forest Description

The FMP must discuss the natural and anthropogenic processes that occurred within the planning area in the past. This information is important for understanding the current forest condition.

This section must contain information on past forestry operations. The discussion will be accompanied by maps at an appropriate scale and/or tables to describe all past forest management activities, for an updated inventory. This information will act as a point of reference for linking past and proposed activities.

The maps and/or tables should include at a minimum:

- existing access developments, including road class, ownership, status (for example active, retired, rehabilitated), and stream crossings
- harvested areas
- renewal activities, such as areas scarified for natural regeneration, areas planted, stand tending (including information on vegetation management programs) and renewal surveys
- history of natural disturbances, including fire, insects and disease

Current Forest Description

A description of the current condition of the forest provides the basis for planning the use and management of the forest resource and establishes a benchmark for monitoring and reporting. Current forest condition must be described in terms of forest structure, composition and function.

Information on the current condition of the forest must include:

- a detailed description of the forest resources inventory classification for the land base by strata, and/or forest type and changes from previous forest resource inventories
- a description of landscape diversity

7.3. Socio Economic Conditions

Some productive Crown forest lands within the boundary of the FML area will have been previously allocated or committed for uses other than forestry. Commitments such as protected areas, Treaty Land Entitlements (TLE), or other Crown land designations within the boundaries of an FML area may be excluded from forest management activities.

These commitments may influence forestry activities during the planning period, or planned forestry activities may have potential to affect uses on committed lands. The FMP will recognize these commitments (designations, claims or agreements) and describe the proponent's strategy for addressing any related issues.

Other resource uses should be described in terms of local, regional and provincial significance. All pertinent existing and proposed land use activities the proponent is aware of within the planning area should be described. Activities may include:

- hydroelectric development
- parks and recreational areas
- protected areas
- mining
- peat harvesting
- agricultural
- utility corridors
- highway development

The proponent will describe:

- From available data (e.g. Statistics Canada) the social and economic conditions on the FML
- The economic contribution by the proponent's mill to the province
- other land base management plans, if any, provided by Manitoba contained in the terms of reference
- Any recreational, cultural or heritage² resources that contribute to the socio-economical conditions
- Communities' Economic Development policies

² Information such as the location of sensitive heritage resources should be kept confidential.

The information required regarding other resource uses will be provided by Manitoba. For organizational purposes and clarity, the proponent may organize the requested information and date the information is required in a table in the terms of reference.

7.4. Forest Administration

The proponent will provide an explanation of how forest lands within the FML are organized for administrative purposes.

This should include:

- FML area boundaries
 - forest sections
 - forest management units
 - provincial forests
 - parks
 - areas of special interest (ASI)
 - designated wildlife lands (e.g., wildlife management areas and refuges)
 - ecological reserves
 - operating areas
 - ecoregions
 - ecozones
 - status and ownership
- a digital map as well as data presented on a map suitable for display
- quota holders, timber sales, special allocations and other third-party operations
- forest certification system(s) employed, as well as summaries of previous audit results
- an overview of how overlapping licensees and quota holders access their approved volumes.

7.5. Corporate Overview and Facility Description

The proponent will provide of its organization and facilities.

This should include:

- The overall project, existing and/or proposed, will be described in terms of:
 - facilities
 - production capacity
 - wood supply requirements (including species utilization)
 - nature of products produced and market(s)
- Information about the company will be provided, including:
 - company goals
 - corporate structure (staffing and organization)
 - operating mandate
 - management philosophy
 - the broad policies under which the company operates
- higher level values (biological, cultural, heritage, social and economic)

7.6. Legislation and Policy

The FMP will refer to government legislation, policies, plans and agreements that provide current direction for forest management. The proponent will:

- list in an appendix all relevant federal and provincial legislation, policy and direction from other sources. This includes acts, regulations and guidelines that must be followed and are relevant to forest management. The appendix will also:
 - include a discussion on how the FMP is addressing the integration of recovery plans for provincial and federal species at risk that occur within the licence area.
 - include a discussion on how the FMP will address potential impacts to known and unknown heritage resources within the licence area.
- identify requirements and responsibilities under their FMLA, as they relate to planning and management obligations

7.7. Quota Holders, Timber Sales, Special Allocations and Third-Party Operations

Other timber disposition holders (e.g. quota operators) within the FMP area will be given the opportunity to participate in the development of the FMP. The proponent must involve third-party operators at key stages of FMP development and document their involvement in the FMP.

7.8. Certification Audits

The proponent may voluntarily undertake independent third-party forest certification audits. Each forest certification system developed criteria upon which a certification decision is assessed. The applicable indicators used during certification should be stated in the FMP. A publicly available copy of the most recent certification audit should be placed in the appendix of the FMP, and annual certification reports must be made available to the Forestry and Peatlands Branch when requested. The following forest certification systems are currently applicable in Canada:

- Canada Standards Association (CSA)
- Sustainable Forest Initiative (SFI)
- Forest Stewardship Council (FSC)

8.0 Forest Management Plan Requirements: Part 2 – Analysis and Modelling

Analysis and modelling is used to improve forest management by representing the forest ecosystem and dynamics within. Modelling improves forest management by helping to understand the impacts forest activities have on long-term sustainability of ecological, social and economic values.

8.1. Resource Analysis

The process used in developing the FMP must include:

1. an updated land base to an agreed-upon date
2. analysis of two or more scenarios of ecosystems in the FMP's area; the future projections should be two forest stand rotations (typically 200 years)
3. analysis of selected and mutually-agreed upon resources and habitat elements (*e.g.* wood volumes and wildlife habitat). Note that these habitat elements must be linked to strata or ecosystems in the update land base to be modeled
4. strategic modeling period can be either five-year or 10-year periods
5. spatial harvest layout over a 20-year period as map(s) and summary table(s)

The Forestry and Peatlands Branch will endeavour to supply the proponent with a collaborative base case wood supply analysis. If the base case is not completed by the time the Terms of Reference for the FMP are submitted, the Director of Forestry and Peatlands will give written specific instructions to the proponent on how to proceed in a timely manner.

The Forestry and Peatlands Branch may co-operate with the proponent in securing other independent analyses to produce a scenario that may assist the proponent in dealing with a specific issue (*e.g.* caribou habitat).

The strata utilized in the proponents' scenarios can be different than the Province of Manitoba's strata. However, a linkage table must be provided to allow the Forestry and Peatlands Branch to compare strata.

8.2. Values, Objectives, Indicators and Targets (VOITs)

FMP specific VOITs will be developed based on Canadian Council of Forest Ministers (CCFM) criteria and indicators. Feedback received from engaging with Indigenous communities, stakeholders and the public should be used to guide the development of the VOITs. Canadian Standards Association (CSA) standard for Sustainable Forest Management also uses a hierarchical system of Values, Objectives, Indicators and Targets (VOITs). If other certification bodies use parallel terms, these may be used. The proponent needs to communicate and define the terms being used in the FMP, and how they inter-relate.

The **values** should consider provincial legislation and policies, company policies and commitments, forest certification requirements, and public and cultural values.

Management **objectives** are to be developed to address the values. Objectives must be measurable, achievable and used for the longer term. These management objectives form the core of the FMP. All other information in the FMP should support these objectives and how they will be achieved.

Indicators should be a measure of the state or condition of the value. **Targets** should be the desired future state or condition of the indicator that would meet the objective for the value.

For example:

Value – maintain coarse-filter biodiversity

Objective – maintain current landscape-level balance of cover types (H, N, M, and S)

Indicator – current area (ha) of H, N, M, and S cover types at the start of the FMP

Target – in modeling future harvest and renewal, apply renewal treatments that maintain the cover type balance within 15 per cent. Modeling output would include (table and graph) cover type area from 0 to 200 years in the future.

Criteria and Indicators for Assessing Sustainability

Manitoba, as a signatory to Canada's Forest Accord, has committed to reporting on sustainability, using a minimum of six criteria that are part of the criteria and indicators framework developed by the Canadian Council of Forest Ministers (CCFM) (2005).

The criteria developed through the CCFM are:

1. biological diversity
2. ecosystem condition and productivity
3. soil and water
4. role in global ecological cycles
5. economic and social benefits
6. society's responsibility

8.3. Forest Modeling

The forest inventory and yield curves used in developing the FMP can be the version used by the Forestry and Peatlands Branch in developing the base case. An alternate inventory can be used by mutual agreement. Any enhancements made to the inventory (e.g. wetland mapping and classification) yields or other components of the base case must be documented. The FMP must indicate the date of the most recent forest inventory, and when that inventory was date stamped.

Landbase Net Down and Description

Forest lands within the FML area boundary not managed for timber production must be included in the description of the current condition, including the following:

- federal parks, ecological reserves, protected areas and any lands permanently withdrawn from timber operations through legislation
- areas where policy direction does not permit forest operations

- forest lands that will be managed to meet objectives for other values (*e.g.* buffers along water features or heritage resources)
- deferral areas: areas where forest operations have been deferred until some time in the future. If deferred areas are included, a generic description is required (*e.g.* to meet adjacency requirements, wildlife guidelines or areas of special interest). These lands are part of the land base for determining timber production levels but are not available in the short-term.
- low volume and non-merchantable forest stands

8.4. Modelling Wildlife Habitat and Habitat Elements

The FMP should discuss the relative amount of habitat for regionally important plant or animal species, and the relative abundance of these habitats over time. Regionally important species can be classified as:

Indicator Species - Species that can be used to infer condition of particular habitats. The suite of species selected will be representative of the region, and use a range of habitats with different ages, cover types and interspersions.

Social and Culturally Significant Species – Species of noted concern or importance to Indigenous communities or the general public. Sustenance, recreation, aesthetic and commercial values should be considered.

Species at Risk – Species that are representative of the region, but also listed as Threatened or Endangered under the federal Species at Risk Act, and/or provincial Endangered Species and Ecosystems Act. Habitat models, Recovery Plans, and defined Critical Habitat and Residence descriptions should be considered when available.

Habitat elements consist of many things, including wildlife habitat, water, carbon and biodiversity. These can be modeled if enough data exists to link ecosystems (strata) to the habitat element. For example, snags (standing dead trees) is an important habitat element. The amount and type of snags vary with the forest type, age and site. Snags and snag dynamics can be modeled if linked to the ecosystems.

Interactions between wildlife and habitat elements should also be considered (*e.g.* roads or edge disturbance), and should be considered in harvest management scenarios when necessary (*e.g.* to mitigate wildlife avoidance and incidental mortality).

8.5. Scenario Analyses

The FMP must contain the analysis of a minimum of two forest management scenarios. The future projections time frame should be two forest stand rotations (typically 200 years). Modelling outputs must be documented and summarized.

Many scenarios are often required to meet the objectives of the FMP in addition to the minimum two scenarios, such as a no harvest context. Note that this is not a scenario, but rather, provides modelling estimates of the forest, assuming no disturbance.

8.6. Preferred Management Scenario - Selection Process

All the scenarios must be analyzed and ranked against the management objectives that can be quantified in the modelling process. The discussion and ranking of each scenario must be included, along with any spatial data. Comparison of the achievement of forest management objectives between scenarios assists in selection of the Preferred Management Scenario.

Objectives to compare the scenarios should be broadly organized in either ecological or social- economic benefits. Both quantitative and qualitative objectives can be used. Each scenario will be assessed against the relevant selected management objectives.

The modelling component of the analysis projects how the forest will develop (future forest condition), when managed to achieve the overall objectives. The various management scenarios, including the base case identified in the FMP, will be scored on their relative achievement of the relevant stated objectives.

The information required in this section will provide guidance and focus to the FMP by identifying the proponents' proposed management scenario. These should be linked to the desired future condition of the forest, identified as part of the overall planning context. The discussion on the management scenario will:

- assess values driven by legislation, criteria and indicators, forest certification, and public involvement
- assess the relevant management objectives
- include an evaluation of the preferred management scenario and summarize potential timber and non- timber flows, resulting from implementing the scenario

The highest scoring scenario is usually chosen as the preferred management scenario. The discussion for rejecting other high scoring scenarios must be contained in this section. Choosing a highly scored scenario that does not have the highest score because it was selected to satisfy higher order commitments is acceptable. Figure 3 provides a template for scenario ranking.

Objectives	Target	Weight	Unit of Measure	Level of Achievement		
				Scenario 1	Scenario 2	Scenario 3
Quantifiable Objectives						
Non-quantifiable Objectives						
Score						
Preferred Management Scenario						

Figure 3 - Template for ranking modelling scenarios

The preferred management scenario will be stated. The reasons for selecting this scenario must be included in the discussion. A set of specific benefits for choosing this scenario will be stated. The changes, if any, in the actual day-to-day operations resulting from the preferred management scenario will be stated.

8.7. Cumulative Effects

A cumulative effects assessment of the proposed forest management activities must be included in the FMP. Given that the cumulative effects assessment is an emerging process, the scope of the assessment will be determined at the time of the development of, and included in, the Terms of Reference.

8.8. Climate Change Adaptation

The FMP should include identification and assessment of vulnerabilities, risks and opportunities with respect to climate change, as related to the activities described in the FMP. Adaptation and mitigation actions should be considered, as per relevant guidelines and policies to be included in the Terms of Reference.

9.0 Forest Management Plan Requirements:

Part 3 - Implementation and Monitoring

9.1. Implementation Strategies

Twenty-year strategic FMPs are implemented through two-year FMOPs, data collection programs, performance monitoring and use of adaptive management processes. FMOPs are the primary vehicle for FMP implementation. The proponent will provide a description on how the FMP and FMOP processes will be linked. The proponent must identify the forest activities that will be carried out to implement the preferred management scenario.

The discussion should contain information on:

- main benefits from following the strategic FMP
- strategic harvest plan – operating areas (e.g. 10-year harvest plan layout) and harvest methods (e.g. variable retention, clearcut)
- road development and access management – primary, secondary and major winter road corridors and alternatives
- forest renewal – renewal strategies and associated activities
- forest health –forest health issues on the FML and potential management strategies

Information will include:

- the criteria used in identifying and selecting areas for harvest, renewal and tending operations
- operational harvest prescriptions for strata
- the location of new primary, secondary and long-term winter road corridors and broad management strategies for road use

The FMP should describe strata renewal and tending treatments to be implemented and the provincial renewal standards to be achieved. The treatments proposed should be consistent with the proponent's standard operating and renewal practices and provincial legislation, policy, guidelines and standards for forest management. Road development and management will also address concerns about access development related to other values such as wildlife and wetlands.

The following information must be included. A map depicting operating areas should be produced at a poster size. Information may be stated in the FMP tables:

Harvest Operations

- overview of annual wood requirements, indicating species and volumes
- proposed operating areas and projected harvest schedule
- projected harvest volume by strata for each five-year period
- harvesting methods (e.g. clear-cut, variable retention, strip-cut or selective cut)
- softwood understorey protection approaches

Road Development, Access Management and Other Infrastructure

- road corridors (one kilometre wide), including proposed and alternatives for all weather roads and main winter access roads to operating areas
- water and wetland course crossings
- road construction standards
- major long-term wood storage and processing areas

Forest Renewal

- overview of renewal activities to be conducted, including cost-shared programs in site preparation, planting, tending, tree improvement and silviculture surveys
- discussion on renewal methods, including natural regeneration, assisted regeneration by direct seeding or planting (including supporting activities such as seed collection and tree improvement operations)
- silvicultural prescriptions by strata

The discussion must include a forecast of the types and levels of activity for renewal and tending operations planned for the FMP period. Renewal activities are to be linked to the overall management objectives and implementation strategies.

Silvicultural Prescriptions

A Silvicultural Prescription (SP) is a framework that describes the link between current forest condition, silviculture treatments and the future forest condition by strata. The SP contributes to achieving objectives, strategies and targets within the overall framework of a sustainable FMP. Each silviculture treatment will be described in a table.

An SP is reported for each stratum harvested in the preferred management scenario. This process may predict major cover type changes and therefore assist in offering changes prior to developing sustainability issues. .

The outcome of these silvicultural prescriptions will be monitored using forest renewal assessments and reported appropriately.

The SP will list the desired strata, by percentage, resulting from the implementation of the stated prescriptions. The strata forecast in the SP may be different than the strata transition in the base case, treatment and response table.

Operating Practices

The proponent must present an overview of all forest management planning and operating practices or procedures employed by the proponent in the course of operations. This would include standard operating procedures for harvest operations, road development, access management and forest renewal in an Appendix.

9.2. Monitoring and Assessment

Forest operations will be monitored by the proponent to ensure compliance with the FMP. Monitoring will identify the effect of forest management activities on all VOITs.

The FMP will contain a section that describes the forest operation monitoring programs and describes how the programs will be co-coordinated with similar programs in Manitoba Agriculture and Resource Development.

Monitoring will be conducted as part of FMP implementation and reported in the five-year forest report (*i.e.* five, 10, 15 and 20 years).

Reporting

The forest report is a five-year status report on the forest management licence (FML) area. The forest report summarizes five years of forestry activity on the FML and compares it to the FMP. This includes tracking and monitoring of VOITs, a comparison of the planned targets for the measurable objectives and a discussion on how the management objectives, targets and strategies are being applied and achieved during the five-year term. Rationalization for extreme (high or low) variances from the planned targets may be warranted in addition to discussion and rationalization of the objectives that have not been met. Include a discussion of any opportunity to change practices to meet the objectives.

Reporting provides:

- A way to account for the results of forest management operations set out in the FMP
- A record of forest management operations and their results
- Adaptive management approaches to be implemented if monitoring identifies that FMP objectives are not being met

9.3. Research

The proponent is encouraged to partner, participate, and recommend future research needs that may increase the growth or health of a forest, verify sustainability, understand ecosystem functions, recovery pathways, and increase acceptance of forest management activities. The proponent should list and describe the current and planned research relevant to their FML area.

Research may assist the proponent in writing an FMP. Peer-reviewed published research is encouraged to be used to help the proponent verify strategies that are used to meet FMP objectives. Current research, that is unpublished, but preliminary results have been developed, may be used to explain strategies in the FMP. The improved knowledge resulting from research activities should link to the adaptation of forest management practices.

10.0 Forest Management Plan - Review and Approval Process

This section details how Manitoba will conduct FMP reviews. It outlines expectations and timelines for both the proponent and Manitoba. Figure 4 highlights milestones and duration of each stage of the review and approval process.

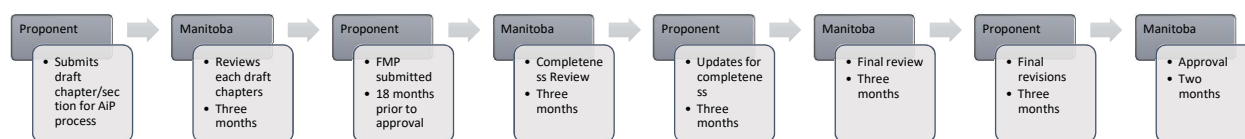


Figure 4 - Timeline and milestones for FMP review and approval

10.1. Staged Chapter Approval in Principle

Each chapter of the FMP must be submitted in draft form for TAC review, to allow for a staged chapter approval in principle work flow.

The purposes of a staged chapter approval in principle include:

- focusing review on a single chapter of the FMP, instead of an entire FMP
- providing stability for foundational FMP chapters that other chapters build on
- allowing for step-wise progress tracking on the FMP, which is helpful to the FMP Planning Team members

The Forestry and Peatlands Branch will provide comments received to the proponent for review, within three months of receiving the draft chapter. Once all responses or required revisions from the initial review on each chapter have been completed, the entire FMP must be submitted.

10.2. Concordance Table

The proponent must include a concordance table in the FMP, which cross-references required FMP guideline information with the FMP components, facilitating review of the FMP.

10.3. Completeness Review

The submission of the entire FMP should occur at minimum 18 months before the expiry of the prior FMP and Forest Management Licence Agreement. Within three months, the FMP should be reviewed by the Forestry and Peatlands Branch to ensure all prior comments have been addressed. A preliminary list of changes should be developed, focusing on the completeness of the FMP and should be provided to the proponent. The proponent is expected to complete any necessary changes to the FMP within three months before moving forward to the next step.

10.4. Final Review

The Forestry and Peatlands Branch will receive a final FMP in hard copy and digital copy. Within three months, the Forestry and Peatlands Branch will coordinate the review of the FMP. This will include an

internal review with the TAC and the FMP will be placed on a public registry to solicit public review and comments.

The Forestry and Peatlands Branch will review and consider all public and TAC comments, request additional information, and require any changes to the FMP that address concerns within two months after the review has ended. A summary of comments received will be posted on a public registry. The proponent has three months to address the comments and provide the final FMP to Manitoba for approval. Once all additional information and/or satisfactory changes to the FMP are received, approval can be provided.

10.5. Approval

The Director of the Forestry and Peatlands branch will approve the FMP within two months. The FMP will be signed by the director and the proponent and then posted on the Forestry and Peatlands branch website and/or public registry.

10.6. Signature Page

A signature page will be included with the FMP. Signatures from the FMP Author and other contributors to the FMP will be included.

10.7. Manitoba Government Website

The approved 20-Year FMP and other related plans (FMOPs, and sub-plans such as Forest Road Development Plans) will be posted on the Manitoba government website.

11.0 Forest Management Plan - Amendment Process

After FMP approval, significant changes to the overall direction of the FMP will require an amendment. Operational or tactical approaches within FMOPs may change without affecting the strategic direction of the FMP. The effects of these changes on wood supply can be monitored over time. Amendments will require TAC review and public consultation. All amendments will be posted on a public registry.

The following will trigger an FMP amendment and will require review and approval from Forestry and Peatlands Branch:

- new operating area
- new primary and secondary roads
- the proponent requests a change to a different scenario than the preferred management scenario

Proponents are expected to develop and implement an engagement plan for all amendments.

The Forestry and Peatlands Branch may enter into a Memorandum of Understanding (MOU) with the proponent under an FMP for salvage operations on Crown Lands in the event of a large scale natural disturbance. An assessment of the impacts of salvage operations on the FMP should be considered as part of the MOU.

Appendix 1: Map and Data list

Proponent spatial data used in analysis or to produce any maps must be provided to Manitoba in a common GIS format such as file geodatabases or shapefiles.

Map Name	Components	Requirement Timing	Attributes
Bio-physical	Shows other biophysical aspects in the FML area (e.g. soils, water or wetlands)		This should be represented in multiple maps.
Cover Type maps	Shows young and old forests by cover type, non- productive and water.	Early in FMP development, to be used in Engagement.	This map does not change, but it will be used in the next FMP.
Habitat availability over time for the selected species	Shows the preferred habitat for each selected species (separate map for each species).	FMP delivery date	This map does not change, but it will be used in the next FMP.
FML History	Shows past activities with respect to harvest, renewal and roads and crossings		This should be represented in multiple maps.
Infrastructure Map	Items such as rail, hydro, health facilities etc.		
Landbase	Approved forest inventory used for the FMP		
License Map	Shows the FMP area including large lakes and roads, owner ship, and administrative boundaries.	Early in FMP development used in Engagement	
Natural Disturbances	Potential disturbances are Fire, wind events, forest health etc.		
Operating Map	Potential harvest stands by operating area. Primary, secondary and long term winter road corridors with alternatives if required and showing major water crossings.	Early in FMP development to be used in Engagement.	Will likely change post-engagement. Selection of one corridor per road.
Resource Uses	Relevant resources uses (e.g. snowmobile trails, trapping areas)		

Glossary of Terms

Active Adaptive Management

Active adaptive management is a systematic process of modeling, experimentation, and monitoring to compare the outcomes of alternative management actions (Farr 2000). Adaptive Management describes an iterative process designed to improve the rate of learning about the management of complex systems. The process incorporates an explicit acknowledgement of uncertainties and knowledge gaps about the response of the system to management actions (Farr 2000).

Active adaptive management involves constructing a range of alternative response models (hypotheses) based on existing data, calculating the long-term value of knowing which is correct, and then weighing this long-term value against any short-term costs incurred in finding out which is correct. Active adaptive management involves deliberately perturbing the system to discriminate between alternative models (hypotheses). (Taylor et al. 1997).

Annual Allowable Cut (AAC)

The annual allowable cut is the volume of wood per year that may be harvested in the Forest Management Licence area and is expressed in cubic metres.

Forest Management Operating Plans (FMOP)

These are plans prepared and submitted bi-annually by timber operators, describing how, where and when to develop roads, harvest timber and renew the forest. They describe the integration of operations with other resource users, the mitigation of the impacts of logging, the reclamation of disturbed sites and the reforestation of harvested areas.

Base Case

A Base Case Report documents the wood supply in detail for the current forest management practice in the study area, and forms the reference point for further analysis. The Base Case defines the landbase net down, strata, yield cures, succession pathway and its management objectives with non-spatial and spatial constraints. These constraints include harvest volume control and maintenance of ecological values like old forests and wildlife habitat.

Biodiversity

Biodiversity is the variety and variability within and between living organisms from all sources, such as terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are a part.

Ecological Approach

This is the management of human activities, so ecosystems, their structure, composition, functions and the processes that shaped them can continue at appropriate temporal and spatial scales.

Heritage Resources

Heritage resources include:

- (a) a heritage site
- (b) a heritage object

- (c) any works or assembly of works of nature or human endeavour that are of value for their archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof

Model

A model is an idealized representation of reality developed to describe, analyze or understand the behaviour of some aspect of it. Modeling is a mathematical representation of relationships under study. Modeling involves the quest to find a subset of variables and a function between them that predicts one or more dependent variables.

Operating Area

This is a contiguous area where forest management activities are planned. Impacts of proposed harvesting activities on various resource concerns (e.g. ecological diversity, habitat management, access, and water management) are assessed based on the entire operating area.

Preferred Management Scenario

This is a set of compatible and integrated resource management objectives and strategies that are selected to guide plan implementation.

Proponent

A proponent is a Forest Management Licence (FML) holder, who is required to have a forest management plan as per their FML agreement.

Reforestation

Reforestation describes activities involved in forest renewal (e.g. site preparation or tree planting).

Roads

Primary and secondary roads are defined in Manitoba's Forestry Road Guideline as:

Primary Road: Permanent, all weather, allowing for general access through the forest

Secondary Road: Used for three or more years, all weather, providing access to and within operating areas

Seral Stage

This is the series of plant community conditions that develop during ecological succession from bare ground (or major disturbances) to the climax stage (Dunster 1996).

Silviculture

Silviculture is the theory and practice of controlling the establishment, composition, structure and growth of forests to achieve specified management objectives.

Strata

Strata - singular, stratum - plural. These are sub-divisions of forest types (*e.g.* aspen-hazel on clay soil stratum; or jack pine-blueberry on sand stratum).

Sustainable Forest Management (SFM)

This describes management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things while providing environmental, economic, social and cultural opportunities for present and future generations (CCFM 2000).

Technical Advisory Committee (TAC)

The Technical Advisory Committee (TAC) consists of provincial and federal government specialists who provide technical expertise.

Terms of Reference (ToR)

The Terms of Reference is a signed agreement by the proponent and government on the localized, specific details to be included when developing the FMP for a specific area.

Wood Supply

Wood supply is the quantity of timber available for harvest over time. Wood supply is dynamic, not only because trees naturally grow and die, but also because conditions of the environmental, social and economic factors that affect the availability of trees for harvest change through time.

Wood Supply Analysis

Wood supply analysis is the process of assessing and predicting the current and future timber supply for a geographic area. Therefore, harvest levels from wood supply analysis fully depend on a series of key ecological, economic and social factors, such as:

- biological conservation
- forest development
- technological change
- local communities
- employment opportunities

It is an assessment of future timber supplies over long planning horizons (200 years) that uses wood supply models.

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Defining adaptive management. Adaptive Management Experiment – Report No. 3. 6 pp.

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