Thirlmere Lakes National Park and the Nattai Reserves System

Fire Management Strategy

2006

Map Sheet 3 of 4 (South-East Section)

This strategy should be used in conjunction with aerial photography and field reconnaissance during incidents and the development of incident action plans.

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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 Department of Environment and Conservation.

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Department of Environment and Conservation NSW

Map Details

Datum: Australian Geodectic Datum of Australia (AGD) 1966
Projection: Australian Map Grid (AMG) Zone 56
Aerial Photography: Fitzwin in 1998.
1:25k Topographic Map: Bargo 9029-3N / Hilltop 9029-2N
Nattai 8929-1S / Picton 9029-4S (LPI)

Fire Season Information

Wildfires	• The statutory wildfire season occurs between 1st October and 31st March. This may be extended if weather conditions lead to increased fire danger outside of this period.
Prescribed Burning (NPWS FMM 4.7)	• Prescribed burning in this area is normally undertaken in Autumn through to Spring.

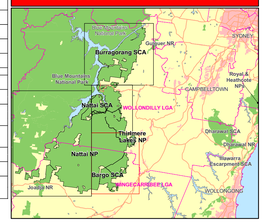
Related Documents

- National Parks and Wildlife Service Fire Management Manual, September 2005.
- The Nattai and Thirlmere Lakes Fire Management Strategy Type 3, June 2006.
- The Native Vegetation of the Warragamba Special Area, Part A – Technical Report and Part B Vegetation Community Profiles, February 2003.
- Sydney South Region Incident Procedures and Contact Lists, 2005.
- Threatened Species Hazard Reduction Guidelines, Parts 1,2 and 3. NSW Rural Fire Service, As amended.
- Recovering Bushland of the Cumberland Plain, Department of Environment and Conservation, NSW 2005

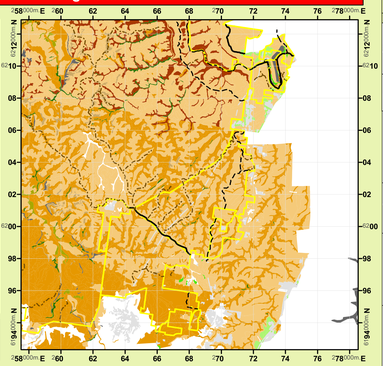
Contact Information

Agency	Position / Location	Phone
National Parks & Wildlife Service	Regional Duty Officer (24 hour)	0419 428 054
	Nattai Area Manager	4677 1959 0419 408 651
	Fire Management Officer	9542 0636 0419 462 105
	Regional Operations Coordinator	9542 0624 0419 628 291
	Nattai Area Office	4677 1959 (fax) 4677 0854
	Sydney South Regional Office	9542 0624 (fax) 9542 1420
Sydney Catchment Authority	24 Hours	9751 1988
Wollondilly District NSW Rural Fire Service	24 Hours Business Hours	4677 1605 4677 1971
Wingecarribee District NSW Rural Fire Service	24 Hours Business Hours	4871 3765 4871 2666
SES	Business Hours Wollondilly Shire Wingecarribee Shire	000 4677 1417 4871 2433
Police	Emergency Picton Mittagoong	000 4677 8999 4871 1222
Ambulance	Emergency Bookings	000 131 233
Hospital	Camden District Bowral District	4629 1000 4861 0200
Council	Wollondilly Shire Council Wingecarribee Shire Council	4677 1100 4868 0888

Locality of Reserve and Local Government Areas



Vegetation



MAP LEGEND

- NPWS Reserve Boundary

Broad Vegetation Communities

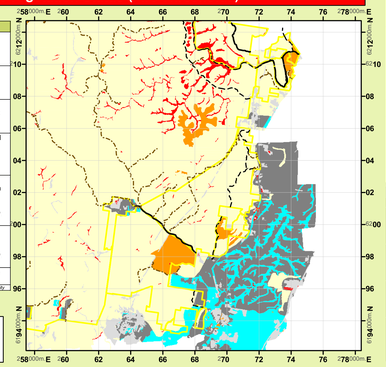
- Freshwater Wetland
- Grassy Dry Sclerophyll Forest
- Heathland
- Rainforest
- Sclerophyll Woodland
- Shale/Sandstone Transition Forest (EEC)
- Shrubby Dry Sclerophyll Forest
- Southern Highlands Shale Woodland (EEC)
- Swamp Sclerophyll Forest
- Wet Sclerophyll Forest
- Sand/Rock/Bare Ground/Water
- Cleared
- NA

Roads and Trails

- Primary (Cat 1)
- Secondary (Cat 9)
- Management Trail

Scale 1:135 000 (0 1 2 3 Kilometers)

Current Vegetation Status (Fire Thresholds)



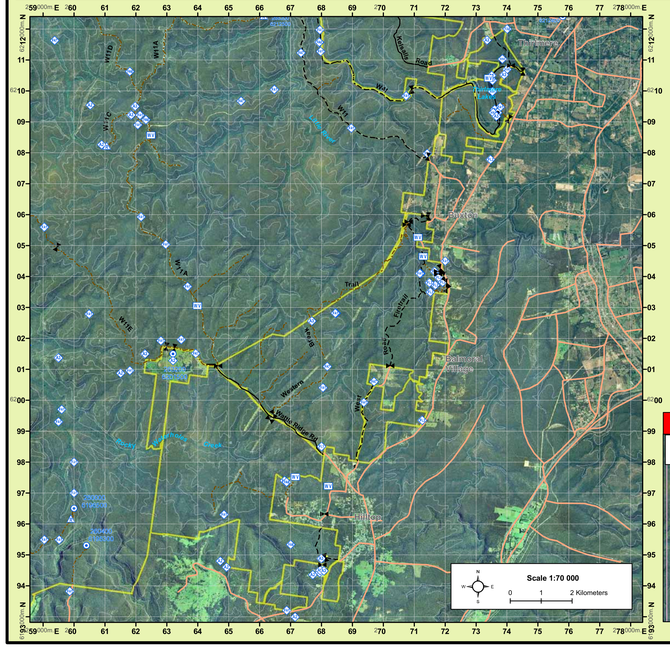
Fire Thresholds

Overburnt	Fire thresholds have been exceeded. *· Protect from fire as far as possible.*
Vulnerable	The area will be Overburnt if it burns this year. *· Protect from fire as far as possible.*
Recently Burnt	Time since fire is less than the optimal interval, but before that it was within threshold. *· Avoid fires if possible.*
Within Threshold	Fire history is within the threshold for vegetation in this area. *· A burn is neither required nor should one necessarily be avoided.*
Almost Underburnt	The area is close to its threshold and may become underburnt with the absence of fire. *· A prescribed burn may be advantageous. Consider allowing unplanned fires to burn.*
Underburnt	Fire frequency is below fire thresholds in the area. *· A prescribed burn may be advantageous. Consider allowing unplanned fires to burn.*
Unknown	Insufficient data to determine fire threshold.

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

Scale 1:135 000 (0 1 2 3 Kilometers)

Bushfire Suppression



MAP LEGEND

- NPWS Reserve Boundary
- 100m Contour
- Gate (assume all gates are locked)

Roads and Trails

- Primary (Cat 1)
- Secondary (Cat 9)
- Management Trail
- Road/Trail (Public/Private)

Site Management (see guideline tables)

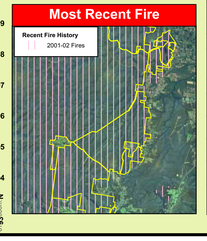
- Threatened Property
- Aboriginal Site
- Historic Site
- Threatened Fauna

Other Fire Control Advantages

- Refuge Area
- Staging Area
- Control Centre
- Water Point Vehicle
- Water Point Helicopter
- Helipad
- Turning Point

Scale 1:70 000 (0 1 2 Kilometers)

Most Recent Fire



Recent Fire History
2001-02 Fires

Operational Guidelines

Refer to Strategy for Fire Management 2003 and Fire Management Manual 2005
Brief all personnel involved in suppression operations on the following issues:

General	Guidelines
Aerial Water Bombing (NPWS FMM 4.4 / NSW Fire Agencies Aviation SOPs O2 / NPWS Guidelines for Effective Aircraft Management)	• The use of bombing aircraft should support containment operations by aggressively attacking hotspots and spot-overs. • The use of bombing aircraft without the support of ground based suppression crews should be limited to very specific circumstances. • Where practicable foam should be used to increase the effectiveness of the water. • Ground crews must be alerted to water bombing operations.
Aerial Ignition (NPWS FMM 4.2.20 & 4.4 / NSW Fire Agencies Aviation SOPs O2-4 / NPWS Guidelines for Effective Aircraft Management)	• Aerial ignition may be used during back-burning or fuel reduction operations where practicable, but only with the prior consent of NPWS Regional Manager or Section 44 delegate. • Utilise incendiaries to rapidly progress back-burns down slope where required.
Backburning (NPWS FMM 4.8)	• 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, backburning should commence when the humidity begins to rise in the late afternoon or early evening. With a lower FDI backburning may be safely undertaken during the day. • Where practicable, clear a 1m radius around dead and fibrous barked trees adjacent to containment lines prior to backburning, or wet down these trees as part of the backburn ignition. • Avoid ignition of backburns at the bottom of slopes where a long and intense up slope burn is likely.
Command & Control (NPWS FMM 4.2)	• 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 initial 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 (NPWS FMM 2.2 & 3.9)	• Construction of new containment lines should be avoided, where practicable, except where they can be constructed with minimal environmental impact. New containment lines require the prior consent of a senior NPWS officer. • Where practicable, containment lines should be stabilised and rehabilitated as part of the wildfire suppression operation. • All containment lines not required for other purposes should be closed at the cessation of the incident. • All personal involved in containment line construction should be briefed on both natural and cultural heritage sites in the location.
Earthmoving Equipment (NPWS FMM 4.2.20 & 4.5)	• Earthmoving equipment must only be used with the prior consent of a senior NPWS officer, and then only if the probability of its success is high. • Earthmoving equipment must be always guided and supervised by an experienced officer, and accompanied by a support vehicle. When engaged in direct or parallel attack this vehicle must be a firefighting vehicle. • Containment lines constructed by earthmoving equipment should consider the protection of drainage features, observe the Threatened Species and Cultural Heritage Operational Guidelines, and be surveyed, where possible, to identify unknown cultural heritage sites. • Earthmoving equipment should be washed down, where practicable, prior to it entering NPWS estate.
Fire Advantage Recording	• All fire advantages used during wildfire suppression operations must be mapped and where relevant added to the database.
Fire Suppression Chemicals (NPWS FMM 4.2.20 & 4.9)	• Wetting and foaming agents (surfactants) are permitted for use in wildfire suppression. • The use of fire retardant is 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 rainforest, 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 (NPWS FMM 5.1)	• Where practicable, containment lines should be stabilised and rehabilitated as part of the wildfire suppression operation.
Smoke Management (NPWS FMM 3.4)	• The potential impacts of smoke and possible mitigation tactics must be considered when planning for wildfire suppression and prescribed burning operations. • If smoke becomes a hazard on local roads or highways, the police and relevant media must be notified. • Smoke management must be in accordance with relevant RTA traffic management guidelines.
Visitor Management (NPWS FMM 3.8 & 4.13)	• The reserve may be closed to the public during periods of extreme fire danger or during wildfire suppression operations.

Suppression Strategies

Current FDR	Forecast FDR	
Low – Mod	Low – Mod	• As far as possible, undertake indirect, parallel or direct attack along existing control lines. • As far as possible, maximise area burnt without threatening assets, including biodiversity. • Identify and survey backup control lines.
Low – Mod	= > High	• Undertake indirect, parallel or direct attack to minimise the time taken to contain the fire. • Construct new control lines if necessary to minimise the time to contain the fire. • Identify and survey backup control lines.
High	All	• Undertake indirect attack along existing or newly constructed control lines. • Secure and deepen control lines along the next predicted downwind side of the fire. • Identify and survey backup control lines.
All	All	• Ensure there is sufficient time to secure control lines before the fire gets to them. • If there is insufficient time to secure control lines, fall back to the next potential control line. • As far as possible, implement threatened species and cultural heritage management guidelines.

Communications Information

Service	Channel	Location and Comments
NPWS - VHF	2 4 9	• High Range – Moderate coverage – all reserves • Mt Kiera – Limited coverage on high points • Camawarra Hospital – Limited coverage on high points
NPWS - VHF	95	• Sydney Catchment Authority Network – Good coverage
Mobile Phone – GSM	-	• Fair coverage on high points
Satellite Phone	-	• Moderate coverage

Vegetation Communities and Biodiversity Thresholds

Regime	Vegetation Community	Biodiversity Thresholds	Fire Behaviour	Year	Burnt	Area (Ha)
A	Freshwater Wetland	• Avoid successive fires at intervals of < 6 years. • Avoid fire exclusion for a period of > 35 years.	Low	1998-99 2001-02 2002-03	2.2 30.8 0.1	
B	Shrubby Dry Sclerophyll Forest	• Avoid successive fires at intervals of < 7 years. • Avoid fire exclusion for a period of > 35 years.	Moderate	1996-97 2000-01 2001-02 2002-03 2004-05	128.2 40.8 5512.2 0.02 0.08	
C	Heathland	• Avoid successive fires at intervals of < 7 years. • Avoid fire exclusion for a period of > 30 years.	Low to moderate	1996-97 2000-01 2001-02	15.3 1.6 258.7	
D	Swamp Sclerophyll Forest	• Avoid successive fires at intervals of < 7 years. • Avoid fire exclusion for a period of > 35 years.	Moderate	1996-97 2001-02 2004-05	2.4 80.1 0.1	
E	Scoltrophyll Woodland	• Avoid successive fires at intervals of < 5 years. • Avoid successive fires at intervals of > 40 years.	Moderate	1996-97 1998-99 2000-01 2001-02 2002-03 2003-04 2004-05	511.3 100.8 65.7 11673.9 0.1 0.3 1.2	
F	Grassy Dry Scelrophyll Forest	• Avoid successive fires at intervals of < 5 years. • Avoid successive fires at intervals of > 50 years.	Moderate	2001-02	35.5	
G	Wet Scelrophyll Forest	• Avoid successive fires at intervals of < 25 years. • Avoid successive fires at intervals of > 50 years.	High	1996-97 2000-01 2001-02	0.7 4.3 1035.5	
H	Rainforest	• Fire should be avoided.	High	2000-01 2001-02	0.5 179.4	
K	Shale/Sandstone Transition Forest (EEC)	• Avoid successive fires at intervals of < 7 years. • Avoid successive fires at intervals of > 40 years.	Moderate	1998-99 2001-02	2.0 49.0	
M	Southern Highlands Shale Woodland (EEC)	• Avoid successive fires at intervals of < 10 years • Avoid successive fires at intervals of > 50 years.	Moderate	2001-02	33.0	
Nil	Cleared Sand/Rock/ Bare/Ground/ Water	• Not applicable.	-	-	-	

Threatened Fauna Fire Ecology

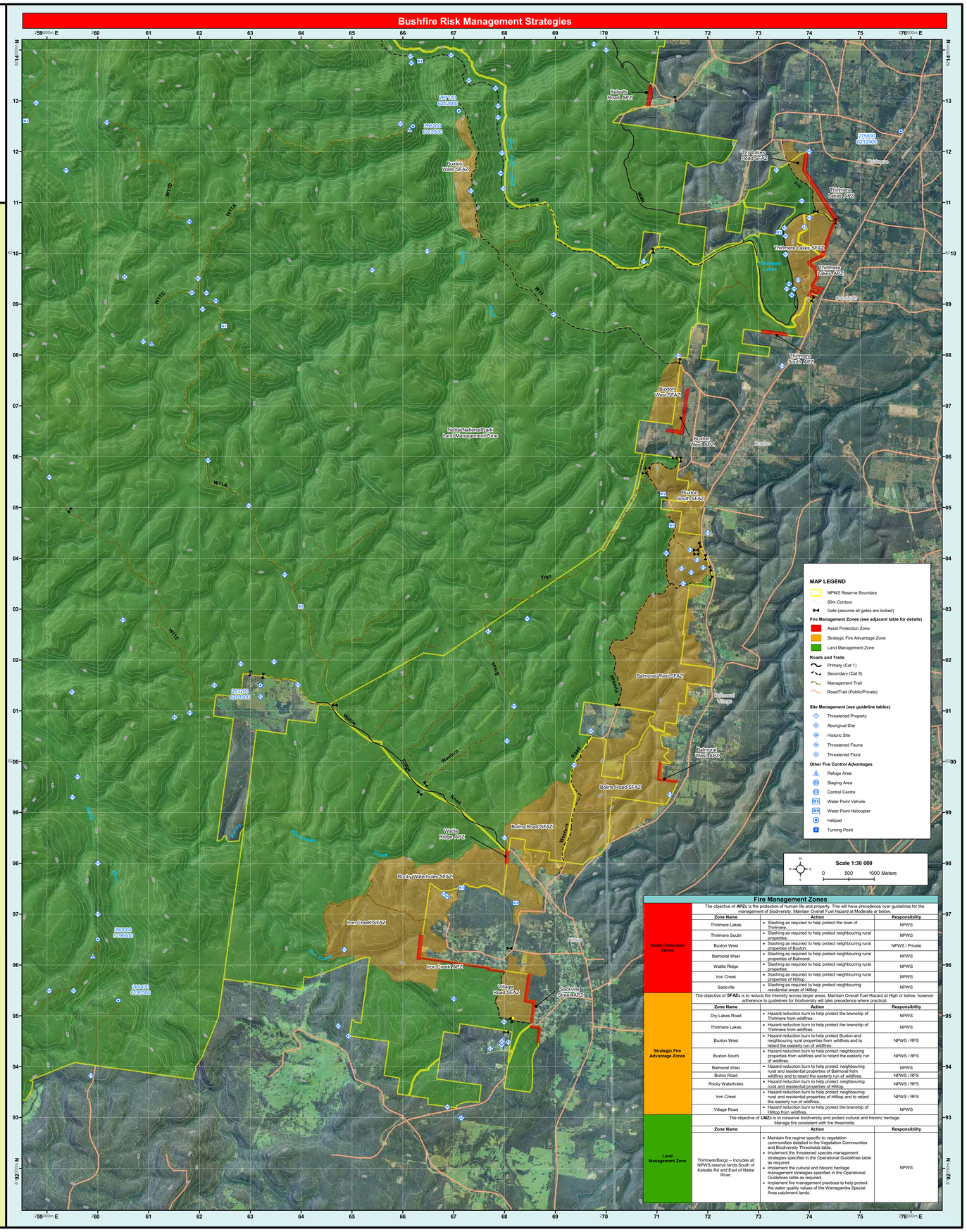
Label	Name	Fire Ecology
	Calyptorhynchus lathami Glossy Black-Cockatoo *(Vulnerable)*	• Avoid burning of Allocasuarina thickets.
	Climacteris picumnus Brown Treecreeper *(Vulnerable)*	• Recorded as being present in equal numbers in burnt and unburnt forest 8 months after fire.
	Heleioporus australiacus Giant Burrowing Frog *(Vulnerable)*	• Exclude fire from known sites. • No slashing, trittering or tree removal.
	Lathamus discolor Swift Parrot *(Endangered)*	• Maintain a mosaic of age classes within habitat. • Avoid frequent, high intensity burns within known/potential habitat. • Burns should be of low intensity preferably outside of the flowering season of the preferred feed trees (Eucalypts etc).
	Miniopterus schreibersii oceanensis Eastern Bentwing-bat *(Vulnerable)*	• Avoid fire around known roost sites. • No slashing around maternity sites.
FA	*Mormopterus norfolkensis* Eastern Free-tail Bat *(Vulnerable)*	• Avoid fire in the near vicinity of roost within known/potential habitat where possible. • Maintain a mosaic of age classes within known/potential foraging habitat. • Avoid slashing, tittering or tree removal within known habitat.
	Neophema pulchella Turquoise Parrot *(Vulnerable)*	• Recorded as being more common in burnt than unburnt areas 8 years after fire.
	Ninox strenua Powerful Owl *(Vulnerable)*	• Avoid burning around known nesting sites at any time. • Avoid slashing trittering or tree removal around known nesting sites.
	Petaurus australis Yellow-bellied Glider (Vulnerable)	• Requires a fire regime that maintains large, mature eucalypts in the overstorey. Therefore the complete absence of fire for very long periods in Wet Sclerophyll Forest will result in unsuitable habitat as eucalypt forest is replaced by rainforest.
	Phascolarctos cinereus Koala *(Vulnerable)*	• Intense wildfire with canopy scorch will cause high mortality and injury. • Post fire areas may be recolonised within 6 – 18 months. With eucalypts providing many nutritious and less toxic leaves for improved food quality.
	Pseudophryne australis Red-crowned Toadlet (Vulnerable)	• Avoid burning adjacent to streams, and no burning around ephemeral drainage lines near the headwaters of creeks.
	Tyto tenebricosa Sooty Owl (Vulnerable)	• Avoid burning around known nesting sites at any time.

Threatened Flora Fire Ecology

Label	Name	Fire Ecology
FL	*Acacia bynoeana* *(Endangered)*	• Maintain minimum fire interval of >7 years. • No slashing, trittering or tree removal.
	Persoonia glaucescens *(Endangered)*	• Maintain minimum fire interval of >15 years. • No slashing more frequently than every 15 years, and no trittering or tree removal.
	Persoonia hirsuta (Endangered)	• Maintain minimum fire interval of >10 years. • No slashing, trittering or tree removal.
	Persoonia hirsuta subsp. evoluta *(Endangered)*	• Maintain minimum fire interval of >10 years. • No slashing, trittering or tree removal.

Resource	Guidelines
Aboriginal Cultural Heritage Site Management (NPWS FMM 4.11)	
A1	• As far as possible protect site from fire. • Do not cut down trees. • Use of foams, wetting agents & retardant is acceptable.
A2	• As far as possible protect site from fire. • Avoid ground disturbance including handtools, dozers. • Avoid water bombing which may cause ground disturbance.
A3	• Avoid ground disturbance including handtools, dozers. • Avoid water bombing which may cause ground disturbance. • Site may be burnt by wildfire, backburn, prescribed burn.
Historic Heritage Management (NPWS FMM 4.10)	*RCHMS: Regional Cultural Heritage Management Strategy.* • *In areas where the asset may be in or close to a water body, wetland or swamp, no foam or retardant is to be used.* • *Earth-moving machinery is to be used around, rather than overthrough assets.*
HS1	• High RCHMS* priority. • Avoid fire, including wildfire, backburning & HR. • Avoid all water bombing activities.
HS6	• High or low RCHMS* priority. • Heritage site unlikely to be effected by fire. • Avoid use of earth moving machinery.
Threatened Fauna Management (NPWS FMM 4.12 & 5.2)	
FA1	• Protect large and hollow bearing trees.
FA5	• Habitat unlikely to be effected by fire. • Avoid use of earth moving machinery in dune habitats.
FA6	• Avoid fire, including wildfire, backburning & HR, as far as possible in wetland habitat. • Avoid use of earth moving machinery in wetland habitats. • Avoid use of retardant and foam in wetland habitats.
FA7	• Avoid high intensity fires that consume tree canopies and fallen logs.
FA8	• Avoid fire, including wildfire, backburning & HR, as far as possible. • Avoid use of earth moving machinery.
Threatened Flora Management (NPWS FMM 4.12)	
FL1	• Avoid interfire intervals of < 10 yrs. • Avoid the use of earthmoving machinery. • Avoid the use of retardant.
FL3	• Avoid high intensity fire. • Avoid interfire intervals <10 years, effect unknown. • Avoid the use of earth moving machinery.
Threatened Property	• Where possible property owners with assets at risk from a wildfire event should be kept informed regarding the progress of the fire; and asked for an assessment of their current level of asset protection preparedness.

Bushfire Risk Management Strategies



MAP LEGEND

- NPWS Reserve Boundary
- 50m Contour
- Gate (assume all gates are locked)

Fire Management Zones (see adjacent table for details)

- Asset Protection Zone
- Strategic Fire Advantage Zone
- Land Management Zone

Roads and Trails

- Primary (Cat 1)
- Secondary (Cat 9)
- Management Trail
- Road/Trail (Public/Private)

Site Management (see guideline tables)

- Threatened Property
- Aboriginal Site
- Historic Site
- Threatened Fauna
- Threatened Flora

Other Fire Control Advantages

- Refuge Area
- Staging Area
- Control Centre
- Water Point Vehicle
- Water Point Helicopter
- Helipad
- Turning Point

Scale 1:30 000 (0 500 1000 Meters)

Fire Management Zones

Asset Protection Zones	The objective of **APZ**s is the protection of human life and property. This will have precedence over guidelines for the management of biodiversity. Maintain Overall Fuel Hazard at Moderate or below.		
	Zone Name	**Action**	**Responsibility**
	Thirlmere Lakes	• Slashing as required to help protect the town of Thirlmere.	NPWS
	Thirlmere South	• Slashing as required to help protect neighbouring rural properties.	NPWS
	Buxton West	• Slashing as required to help protect neighbouring rural properties of Buxton.	NPWS / Private
	Balmoral West	• Slashing as required to help protect neighbouring rural properties of Balmoral.	NPWS
	Wattle Ridge	• Slashing as required to help protect neighbouring rural properties.	NPWS
	Iron Creek	• Slashing as required to help protect neighbouring rural properties of Hilltop.	NPWS
	Sackville	• Slashing as required to help protect neighbouring residential areas of Hilltop.	NPWS
Strategic Fire Advantage Zones	The objective of **SFAZ**s is to reduce fire intensity across larger areas. Maintain Overall Fuel Hazard at High or below, however adherence to guidelines for biodiversity will take precedence where practical.		
	Zone Name	**Action**	**Responsibility**
	Dry Lakes Road	• Hazard reduction burn to help protect the township of Thirlmere from wildfires.	NPWS
	Thirlmere Lakes	• Hazard reduction burn to help protect the township of Thirlmere from wildfires.	NPWS
	Buxton West	• Hazard reduction burn to help protect the township of Buxton and neighbouring rural properties from wildfires and to retard the easterly run of wildfires.	NPWS / RFS
	Buxton South	• Hazard reduction burn to help protect neighbouring properties from wildfires and to retard the easterly run of wildfires.	NPWS / RFS
	Balmoral West	• Hazard reduction burn to help protect neighbouring rural and residential properties of Balmoral from wildfires and to retard the easterly run of wildfires.	NPWS
	Bolins Road	• Hazard reduction burn to help protect neighbouring rural and residential properties of Hilltop.	NPWS / RFS
	Rocky Waterholes	• Hazard reduction burn to help protect neighbouring rural and residential properties of Hilltop and to retard the easterly run of wildfires.	NPWS / RFS
	Iron Creek	• Hazard reduction burn to help protect the township of Hilltop from wildfires.	NPWS / RFS
	Village Road	• Hazard reduction burn to help protect the township of Hilltop from wildfires.	NPWS
Land Management Zone	The objective of **LMZ**s is to conserve biodiversity and protect cultural and historic heritage. Manage fire consistent with fire thresholds.		
	Zone Name	**Action**	**Responsibility**
	Thirlmere/Bargo – Includes all NPWS reserve lands South of Kelsalls Rd and East of Nattai River.	• Maintain fire regime specific to vegetation communities detailed in the Vegetation Communities and Biodiversity Thresholds table. • Implement the threatened species management strategies specified in the Operational Guidelines table as required. • Implement the cultural and historic heritage management strategies specified in the Operational Guidelines table as required. • Implement fire management practices to help protect the water quality values of the Warragamba Special Area catchment lands.	NPWS