North Head Precinct
Fire Management Strategy
2009-2014

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 39 (4) and Section 44 (3) of Rural Fires Act 1997.**
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Endorsed by: Executive Director, Park Management Division — **Date:** / / — Department of Environment & Climate Change

Landholders & Contributors

Australian Government Sydney Harbour Federation Trust · Lend Lease · Sydney Water

Fire Season Information

Wildfires	● The statutory wildfire season occurs between 1 October and 31 March the next year, however unplanned wildfires / landfires tend to increased fire danger outside of this period.
Prescribed Burning	● Prescribed burning in this area is normally undertaken in Spring through to Autumn.

Related Documents

- NPWS Fire Management Manual, July 2008
- NPWS, Eastern Suburbs Banksia Scrub Endangered Ecological Community Information, February 2004
- Sydney Harbour Federation Trust North Head Former School of Artillery, North Head Management Plan, July 2006
- Sydney Harbour Federation Trust North Head Sanctuary Operations Plan 2007
- Fire Management Plan, Sydney Harbour and Botany Bay (La Perouse Precinct) National Parks, 2005
- The Birds of North Head, Sydney harbour Federation Trust, NSW August 2006
- North Fort Fire Strategy, Department of Defence, 2008
- Sydney Water Sewerage Treatment Plant Fire Strategy, Sydney Water, 2008
- Mosman Manly Operations Coordination Plan, NSMM/BFMC
- NSMM/BFMC Bush Fire Risk Management Plan (Under Review), 2009
- REF Quarantine Station "Clearing Trimming & Management of Vegetation" NPWS April 2009

Map Details

Datum: Australian Geodectic Datum (AGD) 1966
Projection: Australian Map Grid (AMG) Zone 56
Aerial Photography: Flown in February 2007.
1:25k Topographic Map: Sydney Heads 9130-2N 3rd Ed. (LPI)

Communications Information

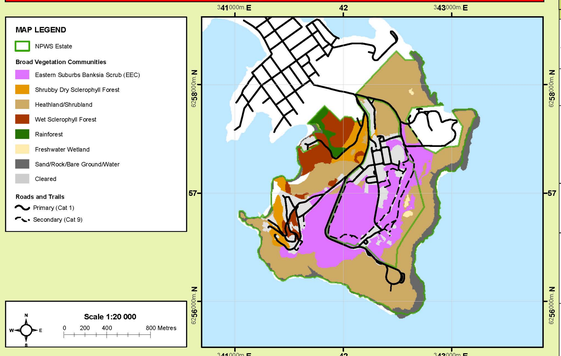
Service	Channel	Location and Comments
NPWS - VHF	3	● Good coverage ● Available in most NSWFB vehicles
UHF - CB	1 - 99	● Choose channel on fire-ground with NSWFB
Mobile Phone - GSM	-	● Good coverage

Contact Information (Emergency 000)

Agency	Position / Location	Phone
National Parks & Wildlife Service	Regional Duty Officer (24 hour)	0418 462 497
	Harbour North Area Manager	9966 8303 / 0417 249 751
	Fire Management Officer	9960 6166 / 0418 462 497
	Regional Operations Coordinator	9995 7322 / 0418 117 882
	Harbour North Area Office	9960 6299 / (f) 9960 3965
	Sydney Regional Office	9995 7962 / (f) 9995 7899
Sydney Harbour Federation Trust		99921100 / (f) 9969 2120
Aus Institute of Police Management (AIPM)		24hr 9934 4800 / (f) 9934 4780
North Head Sanctuary Foundation		8969 2100 / (f) 8969 2120
North Head Sewerage Treatment Plant		Emergency 132 090 / 9350 6969
North Fort Artillery Museum		9976 6102 / (f) 9976 2607
International College of Management		9977 0333 / (f) 9977 0555
NSW Fire Brigade	Manly	9948 4237
SES	Manly	9949 7466
	Sydney Northern Division	9477 5577
Police	Manly	9977 9499
	Water Police (Sydney)	9992 5411
Ambulance	Bankings	131 233
Hospital	Manly Warringah	9976 9011
Council	Manly Council	9976 1500
Sydney Ports Harbour Control	Fire Fighting Support Vessels	9206 4001 (24 hour)

Locality of Reserve and Local Government Areas

Vegetation

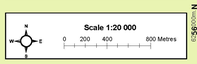


Current Vegetation Status (Fire Thresholds)

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



Operational Guidelines

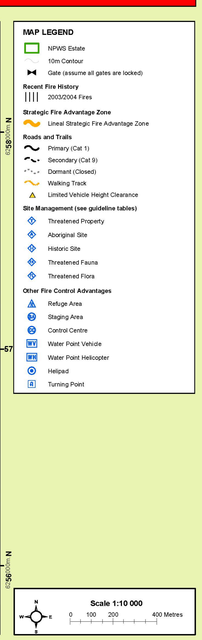
Refer to Strategy for Fire Management 2003 and Fire Management Manual 2008: Brief all personnel involved in suppression operations on the following issues:

General	Guidelines
Aerial Water Bombing (NPWS FMM 4.6 / NSW Fire Agencies Aviation SOPs 02 / NPWS Guidelines for Aerial Incident 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 4.11.5 & 4.4 / NPWS Fire Ecology Guidelines / NSW Fire Agencies Aviation SOPs 02 / NPWS Guidelines for Effective Aircraft Management)	● Aerial ignition may be used during backburning 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 backburns down slope where required.
Burning Operations (NPWS FMM 4.10)	● 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.
Coordinated Response Arrangements (NPWS FMM 4.1.3 & 4.2.3)	● 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.
Fire Control Lines (NPWS FMM 4.8)	● 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 Operations (NPWS FMM 4.9)	● 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 4.11 & 4.4.4)	● 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 5.3)	● Where practicable, containment lines should be stabilised and rehabilitated as part of the wildfire suppression operation.
Smoke Management (NPWS FMM 4.2.7)	● 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 Safety (NPWS FMM 2.4.6, 4.2.1)	● 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.

Bushfire Suppression



Resource	Guidelines
Aboriginal Cultural Heritage Site Management (NPWS FMM 4.2.9 & 2.1.4)	
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 4.2.9 & 2.1.4)	*NOWS: Regional Cultural Heritage Management Strategy:* ● *Historic heritage sites are to be kept clear of dead & live woody body, wetland or swamp, ash bum or retardant as far as practicable.* ● *Earth-moving machinery is to be used around, rather than over/through assets.*
H1	● High RCHMS* priority ● Avoid fire, including wildfire, backburning & HR.
H2	● Avoid all water bombing activities. ● High RCHMS* priority. ● Avoid fire, including wildfire, backburning & HR.
H3	● High or low RCHMS* priority. ● Heritage site unlikely to be effected by fire. ● Danger to any fire crew activity. Avoid site at all costs.
H4	● Low RCHMS* priority ● Avoid fire, including wildfire, backburning & HR. ● Avoid all water bombing activities.
H5	● Low RCHMS* priority. ● Avoid fire, including wildfire, backburning & HR.
H6	● High or low RCHMS* priority. ● Heritage site unlikely to be effected by fire. ● Avoid use of earth moving machinery.
H7	● High or low RCHMS* priority. ● Heritage site unlikely to be effected by fire. ● Avoid use of earth moving machinery. ● Avoid all water bombing activities.
Threatened Fauna Management (NPWS FMM 4.2.9 & 2.1.4)	
FA1	● Protect large and hollow bearing trees.
FA2	● Protect large and hollow bearing trees. ● Avoid interfire intervals of < 10 yrs. ● Avoid high intensity fires that consume tree canopies and fallen logs.
FA3	● Avoid interfire intervals of < 10 yrs.
FA4	● Habitat unlikely to be effected by fire. ● Avoid use of earth moving machinery in wetland habitats. ● Avoid use of retardant and foam in wetland habitats.
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 4.2.9)	
FL1	● Avoid interfire intervals of < 10 yrs. ● Avoid the use of earthmoving machinery. ● Avoid the use of retardant.
FL2	● Avoid fire, including wildfire, backburn, HR, as far as possible. ● 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.
FL4	● Avoid summer fire. ● Avid high intensity fire. ● Avoid earth moving machinery.
FL5	● Avoid low intensity fire. ● Avoid interfire intervals of < 5 yrs. ● Avoid earth moving machinery. ● Avoid the use of retardant.
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	Shrubby Dry Sclerophyll Forest	● Avoid successive fires at intervals of < 7 years. ● Avoid fire exclusion for a period of > 30 years.	Moderate	-	-
B	Heathland	● Avoid successive fires at intervals of < 8 years.	Low to moderate	2003 2000 1997	2.7 11.8 6.0
M	Eastern Suburbs Banksia Scrub EEC	● Avoid successive fires at intervals of < 15 years. ● Avoid fire exclusion for a period of > 30 years.		2003 2000 1996	9.3 7.8 0.8
C	Wet Sclerophyll Forest	● Avoid successive fires at intervals of < 25 years. ● Avoid successive fires at intervals of < 60 years. ● Avoid fire exclusion for a period of > 200 years.	High	1994	20.1
D	Rainforest	● Avoid any fire occurrence (a limited recovery ability exists).	High	-	-
I	Freshwater Wetland	● Avoid successive fires at intervals of < 6 years. ● Avoid fire exclusion for a period of > 35 years.	Low	-	-
Nil	Cleared Sand/Rock/ Bare/Ground/ Water	● Not applicable.	-	-	-

Threatened Fauna Fire Ecology

Label	Name	Fire Ecology
	Perameles nasuta Long-nosed Bandicoot (Endangered Ecological Population at North Head)	● Requires dense vegetation for diurnal shelter ● Low intensity, mosaic burn (1-3ha) may be implemented within known habitat ● Avoid high intensity fires within known habitat in order to minimise loss of important foraging habitat and vegetative protection from predators ● Avoid multiple fire events of less than 10 years within known habitat
	Eudyptula minor Little Penguin (Endangered)	● Feeds in bays and coastal seas. Breeds on rocky cliff bases and vegetated sand dunes. ● Avoid fire within and adjacent to known habitat. ● Fire detrimental to species due to removal of breeding habitat.
F1	*Pseudophryne australis* Red-crowned Toadlet (Vulnerable)	● Avoid fire within and adjacent to known habitat – opportunistic breeder, therefore minimise disturbance all year round ● Avoid the use of foams / retardants within 100 metres of potential / known habitat ● Avoid high intensity fires within & adjacent to known habitat to avoid siltation of breeding areas ● Avoid use of earthmoving machinery within known habitat
	Ninox strenua Powerful Owl (Vulnerable)	● Avoid frequent, high intensity fires within known habitat. Infrequent high intensity fire may promote nest and roost sites development (hollows), however, few records of this species occurs within recently burnt areas (< 5 years – limited data) ● Frequent, low intensity fires may simplify habitat structure & reduce abundance of mammal prey ● Avoid fire within known roost locations (tree hollows) during the breeding season (mid autumn to mid winter) – heat and smoke may impact on nestlings

Threatened Flora Fire Ecology

Label	Name	Fire Ecology
	Acacia terminalis sub.sp *terminalis* (Endangered)	● Killed by high intensity fires (100% scorch), resprouts after low intensity fire ● Primary juvenile period 3-6 years, lifespan / seedbank up to 50 years ● Recruitment of new plants is by germination from soil seed bank after fire
F1	*Eucalyptus camfieldii* (Vulnerable)	● Plant establishes only in mature community, not after disturbance ● Survives 100% scorch, resprouts from lignotuber and buds after fire ● Primary juvenile period unknown, lifespan / seedbank over 100 years
	Gonocarpus salsoloides (ROTAP)	● Killed by 100% scorch, obligate seed regenerator ● Primary juvenile period is 1-3 years, lifespan / seedbank up to 30 years
	Rulingia hermannifolia (ROTAP)	● Killed by 100% scorch, obligate seed regenerator ● Primary juvenile period 2 years, lifespan / seedbank up to 10 years ● Germinates vigorously after fire

Bushfire Risk Management Strategies

Fire Management 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.

Asset Protection Zones

Zone Name	Action	Responsibility
Quarantine Station	● Maintained by mowing, mechanical removal of fuel and fuel reduction burning.	Quarantine Station Lessee / NPWS
Manly Hospital	● Maintained by mowing and mechanical removal of fuel.	Manly Hospital / NPWS
Ceretti Crescent	● Maintained by mechanical removal of fuel.	St. Patricks Estate

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
Police Institute	● Mechanical fuel removal and mowing of 10 metre strip to help protect the Australian Institute of Police Management from wildfires.	NPWS / NSWFB
Quarantine Station	● Mechanical fuel removal / management according to 'REF Quarantine Station "Clearing, Trimming and Management of Vegetation", NPWS 2009	Quarantine Station Lessee / NPSW
Blue Fish Banksia Scrub	● Mechanical fuel removal or hazard reduction burn to help protect critical infrastructure within Sydney Water from wildfires.	NPWS / NSWFB / Sydney Water
Third Cemetery	● Maintain fire regime or disturbance events specific to Eastern Suburbs Banksia Scrub EEC as specified in the Vegetation Communities and Biodiversity Thresholds table.	
The Bower	● Hazard reduction burn to help protect houses along Bower St from wildfires.	NPWS / NSWFB / Manly Council

Land Management Zones

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
Scenic Drive	● Parts or all of zone consists of Eastern Suburbs Banksia Scrub EEC. ● Maintain fire regime specific to Eastern Suburbs Banksia Scrub EEC specified 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
Memorial Walk		NPWS / Defence / Sydney Harbour Federation Trust
Quarantine East		NPWS
Scenic Drive Lineal		Sydney Harbour Federation Trust
Harbour Trust		Sydney Harbour Federation Trust
Lookout Platforms		Sydney Harbour Federation Trust
Harbour Trust East		Sydney Harbour Federation Trust
South Shelly		NPWS
Central Blue Fish		NPWS / Sydney Harbour Federation Trust
Blue Fish Point		NPWS
South Blue Fish		NPWS / Defence / Sydney Harbour Federation Trust
Avenue of Honour		NPWS / Defence
Shelly Banksia Scrub		NPWS / Sydney Harbour Federation Trust
Fairfax	● 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
Quarantine South		NPWS
Quarantine North		NPWS
Collins Beach Flat		NPWS
Collins Beach Ridge		NPWS
Shelly Beach Cliff		NPWS
Shelly		NPWS
Wetland	● Parts or all of zone consists of Eastern Suburbs Banksia Scrub EEC. ● Maintain fire regime specific to Eastern Suburbs Banksia Scrub EEC specified in the Vegetation Communities and Biodiversity Thresholds table.	Sydney Harbour Federation Trust