



**Non-Replaceable Forest Licence Management**

# **Understanding the Basics**

**Version 1.0 September 2005**



**BRITISH  
COLUMBIA**

Ministry of Forests and Range

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Please keep in mind that this document is an attempt to capture current policy and legislation. As changes to policy continue, careful research is required to ensure you are aware of the most recent policy and legislation, which may differ from this document.

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Doyal Keller  
Manager, Tenures  
Mackenzie Forest District  
July 5, 2005



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## Introduction

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Based on observations by Mackenzie Forest District staff, First Nation Non-Replaceable Forest License (NRFL) holders were identified as a customer segment that was at risk of not meeting the expectations of the intent of the tenure agreement. The District's service plan thus included a project that would address this risk by improving licensee understanding of the forest license tenure and other legislated requirements and obligations. This initiative was designed to alleviate the tenure holder's general confusion about their new tenure agreement. The Ministry of Forests' established the following objectives with regard to this initiative:

- to improve forest licence management performance (e.g., meeting obligations and time lines, and managing liabilities);
- to enhance forest management and business decisions (e.g., strategies, objectives); and
- to develop a management tool for other NRFL holders.

This approach was somewhat controversial, as it was expected that the private sector would provide the required forest licence management services. We found, however, that the licensee was not knowledgeable enough to hire services from the private sector to administer the tenure. The forest sector is a very complex industry. Even with less regulation, the ability to operate a forest license requires extensive and varied knowledge. The Mackenzie Forest District turned to private sector consultants from Prince George to deliver this initiative. This was done for two reasons:

1. to create a degree of separation between the Ministry and the tenure holder; and
2. to better interface with the licensee who was also based out of Prince George.

Forest Policy Services and Kim Forest Management accepted the project, which consisted of the development and facilitation of workshops designed to help a licensee understand forest licence obligations and liabilities. We had received positive feedback from the tenure holder throughout the initiative. The tenure holder commented, "we should have had these discussions before signing the agreement."

On March 29, 2005, representatives from the Mackenzie Forest District presented the project to the Regional Office in Prince George. The Regional Executive Director recognized the potential to present this training material more widely, and it was recommended that this package should be standardized to make it accessible for other forest districts in the province. Distribution of the materials to date has generated significant interest from around the province.

## Section One – General Introduction to Forest Licence Management

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This section provides a general introduction to the management of forest licences in British Columbia and the licensees' obligations and responsibilities. See Appendix 1 for a list of useful definitions related to forest licence management.

### A. Acts and Regulations

There are three main pieces of legislation that govern forest harvesting in British Columbia. Several other acts and regulations affect harvesting to some degree.

1. The *Forest Act* (FA) and regulations deal primarily with the amount of timber that can be harvested, who can do that harvesting, and the value of the harvested timber.
2. The *Forest and Range Practices Act* (FRPA) and regulations deal primarily with the actual harvesting activities, including the necessary planning for roads and cutblocks, silvicultural requirements, and environmental standards that must be met. This Act also sets out penalties for failure to perform according to its standards.
3. The *Forest Practices Code of British Columbia Act* (FPC) and regulations. Although FRPA has largely replaced the FPC, some aspects of the FPC, continue to apply (i.e., those concerning strategic planning and fire control).

Several other non-timber acts and regulations also affect timber harvesting, for example:

- *Fisheries Act*
- *Water Act*
- *Wildlife Act*
- Others

### B. Finding Timber

#### *How Much Forest Is There?*

The province of British Columbia covers 95 million hectares (ha). Of this area, about 60 million ha are forested, of which 57 million ha are publicly owned. About 25 million ha are available for harvesting. The rest of the province's forest land is in parks or reserves, or is unmerchantable timber.

## *Determining the Allowable Annual Cut*

British Columbia is divided into two types of large forest management units:

1. [Timber Supply Area](#) (TSA) and
2. Tree Farm Licence (TFL).

There are 37 TSAs and 34 TFLs in the province.

For every TFL and TSA, the Chief Forester determines the amount of timber that can be harvested each year (m<sup>3</sup>/yr).

The Chief Forester's determination considers such things as:

- the portion of the TSA or TFL on which timber can be harvested (e.g., what areas are in parks, or will be managed for wildlife),
- the rate at which the forest is growing,
- the risk of disease, and
- the effect of the rate of harvest on communities in the area and on the province as a whole.

Changes resulting from forest fires, disease outbreaks, and new land use plans may affect forest use and timber supply. Therefore, the AACs for each TFL and TSA are generally re-calculated every 5 years to make sure these changes are noted and properly accounted for.

The AACs for TFLs and TSAs will vary in size. For example, the Prince George TSA has an AAC of 12 250 000 m<sup>3</sup>; whereas the AAC for the Cranberry TSA is 110 000 m<sup>3</sup>.

## **C. The Right to Harvest**

### *Forms of Harvesting Rights*

Rights to harvest timber are granted through numerous types of licences and permits. Most common types are:

1. TFL
2. [Forest Licence](#) (FL).
3. Forest Licence to Cut (FLTC)

Tree Farm Licences apply to a specific land area and are commonly referred to as “area-based tenures.” These licences have a term of 25 years and are replaceable. AAC determination is necessary to determine how much timber should be harvested from the area covered by the TFL.

Forest Licences apply to a specific volume of timber that can be harvested within one or more TSAs. These licences are often referred to as “volume-based tenures.” The AAC for the TSA is determined by the Chief Forester,

and then the volume available for harvest is allocated to timber tenures by the Ministry of Forests and Range.

Forest Licences may be replaceable or non-replaceable. Replaceable licences have generally been granted to people or companies that have built a mill as a condition for getting the licence. Non-replaceable forest licences (NRFL) have generally been granted where the Ministry of Forests and Range wants either to manage a specific timber problem, (e.g., harvesting beetle-killed wood), or to provide other harvesting opportunities where timber has become available for allocation.

A third type of licence, not nearly as common, is the Forestry Licence to Cut (FLTC). This licence tends to be a small volume based tenure, often applied for salvage operations. It can be issued by the Regional Executive Director, District Manager or Timber Sales Manager.

### *Criteria for Granting a Forest Licence*

The Ministry of Forests and Range offers a licence agreement through a competitive process. A key feature is a bonus bid or bonus offer. The Ministry of Forests and Range uses predetermined criteria to determine the successful applicant. It is important that the applicant carefully reviews and understands the obligations and liabilities of managing a Forest Licence before entering into an agreement.

## **D. Rents and Security**

Forest licensees must pay an annual rent to the Province. The present rate is \$0.37/m<sup>3</sup> of AAC. Of this amount, \$0.25/m<sup>3</sup> is for general rent and \$0.12/m<sup>3</sup> is for fire preparedness.

Non-replaceable licence holders are required to provide a silviculture deposit in case silvicultural obligations are not met. The amount of the security necessary is determined by the District Manager on a licence-by-licence basis.

Approved forms of security are outlined below in section I.

## **E. 'Right to Harvest' to 'Free to Grow'**

Although a licence may grant a right to harvest, a great many requirements must be met before harvesting can actually occur. A Forest Stewardship Plan containing [forest development units](#) must be prepared and approved. Site plans for cutblocks and roads inside the forest development units must be prepared; these plans are not submitted for approval, but must be made available upon request. Applications for [cutting permits](#), road permits, and road use permits must be submitted. It is only when a cutting permit or road permit has been issued that harvesting can begin on a cutblock, or road right-of-way.

## *The Forest Stewardship Plan*

The Forest Stewardship Plan (FSP) is the primary harvesting management plan. The FSP has a term of 5 years. The plan must have maps that show the boundaries of forest development units (FDUs) and must specify results or propose strategies in relation to objectives set by government. An FDU is an area where development may take place during the term of the plan. Cutblocks and roads are located inside the FDU.

There are 11 objectives set by government, which include:

- soils,
- visual quality,
- timber,
- forage and associated plant communities,
- water,
- fish,
- wildlife,
- biodiversity,
- recreation resources,
- cultural heritage resources, and,
- resource features.

These objectives, and factors relating to them, are prescribed in the Forest Planning and Practices Regulation (FPPR). Government may also establish other objectives for site-specific areas (e.g., wildlife habitat areas and visually sensitive areas).

Under normal circumstances, the FSP must be available for review and comment for 60 days. The licensee is expected to directly contact people who might be affected by the proposed harvesting operations. The licensee must consider comments from all stakeholders when preparing the FSP; such as;

- First Nations,
- public,
- trappers/ guides,
- range holders, and
- other government tenure holders.

The FSP must be approved by the Minister of Forests and Range before any operations proposed by it can be carried out. The Minister must approve the FSP if:

- it complies with the regulated requirements,
- its results and strategies are consistent with government objectives, and
- it is consistent with the harvesting rights for which it is prepared.

### *Site Plans*

A site plan (SP) for cutblocks and roads must be prepared before harvesting or road construction begins. The SP must identify the approximate location of the cutblock or the road, and show how the results or strategies of the FSP apply to the site. Site plans address such things as cutblock location and design, reforestation plans, and road location and design plans. An SP must be made available to the public if requested, but it does not have to be submitted to the Minister for approval.

### *Cutting Permits*

A cutting permit (CP) formally authorizes the harvesting of timber. [Appraisal data](#) may accompany the application for a CP. This data includes information about the quality and quantity of timber and the expected development strategies and harvesting methods. Such data is used to determine the [stumpage rate](#) for the timber. The stumpage rate is the price that government charges for the timber (in \$/m<sup>3</sup>). An extremely important part of collecting the necessary appraisal information is the cruise. Timber cruising involves gathering information on timber volume and quality in a statistically proper way. Other information (e.g., soil conditions and riparian classifications) that might prove valuable for the planning of harvesting and silviculture operations may be collected during the cruise.

### *Road Permits*

Harvesting a road right of way and building an access road are usually necessary to carry out timber harvesting. The authority to do this comes with the issuance of a road permit (RP). Applications for RPs are usually made along with the cutting permit application. Appraisal data is also required.

### *Road Use Permits*

A road use permit (RUP) allows the licensee to use a road under another licensee's road permit. An RUP is often required in areas where several licensees are operating in the same general vicinity.

### *Reforestation and Free to Grow*

If timber is harvested from an area, the licensee that is responsible for the harvest is also responsible for establishing a new forest on the area. This responsibility includes planting seedlings and undertaking stand-tending activities. Stand tending prevents competing plants from crowding out or killing the seedlings until the new stand has reached [free to grow](#) status. "Free to grow" means that the stand is healthy and its further growth to maturity will not be affected by competition from other plants or trees. Once

the stand has been declared [free growing](#) (by meeting the [stocking standards](#) in the SP) by the licensee, the licensee obligation for the cutblock ends.

To reach free growing usually takes 10 years or more. This means that the licensee will continue to carry a significant liability for some years beyond the term of the licence.

### *Road Deactivation*

The licensee may be required to deactivate roads after harvesting. Roads are usually deactivated to reduce the possibility of environmental damage in the future.

Licensees will continue to be liable for road maintenance until relieved of their obligations by the District Manager. This obligation may continue beyond the term of the forest licence.

### *Fire Protection*

Licensees must have a certain amount of equipment and training for forest firefighting, and must participate in fighting fires that break out in the licensee's area of operations.

## **F. Policy Structure of the Forest and Range Practices Act**

The Forest and Range Practices Act and Regulations is the new regulatory structure for forest practices (enacted on January 31, 2004), replacing much of the Forest Practices Code (enacted in 1995).

### *“Results-based” Legislation, Due Diligence, and Professional Reliance*

The Forest and Range Practices Act is considered “results-based” legislation. This means that the desired result or objective is defined in the legislation, but no legislated direction is given to the licensee on how to achieve the result. It is up to the licensee to determine how they will achieve the result.

Two concepts are particularly important in how FRPA functions. These are:

1. due diligence, and
2. professional reliance.

The legal concept of due diligence refers to the level of judgement, care, and activity that a person would reasonably be expected to achieve under particular circumstances. Part of being duly diligent is to be sure that competent people are responsible for carrying out forest management responsibilities. An important component of ensuring competence is professional reliance—that is, relying on registered professionals to apply good judgement and act in the interests of the environment and public.

Registered professionals include:

- Professional Agrologists (PAg),
- Professional Engineers (PEng) and Professional Geoscientists (PGeo),
- Registered Professional Biologists (RPBio),
- Registered Professional Foresters (RPF) and,
- Registered Forest Technologists (RFT).

Registered professionals belong to professional regulatory bodies, for example, RPF's belong to the Association of British Columbia Forest Professionals. These regulatory bodies establish standards of conduct and practice and can discipline their members. This is often referred to as professional accountability.

### *Compliance and Enforcement*

The Forest and Range Practices Act has an extensive range of penalties for breaches of the Act and regulations. Penalties range from \$2000 to \$1 000 000. Different contraventions have different maximum amounts. In some circumstances, a person contravening FRPA may also be sentenced to a jail term.

## **G. Relationships with Government Agencies**

Managing a forest licence includes working with a number of government agencies as plans are developed and operational areas are defined. While the B.C. Ministry of Forests and Range is the primary decision maker and the agency the licensee works with the most, the B.C. Ministry of Environment has a significant influence on the location and timing of harvesting operations through their responsibilities for water and wildlife management. In addition, because of their responsibility for the salmon fishery, Fisheries and Oceans Canada may have considerable influence on forest operations around certain streams and rivers. Both the Ministry of Environment and Fisheries and Oceans Canada have enforcement authority outside that of the Forest and Range Practices Act.

### *The Ministry of Forests and Range*

The Ministry of Forests and Range operates at three administrative levels:

1. Forest District,
2. Forest Region, and
3. Headquarters.

The Forest District is the most local level and is where most operational decisions are made. The District Manager can make a number of decisions on behalf of the Minister of Forests and Range, including those involved

with the approval of FSPs and administrative penalty decisions.

The majority of the relationship between the licensee and the Ministry takes place at the Forest District level.

The Forest Region takes in a number of forest districts. The region is responsible for the overall performance of the forest districts and provides a number of specialized services,(e.g., research and quality assurance) to the districts and the general public. Some aspects of forest licence management are a regional responsibility, including the setting of stumpage rates.

Headquarters includes the Minister and the senior management of the Ministry. Headquarters is responsible for the overall performance of the Ministry, including the establishment of policy direction and the development of legislation. Headquarters also provides province-wide specialty services, including specialized research and analysis. The Minister and Chief Forester also have specific responsibility for a number of forest management decisions.

There are three forest regions in the province:

1. Coast Forest Region (8 forest districts; regional office in Nanaimo),
2. Northern Interior Forest Region (9 forest districts; regional office in Prince George), and
3. Southern Interior Forest Region (12 forest districts; regional office in Kamloops).

See Appendix 2 for a list of helpful government links and contact numbers.

## H. Cost Ranges for Forest Licence Management Activities

The cost ranges for a specific licence or individual cutblock may vary considerably, as shown below for the Northern Interior. Costs may vary significantly in the Southern Interior and the Coast.

<i>100 000 m<sup>3</sup> AAC; 500 000 m<sup>3</sup> over 5-year term of licence</i>		
<b>Rents and Deposits <sup>a</sup></b>		
Deposit	\$0.15/m <sup>3</sup>	\$15 000 (one time)
Rent	\$0.37/m <sup>3</sup>	\$37 000 (annually)
Year one		\$52 000
Year two onward		\$37 000
<b>Operations – General Overhead and Planning</b>		
General admin overhead	\$3.50/m <sup>3</sup>	
FSP development	\$0.50–1/m <sup>3</sup>	
Cruising, layout	\$5/m <sup>3</sup>	
<i>Subtotal</i>	<i>\$9.50/m<sup>3</sup></i>	
<b>New Road Construction</b>	\$unknown	
<b>Operations – Harvesting</b>		
Ground skidding	\$15–30/m <sup>3</sup>	
Cable yarding	\$25–45/m <sup>3</sup>	
Skyline	\$25–50/m <sup>3</sup>	
Helicopter	\$60–80/m <sup>3</sup>	
<i>Subtotal</i>	<i>\$15–80/m<sup>3</sup></i>	
<b>Operations – Trucking</b>		
<i>Subtotal</i>	<i>\$5–25/m<sup>3</sup></i>	
<b>Operations – Silviculture</b>		
Basic reforestation	\$800/ha	
Site preparation	\$250–500/ha	
Vegetation management	\$250–1250/ha	
Surveys	\$15–45/ha	
<i>Subtotal</i>	<i>\$815–2595/ha</i>	
At 400 m <sup>3</sup> /ha, costs per m <sup>3</sup> =	\$2.05–6.50/m <sup>3</sup>	
<i>Subtotal</i>	<i>\$2.05–6.50/m<sup>3</sup></i>	
<b>Operations – Road Maintenance</b>		
<i>Subtotal</i>	<i>\$0–4.25/m<sup>3</sup></i>	
<b>Operations Cost Range</b>	\$31.55–125.50/m <sup>3</sup>	
<b>Add in Stumpage</b>	\$ unknown	
<b>Add in Road Construction</b>	\$ unknown	

a Silviculture deposit will be required for non-replaceable forest licences; amounts are determined by District Manager.

## I. Approved Forms of Security

Cash, bank draft, or money order (interest is not paid on cash securities) are accepted. Also acceptable is a safekeeping agreement form, which is executed by a chartered bank, credit union, or trust company. This form verifies that the assignable securities outlined below (in the amount designated by the Ministry) are being held in safekeeping and that the rights and claims to the securities have been assigned to the Minister of Finance. Accepted securities are:

- Assignable security guaranteed by the federal or any provincial government with a maturity date of not longer than 3 years.
- A certificate of deposit or term deposit redeemable at par value before maturity, issued by a chartered bank, credit union, or trust company.
- Assignable security guaranteed by the federal or any provincial government with a maturity date of not longer than 3 years (accompanied by an absolute and unconditional assignment to the Minister of Finance).
- A certificate of deposit or term deposit redeemable at par value before maturity, issued by a chartered bank, credit union, or trust company, accompanied by an absolute and unconditional assignment to the Minister of Finance.
- Irrevocable Letter of Credit covering a term of not less than 120 days from the date of opening tenders. The Letter of Credit must contain the following clause:

*"This letter of credit shall be deemed to be automatically extended (for one year from the present or any future expiry date) without any formal amendment unless thirty days prior to the present expiry or any such future expiry date as automatically extended we shall notify you in writing that we elect not to extend the Letter of Credit for any further period and at the same time forward to you together with such written notice of election a bank draft payable to the Minister of Finance in the amount of \$ \_\_\_\_\_ less any amount previously paid under this Letter of Credit."*

Personal or company cheques are not acceptable as security.

## Section Two – Non-Replaceable Forest Licence Management

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### *Planning to Post-harvest Obligations*

This section provides more in-depth information on forest licence management in British Columbia. Some important legal concepts are discussed and the licensee's rights, responsibilities, and liabilities are outlined, as well as the penalty regimes imposed for non-compliance with the terms of the forest agreement. The concept of due diligence is explained along with the role that forestry professionals play in its establishment as a defence. A series of tables then traces the licensee's legal (statutory) obligations and responsibilities from the initial submission of the forest stewardship plan through to the planning of harvest operations and post-harvest assessments. Each table supplies a task checklist and an indication of the required qualifications and experience of the personnel who undertake these tasks. Several flowcharts illustrate the step-by-step process of licence management activities. The module ends with a section on the business environment which surrounds the forest licence management process.

### **Legal Concepts**

This section provides an introductory overview of some important legal structures and linkages that affect forest licence management in British Columbia.

#### *A. Acts and Regulations*

Forest and natural resource management activities in British Columbia take place under a variety of acts and regulations (see Figure 1). Acts are debated and passed in the Legislature. Acts typically empower Cabinet to “make regulations under the act.” Regulations are not debated in the Legislature. Acts usually set out the primary legislative intent whereas regulations usually set out the details around the main intent.

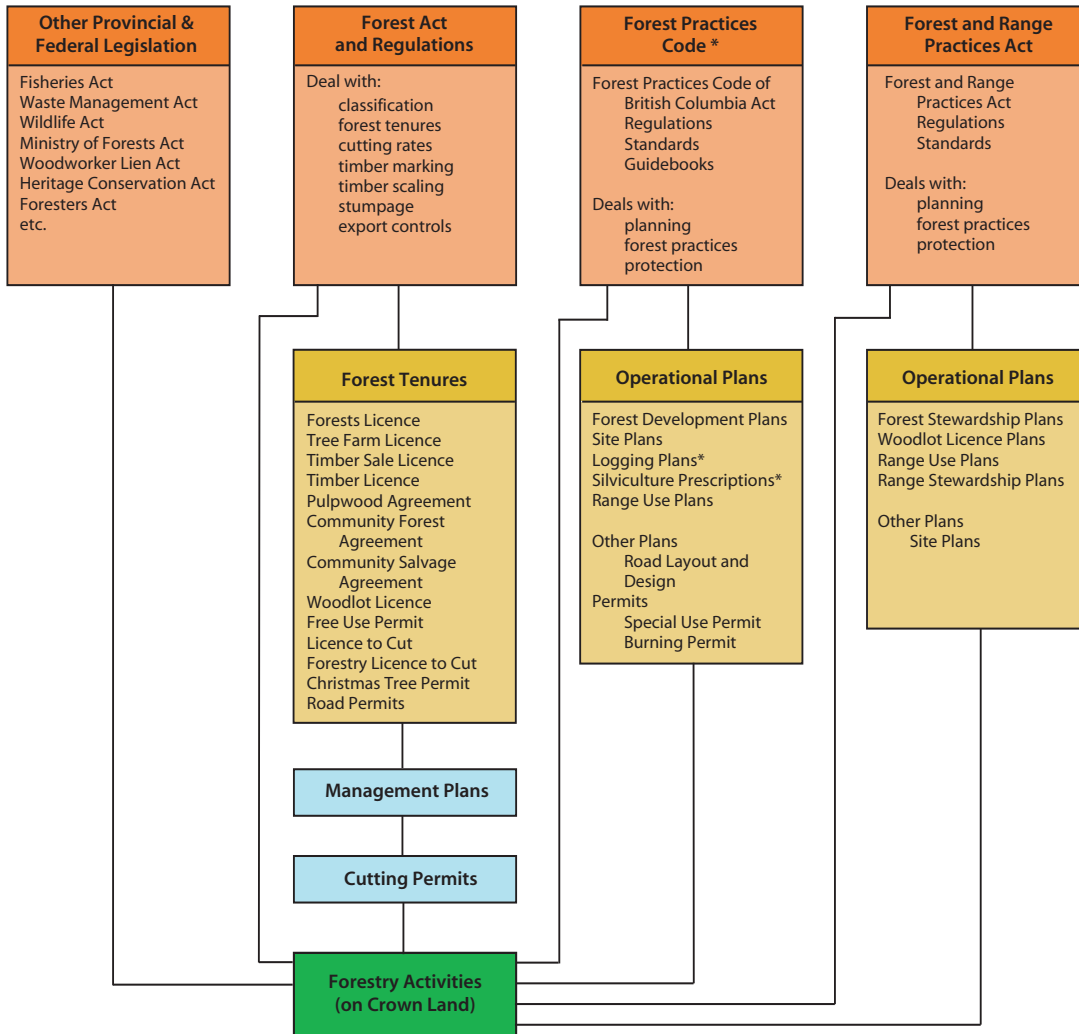
There are three primary forest management acts and attendant regulations:

1. *Forest Act* (FA) and regulations,
2. *Forest and Range Practices Act* (FRPA) and regulations, and
3. The *Forest Practices Code of British Columbia Act*

The *Forest Act* is primarily concerned with the granting of harvesting rights and the pricing of timber. The *Forest Practices Code of British Columbia Act* (old legislation) and the *Forest and Range Practices Act* (new legislation) are primarily concerned with the actual activity in the forest.

A number of other acts and regulations affect forest management in the province; including, but not limited to the:

- *Wildlife Act*
- *Water Act*
- *Fisheries Act*
- *Heritage Conservation Act*



\* Much of the Forest Practices Code has been repealed and replaced by the Forest and Range Practices Act. However, during a transition period, the Code can still apply.

Source: ABCFP Forest Legislation and Policy Reference Guide 2004: Overview of Current Enactments and Policies

Figure 1 Summary of relationships among enactments and other major instruments that influence forestry activities in British Columbia.

### *B. Rights, Obligations, and Liabilities*

A forest licence agreement entered into under the *Forest Act* grants rights to harvest timber. Entering into an agreement also compels the licensee to carry out various forest management activities and to take on numerous obligations and potential liabilities in order to exercise their rights to harvest timber. These liabilities and obligations may extend well past the term of the agreement (e.g., the obligation to establish a new forest on a harvested area may continue for 10 years or more past the licence term in which harvesting could take place).

### *C. Compliance and Enforcement under FRPA*

Most of the activities that a licensee normally undertakes when exercising their rights under a forest agreement are addressed in the acts and regulations and subject to some form of penalty for a failure to comply with the legislation. There are two penalty regimes under FRPA—administrative and prosecutorial.

#### **Administrative Penalties**

Administrative law proceedings are generally carried out outside of the court system. Administrative penalties under FRPA are either monetary or remedial; that is, a person must pay an amount of money to the Crown or carry out some work to repair damage, or both. As we are still in legislative transition, administrative penalties may be administered under the FPC.

Under FRPA, the Minister has the authority to determine whether the act or regulations have been contravened and to levy an administrative penalty. In practice, however, the Minister normally delegates this role to a number of people, most frequently the Forest Service District Manager.

To levy a penalty, the delegated decision maker must determine that the contravention occurred. They are not required to determine whether the contravener intended to breach the provision. The delegated decision maker must consider a number of factors before levying a penalty, such as,

- previous contraventions of a similar nature,
- the gravity and magnitude of the contravention,
- whether the violation was repeated or continuous.

If new information is presented that was not available at the time of the original determination, an opportunity exists for a review of the determination. A determination, or a decision made upon review, may be appealed to the Forest Appeals Commission. This Commission has considerable authority and can set aside or change a determination.

Almost all punitive actions taken by government under the Forest Practices

Code, the *Forest Act* and FRPA have been, and will continue to be, in the administrative realm.

### **Prosecutorial Penalties**

Prosecutorial proceedings take place in the courts and the provisions of the *Offence Act* apply to the proceedings. The *Forest and Range Practices Act* contains a number of offence provisions. Depending on the severity of the offence, a person found guilty of an offence may be subject to a fine, a jail term, or both. The court must find that the offence occurred in order to convict. The court is not required to determine whether the offence was deliberate or not.

The appeal provisions of the *Offence Act* apply to FRPA offence convictions.

### ***D. Due Diligence as a Defence***

The defence of due diligence is available in both the administrative and prosecutorial penalty regimes. The concept of “due diligence defence” is central to the structure of the results-based forest practices legislative regime. *Due diligence* means “exercising a standard of care that a reasonable person with the same responsibilities in the same circumstances would do.” The test is that the actions taken were reasonable under the circumstances, not that the actions taken were perfect.

*Available as a defence* means that if a person subject to a contravention determination can show that they took reasonable steps to ensure that a contravention would not take place, the person will not be found in contravention and therefore would not be subject to a penalty.

In the context of normal forest operations, due diligence acts as a one-way valve. The Crown normally proceeds first against the person with the highest level of responsibility, usually the licensee. If the licensee is found to have been duly diligent and therefore not liable, the Crown may then choose to proceed against the next level, the contractor. If the contractor is found to have been duly diligent and therefore not liable, the Crown may then choose to proceed against the individual work unit or worker. If the worker(s) is found to have been duly diligent, then no penalty can be levied.

One of the essential methods of establishing due diligence is by ensuring that all persons associated with the activity are properly qualified for the task at hand and that proper methods are being employed to carry it out.

### ***E. Due Diligence and Registered Professionals***

The *Forest and Range Practices Act* was brought into force with an expectation that the group of registered professionals most involved in natural resource management would have an important role when establishing due diligence by the forest licensees.

Registered professionals belong to regulatory bodies established by statute. The regulatory bodies require a specific educational level to gain membership, maintain codes of conduct and ethical behaviour, and have the power to discipline a member who fails to meet ethical and performance standards. For all natural resource professional bodies, disciplinary procedures include ejecting the member being disciplined from the profession.

Because a member's livelihood is tied to retaining their good standing in the profession, there is presumably a consistent pressure for the member to maintain or enhance their level of expertise; therefore, society can attach a high level of confidence to the professional credential.

The underlying assumption embodied in FRPA is that a forest licensee who relies on the appropriate registered professional to carry out their forest and natural resource management activities will be establishing some level of due diligence and that the Crown can be reasonably certain that a proper level of natural resource management is being achieved.

Registered professionals in natural resource management include:

- Professional Agrologists (PAg),
- Professional Engineers (Peng),
- Professional Geoscientists (PGeo),
- Registered Professional Biologists (RPBio),
- Registered Professional Foresters (RPF), and
- Registered Forest Technologists (RFT).

### **Forest Stewardship Plans: Legal Requirements**

The Forest Stewardship Plan (FSP) is the key element in the exercising of rights under a forest licence, and is the vehicle for the application of forest management regimes. Table 1 identifies the legal (statutory) requirements in the Forest Stewardship Plan and provides a checklist of tasks to be completed and the required qualifications for completing the tasks. Figure 2 illustrates the planning steps in a flowchart format.

Table 1 Statutory requirements and associated tasks related to the Forest Stewardship Plan

Task	Descriptions/Comments	Required Qualification/ Experience <sup>a</sup>
<input type="checkbox"/> <b>Must Prepare an FSP</b>	<ul style="list-style-type: none"> <li>Holder of a major forest licence must prepare, and obtain approval of a Forest Stewardship Plan before any timber can be harvested or roads constructed.</li> </ul> <p><i>Section 3(1), Forest and Range Practices Act (FRPA)</i></p>	QRP, Tech
<input type="checkbox"/> <b>Content of FSP</b>	<ul style="list-style-type: none"> <li>The FSP must include maps, forest development units, and specify intended results and strategies.</li> </ul> <p><i>Section 5, Forest and Range Practices Act (FRPA)</i></p>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>FSP Term and Extension</b>	<ul style="list-style-type: none"> <li>The term of an FSP is 5 years, but may be extended for up to five additional years.</li> </ul> <p><i>Section 6, Forest and Range Practices Act (FRPA)</i></p>	Minister
<input type="checkbox"/> <b>Review and Comment</b>	<ul style="list-style-type: none"> <li>The proposed plan must be made publicly available for review by any person for a period of time, normally 60 days.</li> <li>The plan proponent must make reasonable efforts to meet with First Nation groups affected by the plan in order to discuss the plan.</li> <li>The plan proponent must consider any written comments received from a person reviewing the plan and show how the comments were addressed.</li> <li>Plan submitted to Minister for approval.</li> </ul> <p><i>Section 20, 21, 22, Forest Planning and Practices Regulation (FPPR)</i></p>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Approval</b>	<ul style="list-style-type: none"> <li>The Minister must approve the plan if the plan meets the legislated requirements and the Minister considers that the plan's results and strategies are consistent with government objectives.</li> </ul> <p><i>Section 16, Forest and Range Practices Act (FRPA)</i>  <i>Section 23, 24, 25, 26, 27, 28, Forest Planning and Practices Regulation (FPPR)</i></p>	Minister
<input type="checkbox"/> <b>Amendments</b>	<ul style="list-style-type: none"> <li>From time to time the plan may require amending.</li> <li>Certain amendments require review and comment and ministerial approval. Some others may not.</li> </ul> <p><i>Section 16, Forest and Range Practices Act (FRPA)</i>  <i>Section 22, 23, 24, 25, 26, 27, 28, Forest and Range Practices Act (FPPR)</i>  <i>Section 29, 30, 31, 32, Forest and Range Practices Act (FPPR)</i></p>	QRP, Tech, SW, SWIT Minister
<input type="checkbox"/> <b>Compliance</b>	<ul style="list-style-type: none"> <li>The holder of the plan must ensure that the intended results are achieved and the strategies carried out.</li> <li>Failure to comply may result in penalties.</li> </ul> <p><i>Section 21, 87, Forest and Range Practices Act (FRPA)</i>  <i>Section 4, Administrative Penalties Regulation</i></p>	

<sup>a</sup> QRP = qualified registered professional; this is a person who: (1) has appropriate education and experience to carry out the activity; and (2) is a member of, or licensed by, a regulatory body in British Columbia that has the legislated authority to regulate its members performing the activity.

These professionals include: Professional Agrologist (PAg), Professional Engineer (PEng), Professional Geoscientist (PGeo), Registered Professional Biologist (RPBio), and Registered Professional Forester (RPF).

Tech = technician; this is a person who holds a graduation certificate from a recognized applied technology program.

SW = skilled worker; this is a person who, through a combination of training and experience, has gained expertise and knowledge in certain activities.

SWIT = skilled worker in training; this is a person who, while working under direct supervision, is receiving training in certain activities.

Many tasks require some involvement from all four workforce levels, but the amount of participation can vary significantly according to the task. For example, most field assessment work may be carried out by Techs, SWs, and SWITs, but analysis of, and decisions resulting from, the data collected usually requires a QRP.

## Forest Stewardship Plans: Management Opportunities

Table 2 identifies the management opportunities in the Forest Stewardship Plan; it also provides a checklist of tasks to be completed and the required qualifications for completing these tasks. See also the business management tool for FSPs presented in Appendix 3.

Table 2 Management opportunities in the Forest Stewardship Plan and associated tasks

Task	Descriptions/Comments	Required Qualification/Experience <sup>a</sup>
<input type="checkbox"/> Propose Results and Strategies	<ul style="list-style-type: none"> <li>• Persons who must prepare a Forest Stewardship Plan may comply with an existing requirement (default measures) set out in the FPPR.</li> <li>• 11 FSP Objectives:                         <ul style="list-style-type: none"> <li>– soils,</li> <li>– visual quality,</li> <li>– timber,</li> <li>– forage and associated plant communities,</li> <li>– water,</li> <li>– fish,</li> <li>– wildlife,</li> <li>– biodiversity,</li> <li>– recreation resources,</li> <li>– cultural heritage resources, and,</li> <li>– resource features</li> </ul> </li> <li>• Results and strategies of objectives that are brought forward for approval, may provide financial and managerial benefits to the holder of the tenure agreement.</li> </ul> <p><i>Section 12, 13, Forest and Range Practices Act (FPPR)</i></p>	QRP, Tech, SW, SWIT

a See Table 1 for a description of the required qualifications.

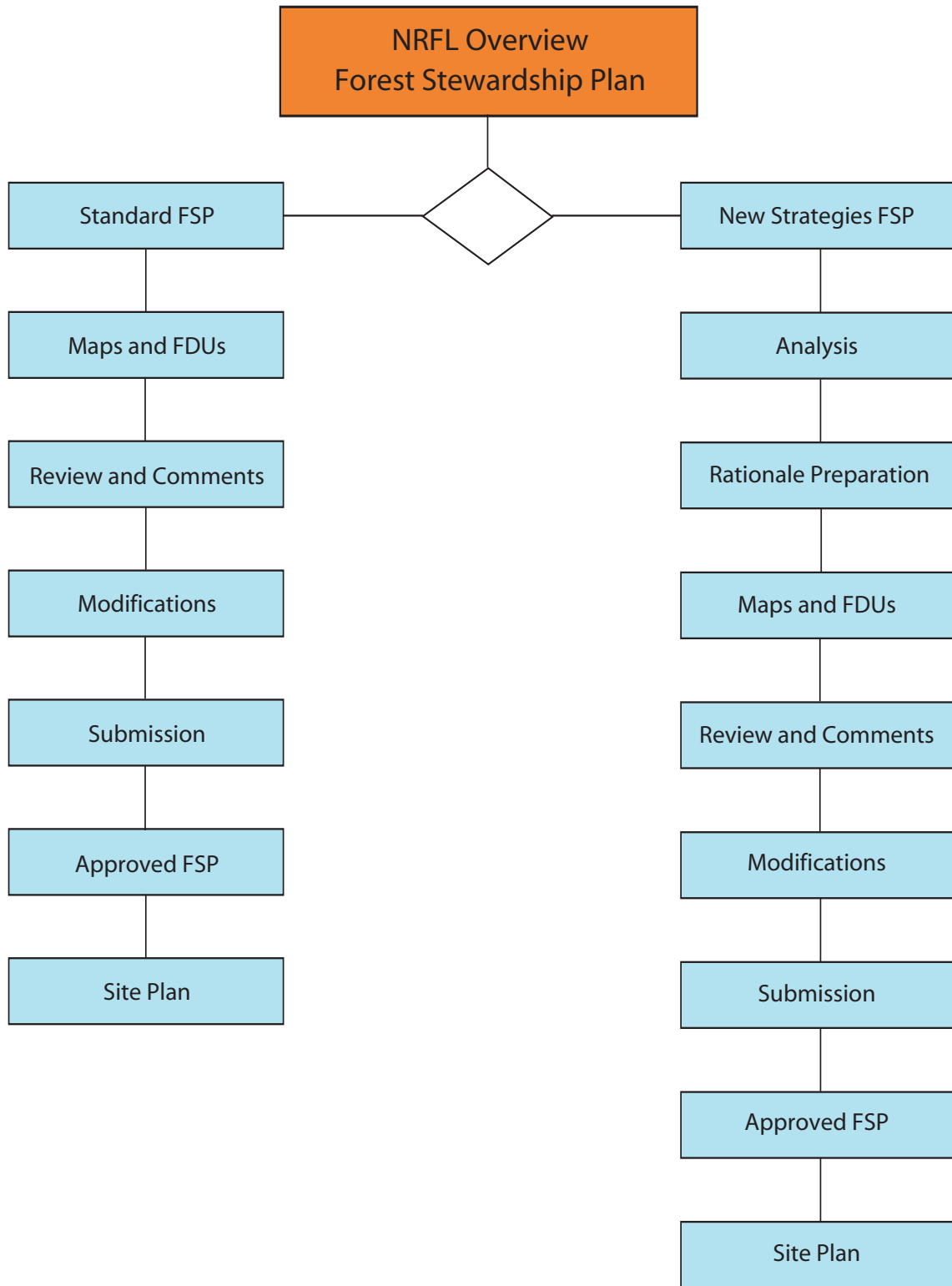


Figure 2 Flowchart of Forest Stewardship Plan activities

## Operations: Legal Requirements

The operations phase is the most critical and most management-intensive of the several phases involved in forest licence management. The following are operational legal requirements:

Table 3 identifies the legal (statutory) requirements associated with the harvesting phase of operations; it also provides a checklist of tasks to be completed and the required qualifications for completing the tasks. Figure 3 illustrates, in a flowchart format, the steps involved in the operations planning process. See also the business management system for operations presented in Appendix 3.

Table 3 Statutory requirements related to harvesting operations and associated tasks

Task	Descriptions/Comments	Required Qualification/Experience <sup>a</sup>
<input type="checkbox"/> Site Plans	<ul style="list-style-type: none"> <li>• Before harvesting begins, the holder of a Forest Stewardship Plan (FSP) must prepare a site plan for any cutblock or any road.</li> <li>• The site plan must be consistent with the FSP and show how the intended results and strategies described in the FSP apply to the site.</li> <li>• Site plans must be made available to the public upon request.</li> <li>• Site plans must be retained until all requirements for the site have been met and government has relieved the holder of any further obligations.</li> </ul> <p><i>Section 10, 11, FRPA</i> <i>Section 34, FPPR</i></p>	QRP, Tech, SW, SWIT
<input type="checkbox"/> Cruise	<ul style="list-style-type: none"> <li>• Cruise data must be gathered, compiled, and submitted before a cutting permit can be issued.</li> <li>• The timber cruise determines the species, quality, and volume of timber on the site.</li> </ul> <p><i>Section 113, FA</i> <i>Section 5.01, NRFL agreement</i></p>	Tech, SW, SWIT
<input type="checkbox"/> Road Permit	<ul style="list-style-type: none"> <li>• If road construction is required to gain access to timber, a road permit is required.</li> <li>• In some circumstances, taking over the responsibility for an existing road may require obtaining a road permit.</li> </ul> <p><i>Section 115, FA</i> <i>Section 22.1, FRPA</i></p>	QRP, Tech
<input type="checkbox"/> Road Use Permit	<ul style="list-style-type: none"> <li>• If timber is to be transported over a road which is under a road permit held by another licensee, a Road Use Permit is required.</li> </ul> <p><i>Section 115, FA.</i> <i>Section.22.1, FRPA</i></p>	QRP, Tech, SW
<input type="checkbox"/> Cutting Permit	<ul style="list-style-type: none"> <li>• An application for a cutting permit must be submitted to the District Manager.</li> <li>• The District Manager must issue the cutting permit before any harvesting can occur.</li> </ul> <p><i>Section 14, FA</i> <i>Section 6.0, NRFL agreement</i></p>	QRP, Tech
<input type="checkbox"/> Notification of Commencement	<ul style="list-style-type: none"> <li>• A licence holder must notify the District Manager before beginning harvest or road construction activities.</li> </ul> <p><i>Section 85, FPPR</i></p>	
<input type="checkbox"/> Annual Reports	<ul style="list-style-type: none"> <li>• A licence holder must submit to the District Manager an annual report that contains information on various harvesting, road, and silviculture-related activities, which occurred throughout the reporting period.</li> </ul> <p><i>Section 86, FPPR</i></p>	

<sup>a</sup> See Table 1 for a description of the required qualifications.

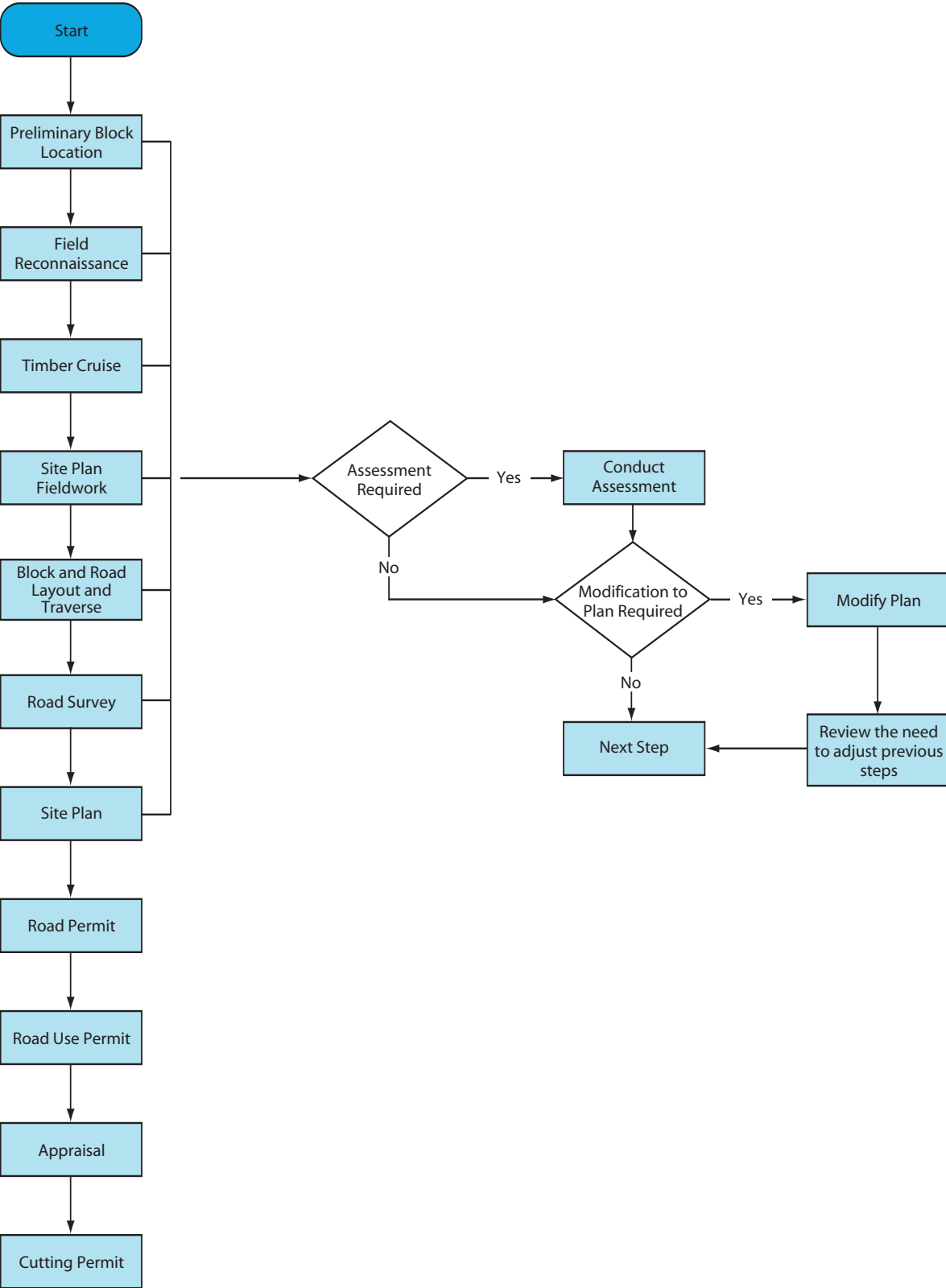


Figure 3 Operations process flowchart.

## Operations: Fieldwork

The fieldwork aspect of operations should be viewed as one of the main areas of focus for entry-level participation; however, most problems in operations are attributed to poor-quality fieldwork. Entry-level participants need to be well trained and closely supervised. Table 4 provides a checklist of the tasks required in conducting the fieldwork-related component of operations, and the required qualifications for completing the tasks. Figure 4 illustrates, in a flowchart format, the fieldwork tasks involved in operations planning.

Table 4 Tasks required in conducting fieldwork, also see the business management system for Operations: fieldwork presented in Appendix 3.

Task	Descriptions/Comments	Required Qualification/ Experience <sup>a</sup>
<input type="checkbox"/> <b>Reconnaissance</b>	<ul style="list-style-type: none"> <li>Although field reconnaissance of the proposed block is not statutory requirement, it will aid in the planning process and may avoid costly mistakes later on in the operational process.</li> </ul>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Timber Cruise</b>	<ul style="list-style-type: none"> <li>Data generated from timber cruising is used in final block planning, site plan (SP) development, and appraisal calculations.</li> </ul>	Tech, SW, SWIT
<input type="checkbox"/> <b>Site Plan Field Data Collection</b>	<ul style="list-style-type: none"> <li>An SP must be completed before harvesting or road building activities take place. Failure to comply may result in penalties.</li> <li>During the SP field data collection, factors may be identified requiring modifications to block boundary, road location, further assessments, and other specific on-site management strategies.</li> </ul>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Assessments</b>	<ul style="list-style-type: none"> <li>Requirements for assessments may be identified during the planning process as well as during on-site fieldwork. Results of the assessment and recommendations made by the QRP may lead to modification from the original plan.</li> </ul>	QRP
<input type="checkbox"/> <b>Road and Boundary Layout</b>	<ul style="list-style-type: none"> <li>Block boundaries and road locations must be laid out to optimize logging opportunities and to protect other values.</li> </ul>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Road Survey</b>	<ul style="list-style-type: none"> <li>Survey of the proposed road is required for use in appraisal calculations.</li> </ul>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Harvesting Plan</b>	<ul style="list-style-type: none"> <li>A logging plan identifies all critical factors and summarizes instructions on logging operations.</li> </ul>	QRP, Tech, SW, SWIT

a See Table 1 for a description of the required qualifications.

Timber cruising involves the gathering of timber volume and quality information through statistical sampling of a timber stand. The volume and quality information gathered is necessary to determine the stumpage rate through the appraisal system. Other landform and vegetation information gathered during the cruise is also very useful in cutblock design and layout.

Assessments include a broad range of technical studies and data collection actions associated with road construction and harvesting activities.

Assessments include such things as terrain mapping, terrain stability analysis, hydrological analysis, archaeological impact assessments, stream analysis, and many other possible actions. Assessments are usually carried out to ensure that the road and harvesting activities will conform to the Act and regulations. They are a critical element in establishing due diligence. The type of assessments required will depend on the area (e.g., flat ground is quite unlikely to require a terrain stability analysis).

Layout involves landscape-level management objectives, environmental protection measures, and practical harvesting considerations must be balanced in choosing the final design of any given cutblock. Once the cutblock design is settled, crews must lay out the design on the ground. Boundaries, harvest exclusion zones, and roads and landings are located and marked with combinations of paint and flagging tape for the harvesting crews to follow.

### NRFL Operational Data Flow

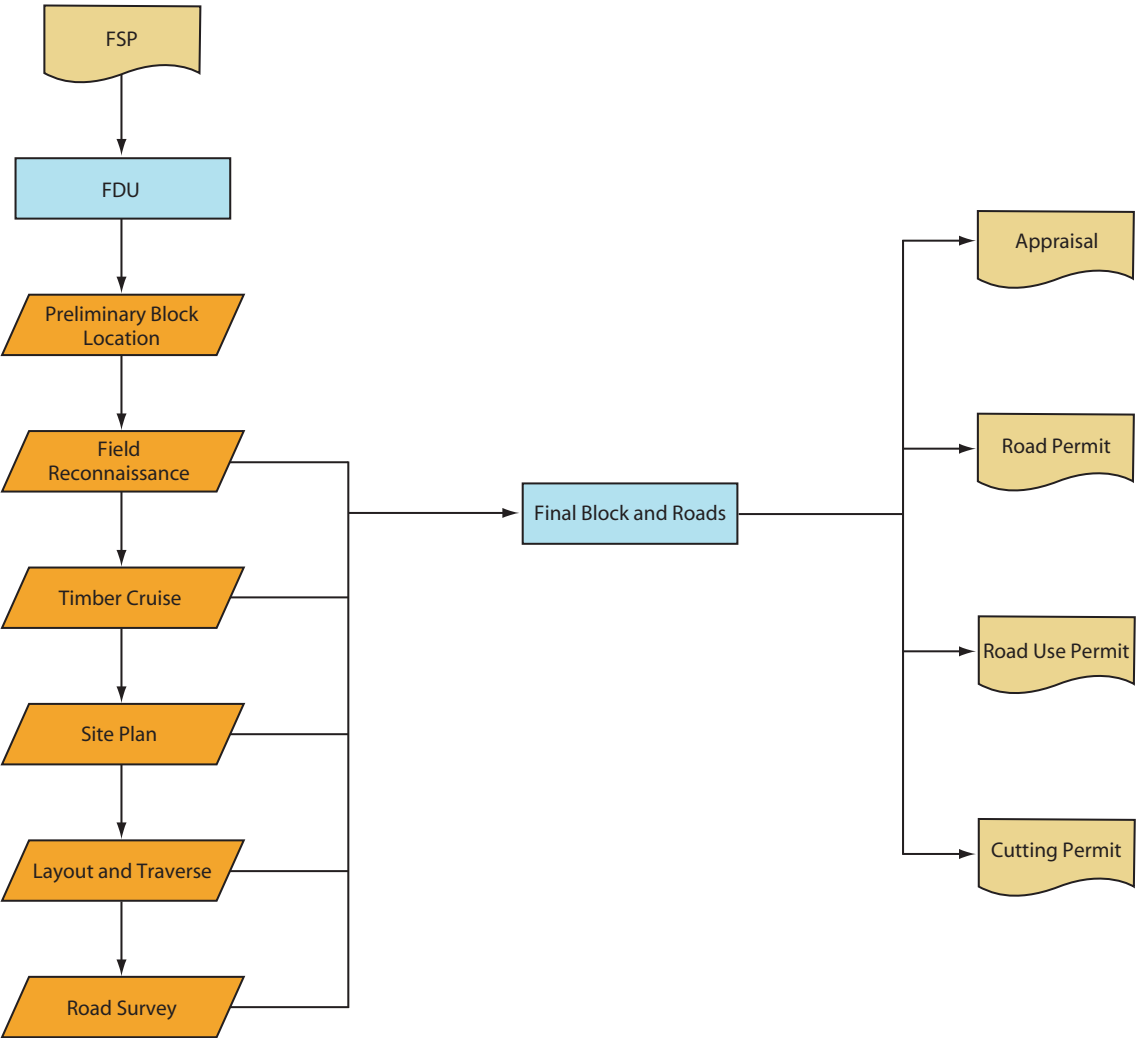


Figure 4 Tasks required in conducting the fieldwork-related component of operations.

## After Harvest: Legal Requirements for Post-Harvest Assessments and Reporting

Post-harvest assessments and reports are required by statute. Failure to complete them within the specified times is a breach of the acts and regulations and may lead to enforcement actions by government. Table 5 identifies the assessments required by statute, and provides a checklist of tasks to be completed and the required qualifications for completing the tasks. See also the business management system for post-harvest requirements presented in Appendix 3.

Table 5 Post-harvest assessments required by statute and associated tasks

Task	Descriptions/Comments	Required Qualification/ Experience <sup>a</sup>
<input type="checkbox"/> <b>Waste Assessment</b>	<ul style="list-style-type: none"> <li>• “Waste” means merchantable timber that could have been removed from the cutblock area but wasn’t. Stumpage is payable on the timber that has not been removed. A waste assessment is required after primary logging is completed and must be submitted within a specified time. Failure to comply may result in penalties.</li> </ul> <p><i>Section 14(d)(ii), Forest Act</i> <i>Section 3, Forest Licence</i></p>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Fire Hazard Assessment</b>	<ul style="list-style-type: none"> <li>• A fire hazard assessment is required and must be submitted to the Ministry within a specified time. Failure to comply may result in penalties.</li> </ul> <p><i>Section 79(1), Forest Practices Code of B.C. Act</i> <i>Section 30, 31, Forest Fire Prevention and Suppression Regulation (FFPSR)</i></p>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Road and Bridge Inspections</b>	<ul style="list-style-type: none"> <li>• The holder of a road permit must maintain roads, bridges, and culverts to a certain standard. Failure to comply may result in penalties.</li> </ul> <p><i>Section 115, 118, Forest Act</i> <i>Section 79(2), Forest Planning and Practices Regulation</i></p>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Regeneration Delay Survey</b>	<ul style="list-style-type: none"> <li>• A survey to declare regeneration is required before the regeneration delay date stated in the Stocking Standards. Failure to comply may result in penalties.</li> </ul>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Free Growing Survey</b>	<ul style="list-style-type: none"> <li>• A survey to declare a block free growing is required within the time frame specified in the Stocking Standards.</li> <li>• Failure to comply may result in penalties.</li> </ul>	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>Annual Reporting</b>	<ul style="list-style-type: none"> <li>• A number of reports must be submitted to the District Manager on or before June 1 of each year.</li> <li>• The reports must contain a broad range of information on roads, harvesting, and silviculture activities.</li> <li>• Failure to comply may result in penalties.</li> </ul> <p><i>Section 86, 87, 88, Forest Planning and Practices Regulation (FRPA)</i></p>	QRP, Tech, SW, SWIT

a See Table 1 for a description of the required qualifications.

## After Harvest: Management Measures

Management measures may be necessary for both good forest management and good business management reasons. The choice of measures is based on the analysis of assessment results. The merit of a specific measure is a function of both forest management and business management. Table 6 identifies measures that may be deemed necessary at the outcome of assessments, and provides a checklist of tasks to be completed and the required qualifications for completing the tasks. See also the business management system for post-harvest requirements presented in Appendix 3.

Table 6 Management measures that may be required as an outcome of assessments and associated tasks

Task	Descriptions/Comments	Required Qualification/Experience <sup>a</sup>
<input type="checkbox"/> <b>Compliance and Enforcement Mitigation</b>	Incidents of non-compliance found through assessments and compliance reviews may require decisions around mitigation measures, reporting to government, and the retention of legal advice.	QRP, Tech
<input type="checkbox"/> <b>Road Maintenance</b>	A road may be kept open and maintained, semi-permanently deactivated, or permanently deactivated, depending on budget, risk management, and future use.	QRP, Tech
<input type="checkbox"/> <b>Silviculture Activities</b>	Depending on the silviculture regime, certain activities, such as piling, burning, and planting, can be anticipated. The need for other activities, such as brushing and thinning, are generally identified as a result of assessments.	QRP, Tech, SW, SWIT
<input type="checkbox"/> <b>SP, FSP Amendments</b>	Assessments may identify the need for amendments to the SP and FSP.	QRP

<sup>a</sup> See Table 1 for a description of the required qualifications.

## After Harvest: Transition from the Forest Practices Code to the Forest and Range Practices Act

Forest Development Plans and Silviculture Prescriptions that were approved under the Forest Practices Code (FPC) continue to operate under FPC rules despite the Forest and Range Practices Act now in force. A compliance issue that occurred before FRPA came into force, but that was found after FRPA went into effect will be dealt with under the FPC. Table 7 identifies considerations related to undertaking a post-harvest transition review of FDPs and SPs to ensure compliance with the appropriate legislation. Figure 5 illustrates, in a flowchart format, the tasks associated with post-harvest transition reviews. See also the business management tracking worksheet for post-harvest requirements presented in Appendix 3.

Table 7 Tasks related to post-harvest transition reviews of FDPs and SPs

Task	Descriptions/Comments	Required Qualification/ Experience <sup>a</sup>
<input type="checkbox"/> <b>Transition Review</b>	<ul style="list-style-type: none"> <li>• Operational plans in place before the FRPA came into force will continue to be subject to the old Code.</li> <li>• Different requirements may apply to those plans and the licensee must be clear about which rules to follow, by block and by road.</li> <li>• Failure to comply with the appropriate legislation could result in penalties.</li> </ul> <p><i>Section 11, Forest and Range Practices Act</i></p>	QRP

a See Table 1 for a description of the required qualifications.

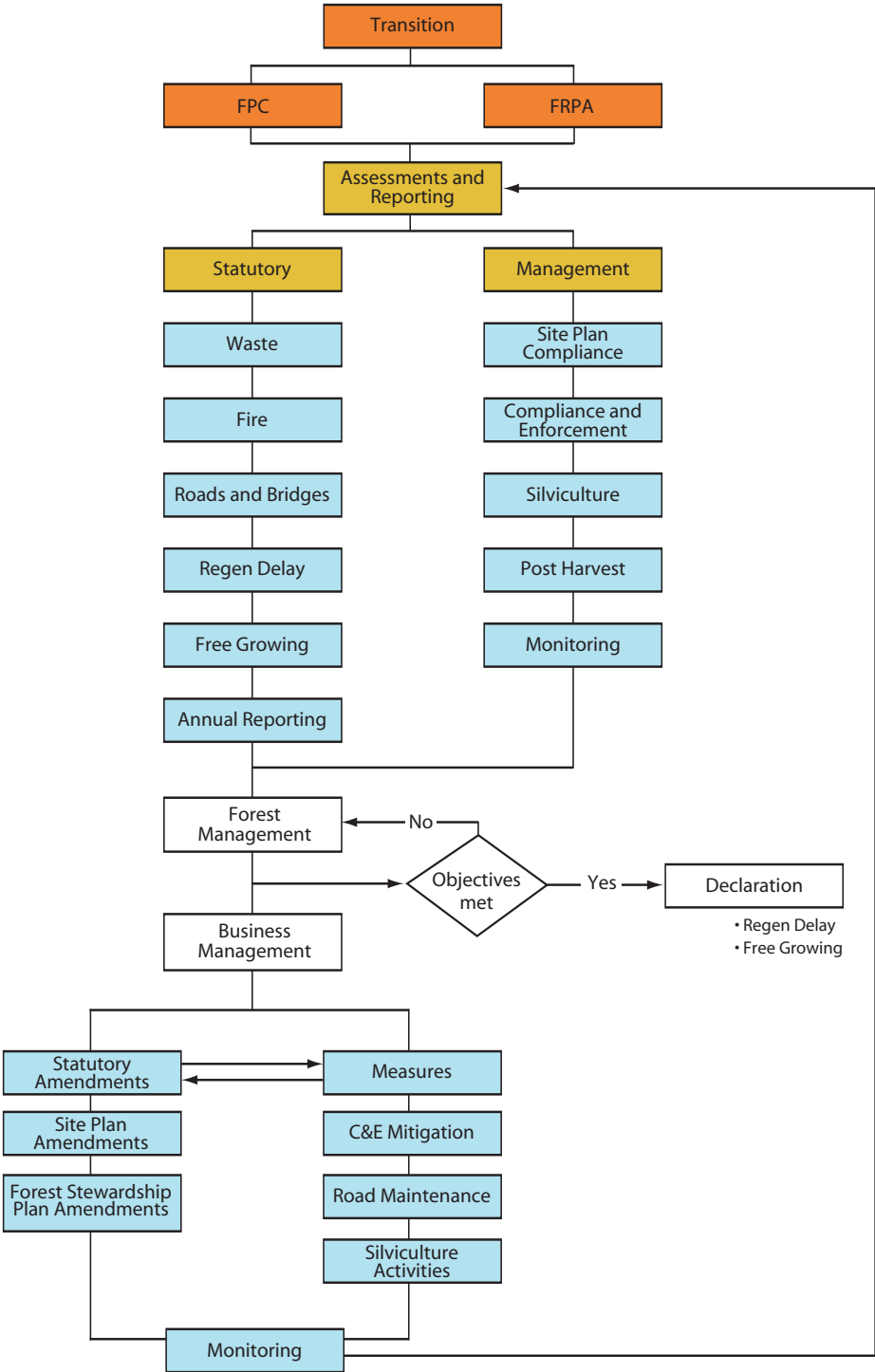


Figure 5 Non-replaceable forest licence management (NRFL) flowchart: post-harvest assessments and reporting.

## Business Environment

### A. Defining a Management Strategy

#### Objectives

An overall licence management strategy will evolve from the interaction of a number of objectives. Although some of the objectives may complement one another, others may be competitive or constraining.

Where the licence is held by, or operated on behalf of, a community, a more complex set of objectives may need to be addressed in the management strategy. For example, a “community-based” strategy may contain:

- Environmental and forest management objectives:
  - to account for cultural values in harvesting and silviculture operations carried out under the licence
  - to reduce risk of mountain pine beetle outbreak
- Social objectives:
  - to maximize community employment
  - to maximize job and career training opportunities that flow from licence obligations
- Financial objectives:
  - forest operations must be profitable
  - surplus after liability contingency to fund business venture investments

Table 8 contains a checklist for setting objectives and solving problems where interests evolve over time.

Table 8 A checklist of steps for setting objectives and solving problems

<input type="checkbox"/>	Identify the problem or desired outcome.
<input type="checkbox"/>	Seek out ideas and develop options.
<input type="checkbox"/>	Evaluate the options and determine probable outcomes.
<input type="checkbox"/>	Select the option.
<input type="checkbox"/>	Implement the option.
<input type="checkbox"/>	Evaluate the results.

*B. The Price of Timber*

**The Interior Forest Products Industry**

The forest products industry in British Columbia’s Interior is composed mainly of sawmills and pulp and paper mills. The mills are designed primarily to use softwood species. The majority of the timber is first processed through a saw mill. Table 9 shows the percentage of log recovery components for an Interior sawmill. The recoverable residual wood fibre, in the form of chips, is then shipped to pulp mills for pulp and paper production.

The bark, sawdust, and fine shavings that were once seen as unrecoverable and burned as waste are now increasingly used as fuel for power generation.

Table 9 Log recovery for a high-recovery dimension mill in British Columbia’s Interior. These percentages will vary for the Coast.

Component	% recovery
Lumber	48%
Chips	30%
Bark, sawdust, shavings	22%

**The International Forest Products Market and the British Columbia Forest Industry**

The international market for primary forest products is huge, and constitutes about 2 billion m<sup>3</sup> of lumber, pulp and paper, and panel products per year. The production of primary forest products is widely dispersed, with significant production on all continents. British Columbia’s production is now about 80 000 000 m<sup>3</sup>/year, or about 4% of the world’s production.

The size of the market and the wide dispersal of production means that no one area or company can control or influence the price of a forest product. This means that when a provincial company sells into an international marketplace, the price which they receive is largely out of their control. British Columbia forest products companies are thus “price takers.” Being a price taker means that business success is determined by how well the company can control costs, because they have only limited control over final product price. It also means that the biggest single factor in determining the price that a forest company can afford to pay for timber is the international price of primary forest products.

**Milling Costs**

The lumber recovery factor (LRF) is the amount of lumber cut from a cubic metre of timber. In the Interior, this cost could range from \$30.30 – 37.87 per m<sup>3</sup>, or \$100–125 per 1000 fbm.

### Delivered Wood Cost

Delivered wood cost is made up of all the costs associated with timber harvesting:

- administration
- planning (FSP)
- pre-harvest forestry (cruising, lay-out, road construction)
- harvesting
- stumpage
- post-harvest obligations (roads, silviculture)
- liability contingency (free to grow, roads)

### Market Price for Lumber and Timber Price Ranges

Since mills are price takers, they work backwards from the lumber market price to establish a price range for timber (Table 10). In the short term, milling costs are essentially fixed; therefore, the delivered wood cost is the only major input with some potential for price variance.

Table 10 Lumber prices (\$) and the price of timber with a LRF of 300

Lumber price per 1000 fbm	350	400	450	500
Lumber price per m <sup>3</sup>	106	121	136	152
Milling cost per m <sup>3</sup>	34	34	34	34
Wood price limit	72	87	102	118

### Transportation Costs and Local Timber Supply

As delivered wood cost limits are generally similar across the Interior of the province, and highway transportation costs are generally the same for all timber producers, the cost of timber transportation effectively define the effective selling zone for timber (see Table 11). Within that zone, total milling capacity and available timber supply will significantly affect the purchase price of timber.

Table 11 Trucking costs and distance to markets (assumes a load of 50 tonne/60 m<sup>3</sup>, an average speed of 80 km/hr, and a trucking cost of \$2/tonne per hour)

Distance (k)	250	500	1000	1250
Cost per m <sup>3</sup> (\$)	5.20	10.40	20.80	26.00

### C. *Licence Holder is a Price Taker*

A seller of logs is as much a price taker as any forest products company and therefore the same principle applies: success in managing a forest licence comes from success in managing costs.

#### **Cost Units**

Forest licence business costs can be broken down into six broad groups:

1. Administration: decision makers, any permanent staff, contract managers
2. Planning: Forest Stewardship Plan, higher level landscape planning, analysis, assessments associated with strategy proposals
3. Pre-harvest forestry operations (cutting permit acquisition): cutblock reconnaissance, cruising, site plan development, block and road design and layout, appraisal and cutting permit submission, road building and logging contract tenders, road construction and maintenance, seedling order
4. Harvest phase: contract supervision, road maintenance, stumpage rate change effect
5. Post-harvest obligations: post-harvest assessments, reforestation obligations, road obligations
6. Liability contingency: reaching free to grow, statutory breach risk

#### **Fixed Costs**

Fixed costs are those costs that do not change when production changes. With the exception of annual rents and obligations flowing from operations (e.g., reforestation liability, road maintenance), there are relatively few fixed costs associated with the holding of a forest licence. Almost all costs flow from operations and operational decisions. For small volume licence holders who sell timber, the business process is one primarily of cash-flow management.

“Investment” for the small licence holder is short term, usually 1–5 years, the investment is in the form of planning and cutblock preparation. Because little capital investment is needed, a good understanding of statutory requirements and industry structure can allow the licensee to carry out operations with relatively modest borrowing requirements. In good circumstances, it would be quite possible for the first year or two of operations to provide all the cash reserves necessary for all further operations.

#### **Variable Costs**

Variable costs change with production. Almost all costs in forest licence management are variable costs, and all variable costs can be managed to some degree (see Table 12).

*Planning:*

- Must have FSP; FSP is good for 5 (or 10) years.
- FSP can be amended and can cover a shorter term.
- Cost for full term; new objectives and strategies may be prohibitive.

*Possible solution:* Do standard regulations FSP for years 1 and 2, then use cash flow from operations to fund amendments for FSP objectives.

*Pre-harvest Cutting Permit Acquisition:*

- Unit costs for fieldwork will be lower for larger volumes of work.
- “On the shelf” cutting permits allow licensee to react to good market situation.
- Need to balance unit cost savings with cash flow.

*Possible solution:* Negotiate larger-volume contract with one supplier, but work carried out in balance with operational needs.

Table 12 Sample forest operations cost ranges in dollars. The Southern Interior and the Coast may be significantly different.

Cruising	100–175 per plot	0.18–0.40/m <sup>3</sup>
Boundary layout (Global Positioning System)	650–850 per kilometre	0.17–0.23/m <sup>3</sup>
Boundary layout (cable)	100–175 per hectare	0.40–0.70/m <sup>3</sup>
Road layout	450–800 per kilometre	0.09–0.16/m <sup>3</sup>
Site plan (silviculture)	20–35 per hectare	0.08–0.14/m <sup>3</sup>
Silviculture obligations	1200–2500 per hectare	4.80–10.00/m <sup>3</sup>

*Harvest Phase:*

- Stumpage rates may change through the course of harvesting; change may be positive or negative.

*Possible solution:* Monitor and understand the appraisal system; advance or delay scaling if beneficial to do so.

*Post-harvest Obligations:*

- Use of herbicides for vegetation management in plantations can be a cost-effective solution in ensuring plantation reaches free to grow, but community concerns may make herbicide use problematic.

*Possible solution:* Assess full range of plantation management options to find best social and financial mix.

*Liability Contingency:*

- Carrying out operations under a forest licence triggers a number of long-term liabilities and potential liabilities (e.g., free to grow, statutory breaches resulting from operational errors).

*Possible solution:* Carry out risk management assessment and establish a liability management program.

## Appendix 1 – Glossary

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**Allowable Annual Cut (AAC):** The allowable rate of timber harvest from a specified area of land. The Chief Forester sets AACs for timber supply areas (TSAs) and tree farm licences (TFLs) in accordance with Section 8 of the *Forest Act*.

**AAC apportionment:** The distribution of the AAC for a TSA among timber tenures by the Minister in accordance with Section 10 of the *Forest Act*.

**Administrative review:** An appeal of a determination under Sections 127–129 of the *Forest Practices Code of British Columbia Act*.

**Appraisal:** The price, or stumpage, that government charges for timber is determined through the appraisal system. The appraisal system uses statistical and mathematical formulas to balance the international market price for lumber and chips against timber species and quality, and forest harvesting and management costs, to arrive at a price per cubic metre (m<sup>3</sup>) for each species.

**Available volumes:** The portion of total inventory volume that is available for harvesting after all management constraints on timber harvesting have been considered, including definition of the timber harvesting land base, age of tree merchantability, deferrals, and any other priorities or constraints on timber harvesting.

**Basic silviculture:** Harvesting methods and silviculture operations including seed collecting, site preparation, artificial and natural regeneration, brushing, spacing and stand tending, and other operations that are for the purpose of establishing a free-growing crop of trees of a commercially valuable species and are required in a regulation, pre-harvest silviculture prescription, or silviculture prescription.

**Critical wildlife habitat:** Part or all of a specific place occupied by a wildlife species or a population of such species and recognized as being essential for the maintenance of the population.

**Critical winter range:** Forested habitat, usually stands of mature or old-growth conifers, that provides deer and elk with resources critical to survival during severe winters.

**Cruise:** Involves the gathering of timber volume and quality information through statistical sampling of a timber stand. The volume and quality information gathered is necessary to determine the stumpage rate through the appraisal system.

**Cutting authority:** As defined in the Forest Practices Code of British Columbia Cutblock and Road Review Regulation, a cutting permit or an application for a cutting permit or a timber sale licence or a timber sale licence that has been advertised.

**Cutting permit:** A legal document that authorizes the permit holder to harvest trees under a licence issued under the *Forest Act*.

**Discretionary authority:** The power to make a decision where the choice of whether to make a decision is that of the decision maker.

**Economically operable:** Forest stands for which log prices exceed harvesting costs, including profit and return to capital.

**Falldown effect:** A decline in timber supply or harvest level associated with the transition from harvesting the original stock of natural mature timber over one rotation to harvesting at a non-declining level (typically equal to the annual increment) after conversion to a forest with a balanced age class structure.

**Forage:** Grasses, herbs, and small shrubs that can be used as feed for livestock or wildlife.

**Forest development unit:** An area where development may take place during the term of the Forest Stewardship Plan.

**Forest inventory:** An assessment of forest resources, including digitized maps and a database which describes the location and nature of forest cover (including tree size, age, volume, and species composition) as well as a description of other forest values, such as soils, vegetation, and wildlife features.

**Forest licence:** A forest licence allows orderly timber harvest over a portion of a sustained yield management unit, and the timely reforestation of harvested areas according to a strategic resource management plan prepared by the Forest Service for each TSA. The licence has a term of 15–20 years, generally replaceable every 5 years (some are non-replaceable), and operating areas that shift over time. Once an area is harvested and reforested, the licensee moves to another part of the TSA. A forest licence specifies an annual allowable cut, requires a management and working plan, and specified management activities.

**Forest Practices Board:** The "public watchdog" agency established under the *Forest and Range Practices Act* to audit the activities of both the forest industry and the government. The Board may also investigate complaints.

**Forest profile:** The range of forest conditions that exists across the landscape, including such factors as timber species, quality, condition and age, location, elevation, topography, accessibility, and economic viability.

**Free to grow:** The stand is healthy and its further growth to maturity will not be affected by competition from other plants or trees.

**Free growing:** Stocking standards have been met as per the silviculture prescription or site plan by the licensee.

**Greened-up:** A cutblock that supports a stand of trees which has attained the green-up height specified in a higher level plan for the area or, in the absence of a higher level plan for the area, has attained a height that is 3 m or greater; if under a silvicultural prescription, the cutblock meets the stocking requirements of that prescription; if not under a silviculture prescription, the cutblock meets the stocking specifications for that biogeoclimatic ecosystem classification specified by the Regional Manager.

**Habitat:** The place where an organism lives, and (or) the conditions of that environment including the soil, vegetation, water, and food.

**Impact assessment:** A study of the potential future effects of resource development on other resources and on social, economic, and (or) environmental conditions.

**Inoperable lands:** Lands that are unsuited for timber production now and in the foreseeable future by virtue of: elevation; topography; inaccessible location; low value of timber; small size of timber stands; steep or unstable soils that cannot be harvested without serious and irreversible damage to the soil or water resources; or designation as parks, wilderness areas, or other uses incompatible with timber production.

**Judicial review:** A review of a decision by a court authorized and conducted under the *Judicial Review Procedure Act* primarily concerned with the fairness of the procedures used to make a decision, whether or not the decision maker was acting within his or her jurisdiction, and errors of law.

**Management plan:** A management plan, or management and working plan, approved under a tree farm licence, woodlot licence, pulpwood agreement, or forest licence; contains inventory and other resource data.

**Multiple Use Sustained Yield Calculation (MUSYC):** A linear programming forest planning model developed by the United States Forest Service. This model is currently used as the British Columbia Forest Service's standard forest planning model for carrying out TSA timber supply computer analysis.

**Natural disturbance regimes:** The historic patterns (frequency and extent) of fire, insects, wind, landslides, and other natural processes in an area.

**Net down procedure:** The process of identifying the net land base, or is the number of hectares of forest land that actually contribute to the AAC. The process involves "netting down" the TSA gross area to the TSA gross forest area, then to the TSA net forest area. Areas and (or) volumes are sequentially deleted or reduced from the gross land base for a number of considerations (e.g., in privately owned, non-forest or non-productive, environmentally sensitive, unmerchantable, and inaccessible areas).

**Objective:** A goal or aim.

**Operable timber:** Available timber that can be economically logged with present harvesting methods after consideration of access, timber quality, and market price.

**Operating area:** Geographic subunits of TSAs that have been assigned to individual major licensees for the purposes of long-term planning. The boundaries are subject to change as the timber profile within a TSA changes over time.

**Operational plan:** A forest stewardship plan, woodlot licence plan, range use plan, or range stewardship plan.

**Quasi-judicial:** A decision made by a government official or tribunal that involves the application of policy to a particular set of facts requiring the exercise of discretion and the application of the principles of natural justice.

**Stocking standards:** Measurable standards to ensure that the desired stand conditions are met.

**Stumpage rate:** The price that government charges for timber (in \$/m<sup>3</sup>).

**Timber Supply Area (TSA):** An integrated resource management unit established in accordance with Section 6 of the *Forest Act*. Timber supply areas were originally defined by an established pattern of wood flow from management units to the primary timber-using industries.

**Timber Supply Block:** A division of a TSA.

**Utilization standards:** The dimensions (stump height, top diameter, base diameter, and length) and quality of trees that must be cut and removed from Crown land during harvesting operations.

**Waste:** The volume of timber left on the harvested area that should have been removed in accordance with the minimum utilization standards in the cutting authority. It forms part of the AAC for cut-control purposes.

**Yield analysis:** The study of forest yield over time using mathematical models and inventory data.

**Yield curve:** A representation of stand volume, usually as a function of stand age, in graphical or tabular form.

## Appendix 2 – Information Contacts

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<b>Northern Interior Forest Region</b>	<a href="http://www.for.gov.bc.ca/rni/">http://www.for.gov.bc.ca/rni/</a>
<b>Mackenzie Forest District</b>	<a href="http://www.for.gov.bc.ca/dmk/">http://www.for.gov.bc.ca/dmk/</a>
<b>B.C. Ministry of Environment</b>	<a href="http://wlapwww.gov.bc.ca/">http://wlapwww.gov.bc.ca/</a> or <a href="http://www.env.gov.bc.ca/">http://www.env.gov.bc.ca/</a>
<b>Fisheries and Oceans Canada</b>	<a href="http://www.dfo-mpo.gc.ca/">http://www.dfo-mpo.gc.ca/</a>
<b>Acts, regulations, and reports</b> <i>(On-line access to the bulk of forest legislation and policies.)</i>	<a href="http://www.for.gov.bc.ca/mof/acts.htm">http://www.for.gov.bc.ca/mof/acts.htm</a>
<b>Forms index</b> <i>(On-line access to the majority of B.C. Ministry of Forests and Range forms.)</i>	<a href="http://www.for.gov.bc.ca/pscripts/isb/forms/forms.asp">http://www.for.gov.bc.ca/pscripts/isb/forms/forms.asp</a>
<b>Forest and Range Practices Act training</b> <i>(On-line access to all FRPA training modules.)</i>	<a href="http://www.for.gov.bc.ca/code/training/frpa/fpc_transition_training.html">http://www.for.gov.bc.ca/code/training/frpa/fpc_transition_training.html</a>
<b>Electronic forest management</b> <i>(Provides the opportunity to submit all key information, including appraisal.)</i>	<a href="http://www.for.gov.bc.ca/his/esd/">http://www.for.gov.bc.ca/his/esd/</a>
<b>Government of British Columbia</b> <i>(Primary Web access point for all government services and sites.)</i>	<a href="http://www.gov.bc.ca/bvprd/bc/home.do">http://www.gov.bc.ca/bvprd/bc/home.do</a>

### Professional Association Contacts

#### **Association of British Columbia Forestry Professionals**

1030–1188 West Georgia Street  
Vancouver, BC V6E 4A2  
Telephone: 604-687-8027  
Facsimile: 604-687-3264  
Email: [info@abcfp.ca](mailto:info@abcfp.ca)  
Web page: [www.abcfp.ca](http://www.abcfp.ca)

#### **Association of Professional Engineers and Geoscientists of B.C.**

200–4010 Regent Street  
Burnaby, BC V5C 6N2  
Telephone: 604-430-8035      Toll free in Canada: 1-888-430-8035  
Facsimile: 604-430-8085  
Email: [apeginfo@apeg.bc.ca](mailto:apeginfo@apeg.bc.ca)      Web page: [www.apeg.bc.ca](http://www.apeg.bc.ca)

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Facsimile: 250-380-9233

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Web page: [www.bcia.com](http://www.bcia.com)

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## Appendix 3 – Non-Replaceable Forest Licence – Business Management System

The business management system was developed for non-replaceable forest licence holders to be able to track their legal obligations and activities throughout the term of the licence. The licence holder can plan to target necessary timelines, or target specific business management goals. The business management system keeps track of:

- cutblock development,
- road and bridge development,
- seedling/ planting information,
- Forest Stewardship Plan (required steps to developing the plan),
- legal operational obligations and required fieldwork activities,
- post-harvest assessment information, and
- harvesting.

This business management system can be viewed on ‘Sharepoint’ located on the internal government website.

Example of NRFL business management system spreadsheet

Harvest schedule	m <sup>3</sup>	Block ID	NAR	Tot # of blocks
Target winter volume				
<b>Total winter volume</b>	<b>0</b>			
Target summer volume				
<b>Total summer volume</b>	<b>0</b>			

*Continued on next page*

Example of NRFL business management system spreadsheet (continued)

Silviculture schedule				
	Block ID	NAR/Bik	Planting density	Total
Target spring planting				0
				0
				0
<i>Total spring planting</i>				0
Target summer planting				0
				0
				0
<i>Total summer planting</i>				0
Brushing	Block ID		Total treatment area	
				0
<i>Total brushing</i>				0
Surveys	Block ID		Total survey area	
				0
<i>Total surveys</i>				0
Site Prep	Block ID		Total treatment area	
				0
<i>Total site prep</i>				0

Block development schedule	m <sup>3</sup>	Block ID	Tot # of blocks
Target winter volume			
<i>Total winter volume</i>			0
Target summer volume			
<i>Total summer volume</i>			0
<i>Number of Cutting Permits</i>		2	

Road and Bridge Schedule			
	RP km	In block km	Total
Target Km road built			0
Target # bridge installed			0
Target Km road inspected			0
Target # bridge inspected			0
Target Km road maintained			0
Target Km road deactivated			0