

Vegetation

MAP LEGEND

- NPWS Estate
- Ecological Endangered Communities (EEC)
 - Coastal Saltmarsh
 - Kumall Dune Forest
 - Swamp Oak Floodplain Forest
 - Swamp Sclerophyll Forest
 - Sydney Freshwater Wetland
- Broad Vegetation Communities
 - Shrubby Dry Sclerophyll Forest
 - Heathlands
 - Saltine Wetlands
 - Freshwater Wetlands

Operational Guidelines

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

General	Guidelines
Aerial Water Bombing	- The use of bombing around should be undertaken manually by aggressively attacking headlands and up-overs. - The use of bombing along a road with the support of ground based suppression crews should be limited to very specific circumstances. - Where practicable bombing should be used to increase effectiveness of water ground crews must be affected to water bombing operations. - It is not to be used in the Peninsula LMC near National Park. - Clearance from Sydney Air Traffic Control is required due to controlled airspace above Botany Bay National Park. - Aerial action may be used during back-burn or fuel reduction operations where practicable, but only with the prior consent of NPWS Regional Manager or Section 4 manager. - Utilise monotonies to rapidly generate backburn down slope where appropriate.
Aerial Ignition	- Temperature and humidity trends must be monitored carefully to determine when to adopt times to implement aerial ignition. Generally early (7.0 to 10.0) Very High or greater, backburning should commence when the humidity begins to rise in the late afternoon or early evening. With a lower RH (20 backburning) may be safely undertaken during the day. - Where practicable, clear a 1m radius around dead or felled bushes next to adjacent to containment lines prior to backburning, or wet down trees as part of the backburn ignition. - Avoid ignition of backburn at the bottom of slopes where a strong and intense up-draught may occur.
Backburning	- The fire front boundary should only be assumed to control the fire, but then use the reverse side of the boundary to control the fire. - Where practicable, clear a 1m radius around dead or felled bushes next to adjacent to containment lines prior to backburning, or wet down trees as part of the backburn ignition. - Avoid ignition of backburn at the bottom of slopes where a strong and intense up-draught may occur.
Command & Control	- The fire front boundary should only be assumed to control the fire, but then use the reverse side of the boundary to control the fire. - Where practicable, clear a 1m radius around dead or felled bushes next to adjacent to containment lines prior to backburning, or wet down trees as part of the backburn ignition. - Avoid ignition of backburn at the bottom of slopes where a strong and intense up-draught may occur.
Containment Lines	- Construction of fire containment lines should be avoided, where practicable, except where they can be constructed with minimal environmental impacts. 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 cessation of the incident. - All personnel involved in containment line construction should be briefed on both natural and cultural heritage status in the location. - Earthmoving equipment may only be used with the prior consent of a senior NPWS officer. It is then only if the probability of its success is high and the equipment is operated by a competent operator. When engaged by a senior NPWS officer, it should be accompanied by a support vehicle. - Containment lines constructed by earthmoving equipment should consider protection of drainage features, stream bed, threatened species and Cultural Heritage Operational Guidelines, and be surveyed, where possible, to identify potential cultural heritage sites. - Earthmoving equipment should be washed down, where practicable, prior to entering NPWS estate. - Earthmoving equipment to be excluded from the Meeting Place Precinct in the Peninsula LMC. - All fire activities used during wildfire suppression operations must be inspected and where relevant added to the database.
Earthmoving Equipment	- Writing and logging entries (surfactants) are permitted for use in wildfire suppression. - The use of the 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 railroads. - Areas where fire suppression chemicals are used must be mapped and the NPWS Regional Manager, or Section 4 manager, must be informed. - The Threatened Species Operational Guidelines are to be observed.
Fire Avoidance Recording	- All fire activities used during wildfire suppression operations must be inspected and where relevant added to the database. - Writing and logging entries (surfactants) are permitted for use in wildfire suppression.
Fire Suppression Chemicals	- The use of the 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 railroads. - Areas where fire suppression chemicals are used must be mapped and the NPWS Regional Manager, or Section 4 manager, must be informed. - 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. - The potential impacts of erosion & possible mitigation practice should be considered when planning for wildfire suppression & prescribed burning operations. - If erosion is a hazard on local roads or highways, the police and fire services should be notified. - Smoke management should be in accordance with relevant RTA (traffic management) guidelines and restrictions.
Smoke Management	- If smoke is a hazard on local roads or highways, the police and fire services should be notified. - Smoke management should be in accordance with relevant RTA (traffic management) guidelines and restrictions.
Visitor Management	The reserve may be closed to the public during periods of extreme fire danger or during wildfire suppression operations.

Scale 1:300 000

0 100 200 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 assistance 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 history.

Suppression Strategies

Current DFR	Forecast DFR	Suppression Strategies
Low - Mod	Low - Mod	- As far as possible, undertake indirect, parallel or direct attack along existing control lines. - Identify and survey backburn control lines. - Identify and survey backburn control lines. - Identify and survey backburn control lines.
Low - Mod	Low - Mod	- 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 taken to contain the fire. - Identify and survey backburn control lines. - Identify and survey backburn control lines. - Identify and survey backburn control lines.
Low - Mod	Low - Mod	- Undertake indirect attack along existing or newly constructed control lines. - Secure and deeper control lines along the best predicted downwind side of the fire. - Identify and survey backburn control lines. - Identify and survey backburn control lines. - Identify and survey backburn control lines.
High	High	- 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.
All	All	

Scale 1:300 000

0 100 200 Meters

Resource

Aboriginal Cultural Heritage Site Management

Resource	Guidelines
A1	- As far as possible protect sites from fire. - Do not down trees.
A2	- Use of trees, wetting agents & retardant is acceptable. - Use of trees as possible points for fire from fire.
A3	Avoid

Recent Fire History

As far as possible, implement threatened species and cultural heritage management guidelines.

MAP LEGEND

Recent Fire History

- 2004-2007 Fires

Roads and Trails

- Essential Cat 1
- Essential Cat 2
- Important Cat 1
- Important Cat 2
- Important Cat 3
- Important Cat 4
- Important Cat 5
- Important Cat 6
- Important Cat 7
- Important Cat 8
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- Important Cat 100

Site Management (see guideline tables)

- Threatened Property
- Threatened Fauna
- Threatened Flora

Threatened Fauna Fire Ecology

Label	Name	Fire Ecology
	<i>Lathamus discolor</i> Swamp Parrot (Endangered)	Avoid fires that may impact winter flowering feed trees such as Eucalypt spp
	<i>Heptacapsus longirostris</i> Broad-headed Snake (Endangered)	No slashing, trifoliation or tree removal
	<i>Pteropus poliocephalus</i> Grey-headed Flying Fox (Vulnerable)	Avoid fire in the vicinity of roost sites, especially during the breeding season (March – October)
	<i>Cinix olivacea</i> Wattlebird (Vulnerable)	No burning adjacent to wetlands
	<i>Trichostema</i> Green and Golden Bell (Endangered)	No burning within 50 metres of wetlands and other large water bodies
	<i>Botaurus pectoratus</i> Australian Bittern (Vulnerable)	No slashing, trifoliation or tree removal of (or around) known resting sites
	<i>Pardaliparus</i> Dusky Pardaliparus (Vulnerable)	Only use low intensity fire, and only between May and end of July. Avoid burning of River Red Gum and Callitris, and protect hollow bearing trees
	<i>Ninox strenua</i> Powerful Owl (Vulnerable)	No burning around known nesting sites at any time
	<i>Acridothera tristis</i> Common Myna (Endangered)	No slashing, trifoliation or tree removal of (or around) known nesting sites
	<i>Sarcophaga</i> Yellow-bellied Shearwater (Vulnerable)	Avoid fire in the near vicinity of roost within known-potential habitat where possible, especially during the breeding season (December-March)
	<i>Myotis</i> Eastern Broadwing (Vulnerable)	Avoid fire in the near vicinity of roost within known-potential habitat where possible, especially during the breeding season (Spring and Summer)
	<i>Myotis</i> Large-footed Myotis (Vulnerable)	Avoid fire in the near vicinity of roost within known-potential habitat where possible, especially during the breeding season (November-December)
	<i>Pteropus</i> Giant Flying Fox (Endangered)	Protect swamps and vegetation around swamps from fire

Threatened Flora Fire Ecology

Label	Name	Fire Ecology
	<i>Adiantum</i> Adiantum (Endangered)	No fire more than once every 7 years
	<i>Adiantum</i> Adiantum (Endangered)	No slashing, trifoliation or tree removal
	<i>Adiantum</i> Adiantum (Endangered)	No fire more than once every 7 years
	<i>Adiantum</i> Adiantum (Endangered)	No slashing, trifoliation or tree removal
	<i>Adiantum</i> Adiantum (Endangered)	No slashing, trifoliation or tree removal
	<i>Adiantum</i> Adiantum (Endangered)	No fire
	<i>Adiantum</i> Adiantum (Endangered)	No slashing, trifoliation or tree removal
	<i>Adiantum</i> Adiantum (Endangered)	Earthmoving equipment is to be restricted from known-potential habitat
	<i>Adiantum</i> Adiantum (Endangered)	Exclude the use of herbicides and retardants within the known-potential habitat
	<i>Adiantum</i> Adiantum (Endangered)	Burns should be of low intensity preferably outside of the flowering season (August/September)

Bushfire Risk Management Strategies

Fire Management Zones

The objective of **APZs** 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
Cottage 3	Slash	NPWS
Meeting Place	Slash	NPWS
Carbon Black East	Maintain trail and slash	NPWS
Refinery	Slash	Suburban Council
Workshop	Slash	NPWS

The objective of **SFAZs** 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
Meeting Place	Slash / mow to protect historic assets	NPWS
Commemoration Flat	Slash / mow to protect historic assets	NPWS

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

Zone Name	Action	Responsibility
Cape Baily	Maintain fire regime specific to vegetation communities detailed in the Vegetation Communities and Fire Thresholds table	NPWS
Botany Cone	Implement the threatened species management strategies specified in the Operational Guidelines table as required	NPWS
Perennials control	Implement the threatened species management strategies specified in the Operational Guidelines table as required	NPWS
Steps	Implement the threatened species management strategies specified in the Operational Guidelines table as required	NPWS
Kumell Hill	Implement the threatened species management strategies specified in the Operational Guidelines table as required	NPWS

Communications Information

Service	Channel	Location and Comments
NPWS - VHF	9	• Garrawarra Farm - Discovery Centre good coverage • Garrawarra Hospital - good coverage along coastal cliff
UHF - CB	10	• Available in most NSWFB and RFS vehicles • Choose channel on frequency with NSWFB & RFS • Discovery Centre intermittent to good
Mobile Phone - GSM	-	• Cape Solander Intermittent • Tallagles and Cape Baily poor • PottersPoint intermittent

MAP LEGEND

NPWS Estate
10m 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
Essential Cat 1
Essential Cat 9
Important Cat 7
Important Cat 9
Management Trails
Walking Track
Public / Private Roads
Other Fire Control Advantages
Refuge Area
Staging Area
Control Centre
Water Point Vehicle
Water Point Helicopter
Helped
RFS Station
Turning Point
Assembly Area