Copperhannia Nature Reserve
Fire Management Strategy 2014
Mapsheet 1 of 1

Office of Environment & Heritage
NSW National Parks & Wildlife Service

This strategy should be used in conjunction with aerial photography and field reconnaissance during incidents and the develop ment of incident action plans. These data are not guaranteed to be free from error or omission. The NSW National Parks and Wildlife and its employees disclaim liability for any act done on the information in the data and any consequences of such acts or omissions. This document is copyright. Apart from any fair dealing for the purpose of study, research criticism or review, as permitted under the copyright Act, no part may be reproduced by any process without written permission. **This strategy is a relevant Plan under Section 38 (4) and Section 44 (3) of Rural Fires Act 1997.** The NSW National Parks and Wildlife Service is part of the Office of Environment and Heritage. Published by the Office of Environment and Heritage (NSW).

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ISBN 978 1 74293 794 6 **OEH** 2012/0727 | **Date:** June 2014 | **Version No:** 1

Map Details		Related Documents
Datum: Geocentric Datum of Australia (GDA) 1994 **Projection:** Map Grid of Australia (MGA) Zone 55 **Data:** Spot Satellite Imagery: 2005.	**1:50k Topographic Map:** Abercrombie 8730- S **Scale:** Note scales are true when printed on A1 size paper	OEH Fire Management Manual 2013 - 2014.

Fire Season Information

Wildfires	The critical wildfire season generally occurs between December and February. Dry lightning storms (characterised by numerous lightning strikes associated with little or no rainfall) frequently occur during this period. The potential for severe fire weather conditions occur when strong winds from the NW are aligned with high day time temperatures and low relative humidity. Particular care is required during periods of negative Southern Oscillation Indices when drier than normal conditions can be experienced as early as October/November and as late as March/April.
Prescribed Burning	Prescribed burning should generally be undertaken during Autumn. Prescribe burns may also take place during Winter and/or early Spring if suitable weather conditions prevail. A low to moderate intensity burn is generally prescribed over most of the reserve.

Operational Guidelines

Brief all personnel involved in suppression operations on the following issues using the SMEACCS format:

General	Guidelines
Aerial Water Bombing	▪ The use of bombing aircraft is designed to support suppression and containment operations and where necessary slow the progress of an advancing fire until ground crews arrive. ▪ Aircraft assist in aggressively attacking hotspots and spot-overs and their use without the support of ground based suppression crews generally has limited effectiveness. ▪ Where practicable foam should be used to increase the effectiveness of the water. ▪ Ground crews must be alerted to water bombing operations.
Aerial Ignition	▪ Aerial ignition may be used during back-burning or fuel reduction operations where practicable, but only with the prior consent of NPWS Senior Officer, Section 44 delegate or as prescribed in an operational burn plan, ▪ The use of aerial ignition as a fire suppression tool should be specified in the IAP or within the prescribed burn plan. ▪ Aerial ignition will only be undertaken by qualified and competent navigators and bombardiers, ▪ Utilise aerial ignition to rapidly burn out large areas and or reduce spotting potential by preventing longer uphill fire runs. ▪ Aerial ignition can be utilised to rapidly progress back-burns down-slope where required.
Back-burning	▪ Temperature and humidity trends must be monitored carefully to determine the safest times to implement back-burns. ▪ Generally, when the FDI is Very High or greater, back-burning should only commence when the humidity begins to rise in the late afternoon or early evening. ▪ Back-burning may be safely undertaken during the day only when FDI is low ▪ Where practicable, and prior to light up, clear (or wet down) around dead and hollow bearing trees adjacent to containment lines to reduce effort needed for mop up activities, ▪ Use parallel containment lines when applicable, ▪ All personnel must be fully briefed before back-burning operations begin. ▪ Approval of the IC is required prior to commencement of back-burning operations.
Command & Control	▪ Standard Incident Management Systems are to be applied, ▪ The first combatant agency on site may assume control of the fire, but then must ensure the relevant land management agency is notified promptly. ▪ On the arrival of other combatant agencies, the Incident Controller will consult with regard to the ongoing command, control and incident management team requirements as per the relevant BFMC Plan of Operations.
Containment Lines	▪ Where possible, the construction of new containment lines should be avoided. ▪ For new containment lines the IMT should liaise with and receive consent from a senior NPWS officer prior to their construction. ▪ All containment lines constructed as part of the fire suppression effort must be constructed with as minimal environmental impact as is possible and those containment lines not required for other purposes should be closed prior to the cessation of the incident. ▪ All personal involved in containment line construction should be briefed on the protection of the reserves natural and cultural assets. ▪ When constructing containment lines, steep and rocky areas and locations adjacent to riparian (creeks or streams) or significant drainage lines should be avoided. ▪ Containment line construction using earthmoving equipment must be conducted in accordance with this RFMS and the OEH FMM and sedimentation and erosion control measures must be implemented in accordance with both OEH and DLWC fire trail constructions guidelines and standards and the PWG Roads Policy (Manual) .
Earthmoving Equipment	▪ Earthmoving equipment may only be used with the prior consent of a senior NPWS officer. ▪ Earthmoving equipment must always be guided and supervised by an appropriately experienced person, who can assist with survey (route selection) and the identification and protection of threatened species and/or or historic and Aboriginal sites (known nor unknown) along the proposed containment line. ▪ To assist with the protection of natural and cultural assets and drainage features earth moving operators need to be briefed and observe the Threatened Species and Cultural Heritage Operational Guidelines contained in this RFMS ▪ Earth moving equipment must always be accompanied by a support vehicle and when engaged in direct or parallel attack this vehicle must be a fire fighting vehicle. (NB - The use of D4 sized dozers are preferred for containment line construction). ▪ Earthmoving equipment must be washed down (where practicable) prior to it entering NPWS estate and again on exiting NPWS estate. ▪ Where multiple items of earthmoving equipment are being used, the IMT should consider the appointment of a Plant Operations Manager.
Fire Advantage Recording	▪ All fire advantages used during wildfire suppression operations must be mapped and where relevant added to the database.
Fire Suppression Chemicals	▪ Use of wetting and foaming agents (surfactants) is permitted on the reserve. ▪ The use of fire retardants are only permitted with the prior consent of the senior NPWS officer and should be avoided where reasonable alternatives are available. ▪ Exclude the use of surfactants and retardants within 50m of watercourses, dams and swamps, ▪ Areas where fire suppression chemicals are used must be mapped and the used product's name recorded, ▪ The Threatened Species Operational Guidelines are to be observed.
Rehabilitation	▪ Where practicable, containment lines should be stabilised and rehabilitated as part of the wildfire suppression operation.
Smoke Management	▪ The potential impacts of smoke must be considered when planning for wildfire suppression and prescribed burning operations. ▪ Where possible the use of prevailing weather conditions along with specific light up strategies and ignition patterns will be used to manage and disperse smoke. ▪ If smoke becomes a hazard on local roads or highways, the police and relevant media must be notified, ▪ Smoke management will be in accordance with relevant OEH guidelines.
Visitors	▪ The reserve may be closed to the public during periods of extreme fire danger or during prescribed burning or wildfire suppression operations.
WARNINGS	▪ Assume all trails are gated and locked. ▪ Communication "blackspots" occur throughout the reserve, especially in the southern end of the reserve and are often confined to the lower points in the landscape (ie gullies and creek lines). ▪ Arkell Ridge Trail is a **No Through Trail.** ▪ Hells Hole Trail and Little Hells Hole Trail contain steep (often slippery) terrain with numerous rollovers.
Water Points	▪ For all large fires, bulk water carriers should be deployed ASAP to the fireground ▪ Dams on private property or with the adjoining State Forests that surround the reserve can be utilised for firefighting purposes but should be replenished (if at all possible) ▪ Apart from Rocky Bridge Creek (which is considered to be a source of permanent water) most of the remaining major drainage lines are considered to be ephemeral and generally do not contain water.

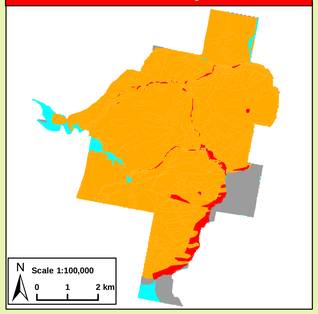
Threatened Species and Cultural Heritage Operational Guidelines

Site	Guidelines
	Aboriginal Cultural Heritage Site Management
IS1	▪ Do not cut down trees ▪ As far as possible protect the site from fire ▪ Use of foams, wetting agents & retardant is acceptable.
IS2	▪ Avoid all ground disturbance including the use of earthmoving machinery, handline construction and driving over sites ▪ Sites may be burnt by bushfire, backburn or prescribed burn without damage.
	Historic Heritage Site Management
H1	▪ As far as possible protect the site from fire ▪ Avoid all ground disturbance including the use of earthmoving machinery, handline construction and driving over sites ▪ Avoid water bombing which may cause ground disturbance ▪ Use of foams, wetting agents & retardant is acceptable.
	Threatened Fauna Management
FA1	▪ Utilise mosaic burning and avoid disturbance at known sightings, roostings or refuges and avoid frequent fire (<6 years).
FA3	▪ Utilise mosaic burning and protect hollow bearing trees.

Communications Information

Service	Channel	Location and Comments
NPWS VHF Repeater	290	WRR Vote Group - searches for towers
	294	Sunny Corner (duplex)
	594	Sunny Corner (simplex) - car to car
	292	Mount Canobolas (duplex)
	592	Mount Canobolas (simplex) – car to car
	11 - 17	NPWS Fireground Channels
	113	Shooters Hill
	116	Snowy Mountains
NPWS VHF Portable Repeater	21 - 26	Available from Central West Area Bathurst office
RFS PMR	P004	Mount Ryan - Triangle Flat
	P044	Mount Macquarie - Blayney
	P053	Clarks Trig - Newbridge
Forestry Corporation	?	Local arrangements to be made - they are still running VHF 80Mhz systems.
UHF - CB	10 or 16	Local brigade channel
Mobile Phone	Next G	Reception: Ridges - Fair to Poor
	Next G	Reception: Gullies - Poor to NIL

Status of Biodiversity Thresholds

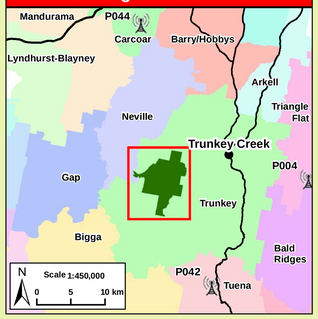


Evaluation of Biodiversity Thresholds

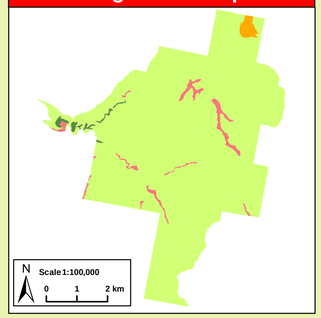
Too Frequently Burnt	Fire thresholds have been exceeded. Species may become extinct due to insufficient time to mature and reproduce. *Protect from fire as far as possible.*
Vulnerable to Frequent Fire	The area will be too frequently burnt if it burns this year ▪ *Protect from fire as far as possible.*
Within Threshold	Within the threshold for vegetation in this area. Species have had sufficient time to mature and reproduce, and for habitats to develop. ▪ *A fire event is neither required nor should one necessarily be avoided.*
Long Unburnt	Underburnt, excessive time since last fire, species may become extinct. ▪ *A fire event may be ecologically advantageous. Consider allowing unplanned fires to burn.*

NB. Fire thresholds are defined for vegetation communities to conserve biodiversity

RFS Fire Brigade Areas & Towers



Vegetation Map



Vegetation Map Legend

Broad Vegetation Class	Vegetation Type	Vegetation Description and Fire Interval	Fire Behaviour
Dry Sclerophyll Forest (Shrub/Grass formation)	Upper Riverina Dry Sclerophyll Forests	This vegetation type occupies are large part of the reserve and is generally characterised by the presence of both Red Stringybark *Eucalyptus macrorhyncha* and Red Box *E.polyanthemos*. These species occur in association with several other species of trees (often co-dominant) at variable altitudes including Inland (Western) Scribbly Gum *E.*rossii, Brittle (Manna) Gum *E.*mannifera, Long leaved (Bundy) Box *E.*goniocalyx and Apple Box *Eucalyptus bridgesiana* and to a lesser extent Tumbledown Gum *E.*dealbata, Yellow Box *E.melliodora* and Black Cypress Pine *Callitris enlicheri* are also found. Other prominent species that occur include Native Blackthorn *Bursaria spinosa*, Silver Wattle *Acacia dealbata*, Silver Tea Tree *Leptospermum multicaule*, Nodding Blue Lily *Stypandra glauca*, Hoary Guinea Flower *Hibbertia obtusifolia*, Wattle Mat Rush *Lomandra filiformis*, Blue Flax Lily *Dianella revoluta*. Dense stands of Plum-leaf Pomaderis *Pomaderis prunifolia* are often found along creeklines while ground covers are dominated by Snow Grass *Poa sieberiana*, Red Anther Wallaby Grass *Joycea pallida* and the Wattle Mat Rush *Lomandra filiformis*. Grass Trees *Xanthorrhoea glauca* are often found in woodlands at lower altitudes. This vegetation type is comprised of complex of several woodland and forest communities and have been described as Red Stringybark – Box Woodlands, Sheltered Woodlands, Sheltered Red Stringybark Forests, Copperhannia Creekside Apple Box Woodland , Granite Woodlands and Low Altitude Dry Woodlands. An interval between fire events of less than 8 years and greater than 50 years should be avoided.	The presence of a high concentration of continuous ground cover species (ie native grasses) will often create erratic fire behaviour which can impact on the success of suppression activities and potentially lead to spotting and the rapid spread of fire under suitable weather conditions. On the more exposed ridges and aspects fuel loads are low and surface and ground fuels tend to be discontinuous.
Dry Sclerophyll Forest (Shrub formation	Southern Tableland Dry Sclerophyll Forests	This vegetation type is generally dominated by the presence of both Red Stringybark *Eucalyptus macrorhyncha* and Inland (Western) Scribbly Gum *E.*rossii with Long leaved (Bundy) Box *E.*goniocalyx being an associated tree species. The vegetation type has been described as Red Stringybark – Scribbly Gum Woodlands. An interval between fire events of less than 10 years and greater than 30 years should be avoided	The ground layer tends to be sparse with low to medium plant cover. Fuel loads tend to be discontinuous and as a consequence have a reduced impact on fire behaviour.
Forested Wetlands	Eastern Riverine Forests	This vegetation type is generally dominated by the presence of River Oak *Casuarina cunninghamiana* and is confined to the riparian areas along Hells Hole Creek. This vegetation type has been described as *River Oak Forests.* An interval between fire events of less than 10 years and greater than 35 years should be avoided.	Generally these areas are found in the more sheltered and moister parts of the reserve. They are often located or associated with steep and often rocky areas adjacent to creek lines and as such are unlikely to be subject to fire.
Grassy Woodlands	Southern Tableland Grassy Woodlands	This vegetation community is confined to the main drainage lines and larger associated tributaries of Hells Hole, Little Hells Hole and Rocky Bridge Creeks and is characterised by the presence and dominance of Apple Box *Eucalyptus bridgesiana*. Other associated species include Red Stringybark *Eucalyptus macrorhyncha*, Long leaved (Bundy) Box *E.*goniocalyx, Inland (Western) Scribbly Gum *E.*rossii and Red Box *E.polyanthemos*. This vegetation community has been described as Copperhannia Creekside Apple Box Woodland. An interval between fire events of less than 10 years and greater than 40 years should be avoided.	These areas are associated with drainage landscapes and as such are found in the moist and sheltered aspects of the reserve. As a result there tends to be a higher proportion of ferns and the lower altitude areas a dense stand of *Pomaderris* grow along these creek lines. The shrub layer is variable and has a ground cover of both Snow grass and Wallaby grass which can contribute to an escalation of erratic fire behaviour if suitable conditions persist.

Contact Information

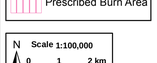
Agency	Position / Location	Phone
National Parks & Wildlife Service	Duty Officer	**02** 6332 6350
	Central West Area Office - Bathurst	**02** 6332 7640
	Western Rivers Regional Office – Griffith	**02** 6966 8100
NSW Rural Fire Service - Chifley Zone	Duty Officer	0428 650 470
	Bathurst FCC – 7 Lee Street KELSO	**02** 6333 1333
	Trunkey Brigade – Captain - David Byrnes	0439 489 062
NSW Rural Fire Service - Canobolas Zone	Duty Officer	**02** 6361 8288
	Orange FCC – 1385 Forest Road ORANGE	**02** 6363 6666
	Neville Brigade – Captain – Mike Spira	0425 205 343
Forestry Corporation	Duty Officer – Fire Reporting	**02** 6332 4812
	Northern Softwood Region Office – Bathurst	**02** 6331 2044
	Pennsylvannia SF - Fire Tower (only manned during Bushfire Danger Period)	**02** 6331 2044
Emergency Services	Police, Ambulance, Fire	000
SES	Statewide	13 2500
	Duty Officer - Central West – Bathurst	**02** 6334 8555
NSW Police Service	Trunkey	**02** 6368 8606
	Bathurst	**02** 6332 8699
Hospital	Bathurst Base	**02** 6330 5311
Council	Bathurst Regional Council	**02** 6333 6111
Local Aboriginal Land Council	Cowra	**02** 6342 3259

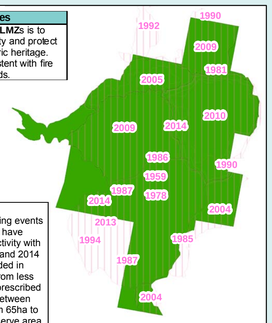
Bushfire Risk Management Strategies & Fire History

Fire Management Zones

Land Management Zones	The objective of **LMZs** is to conserve biodiversity and protect cultural and historic heritage. Manage fire consistent with fire thresholds.

Prescribed Burn Area





Fire History

The reserve is prone to summer lightning events and a large proportion of wildfires have occurred as a result of dry lightning activity with no associated rainfall. Between 1977 and 2014 thirteen wildfires have been recorded in Copperhannia NR, ranging in area from less than 1ha to over 860ha. To date ten prescribed burns have also been undertaken between 1982 and 2014 and range in size from 65ha to 2927ha. Approximately 95% of the reserve area has been burnt from wildfire and prescribed burns during the past 37 years.

Suppression Strategies

Strategy	Guidelines
Direct Attack (This strategy should be the first consideration in order to minimise the area burnt)	For this strategy to be successful the following parameters need to be considered: FDI <100 and a FDR of High or below Flame Height <1.5m OFH – Low to Mod Sufficient resources need to be available The use of suitable heavy plant is permissible provided that close containment of the fire can be achieved. Fire behaviour can be erratic due to concentration and continuity of grass fuels.
Indirect Attack (If direct attack is not possible then this strategy is the preferred option).	This option is generally implemented as part of a much broader containment strategy that utilises a combination of ground crews, water bombing aircraft, heavy plant, control lines (existing fire trails) and other fire control advantages such as low or discontinuous fuel areas. This strategy is generally considered when the following parameters apply: FDI >100+ and FDR is Very High or above Flame Height > 1.5m OFH – High to Extreme

Incident Map

Locality