

A guide to burning under the **Native Vegetation** clearing provisions

Environmental Protection Act 1986

Forward

These guidelines are part of a series that have been prepared by the Department of Environment and Conservation to provide advice on the protection of native vegetation. This document comprises a set of guidelines for protecting the values of native vegetation wherever fire is planned as a management tool. They have been placed in the public forum as a guide to best environmental management practice.

This document comprises an overview guideline (No. 1) and specific guidelines (Nos 2 onwards) which address fire management issues relating to native vegetation in specific Interim Biogeographic Regionalisation of Australia (IBRA) bioregions as shown in Figure 1. In areas of extensive rather than intensive land use, some bioregions have been aggregated for convenience.

The guidelines will be enhanced or amended based on feedback and experience. You are invited to provide comments on the content and application of these guidelines. Please use the submission sheet included in this document to provide your response. The Department of Environment and Conservation will review feedback on the guidelines approximately 12 months after their release.

These guidelines are also available on the Department of Environment and Conservation's web page at www.dec.wa.gov.au/nvc.

The aims of the guidelines are to:

- briefly summarise fire ecology and management issues in Western Australia relevant to the native vegetation clearing provisions of the *Environmental Protection Act 1986* (Guideline 1);
- put forward bioregion-specific guidelines to assist landholders and land managers in maintaining the values of native vegetation when considering the use of fire for fuel reduction (guideline 2 onwards).

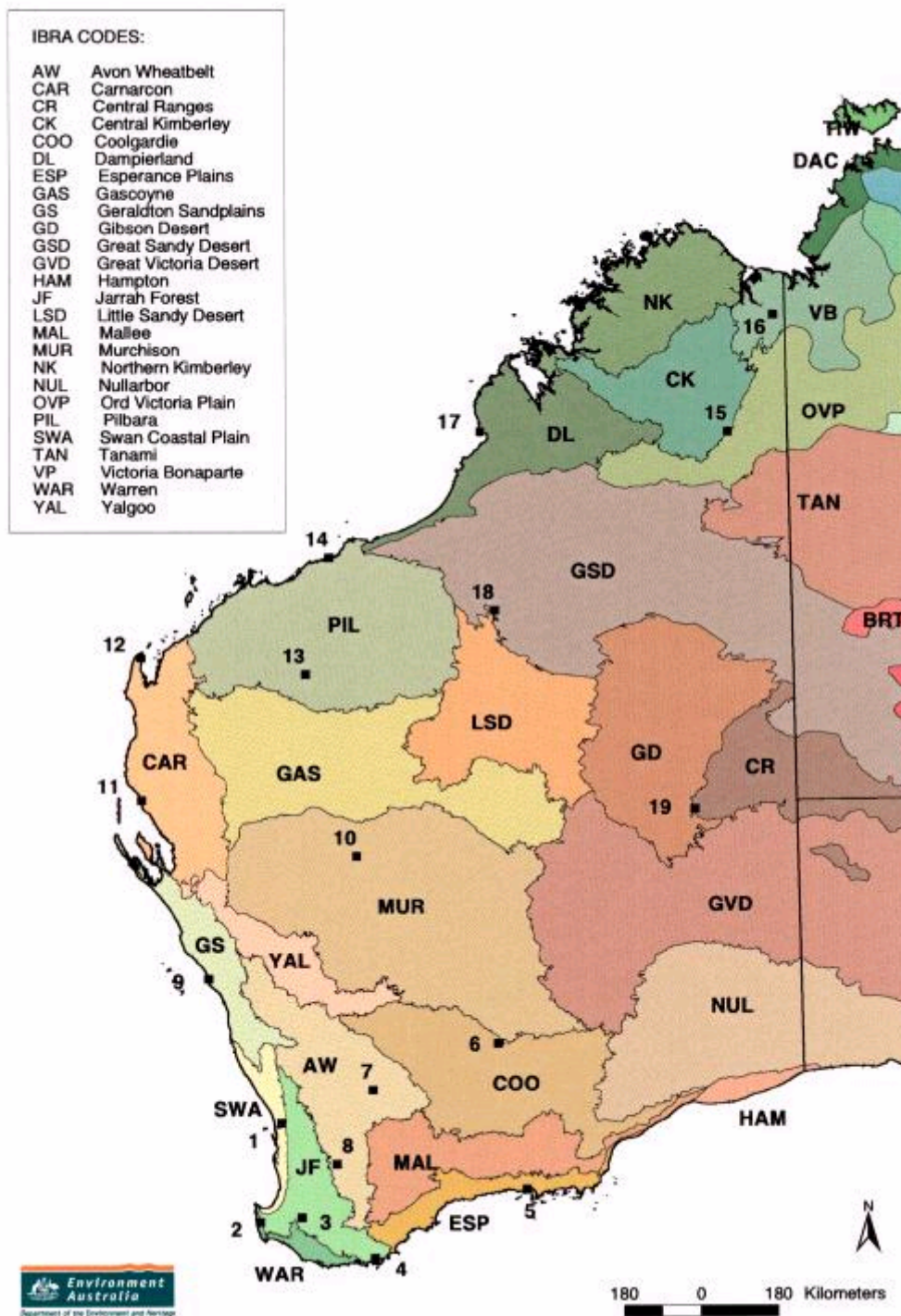
The use of fire for clearing purposes is not discussed, as this is illegal unless conducted as part of a permit under Part V of the *Environmental Protection Act 1986* or subject to an exemption.

The focus of this document is on privately owned bushland and local government reserves, although the guidelines also provide guidance to fire control officers on maintaining environmental values as part of a fire management framework.

Native vegetation is defined in the *Environmental Protection Act 1986* as “indigenous aquatic or terrestrial vegetation, but does not include vegetation in a plantation”. A plantation is “one or more groups of trees, shrubs or plants intentionally sown, planted or propagated with a view to commercial exploitation”.



Interim Biogeographic Regions of Australia



Introduction

Background

Fires within areas of native vegetation can broadly be 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. The guidelines attempt 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.

Responsible hazard reduction burning balances the risk to life and property with conservation of biodiversity. These guidelines are written to fulfil the purpose of the *Environmental Protection Act 1986*. They aim 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 the guidelines below 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 issued despite the significant impact to these matters if a good case were made for doing so.

The objective of these guidelines

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

The guidelines also refer to principles against which the Department of Environment and Conservation will assess potential impacts on native vegetation as a result of fire. These principles are contained in Schedule 5 of the *Environmental Protection Act 1986*.

The guidelines have been developed in consultation with experts in fire ecology and fire protection and have the following aims:

- determine conditions where protection of life and property require special protection such that some adverse impact on biodiversity values may be acceptable;
- assist those with responsibility for issuing 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 issuing a permit.

Scope of the guidelines

These guidelines apply to all lands where native vegetation exists throughout the State. They apply to all intentional burning of native vegetation in Western Australia.

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

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

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* 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 hazard reduction burning during the restricted fire period (generally from September to March in the south west but depending on local conditions).

The Fire Services Division of the Fire and Emergency Services Authority of Western Australia (FESA) 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.

The Department of Environment and Conservation regulates clearing of native vegetation under Part V of the

Environmental Protection Act 1986 throughout Western Australia.

Clearing is defined as:

- (a) the killing or destruction of;
- (b) the removal of;
- (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;
- (f) the severing of trunks or stems of; or
- (g) any other substantial damage to

some or all of the native vegetation in the area.

Where vegetation is burnt with the intention of clearing or if the burning is not for an exempt purpose, a clearing permit under the *Environmental Protection Act 1986* is required. For further information, please contact the Native Vegetation Management section of the Department of Environment and Conservation on freecall 1800 061 025 or visit the website at www.dec.wa.gov.au.

A permit under the *Environmental Protection Act 1986* 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, FESA, Bush Fires Board or Local Government, or done by the Department of Environment and Conservation as part of its functions under the *Conservation and Land Management Act 1984*, does not require a clearing permit under the *Environmental Protection Act 1986*.

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 Fire and Emergency Services declares a bush fire emergency, a person can burn if the Minister grants 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 spreading of a fire. Fire Brigades can do the same activities to control a fire.

CALM Act

Burning done by the Department of Environment and Conservation in the performance of its functions under section 33 of the *Conservation and Land Management Act 1984*. This would include burning done for hazard reduction, biodiversity conservation and fire prevention and control.

Fire and the environment

Much 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 are 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 (especially 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 are 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 reseeders 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.
- Birds are amongst the most fire-sensitive fauna. Many endangered species rely on long unburnt vegetation and very old hollow-bearing trees. This suggests that bird fauna has adapted to an environment which has a long history of little or mild disturbance. This is in contrast to the successional sequence of other vertebrate groups, which is often played out in a period of 10-20 years. Invertebrates are poorly understood but are known to have a vital role in ecosystem health and function.
- 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 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.
- 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.
- 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

At landscape scales, biodiversity is greatest where habitat heterogeneity (represented by a wide range of post-fire successional stages in the vegetation) is maximised. This points to 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.

References

Burrows, N.D., Ward, B. and Robinson, A.D. (1999). *The role of indicators in developing appropriate fire regimes*. Bushfire 99 Conference Proceedings. Australian Bushfire Conference, Albury, July 1999.

Gill, A.M. and Nicholls, A.O. (1989). *Monitoring fire-prone flora in reserves for nature conservation*. In: "Fire Management on Nature Conservation Lands". Proceedings of a National Workshop held in Busselton, Western Australia (eds. N.D. Burrows, L. McCaw and G. Friend). Occasional Paper 1/89, Department of Conservation and Land Management, Perth Western Australia, 137-152.

Muir, B.G. (1987). *Time between germination and first flowering of some perennial plants*. *Kingia* 1(1): 75-83.