Bents Basin State Conservationa Area and Gulguer Nature Reserve
Fire Management Strategy
2006

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.

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Department of Environment and Conservation NSW

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 Spring through to Autumn.

Related Documents

- National Parks and Wildlife Service Fire Management Manual, September 2005.
- Bents Basin State Conservation Area Draft Plan of Management, January 2007.
- Gulguer Nature Reserve Draft Plan of Management, September 2005

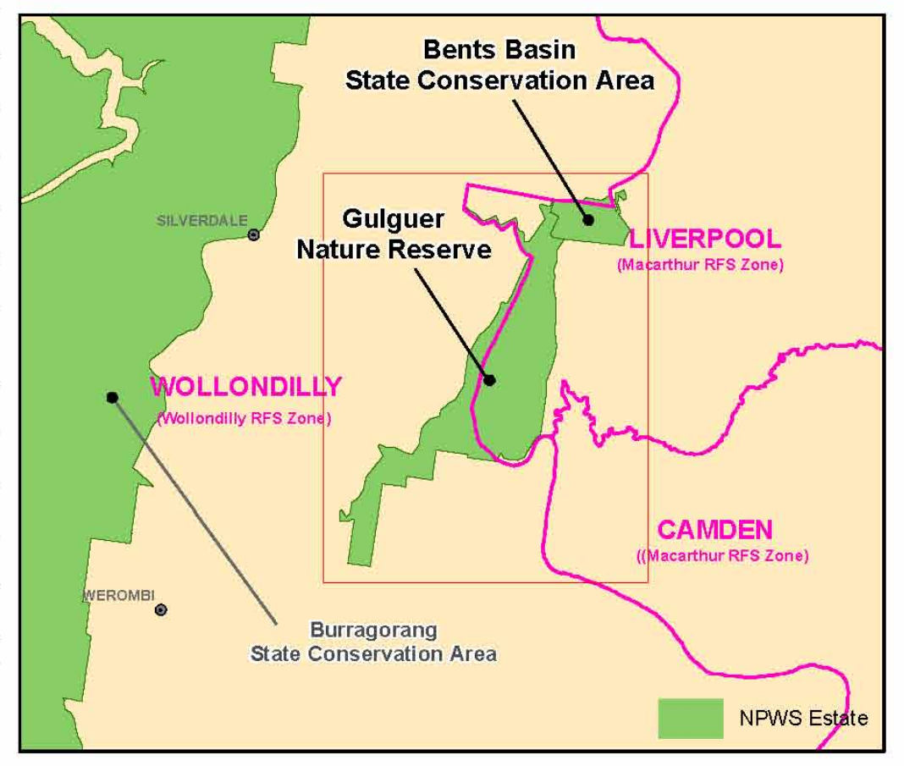
Communications Information

Service	Channel	Location and Comments
NPWS - VHF	91	Good coverage
UHF - CB	1 - 99	Available in most NSWFB and RFS vehicles Choose channel on fire-ground with NSWFB and RFS
Mobile Phone - GSM	-	Good coverage

Contact Information

Agency	Position / Location	Phone
National Parks & Wildlife Service	Regional Duty Officer (24 hour)	9895 7698
	Cumberland South Area Manager	9895 7546 0407 067 515
	Fire Management Officer	9895 6185 0418 462 497
	Regional Operations Coordinator	9895 7322 0418 117 882
	Cumberland South Area Office	9895 7440 (fax) 9895 7727
	Bents Basin State Conservation Area Office	4774 8662 (fax) 4774 8634
	Sydney Regional Office	9895 7420 (fax) 9895 7699
Macarthur Zone NSW Rural Fire Service	24 Hours Business Hours	9603 7145 9603 7077
SES	Emergency Liverpool Sydney Southern Division	000 9821 9324 9793 3099
Police	Emergency Green Valley	000 9607 1799
NSW Fire Brigades	Emergency Liverpool	000 9824 0521
Ambulance	Emergency Bookings	000 131 233
Hospital	Nepean Hospital Penrith Great Western Hwy, Kingswood	4734 2000
Council	Liverpool City Council Wollondilly Shire	1300 362 170 4677 1417
Neighbours	Lord Ben Horse Stud and Riding School	4774 8766

Locality of Reserve and Local Government Areas



Map Details

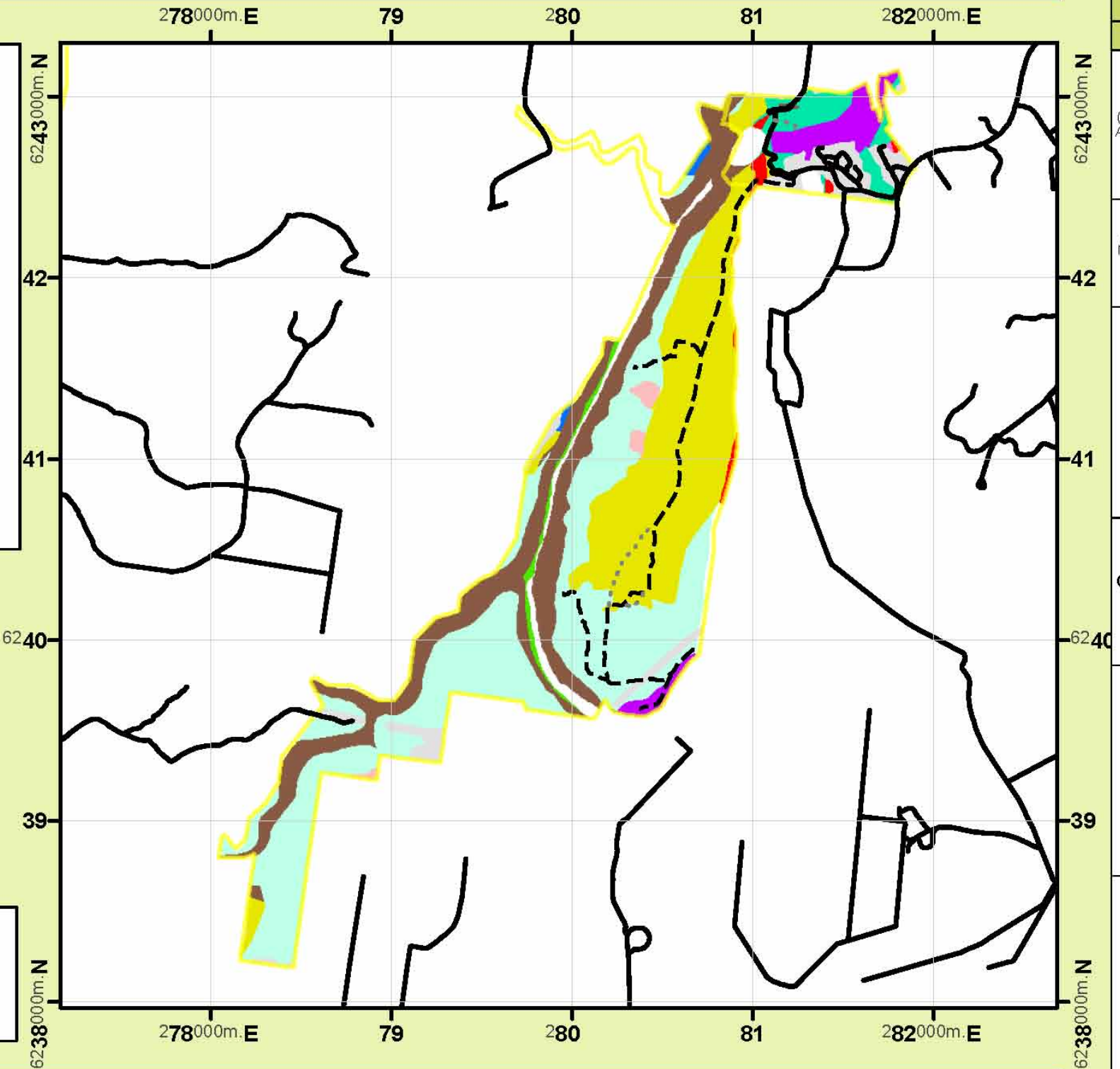
Datum: Australian Geodectic Datum of Australia (AGD) 1966	**Aerial Photography:** Flown in 2005.
Projection: Australian Map Grid (AMG) Zone 56	**1:25k Topographic Map:** Warragamba 9030-3S 3rd Ed. (LPI)

Vegetation

MAP LEGEND
- NPWS Estate

Broad Vegetation Communities
- Alluvial Woodland
- Riparian Forest
- Riparian Scrub
- Shale Hills Woodland
- Shale Sandstone Transition Forest (High Sandstone Influence)
- Shale Sandstone Transition Forest (Low Sandstone Influence)
- Shrubland Heath Complex on Sandstone
- Upper Georges River Sandstone Woodland
- Western Sandstone Gully Forest
- Woodland on Sandstone
- Cleared

Roads and Trails
- Primary (Cat 1)
- Secondary (Cat 9)
- Dormant (Closed)



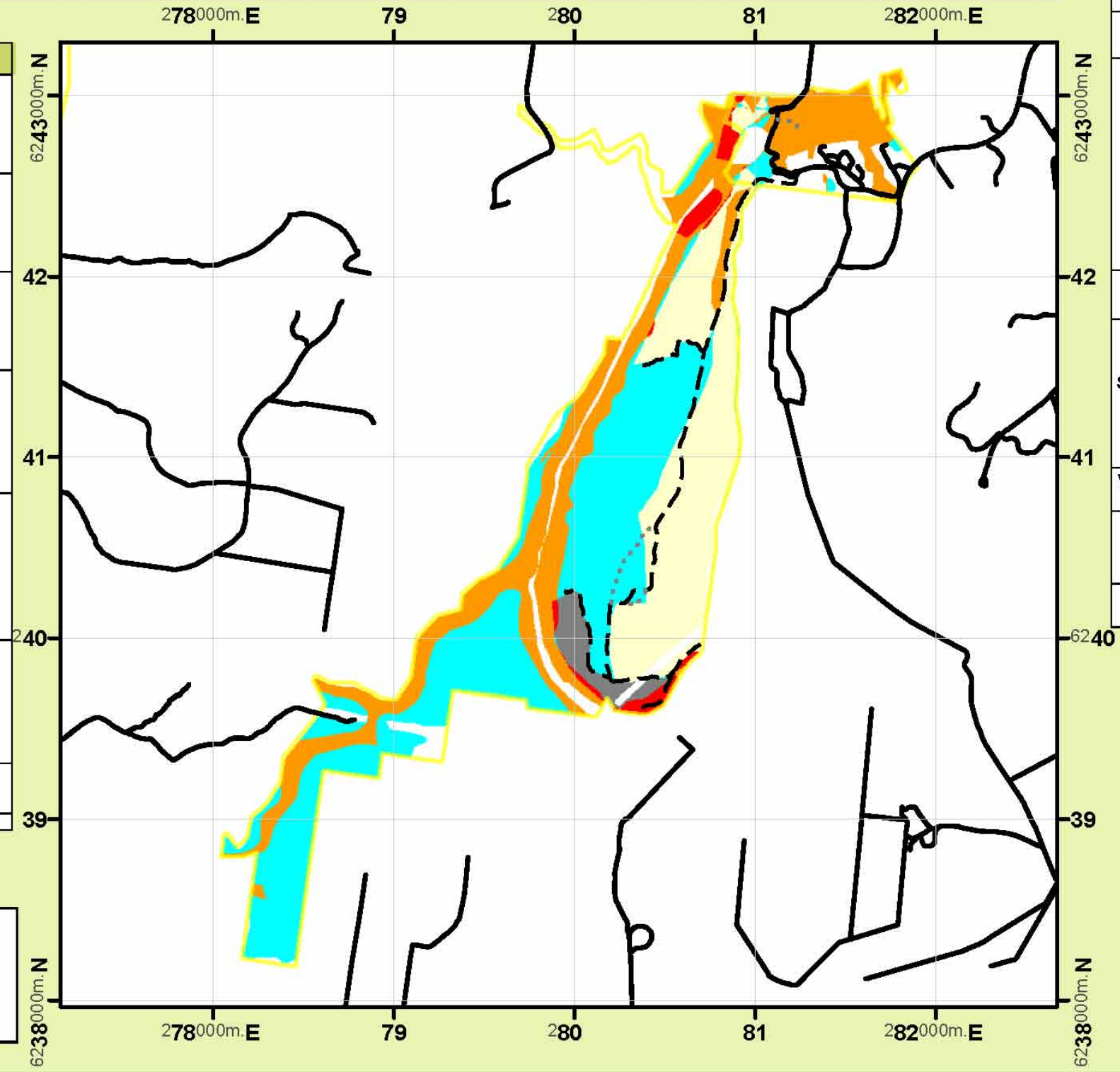
Scale 1:35 000
0 350 700 1400 Meters

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



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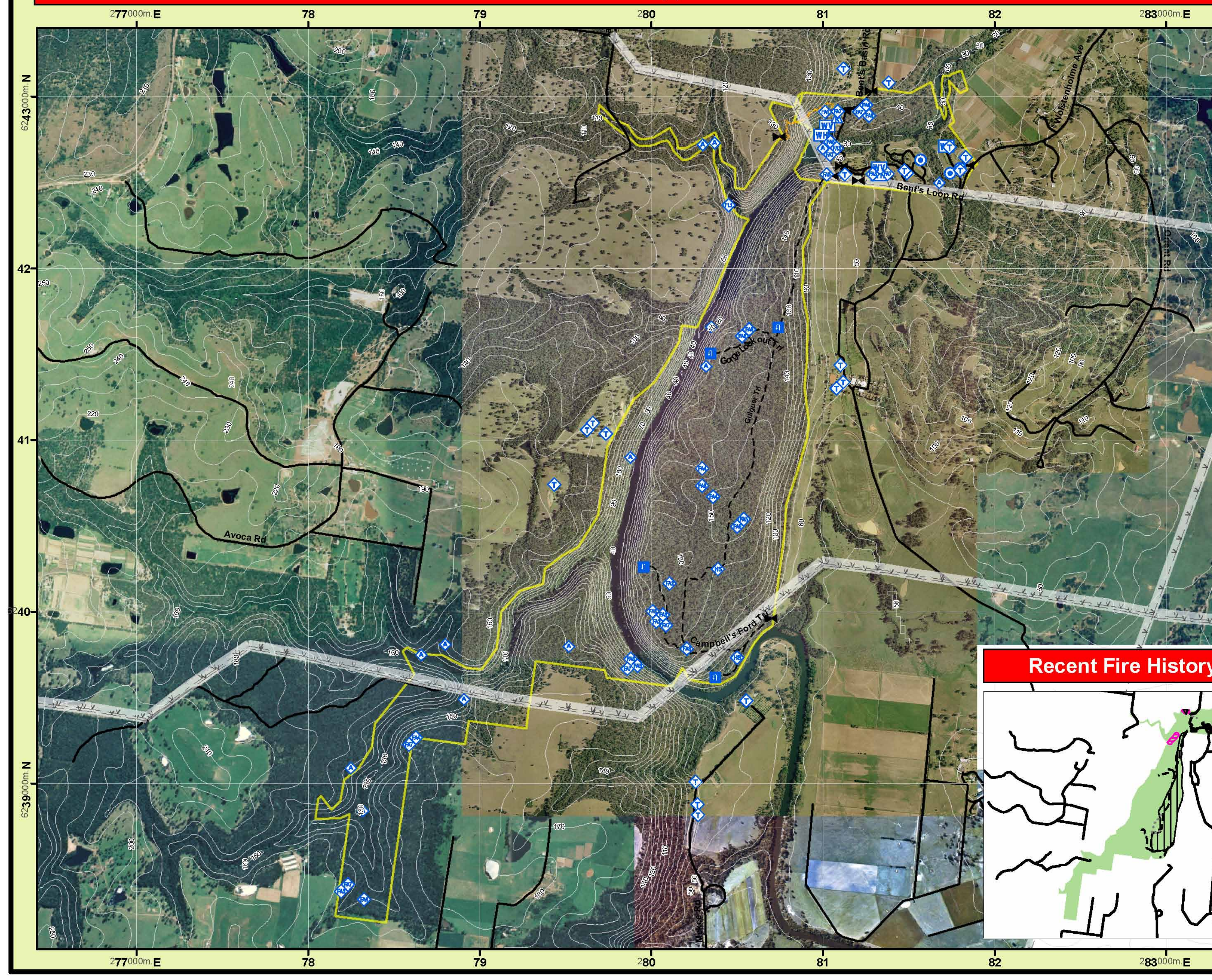
Bushfire Suppression



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 must ensure the relevant land management agency is notified immediately. 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 personnel 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 & 4.3)	Earthmoving equipment may 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 100m 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 3.6 & 4.13)	The reserve may be closed to the public during periods of extreme fire danger or during wildfire suppression operations.
High Voltage Powerlines (Fire Management Circular 2001/8)	Always assume lines are energised Bushes or tress burning in powerline easements present a real threat of creating a phase to ground short – KEEP AT LEAST 25M CLEAR
Tree Management	Any tree felling requires the prior consent of the Senior NPWS Officer and should be avoided where reasonable alternatives are available.

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.

Resource Management Guidelines

Resource	Guidelines
Aboriginal Cultural Heritage Site Management (NPWS FMM 4.11)	
A	As far as possible protect site from fire Avoid ground disturbance including earthmoving machinery, handtools and driving over sites. Avoid all water bombing activities that may cause ground disturbance.
Historic Heritage Management (NPWS FMM 4.10)	
HS	Heritage site unlikely to be effected by fire Avoid use of earth moving machinery Avoid all water bombing activities that may cause ground disturbance
Threatened Fauna Management (NPWS FMM 4.12 & 5.2)	
FA1	Avoid fire in known locations. If unavoidable, avoid fires > 1ha Wet large logs down before a fire Avoid frequent fires
FA2	Avoid fire, smoke and heat around roost trees (Mar - Oct) Avoid large scale, high intensity frequent fires No slashing, trittering or tree removal
FA3	Avoid high intensity fires within known locations Avoid burning known habitat during breeding / habitation period (July - Dec) Avoid removal of suitable feeding and nesting trees (*Eucalyptus fibrosa*, mistletoe clumps and *Casuarina* sp)
FA4	Avoid high intensity fires within known roost locations (tree hollows), during the breeding season (Mar - August) Avoid large scale fires to protect foraging habitat No slashing, trittering or tree removal within known habitat
FA5	Avoid fire, smoke and heat around known / potential habitat during the breeding season (May – Dec) Implement low intensity, mosaic burns within known habitat Minimise frequency of fires within known / potential habitat
FA6	Avoid frequent, high intensity fires within known habitat Avoid frequent, low intensity fires as they may simplify habitat structure and reduce the abundance of mammal prey Avoid fire within known roost locations (tree hollows) during the breeding season (June – Sept) No slashing, trittering or tree removal within known habitat
FA7	Avoid fire, smoke and heat around roost trees (hollows or under the loose bark of trees) Avoid large scale fires to protect foraging habitat No slashing, trittering or tree removal within known habitat
FA8	Avoid fire, smoke and heat around maternity caves during breeding season (Oct - Nov) Avoid large scale fires to protect foraging habitat Avoid fire, smoke and heat around winter torpor sites (May - Aug)
FA9	Avoid fire within known / potential roost sites (caves and culverts) No tree removal or fire suppression chemicals to be used with known habitat
Threatened Flora Management (NPWS FMM 4.12)	
FL1	Remove debris build up a tree base to reduce fire duration and intensity Avoid mod-high intensity fires Avoid fire operations and disturbance to soil seedbank Minimum fire interval >20 years <250 years.
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

Vegetation Communities and Biodiversity Thresholds

Regime	Vegetation Community	Biodiversity Thresholds*	Fire Behaviour	Year Burnt	Area (Ha)
A	9 – Shale Hills Woodland	Minimum fire interval 4 - 6 yrs Implement variable fire regime within this range Maximum fire interval 15 - 20 yrs Re-assess biodiversity within community after approx. 15 years Significant research & monitoring is required	Moderate to High	-	-
B	1 – Shale Sandstone Transition Forest (Low Sandstone Influence)	Minimum fire interval 8 – 10 yrs Implement variable fire regime within this range Maximum fire interval 15 - 40 yrs Longer unburnt areas tend to have increased weed invasion. May need to implement fire to assist in weed management. Site and context specific, therefore research and monitoring required	Moderate to high	2005	1.2
	2 - Shale Sandstone Transition Forest (High Sandstone Influence)			2007 2005 2001/02	0.8 47 0.5
	32- Upper Georges River Sandstone Woodland			-	-
	Shrubland Heath Complex on Sandstone			-	-
	Woodland on Sandstone			2007 2005 2001/02	0.07 23 0.02
C	11 - Alluvial Woodland	Avoid any fire occurrence (a limited recovery ability exists)	Low	-	-
	12 - Riparian Forest			2005	0.4
	33 - Western Sandstone Gully Forest			2007 2006 2001/02	0.2 3 0.06
	35 - Riparian Scrub			-	-
Nil	Cleared	Not applicable	-	-	-

*There is insufficient data to give definite details, however, available data indicates approximate minimum and maximum intervals as those specified above. It is important to note that specifying the above thresholds, does not mean that this community should be burnt at this specific time (say every 6 years), it is only a guide and fire should be implemented at variable frequencies within the specified range. Significant research & monitoring of the effects of either the presence or absence of fire on each of the communities is required in order to come up with more accurate guidelines.

MAP LEGEND
- NPWS Estate
- 10m Contour
- Transmission Powerlines
- ⋈ Gate (assume all gates are locked)

Recent Fire History
- 2006/07 Fires
- 2005 Fire
- 2001/02 Fires

Roads and Trails
- Primary (Cat 1)
- Secondary (Cat 9)
- Dormant (Closed)
- Walking Track

Site Management (see guideline tables)
- Threatened Property
- Aboriginal Site
- Historic Site
- Threatened Fauna
- Threatened Flora

Other Fire Control Advantages
- Refuge Area
- WV Water Point Vehicle
- WH Water Point Helicopter
- Helipad
- Control Centre
- Turning Point

Scale 1:19 000
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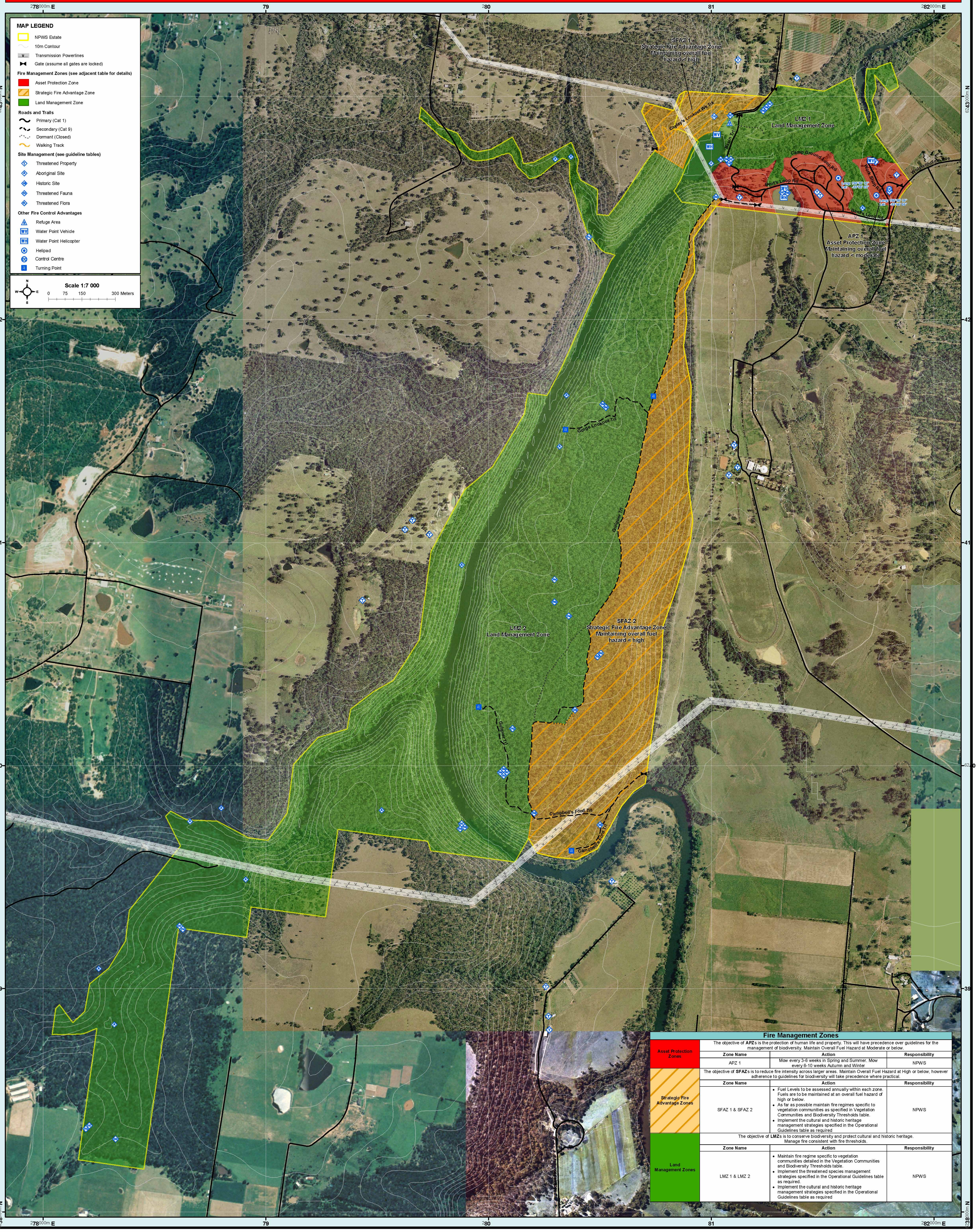
Bushfire Risk Management Strategies



MAP LEGEND
- NPWS Estate
- 10m Contour
- Transmission Powerlines
- ⋈ 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)
- Dormant (Closed)
- Walking Track

Site Management (see guideline tables)
- Threatened Property
- Aboriginal Site
- Historic Site
- Threatened Fauna
- Threatened Flora

Other Fire Control Advantages
- Refuge Area
- WV Water Point Vehicle
- WH Water Point Helicopter
- Helipad
- Control Centre
- Turning Point

Scale 1:7 000
0 75 150 300 Meters

Fire Management Zones

	Zone Name	Action	Responsibility
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.		
	APZ 1	Mow every 3-6 weeks in Spring and Summer. Mow every 6-10 weeks Autumn and Winter	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.		
	SFAZ 1 & SFAZ 2	Fuel Levels to be assessed annually within each zone. Fuels are to be maintained at an overall fuel hazard of high or below. As far as possible maintain fire regimes specific to vegetation communities as specified in Vegetation Communities and Biodiversity Thresholds table. Implement the cultural and historic heritage management strategies specified in the Operational Guidelines table as required	NPWS
Land Management Zones	The objective of **LMZ**s is to conserve biodiversity and protect cultural and historic heritage. Manage fire consistent with fire thresholds.		
	LMZ 1 & LMZ 2	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	NPWS