

Position / Location	Phone
outy Officer (Call Centre)	(02) 8579 0609
umberland Area Manager	0419 753 789
umberland Area Office	(02) 4572 3100 (fax) 4580 2714
Freater Sydney Branch Director	(02) 4320 4200
4 hours usiness Hours ax	000 (02) 4734 7777 (02) 4737 8717
mergency /estern Sydney Region	000 8811 7700
mergency lepean PAC (Penrith / St Marys) lount Druitt	000 (02) 4721 9413 (02) 9675 0699
mergency Vestern Sydney and Nepean Blue Aountains Sector	000 4731 2167 (fax) 4731 4501
lepean	(02) 4734 2000
awkesbury District Health Service	(02) 4560 5555
eerubbin LALC	(02) 4724 5600
lacktown City Council	(02) 9839 6000
enrith City Council	(02) 4732 7777

Channel Location and Comments 134 Mulgoa 130 Vote Channel • Good coverage • RFS and NPWS radios can chat on same fireground RFS FG 1-20 NPWS FG 41-60 • RFS and NFWS radios can that on same ineground channels • NPWS FG 1-60 • NPWS FG channel is numbered 40 highe r than RFS FG channel (e.g. RFS FG 3 = NPWS FG 43) • 1 - 99 • Available in most NSWFB and RFS vehicles • Choose channel on fire -ground with NSWFB and RFS Good coverage

Operational Guidelines Refer to 2017-2018 Fire Management Manual.

nel	involved in suppression operations on the following issues:
	Guidelines
	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 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.
	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.
	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.
	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 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.
	All fire advantages used during wildfire suppression operations must be mapped and where relevant added to the database.
	vvetting and toaming 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

od	•	As far as possible, undertake indirect, parallel or direct atta along existing control lines. As far as possible, maximise area burnt without threatening assets, including biodiversity. Identify and survey backup control lines.
h	•	Undertake indirect, parallel or direct attack to minimise the time taken to contain the fire. Construct new control lines if necessary to minimise the tim to contain the fire. Identify and survey backup control lines.
	•	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.
	•	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 t the next potential control line. As far as possible, implement threatened species and cultural heritage management guidelines.

Vegetal	ion communities and bio	Eiro	y IIIES	A
Vegetation Community	Biodiversity Thresholds	Behaviour	Year Burnt	Area (Ha)
Castlereagh swamp Woodland Freshwater Wetland	 Exclude fire where possible (a limited recovery ability exists) Low to Moderate (depending on time since last rain) 	Low to Moderate	-	-
	Minimum Fire Interval: 3-6 years			
Shale Plains woodland	 A quick succession of burns 3-6 years apart followed by a long interval is preferred for 		-	-
Shale Gravel Transitional Forest	 biodiversity benefits <u>Maximum Fire Interval:</u> 15–20 years Re-assess biodiversity after approx. 15 years as <i>Bursaria</i> tends to become competitively dominant and <i>Themeda</i> dies (after approximately 10-12 years) Significant research & monitoring is required 	Moderate to High	-	-
Castlereagh scribbly Gum Woodland	 Minimum fire interval 8 – 10 years Implement variable fire regime within this range Maximum fire interval 15 - 30 years Longer unburnt areas tend to 	Moderate	2012	1
Cooks River Castlereagh Ironbark Forest	oks River stlereagh ronbarkhave increased weed invasion. May need to implement fire to assist in weed managementto to assist in weed management• Site and context specific, therefore research and monitoring required	to riigii	2016	2
River-Flat Eucalypt Forest	 Minimum Fire Interval: 20 years Crown fires should be avoided in the lower end of the interval range Maximum Fire Interval: 60 years 	Moderate	-	-
Unknown	Recommend an initial inter-fire interval of 2-3 years followed by	Moderate to High	-	-

Label Name

Scale 1:16,000

Metres

250 500 750 1,00

Grevillea

(Vulnerable) Marsdenia

Viriflora

Pultenaea parviflora

and	Local G	overni	nent A	reas
	-1		HAWKESBURY	LGA Winds
	H		Berksimier	
	HA		Π	
\mathbb{N}	KF		-25-	1.
			5	Mars
			Shanes	Park
	anebrook	$+ \chi$		
Mount I	leasant Jordan Sp	Drings	KTOWN LGA	mot
PENRITH LGA	rdswood-Park		Ropes Cross	ing B
0	Cambridge I	Park	inheved Treg	ear D
Lemongr	ove	Werringto		Whala
Penrith Park	<u>Kingswood</u>	° J	North S	St Marys
• 3000	Cadder		Oxl	ey Parks
	aremont Meadow.	Quarry Hill	Co	Ivton
	17		Chatsworth	C Mi
	JOrchard	Hills Mel	ville ° °	ewitts
¢			•	~
Resource		Guidelin	es	
	Aboriginal	Cultural Harita	~~	

Locality of Reserve

Aboriginal Cultural Heritage Site Management			
		(NPWS FMM 2.0) As far as possible protect site from fire	
IS1		Avoid ground disturbance including handtools, dozers.	
	•	Avoid water bombing which may cause ground disturbance. Manually clear 10m around site and wet sown site prior to	
		burning	
IS3		As far as possible protect site from fire Place control lines well away from site	
	•	Site must be monitored during burn operations	
IS4		No vehicles to be driven near the site unless on a formed road Place control lines well away from the site	
	•	No slashing/trittering of vegetation or earthmoving machinery	
		No breaking of earth near the site No vehicles or machinery to be used near site unless on a	
IS5		formed road	
		Do not damaged vegetation that may be screening the site	
		Historic Heritage Site Management	
	_	(NPWS FMM 2.0)	
		As far as possible, protect site from fire Avoid all ground disturbances, including the use of earthmoving	
HS2		machinery, handline construction and driving over sites	
		Avoid water bombing Use of foam, wetting agents and retardant is acceptable	
	•	Avoid all ground disturbances, including the use of earthmoving	
ЦСА		Water bombing and the use of foams, wetting agents and	
п 3 4		retardant are acceptable Site me be burnt by bushfire, back burn or prescribed burn	
	•	without damage	
		Threatened Fauna Management	
	•	Avoid high intensity fires that consumes the canopy	
FA2		Avoid tires in times of nectar scarcity (winter) No slashing or trittering or earth-moving equipment	
	•	Protect logs and fallen timber and dead standing timber	
FAG	•	iviaintain appropriate fire frequencies to prevent dense understoreys	
FA3	•	No slashing or trittering or earth-moving equipment	
		Avoid fires during the breeding season (August - January) Avoid fire intervals < 3 years	
	•	Protect large old, hollow-bearing trees	
		Protect logs and fallen timber	
FA4	•	Avoid high intensity fire that consumes the canopy and frequent	
	•	No slashing or trittering or earth-moving equipment	
	•	Avoid smoke and fires during the breeding season (Autumn/winter)	
	•	Protect large old, hollow-bearing trees	
F 4.5	•	Avoid smoke and fire near known roost/den trees, roost sites and during the breeding season (spring/summer)	
FA5	•	Avoid high intensity fire that consumes the canopy and frequent	
	•	Protect logs and fallen timber	
	•	Protect large, old hollow-bearing trees	
		(spring/summer)	
FA6		Avoid fire in, or protect the riparian zone from frequent fire Avoid hot fires that consume canopy and high intensity fire over	
		large areas	
	•	No burning within 100m of wetland	
	•	Avoid frequent fires adjacent to wetlands	
FA7	•	(spring/summer)	
	•	No use of chemical or foam retardants for fire suppression	
	•	Protect logs and fallen timber	
FA11	•	Avoid fire in known habitat locations If not possible, avoid fires > 1 ha in known habitat locations	
	•	No slashing, trittering or earthmoving works	
		Threatened Flora Management (NPWS FMM 2.1 & 4.2)	
	•	Avoid inter- fire intervals of < 8 - 15 years	
FL4	:	No slashing or trittering or earthmoving machinery	
	:	Avoid the use of chemical retardant Avoid burning during August to March	
	•	Avoid inter-fire intervals of < 10 - 12 years	
FL5	:	Avoid inter-fire intervals of > 20 - 25 years No slashing trittering or tree removal or earth moving equipment	
	•	Avoid use of retardants	
	•	Avoid inter-fire intervals of < 10 years	
FL6	:	Avoid high intensity fires No slashing, trittering, tree removal or use of earth moving	
		equipment	
	•	Avoid use of retardants Avoid inter-fire interval of < 10 - 15 years	
	•	Avoid inter-fire intervals > 20 - 25 years	
FL7	:	Moderate-high intensity fires preferable - Late summer/Autumn No slashing, trittering or tree removal or use of earthmoving	
	[equipment	
	•	Avoid use of retardant	
	:	Avoid inter-fire intervals < 10 - 15 years	
FL8	•	Avoid high intensity fire	
	•	equipment	
	•	Avoid use of retardant	
Threatened	•	vvnere possible property owners with assets at risk from a wildfire event should be kept informed regarding the progress of the fire:	

	protection preparedness.
	Threatened Fauna Fire Ecology
Name Chthonicola sagittata Speckled Warbler /ulnerable)	Fire Ecology Avoid frequent, high intensity burning within known habitat during breeding season (August - January). Avoid any fire management operations within known habitat. The breeding season is between July and February. Nests are constructed on the ground and are well concealed by vegetation, leaf litter, and trees or shrubs.
aphoenositta hrysoptera aried Sittella /ulnerable)	Survival and population viability are sensitive to habitat isolation, reduced patch size and habitat simplification, including reductions in tree species diversity, tree canopy cover, shrub cover, ground cover, logs, fallen branches and litter. Listed threats include removal of live and dead timber, removal of patches of regrowth eucalypts or shrubs and inappropriate fire regimes. Breeding season is August to January.
Dasyurus maculatus ootted-tailed Quoll /ulnerable)	Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. A generalist predator with a preference for medium-sized mammals such as gliders, possums and rabbits. Females occupy home ranges up to about 750 hectares and males up to 3500 hectares. Traverse home ranges along densely vegetated creek lines. Avoid degradation of suitable quoll habitat through clearing and changes in fire patterns. Avoid loss of potential den sites such as large hollow logs.
Hieraaetus orphnoides .ittle Eagle /ulnerable)	Occupies open eucalypt forest, woodland or open woodland. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Lays two or three eggs during spring, and young fledge in early summer. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.
xobrychus flavicollis lack Bittern /ulnerable)	Inhabits terrestrial and estuarine wellands and sometimes. Feeds at night on frogs, fish and invertebrates. During the day it roosts in trees or on the ground amongst dense reeds. Breeds between December and March. Avoid burning riparian vegetation during the breeding season.
itoria aurea Green and Golden Bell Frog Indangered)	Tolerates a wide range of water conditions and habitats including marshes, swamps, ponds, dams, creeks, rivers, wetlands, etc Breeding is usually between September and February. Reproductive events are heavily influenced by seasonal and prevailing weather conditions, as well as geography. Avoid inappropriate fire regimes. Avoid fire management that adversely affects frogs by destroying vegetation used for refuge, foraging or shelter. Avoid burning in low lying areas and wetlands dominated by sedge and emergent growth. Avoid the use of foam near known or potential breeding habitat sites.
ophoictinia isura quare-tailed Kite /ulnerable)	Medium-sized raptor that forages over eucalypt-dominated open forests and woodlands. It particularly favours productive forests and box-ironbark-gum woodlands. Breeds from July to February in large stick platforms in open forest or woodland near watercourses. Avoid loss of nesting/feeding resources from clearing and fire. Avoid frequent fire regimes as this impedes recruitment, as generation length is ~10ys.
Meridolum orneovirens cumberland Plain Land Snail ndangered)	Primarily inhabits Cumberland Plain Woodland. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. Dispersal distances are thought to be small and there is some suggestion that gene flow between populations is low. Fires at inappropriate times, or too frequently, will destroy the habitat required by the species, or burn the groundcover in which it can be sheltering, leading to direct loss of individuals.
Miniopterus schreibersii sceanensis Eastern entwing-bat /ulnerable)	Caves are the primary roosting habitat. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. At other times of the year, populations disperse within about 300 km range of maternity caves. Hunt in forested areas, catching moths and other flying insects above the tree tops. Listed threats include hazard reduction and wildfire fires during the breeding season. Avoid fire around known roost sites.
ormopterus orfolkensis astern Free- tail Bat /ulnerable)	Roosts mainly in tree hollows but will roost under bark or in man-made structures. Avoid removing hollow-bearing trees. Avoid large scale wildfire or hazard reduction burns on foraging and/or roosting habitat. Highly mobile and volant feeder.
Myotis macropus Southern Myotis /ulnerable)	Roost in tree hollows, aqueduct tunnels, under bridges, in drains and in dense vegetation in the vicinity of bodies of slow flowing or still water (including estuaries). They forage almost exclusively over water bodies feeding on insects and small fish. A single young is born between November to December. Lactation lasts for about eight weeks and the bond between mother and young may last for another three to four weeks after weaning. Protect known pasting/rooting eige (arree of bollow-bearing trees) required during winter
nox strenua owerful Owl /ulnerable)	spring breeding season. Avoid medium-high intensity fire in known locations during mesting season. Nesting occurs from late autumn to mid-winter. Avoid high intensity prescribed burns or wildfires over large areas that reduce forage habitat. Maintain appropriate fire regimes within known habitat including forests and woodlands.
Petaurus australis ellow-bellied Glider /ulnerable)	I eeds primarily on plant and insect exudates. Dens, often in family groups, in hollows of large trees. Very mobile and occupy large home ranges (between 20-85 ha) to encompass dispersed and seasonally variable food resources. NOTE: The population at Windsor downs is now almost certainly extinct. Only Cumberland reserve where they are still known from is Cattai NP. Probably extinct in Windsor Downs NR.
Pteropus bliocephalus rey-headed Flying Fox /ulnerable)	Heed on the nectar and pollen of native trees, particularly Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Single young is born in October or November. Maintain appropriate fire regimes within community thresholds for forests and woodlands with well-developed understorey. Winter flowering species are an important forage source. No known roost sites in Cumberland Area reserves.

and asked for an assessment of their current level of asset

Property

(vulnerable) forage source. No known roost sites in Cumberland Area reserves. Saccolaaimus Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they flaviventris are known to utilise mammal burrows. Forages in most habitats across its very wide range, Yellow-bellied with and without trees. Appears to defend an aerial territory. Breeding has been recorded Sheathtail-bat from December to mid-March, when a single young is born. Avoid the loss to hollow-bearing (//ulnersheathtail-bat from December to mid-March, when a single young is born. Vulnerable) trees. Scoteanax Utilises a variety of habitats. Usually roosts in tree hollows. Creek and river corridors a Scoteanax Utilises a variety of habitats. Usually roosts in tree holiows. Creek and nver comdors are rueppellii important foraging areas. Little is known of its reproductive cycle, however a single young is Greater born in January. Prior to birth, females congregate at maternity sites located in suitable trees. Avoid burning of riparian corridors in known habitat locations; avoid felling potential Bat roost trees (those with hollows); avoid burning during breeding season; maintain appropriate (/ulnerable). (Vulnerable) fire regimes. Tudo Found in rainforest and wet sclerophyll with a well-developed mesomorphic understorey. Big Tyto tenebricosa Sooty Owl (Vulnerable) Threatened Flora Fire Ecology Fire Ecology Minimum interval 8 years recommended, while 10-15 years is required to allow sufficient seed and fuel to accumulate, Ilwynia tenuiolia particularly if burnt late summer to autumn. Killed by fire but regenerates from soil seedbank. Prolific seed germination in Vulnerable) response to fire. May be a weak resprouter, expect most plants to be killed by mod-high intensity fire. Lifespan 20-30 yrs Reproductive maturity occurs >4 years after germination. Flowering occurs sporadically, though peaks from August to March.

juniperina Juniper-*Juniperina* Juniper-leaved Grevillea (/ulnerable), If fires are too frequent there may be insufficient time to build up seed in the soil to replace plants killed in the fire. Flowers sporadically, but peaks between July and October. Arson causing frequent and intense fires is listed as a threat. Marsdenia viridiflora subsp. remnant open shale woodland voortation. Its representation the response to fire in whether the the test that the test of test of the test of test remnant open shale woodland vegetation. Its response to fire is unknown, and due to its small population size and scattered distribution, this species may be highly susceptible to stochastic fire events. Flowers in Spring and sporadically.
 (Endangered)
 Distribution, this species may be highly susceptible to stochastic the events. Howers in sping and sporatically.

 Micromyrtus minutiflora
 An obligate seed regenerator. Seed germination is promoted by fire and also by physical disturbance. Although listed as a short-lived species much of the ecology is poorly known. Maturity is expected in about 10 years. Peak flowering is from

 (Endangered)
 November to March with sporadic flowering all year round.

 Peak flowering occurs from December to January. Reproductive maturity is not reached for 3-4 years, with peak reproduction at 5-6 years. Lifespan is about 20 years. Killed by fire and re-establishes from soil-stored seed. Germination can be prolific Nodding Geebung

 Nodeling Geebung
 after a moderate to high intensity fire. There is no evidence of vegetative spread. Fire intervals of 10-15 years allows

 (Endangered) adequate build-up of seed storage and fuel levels to provide for moderate to high intensity burns (particularly in summer to

 Pimelea spicata
 Flowers sporadically throughout the year, generally seen in summer after moderate levels of rainfall. Mature plants spread

 Spiked Rice-flower
 Flowers and is maintained in the presence of a suitable disturbance regime. Avoid high frequency fires. No fire more than

 (Endangered)
 once every 5 years.

 Longevity may be > 50 yrs.
 Vegetative reproduction is probably the primary form of recruitment. It is likely that it has high

seed dormancy and persists in the soil via the seedbank. Seed germination is probably linked to fire. Unknown whether plants will sucker following fire. High intensity fires probably kill more resprouting plants, and longer periods will be needed to recover; but, seeds in the soil may require fire of sufficient intensity to break dormancy. Late summer and autumn fires are

(Endangered) preferable. Recommend a minimum fire free period of 5-7 years to allow an adequate seedbark to develop. Recommend to limit fires in area until seed viability known; if viable high intervals of 20-25 years may be appropriate; mod-high intensity fires



Bushfire Risk Management Strategies