



NSW RURAL FIRE SERVICE

# **BUSH FIRE ENVIRONMENTAL ASSESSMENT CODE - SUPPORTING DOCUMENT**



## **RULES AND NOTES FOR APPLICATION OF SOIL EROSION RISK**

July 2021



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# 1 Preamble

The Bush Fire Environmental Assessment Code (Code) provides for a 'one-stop shop' streamlined environmental assessment and approval process for mechanical and burning methods for undertaking bush fire hazard reduction work. Issuing authorities and certifying authorities can use this Code to determine Bush Fire Hazard Reduction Certificates (Certificates) that authorise the carrying out of the identified bush fire hazard reduction works in accordance with section 100C of the *Rural Fires Act 1997*.

The Code identifies potential issues of environmental concern. Works which may impact on these environmental concerns are required to be carried out in accordance with the provided conditions. The Code also identifies those circumstances for which a Certificate may not be issued based on the potential environmental impact. In these cases, a more comprehensive assessment of the potential impact is required under the relevant environmental legislation.

The Code and related documents can be located at [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au),

This document has been prepared by the Department of Planning, Industry and Environment (Environment, Energy and Science Group (EES)).

## 2 Introduction

This document is for the use of issuing and certifying authorities (those public authorities specified in the Code and the *Rural Fires Act 1997*) when assessing the conditions required for a bush fire hazard reduction certificate.

However, this document also serves to inform the broader community as to how soil erosion risk is assessed and mitigated under the Code.

This document operates to further inform the Code with respect to mitigating the potential for soil erosion resulting from hazard reduction works. This document has been developed to support the Code. As such, a level of understanding of the Code will assist in comprehending this document, particularly in regard to matters such as terminology. This document also provides guidance on how the conditions are derived.

There are differences in the effect of mechanical hazard reduction and those resulting from prescribed burning. As such, this document and the Code provide different solutions to mitigate the risk for those two methods. Note that the soil erosion risk arising from the construction and maintenance of Fire Trails and control lines designed for vehicular use are not addressed in this supporting document but via the Fire Trail Standards. This reflects the higher risks associated with these types of work.



# 3 Contents

Contents of this document are as follows:

## **Part A Mechanical Methods of Hazard Reduction**

- What do the Soil Erosion Risk Categories in Tables 3 and 4 of the Code refer to?
- How will I know which Soil Erosion Risk Category applies to the land?
- How will I know the conditions that apply for mechanical works for the category of soil erosion risk identified?
- What is the rationale for this approach?

## **Part B Prescribed Burning**

- How will I know which land is deemed to be at risk of significant soil erosion when undertaking burns of moderate or high intensity?
- How will I know which soil erosion risk mitigation conditions are required for the burn if the presence of land deemed to be at risk of significant soil erosion is identified?
- What is the rationale for this approach?

# 4 Part A - Mechanical Methods of Hazard Reduction

Clause 4.2 of Part 4 of the Code provides the conditions that are to be adhered to when issuing a Bush Fire Hazard Reduction Certificate for mechanical hazard reduction.

**Note:** additional relevant conditions within the Code are required to be adhered to such as those relating to riparian buffer zones.

## 4.1 What do the Soil Erosion Risk Categories in Tables 3 and 4 of the Code refer to?

The Soil Erosion Risk Categories 1-5 in Tables 3 and 4 of the Code refer to categories of modelled soil erosion risk (as provided by EES) measured as mean annual baseline rainfall erosivity. They are as follows:

SOIL EROSION RISK CATEGORY	MEAN ANNUAL RAINFALL EROSIIVITY MJ.MM/(HA.HR.YEAR)
1	0 <= Value <= 300
2	300 < Value <= 600
3	600 < Value <= 1500
4	1500 < Value <= 4000
5	Value > 4000

The categories differentiate the types of mechanical methods that are permissible.

## 4.2 How will I know which Soil Erosion Risk Category applies to the land?

The Soil Erosion Risk Categories are mapped and contained as a spatial layer within the bush fire information management systems. The relevant category of soil erosion risk will be identified for any land selected in that management system. The management system is available to all issuing and certifying authorities.

## 4.3 How will I know the conditions that apply for mechanical works for the category of soil erosion risk identified?

Clause 4.2.1 and Table 3 in Part 4 of the Code provide the conditions that are to be adhered to when issuing a Bush Fire Hazard Reduction Certificate for mechanical hazard reduction for the purpose of:

1. Asset Protection Zones (APZs),
2. Neighbourhood Safer Places (NSPs),
3. Transport corridors, and
4. Linear fire breaks.

Clause 4.2.3 and Table 4 in Part 4 of the Code provide the conditions that are to be adhered to when issuing a Bush Fire Hazard Reduction Certificate for mechanical hazard reduction for the purpose of:

1. Control lines (not designed for vehicular use).



#### 4.4 What is the rationale for this approach?

Mechanical works that result in an exposed soil surface renders the ground vulnerable to erosion. To minimise soil erosion for APZs, NSPs, transport corridor and linear fire breaks, at least 70% ground cover is to be retained. However, for sites that have less than 70% ground cover prior to the work commencing the prescription should aim to maximise available ground cover through such means as spreading slashed vegetation. In areas to be maintained permanently, a suitable ground cover (e.g. short grass or graminoid cover) should be established.

The soil erosion risk modelling provided by EES can differentiate the erosion potential between bare earth and varying percentages of ground cover. Ground cover of 70% significantly reduces the erosion potential. The soil erosion risk model is based on an analysis of soil characteristics, rainfall erosivity, slope and ground cover. It is understood that machinery has an additional effect on soil erosion risk by disturbing the soil profile. It is therefore important that limitations are applied to the type of machinery that may be used on categories of increasing soil erosion risk. It is important to note that permissibility for different types of machinery does not necessarily indicate that it is safe to operate the machine at that location.

Control lines (not designed for vehicular use) are more temporary and narrower in nature than APZs, NSPs, transport corridor and linear fire breaks. They also require bare earth in order to contain the burn. As such, different conditions are applied to this work.

## 5 Part B – Prescribed Burning

This document and the associated Clause 5.7 of Part 5 of the Code provide the conditions that are to be adhered to when issuing a Bush Fire Hazard Reduction Certificate for prescribed burning. Note: additional relevant conditions within the Code are required to be adhered to such as those relating to riparian buffer zones.

### 5.1 How will I know which land is deemed to be at risk of significant soil erosion when undertaking burns of moderate or high intensity?

The Soil Erosion Risk for Prescribed Burning Map (prepared by EES) must be used to determine if the site contains land deemed to be at risk of significant soil erosion when undertaking burns of moderate or high intensity.

The Soil Erosion Risk for Prescribed Burning Map is contained as a spatial layer within the bush fire information management systems. Land deemed to be at risk of significant soil erosion when undertaking burns of moderate or high intensity will be identified for any land selected in that management system. The management system is available to all issuing and certifying authorities.

The Soil Erosion Risk for Prescribed Burning Map will map these areas if and when they are identified.

### 5.2 How will I know which soil erosion risk mitigation conditions are required for the burn if the presence of land deemed to be at risk of significant soil erosion is identified?

Where land deemed to be at risk of significant soil erosion is identified as present at the site, then the management actions identified in the attribute table of the Map must be implemented to minimise the erosion potential.

### 5.3 What is the rationale for this approach?

The soil erosion risk modelling provided by EES can differentiate the erosion potential between bare earth and varying percentages of ground cover. Ground cover below 30% is the point at which there is a significant increase in erosion potential. Low to moderate intensity burning typically results in a ground cover of at least 30%, inclusive of vegetative and non-vegetative material. In addition, ground cover rapidly re-establishes following burning although the rate and magnitude of this increase will vary between Vegetation Classes and post burning environmental conditions. It is therefore accepted that prescribed low to moderate intensity burning will generally result in an acceptable soil erosion risk. The regrowth in vegetation types such as grasslands, for which high intensity burning is allowable under the Code, will generally occur at a faster rate and therefore limit the soil erosion risk potential. Note that a bush fire is likely to result in less than 30% ground cover with a resulting increase in the soil erosion risk.

Nevertheless there is potential for some Vegetation Classes in some landscapes (based on slope and potential for intense rainfall events) to exceed an acceptable soil erosion risk. The Soil Erosion Risk for Prescribed Burning Map will map these areas if and when they are identified.

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