

Southern Ranges Region
Bendick Murrell National Park
Fire Management Strategy 2016

Resource Information

Bendick Murrell National Park (NP) (referred to in this plan as the Park) covers 1860 ha approximately 35 km north of Young on the south west slopes of NSW and was gazetted on the 1st of January 2011. The Park is characterised by an undulating plateau that rises from approximately 400 m in the east to approximately 600 m above sea level, dissected by numerous minor drainage lines.

This strategy has been prepared in accordance with the policies and procedures detailed in the NPWS Fire Management Manual (NPWS, 2012), and relevant legislation.

Office of Environment, Heritage	Government Areas	Other Organisations
<ul style="list-style-type: none"> NSW National Parks and Wildlife Service, Parks and Wildlife Group, Southern Ranges Region, Murrumbidgee Area. 	<ul style="list-style-type: none"> Hilltops Council 	<ul style="list-style-type: none"> Young Local Aboriginal Land Council Young Local Land Service
Rural Fire Service	<ul style="list-style-type: none"> South West Slopes Zone 	

IMPORTANT: The following planning information is based on the best possible data for each table category at the time of production of the plan (December 2016). When used in conjunction with other information and updates in NPWS GIS and Database management systems, concessions may be needed where asset management and biodiversity requirements differ.

MAP 1: FIRE HISTORY

The pre-European fire history of the park is not well known. Traditional fire practices of Aboriginal people in NSW have not been well researched and are therefore poorly understood. There is limited information regarding the fire history in the park however anecdotal evidence has suggested that several lightning strikes during dry electrical storms have occurred over the years with little damage. The majority of storms occur between November and February.

In April 2011, OEH conducted a prescribed burn of 23ha in the southern part of the park. A prescribed burn of 108ha was carried out in the east of the park in March 2009 by the former managers, Forestry Corporation. An area of 146 ha was burnt in private land to the west of the park by the RFS in March 2009.

The last known extensive wildfire burnt the entire park area in February 1932. The source of this fire which started on the neighbouring 'Kamradie' is thought to be from smouldering roots from a pine stump burnt weeks before. A small (1 ha) wildfire was recorded by the RFS in February 2006.

The limited records that do exist show that the incidence of fire for the Park, and the surrounding area is low.

THREATENED FAUNA MANAGEMENT

Common Name	Scientific Name	TSC Schedule	Vulnerable Period
Eastern Bentwing Bat	<i>Minioterus schreibleri</i>	V	J F M A M J J A S O N D
Greater Long-eared Bat (South-eastern form)	<i>Nyctophilus timonias</i>	V	J F M A M J J A S O N D
Yellow-bellied Shearwater	<i>Scolecophagus flaviventris</i>	V	J F M A M J J A S O N D
Little Pied Bat	<i>Chalinolobus pacificus</i>	V	J F M A M J J A S O N D
Spotted-tailed Quoll	<i>Diposops maculatus</i>	V	J F M A M J J A S O N D
Brush-tailed Phascogale	<i>Phascogale lapostola</i>	V	J F M A M J J A S O N D
Eastern Pygmy possum	<i>Cercartetus nanus</i>	V	J F M A M J J A S O N D
Squirrel Glider	<i>Petaurus noronchensis</i>	V	J F M A M J J A S O N D
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	V	J F M A M J J A S O N D
Powerful Owl	<i>Ninox strenua</i>	V	J F M A M J J A S O N D
Barking Owl	<i>Ninox connexus</i>	V	J F M A M J J A S O N D
Scarlet Robin	<i>Petroica boodang</i>	V	J F M A M J J A S O N D
Speckled warbler	<i>Pyrholaemus sagittatus</i>	V	J F M A M J J A S O N D
Varied Stitella	<i>Daphoenocitta chrysotis</i>	V	J F M A M J J A S O N D
Black-chinned honeyeater (Eastern subspecies) †	<i>Meliphaga gularis gularis</i>	V	J F M A M J J A S O N D
Brown Treecreeper	<i>Clanirostris plumbeus</i>	V	J F M A M J J A S O N D
Diamond Firetail	<i>Steganopleura guttata</i>	V	J F M A M J J A S O N D
Hooded Robin (south-eastern form) †	<i>Melanodryas cucullata cucullata</i>	V	J F M A M J J A S O N D
Flame Robin †	<i>Petroica phoenicea</i>	V	J F M A M J J A S O N D
Gibbet's Whistler	<i>Phylidryphus inornata</i>	V	J F M A M J J A S O N D
Hooded Robin (south-eastern form) †	<i>Melanodryas cucullata cucullata</i>	V	J F M A M J J A S O N D
Little Eagle	<i>Hieraaetus morphnoides</i>	V	J F M A M J J A S O N D
Little Lorikeet	<i>Glossopsitta pusilla</i>	V	J F M A M J J A S O N D
Grey-crowned Babbler (eastern subspecies) †	<i>Ptilinopus temporalis temporalis</i>	V	J F M A M J J A S O N D
Grey Falcon	<i>Falco hypoleucos</i>	E	J F M A M J J A S O N D
Regent Honeyeater	<i>Arnochaera phrygia</i>	E(1a)	J F M A M J J A S O N D
Painted Honeyeater	<i>Grantella picta</i>	V	J F M A M J J A S O N D
Superb Parrot †	<i>Polytelus swainsoni</i>	V	J F M A M J J A S O N D
Swift Parrot	<i>Lathyrus discolor</i>	E	J F M A M J J A S O N D
Turquoise Parrot	<i>Nymphes pucheranii</i>	V	J F M A M J J A S O N D
White-fronted Chat	<i>Ephianurus albitrons</i>	V	J F M A M J J A S O N D
Rosenberg's Goanna	<i>Vesaurus rosenbergi</i>	V	J F M A M J J A S O N D

Threatened Fauna Guidelines

- Minimise size and intensity of wildfires, and manage to produce mosaic burn patterns. Fire patchiness is likely to be an important factor in providing a mosaic of structurally diverse vegetation.
- If prescribed burns are necessary, avoid implementation during Spring. When planning prescribed burns, refer to the periods of vulnerability of species likely to be located within the burn area, and develop appropriate mitigation measures for their protection.
- Avoid prescribed fire during times of prolonged drought.
- Minimise production of high intensity fires during prescribed burning and backburning operations.
- Avoid damaging/felling hollow-bearing and known nest/treed trees when establishing control lines, mopping up and during prescribed burning. If habitat trees are located on control lines remove fuel from bases of trees, prior to prescribed burning or backburning. During mop up activities where suitable by to extinguish fire rather than falling tree.

MAP 2: VEGETATION COMMUNITIES

Vegetation Formation (Keith 2002)	Vegetation Community Description	NSW VCA ID (Benson)	Reserve (GIS) ha's	% Reserve Cover
Grassy woodlands	White Box - Blakelys Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass/shrub woodland on yellow soils on hills in the New South Wales South-western Slopes Bioregion	268	19.6	1
	Red Stringybark - Long-leaved Box - Black Cypress Pine grass/shrub woodland on siliceous sedimentary ranges in the upper NSW South-western Slopes and South Eastern Highlands Bioregions	321	28.2	1.5
	Inland Scrubby Gum - Red Stringybark - Black Cypress Pine hillside shrub-tussock grass open forest on mainly sandstone ranges in the NSW central western slopes	322	613.9	33
Semi-arid woodlands	Red Gum - Black Cypress Pine - Red Stringybark woodland on rocky hills in the NSW central western slopes	332	98.5	5.3
	Mugga Ironbark - mixed box woodland and hills in the Coora - Boreeora - Young region of the NSW South-western Slopes Bioregion	342	707.3	42.8
	Red Gum - Black Cypress Pine with Mugga Ironbark mixed box woodland	332/342	132	7.1
	Red Gum - Black Cypress Pine with scribbly gum	332/322	32	1.7
	Mugga Ironbark - mixed box woodland with scribbly gum	322/342	141	7.6
	Undescribed	N/A	N/A	N/A

MAP 3: STATUS OF FIRE THRESHOLDS

Threshold	NSW VCA ID	% of Reserve	Interpretation & Management Guidelines
Too Frequently Burnt	N/A	0	<ul style="list-style-type: none"> Fire thresholds have been exceeded. In these areas, species and populations sensitive to shallow soils may experience a decline in abundance to a point where they risk local extinction. Protect from fire as far as possible.
Vulnerable to Frequent Fire	268, 321, 322, 332, 342, 332/322, 322/342	61.4	<ul style="list-style-type: none"> These areas have experienced one inter-fire interval less than the minimum recommended interval. These areas will be 'Too Frequently Burnt' if it burns before the minimum threshold is reached. Protect from fire as far as possible.
Within Threshold	268	0.4	<ul style="list-style-type: none"> Fire history is within the threshold for the vegetation community. Fire is neither required or to be avoided.
Long Unburnt	268, 321, 322, 332, 342, 332/342, 322/342	38.2	<ul style="list-style-type: none"> Where the age of a vegetation community is greater than the maximum fire interval for the community and if fires continue to be excluded, a decline in biodiversity may result through the senescence of plants and their seed banks. Long-unburnt areas are, however, ecologically significant, as there may be relatively few areas represented. Consider implementing an ecological burn or allow the area to burn under natural conditions.
Unknown	N/A	0	<ul style="list-style-type: none"> There has been no fire mapped for this area and the maximum recommended fire interval for the vegetation type is longer than the length of time for which fire records are available. It is not possible to determine if the vegetation is in the 'Within Threshold' or 'Long Unburnt' category.

Note: The threshold analysis is derived from vegetation community thresholds and recorded fire history. In the event of fire, the analysis must be performed again to establish new thresholds. Fire history for the Park is unknown, therefore all vegetation communities are considered within threshold.

MAP 4: BUSHFIRE BEHAVIOUR POTENTIAL

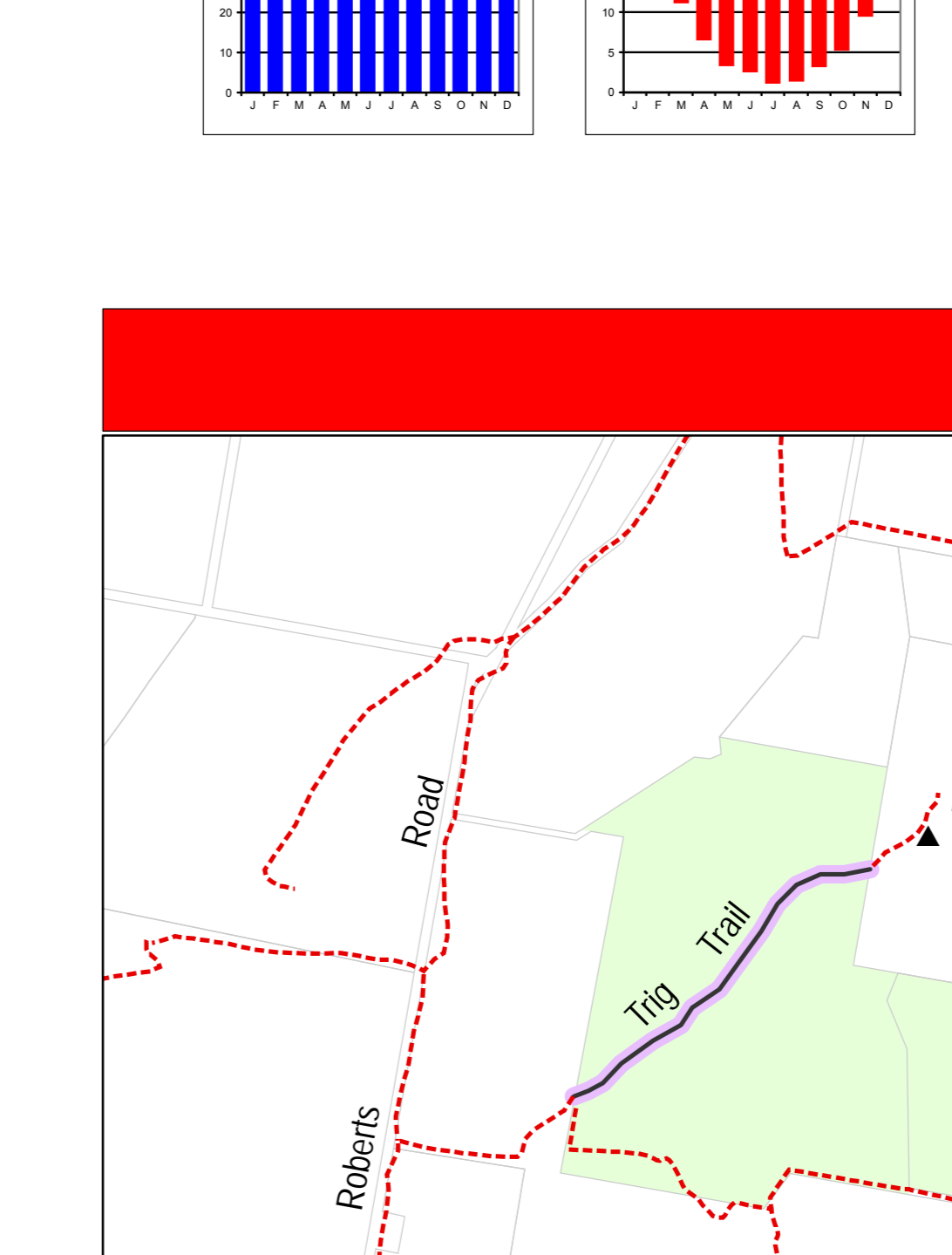
Vegetation Fuel Hazard Rating (under moderate conditions in mature vegetation communities). The ratings and modelling are specific to the Park. The information is not for comparison of the broader landscape managed by the NPWS Southern Ranges Region.

Rating	Vegetation Description	% of Reserve
Low	White Box - Blakelys Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass/shrub woodland	0
Moderate	Mugga Ironbark - mixed box woodland	51.4
High	Red Stringybark - Long-leaved Box - Black Cypress Pine shrub/grass woodland Red gum black cypress pine red box low woodland Inland Scrubby Gum - Red Stringybark - Black Cypress Pine hillside shrub-tussock grass open forest	48.6

ANALYSIS OF BUSHFIRE BEHAVIOUR POTENTIAL

Bushfire behaviour at any position on the landscape reflects:

- Site attributes such as vegetation type, slope, aspect and elevation (can affect fuel levels, structure and moisture content).
- Fire weather attributes such as temperature, relative humidity, wind direction and wind speed. While these characteristics are difficult to predict, bad fire weather days are generally associated with winds from the northwest to west.



MAPS 2 and 5: SIGNIFICANT COMMUNITIES

Vegetation Group	Significant Flora Management Guidelines & Considerations
Grassy Woodlands	<ul style="list-style-type: none"> Box-gum woodland is listed as an endangered ecological community under the Threatened Species Conservation (TSC) Act. It is an important habitat for rare woodland birds, which needs to be considered when planning prescribed burns or suppression activities during incidents. Where possible: <ul style="list-style-type: none"> Use existing trails as containment lines to prevent further fragmentation of this vegetation group. Protect mature, large and hollow bearing trees. Retardants and foams can be used in this area. Monitor the area for loss of biodiversity and manage within the vegetation group guidelines. Prescribed fire should only be implemented where required for ecological purposes. Back burnings and prescribed burns are permitted within thresholds.
Semi-arid woodlands	<ul style="list-style-type: none"> As above If a fire breaks out, check for visitors (preferably by air) and give directions if required. Park closure may be implemented during periods of very high fire danger, when the Park is threatened by fire, or when a fire is actually burning in the Park. Partial Reserve Fire Bars, such as a ban on solid fuel, can be considered.

There are no species listed on the TSC Act recorded in Bendick Murrell National Park.

Regionally Significant Plant Species

No species, recorded within the Park are regionally significant.

MAP 3: VEGETATION COMMUNITY THRESHOLDS

Vegetation Formation	Minimum Fire Interval	Maximum Fire Interval	NSW VCA ID	Fire History Evaluation	Guidelines
Grassy Woodlands	5	40	268	37% within threshold 25% long unburnt 38% long unburnt	<ul style="list-style-type: none"> Given the lack of knowledge of ecosystem function without fire, the upper limits of these thresholds are untested. Fire should only be introduced into the Park for the protection of assets, and ecological purposes if there is a demonstrated biodiversity decline. Long-unburnt areas are ecologically significant, as there may be relatively few areas represented. Too frequent fires may promote fire tolerant species.
Semi-arid woodlands	15	40	321, 322, 332, 342, 332/322, 322/342	6% vulnerable 94% long unburnt 74% vulnerable 26% long unburnt 32% vulnerable 68% long unburnt 74% vulnerable 26% long unburnt 100% long unburnt 100% vulnerable 100% vulnerable 18% vulnerable 82% long unburnt	<ul style="list-style-type: none"> As above

Note: These are indicative biodiversity thresholds based on broader state wide surveys. The broad thresholds are based on an analysis of known flora response to fire using plant site attributes, and including compatibility of known fauna requirements, for identified broad vegetation formations (Kenyon et al. 2004). Vegetation communities as outlined in Map 2 have been classified into formations to determine the appropriate biodiversity threshold guidelines. These thresholds, while accounting for some key flora and fauna variables, do not account for the whole variability in the landscape. Therefore such thresholds must be used with caution (Kenyon et al. 2004). Interpretation of the thresholds should be done in association with local knowledge, detailed survey and planning associated with prescribed burn proposals and utilizing the results of local monitoring programs (Kenyon et al. 2004). It is noted there is very little data available on the response of fauna species to fire regimes and therefore more attention should be paid to fauna species at the local level when considering applying the thresholds.

MAP 7: BUSH FIRE MANAGEMENT ZONES - DEFINITIONS

Asset Protection Zone (APZ)	Strategic Fire Advantage Zone (SFAZ)	Land Management Zone (LMZ)
The purpose of APZ is to protect human life, property and highly valued public assets and values. Provide fuel reduced areas around assets.	To provide strategic areas of fire protection advantage which will reduce the speed and intensity of bushfires, reduce the potential for spot fire development, and act as containment of bushfires to existing management boundaries.	The objectives of land management strategies within this zone are for the protection of natural and cultural heritage, and to reduce the likelihood of spread of fires.

RESERVE BUSH FIRE MANAGEMENT ZONES

Zone	Guidelines	Actions
LMZ	<ul style="list-style-type: none"> Minimise size and intensity of wildfires, and manage to produce a mosaic burn pattern, where weather conditions permit. Earthmoving equipment may be used to contain fire within OEH policy guidelines. Attempts can be made to increase burn patchiness by use of accelerants, retardant, water bombing etc. Protect mature trees and minimise felling large and hollow bearing trees during mop up activities. 	<ul style="list-style-type: none"> Prescribed fire will be used where deemed necessary for asset protection or ecological purposes. Assess cooperative fire management programs with adjacent landholders and implement where appropriate, in consultation with BFMC.



MAP 8: FUELS AND FIRE BEHAVIOUR

Fuels are variable across the Park reflecting complex interactions between vegetation type, aspect and topography. Fuel sampling was conducted in September 2014 at 14 sites throughout the Park. The assessment approach applied was to determine the Overall Fuel Hazard (OFH) Rating (McCarthy et al., 1999). Rather than only considering surface fuel loads (ft), this assessment shifts the emphasis to considering the whole fuel complex, and particularly the bark and elevated fuels - bark and elevated fuels being the fuel elements principally responsible for both first attack failure and also for general suppression difficulty. The major findings of the fuel sampling program were:

- The Overall Fuel Hazard ratings were 8 Low, three Medium and three Very High.
- The fuels in the 2011 prescribed burn area ranged from Low to Medium.
- The fuels in the 2008 prescribed burn and wild fire area ranged from Medium to Very High.
- There were no sites that were classified as having Extreme overall fuel hazard rating.
- If an area is within biodiversity threshold, identified to have high fuel loads, and there is a risk to life and property, temporary fuel monitoring sites will be located within that area for determination of whether a prescribed burn is suitable. Management options would be discussed with the RFS South West Slopes Zone.

WORKS PROGRAM

Asset	Priority	Name, Area or Detail	Management Strategy	Proposed Works
Trails	High	Public and Management Trails	<ul style="list-style-type: none"> Maintain trail network for vehicle category identified in the fire trails register dependent on available resources. All trails to be clearly signposted at intersections and trailheads. Ensure earthmoving equipment operators are aware of location of heritage sites if identified and ensure protection. 	<ul style="list-style-type: none"> Assess trails annually and maintain as required. Maintain directional signage throughout the trail network as required. Chemical and mechanical fuel reduction of management trails as required.
	Low	Dormant Trails	<ul style="list-style-type: none"> Could be used during emergencies once upgraded to Cat 9 standard. May be re-opened as a control line option. 	<ul style="list-style-type: none"> Assess trails and document condition and suitability for the fire suppression activities, every 5 years.
Land Management Zones (LMZ)	High	As identified in Map 7	<ul style="list-style-type: none"> Prescribed burns will be implemented where deemed necessary for asset protection. Any proposed prescribed burn must be in line with OEH policy and managed in accordance with the RFS Bushfire Management Committee. Manage and protect natural & cultural values with appropriate fire management regimes. 	<ul style="list-style-type: none"> Assess cooperative fire management programs with adjacent landholders and implement where appropriate, in consultation with BFMC. Conduct fuel hazard assessment as per fuel monitoring schedule. Monitor thresholds every 5 years, and after fire events.
	High	Fuel monitoring	<ul style="list-style-type: none"> Continue fuel monitoring program, including photo reference points. 	<ul style="list-style-type: none"> Conduct fuel hazard assessment every 5 years.
Information & Research	High	Mapping fire	<ul style="list-style-type: none"> Map all bushfires and prescribed burns to enable data collection on fire frequency, intensity, rate of spread and area burnt. 	<ul style="list-style-type: none"> Map the extent, patchiness and intensity, where possible, of all bushfires and prescribed burns. Incorporate data into fire management and incident databases.
	Low	Research	<ul style="list-style-type: none"> Liaise with academic and research institutions to encourage research in the Park relevant to fire management. 	<ul style="list-style-type: none"> Ongoing
Cooperative Fire Management	High	Liaise with NSW RFS, and Neighbours	<ul style="list-style-type: none"> Attend meetings with the NSW South West Slopes Bushfire Management Committee and RFS volunteer groups. Undertake joint training exercises where appropriate. 	<ul style="list-style-type: none"> Ongoing

