



# Interim Mapping Standards for Bush Fire Prone Areas 2021

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The information contained within this document is correct at the time of publication and will be reviewed as required to maintain currency. The latest version is available at [www.dfes.wa.gov.au/bushfireproneareas](http://www.dfes.wa.gov.au/bushfireproneareas).

## Acknowledgments

The Department of Fire and Emergency Services (DFES) Mapping Standard for Bush Fire Prone Areas (the Standard) was approved by the Director Office of Bushfire Risk Management (OBRM) in August 2021. This is the sixth revision of the Standard published in December 2015.

DFES acknowledges those who assisted in the Review and development of the Standard. In particular, DFES recognises the valuable contribution of the Department of Biodiversity, Conservation and Attractions (DBCA), the Department of Planning, Lands and Heritage (DPLH), the Department of Mines, Industry Regulation and Safety (DMIRS), the Building Commission, the Western Australian Land Information Authority (Landgate) and the New South Wales Rural Fire Service. DFES would also like to acknowledge the important role of local governments in the development of the Map of Bush Fire Prone Areas.

## Currency of the Standard

The latest version of the Standard will be available at [www.dfes.wa.gov.au/bushfireproneareas](http://www.dfes.wa.gov.au/bushfireproneareas).

Amendment		Details	Amended by	Release
No.	Date			
V6.0	August 2021	Updated to reflect current review and that this standard does not apply to the Central Planning Sub-region	DFES	Public
V5.0	May 2018	Minor amendment to reflect minor changes in approval timelines.	OBRM	Public
V4.0	November 2017	Minor amendment to terminology to reflect maturity of review process (provision of 'mapping' rather than 'datasets'). Update of contact details and agency names to reflect machinery of government changes.	OBRM	Public
V3.0	May 2017	Major amendment to Section 1.1 to remove text "Where a bush fire prone area cuts across a portion of a parcel of land, the entire parcel is treated as a bush fire prone area for the purposes of this Standard." Minor updates to other sections.	OBRM	Public
V2.0	November 2015	Annual review undertaken as outlined in 2014 Standard. Consultation with Department of Fire and Emergency Services, Department of Planning, Lands and Heritage, Department of Mines, Industry Regulation and Safety – Building Commission, Department of Biodiversity, Conservation and Attractions, and Landgate.	OBRM	Public
V1.0	May 2014	Initial release	OBRM	Public

# Table of Contents

<b>Definitions.....</b>	<b>5</b>
<b>1. Introduction .....</b>	<b>6</b>
1.1 What is a Bush Fire Prone Area?.....	7
1.2 Purpose of the Map of Bush Fire Prone Areas.....	7
<b>2. Scope .....</b>	<b>7</b>
<b>3. Legislation and Policy .....</b>	<b>7</b>
<b>4. Review of Mapping Standards.....</b>	<b>8</b>
<b>5. Identifying Bush Fire Prone Areas .....</b>	<b>8</b>
5.1 Vegetation Classification .....	8
5.2 Bush Fire Prone Vegetation Data .....	10
5.3 Assessing Bush Fire Prone Vegetation.....	10
5.4 Precautionary Principle.....	12
5.5 Identifying the Bush Fire Prone Area .....	12
<b>6. Technical Specifications of the Map of Bush Fire Prone Areas.....</b>	<b>13</b>
6.1 Map and Data Accessibility.....	13
6.2 Map Inclusions.....	13
6.3 Map Functionality .....	13
6.4 Map Depiction of Bush Fire Prone Areas.....	14
<b>7. Interim reviews of Map of Bush Fire Prone Areas .....</b>	<b>15</b>
7.1 Review of Bush Fire Prone Mapping.....	15
7.2 Finalisation of the Bush Fire Prone Areas Dataset.....	16
7.3 Publication of the Map of Bush Fire Prone Areas.....	16
<b>8. Monitoring and Review .....</b>	<b>16</b>
8.1 Mapping Standard for Bush Fire Prone Areas.....	16
<b>Appendix 1 - Classification of Vegetation - Summary .....</b>	<b>17</b>

## List of Figures

Figure 1 – Western Australian Bush Fire Prone Areas Framework.....	6
Figure 2 – Size and Proximity Requirements for Vegetation to be Considered Bush Fire Prone .....	12
Figure 3 – Map Sample .....	14
Figure 4 - Classification of vegetation – summary .....	17
Figure 5 – Western Australia Photographic Examples.....	22

## List of Tables

Table 1 – Classification of Vegetation.....	9
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# Definitions

The following definitions apply to terms used within this Standard.

<b>Bush fire</b>	An unplanned vegetation fire. A generic term, which includes grass fires, forest fires and scrub fires, both with and without a suppression objective <sup>1</sup> . 'Bushfire' and 'bush fire' should be taken to have the same meaning, with the latter used in this document to align with the terminology of the <i>Fire and Emergency Services Act 1998</i> .
<b>Bush fire prone area</b>	An area that is subject to, or likely to be subject to, bush fire attack <sup>2</sup> .
<b>Bush fire prone buffer</b>	An area 100 metres wide that immediately surrounds bush fire prone vegetation.
<b>Bush fire prone vegetation</b>	Vegetation classified as bush fire prone in accordance with the criteria and vegetation key specified in this Standard.
<b>Designated bush fire prone area</b>	An area that has been designated by the Fire and Emergency Services (FES) Commissioner under section 18P of the <i>Fire and Emergency Services Act 1998</i> as an area that is subject, or likely to be subject, to bush fires.
<b>Map of Bush Fire Prone Areas</b>	An online map spatially identifying areas within WA that are designated as bush fire prone, produced in line with the requirements of this Standard.

<sup>1</sup> Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne.

<sup>2</sup> Standards Australia 2019, *Australian Standard Construction of buildings in bushfire-prone areas AS 3959:2018*, Fourth Edition incorporating Amendment No. 1, Standards Australia, Sydney, Australia p. 8.

# 1. Introduction

The need to plan for appropriate land use in areas subject to bush fire risk is a requirement of the land use planning system. A drying climate, expansion of urban land into rural areas and increasing fuel loads means that bushfire risk is a significant issue that needs to be addressed in Western Australia (WA). The identification of bush fire prone areas is a fundamental step towards implementing bushfire controls through the planning and building system.

**The Map of Bush Fire Prone Areas (the Map) identifies Western Australian bush fire prone areas as designated by the FES Commissioner.**

**The Mapping Standard for Bush Fire Prone Areas (the Standard) is a reference tool that defines the process for development of the Map and its subsequent reviews in identification of bush fire prone areas in WA.**

The Map and Standard are important components of State Government reforms to reduce the risk of bushfire to life, property and infrastructure. Together they help ensure the accurate and consistent designation of bush fire prone areas in WA. This is in response to the findings of A Shared Responsibility: The Report of the Perth Hills Bushfire February 2011 Review (also known as the Keelty Report) to improve consistency in the application of bush fire planning and building controls in WA.

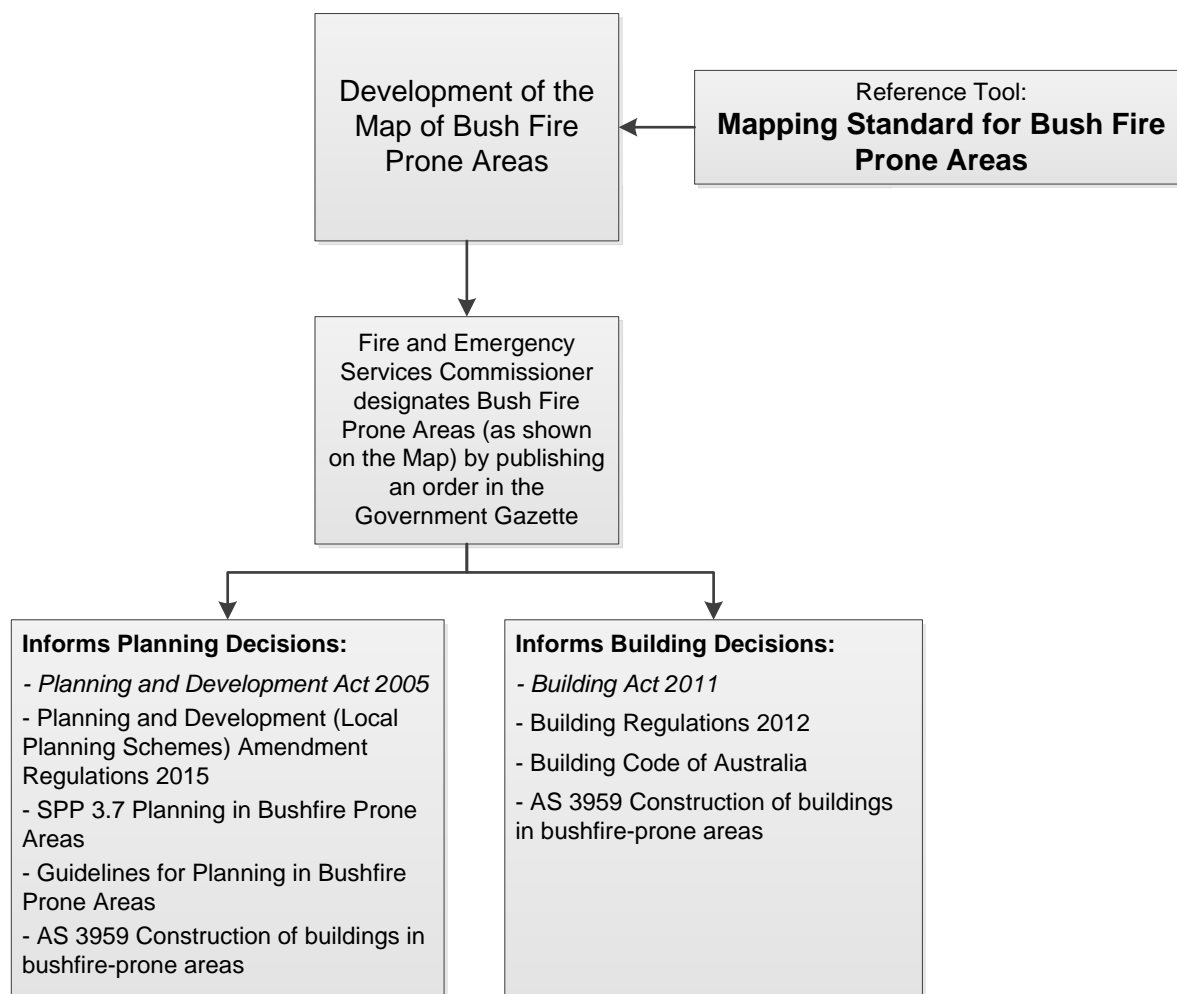


Figure 1 – Western Australian Bush Fire Prone Areas Framework

## 1.1 What is a Bush Fire Prone Area?

A bush fire prone area is defined as an area that is subject to, or likely to be subject to, bush fire attack. These areas are identified by the presence and/or proximity of bush fire prone vegetation for the purposes of the Standard. Research into past bush fire events found that approximately 85 per cent of destroyed houses were within 100 metres of bushland, with ember attack being a significant cause of property ignition<sup>3</sup>. As such, 100 metres has been added to the periphery of the bush fire prone vegetation to create the bush fire prone areas as defined by the Standard.

## 1.2 Purpose of the Map of Bush Fire Prone Areas

The Map is used as a trigger for additional planning and building requirements for new land use development proposals within bush fire prone areas designated by the FES Commissioner. Properties that are in bush fire prone areas may require additional assessment as part of any planning or building approval processes. Further information on the bush fire planning policy and regulatory framework is available at [Bushfire planning - Department of Planning, Lands and Heritage](#). The Map may also be used as a research tool by those seeking information about the bush fire prone status of land in WA.

# 2. Scope

This Standard defines the process for the development of the Map and its identification of bush fire prone areas of WA. The Map does not identify specific bush fire risks, and land not designated as bush fire prone may still be subject to bushfire.

From September 2019, this Standard no longer applies to local governments within the Perth Central Planning Sub-region including; City of Stirling, City of Bayswater, Town of Bassendean, Town of Cambridge, City of Vincent, City of Nedlands, City of Subiaco, City of Perth, City of Belmont, Town of Claremont, City of South Perth, Town of Victoria Park, Town of Cottesloe, Shire of Peppermint Grove, Town of Mosman Park, City of Fremantle, Town of East Fremantle, City of Melville and City of Canning.

For further information on how all local governments will be considered in the 2021 Interim Review, refer to Section 4 of this Standard.

# 3. Legislation and Policy

The FES Commissioner under the *Fire and Emergency Services Act 1998* can, by order published in the Gazette, designate areas of Western Australia as bush fire prone.

DFES is responsible for the development of the Map, working with local government and partner agencies, and with technical support provided by Landgate.

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<sup>3</sup> K. Chen & J. McAneney 2010, *Bushfire Penetration into Urban Areas in Australia: A Spatial Analysis*, Risk Frontiers Macquarie University for Bushfire CRC, p. 16.

## 4. Review of Mapping Standards

The method for deriving the Map is being reviewed as a part of the Bushfire Framework Review 2019 (the Review). There will be a two stage review of the Map, an amendment to the policy and regulatory mechanisms, including State Planning Policy 3.7 Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas.

Stage 1 of the Review was completed in September 2019 and focused on the Perth Central Planning Sub-region. The risk profile of this region was unique given its considerable distance away from the rural-urban interface and low likelihood of being impacted by landscape scale bush fires. In these local governments small isolated parcels of vegetation less than four hectares were removed, as were areas where additional review identified a lower bush fire risk e.g. areas of managed vegetation. For these reasons, this Standard does not apply to the local governments of the Perth Central Planning Sub-region.

Stage 2 of the Review is underway and will produce a revised Map based on a new mapping methodology, designed in partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The new methodology will use bush fire science and modelling to consider the potential impact of bush fire on communities, introduce more nuance and take a more holistic approach to the designation of bush fire prone areas. This Standard will be updated and revised to reflect the new methodology when it is released.

This Interim Mapping Standard is intended to support updates to areas of the Map that are subject to Stage 2 of the Review. For example, it will generally exclude the Perth Central Planning Sub-region. For all other local governments across the State, any significant changes to vegetation greater than one hectare can be submitted for its status as a bush fire prone area to be considered in the Interim Review. There is the opportunity through this Interim Review for local governments in the Perth Central Planning Sub-region to remove from the Map areas of land that have had vegetation reductions of greater than one hectare.

## 5. Identifying Bush Fire Prone Areas

This section provides an overview of the process for identifying bush fire prone areas.

### 5.1 Vegetation Classification

The vegetation types considered bush fire prone for the purpose of the Standard are contained in Table 1, sourced from Australian Standard 3959-2018.



Table 1 – Classification of Vegetation<sup>4</sup>

Vegetation Classification	Vegetation Type	Figure No. <sup>5</sup>	Description
<b>A Forest</b>	Tall open forest Tall woodland	01 02	Trees over 30 m high; 30-70% foliage cover (may include understorey ranging from rainforest species and tree ferns to low trees and tall shrubs). Found in areas of high reliable rainfall. Typically dominated by eucalypts with a sub-dominant tree layer.
	Open forest Low open forest	03 04	Trees up to 30 m high; 30-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.
	Pine plantations	Not shown	Trees 30 m in height at maturity, generally comprising Pinus species or other softwood species, planted as a single species for the production of timber.
<b>B Woodland</b>	Woodland Low woodland	05 07	Trees up to 30 m high; 10%–30% foliage cover dominated by eucalypts and/or callitris with a prominent grassy understorey. May contain isolated shrubs.
<b>C Shrubland</b>	Closed (low) heath Open heath	10 11	Found in wet areas and/or affected by poor soil fertility or shallow soils. Shrubs 1 m–2 m high. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.
	Low shrubland	12	Shrubs <2 m high; greater than 30% foliage cover. Understoreys may contain grasses. Acacia and Casuarina often dominant in the arid and semi-arid zones.
<b>D Scrub</b>	Closed scrub (Tall heaths)	13	Found in wet areas and/or areas affected by poor soil fertility or shallow soils; >30% foliage cover. Dry heaths occur in rocky areas. Shrubs >2 m high. Typical of coastal areas and tall heaths up to 6 metres in height. May be dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres.
	Open scrub	14	Shrubs greater than 2 m high, 10%–30% foliage cover with a mixed species composition.
<b>E Mallee/ Mulga</b>	Tall shrubland	15	Vegetation dominated by low trees or tall shrubs (especially eucalypts and acacias) some with a multi-stemmed habit (mallee); usually greater than 2 m in height; <30% foliage cover. Understorey of widespread dense low shrubs or sparse grasses and generally found in the arid and semi-arid zones, but not within the rangelands.
<b>F Rainforest</b>	Tall closed forest Closed forest Low closed forest	16 17 18	Trees >90% foliage cover; understorey may contain a large number of species with a variety of heights. Not dominated by eucalypt species.
<b>G Grasslands</b>	Open woodland Low open woodland Open shrubland Low open shrubland Hummock grassland Closed tussock grassland Tussock grassland Open tussock Sparse open tussock Dense sown pasture Sown pasture Open herbfield Sparse open herbfield	06 08 09 19 20 21 22 23 24 25 26 27 28	All forms (except tussock moorlands), including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland.  NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.
<b>H Tussock Moorland</b>	Tussock Moorland	Not shown	All forms of vegetation where the overstorey is dominated by the species Buttongrass ( <i>Gymnoschoenus sphaerocephalus</i> ). Only occurs as a significant vegetation type in Tasmania.

<sup>4</sup> Source: AS 3959-2018: Table 2.3 © Standards Australia. Reproduced with permission under Standards Australia licence number CL0821dfe.

<sup>5</sup> Figure number relates to those shown in Appendix 1 – Classification of Vegetation Summary.

Managed grassland and low threat vegetation in accordance with clause 2.2.3.2. (e) and (f) of AS 3959: 2018 are **not** considered bush fire prone for the purpose of the Standard.

More detail is provided in **Appendix 1 – Vegetation Classification Summary**, which provides a visual guide to assist in classifying vegetation.

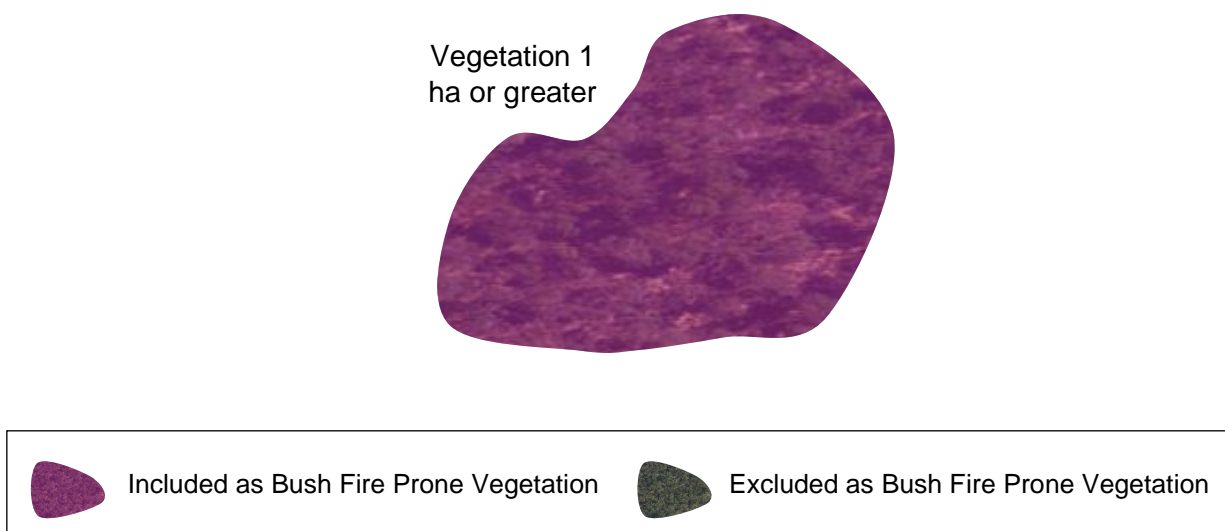
## 5.2 Bush Fire Prone Vegetation Data

The vegetation data used to develop the Map was sourced from the Department of Primary Industries and Regional Development, the Forest Products Commission and PF Olsen. A review was undertaken with DFES and the DBCA to determine which types of vegetation contained in the data are prone to bush fire. As per Section 7 of this Standard, local government and relevant state agencies are provided with the opportunity to annually review the bush fire prone mapping for their administrative areas.

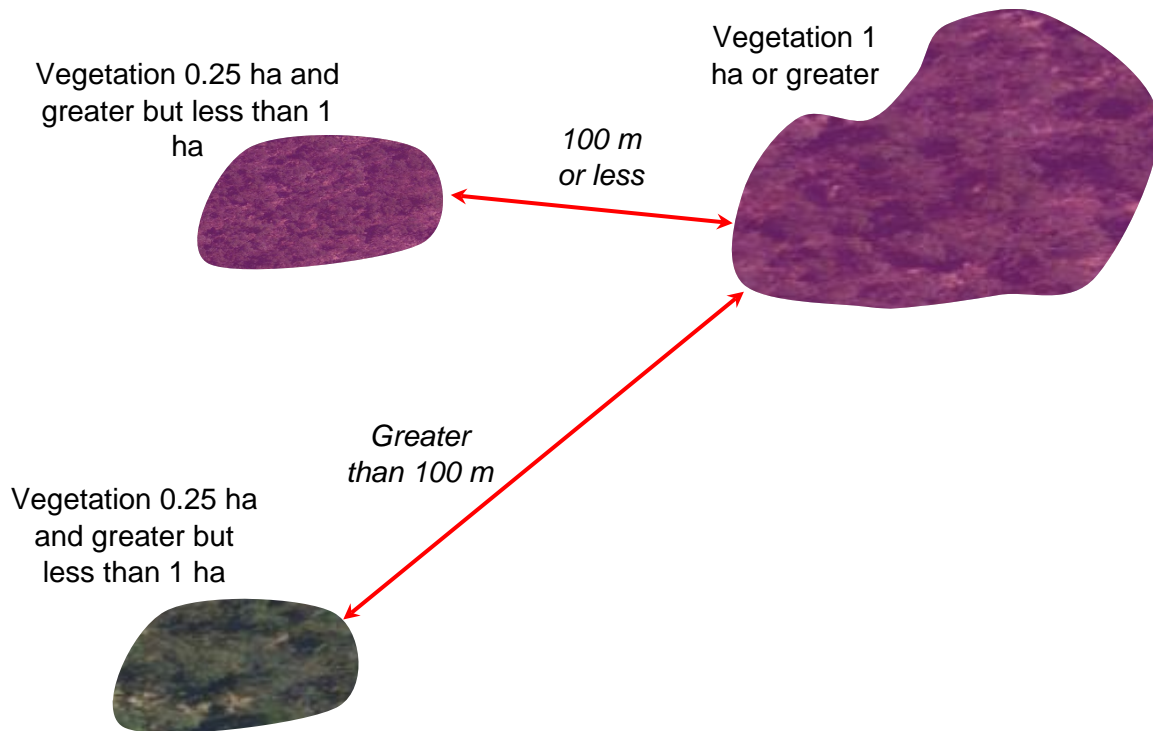
## 5.3 Assessing Bush Fire Prone Vegetation

Vegetation is identified as bush fire prone on the Map if it contains at least one of the vegetation classifications identified in Table 1 (detailed in **Appendix 1 – Vegetation Classification Summary**) and meets the size and proximity requirements contained in points 1 – 4 in Figure 2 below and over page.

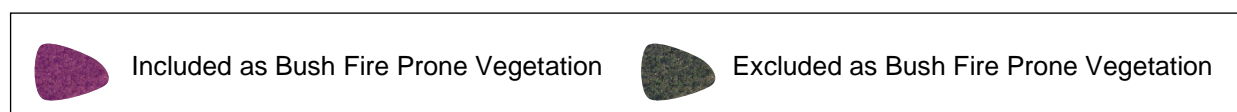
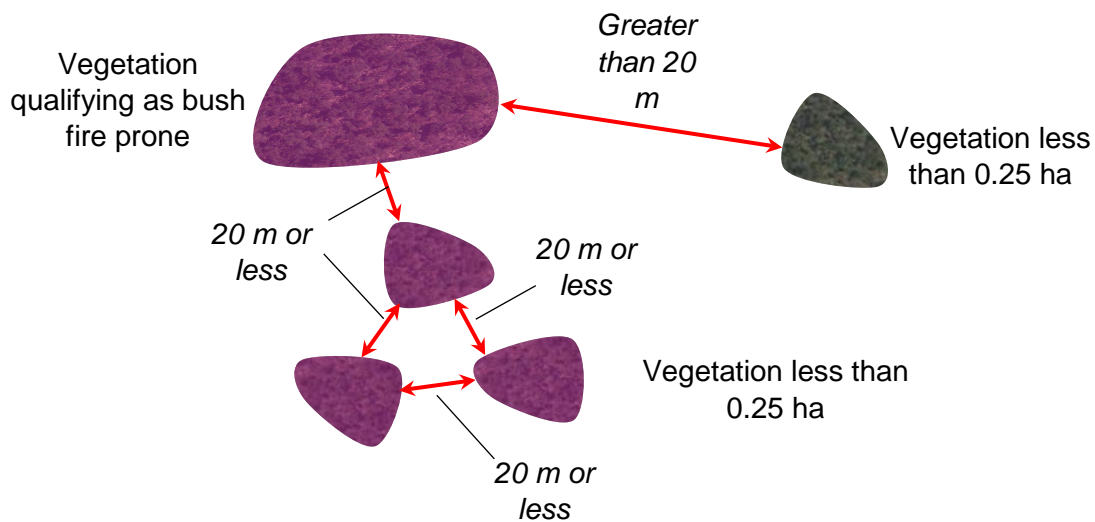
### 1. One hectare in area or greater:



**2. Less than 1 hectare to 0.25 hectares in area and 100 metres or less from other bush fire prone vegetation 1 hectare or greater in area:**



**3. Less than 0.25 hectare in area but 20 metres or less from bush fire prone vegetation of any size.**



**OR**

**4. Strips of vegetation 20 metres or greater in width, regardless of length, and within 20 metres of other bush fire prone vegetation of any size:**

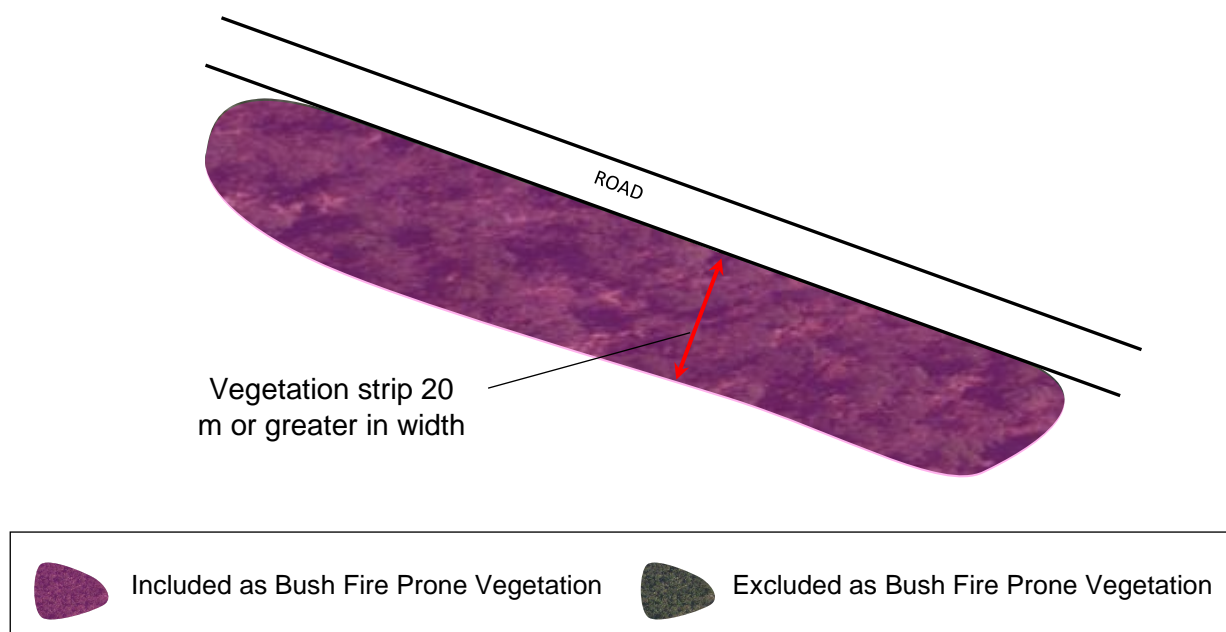


Figure 2 – Size and proximity requirements for vegetation to be considered bush fire prone

Vegetation should be classified at the point in time the assessment is undertaken. The future state of the site in question should not be considered (refer Section 7 of this Standard for more detail on how changes in vegetation will be captured over time).

## 5.4 Precautionary Principle

Where it is uncertain whether an area of vegetation meets the above criteria to be bush fire prone, local government should adopt a precautionary approach and identify the vegetation as bush fire prone. DFES will make the final assessment as to its inclusion on the Map.

## 5.5 Identifying the Bush Fire Prone Area

Once the bush fire prone vegetation has been identified, a 100 metre buffer is applied to the periphery of the bush fire prone vegetation to create the bush fire prone area. Buffering of the bush fire prone vegetation may create overlapping bush fire prone areas. Where two or more buffers overlap, they are merged to form a single bush fire prone area. The bush fire prone area, which is comprised of the bush fire prone vegetation and the bush fire prone buffer, is displayed on the Map in accordance with Section 5 of this Standard.

## 6. Technical Specifications of the Map of Bush Fire Prone Areas

This section provides an overview of the technical specifications of the Map of Bush Fire Prone Areas.

### 6.1 Map and Data Accessibility

The Map can be accessed online through the [DFES website](#) utilising the Shared Location Information Platform (SLIP) administered by Landgate. The dataset for designated bush fire prone areas is also available from the WA open data website, [www.data.wa.gov.au](http://www.data.wa.gov.au), for users to access and incorporate into their Geographic Information Systems (GIS) as appropriate.

### 6.2 Map Inclusions

The Map includes the following data:

- Bush fire prone areas;
- Aerial photography;
- Cadastral boundaries;
- Local government boundaries;
- Town site names; and
- Road names.

### 6.3 Map Functionality

Users can search the Map by address, or by navigating and zooming to areas of interest. When an area of interest is identified, clicking on the Map will display the:

- Designation status ('Not Applicable' or 'Bush Fire Prone Area');
- Designation date of bush fire prone areas;
- Local government for that location; and
- Webpage links for additional information: OBRM, DPLH and DMIRS Building and Energy division.

The Map also contains links to Instructions for Use and Frequently Asked Questions which will provide users with greater detail on how to use the Map.



## 6.4 Map Depiction of Bush Fire Prone Areas

Bush fire prone areas will appear pink in colour on the Map as per the example image below. The pink colour used to identify bush fire prone areas is ESRI ArcGIS standard colour RGB model values 255, 0, 197 displayed at 70 per cent transparency.

Areas which have been designated for four months or less have an additional blue hatching.

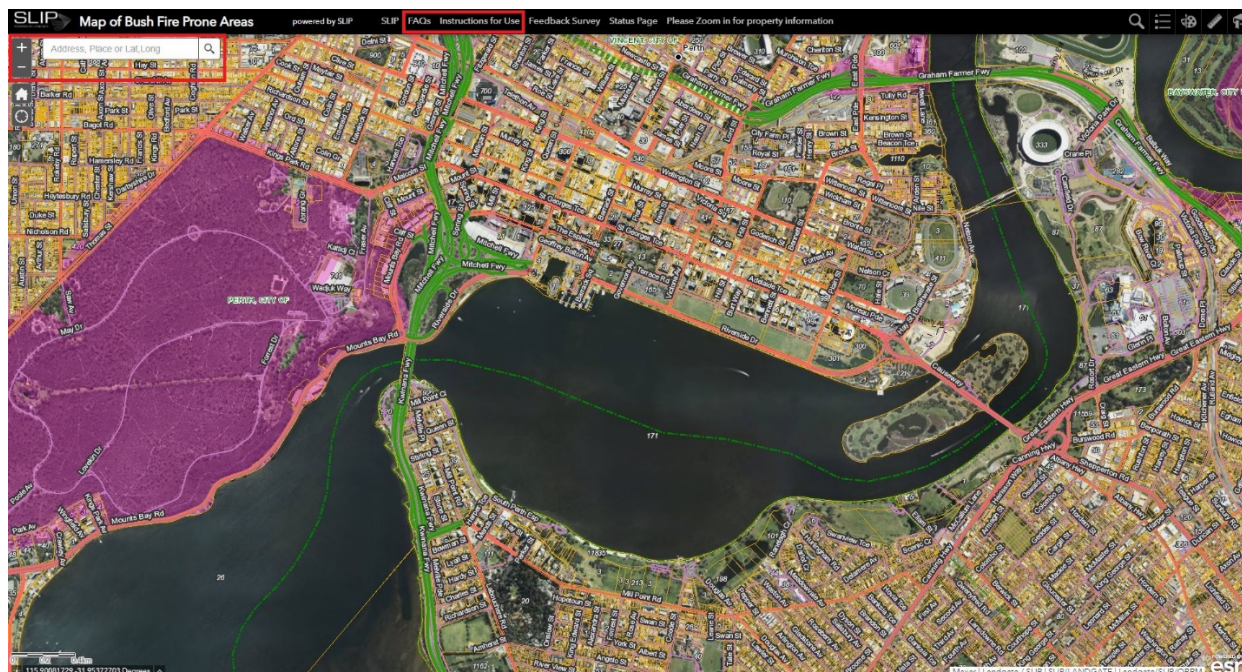


Figure 3 – Map Sample

## 7. Interim reviews of Map of Bush Fire Prone Areas

This section provides an overview of the process being used to undertake interim reviews of the Map of Bush Fire Prone Areas. The process has been modified from previous reviews and development phases to account for the fact the method for developing the Map of Bush Fire Prone Areas will be updated in the near future and any changes should be considered in light of this.

Interim reviews need to avoid confusion and unnecessary regulatory burden by making changes that may be amended by the CSIRO review. As such, interim reviews should only capture major changes or updates in vegetation extent that are not reflected in the current version of the Map.

### 7.1 Review of Bush Fire Prone Mapping

It is the responsibility of local government and relevant state agencies to monitor and review bush fire prone areas identified within their administrative areas, to ensure the currency of information provided to DFES for consideration in the Map. Public and industry input should be provided to the relevant local government and will be captured through DFES's consultation process. Relevant state government agencies will be provided with the opportunity to contribute to the Review of the Map as appropriate.

DFES will be conducting the Review, which will be managed by OBRM as follows:

- OBRM will write to local governments and relevant state agencies to initiate the interim review of the Map.
- Local governments and state agencies will be given approximately two months to review<sup>6</sup> the mapping for their administrative areas. Some assistance may be provided by OBRM if required.
- Local governments, excluding those within the Perth Central Planning Sub-region, and agencies should provide requests for significant changes to OBRM. Significant changes are 1 ha or greater in area. Changes under 1 ha in area will be considered in the CSIRO review of the mapping methodology.
- Local governments within the Perth Central Planning Sub-region should provide requests to OBRM only for removal from the Map areas of land that have had vegetation reductions greater than one hectare.
- OBRM requests that local governments notify them if no amendments are required.
- DFES will review proposed amendments.
  - If DFES does not accept proposed amendments, OBRM will liaise with relevant parties, to confirm (or otherwise) the accuracy of the proposed amendments. Should a difference of opinion not be resolved, the issue will be escalated to the Director OBRM for a final decision.

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<sup>6</sup> In most cases, a desktop assessment and application of local knowledge is an adequate process for verifying the bush fire prone vegetation data. A field assessment is appropriate where data or local knowledge is not sufficient to make a determination.

- DFES will use all accepted amendments to update the Bush Fire Prone vegetation data.

## **7.2 Finalisation of the Bush Fire Prone Areas Dataset**

- Landgate will use the accepted bush fire prone vegetation data to prepare the draft bush fire prone area dataset and Map.
- DFES will review the draft bush fire prone area dataset and Map and seek approval from the FES Commissioner.

## **7.3 Publication of the Map of Bush Fire Prone Areas**

- The FES Commissioner designates the bush fire prone areas, identified for information purposes on the Map, through an order published in the Government Gazette.
- DFES stores the designated bush fire prone area dataset and makes it publicly accessible through Landgate:
  - To view as the Map on the DFES website;
  - To view and download through [www.data.wa.gov.au](http://www.data.wa.gov.au)<sup>7</sup>; and
  - As a field in relevant Landgate Property Interest Reports.
- DFES will inform local governments of this change by email and through the Western Australian Local Government Association's networks and newsletters.

# **8. Monitoring and Review**

## **8.1 Mapping Standard for Bush Fire Prone Areas**

The Standard is currently being reviewed to maintain its currency and improve the accuracy of the resulting map. The review process is being undertaken in collaboration with DPLH, DMIRS and the CSIRO. There will be an engagement process as part of the Review and the public, industry and local government will be able to provide input during the consultation processes.

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<sup>7</sup> Previously designated bush fire prone area data will continue to be publicly available in the Map of Bush Fire Prone Areas and [www.data.wa.gov.au](http://www.data.wa.gov.au), and will be identified by its designation date.



# Appendix 1 - Classification of Vegetation - Summary

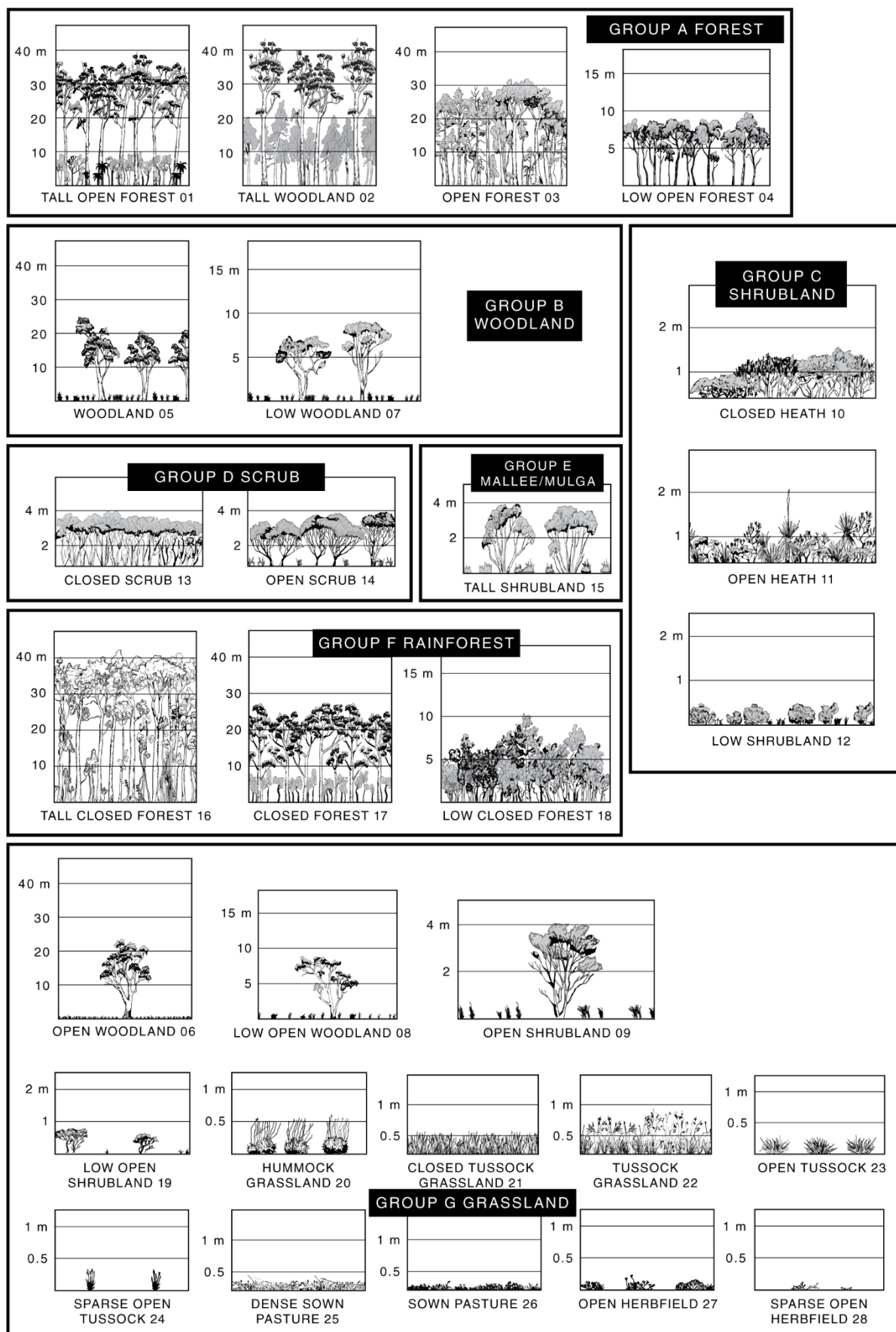


Figure 4 - Classification of vegetation – summary<sup>8</sup>

<sup>8</sup> Source: AS 3959-2018: Figure 2.4a © Standards Australia. Reproduced with permission under Standards Australia licence number CL0821dfe.

# Western Australian Photographic Examples

## Group A Forest



Jarrah open forest trees to 30 m height and more than 30% foliage cover



Karri tall open forest over 30 m and more than 30% foliage cover



Tuart open forest trees to 30 m height and more than 30% foliage cover



Melaleuca low open forest trees over 6 m in height and more than 30% foliage cover.





Peppermint/Mixed low forest over 6 m in height and over 30% foliage cover



Pine plantation over 30 m in height at maturity

### Group B Woodland



Eucalypt low open woodland over 10 m and less than 30% foliage cover with grassy understorey



Eucalypt woodland over 10 m and less than 30% foliage cover with isolated shrubs




Melaleuca low woodland trees over 6 m in height and less than 30% foliage cover over a native grass understorey



Low woodland with trees over 6 m, native grass and sedge understorey with isolated shrubs



<b>Group C Shrubland</b>	
	
<p>Low shrubland (Kwongan) less than 2 m in height</p>	<p>Closed (low) heath with 1 m - 2 m high shrubs</p>
<b>Group D Scrub</b>	
	
<p>Closed tall shrubland (scrub) greater than 2 m in height</p>	<p>Open shrubland (scrub) greater than 2 m in height</p>
<b>Group E Mallee/Mulga</b>	
	
<p>Mulga dominant with low shrubs in foreground over sparse grasses.</p>	<p>Mallee greater than 6 m in height and less than 30% foliage cover</p>



## Group F Rainforest

Rainforest in WA is restricted to the Kimberley Region which contains small areas of dry rainforest scattered across sheltered valleys and high rainfall coastal areas. The majority of these sites are protected within the reserve system and are unlikely to be associated with future development.



Kimberley vine thicket with greater than 90% foliage and dense understorey.

## Group G Grassland



Low open woodland with less than 10% foliage cover



Open sedgeland



Northern tussock grassland



Closed tussock – Sedgeland

	
Hummock grassland – Spinifex	Sown pasture

Figure 5 – Western Australia Photographic Examples<sup>9</sup>

<sup>9</sup> Western Australian photographic examples courtesy of the Bushfire Technical Services team of the Department of Fire and Emergency Services.