Government of Western Australia
Department of Environment Regulation

GUIDELINE

A guide to burning under the native vegetation clearing provisions

Environmental Protection Act 1986

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Accessibility
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Contents

Purpose

This guide briefly summarises fire ecology and management issues in Western Australia relevant to the native vegetation clearing provisions of the *Environmental Protection Act 1986* (EP Act).

The use of fire for clearing purposes is not discussed, as this is illegal unless conducted as part of a permit under Part V of the EP Act or subject to an exemption.

The focus of this document is on privately owned bushland and local government reserves, although the guide also provides guidance to fire control officers on maintain environmental values as part of a fire management framework. Native vegetation is defined under the EP Act:

> ***native vegetation*** means indigenous aquatic or terrestrial vegetation, and includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition, but does not include vegetation in a plantation;

This guide is also available on the Department of Environment Regulation (DER) website or contact +61 8 6467 5000.

Introduction

Scope

This guide applies to all lands where native vegetation exists throughout the State. It also applies to all intentional burning of native vegetation in Western Australia.

The guide should be used in conjunction with existing statutes and regulations and industry guidelines whenever a fire is planned.

It endeavours to provide a consistent position and to provide guidance to those with an interest in fire management and native vegetation, but is not intended to modify or replace specific legislative requirements or the requirements of other government agencies. Where an apparent conflict arises, the land manager or proponent should discuss requirements with the individual agencies to ensure common agreement is reached.

Background

Fires within areas of native vegetation can be broadly divided into two categories:

- planned /controlled fires; and
- wildfires.

In the case of planned fires, burning may be undertaken for a variety of purposes including:

- as a means of clearing vegetation;
- to regenerate vegetation;
- for hazard or fuel reduction; and
- to manage habitat for biodiversity conservation purposes.

Wildfires may be started accidentally through negligence or carelessness (e.g. unextinguished cigarette butt), deliberately (arson), or when a planned burn gets out of control or by natural causes (lightning).

Although there is some degree of overlap between these categories, the main concentration of this paper is on planned burns, which are within human control. This guide attempts to define when, and under what conditions and circumstances, controlled burning may be undertaken.

A hazard reduction burn is a managed fire undertaken to provide a level of protection to human life and property values against wildfires. It does not eliminate the risk of wildfires but is designed to reduce the risk to a level considered acceptable to the community. A program of hazard reduction burning may prescribe all those factors discussed below, including season, fire interval, intensity, vegetation type, etc.

Responsible hazard reduction burning balances the risk to life and property with conservation of biodiversity. This guide is written to fulfil the purpose of the EP Act. It aims to ensure that hazard reduction burns do not result in significant adverse impacts on biodiversity, land degradation or water quality. Indicators to assess possible impacts are given.

Hazard reduction burning that does not comply with these guidelines and results in unacceptable impacts on biodiversity, land degradation or water quality should be assessed as clearing under the Act. A clearing permit may be granted, despite these impacts, if a good case were made for doing so.

The objective of this guide

The objective of this guide is to provide information to Departmental staff and other government agency staff, bush fire control officers, landholders and land managers on fire management and native vegetation issues that need to be considered as part of fire planning.

The guide also refers to principles against which the Department of Environment Regulation (DER) will assess potential impacts on native vegetation as a result of fire. These principles are contained in Schedule 5 of the EP Act.

These guidelines have been developed in consultation with experts in fire ecology and fire protection and aim to:

- determine conditions when protection of life and property through hazard reduction burning is necessary, such that some adverse impact on biodiversity values may be acceptable;
- assist those with responsibility for granting permits or for managing vegetation on private property to appropriately manage fire to maintain the conservation values of the bushland while adequately protecting life and property;
- provide guidance for when and under what conditions burning outside the restricted or prohibited period could be considered acceptable (although this will still require a permit to clear); and
- help to ensure that biodiversity conservation is considered in decision-making when granting a permit.

Legislative framework

A number of agencies are involved in the management and regulation of fire for areas of native vegetation in Western Australia, and several Acts have relevance to this issue.

The *Bush Fires Act 1954* (BF Act) gives local governments the power to require bush fire prevention measures on land, including perimeter fire access tracks. Fire control officers can issue permits to landholders to undertake fire hazard reduction burning during the restricted fire period (generally from September to March in the south west but depending on local conditions).

The Department of Fire and Emergency Services (DFES) provides policy advice and standards to local government to provide for consistency of fire protection requirements applied to land development throughout Western Australia. It also conducts audits of local government authorities to test the extent, quality and consistency of their fire protection policy and performance.

DER regulates clearing of native vegetation under EP Act throughout Western Australia. Under the Act, s 51A:

> ***clearing*** means—
>
> (a) the killing or destruction of; or
>
> (b) the removal of; or
>
> (c) the severing or ringbarking of trunks or stems of; or
>
> (d) the doing of any other substantial damage to,
>
> some or all of the native vegetation in an area, and includes the draining or flooding of land, the burning of vegetation, the grazing of stock, or any other act or activity, that causes—
>
> (e) the killing or destruction of; or
>
> (f) the severing of trunks or stems of; or
>
> (g) any other substantial damage to,
>
> some or all of the native vegetation in an area.

Where vegetation is to be burnt with the intention of clearing and the burning is not for an exempt purpose, a clearing permit under the EP Act is required. For further information, please visit DER's website or phone +61 8 6467 5000.

A permit under the EP Act is not required if an exemption under Schedule 6 applies.

Schedule 6 provides for a number of exemptions relating to fire prevention and control. In general, any burning approved or required by the relevant authority such as the Minister for Fire and Emergency Services, DFES, Bush Fires Board or Local Government, or done by the Department of Parks and Wildlife (Parks and Wildlife) as part of its functions under the *Conservation and Land Management Act 1984* (CALM Act), does not require a clearing permit under the EP Act.

Restricted burning

Bush can be burnt during a restricted time if a permit is obtained from a bush fire control officer.

Bush fire emergency

If the Minister for Emergency Services declares a bush fire emergency, a person can burn (with the Minister's permission).

Burning during prohibited times

A burning permit can be obtained from a bush fire control officer to burn bush on land to protect a dwelling, building, haystack or crop. A landowner may also burn bush on a road reserve adjoining his land with permission from a bush fire control officer.

Bush fire control officers

A bush fire control officer may construct fire breaks or clear land to control or prevent the spread of a fire. Fire brigades can do the same activities to control a fire.

Burning carried out by Parks and Wildlife in the performance of its functions under section 33(1)(a) of the CALM Act is exempt. This would include burning done for fire hazard reduction, biodiversity conservation and fire prevention and control.

Fire and the environment

Much of Western Australian flora is adapted to fire but things like frequency, season, intensity, pattern, and post-fire environmental conditions are very important. Fire and its effect on the environment is complex and impacts may be greater as a result of many factors working together.

The following are some of the key factors to consider in assessing the effect of fire on the environment.

Fire frequency

In order to maintain the conservation values of a piece of bushland, fire should not occur more frequently than the time needed for all plants to reach adequate reproductive capacity. This is particularly important for obligate reseeders, which are usually killed by fire and depend on soil or canopy stored seed for replacement. There are some data regarding time between germination and reproductive maturity for some species (Muir, 1987), but there is always going to be the need for local knowledge of particular areas and vegetation communities.

In addition, this time interval does not necessarily equate with adequate reproductive capacity. Burrows et al. (1999) follow Gill and Nicholls (1989) in advocating a minimum fire period of twice the juvenile period of the slowest maturing species to allow sufficient time to allow seed banks to replenish. It is noted that soil seed bank longevity also varies between species, although there is anecdotal evidence of seed surviving in soil for 100 years.

Fire intervals need to be longer in drier areas or if there is a series of dry seasons as the time taken for plants to grow and set seed is generally much slower.

Too frequent fire has several deleterious effects:

- May result in reductions or localised extinctions of reseeder species unless the time interval between fires is sufficient for the species to build up an adequate seed bank.
- Resprouter species, which are not normally killed outright by fire, may be weakened and killed by frequent fires.
- Unless adequate unburnt areas are maintained, fauna species will reduce in numbers or become locally extinct as a result of frequent fires.
- Frequent fire removes senescent or dead vegetation, both standing trees and fallen logs, which have special values as habitat for fauna.
- Frequent fires favour the growth of grassy weeds, resulting in a higher fuel load in a shorter time period, and diminishing biodiversity values in the bushland.

Fire season

Most arguments over when burns should take place consider two options (cool or hot burns). However, the impact of fire should also consider what environmental conditions have occurred prior to any planned burn. For example, prolonged drought will place many plants under stress. This may substantially reduce their ability to regenerate or recover from fire. Cool burns are most usually undertaken for hazard reduction purposes and are of low-to-moderate intensity. Hot fires are usually of high intensity and are most commonly used for regeneration for ecological purposes. The main characteristics of each are outlined below:

Cool burns

- low to moderate intensity;
- does not consume all organic matter—some patches may be left and little or no canopy is burnt;
- will destroy that year's seed crop (many species are flowering at this time of year);
- stimulates surface seed germination;
- does not crack seed dormancy of buried seed;
- may kill young animals although adults may escape and later recolonise from unburnt patches to burnt areas;
- encourages the growth of already established perennial weed grasses;
- favours resprouting plants over reseeders (outcompete during summer);
- may weaken seedlings so they do not survive until the first autumn rains; and
- easier to control and less dangerous to fire crews.

Hot burns

- usually hot, intense and occur over extensive areas—fires do not go out overnight;
- consumes most above ground material including the canopy;
- likely to burn down some mature trees;
- will break dormancy of some buried seed, and there is generally a higher seedling germination and survival rate for all seeders;
- may cause high mortality to native fauna and unless patches are deliberately left unburnt, will not allow for recolonisation (achieving patchiness may be more difficult);
- is more difficult to control, and potentially involves greater dangers to fire fighters, the community and property; and
- is generally considered more favourable where regeneration for conservation purposes is desired.

Fire intensity

The intensity at which a fire burns will depend on many things including season, the air temperature and humidity, the amount and moisture content of the fuel and soil, topography, the wind strength and the time of day. Fires of different intensities favour the regeneration of different species, and low intensity fires are more readily managed to leave areas of vegetation unburnt to promote habitat diversity and sustain fauna populations. However, note that response to fires is very unpredictable, emphasising the need to leave some areas deliberately unburnt. A ground layer of weedy grasses increases the fire intensity regardless of burning season.

Habitat heterogeneity

Biodiversity is greatest where habitat heterogeneity (represented by a wide range of post-fire successional stages in the vegetation) is maximised. This highlights the need to have a variety of fire ages within areas of remnant vegetation, ranging from recently burnt to long unburnt.

Unburnt patches of bush are important refuges for fauna during a fire and provide essential food and shelter afterwards. They also provide a source of seed for recolonisation of burnt areas. The patchiness of a burn will affect the speed and degree of recolonisation following a burn. Isolated remnants are more vulnerable in the event of a burn, and retaining some unburnt vegetation is a vital issue for consideration within these areas.

Fire management plans should be designed to leave substantial areas unburnt following any controlled fire.

Post-fire conditions

The impact of unpredictable events can be great. Heavy rain following a fire and before plants are re-established may result in severe erosion and topsoil loss. This can limit regeneration, cause land degradation and adversely affect waterbodies. Similarly, drought may impede regeneration and cause death amongst resprouters. Unforeseen insect plagues or heavy grazing by kangaroos following fire can also have

a deleterious effect on regenerating vegetation. While these events cannot be predicted, they underline the importance of not burning all of an isolated remnant at one time.

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