

**MINISTRY OF
NATURAL RESOURCES
AND FORESTRY**



**PRESCRIBED BURN
MANUAL**

May 2019

AFFES Publication No. POO443

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1.0 INTRODUCTION

Prescribed burning is recognized throughout Ontario as a safe, effective resource management tool, and as an integral component of an effective fire management organization. In the absence of “natural” fire, prescribed burning is also acknowledged as the only way to ensure long-term ecological sustainability in many of Ontario’s ecosystems.

Ontario’s Fire Management Strategy recognizes prescribed burning and a number of MNRF program areas support and encourage its use as a resource management tool (i.e., Forests, Ontario Parks, Species at Risk, Ontario Stewardship, and others).

The MNRF fire program has the responsibility for the administration of the MNRF prescribed burn program. The application of prescribed fire in the environment is controlled to ensure that public safety, interests and values are protected from the risk of wildfire. Prescribed burn planning occurs for many reasons and occurs both outside and inside the Fire Regions (OFR, IFR).

This manual provides direction for planning prescribed burns on Crown lands administered by the MNRF throughout Ontario, on private land managed by MNRF or on any burn regardless of land ownership in which MNRF personnel are involved in an operational, support or approval role. The PB Manual is recognized in the Forest Operations and Silvicultural Manual, which is a regulated manual under the Crown Forest Sustainability Act administered by the Ministry of Natural Resources.

The manual outlines the planning process which ensures that all prescribed burns in Ontario are conducted in a safe and efficient manner. This document describes key prescribed burn planning concepts and some considerations for planning prescribed burns, based on the complexity of the proposed burn. Two main planning streams exist - low and high complexity. Companion documents, provided through electronic links in this manual, outline the detailed prescribed burn planning requirements and standard business practices. In addition the PB Planning Toolbox contains tools that can assist planners in preparing prescribed burn plans including fuel loading calculators and PB expert systems for white pine, red oak and tall grass prairie sites.

Prescribed Burn Policy in Ontario:

The Prescribed Burn Policy in Ontario is comprised of: **The Natural Resource Management Legislation and Policy** and the **Forest Fires Prevention Act R.S.O. 1990**. The Policy combines the two provincial documents to produce the **Prescribed Burning Operations Policy**

The Policy Contains the Prescribed Burn Manual containing the **General Direction** and **PB Plan contents**. The Policy also contains a Toolbox to assist with the planning of a prescribed burn

PB Toolbox

1. Planning Guides

- a. PB Applications
- b. Guide to the Prescribed Burn Complexity Assessment Key
- c. Prescribed Burn Complexity Assessment Key
- d. Prescribed Burn Complexity Assessment Form
- e. Guide to High Complexity Prescribed Burn Planning
- f. Guide to the Prescribed Burn Boundary Assessment
- g. Prescribed Burn Boundary Assessment
- h. Low Complexity PB Template
- i. Guide to the High Complexity Prescribed Burn Risk Analysis
- j. HCPB Risk Analysis
- k. Guide to the High Complexity Prescribed Burn Independent Analysis
- l. HCPB Independent Analysis
- m. Post Burn Reports

2. PB Business Practices

- a. Terms and Conditions for High Complexity Prescribed Burns
- b. Terms and Conditions for Low Complexity Prescribed Burns
- c. Prescribed Burn Agreement
- d. Prescribed Burn Unit Costs 2008
- e. Guide to Prescribed Burn Costs
- f. Low Complexity Prescribed Burn - Cost Estimate
- g. Prescribed Burn Costing Form Summary
- h. PB Personnel Standards

3. Additional Tools

- a. PBWX
- b. Slash Fuel Loading Guide
- c. Understory Prescribed Burn Expert System for Ontario White Pine
- d. Tallgrass Prairie and Savanna Prescribed Fire Decision Support System
- e. Red Oak Prescribed Burn Expert System
- f. Measurement and Description of Fuels Report O-X-287
- g. PB Burning of Boreal Mixedwood Slash Report O-X-367

1.1 Legislation and Policy

Prescribed burning in Ontario is governed by a number of *Statutes of Ontario* and/or policies.

1.1.1 [Forest Fires Prevention Act](#)

Regulation 207/96 of the **Forest Fires Prevention Act R.S.O. 1990**, outlines the conditions under which outdoor burning may take place without a fire permit. Outdoor fires are allowed, outside of restricted fire zones, for cooking and warmth as well as other fires that are either piles of woody debris or small areas:

- Composed of piled wood, brush, leaves or discarded wood by-products, AND
- The material is burned in a single pile that is less than two metres in diameter and less than two metres high, AND
- The fire is at least two metres from any flammable materials OR
- The total area to be burned does not exceed 1 ha AND
- The length of flaming edge does not exceed 30 m
- In either case, the fire is started not earlier than two hours before sunset, and is extinguished not later than two hours after sunrise the following day, or earlier.

Burns that meet these conditions do not require permits from the Ministry of Natural Resources and Forestry however, may still require permits from a municipality.

All other fires outside of the parameters listed above require a permit and/or may require a Prescribed Burn plan depending on the purpose, duration and complexity of the proposed project.

Prescribed Burns will not be ignited in an area that has been designated a Restricted Fire Zone, declared by the Minister or designate under section 37.(1)(b) of the Act.

1.1.2 [Fire Protection and Prevention Act](#)

Throughout Ontario, under the **Fire Prevention and Protection Act R.S.O 1997** and the **Municipal Act S.O. 2001**, the council of a municipality may appoint a Chief Fire Official and pass bylaws regulating the setting of open air fires. Burning permits may be required and issued under the authority of municipal by-laws in a given municipality.

1.1.3 [Environmental Assessment Act](#)

Prescribed burns conducted by MNRF or on behalf of any government agency must comply with the conditions of the Environmental Assessment (EA) Act. Private individuals or companies conducting burns should contact the Ministry of Environment (MOE) to determine if they are governed by any EA conditions.

Prescribed burns for timber management purposes on Crown lands in Forest Management Units are presently included within the Terms and Conditions of the approval under the Class Environmental Assessment for Timber Management on Crown Lands in Ontario.

Prescribed burns for timber management purposes on Crown lands, Agreement Forests, and private lands south of designated Forest Management Units meet EA Act conditions under Exemption Order MNR-41.

Prescribed burns carried out by or on behalf of MNRF for wildlife management purposes meet EA Act conditions under Exemption Order MNR-42. A copy of the “Manager Confirmation – EA Act Compliance Form – Wildlife Management Activity Project” should be completed and added to the project file.

Prescribed burns that are on Crown land included in a provincial park or conservation reserve are subject to the Class Environmental Assessment for Provincial Parks and Conservation Reserves. Fire projects that conform to the Forest Fire Management Strategy for Ontario and the Prescribed Burn Manual are classed as Category A. Enhanced or alternative direction will be prepared in accordance with the Fire Management Policy for Provincial Parks and Conservation Reserves and be screened to Category B/C/D.

Prescribed burns for timber management purposes on Agreement Forests and private lands within the area of Forest Management Units covered by the Class EA for Timber Management on Crown Lands in Ontario, or lands north of Forest Management Units covered by the Class EA for Timber Management on Crown Lands in Ontario are not exempt from EA. Until EA Act coverage is obtained for prescribed burns on those areas, any proposals must be referred to the Resource Management Planning Section, Land Use Planning Branch.

Burns proposed or delivered by MNRF on Crown lands that are not included in provincial parks or conservation reserves and are not for timber or wildlife habitat management purposes may be subject to, and require screening under the Class Environmental Assessment for Resource Stewardship and Facility Development. Burn proponents should check with MNRF EA specialists at the Resource Management Planning Section, Land Use Planning Branch, Peterborough, Ontario.

1.1.4 [Environmental Bill of Rights \(EBR\)](#)

The Prescribed Burn Manual, through its compliance with MNRF’s Statement of Environmental Values, serves all three purposes of the Environmental Bill of Rights.

- a) To protect, conserve and where reasonable, restore the integrity of the environment.**

The PB Manual provides direction on the use of prescribed fire which, when applied safely and effectively, provides opportunities to enhance the sustainability and biodiversity of all vegetation and forest resources.

b) To provide sustainability of the environment.

This manual directs the application of prescribed burns, as determined by land and resource plans, which contribute to the sustainability of valuable local environments and ecosystems.

c) To protect the right to a healthy environment.

This manual ensures that appropriate actions take place when applying prescribed fire to ensure the long term health of natural ecosystems. It aids resource managers in preparing the PB plans. The manual also provides direction for public input into the preparation of PB plans, so they will have a direct role in ensuring the continuation of healthy ecosystems..

This Prescribed Burn Manual was subject to public review under the EBR notification requirements.

1.1.5 Endangered Species Act

Prescribed burns conducted by MNRF or on behalf of any government agency must comply with the conditions of the Endangered Species Act (ESA). Private individuals or companies conducting burns should contact the Ministry of Natural Resources (local district office) to determine if they are affected by any ESA conditions and if a permit under that legislation is required.

1.2 Fire Management Policy

Prescribed burning is recognized as an integral land management tool that can be used to help achieve a range of objectives such as:

- silvicultural site preparation;
- restoring and maintaining the health, integrity and sustainability of ecosystems;
- controlling outbreaks of insects and disease;
- reducing wildfire hazards;
- research;
- developing and testing operational fire management and silvicultural techniques;
- developing staff skills and experience.

The application of prescribed burning introduces risks to MNRF staff and other persons, public property, and other societal values. Controls must be in place to mitigate the risks so that the benefits of prescribed burning can be achieved safely and effectively. These controls include:

- incorporating a risk-management approach at all levels of planning and operations
- carry out work in accordance with an approved burn plan that is consistent with the requirements of this manual
- ensuring training qualifications are adequate and current for all personnel involved in prescribed burn operations;
- coordinating burn operations, including fire suppression plans and resources; and
- clearly defined roles and responsibilities at all stages of prescribed burn planning, approval, and operations

Many prescribed burns are carried out by individuals who are not MNRF employees. The controls outlined above are incorporated into this manual and any person wishing to conduct a prescribed burn should be familiar with the contents and refer to the appropriate Terms and Conditions for Conducting Prescribed Burns.

1.3 Other Planning Directives / Guidelines / Manuals

Other documents provide information on the various techniques and procedures required to complete particular sections of this manual. PB plan writers must have regard to these other related documents when developing a plan.

1.4 Manual Updates and Revisions

The Prescribed Burn Manual will be reviewed at least every five years and revised as required. The most current version will be posted to the Prescribed Burn page on the MNRF web site. Comments concerning this manual should be sent to:

Director of Aviation and Forest Fire Management:
Ministry of Natural Resources
70 Foster Drive, Suite 400
Sault Ste Marie, Ontario.
P6A 6V5

1.5 Prescribed Burn Terminology

Many terms used in prescribed burning in Ontario are found in the "*Glossary of Forest Fire Management Terms*", Canadian Committee on Forest Fire Management, National Research Council Canada, NRCC No. 26516. The following are terms used in reference to prescribed burn operations.

Burn Boss: The person responsible for supervising a prescribed burn from ignition to mop-up.

Burn Boundary: The boundary line surrounding the **project area** of the prescribed burn.

Burn Proponent: Any resource management group that has vested interest in the application of fire to a specific area. (May also be known as the “client” to those delivering the burn)

Fire Assessment Report (FAR): A report used by fire management personnel to describe the current state of a fire and provide an assessment of alternatives for dealing with the fire situation. An assessment is completed whenever a PB reaches **problematic control** or becomes a wildfire. The FAR provides a direct link to regional fire response planning which ensures that appropriate action is being taken with regards to suppression requirements and costs.

Fire Management Representative: The local representative of the MNRF’s Aviation, Forest Fire and Emergency Services, designated by the Regional Fire Program Manager; usually the Fire Management Supervisor or the Fire Advisor.

Inside the Fire Region: The portion of the province, that is described within Schedules 1 and 2 of the Forest Fires Prevention Act, to which the Act applies. (Generally the portion of Ontario north of Highway 7 east of Hwy 400 and the Bruce Peninsula.)

Major revision: Changes to the plan that affect safety, control and/or objectives (for example, the desired results fall outside the index ranges established).

Minor revision: Changes that do not affect safety, control or objectives (e.g. the Burn Boss is replaced by another that is equally qualified and knowledgeable of the prescribed burn).

MNRF Senior Manager: The MNRF manager accountable for decisions on the land base. The Ontario Parks Zone Manager for lands within a Provincial Park or managed by Ontario Parks and the District Manager for all other locations.

Outside the Fire Region: The portion of the province outside of that described within Schedules 1 and 2 of the Forest Fires Prevention Act. (Generally southwestern Ontario south of the Bruce Peninsula and southeastern Ontario south of Highway 7.)

PB Planning Team: The team organized to prepare the PB Plan and, at minimum, consists of the burn proponent and a qualified Burn Boss.

Prescribed Burn Complexity: The complexity key is used to determine whether a burn project is classified as high or low complexity. The planning detail required in the preparation of a prescribed burn plan considers: the duration of the burn; burn objectives; project size; resource requirements; ignition type; potential for social disruption; negative environmental values and fire escape.

Problematic Control: A fourth possible stage of a prescribed burn. The prescribed burn (at any

of the previous three stages; ignition, control or demobilization) is not developing as planned and the burn could potentially escape or consume more resources and funds than was planned.

Project Area: The entire area within the **burn boundary** excluding the areas which will obviously not burn (for example, water, fire-proof wetlands). When reporting proposed burn size, use this area.

Stages of a PB: A prescribed burn typically has 3 stages; Ignition, Control and Demobilization. A PB may enter a fourth stage called **problematic control** if it is not proceeding as planned.

Treatable Area: The area(s) within the **project area** for which pre-determined desired results can be achieved.

Visitor: An individual on site during a prescribed burn but not assigned to an operational role.

2.0 PLANNING

Planning requirements depend upon who conducts the prescribed burn and land ownership:

- a) If MNRF plans and/or conducts the Prescribed Burn; a Prescribed Burn Plan is required. If the burn is conducted on Private, Municipal or Federal lands or is conducted on Crown land on behalf of a non-MNRF burn proponent, then a "*Prescribed Burn Agreement*" is also required.
- b) A PB plan and fire permit may be required before any prescribed burning can occur on Crown lands administered by the MNRF throughout Ontario, on private land that is managed by MNRF or on any burn regardless of land ownership in which MNRF personnel are involved
- c) If the prescribed burn is planned and/or conducted with no MNRF involvement or land jurisdiction, then the burn need only meet legislated and local burning requirement such as the **Fire Prevention and Protection Act R.S.O 1997**, and the **Municipal Act S.O. 2001**. Regardless, the local fire authority must be contacted to determine their requirements

This chapter outlines the steps that are to be followed in the prescribed burn planning process. Details about how to carry out these steps are found in the guides and other reference documents in the PB Toolbox.

2.1 Site Selection

Burn proponents are responsible for identifying candidate PB sites as early as possible. This will normally be done through the resource management planning process (e.g., annual work schedules, park vegetation management plans). Site selection factors that affect the probability of success are: size, shape, fuel type, access, values, costs and burn boundaries. It is advantageous to have an experienced fire manager involved early in this process. Specialized tools are available in the PB Toolbox to assist with site assessment for white pine, red oak and

tallgrass prairie.

2.2 Prescribed Burn Application

The burn proponent is responsible for the preparation and submission of the formal application for a prescribed burn. Prior to submission to MNRF, the burn proponent will ensure that the private land owner or non-MNRF land base manager has reviewed the application and has signed the PB Approvals sheet, if applicable. Applications submitted to MNRF are reviewed by managers responsible for the area and are approved or rejected. An application is required for each PB project. If slash pile burning is submitted as part of the Annual Work Schedule, an application is not required.

2.2.1 Complexity Assessment

Every prescribed burn application that is submitted to MNRF for approval must be accompanied by a completed Prescribed Burn Complexity Assessment form. The burn proponent may complete the form but will need assistance from a qualified Burn Boss. The complexity assessment process rates the burn based on a number of predetermined, weighted parameters to determine whether a burn fits within the high or low complexity planning streams.

2.3 Plan Development

Once an application is approved, a PB plan can be prepared. Each PB project requires a separate plan. PB plans submitted for approval by MNRF must comply with the PB Operations Policy and this manual. The approval of the Complexity Assessment will determine whether the plan can be developed using one of the low complexity PB templates or whether it must be developed using the *“Guide to High Complexity Prescribed Burn Planning”*. When the plan has been prepared, it is submitted to the MNRF for approval. Prior to submission, the plan must be signed by the burn proponent. The MNRF reviewers assess the plan to ensure that it is complete, that the burn can be done safely, and that the desired results can be achieved.

2.4 Plan Review and Approval

2.4.1 MNRF Role

All prescribed burns inside the legislated fire regions must be approved by MNRF. For areas outside of the legislated fire regions, approval is required for burns on land managed by the MNRF or that have an MNRF employee involved in the planning or delivery of the burn.

Outside the legislated fire regions, on crown lands not managed by the MNRF or on private lands where the burn will have no involvement of MNRF personnel, a plan does not need to be submitted to the MNRF. Prescribed burning on private land, OFR is

regulated by the “chief fire official” who approves/authorizes all open air burning within their jurisdiction under authority of the “*Fire Protection and Prevention Act*” S.O. 1997, Chapter 4.

2.4.2 Planning Schedule

It takes time to plan and approve a prescribed burn. This will ensure that burn proponent concerns are addressed, time is allowed for review prior to approval and that the PB is carried out in a safe and efficient manner. Table 1 summarizes the cumulative timing required for low and high complexity prescribed burns, both inside and outside of the legislated fire regions.

Table 1: Prescribed Burn Planning and Approval Schedule
Dated back from earliest possible ignition date.

Activity	Low Complexity	High Complexity
Submit application	6 months	9 months
Application approved/rejected	5 months	7 months
Plan complete/approved by the burn proponent and submitted to MNRF	60 days	75 days
Plan Approved by Fire Mgt. Representative	45 days	60 days
Plan Approved by MNRF Senior Manager	30 days	45 days
Plan Approved by AFFES Regional Response and Operations Manager	n/a	30 days
Plan Approved copy available at District or Park Office	30 days	30 days
No additional major revisions or amendments	14 days	14 days

2.4.3 Prescribed Burn Application and Plan Review

Prescribed burn applications and plans submitted to MNRF for approval are reviewed by MNRF technical specialists and managers prior to approval. The plan review assesses all planned actions and associated risks to ensure the PB will meet the objectives of the burn proponent. The plan must be operationally feasible and comply with MNRF management

strategies and regulations. The intent of this is to safely serve and protect the needs of the public. The review process is outlined in the Prescribed Burning Operations Policy, FM: 2:10.

2.5 Plan Approval

Prescribed burn applications and plans will be approved by a land manager and a fire manager based on the complexity of the prescribed burn. The documents contain a section where the approvers will sign-off on the plan, including a printed or typed name and the date that the signature was applied to the document. Applications and plans will be approved at least 30 days prior to the ignition of the burn. Major revisions to plans must be approved at least 14 days prior to the ignition of a burn.

2.6 Ignition Approval

Approval from MNRF to ignite a prescribed burn is required where the MNRF Fire Program may be requested or expected to respond to an escape. Notification of other fire response authority (i.e. the municipal chief fire official) should occur where MNRF is not the fire service provider.

For high complexity prescribed burns, an onsite review of the ignition and suppression plan and the predicted fire behaviour will be completed prior to ignition. This review will provide a risk analysis of the plan in relation to actual and forecast conditions and whether the suppression plan is appropriate for expected conditions on the day of ignition. Risk to values outside the burn area will be specifically addressed in this review. On the day of ignition, a prediction of fire behaviour for the burn area and adjacent fuel complexes will be conducted by a FBAN before the Burn Boss seeks approval to ignite.

2.7 PB Plan Information Management

Copies of plans are required to be available in various locations as follows:

- a. A complete copy of the approved prescribed burn plan and fire permit is required onsite during the burn operation.
- b. A second copy of the plan is required to be available at the MNRF district or Ontario Parks office for 30 days prior to ignition.
- c. A third copy is available at the Regional Fire Office for the Duty Officer to access on the day of ignition and beyond. This copy should contain the original signatures and will remain on file at the appropriate Regional Fire Office.

2.8 Revisions to an Approved Plan

Revisions to a plan that has already been approved are the exception rather than the rule.

2.8.1 Minor Revisions

Inside the legislated fire regions, the Fire Management Supervisor, in consultation with the Burn Proponent and the Burn Boss, can approve minor changes to the plan that will not influence the safety or control aspects of the burn. Outside of the legislated fire regions, the MNRF Senior Manager who approved the plan can approve these changes.

Examples of Minor Revisions:

- Increase in suppression equipment
- Change in personnel if replacements equal in qualification and knowledgeable about the burn
- Logistical issues that are deemed more cost effective/efficient and still meet the intent of the plan
- Any change that enhances safety
- Changes to radio frequencies as long as appropriate personnel are advised in pre-burn briefings
- Addition of personnel for mentoring
- Change in location of basecamp, helipads, torch site, if more suitable/safe areas are determined

2.8.2 Major Revisions

Major revisions will result in either the postponement of the burn or require that the proposed revision be re-routed through the formal approval process. This type of revision cannot be made less than 14 days prior to ignition. If the revisions must be made, then ignition will be postponed until at least 14 days after the approval of the plan revision to ensure that all parties are aware of any changes.

Requests, including rationale, and approval of all plan revisions will be documented and appended to all copies of the PB Plan.

Examples of major revisions:

- A change to aircraft levels below approved level
- A reduction of suppression resources
- A significant change to ignition method i.e., switching from ground to aerial or vice versa
- Change in prescription
- Changes that significantly increase costs
- Identification of additional values that could be impacted since the plan approval
- Any change that could affect safety of personnel
- Any change that affects the Terms and Conditions for Conducting PBs

2.9 Conducting the Burn

Every prescribed burn will be conducted as described in its approved Prescribed Burn Plan.

2.10 Burn Documentation

Within 10 days of ignition, an electronic file of the burn plan, including scanned images of the completed approvals and authorization sheets, will be forwarded to the Forest Fire Management Section for inclusion in the current year's PB files.

Part of the prescribed burn evaluation is conducted to document the prevailing conditions before ignition occurs. Evaluation of the burn results determines the success of the prescribed burn in meeting its objectives. Reviews are conducted on some burns to evaluate the PB program and make improvements for future burns. Post burn documentation should be completed and filed within 60 days of the burn being declared out.

3.0 APPLICATION

Prescribed burn planning begins with a prescribed burn application initiated by the burn proponent. The burn proponent must be involved in this stage of planning and other managers and partners who have vested interest in the burn area should also be involved. A site inspection should occur.

A separate application must be submitted for each PB being planned. There will be no class approvals. Prescribed burning identified in an approved Annual Work will suffice as an approved application.

The following outlines the information that must be included in an application:

3.1 Title Page

The title page must clearly identify the district, year, local name, geographic location and the size of the project area.

3.2 Site Description

Information contained within the site description should enable a reviewer to mentally picture the site.

3.2.1 Map

An appropriate scale map must accompany all applications. This may vary from a large scale map of a unique area (for example, Pinery Park) to a common Forest Resources Inventory map (1:20,000). A map must show: timber and non-timber values, areas of concern, stand types, past and future logging operations, other disturbances or treatments (for example, spray areas), and the anticipated prescribed burn boundary.

3.2.2 Topography

A brief description of the general soil and topographic features which exist throughout the site, including % slope.

3.2.3 General Fuel Description

A description of the fuels that will be burned and those outside of the treatable area that could be involved if spotting or a fire escape occurs with enough detail to provide the reviewers with sufficient background information for analysis.

3.2.4 Other Treatments

Any treatments that will be applied to the site prior to burning that could affect fire behaviour must be detailed in the application. These would include herbicide application, a change in the arrangement of the fuel (i.e., mowing or tramping) or the addition of fuel.

3.2.5 Values

Known values and acceptable levels of fire impact must be identified within the burn or surrounding area (for example, a 15% fire loss to a wildlife corridor is acceptable; a trapper's cabin near the burn area requires 100% protection). The planning team will identify and prioritize all values which the fire may impact. Any public or commercial restrictions must be included in the application.

3.3 Burning Objectives

The objective(s) of the prescribed burn must be clearly stated. Categories under which specific objectives can be identified are:

- silvicultural site preparation
- restoring and maintaining the health, integrity and sustainability of ecosystems
- controlling outbreaks of insects and disease
- reducing wildfire hazards
- research
- developing and testing operational fire management and silvicultural techniques
- developing staff skills and experience

3.4 Timing of the Burn

Any critical timing to conduct a burn (for example, before "greenup" or with a seed crop), in order to attain specific results must be identified. As well, consideration must be given as to whether the burn can be held over to another year and/or the impact of not doing the burn.

3.5 Desired Results

The desired or acceptable results depend on the burn proponent's primary objective. This may vary for each site. On silvicultural burns, a reduction of logging debris and duff are the most common prescribed burn objectives. On other burns, the desired results may include specific species mortality or a decrease in vitality of certain plant types. The burn proponent must set the desired results.

3.6 Treatable Area

The treatable area is the area that will actually have fire applied to it and should be identified in either hectares or by percent of the total project area. There may be a need to describe an acceptable range (for example, out of an area of 200 ha, there is a requirement to have 60% meet a specific objective, 20% can have a lesser result and the remaining 20% can be left untreated).

3.7 Acceptable Fire Impacts outside Treatable Area

The application must provide an expression of how much fire or the degree of impact that can be tolerated outside the treatment area. This expression can range from 100% fire exclusion (critical stand of timber or value) to an area which could withstand a moderately intense ground fire as long as the standing timber is not destroyed. The information provided in this section will be used in developing ignition and suppression strategies and developing the criteria for problematic control.

4.0 PRESCRIBED BURN PLAN

Every plan will define the logistical and tactical requirements to ignite, control and carry out the burn safely while meeting the objectives of the burn. Prescribed burn plans state the objectives of the burn, describe thought processes for planning the burn, provide operational requirements for conducting the burn, assign responsibility, and serve as documentation for review purposes.

Under no circumstances is safety to be compromised in the use of prescribed burning. All individuals involved in conducting a prescribed burn are to be trained in their respective positions and assigned functions, with specific emphasis placed on safety. Risks associated with the burn should be identified, assessed and mitigated within the burn plan and throughout the approval and pre-ignition processes. Section 4.21 outlines the planning steps to ensure the burn will be completed safely.

The guide and templates for prescribed burn plan preparation outline the detailed content requirements for a PB plan (low or high complexity). The degree of detail contained in either type of plan depends on the complexity of the burning situation. In general, all PB plans will

contain the following components:

4.1 Detailed Fuel Description

A detailed description of the fuel complexes on site is required. Fuel age, species, arrangement, and distribution must be determined. Duff depth distributions should be recorded, where applicable.

4.2 Boundary Assessment

Natural and constructed boundaries surrounding a proposed burn must be assessed following the Prescribed Burn Boundary Assessment process. Risk assessments and mitigating actions concerning boundaries will be included in the PB plan.

4.3 Values

All values in the area of the burn that could be expected to be impacted by the burn, an escape or smoke, must be identified in the plan.

4.4 Fire Prescription

Every prescribed burn plan will contain a fire prescription; the fire weather and fuel moisture conditions necessary to achieve the desired results while limiting fire behaviour to something controllable. Prescriptions must be described in terms of the *Canadian Forest Fire Weather Index System* and observable weather parameters.

4.5 Fire Behaviour Predictions

Fire behaviour predictions are required for the fuels inside the burn boundary and those that could be involved if spotting or a fire escape occurs.

4.6 Fire Behaviour Observations

Fire behaviour observations will be made on all burns in accordance with the complexity of the burn. Fire behaviour observations are necessary to ensure that the burn is progressing according to plan and not entering the problematic control stage.

4.7 Weather

Standard weather measurements are to be taken on-site at 1/2 hour intervals immediately preceding and during the ignition stage.

4.8 Personnel

The Burn Boss has overall responsibility and accountability to ensure the PB is conducted according to the approved PB plan. Careful consideration should be given to the qualifications of the other personnel working on the burn. All personnel involved in the operational delivery of all stages of a prescribed burn must be trained and qualified.

4.9 On-Site Visitors

Every PB plan must outline how visitors will be dealt with during the burn operation.

4.10 Maps

The number of maps required is dependent upon burn complexity. A minimum of one map is required for every burn. The map must include area outside the burn boundary, depending upon the complexity of the burn, expected fire behaviour, and the extent of suppression strategies.

4.11 Records

The plan must state how information will be documented for activities before, during and after the burn.

4.12 Internal Communications

Every plan must include details on how operational communications will occur. Operational communications include pre-burn briefings, post burn debriefings and communications between team members during the burn operation.

4.13 Ignition Plan

The ignition plan will describe the ignition operation for the prescribed burn.

4.14 Suppression/Operations

The suppression/operations plan will describe the strategies and tactics that will be used to control the burn from the time the burn is ignited until it is called out.

4.15 Problematic Control

Every plan must clearly identify the signs of problematic control and a plan for returning the burn to the controlled stage.

4.16 Suppression outside the Treatable Area

The suppression plan must address how fires will be responded to which are either in non-

treatment areas within the burn boundary (for example, wildlife corridors) or areas outside the burn boundary.

4.17 Fire Assessment Report

A Fire Assessment Report may be required if a burn enters the problematic control stage or escapes control.

4.18 Declaration of a Wildfire

The plan must describe the criteria for declaring the PB a wildfire and any communications that are required as a result.

4.19 Logistics

The level and type of service for the entire period of the burn operation must be described and rationalized in relationship to such things as ignition requirements, suppression requirements, site security and safety requirements as well as efficiency considerations.

4.20 Cost Estimate

Cost estimates should be developed for every prescribed burn to assist the burn proponent in ensuring that the benefit received from the burn justifies the cost.

4.21 Safety Plan

Safety functions and responsibilities are an inherent component of all job functions in a prescribed burn operation. The safety section will address how common issues will be mitigated and provide specific information on dealing with emergencies or other special safety concerns.

4.22 External Communications

It is necessary to keep the Ontario public, private industry, local government officials, the Ministry of Natural Resources and other ministries and agencies informed of the prescribed burn program. Each prescribed burn plan will have a communications plan that addresses how key messages concerning the prescribed burn will be delivered to the key audiences that want or require them.

4.23 Problematic Control Notification

A PB communication plan must have a contingency section that details an immediate and structured communications response to a PB exhibiting problematic control or a PB that is declared a wildfire.

5.0 PB TOOLBOX

The **PB Toolbox** contains the companion documents to this manual that provide detailed instructions for preparing a prescribed burn plan as well as other documents and information required or that provide assistance in PB planning and delivery including:

1. Planning Guides

- a. PB Application
 - i. LCPB Application
 - ii. HCPB Application
- b. Prescribed Burn Complexity Assessment Key
- c. Guide to the Prescribed Burn Complexity Assessment Key
- d. A Guide to High Complexity Prescribed Burn Planning
- e. Prescribed Burn Boundary Assessment
- f. Guide to the Prescribed Burn Boundary Assessment
- g. Low Complexity PB Templates
 - i. Low Complexity Prescribed Burn Plan
 - ii. Low Complexity Prescribed Burn Plan for Slash Pile Burning
 - iii. Low Complexity Prescribed Burn Plan for Railway Right-of-Way Burning
 - iv. Low Complexity Prescribed Burn Workbook
- h. Post Burn Reports
 - i. Low Complexity Slash Pile Burn – Post Burn Report
 - ii. Low Complexity Prescribed Burn – Post Burn Report
 - iii. High Complexity Prescribed Burn Documentation
- i. HCPB Risk Assessment
- j. Guide to HCPB Risk Assessment – coming soon
- k. HCPB Independent Analysis
- l. Guide to HCPB Independent Analysis – coming soon
- m. HCPB Application – Approvals
- n. PB Operations Policy

2. PB Business Practices

- a. Terms and Conditions for High Complexity Prescribed Burns
- b. Terms and Conditions for Low Complexity Prescribed Burns
- c. Prescribed Burn Agreement
- d. Prescribed Burn Cost Estimate Worksheets
- e. PB Personnel Standards
 - i. LCPB Worker
 - ii. LCPB Boss
 - iii. HCPB Boss

3. Additional Tools

- a. PBWXSlash Fuel Loading Guide

- b. Understory Prescribed Burn Expert System for Ontario White Pine
- c. Tallgrass Prairie & Oak Savanna Prescribed Fire Decision Support System
- d. Red Oak Prescribed Burn Expert System
- e. Measurement and Description of Fuels and Fire Behaviour on PB OX 287
- f. PB Burning of Boreal Mixedwood Slash in the Ontario OX 367
- g. Preliminary Fuel Consumption Guidelines for PB OX 316