



HARDWOOD FORESTS DIVISION

# Fuel Management Plan

[forestrycorporation.com.au](http://forestrycorporation.com.au)

## INTRODUCTION

Forestry Corporation of NSW (FCNSW) manages a significant estate of fire prone forests and plantations in NSW. Uncontrolled bushfires are a major and recurring threat to FCNSW business objectives, to communities living in or near forested landscapes, and to people whose livelihoods rely on forest and plantation resources. FCNSW is responsible for sustainably managing native forest ecosystems that have evolved with fire and require a range of different fire regimes to maintain their health, diversity and vitality. Accordingly, FCNSW recognises the need for a risk-based approach to fire management which gives appropriate protection to the range of social, economic and environmental values.

Fuel management is a key management activity undertaken by FCNSW to manage this risk. Fuel reduction through prescribed burning in native forest and grazing are the two main tools used to manage fuel loads, not only for bush fire risk mitigation but also as a means of maintaining ecological diversity and forest health. Prescribed burning is also carried out regularly as part of the silvicultural treatments undertaken to establish plantations and prepare areas for natural regeneration.

FCNSW recognises that fire has always been central to Aboriginal peoples' relationship to the land, and their use of fire as part of everyday life, works towards meeting their spiritual obligations to care for country and serves a wide range of practical purposes. FCNSW acknowledges and respects the depth of knowledge Aboriginal communities have utilising fire in the landscape and understanding fires effects in forested and other ecosystems, including the important role fire plays in keeping landscapes healthy and productive. Accordingly, as a core principle of our fire management, FCNSW aims to engage with Aboriginal communities, and through building trust and transparency, we seek to implement cultural burning programs which return communities to the bush and return bush resources to their communities.

FCNSW has developed this Fuel Management Plan to define the general principles and process of fuel management in State forests, provide an overview of how the prescribed burning program has been developed and how cultural burning activities are integrated in FCNSW's broader program of fuel reduction.

## SCOPE

This Plan provides the framework for fuel management in State forests and other land managed by Hardwood Forest Division (HFD). For the purposes of fire and fuel management, HFD is organised into Forest Protection Areas (FPAs) which are geographically based (Table 1). These FPAs include native forest, hardwood plantations and native forest adjacent to fire-sensitive softwood plantation forests in Bombala, Walcha and Grafton. Softwood Plantations Division have responsibility for fuel management in Tumut and Bathurst Forest Protection Areas (refer to the SPD Fuel Management Plan). Fuel management in areas of State forest under crown lease are not considered within this plan due to the shared management responsibilities with leaseholders. These crown leases are primarily grazed and account for 156,462 hectares of State forest.

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 1 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025

**Table 1: Forest Protection Areas in Hardwood Forests Division.**

HFD areas	Forest Protection Areas
<b>Coastal</b>	South Coast
	Hunter
	Mid North Coast
	North Coast
	Far North Coast
<b>Western</b>	Northern Cypress
	Southern Cypress
	River Red Gum

## OBJECTIVES

The objective of this plan is to:

- provide a set of guidelines for the strategic management of fuel on land which HFD has management control
- ensure that HFD meets its legal and other obligations for fuel management
- describe the fuel management strategies used by FCNSW
- describe the process for identifying areas where hazard reduction burning will occur
- document the targets for hazard reduction burning and describe the process for developing the three-year prescribed burn schedule for the FPAs in HFD.

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 2 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025



## COMPLIANCE FRAMEWORK

This plan meets legal and other best practice standards and requirements for fuel management (Table 2: Where this plan fits with FCNSW’ legal and other requirements).

Table 2: Where this plan fits with FCNSW’ legal and other requirements

	Legislation	Regulatory Instruments	Policy/ Plans	Committees
<b>Commonwealth</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i>		National Bushfire Management Policy Statement for Forests and Rangelands	Australasian Fire & Emergency Service Authorities Council (AFAC) Forest Fire Management Group (FFMG)
<b>State (NSW)</b>	<i>Forestry Act 2012 No 96</i> <i>Rural Fires Act 1997 No 65</i> <i>Environmental Planning and Assessment Act 1979 No 203</i> <i>Plantation and Reafforestation Act 1999 No 97</i>	Integrated Forestry Operations Approvals (IFOAs) Bushfire Environmental Assessment Code Bushfire risk management plans Environmental Impact Assessment	Bush Fire Coordinating Committee Policies Guidelines for low intensity burning (RFS)	Bush Fire Coordinating Committee (BFCC) Bushfire Management Committees (BFMCs)
<b>FCNSW</b>			Forest management policy Fire management policy Fire Management Plan HFD Fuel Management Plan SFD Fuel Management Plan East Coast and Western Branch Grazing Management Plans HFD eucalypt decline, disease and insects Management plan	

For a list of all legislation and how it relates to HFD, refer to Forestry Corporation’s [Compliance Register](#).

## WHY MANAGE FUEL?

FCNSW manages fuel across the estate primarily to mitigate the risk of bushfires while maintaining ecological diversity and forest health. Specifically, FCNSW has four primary goals when managing fuel in the forest estate. These are to:

- i. protect human life and property from wildfires
- ii. protect public assets, including timber plantations, and other values
- iii. prevent the spread of wildfires from FCNSW estate

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 3 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025

WARNING: a printed copy of this document is uncontrolled. Please verify this is the latest version prior to use.

- iv. conserve and maintain ecological health and vitality at a landscape scale.

To achieve these goals FCNSW implements a range of fuel management strategies including prescribed burning, grazing, mechanical and chemical treatments.

## FUEL MANAGEMENT STRATEGIES

Fuel management strategies used by FCNSW are consistent with the principles of ecologically sustainable forest management. The primary ways fuel loads are reduced in State forests is through prescribed burning and grazing.

### PRESCRIBED BURNING

Prescribed burning is a key fuel management strategy for FCNSW. Prescribed burning can be defined as is the controlled application of fire under specified environmental conditions to a predetermined area, and at a time, intensity, and rate of spread required to attain planned resource-management objectives<sup>1</sup>. Prescribed burning is carried out in State forests to reduce the potential fire behaviour and impacts when bush wildfires occur and for specific silvicultural purposes. Importantly, prescribed burning can also be for spiritual, social and cultural purposes on country as part of Aboriginal peoples' relationship with the land.

Eucalypt decline is a significant issue in many of the forests that HFD manages (refer to HFD eucalypt decline, disease and insects management plan). Prescribed burning is the primary method of maintaining healthy forests and managing eucalypt decline. As a priority, frequent mild burning will be used to arrest decline and maintain the health and regenerative capacity of grassy and open eucalypt forests through the application of the HFD fuel management plan which prioritises prescribed burning for healthy, and in-transition forests, to halt the advance of decline. This approach will also improve the regenerative capacity of the forest. Forests in significant to terminal decline require different treatment to restore healthy ecosystem processes.

While in many cases prescribed burning is an effective fuel reduction strategy, there are forest types and land management units where prescribed burning is not appropriate. For example, prescribed burning for hazard reduction is not implemented in softwood plantations due to the risk of damage to the commercial crop and in forest types such as white cypress pine and river red gum grazing is a more effective option for fuel reduction due to these forest types sensitivity to fire.

The types of prescribed burning carried out by FCNSW are;

#### Hazard reduction burning

Hazard reduction burning is the primary type of prescribed burning carried out by HFD. The main purpose is to reduce fuels to protect assets and prevent the spread of wildfire while conserving and maintaining ecological health and vitality at a landscape scale. HFD aims to carry out hazard reduction burning at low intensities by burning under appropriate burn prescriptions and ignition patterns. Low intensity burning reduces the impact of fire on flora and fauna (and in many cases enhances ecosystem health) and fire at low intensity is easily controlled.

#### Silvicultural burning

HFD carries out prescribed burning for silvicultural purposes associated with the growing of forests, in plantations and native forest. Prescribed burning is the principal technique used to remove slash (windrow and broadacre burning) during plantation establishment to maximise the space available to

<sup>1</sup> Australasian Fire Authorities Council, 2012, Bushfire Glossary, p. 24

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 4 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025

plant trees. Prescribed burning is also used before and after timber harvesting in coastal and tableland native forest to create the appropriate seedbed and/or promote lignotuber development for forest regeneration. Silvicultural burning reduces fuel loads within these areas providing fuel management benefits.

### Cultural burning

An integral part of HFD's prescribed burning is combining the use of traditional burning knowledge and practices with modern burning technologies and practices. HFD's Aboriginal Partnerships Team engages with local Aboriginal communities to integrate cultural burning practice across cultural lands. The integration of cultural burning follows a five-step engagement process:

- i. HFD's Aboriginal Partnerships Team engagement with local community groups
- ii. local community groups identify which members of their community will participate in cultural burning activities and require training (cultural burning training by the community, and firefighter training by FCNSW)
- iii. relevant training (as above) is provided and local communities undertake cultural burn program planning in partnership with HFD
- iv. ceremonial aspects of cultural burning are conducted
- v. cultural burning program is implemented (ongoing).

## GRAZING

Grazing is an important element of HFD's fuel reduction strategy with 11% of the total area of managed by HFD grazed under permit. Grazing provides a safe and economic method to reduce ground fuels and thereby reduce the intensity and rate of spread of wildfire. Agistment in State forest is sought after by graziers where sufficient pasture exists. These areas are made available under permit. Grazing management plans have been developed to ensure that grazing by domestic stock is environmentally sustainable and meets legal, social and economic obligations. These plans outline the principles underlying grazing management and the processes for monitoring and improvement.

## MECHANICAL TREATMENTS

Mechanical thinning, which uses harvesting machinery to reduce tree stocking and crown fuels, can also be used in strategic areas to mitigate the risk of fire, intensity and spread. This complements other measures aimed at reducing on-ground fuels such as collection of residue, slashing and chemical treatments. Currently mechanical thinning for the purpose of fuel reduction is a minor component of HFD's fuel management but may be expanded into the future.

## HAZARD REDUCTION BURNING SCHEDULE

The areas of forest managed by HFD where hazard reduction burning is proposed are identified through a risk assessment process for which consists of three steps:

- i. an assessment of fire vulnerable assets
- ii. constraints to hazard reduction burning
- iii. identification of Fuel Management Zones (FMZs).

These steps are mapped as GIS layers and form the basis for the development of three-year rolling hazard reduction burning schedule. Plantation re-establishment burns (i.e. broadacre and windrow burns) are not considered in this process.

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 5 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025

## ASSETS VULNERABLE TO FIRE

HFD assess fire vulnerable assets in the landscape, identifying:

- i. settlements/ townships adjoining State forest
- ii. softwood plantations
- iii. land tenure boundaries (State forest; National Park; Crown; private)
- iv. credible high-intensity fire paths to plantations via State forest

This is mapped (GIS Layer: GISO FireRisk).

## CONSTRAINTS TO HAZARD REDUCTION BURNING

The second part of FCNSW' fire risk assessment differentiates between land and vegetation types that are treatable using hazard reduction burning and those that are non-treatable. This is mapped (GIS Layer: Burn Category selection in the GISO Fuel\_Management\_Plan FeatureClass).

### Non-burnable area

Areas that are not suitable for burning include the following categories:

- i. FCNSW land excluded from prescribed burning by environmental regulations
- ii. plantations and high value young regrowth agglomerations
- iii. fire sensitive forest types in which grazing is preferred to burning as a fuel management treatment (*Note: Grazing and burning may also be a suitable option*)
- iv. forest health category 3 areas – being FCNSW land not currently feasible to treat with low intensity prescribed fire without Forest Health Restoration treatment first being applied
- v. FCNSW land not tenable for hazard reduction burning due to operational constraints (neighbour fencing/assets not feasible to protect, no reliable burn boundaries, access issues etc.).

### Burnable area categories

Areas of land managed by HFD that is available for burning are known as “treatable area”.

Currently an assessment of eucalypt decline in State forests has not been carried out systematically and so it has not been considered in the development of the hazard reduction burning schedule. This information will be used to prioritise burning.

The following categories are used as a method of prioritising burning to maintain healthy forests and manage eucalypt decline when developing the rolling three-year hazard reduction burning schedule:

- i. Forest Health Category 1: forests currently in a healthy condition
- ii. Forest Health Category 2: forests in a late transition state which require burning as a matter of priority to prevent transition to Category 3
- iii. Forest Health Category 3: forests in significant to terminal decline, restoration treatments required to restore ecosystem process including the use of prescribed burning.

## HAZARD REDUCTION FUEL MANAGEMENT ZONES

This part of the fire risk assessment process identifies fire management zones, derived from local Bush Fire Risk Management Plans and risks identified by HFD. Fire management zones indicate the fire risk and the frequency of hazard reduction to manage this risk. This is mapped (GIS Layer: GISO Fuel\_Management\_Plan FeatureClass , Burn\_Category).

The different fire management zones are:

- i. Asset Protection Zone (small areas primarily managed through mechanical fuel reduction)

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 6 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025

- ii. Strategic Fire Advantage Zone
- iii. Land Management Zone.

These burn zones are in addition to other fuel reduction treatments including silvicultural burning, grazing, and mechanical treatments.

## HAZARD REDUCTION BURNING TARGETS

The hazard reduction burning schedule is based on a frequency of burning for each fire management zone. The current FCNSW target for hazard reduction burning (set by the RFS) is 22,200 ha per year, approximately 3% of the burnable area for all FCNSW land.

The maximum areas HFD has available for each zone is:

- i. Strategic Fire Advantage Zone – Hazard reduction burning over 10% of the gross area per year
- ii. Land Management Zone - Hazard reduction burning over 5% of the gross area per year.

Appendix A shows the maximum available burnable areas for each FPA. The annual target, set by the RFS, is selected from the available areas in Appendix A.

## THREE YEAR ROLLING HAZARD REDUCTION BURNING SCHEDULE

The RFS hazard reduction burning targets are used to develop an annual rolling three-year plan which will be accounted for in a 5-year rolling average. The burn schedule considers a five-year rolling average performance target to allow for targets to be reduced or increased in any given year as determined by seasonal conditions, fire history, and uncertainty created by other variables.

A three-year rolling hazard reduction burning schedule is developed for each FPA showing where hazard reduction burning is scheduled for the current year, as well as an 'outlook' schedule for a further 2 years. Each year this schedule is reviewed with additional areas added to the schedule to meet hazard reduction targets for each fire management zone. This schedule is developed considering wildfire and prescribed burning history, fire intervals for the different vegetation formations and proposed areas where pre and/or post-harvest burning is required. This is mapped (GIS Layer: Plan Portal, Temporarily GISO Fuel\_Management\_Plan FeatureClass, Planned\_Year).

## PLANNING AND CONDUCTING PRESCRIBED BURNING

Planning prescribed burning in areas of forest managed by FCNSW requires site specific burn plans to be prepared. Burn prescriptions and ignition patterns are specified to ensure that prescribed burning meets management objectives.

## SITE SPECIFIC PLANS FOR BURNING

All prescribed burns will have an approved operational plan prior to burning. These plans are site specific and prepared in accordance with the FCNSW Prescribed Burn template. Safety and environmental considerations and potential impacts on other stakeholders are assessed as part of the planning process (due diligence). Operational plans include:

- » burn objectives and prescriptions
- » an operational map
- » environmental approvals
- » burn area details
- » resources required
- » standards to be met
- » checks and notifications to be undertaken

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 7 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020 Review: May 2025



- » authorisations to be obtained and
- » post burn appraisals to be conducted.

HFD conducts prescribed burning under one of four environmental approval pathways:

- i. burning for site preparation as permitted under a Bushfire Hazard Reduction Certificate (BFHRC) issued pursuant to the Rural Fires Act.
- ii. burning under the Bushfire Environmental Assessment Code (BFEAC)
- iii. burning under an Integrated Forestry Operations Approval (IFOA)
- iv. burning under an Environmental Impact Assessment (EIA)

These are explained in more detail in the FCNSW Fire Management Plan. Each burn is entered into Rural Fire Service (RFS) systems. There is no requirement for plantation re-establishment burns to be entered into the RFS system, although these burns must be entered in ICON as a planned event.

All site-specific burn plans must be approved by a designated officer and all burns must be authorized prior to commencement of burning. Designated officers may delegate approvals to qualified officers in their chain of command.

## IMPLEMENTING PRESCRIBED BURNS

Prescribed burns will be implemented within burn prescriptions and lighting guidelines to ensure the potential impacts of fire are managed, fire is easily controlled and remains within identified control lines. HFD FPAs have variations in their prescribed burn prescriptions which accounts for geographic location, vegetation types and climate. These prescriptions may be adjusted for any given burn to account for local variations in fuels, fuel moisture, slope, aspect and weather conditions. Lighting patterns are critical to ensuring burning meets the burn plan objectives. Test burns are required prior to implementing a prescribed burn. These areas where hazard reduction is undertaken are mapped (GIS Layer: Hazard reduction (Mobile GISM HRBPoly for current. GISO HazardReduction for Historic and other agency HR).

**Table 3 Example prescribed burn parameters**

Fire Parameters	Target	Fire Parameters	Target
Wind speed	<15km/hr	Wind Direction(s)	N/A
FDI	<10	BKDI	<100
FMC Dry	10 - 16%	FMC Wet	>20%
Head Fire ROS	60m/hr	Relative Humidity	>40
FMC Elevated	>10%	Temperature	<28° C
Flame height	1-2 m		

## DATA CAPTURE, MONITORING AND REPORTING

The following data is stored on FCNSW corporate GIS layers:

- i. an assessment of fire vulnerable assets
- ii. constraints to hazard reduction burning
- iii. identification of Hazard Reduction Fuel Management Zones
- iv. three-year rolling hazard reduction burn schedule

Document title: HFD Plan - Fuel Management		Version No.: 1	Page 8 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020	Review: May 2025

- v. hazard reduction burns.

The Forest Protection Manager (Coastal FPAs) and Environment & Resources Manager (Western FPAs) are responsible for reviewing and updating the hazard reduction burning schedule.

Area figures for hazard reduction burning are reported annually to the Senior Manager Stewardship and Senior Manager Western. These figures are accounted for in FCNSW' Sustainability Report.

## AMENDMENTS FROM PREVIOUS VERSION

Version #	Changes
1.0	Plan Development.

Document title: HFD Plan - Fuel Management	Version No.: 1	Page 9 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020
		Review: May 2025

**WARNING: a printed copy of this document is uncontrolled. Please verify this is the latest version prior to use.**

## APPENDIX A –HAZARD REDUCTION BURNING AREAS FOR EACH FOREST PROTECTION AREA

FPA	Area of State forest (less crown leases)	Burnable area	SFAZ	Annual maximum SFAZ	LMZ	Annual maximum LMZ	Annual maximum	Area grazed	Crown lease
<b>Far North Coast</b>	175,380	134,183	34,128	3,413	100,056	5,003	8,416	74,228	38,673
<b>North Coast</b>	216,621	195,235	96,332	9,633	98,903	4,945	14,578	41,298	42,160
<b>Mid North Coast</b>	227,554	219,690	90,403	9,040	129,287	6,464	15,505	17,771	19,865
<b>Hunter Coast</b>	144,980	132,159	40,747	4,075	91,412	4,571	8,645	8,248	4,178
<b>South Coast</b>	410,126	388,028	121,030	12,103	266,998	13,350	25,453	259	5,004
<b>Northern Cypress</b>	269,966	16,841	0	0	16,841	842	842	3,657	5,538
<b>Southern Cypress</b>	144,590	94	0	0	94	5	5	27,294	9,233
<b>River Red Gum</b>	36,510	0	0	0	0	0	0	2,265	247
<b>Total</b>	1,625,728	1,086,230	382,640	38,264	703,590	35,180	73,443	177,113	124,898

Document title: HFD Plan - Fuel Management		Version No.: 1	Page 10 of 10
Document ID: D00281183	Document owner: State Fire Manager	Issued: May 2020	Review: May 2025

WARNING: a printed copy of this document is uncontrolled. Please verify this is the latest version prior to use.