

	TABLE 1: MAPS 1 & 2 - FIRE HISTORY
Ignitions	Pre European fire scar records in the Alps suggest large and high intensity bushfires were infrequent limited by ignition sources and climax sub alpine communities (Zylstra 2006). It is likely that the higher elevations in the Brindabella ranges have a similar fire history.  Banks (1989) noted a significant increase in fire frequency for the Brindabella area from 1860. In the 100 years from 1860 to 1960, the most common cause of fires was burning undertaken by graziers or stockmen.  In more recent years the major cause of fire has been lightning, with occasional fires caused by arsonists. Historically unplanned fires originating within the Park have been infrequent. The majority of fires that have impacted the Park have originated outside its boundaries.
Prescribed burns	Prescribed fire within the Park was an objective of management in the ACT bush fire lease from 1944 through to 1985. Between 1985 and 2003 the focus for prescribed fire was in the north of the reserve. In 2013 nearly 2000 ha was treated by three prescribed fires within the Park. A further 860 ha was treated by three prescribed fires in 2015.
Wildfire	Major fires often developed in drier seasons. Extensive fires occurred in the area in 1906, 1915, 1917, 1918, 1926, 1939, 1942, 1945, 1952 (Department of Forestry, ANU 1973). The exact extent of the burnt areas are hard to determine due to incomplete historical records. Severe fire seasons in 1926 and 1939 eventually led to the 1944 lease of an area of the Brindabella Range to the ACT Bush Fire Council. From 1985 the ACT Bush Fire Council ceased active hazard reduction burning within the lease area. A significant El Nino event in 2003 coupled with a severe and widespread lightning event on 8th January 2003 resulted in 164 ignitions across south eastern Australia. Extended periods of high to extreme fire danger resulting from low humidity, high temperatures, strong winds and drought conditions, resulted in approximately 94 % of the park being burnt.

Group	Vegetation G	roup		Significant Flora Management Guidelines & Considerations
A	Alpine Ash Eucalyptus delegatensis	Frequence Eucaly to the continuof this	ptus delegaten effects of fire, u uation of the spi plan. iid prescribed fi urs within LMZ cess.	y fire, resulting in canopy scorch, will potentially cause local extinction in Alpine Ash communities sis. The species lacks lignotubers, so will not resprout after fire. This species remains vulnerabl ntil they reach reproductive maturity, and establish a canopy stored seedbank. To maintain the ecies, consecutive fires should not occur in areas where the species is regenerating, during the lire where this species occurs, during the life of this plan. Potential impacts to Alpine Ash where 2 will be identified and minimised through the impact assessment and operational planning ge classes of Alpine ash and prioritise sites for protection from wildfire.
В	Snowgum wood Eucalyptus pau	centur for the purpos use of that su ciffora Snow Mir Exc thre Ma	y with many are introduction of se of hazard recoprescribed fire chuse of fire silum mortality in inise the size a sept for asset prescholds.	fire in these areas is related to drought conditions and is generally in the order of 1-2 fires per eas remaining long unburnt (McCarthy et al., 2003). Snowgum woodlands do not have a requirem fire for ecological reasons and there is very little to justify the introduction of prescribed fire for the fluction specifically to conserve species (McCarthy et al., 2003). This does not however preclude to in these communities for the reduction of fuel hazard for the protection of assets. It simply indicate hould take account of the overall need for variability of frequency to maintain habitat values. Coreases when burning and drought or grazing are combined.  and intensity of all fires.  Totection or strategic purposes, fire will be introduced in accordance with the biodiversity fire reginced and according to level of disturbance and prioritise sites for protection from wildfire.
С	Wet Heath (Bog Riparian and Woodland Inter Areas	A fire of for wa Fire an erosio vegeta  face  Mir exc  Avo  Avo  Exc	within the sphace retention, filt and destabilisation, sedimentation tion, reducing the size and the use of each of the use of fire id vehicle accellude bogs, whe	gnum bogs is a significant threat to the integrity and maintenance of the bogs. The function of boration and provision of habitat can be affected by damage from fire.  In of soil resulting from frequent fire can lead to increased run-off into streams and waterways, we nand eutrophication, potentially impacting on species. High intensity fire can remove riparian the filtering benefits of vegetation. Loss of nutrient from the site can affect water quality, and intensity of all fires to reduce the potential impacts on the communities. Fire should be active as where possible.  Fire the possible arth moving equipment within 100m of bogs. Minimise disturbance in riparian areas. The suppression chemicals within 100m of bogs and drainage lines. The symptomic series within bog communities. The possible, from backburn blocks.  Fire possible, from backburn blocks.  Fire possible, from backburn blocks.
D	Alpine Complex	The D format	ry Heath, Wet Fion is sensitive should be active	leath and Alpine Vegetation alliances have been classified in the Alpine Complex formation. Thi
			T	hreatened Flora Species
Group	Common Name	Scientific Name	Status	Guidelines
С	Leafy Anchor Plant	Discaria nitida	V	<ul> <li>No known records of these species have been located within the reserve. There is the potential to locate these species, if further survey was conducted, as suitable habitat exists</li> </ul>
С	Rough Eyebright	Euphrasia scabra	E	Potential habitat for these species will be protected as per significant community guidelines.
	Austral Toadflax	Thesium australis	T <sub>V</sub>	If identified, implement protection strategies during fire suppression and management activ

accordance with the biodiversity fire thresholds for the vegetation community in which they occur.

Acacia pravissima, Blechnum patersonii, Eucalyptus camphora, subsp. Humeana, Eucalyptus delegatensis, Eucalyptus fastigata, Eucalyptus niphophila, Grevillea victoriae, subsp. Brindabella, Grevillea sp Baldy Range, Leptospermum micromyrtus, Podolobium alpestre, Ozothamnus stirlingii, Pimelea pauciflora, Prostanthera cryptandroides, Prostanthra sp.aff.rugosa, Pultenaea juniperina var. mucronata, Wahlenbergia gloriosa.

McCarthy, G., Tolhurst, K. and Chatto, K. 2003, 'Determination of sustainable fire regimes in the Victorian Alps using plant vital attributes', Report No. 54, DEPI, Victoria.

e following species, occurring within the reserve are regionally significant as they are at the limit of their distribution. These species will be managed in

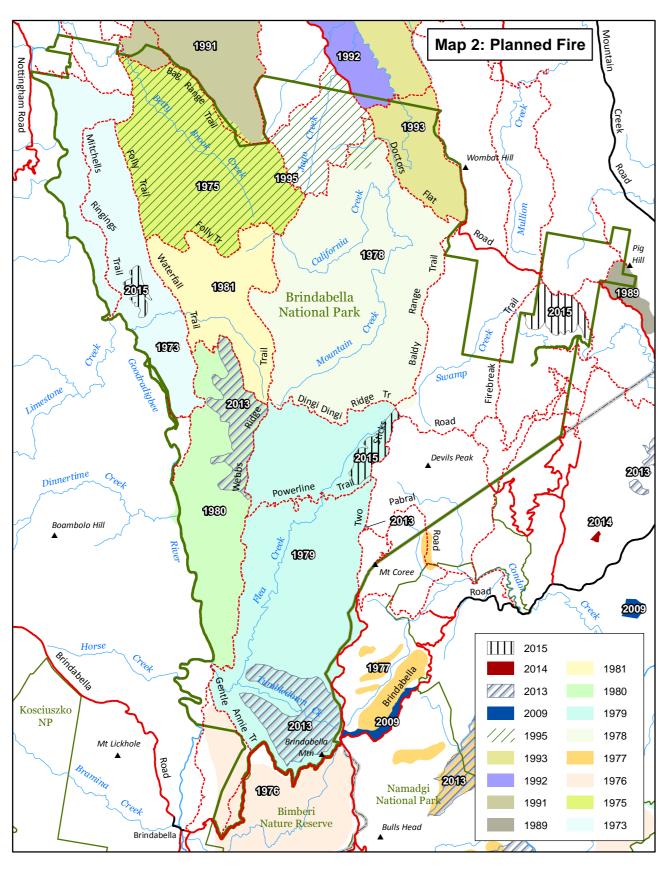


TABLE 6b: MAP 6 - THREATENED FAUNA

Group	Common Name		Scientific Name	TSC					Vulr	nerak	ole Po	eriod	_			_
J.oup	Common Name		Goldmano Hame	Schedule	J	F	М	Α	M	J	J	Α	S	0	N	0
	Northern Corrobo	ree Frog	Pseudophryne pengilleyi	V			_	_	_	_	_	_	_	_		1
Α	Alpine Tree Frog (	(D)	Litoria verreauxii alpina	E			_	_	_	_	_	_	_	_		
^	*East False Pipist	relle (B)	Falsistrellus tasmaniensis	V	/	_									_	4
	*Broad-toothed ra	t (C,D)	Mastacomys fuscus	V	/	_						_	_	_		L
	*Yellow-bellied Gli	der	Petaurus australis	V								_	_	_		
	*Powerful Owl (A)		Ninox strenua	V					_		_	_	_			
	*Barking Owl (A)		Ninox connivens	V							_		_			L
В	Gang Gang Cocka	atoo	Callocephalon fimbriatum	V	/	_	_						_			4
	Brown Treecreepe	er	Climacteris picumnus	V									_	_		4
	*Squirrel Glider		Petaurus norfolcensis	V												L
	*Masked owl (A)		Tyto novaehollandiae	V			_	_	_		_		_			L
	Olive Whistler (C)		Pachycephala olivacea	V	/								_			4
	*Spot-tailed Quoll	(C)	Dasyurus maculatus	V							_					
	*Koala		Phascolarctos cinereus	V	/	_	•									
	*Sooty Owl		Tyto tenebricosa	V			<b>/</b>	_			<b>/</b>	_				
	*Speckled warbler	•	Pyrrholaemus sagittatus	V			•					_	_			1
С	*Pink Robin (A,B)		Petroiaca rodinogaster	V	<b>/</b>											1
	*Diamond Fire-tail		Stagonopleura guttata	V	<b>/</b>						_		<b>/</b>	_	1	1
	Regent Honeyeate	er	Xanthonmyza Phrygia	E	•			•	•	1	•	•	•	•	•	4
D	*Smoky Mouse		Pseudomys fumeus	E1	1	<b>/</b>	<b>/</b>	_					<b>/</b>	<b>/</b>	1	1
E	*Eastern Bentwing	g Bat (B)	Miniopterus schreibersii	V			1	1								1
Habitat Group	Vegetation Group															
		<ul><li>habitat hav</li><li>In LMZ2 fire</li><li>Wildfires sh</li><li>Fire patchin</li></ul>	for threatened species has not e been included as key habitat s will be introduced in accordance vould be kept to smallest possible s ess is likely to be an important fact	been identified ites may be ide with the biodiver- ize, to enable pa for in providing a	withientifie	in the	Resoring to	the lift nresho withir	e of toolds.	t <b>his</b> p speci	olan. es ra	inge t	o ren			
General	All	habitat hav In LMZ2 fire Wildfires sh Fire patchin Protect iden If prescribed periods of vitheir protect Avoid presc Minimise int	for threatened species has not e been included as key habitat s will be introduced in accordance vould be kept to smallest possible s ess is likely to be an important fact tified key populations or habitat du d burns are necessary, avoid imple ulnerability of species likely to be le	been identified ites may be ide with the biodiver- ize, to enable pa for in providing a ming wildfire. mentation durin- pocated within the d drought. ing prescribed b	withing withing with the sity fire atches a mosa g spring burning within the surning with	in the ed du e reg s of ha aic of area	Resering to the structure of the structu	the lift nresho withir turally plann devel	ie of tolds. In the straining properties of the straining of the	speci rse v rescri pprop	es ra egeta ibed iriate	ange tation.	o ren	nain i	ntact.	
General A		habitat hav In LMZ2 fire Wildfires shi Fire patchin Protect iden If prescribed periods of vitheir protect Avoid presc. Minimise int Divert new t Wash down Avoid the us Do not use it trail is being of the site. If prescribed streams & ri There are no avoiding key Conduct Bromanagemer If key Broad significant h	I for threatened species has not be been included as key habitat so will be introduced in accordance would be kept to smallest possible so ess is likely to be an important fact tiffied key populations or habitat during times are necessary, avoid impleutinerability of species likely to be loon. The construction of high intensity fires during times and control line construction to vehicles and footwear before enters of fire suppression chemicals with earthmoving equipment within 100 maintained as part of fire manage of burns are deemed necessary, minimer flats. Attempt to keep fire at less on natural waterpoints available with y habitat areas. Driving through both and Tooth Rat habitat sites are identifiabitat during wildfires, utilising existing through gotheral to the control of the state of the control o	been identified ites may be ide with the biodiver ize, to enable particle ites in providing a ring wildfire. The mentation during ocated within the didrought. The ing prescribed be a avoid impact the ing areas contains and form of bogs and karnent activities, nimise disturbar ast 100m from the inin the Reserve. The ing the provide ites in the didrough items in the provide items in the provide items in the serve.	within wi	in the d du e reg of ha aic of ng. V area g and tiffied ident bogs north t wide r not in areas up him s for p	Respondence of the control of the co	the lift in reshount in the lift in the li	e of the second	species verses verse verses verse verses ver	blan.  des ra egeta egeta des ra egeta des r	ange t ation. burns mitig  at site wwn have wet lat suitareas ression	o ren  , refe ation  s. I  abitat  heath able I  s.  on an	f an e	xistin in 50 s, pons	for
	All  Streams, Wet heath (bogs) & Riparian and Woodland	habitat hav In LMZ2 fire Wildfires she Fire patchin Protect iden If prescribed periods of v their protect Avoid presc Minimise int Divert new t Wash down Avoid the us Do not use trail is being of the site. If prescribed streams & ri There are n avoiding key Conduct Bre Conduct Bre Conduct Bre Managemer If key Broad significant h known habit Minimise siz Avoid dama prescribed t Avoid placin habitat sites	I for threatened species has not be been included as key habitat so will be introduced in accordance would be kept to smallest possible so ess is likely to be an important fact tiffied key populations or habitat during times of prolonged included burns are necessary, avoid impleuting times and control line construction to realist and control line construction to vehicles and footwear before entered in the same properties of the suppression chemicals with earthmoving equipment within 100 maintained as part of fire managed burns are deemed necessary, minuter flats. Attempt to keep fire at less on natural waterpoints available with y habitat areas. Driving through both activities. I Tooth Rat habitat sites are identificated abitat during wildfires, utilising exist and commence backburning op the and intensity of wildfires, and maging/felling hollow-bearing and knowning. During mop up activities up infrastructure (eg. temporary utilities in procession in the procession of the structure (eg. temporary utilities up infrastructure (eg. temporary ut	been identified ites may be ide with the biodiven ize, to enable particles or in providing a ring wildfire. I mentation during cated within the did drought. I may be a void impact the ring areas contained the following areas contained to a void impact the ring the Reserve. The ring the ring to a void in the ring area to be avoid in the ring area to produce the ring tracks as merations outside an age to produce own nest/feed the ring tracks as merations outside the ring tracks as merations outside an age to produce own nest/feed the ring tracks as merations outside th	within within the most of the	in the d du du e reg s of ha aic of ha aic of ha aic of ha aic of ha area s area s up bu dinim s for p vise is sposown ha aic b ha e e aather n kno eees w	Respondence of the control of the co	the lift in the li	re of the second	special specia	es ra egeta ibed irriate ons. ents. abita o kno y into ers a arrian suppi	ation.  burns mitig  at site where the site site areasic for prescribe moppin ithin 2	o ren  , refe ation  s. I  abitat  heath able I  s. on an  rotect ed bu  ng up	f an ef (bog	xistin in 50n s), ons	g m

Do not introduce prescribed burning or backburning where known populations or key habitat of Smoky Mouse occur.
 Protect habitat areas with diverse heath understorey / grass trees on ridgetops, from fire interval of <15 years.</li>

Avoid placing infrastructure (eg temporary utilities, rerouting trails) in key habitat areas. Trail and control line construction

Conduct Eastern Bentwing Bat habitat surveys to identify key habitat sites for protection during fire suppression and management activities. If key habitat sites are identified:

Do not use earth moving equipment or construct control lines within 100m of known roosting and breeding sites.

Ensure prescribed burn conducted under conditions such that smoke does not enter cave.

Avoid falling trees during mop up operations in entrances to known roosting and breeding caves.

should be avoided in areas of key habitat. If an existing trail is being maintained as part of fire management activities, do

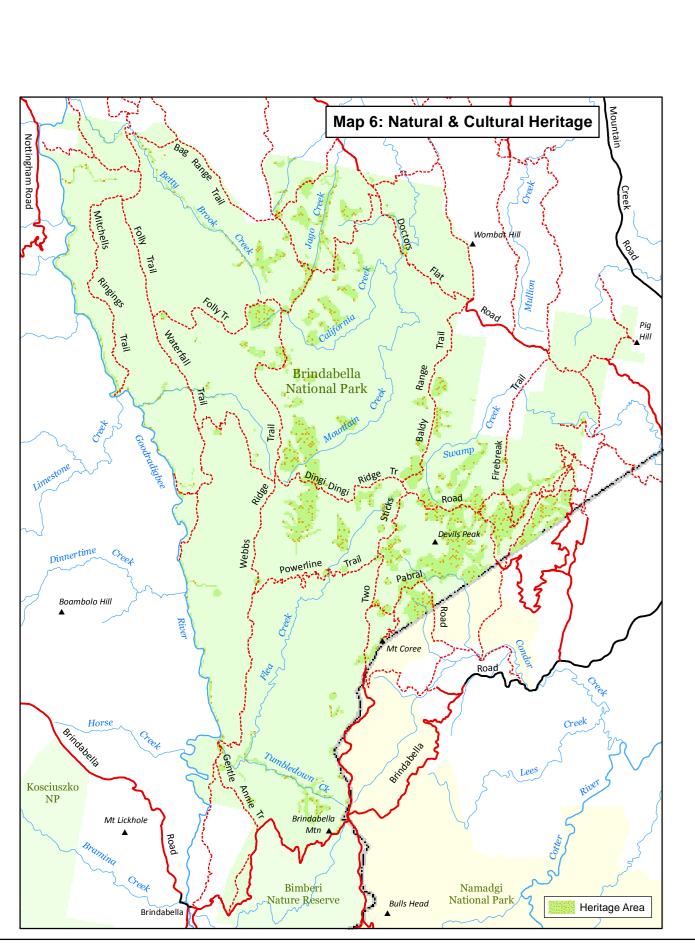
\* Species recorded off the Reserve, however the proximity of record and available habitat within the Reserve suggest species could be located within the Reserve.

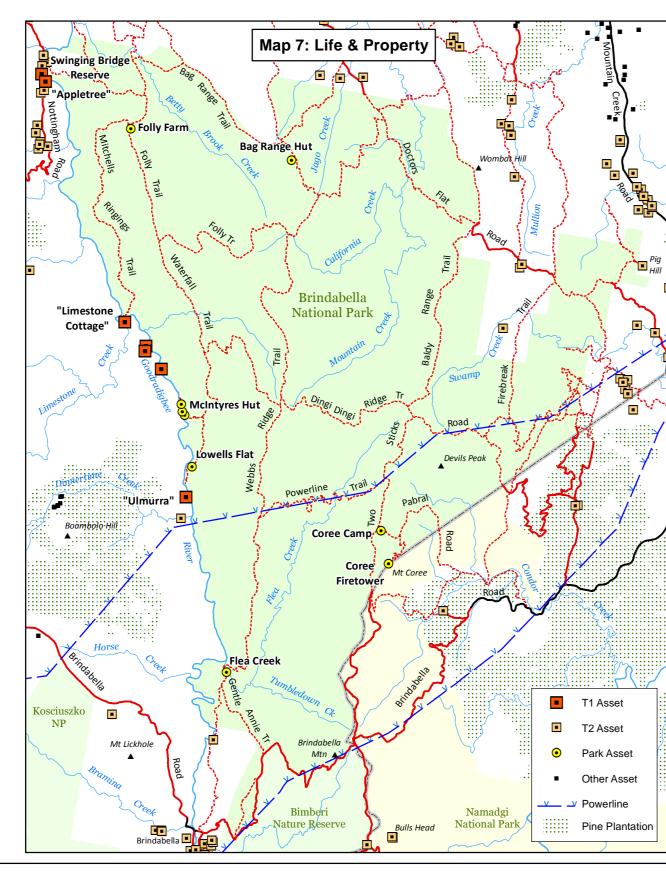
• Species is assigned to their primary habitat group, additional suitable habitat groups are identified in brackets.

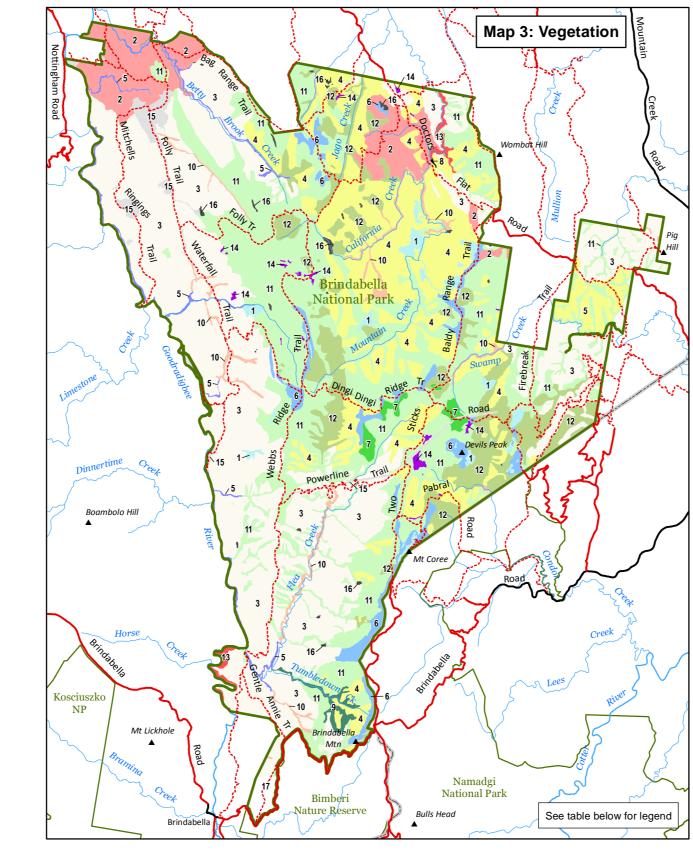
not widen or move debris into key habitat.

Avoid falling large trees into diverse heath or key habitat.

Do not introduce fire within 100m of known cave roost.







Vegetation Formation (Keith, 2002)	Vegetation Community Description	Code	Reserve (GIS) Ha's	% Reserv
Alpine Complex	Montane Rocky Heath	1	192.2	0.9
	Dry box woodland	2	1084.6	5.1
Dry Sclerophyll Forests – shrubby	Peppermint forest	3	7546.4	35.4
subformation	Peppermint – Mountain gum forest	4	3446.4	16.2
	Riparian	5	189.2	0.9
Sclerophyll Grassy Woodlands	Snowgum – Mountain gum forest	6	527.5	2.5
	Alpine Ash forest	7	113	0.5
	Black Sallee woodland	8	1.6	<0.1
Wet Sclerophyll Forests – grassy subformation	Brown barrel forest	9	74.3	0.3
Subioiiiatioii	Manna gum forest	10	279.4	1.3
	Narrowleaf peppermint – Mountain gum forest	11	5682	26.7
Wet Sclerophyll Forests – shrubby subformation	Brown barrel forest	12	1647.8	7.7
Heathlands	Riparian Heath	13	77.6	0.4
Forested Wetlands	Swamp	14	43.6	0.2
	Cleared Land	15	278.2	1.3
	Rock	16	37.2	0.2
	Unmapped	17	149.7	0.7

	Fire should be actively excluded from the Alpine Complex vegetation formation, where possible.
•	Except for asset protection or strategic purposes, fire will be introduced in accordance with the biodiversity fire regime thresholds.  Ensure potential risks to Alpine Ash located within LMZ 2 are identified during impact assessment and operational planning and strategies are implemented protect Alpine Ash during prescribed burning activities, where possible.  Avoid implementation of prescribed burns during spring, and during times of prolonged drought. Minimise introduction of high intensity fires during prescribe burning and backburning operations.  Do not introduce fire directly into wet heath (bogs) and waterways. Attempt to keep fire at least 100m from these areas. Do not introduce fire into alpine convegetation, rocky outcrops, and karst areas.  Avoid damaging/felling hollow-bearing and nest/feed trees when establishing control lines, mopping up and during prescribed burning. During mop up active to extinguish fire rather then falling tree. If habitat trees are located on control lines remove fuel from base of tree, prior to prescribed burning or backburn.
ı	Do not use earthmoving equipment within 100m of wet heath (bogs) & known northern corroboree frog habitat sites. If an existing trail is being maintained a of fire management activities, do not widen or move debris into known habitat, within 50m of the site.  Avoid the use of earth moving equipment within the Karst Area.
•	Avoid the use of fire suppression chemicals within 100m of streams, wet heath (bogs) & riparian environments, and within the catchment of the Karst area. Driving through wet heath (bogs) is to be avoided. Minimise disturbance in riparian areas.  Minimise use of waterbombing in wet heath (bogs), due to potential damage to sphagnum structure.

SUMMARY GUIDELINES FOR THE PROTECTION OF NATURAL HERITAGE

Avoid the use of fire suppression chemicals within 100m of streams, wet nearn (pogs) & riparian environments, and within the catchment of the Karst (or Driving through wet heath (bogs) is to be avoided. Minimise disturbance in riparian areas.
Minimise use of waterbombing in wet heath (bogs), due to potential damage to sphagnum structure.
Map the age classes of the Alpine Ash and the disturbance class of Snowgum woodland communities and prioritise sites for protection from wildfire.

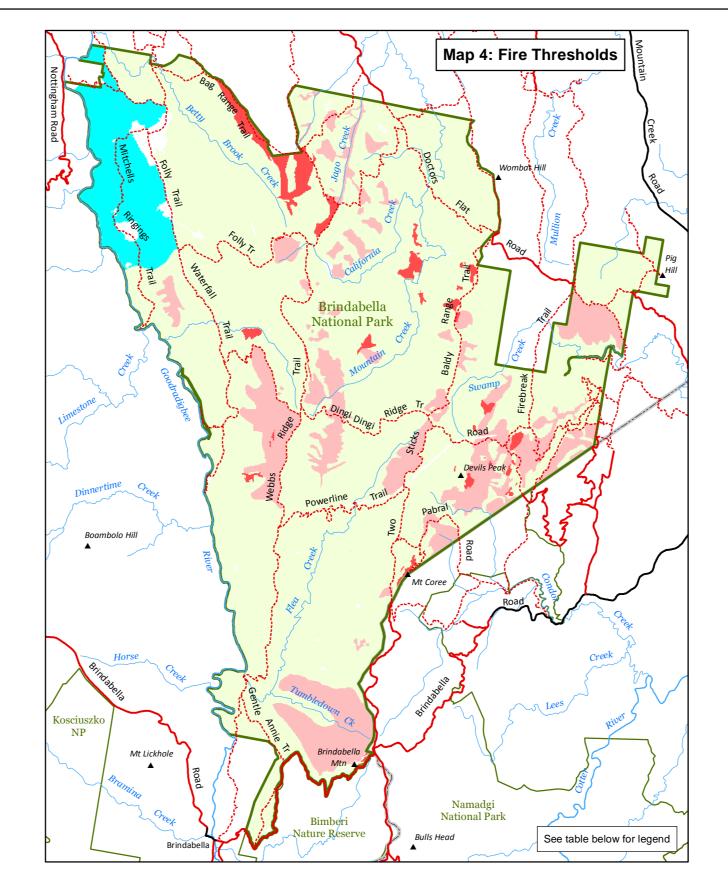
Asset	Vulnerability	Risk Mitigation
T1 – Private properties/farm buildings within close proximity (100m) of reserve boundary	5 assets are located within 100m of the Park, and thus are within the immediate area of influence of fire leaving the reserve.	Participate in the development and where appropriate implementation, of fire management proposals regarding asset protection, through the RFS Bushfire Management Committee and ACT Emergency Services Authority.     Maintain asset protection zones surrounding public assets, as required.     Liaise with ACT authorities regarding classification of zones within the cooperative
T2 – Private property within 3 km of reserve boundary	Vulnerable to fire coming from the Park, particularly under the influence of north westerly to south westerly winds.	management area and the requirement for prescribed burn activities.     Implement ridgetop ignitions in Land Management Zone 2, in accordance with vegetation biodiversity thresholds, and fuel load.     Maintain all access trails within the reserves for use in fire suppression.
Public assets within Park, e.g. 330kv powerline, campgrounds, Mt Coree firetower (immediately adjacent	Vulnerable to impacts from fire within the Park.	<ul> <li>Maintain the Southern section of Two Sticks Road, Blue Range Road, northern section of Webbs Ridge, Doctors Flat Road and Maginot Trail to float standard.</li> <li>Maintain identified fire management operational assets such as helipads and wate points as required.</li> <li>Respond to wild fires as soon as they are detected.</li> </ul>
to Park)		Ensure operational guidelines are adhered to.     Implement annual fire management work schedule.
Visitors to the Park	Vulnerable to impacts from fire within the Park.	As above     Formalise signs at major camping and picnic areas advising of actions they shoul undertake in the event of a fire.     If a fire breaks out check campgrounds for visitors (preferably by air) and give directions if required.     Park closure may be implemented during periods of extreme fire danger, when the Park is threatened by fire, or when a fire is actually burning in Park.
Firefighting personnel	Vulnerable to impacts from fire within the Park.	As above.     Undertake a thorough evaluation of the possible risks to fire fighters and support personnel before deploying crews onto fireground.
ACT Rural and Urban Areas	The possibility of fire runs under extreme weather conditions burning significant distances to the east and south east and impacting on rural and urban areas in the ACT.	As above.     Liaise with ACT authorities to encourage appropriate land management practices protect the rural and urban interface.

	TABLE 8:	MAP 8 - BUSH FIRE MANAGEN	IENT ZONES - DEFINITIONS					
Asset Protection Zone (APZ)		Provide fuel reduced areas around assets, which are adjacent to bushfire hazards. The primary fire management objective in APZs is the protection of life and property.						
Land Manag (LM		Defines management strategies for the protection of a biodiversity.	Defines management strategies for the protection of areas with important natural or cultural values. Focus on conserving biodiversity.					
Fire Exclus		Areas which are extremely sensitive to fire, particularly processes (e.g. climate change) have the potential to	where impacts of fires in combination with other threatening result in species extinctions.					
		RESERVE BUSH FIRE MANA	GEMENT ZONES					
Zone	Guidelines	3	Actions					
APZ		as possible, the standards as specified in Planning for e Protection (RFS, 2006) are applied to APZ's.	<ul> <li>Assess maintenance requirements of APZ's annually. Fuel reduction activities include prescribed burning, mechanical removal of fuel, herbicide application.</li> </ul>					
LMZ1	<ul><li>know</li><li>vege</li><li>biodi</li><li>vege</li><li>shou</li></ul>	•	<ul> <li>Minimise size and intensity of wildfires, and manage fire to produce mosaic (patch) burn patterns (where weather conditions permit).</li> <li>Protect mature trees and minimise felling of large and hollow bearing trees during 'mop up' activities, where time permits.</li> <li>Prescribed fire will be used where deemed necessary for ecological purposes (including protection of catchment values).</li> <li>Earth moving equipment maybe used to contain fire within OEH policy guidelines.</li> <li>Fire suppression chemicals may be used to suppress fire however minimise use within 100m of water courses and dams.</li> </ul>					
LMZ2	aspects or the This areas he the impact of Park and thr	n western edge of Park and northern and westerm be dominant north south ranges ave been identified for fuel management, to minimise f fire originating from the west travelling through the eatening assets within the ACT, and the sensitive ts within the Park.	<ul> <li>Assess fuel load as per fuel monitoring schedule.</li> <li>Mosaic burning may be undertaken to reduce the likelihood of spread of fires.</li> <li>Once vegetation communities have reached minimum threshold then consider fuel management requirements in consultation with RFS Bushfire Management Committee.</li> <li>Implement ridgetop ignitions relative to the biodiversity threshold and overall fuel hazard guidelines.</li> <li>Minimise potential for fire to spread and or contain to existing control lines.</li> <li>Manage fire to produce mosaic (patch) burn patterns (where weather conditions permit).</li> <li>Earth moving equipment maybe used to contain fire within OEH policy guidelines.</li> <li>Fire suppression chemicals may be used to suppress fire however minimise use within 100m of water courses and dams.</li> </ul>					
FEZ		t to exclude fire from this zone or increase burn ess by use of incendiaries, water bombing etc.	<ul> <li>Prescribed fire will not be introduced into this zone as it is not required for ecological purposes.</li> </ul>					

Minimise the use of earth moving equipment.

drainage lines and wet heath (bogs).

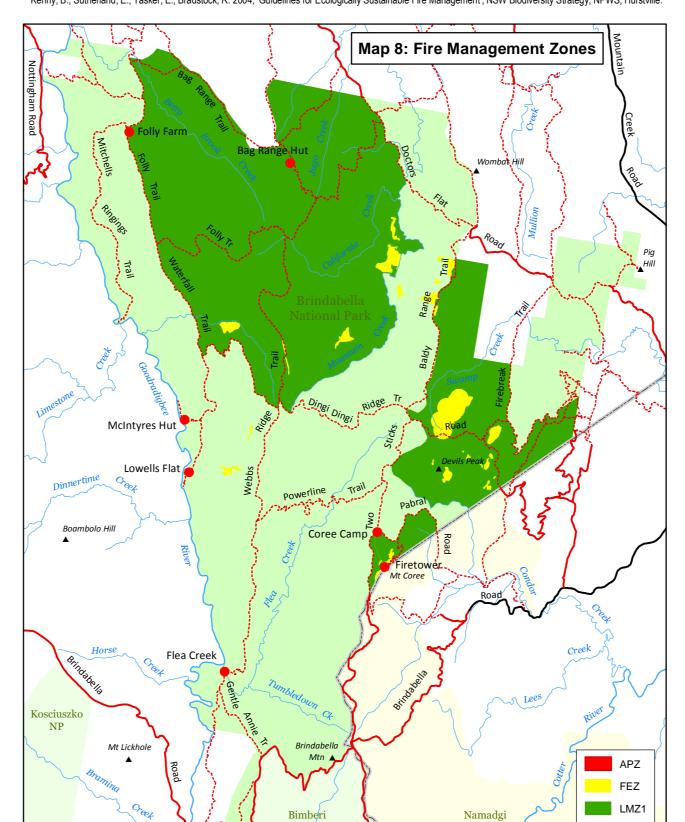
Avoid the use of fire suppression chemicals within 100m of

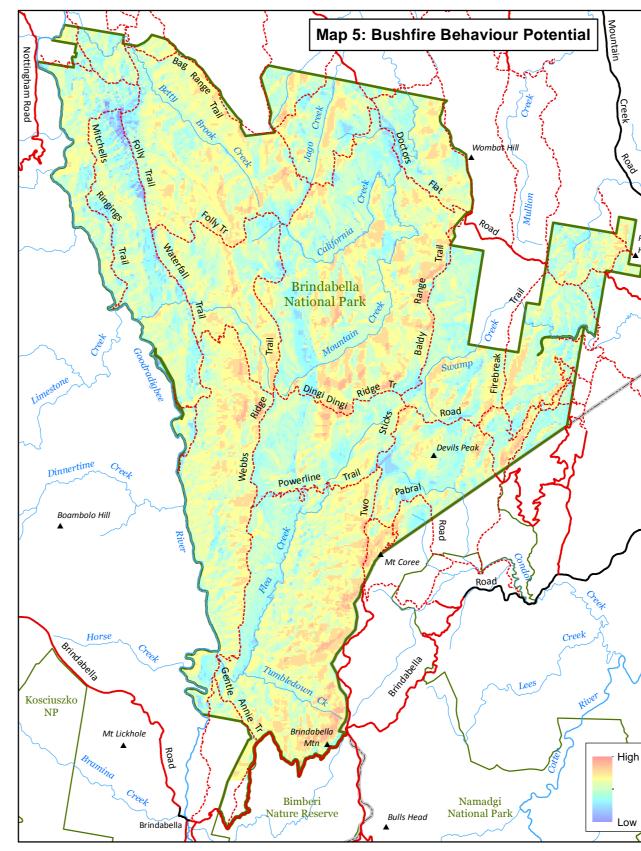


Threshold	Vegetation Community	% of Reserve	Interpretation & Management Guidelines
Too Frequently Burnt	Alpine ash forest, Brown barrel forest, Montane Rocky Heath, Narrowleaf peppermint – Mountain gum forest, Peppermint forest, Peppermint – Mountain gum forest, Riparian, Snowgum – Mountain gum forest	2.1	The inter fire intervals have been too short. In these areas, species and populations sensitive to short fire intervals may experience a decline in abundance to a point where they risk local extinction. Protect from fire as far as possible.
Vulnerable to Frequent Fire	Alpine ash forest, Brown barrel forest, Dry box woodland, Manna gum forest, Montane Rocky Heath, Narrowleaf peppermint – Mountain gum forest, Peppermint forest, Riparian, Snowgum – Mountain gum forest, Swamps	13.5	These areas have already experienced one inter-fire interval less that the minimum interval recommended for this vegetation type and/or the current time-since-fire is less than the minimum recommended interval.  All unbumt Rainforest / Mangrove / fire exclusion vegetation is in this category.
Within Threshold	Alpine ash forest, Black sallee woodlands, Brown barrel forest, Dry box woodland, Manna gum forest, Montane Rocky Heath, Narrowleaf peppermint – Mountain gum forest, Peppermint forest, Peppermint – Mountain gum forest, Riparian, Riparian heath, Snowgum – Mountain gum forest, Swamps	77.2	Fire history is within the threshold for the vegetation community.     Fire is neither required or to be avoided.
Long Unburnt	Dry box woodland, Narrowleaf peppermint – Mountain gum forest, Peppermint forest, Riparian, Riparian heath	5.4	Where the age of a vegetation community is greater than the maximum fire interval for the community.     If fires continue to be excluded, a decline in biodiversity may result through the senescence of plants and their seed banks.     Long-unburnt areas are, however, ecologically significant, as there may be relatively few areas represented.     Consider implementing an ecological burn or allow the area to burn under suitable conditions.
No Regime	Cleared land, Rock, unmapped	1.8	Areas which do not have recommended fire intervals assigned to them, e.g. cleared land, rock, and unmapped vegetation

Vegetation	Vegetation	Minimum	Maximum	Fire History Evaluation	Guidelines
Formation	Class	Fire	Fire	The flistory Evaluation	Guidelines
		Interval	Interval		Planning should provide for a range of age classes
					(time since fire) within all formations.
Alpine Complex	Montane Rocky Heath	No burning permitted	No burning permitted	95% Too Frequently Burnt 1% Vulnerable to Frequent Fire	Recovery in Alpine areas can be very slow due to lower productivity at higher elevations.
				4% Within threshold	Fire occurs rarely, except under extreme conditions.     Protect from fire during back burning operations.
Dry Sclerophyll Forests - shrubby subformation	Dry box woodland, Peppermint forest Peppermint- Mountain gum forest, Riparian	7	30	<1% Too Frequently Burnt 4% Vulnerable to Frequent Fire 86% Within threshold 9% Long Unburnt	Some intervals in the higher end of the range, i.e. 25 years, may be desirable (Kenny et al, 2004). This is particularly relevant for Riparian communities containing Casuarina cunninghamiana, as they provide refugia after fire events, and should burn irregularly due to their topographic position and fuel moisture levels. They are not guaranteed to resprout and recolonisation is slow. These communities should be protected during prescribed burning operations.  A decline in biodiversity is predicted if 3 or more consecutive fires occur with inter – fire intervals of < 7yrs.  Too frequent fires may promote fire tolerant shrubs
Sclerophyll	Snowgum-	10	40		Occasional intervals >15 yrs may be desirable (Kenny)
Grassy	Mountain gum	10	"	4% Too Frequently Burnt	et al, 2004).
Woodlands	forest			13% Vulnerable to Frequent Fire	High intensity fires should be avoided.  A dealine in highly participated if 2 and approximately a second in the district of the second in the district of the second in the second
				83% Within threshold	A decline in biodiversity is predicted if 3 or more consecutive fires occur with inter – fire intervals of < 10yrs.
Wet	Manna gum forest,	10	50	2% Too Frequently Burnt	Occasional intervals greater than 15 years may be
Sclerophyll Forests - grassy	Alpine ash forest, Narrowleaf peppermint-			6% Vulnerable to Frequent Fire 92% Within threshold	desirable (Kenny et al, 2004).  Crown fires should be avoided in the lower end of the interval range (Kenny et al, 2004).
subformation	Mountain gum forest, Brown barrel forest, Black sallee woodlands				Some minimum intervals >25 yrs for low intensity fires are required in Alpine ash forest, especially at higher elevations. Except for asset protection purposes, no fire should be introduced in Alpine ash forest during the life of this plan.      A decline in biodiversity is predicted if:
					<ul> <li>⇒ 3 or more consecutive fires occur with inter – fires intervals of &lt;10yrs,</li> <li>⇒ no understorey fire within 50 years,</li> </ul>
					⇒ 2 or more canopy consuming fires in Alpine Ash occur within 25 yrs,
					no high intensity fire in Alpine Ash occurs within 400 yrs.
					Some drier parts of these communities may tolerate occasional lower fire intervals of low intensity fires.
Wet Sclerophyll Forests -	Brown barrel forest	25	60	5% Too Frequently Burnt 93% Vulnerable to Frequent Fire	Crown fires should be avoided in the lower end of the interval range (Kenny et al, 2004).  A decline in highly write in predicted if
shrubby subformation				2% Within threshold	A decline in biodiversity is predicted if:     3 or more consecutive fires occur with inter – fires intervals of <25yrs.
					⇒ no understorey fire within 60 years, ⇒ 2 or more canopy consuming fires occur within 100
					yrs,  ⇒ no high intensity fire occurs within 400 yrs.
					<ul> <li>Some drier parts of these communities may tolerate occasional lower fire intervals of low intensity fires.</li> </ul>
Heathlands	Riparian Heath	7	30	100% Within threshold	Occasional intervals greater than 20 years may be desirable (Kenny et al, 2004)
					A decline in biodiversity is predicted if 3 or more consecutive fires occur with inter – fire intervals of <
Forested Wetlands	Swamps	7	35	100% Within threshold	7yrs.  Occasional intervals greater than 30 years may be desirable (Kenny et al, 2004)
					A decline in biodiversity is predicted if 3 or more     consequence fire program with inter-fire intervals of a

consecutive fires occur with inter - fire intervals of <





Low	Montane Rocky Heath Cleared		2 %			
Moderate	Snowgum-mountain gum for Black sallee woodlands Manna gum forest Brown barrel forest Alpine ash forest Riparian Swamp	est			13 %	
High	Peppermint-mountain gum fo Narrowleaf peppermint-mour Peppermint forest Dry box woodland Riparian Heath				85 %	
Aspec	t Bushfire Behaviour	Slope Bushfire Be	haviour	Elevation Bushfire E	Behaviour	
Rating	Aspect in degrees	Rating	Slope in degrees	Rating	Elevation (asl)	
Very Low	45-180º &Flat	Very Low	0 - 100	Low	1401-1800 m	
Low	180-2250	Low	10 - 200	Medium	1101- 1400m	
Moderate	0-450 & 225-2700	Medium	20 -400 & >700	High	801 – 1100m	
High	270-3600	High	>400	Very High	0 – 800m	

ANALYSIS OF BUSHFIRE BEHAVIOUR POTENTIAL
Bushfire behaviour at any position on the landscape reflects
<ul> <li>site attributes such as vegetation type, slope, aspect and elevation (can affect fuel levels, structure and moisture content).</li> </ul>
Fire weather attributes such as temperature, relative humidity, wind direction and wind speed. While these characteristics are difficult to predict, analysis of local weather data shows that bad fire weather days are generally associated with winds from the north-west to west.
The western slopes of Webbs Ridge, Baldy Range, Bag Range, and the ridgeline that marks the NSW/ACT border in the Two Sticks Road vicinity, have the

driven up these slopes under strong winds have high spotting potential.

Lower fire behaviour is found on more sheltered easterly aspects or with more gently undulating slopes, for example California Flats and Top Crossing. The fuel moisture levels are generally higher, thus mitigating fire behaviour under moderate conditions. However, during extended drought periods or severe fire weather conditions these forests have the potential to support extreme fire behaviour, exacerbated by the ribbon bark of some of the tree species.

Work is being undertaken by UNSW on the effect of terrain and localised weather conditions on fire behaviour in the Park.

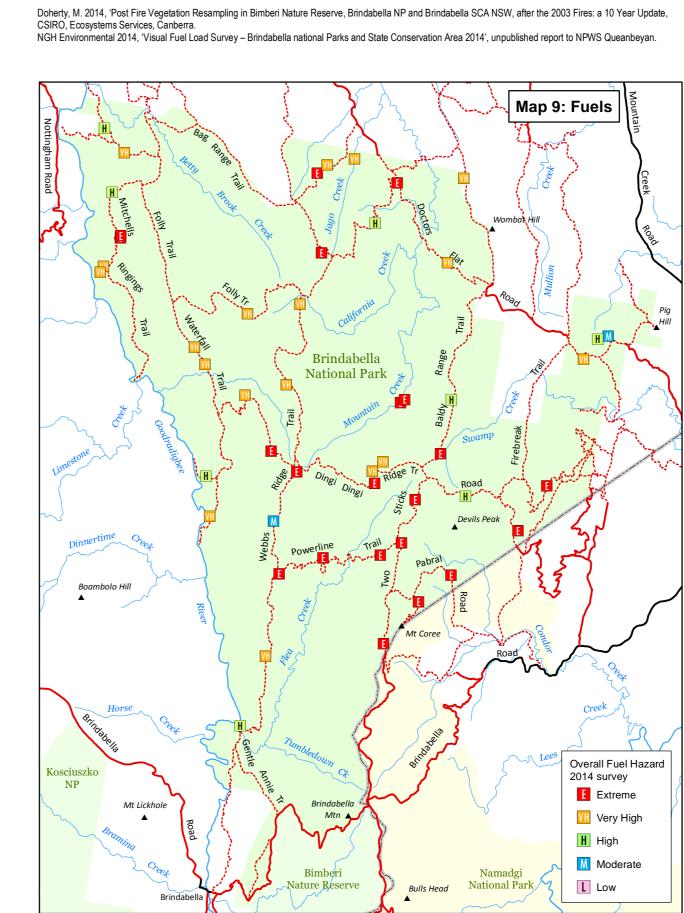
highest fire behaviour potential, due to their steepness and exposure to both afternoon sun and drying north-westerly to westerly winds through summer. Fires

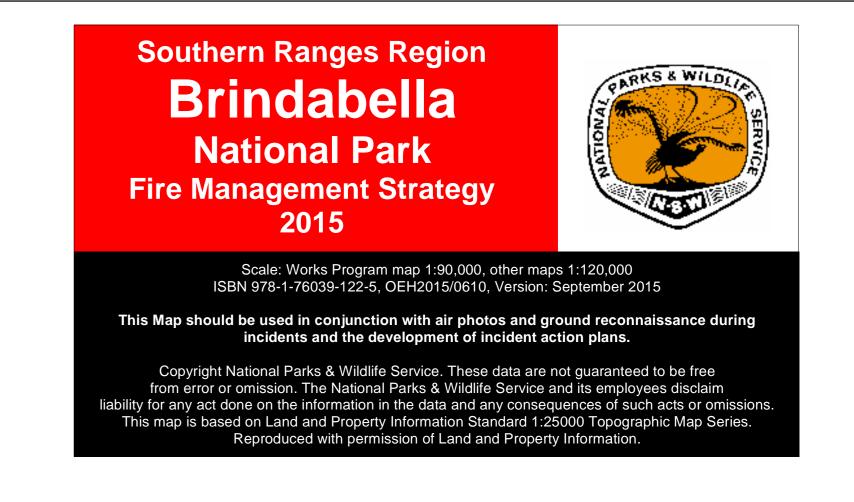
Name of HR	Size Ha	Zone	BRIMS Number	Vegetation Communities	Prescription	Implementation date
Maginot LMZ	700	LMZ 2	HR14091870019	Peppermint forest complex/ Dry box.	To reduce fuels on the ridges between Doctors flat Rd and Maginot fire trail.	Autumn 2016
					Fuel loads to be reduced to less than 8 ton/Hectare.	
Coree Creek LMZ	65	LMZ2	HR15052872978	Peppermint - Mountain gum	Cooperative burn with ACT	Autumn 2016
Bulls Head LMZ Bimberi NR	1952	LMZ 2	HR14091970054	Peppermint - Mountain gum	Reduce fuels on ridges.	Autumn 2016
Sandy Flat LMZ	300	LMZ 2	HR14092270061	Peppermint forest	To reduce fuels on the ridges between Webbs Ridge, the Goodradigbee river and the power lines.	Autumn 2017
					Fuel loads to be reduced to less than 8 ton/Hectare.	
Baldy Range LMZ	700	LMZ 2	HR14091970055	Peppermint - Mountain gum	Reduction of fuels between Baldy range fire trail and mountain creek to protect brown barrel communities along the range.	Autumn 2017
					Fuel loads to be reduced to a mosaic burn across the treatment area.	
Fairlight HR	280	LMZ 2	HR14092270067	Peppermint forest	Cooperative burn with local brigades	Autumn 2017
Central Flea Creek LMZ	912	LMZ 2	Unassigned	Peppermint forest		Autumn 2018
Firebreak Trail LMZ	519	LMZ 2	Unassigned	Peppermint forest/Brown barrel forest		Autumn 2018
Upper Waterfall LMZ	342	LMZ 1	Unassigned	Narrowleaf Peppermint – Mountain Gum		Autumn 2018

TABLE 9: WAP 9 - FUEL LANDSCAPE				
Fuel Landscape Analysis	ı			
Fuel sampling carried out in the Park in June 2014 has shown that overall fuel loads have returned to pre-2003 levels with 76% of survey sites recording a rating of either very high or extreme in 2014. This compares to 53% in 2009. These increased fuel load ratings are largely driven by increases in the combined surface hazard and elevated hazard ratings where the majority of sites returning higher ratings for these variables in 2014 compared to 2009. This is despite bark hazard ratings remaining fairly similar. This suggests an increase in organic surface materials such as bark and leaves have built up since the last survey and that there has been an increase in size and density of shrubs and other understorey vegetation (the elevated layer) at the majority of survey locations (NGH 2014).				
The NGH report shows that fuels in the park at a similar level to that prior to 2003 and work by Doherty (2014) supports the view that the fuel structure is at a post fire climax. The broad implications for fuel management is that fuels with a high elevated component produce additional constraints on the use of prescribed fire				

These are reducing the window of opportunity through elevated ground fuel moistures due to a thicker shrub layer and an increased fire behaviour potential due to

The fuel surveys carried out in 1998, 2004, 2006, 2009 and 2014 confirm that Higher fuel levels tended to occur at higher altitudes and within gullies.





This Fire Management Strategy (FMS) provides direction for fire management activities within Brindabella National Park (the Park) to fulfil the NSW National Parks and Wildlife Service obligations of legislation, Government policy and inter-agency agreements. This FMS is supported by a resource document providing more in-depth information about fire management in the Park. The fundament in bushfire management is to minimise the risk of bushfire damage to life and property. Whilst maintaining this emphasis on life and property, we also have an important statutory obligation to minimise	ency agreements. This FMS is supported by a resource document providing more in-dépth information about fire management in the Park. The fundamental obligation risk of bushfire damage to life and property. Whilst maintaining this emphasis on life and property, we also have an important statutory obligation to minimise damage to
natural and cultural heritage values which may occur through bushfire management practices. A memorandum of understanding exists between relevant governments on the co-operative management Australian Alps National Parks (current 6th November 1998). A memorandum of understanding also exists for fire management and suppression between the NSW National Parks and Wildlife	

RESOURCE INFORMATON

The Park covers an area of approximately 21000 ha and forms the northern most extent of the Australian Alps National Parks. The Australian Alps was listed on the National Heritage List in November 2008. The Park is located in southern New South Wales and adjoins the Australian Capital Territory, between 10 and 30 kilometres west of Canberra's urban area. 94% of the Park was bumt at varying intensities in

The park is significant for its biodiversity, landscape, cultural and recreational values. There are almost 500 native plant species recorded in the park, which are found within sixteen different vegetation types. Twelve of these plant species are regarded as regionally significant as they are at the limit of their distribution. Importantly the park contains the northern most limit of the fire sensitive alpine ash, and examples of the endangered ecological communities, Montane Peatland and Swamps, and Boxgum Woodland. Several threatened fauna species are located within the Park including the Northern Corroboree Frog which is listed as Vulnerable under the NSW Threatened Species Act.

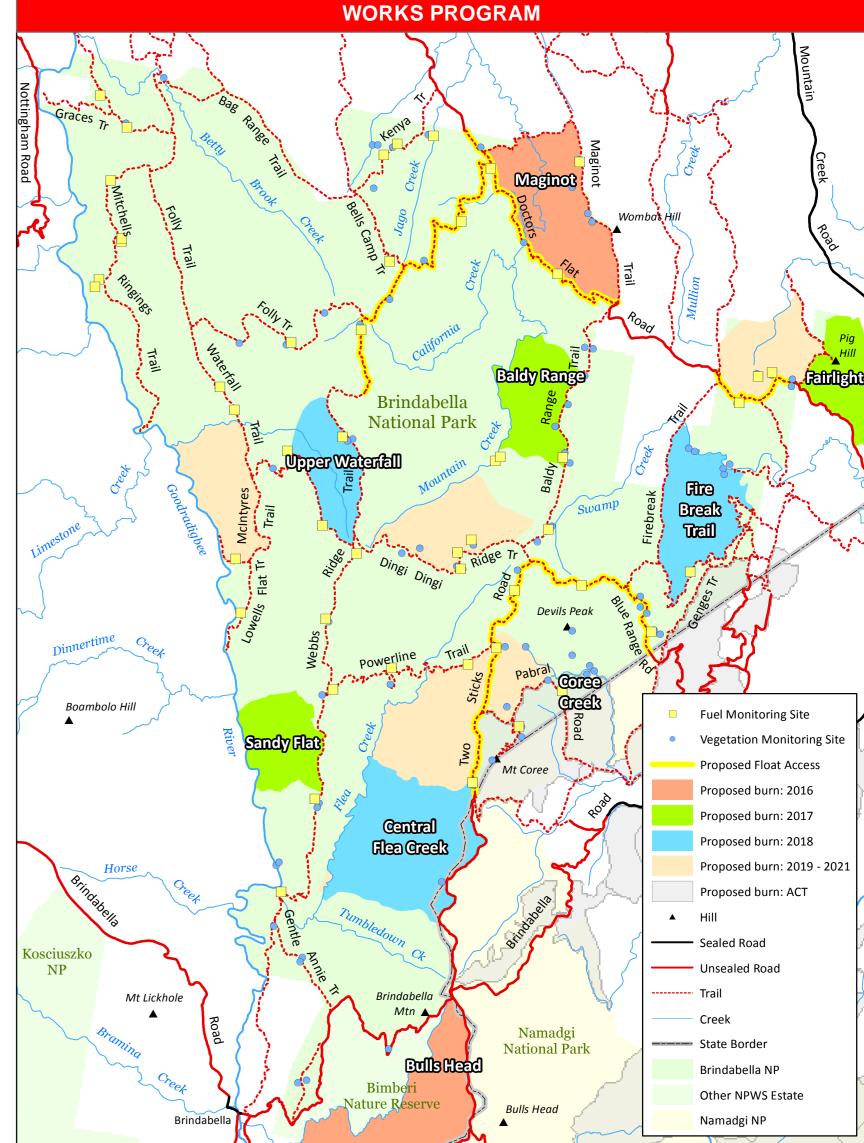
The park forms part of the catchment for the Goodradigbee River which flows into Burrinjuck Dam providing a primary source of irrigation water further downstream to the Murrumbidgee Irrigation Area.

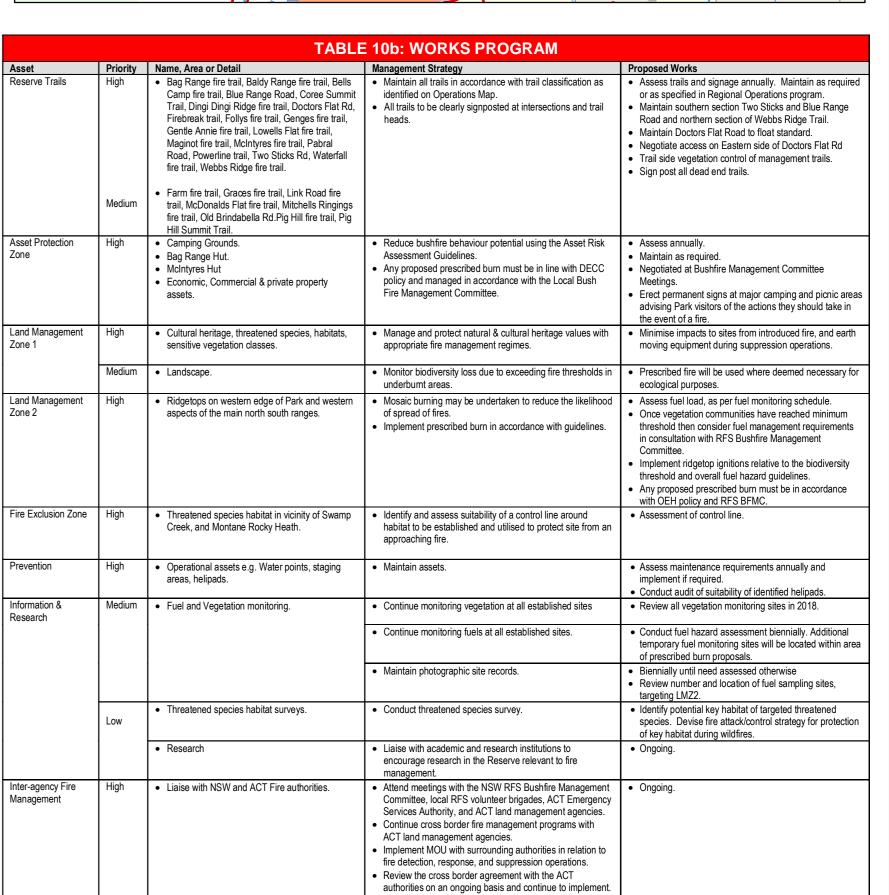
Importantly, the park also forms part of the catchment for the Cotter Dam which provides domestic water for the ACT.

The park receives about 11,500 visitors annually and is particularly popular among four-wheel drive and trailbike enthusiasts.

This strategy identifies the primary objectives for fire management operations, the characteristics of the bushfire environment, the assets within and surrounding the Park, and the values of the Park. The strategy includes a risk assessment of fire threat to assets, including natural and cultural heritage assets, and provides a range of fire management guidelines to facilitate fire management planning and fire suppression operations.

Office of Environment and Heritage	National Parks and Wildlife Service, Park Management - Metro & Mountains Branch, Southern Ranges Region, Alpine-Queanbeyan Area.	Government Areas	Eden-Monaro Federal Electorate.     Burrinjuck State Electorate.     Tumut and Yass Local Government Areas.
Rural Fire Service	Riverina Highlands Zone, Southern Tablelands Zone.	Other Organisations	Brungle Tumut Aboriginal Land Council.     Riverina Local Land Services





Undertake joint training exercises.